

FAIRFIELD CITY COUNCIL

DETAILED SITE INVESTIGATION

FAIRFIELD SUSTAINABLE RESOURCE CENTRE EXPANSION

JULY 2020

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Detailed Site Investigation
Fairfield Sustainable Resource Centre Expansion
Fairfield City Council

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ABBREVIATIONS

ANZECC	Australian, New Zealand Environment and Conservation Council
BTEX	Benzene, toluene, ethylbenzene and xylene
C6–C10	Light petroleum hydrocarbon chain fraction (for example, petrol)
C10–C16	Medium petroleum hydrocarbon chain fraction (for example, jet fuel, kerosene, diesel)
C16–C34	Heavy petroleum hydrocarbon chain fraction (for example, diesel, motor oils)
C34–C40	Heavy petroleum hydrocarbon chain fraction (for example, lube oils, fuel oils, waxes)
<1, <100	Less than the PQL, that is, less than 1 or 100 units
LNAPL	Light non-aqueous phase liquid
m AHD	Metres Australian Height Datum
mg/kg	Micrograms per kilogram
mg/L	Milligram per litre
ND (nd)	Not detected above the PQL
ppm	Part per million
PQL	Practical quantitation limit (of chemical concentration)
Redox potential	Reduction/oxidation potential
RPD	Relative per cent difference
TDS	Total dissolved solids, a measure of salinity
TRH	Total recoverable hydrocarbons
µg/L	Microgram per litre
µS/cm	MicroSiemens per centimetre; a measure of conductivity and salinity

EXECUTIVE SUMMARY

The Fairfield Sustainable Resource Centre (SRC) is a Council-operated recycling centre which accepts waste building material comprising terracotta, brick, concrete and asphalt and supplies aggregate, sand, topsoil and crushed concrete for construction and landscaping. It is understood that the Council intends to expand the SRC licensed area to include approximately 2.8 hectares (ha) to the east of the current SRC operational area, including filling in a gully within a former road reservation (Canal Road) between the current facility and the proposed expansion. The project will also include expanding a paved carpark area, construction of a flood compensation area to the north-east of the expansion area and creation of two new sedimentation basins, one in the north of the facility and one in the north-east corner of the expansion area. Fairfield City Council engaged WSP Australia Pty Ltd (WSP) to undertake a detailed site investigation (DSI) for the facility, including the expansion area, as part of the planning approvals process.

The objectives of the DSI were to:

- assess the condition of the soil in the proposed expansion area
- assess the groundwater quality beneath the expansion area
- assess the condition of soil, groundwater and any standing water present in the gully
- assess groundwater quality between the SRC facility and Prospect Creek.

The scope of work to meet the objectives comprises:

- desktop assessment of the history and current operation of the current SRC and the expansion area to select intrusive investigation locations
- intrusive investigation at 32 sampling locations comprising:
 - excavation of 27 test pits in the expansion area and adjacent to the gully
 - drilling and installation of 3 wells in the expansion area
 - drilling and installation of 2 shallow wells between the existing SRC facility and Prospect Creek
- surface water sampling of Prospect Creek upstream of the SRC facility, at the facility and downstream of the facility
- surface water sampling of standing water in the gully where Canal Road is proposed to be constructed.

The results of the investigation showed some contamination in the groundwater beneath the expansion area, likely a result of the landfill leachate. No human health risks related to the proposed operational increase of the use of the site were identified from soil or groundwater. The standing water in the gully and the samples of Prospect Creek found metals and hydrocarbons present. Hydrocarbons detected did not exceed any adopted assessment criteria and metals were considered to represent background conditions.

The soil and groundwater in the gully were unable to be assessed due to the vegetation present. However, test pits and soil bores were undertaken adjacent to the gully and a sample of the surface water outflow was collected. The outflow sample contained hydrocarbons, although no risks were identified.

Based on the results of the DSI the proposed redevelopment of the site, including the expansion of the SRC and filling in the gully, is not considered to represent a risk to human health or the environment. During the construction phase controls to limit dust generation and manage water runoff would be included in a construction environmental management plan. The presence of the landfill material is not expected to impact the proposed redevelopment due to the thickness of the capping material.

Soil excavated for the new sedimentation basin in the expansion area is considered likely to be suitable for reuse at the site, based on the sampling results from test pits in the proposed area. However, if soil is removed from the site it must be sampled for waste classification before disposal.

The areas of the site where the carpark expansion, sedimentation basin in the north-east of the facility and flood compensation area are proposed were not assessed during this investigation. However, only limited potential risks are associated with the carpark expansion and sedimentation basin, comprising management of spoil, dust generation and water runoff, which can be adequately managed during the construction phase under the construction environmental management plan. Soil sampling for waste classification should be undertaken on any spoil material created during these works. The flood compensation basin is discussed in a separate memorandum, as it was added to the scope after the fieldwork was completed.

The site is considered suitable for the continued use as a recycling centre, with no remediation recommended based on the findings of this investigation.

1 INTRODUCTION

1.1 BACKGROUND

Fairfield City Council covers 102 km² in the south-western Sydney metropolitan area, and serves approximately 205,000 residents. The Fairfield Sustainable Resource Centre (SRC) is a Council-operated recycling centre which accepts waste building material comprising terracotta, brick, concrete and asphalt and supplies aggregate, sand, topsoil and crushed concrete for construction and landscaping. The SRC has been in operation since 1997 and processes in excess of 180,000 tonnes of material per year.

It is understood that the Council intends to expand the SRC licensed area to include approximately 2.8 hectares (ha) to the east of the current SRC operational area, including filling in a gully within a former road reservation (Canal Road) between the current facility and the proposed expansion. The project will also include expanding a paved carpark area, construction of a flood compensation area to the north-east of the expansion area and creation of two new sedimentation basins, one in the north of the facility and one in the north-east corner of the expansion area.

A site layout plan is presented as Figure 1 in Appendix A. Fairfield City Council engaged WSP Australia Pty Ltd (WSP) to undertake a detailed site investigation (DSI) for the facility, including the expansion area, as part of the planning approvals process. The purpose of the DSI is to respond to the Planning Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning and Environment (DPE) for the project, in particular the requirements for characterisation of:

- “water quality at the point of discharge to surface and/or groundwater against the relevant water quality criteria”
- “the nature and extent of any contamination on the site and a description of proposed management measures.”

The DSI was initially scoped to assess the expansion area only. However, after feedback from the DPE, now the Department of Planning, Industry and Environment (DPIE), it was broadened to include the currently licensed facility area, following the initial assessment work undertaken in 2017.

1.2 OBJECTIVES

The objectives of the investigations were to:

- assess the condition of the soil at the facility, including in the proposed expansion area
- assess the groundwater quality beneath the expansion area
- assess the condition of soil, groundwater and any standing water present in the gully
- assess groundwater quality between the SRC facility and Prospect Creek.

1.3 SCOPE OF WORKS

The scope of work to meet the objectives comprises:

- desktop assessment of the history and current operation of the current SRC and the expansion area to select intrusive investigation locations
- intrusive investigation at 40 sampling locations comprising:
 - excavation of 27 test pits in the expansion area and adjacent to the gully
 - hand digging 8 locations in the existing facility

- drilling and installation of 3 wells in the expansion area
- drilling and installation of 2 shallow wells between the existing SRC facility and Prospect Creek
- surface water sampling of Prospect Creek upstream of the SRC facility, at the facility and downstream of the facility
- surface water sampling of standing water in the gully where Canal Road is proposed to be filled.

In addition, surface water sampling was undertaken in three rounds in 2018 and 2019 as part of a surface water discharge assessment at the request of the NSW Environment Protection Authority (EPA). The sampling was undertaken after periods of heavy rainfall when ponding was present in the northern portion of the site.

2 SITE LOCATION AND SETTING

2.1 SITE LOCATION AND IDENTIFICATION

The general site identification details are provided in Table 2.1.

Table 2.1 Site details

Site address	Corner of Hassall Street and Widemere Road, Wetherill Park
Site identification	Currently licensed area: Lots 35 and 37, Deposited Plan (DP) 3082 Lot 1, DP 368374 Lot 1, DP 515773 part Lot 1 and Lot 2, DP 620755 Lot 34, DP 657040 Expansion area: Lots 1 and 2, DP 620755 part Lot 1, DP 368374 part Lot 37, DP 3082 Proposed Canal Road: Lot 100 in DP 1220637 part Lot 1, DP 620755 part Lot 37, DP 3082 part Lot 35, DP 657040.
Site area	Currently facility area – approximately 17.5 ha Expansion area – approximately 2 ha Proposed Canal Road – approximately 6,000 m²
Current site use	Recycling facility
Surrounding land uses	Commercial and light industrial properties are present to the south, beyond Hassall Street, and west. To the north and east is Prospect Creek, with recreational sporting facilities beyond.
Local government area and zoning	City of Fairfield LGA, zoned IN1, general Industrial, under <i>Fairfield Local Environmental Plan 2013</i> (Fairfield LEP)
Proposed site use	Recycling centre and internal roadway

2.2 SITE INSPECTION

A site inspection of the expansion area was undertaken in September 2017 at the time of the initial assessment, and a subsequent inspection of the currently licensed portion of the facility was undertaken in April 2020.

The main entrance to the facility is via a driveway from Widemere Road. Due to historical landfilling, two areas have been built up approximately 10 m above the surrounding topography, which generally slopes to the north down to Prospect Creek. The surface of both areas was covered by a compacted gravel road base to allow heavy vehicle access. These two elevated areas make up the majority of the southern portion of the SRC property, with vegetated slopes coming down in all directions to the natural ground level.

The larger elevated pad, approximately 5 ha, comprises the main recycling facility and includes the site office and maintenance building, the facility entrance, weigh station control office, two pugmills, a crusher two water reservoirs and numerous stockpiling areas. The smaller elevated pad, approximately 1.5 ha, comprises the expansion area and includes a third water reservoir and additional stockpiling areas. There are multiple concrete bunded quarantine bays in the western portion of the expansion area. The two pads are connected by an access road, running near the southern site boundary over the gully intended to be filled in to create Canal Road.

To the north-west of the larger elevated area is a smaller operational area of the site used as a weekend drop-off area for household recyclables. This area also has a paved entrance drive from Widemere Road, leading to an open paved area that surrounds a stand of mature trees.

2.3 TOPOGRAPHY AND SURFACE WATER DRAINAGE

The property that includes both the current facility and the proposed expansion area comprises a series of capped former landfill cells that are elevated between 5 and 10 m above the surrounding area. The natural ground surrounding the cells slopes down towards Prospect Creek, which forms the northern boundary of the majority of the property before passing through the north-western portion to the north of the existing facility.

The tops of the capped cells that make up the current facility and the expansion area are generally flat with slopes down in all directions at the edges of the cells. Between the current facility and the expansion area is a gully where Canal Road is proposed to be constructed.

Surface water in the operational areas is directed to three holding ponds, in the north-west and south-east of the current facility and in the south-west of the expansion area. For the surrounding area surface water is expected to drain to Prospect Creek. A buffer zone has been designated between the weekend drop-off area and Prospect Creek to allow for settling and filtering of any runoff before reaching the creek.

2.4 GEOLOGY

The regional map of the area (Department of Mineral Resources, 1983, Geological Series Sheet 9130, Edition 1, Penrith, Scale 1:100,000) indicates that the regional geology consists of Triassic Wianamatta Group shale, carbonaceous claystone, laminate, fine to medium grained lithic sandstone, rare coal and tuff.

2.5 ACID SULFATE SOIL

A search of the Australian Soils Resource Information System (ASRIS, 2013) and ASS risk mapping published by the Office of Environment and Heritage (2013) indicated that the site is located in an area of low probability of acid sulfate soil occurrence. The site is not classified according to the Fairfield LEP maps.

2.6 HYDROLOGY

A review of the Department of Primary Industries registered groundwater bore database (<http://allwaterdata.water.nsw.gov.au/water.stm>) conducted on 21 May 2020 identified two registered groundwater bores at the site and seven registered bores located between 650 and 800 m to the west to south-west. The well details are summarised in Table 2.2.

Table 2.2 Registered groundwater bores

WELL ID	DISTANCE FROM SITE	REGISTERED USE	INSTALLED DEPTH	STANDING WATER LEVEL
GW103599	On SRC property	Monitoring	5 mBGL	NA
GW103600	On SRC property	Monitoring	5 mBGL	1 mBGL
GW105475	725 m south-west	Monitoring	9.5 mBGL	NA
GW111878	150 m west	Monitoring	5.5 mBGL	NA
GW111879	775 m west	Monitoring	5.8 mBGL	NA
GW111880	775 m south-west	Monitoring	6.2 mBGL	NA
GW105476	650 m west	Monitoring	9.5 mBGL	NA
GW111881	775 m west	Monitoring	6.5 mBGL	NA
GW105474	725 m south-west	Monitoring	9.3 mBGL	NA

Notes

mBGL – metres below ground level

NA – not available

The nearest surface water body is Prospect Creek, located 150 m north-east of the expansion area. Prospect Creek flows into the Georges River, approximately 8 km south-east of the site.

3 SITE BACKGROUND REVIEW

3.1 HISTORICAL AERIAL PHOTOGRAPH REVIEW

Historical aerial photographs of the site and vicinity were reviewed for the years 1965, 1978, 1991 and 2004 along with the current aerial. Aerial photographs are included in Appendix B. The details of the site and surrounding area in each photograph are summarised in Table 3.1.

Table 3.1 Historical aerial photograph review

YEAR	SITE CONDITIONS	SURROUNDING CONDITIONS
1965	The site and the remainder of the SRC are rural agricultural properties. A small group of buildings which may be rural farm buildings is present in the southern portion of the site.	The surrounding sites are rural residential and agricultural. Widemere Road, Hassall Street and Redfern Street are present. Prospect Creek is generally in its current alignment, although vegetation clearing is apparent along the banks.
1978	The western portion of the site appears to still be agricultural, although the use is unclear based on the quality of the photograph. The eastern portion has been cleared and appears to be in use as a land fill. One small building is present on the eastern portion and a group of structures is present in the south of the western portion.	Sites to the south appears to remain generally agricultural, although residential development has progressed to the south-east. Additional roadways have been constructed to the south. To the north and east, beyond Prospect Creek, a quarry operation is present.
1991	The site appears to have been filled and capped, and the gully in the west is apparent. The western portion of the SRC has large stockpiles of material present.	Properties to the south and west have been redeveloped for commercial or industrial uses. The Road layout is in its current configuration. The quarry to the north and east of Prospect Creek appears to have been largely filled and sport fields are being constructed.
2004	The site is in its current layout, with the SRC facilities present.	Density of commercial/industrial development to the west and south has increased. Vegetation around Prospect Creek is increased.
2016	No changes	No changes

3.2 NSW PUBLIC REGISTERS SEARCH

Searches were conducted of the NSW Environment Protection Authority (EPA) contaminated land public record (<http://app.epa.nsw.gov.au/prclmapp/searchregister.aspx>) and the *Protection of the Environment Operations Act 1997* (POEO) public register (<http://www.epa.nsw.gov.au/licensing-and-regulation/public-registers/about-prpoeo>). No contaminated sites were identified within 1 km of the site. Sites with environmental protection licenses within 1 km of the site are summarised in Table 3.2.

Table 3.2 Licensed sites

SITE	DISTANCE FROM SITE	LICENSED ACTIVITIES
ABC Paper & Paper Mills Pty Ltd	670 m south-west	Paper or pulp production
Architectural & Structural Adhesives Pty Ltd	500 m south-west	Chemical and/or waste generation or storage
Australian Comfort Group Pty Ltd	700 m south-west	Chemical production
Boral Recycling Pty Ltd	750 north-west	Waste storage and recovery
Drum Reconditioners (NSW) Pty Ltd	750 m west	Waste generation, processing and/or storage
Grima Environmental Services Pty Ltd	630 m south-west	Waste storage and recovery
ITW Australia Pty Ltd	300 m south-east	Petroleum and fuel production
Resourceco RRF Pty Ltd	900 m west	Waste storage and recovery
Steritech Pty Ltd	550 m west	Sterilisation activities
Tank Management Services Pty Ltd	800 m south-west	Waste processing

3.3 PRELIMINARY CONCEPTUAL SITE MODEL

Based on the site inspection and the desktop review of site setting and historical land use information, a preliminary conceptual site model (CSM) has been prepared. The CSM is summarised in Table 3.3.

Table 3.3 Preliminary CSM

Potential sources of impact	The potential sources of impact identified are: — historical land filling — uncontrolled fill material used for capping or levelling — fly tipping — stockpiling of fill material related to the SRC — pesticides/herbicides used historically to maintain the site — vehicle use associated with the SRC.
Potentially impacted media	Soils: Impacts from fill or waste material, either surficial or buried in the landfill cells, surface application of pesticides/herbicides. Groundwater: Impacts from landfill leachate or migration from soil impacts.

Contaminants of concern	Contaminants of concern for the site comprise: — polycyclic aromatic hydrocarbons (PAHs) — metals — asbestos — petroleum hydrocarbons as total recoverable hydrocarbon (TRH) and benzene, toluene, ethylbenzene, xylene and naphthalene (BTEXN) — organochlorine and organophosphorus pesticides (OCPs/OPPs) — polychlorinated biphenyls (PCBs).
Migration pathways	Potential migration pathways include: — runoff of surface contaminants in rain water — vertical migration of contaminants in soil from infiltration of rain water — horizontal migration of contaminants along the hydraulic gradient or through underground service trenches — volatilisation of hydrocarbon contamination — airborne migration of contamination in dust or vapour, or as fibres.
Potential receptors	Based on the site setting, potential receptors comprise: — site users, including SRC workers, truck drivers delivering or collecting material and excavation/maintenance workers — nearby site users which might be impacted by airborne contamination — maintenance workers in nearby service trenches — users of groundwater or surface downgradient of the site — underlying soil and groundwater — surface water bodies which may be impacted by runoff or groundwater from the site, e.g. Prospect Creek.
Potential exposure pathways	Potential exposures pathways comprise: — inhalation of dust, vapour or fibres by site users or nearby site users — ingestion of or dermal contact with contaminated soil by sites users — ingestion of or dermal contact with contaminated water downgradient of the site through extraction of groundwater or the use of downgradient surface water bodies for recreation.

4 DATA QUALITY OBJECTIVES

Systematic planning is critical to successful implementation of an environmental assessment and is used to define the type, quantity and quality of data needed to inform decisions. The United States Environmental Protection Agency has defined a process for establishing data quality objectives (DQOs), which has been referenced in the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM; as amended 2013).

DQOs ensure that:

- the study objectives are set
- appropriate types of data are collected (based on contemporary land use and chemicals of concern)
- the tolerance levels are set for potential decision making errors.

The DQO process is a seven-step iterative planning approach. The outputs of the DQO process are qualitative and quantitative statements which are developed in the first six steps. They define the purpose of the data collection effort, clarify what the data should represent to satisfy this purpose and specify the performance requirements for the quality of information to be obtained from the data. The output from the first six steps is then used in the seventh step to develop the data collection design that meets all performance criteria and other design requirements and constraints. The DQO process adopted for the DSI is outlined in Table 4.1.

Table 4.1 DQO process

STEP	DESCRIPTION	OUTCOMES
1	State the problem	The purpose of this assessment was to assess the potential risks related to the proposed expansion of the SRC and construction of Canal Road.
2	Identify the decisions/goal of the investigation	The decisions to be made based on the results of the investigation are as follows: — Has the soil and groundwater been adequately sampled? — Were all the potential sources identified and targeted and contaminants of concern analysed? — Were any unacceptable risk to receptors identified?
3	Identify the inputs to the decision	The inputs required to make the above decisions are as follows: — geological and hydrogeological data — concentrations of contaminants of concern in soil and groundwater — site assessment criteria (outlined in Section 6) — observation data including presence of odours or discoloration — distribution of identified contamination.
4	Define the study boundaries/constraints on data	The boundaries of the investigation have been identified as follows: — Spatial boundaries: the spatial boundary of the investigation area is defined as the geographical extent of the currently licensed facility, the expansion area and the proposed roadway between them. The potential receptors of concern were considered by the study although they are not included in the study boundaries. — Temporal boundaries: the date of the project inception to the completion of the fieldwork under the proposed investigation.

STEP	DESCRIPTION	OUTCOMES
5	Develop a decision rule	The purpose of this step is to define the parameters of interest, specify the action levels and combine the outputs of the previous DQO steps into an 'if...then...' decision rule that defines the conditions that would cause the decision maker to choose alternative actions. The parameters of interest are concentrations of contaminants of concern in soil and groundwater. An assessment of the concentrations of the contaminants of concern is to be undertaken to assess the suitability for commercial/industrial land use and open space in certain areas of the site. Should concentrations exceed the adopted assessment criteria, further assessment and/or management options will be considered.
6	Specify limits on decision errors	The acceptable limits on decision errors to be applied in the investigation and the manner of addressing possible decision errors have been developed based on the data quality indicators (DQIs) of precision, accuracy, representativeness, comparability and completeness and are presented in Table 4.2 and 4.3.
7	Optimise the design for obtaining data	The purpose of this step is to identify a resource-effective data collection design for generating data that satisfies the DQOs. This assessment has been designed considering the available information regarding the site. The resource effective data collection design that is expected to satisfy the DQOs is described in detail in Section 5. To ensure the design satisfies the DQOs, DQIs have been established to set acceptance limits on field methodologies and laboratory data collected.

DQIs for sampling techniques and laboratory analyses of collected soil and groundwater samples define the acceptable level of error required for this validation assessment. The adopted field methodologies and data obtained have been assessed by reference to DQIs as follows:

- precision: a quantitative measure of the variability (or reproducibility) of data
- accuracy: a quantitative measure of the closeness of reported data to the true value
- representativeness: the confidence (expressed qualitatively) that data are representative of each media present on the site
- comparability: a qualitative parameter expressing the confidence with which one data set can be compared with another
- completeness: a measure of the amount of useable data (expressed as a percentage) from a data collection activity.

A summary of the field and laboratory DQIs for the assessment are provided in Tables 4.2 and 4.3.

Table 4.2 DQIs for field techniques

DQI
Precision
Standard operating procedures (SOPs) appropriate and complied with
Collection of inter-laboratory and intra-laboratory duplicates
Accuracy
WSP SOPs appropriate and complied with

DQI
Collection of field blanks and trip blanks and trip spikes
Representativeness
Appropriate media sampled
Comparability
Same SOPs used on each occasion
Experienced sampler
Climatic conditions (temperature, rainfall, wind)
Same type of samples collected
Completeness
SOPs appropriate and complied with
All required samples collected

Table 4.3 DQIs for laboratory

DQI	ACCEPTABLE LIMITS
Precision	
Analysis of laboratory duplicates for contaminants of concern in soil	SOIL <10 x practical quantitation limit (PQL) – no limit >10 x PQL – 30% relative percentage difference (RPD) GROUNDWATER <10 x PQL – no limit >10 x PQL – 100% RPD
Laboratories certification	National Association of testing Authorities (NATA) accreditation for analyses performed
Accuracy	
Analysis of laboratory prepared trip blanks (one per batch)	Below practical quantitation limits (PQLs) for contaminants analysed
Analysis of rinsate blanks (one per day)	Below PQLs for contaminants analysed
Analysis of laboratory blanks	Below PQLs for contaminants analysed
Analysis of laboratory matrix spikes, laboratory control samples and surrogate recoveries	As per laboratory acceptance criteria
Analysis of laboratory duplicates for contaminants of concern in soil	As per laboratory acceptance criteria
Representativeness	
All required samples analysed	As per Section 5

DQI	ACCEPTABLE LIMITS
Comparability	
Sample analytical methods used (including clean-up)	As per NEPM (2013)
Same units	Justify/quantify if different
Same laboratories	Justify/quantify if different
Sample PQLs	Less than nominated criteria
Completeness	
All critical samples analysed	As per Section 5
All required analytes analysed	As per Section 5
Appropriate methods and PQLs	As per NEPM (2013)
Sample documentation	Chain of custody documentation completed
Sample holding times complied with	As per laboratory requirements

5 SAMPLING AND ANALYSIS PROGRAM

5.1 SAMPLING RATIONALE

The sampling plan for the DSI comprised soil sampling by hand auger, test pitting and solid auger drilling method to target the investigation areas and to provide coverage across the site. Sampling locations are shown on Figures 2 and 3, Appendix A.

5.1.1 INITIAL INVESTIGATION

Twenty-seven test pits were excavated in a general grid pattern across the expansion area to characterise the soils, to a maximum depth of 3 m below ground level (mBGL). The test pits were proposed to extend into the landfill material; however, the thickness of the capping above the cell resulted in limited assessment of the landfill cell itself.

Six test pits were originally proposed to be installed in the gully to assess the soil conditions. These were changed to hand auger locations due to access concerns as the gully was densely vegetated at the time of the initial site visit. Access for the hand auger locations was also not possible, and no samples of soil were able to be collected from within the gully.

Three boreholes (BH01 to BH03) were undertaken to a maximum depth of 10.2 mBGL in the expansion area. Three shallower boreholes (BH04 to BH06) were undertaken to a maximum depth of 2.5 mBGL between the current operational site area and Prospect Creek. These boreholes were converted to monitoring wells to assess the groundwater condition in these areas of the site, except for BH06 where target depth could not be obtained.

A groundwater monitoring event (GME) was undertaken on the five monitoring wells by WSP to provide a baseline status of the groundwater contamination at the site, if any. Additionally, three surface water samples were collected from Prospect Creek and one from the gully on-site to assess surface water quality.

Soil and water sampling locations are shown on Figures 2 and 3 in Appendix A.

5.1.2 SURFACE WATER SAMPLING

The surface water sampling, undertaken at the request of the NSW EPA, was aimed at assessing the risk to Prospect Creek from runoff during and following periods of heavy rain. Sampling locations were based on the findings of a water pollution management assessment was prepared by Mepstead and Associates Pty Ltd (Mepstead) in 2018. The assessment included mapping of surface water flows across the facility and preparation of a site water balance. The report found that in the north-western portion of the site, at the community recycling centre, surface water runoff would discharge to low-lying ground before reaching Prospect Creek, intended to be a buffer zone between the site and the creek. However, the report concluded that the buffer zone in this area was not considered sufficient to prevent untreated water from entering the creek during larger storm events.

To assess whether runoff from the site was reaching the creek, samples were collected from the following areas during and/or after heavy rain events:

- standing water in the north-eastern portion of the site (recycling drop-off centre)
- standing water in the buffer zone between the recycling drop-off centre and Prospect Creek
- Prospect Creek adjacent to the recycling drop-off centre.

During the first sampling event, the buffer zone wasn't sampled. Samples were collected from standing water on the SRC facility and the recycling centre and the creek was sampled.

Indicative sampling locations are shown on Figure 4 in Appendix A.

5.1.3 *ADDITIONAL SOIL INVESTIGATION*

Based on feedback from the DPIE the scope of work was extended to consider the current facility as well. The potential sources of contamination at the site are generally surficial, from material storage and/or plant, with the exception of the impact of the landfill cells. As the landfill cells represent a potential impact to groundwater and receivers of groundwater, this is considered to have been previously assessed by the groundwater assessment in the initial investigation. Therefore, the additional assessment was targeted to surface impacts.

To assess the current facility, eight boreholes were dug by hand auger, targeting areas of potential contamination based on the site use; material stockpiling and processing areas, the truck wash station, the storage shed and near an aboveground diesel storage tank. Three water samples were collected from the three surface water reservoirs.

Sampling locations are shown on Figure 5 in Appendix A.

5.2 *FIELDWORK*

5.2.1 *SERVICE LOCATION*

A desktop search for underground services using the 'Dial Before You Dig' service was undertaken prior to intrusive investigations. Sampling locations were then cleared prior to the commencement of intrusive works by an experienced service locator. The service locator was provided with information/plans from the relevant asset owners.

Sydney Water sewer assets located in close proximity to Prospect Creek were unable to be accurately identified by the service locator or Sydney Water. In addition, a gas pipeline was located in the vicinity of the creek. Based on this the three borehole locations planned for this area were undertaken by hand auger rather than using the Geoprobe drill rig to minimise risk.

5.2.2 *INTRUSIVE INVESTIGATION WORKS, SOIL SAMPLING AND MONITORING WELL INSTALLATION*

Following the clearing of locations, intrusive investigation works were undertaken on 27 and 28 September 2017 and 15 April 2020. During the initial investigation, soil assessment was undertaken by test pit, mechanical drilling and hand digging. Test pits were excavated across the expansion area to depths of between 1.6 and 3.1 mBGL under the supervision of a WSP environmental scientist. A Geoprobe drill rig was used by Matrix Drilling Pty Ltd (Matrix) under the supervision of an experienced WSP environmental scientist to manually advance three boreholes (BH01 to BH03) to a maximum depth of 10.2 mBGL. These boreholes were converted to groundwater wells to assess water quality of the regional aquifer. A hand auger was used to advance three boreholes (BH04 to BH06) to a maximum depth of 2.5 mBGL. Two of these boreholes, BH04 and BH05, were converted to groundwater wells to target shallow groundwater flowing into Prospect Creek. Target depth was unable to be obtained at BH06 due to refusal on compacted gravelly material.

The groundwater wells were installed using threaded Class 18 flush-jointed polyvinyl chloride (PVC) casing and screened with machine-slotted PVC pipe with a minimum outside diameter of 50 mm.

The additional investigation was completed by hand auger only, to a maximum depth of 1.1 mBGL. The majority of locations were less than 0.5 mBGL due to refusal on shallow, compacted gravel.

Soil samples were collected at regular intervals from the boreholes. A calibrated photo-ionisation detector (PID) was used to take the readings. PID readings can be used to aid in selecting soil samples for laboratory analysis.

Subsurface conditions were logged by an experienced environmental scientist. Soil samples were placed in 250 mL jars, leaving minimal headspace, and closed using Teflon-coated lids.

All soil samples were stored on ice in an esky and transported to the laboratory under chain of custody conditions.

Dedicated disposable nitrile gloves were worn for each sampling episode to minimise the potential for cross contamination. Sample containers were filled completely prior to being stored in an ice cooled esky and transported to the laboratory with the samples.

5.2.3 GROUNDWATER SAMPLING

A groundwater monitoring event was undertaken on the newly installed monitoring wells (MW01 to MW05) by an experienced WSP field scientist on 17 October 2017. Prior to sampling, all wells were gauged to check for the presence of light non-aqueous phase liquid (LNAPL) and establish standing water levels (SWLs) using an interface probe.

Groundwater samples were collected from each monitoring well using a low flow MicroPurge® kit at MW01, MW02 and MW03. A disposable bailer was utilised to sample shallow groundwater at MW04 and MW05. Groundwater samples were decanted directly into laboratory supplied containers. Groundwater field parameters including temperature, pH, reduction/oxidation potential (redox), electrical conductivity and dissolved oxygen were measured at each monitoring well during purging of the monitoring well, once parameters were stabilised groundwater samples were collected. The samples were delivered (on ice) to the selected NATA accredited laboratories under appropriate 'chain of custody' documentation.

5.2.4 SURFACE WATER SAMPLING

Surface water samples were collected in the drop-off centre, in the buffer zone between the drop-off centre and the creek, from Prospect Creek and from the three reservoirs at the SRC facility. The standing water samples in the drop-off centre and buffer zone were collected using disposable syringes to collect standing water and transfer it to laboratory-supplied bottles with the appropriate preservatives, where required. The samples from Prospect Creek and the reservoirs were collected in disposable bailers and decanted into appropriate bottles.

Standing water samples collected in June and October 2018 were filtered for dissolved metals analysis, but the samples collected in September 2019 were not filtered and were analysed for total metals. The samples collected from the reservoirs in April 2020 were also not filtered and total metals were analysed. This was done to assess the potential risk from use of the reservoir water for dust suppression, which could include the dispersal of suspended material containing metals.

5.3 LABORATORY ANALYSIS

Selected soil samples collected were submitted to the primary analytical laboratory for analysis for contaminants of concern at the targeted locations.

Primary samples and the intra-laboratory sample were analysed by Australian Laboratory Services Pty Ltd (ALS), with the soil and groundwater inter-laboratory duplicate sample analysed by Eurofins Environmental Testing Australia Pty Ltd (Eurofins). The laboratories are accredited by NATA for the analytical suites requested.

Tables 5.1 and 5.2 provides a summary of the laboratory analytical schedule for soil and groundwater samples analysed during the current investigation.

Table 5.1 Laboratory analysis - Soil

ANALYTE	PRIMARY SAMPLES	DUPLICATES	RINSATE BLANK	TRIP BLANK	TRIP SPIKE
TRH	20	6	1	2 (C ₆ -C ₁₀)	1 (C ₆ -C ₁₀)
BTEXN compounds	20	6	1	2	1
PAHs	40	6	-	-	-
Heavy metals	40	6	-	-	-

ANALYTE	PRIMARY SAMPLES	DUPLICATES	RINSATE BLANK	TRIP BLANK	TRIP SPIKE
OCPs/OPPs	12	4	-	-	-
PCBs	12	4	-	-	-
Asbestos (presence/absence)	37	-	-	-	-

Table 5.2 Laboratory analysis - Groundwater

ANALYTE	PRIMARY SAMPLES	DUPLICATES	RINSATE BLANK	TRIP BLANK	TRIP SPIKE
TRH	5	2	1	1 (C ₆ -C ₁₀)	1 (C ₆ -C ₁₀)
BTEXN compounds	5	2	1	1	1
PAHs	5	2	-	-	-
Heavy metals	4	2	-	-	-
OCPs/OPPs	4	-	-	-	-
PCBs	4	-	-	-	-

Table 5.3 Laboratory analysis – Surface water

ANALYTE	PRIMARY SAMPLES	DUPLICATES	RINSATE BLANK	TRIP BLANK	TRIP SPIKE
TRH	19	2	1	1 (C ₆ -C ₁₀)	1 (C ₆ -C ₁₀)
BTEXN compounds	19	2	1	1	1
PAHs	7	2	-	-	-
Heavy metals ¹	19	2	-	-	-
OCPs/OPPs	1	-	-	-	-
PCBs	1	-	-	-	-
Nitrate, nitrite, ammonia and phosphorus	12	-	-	-	-

(1) Metals analysed include aluminium, arsenic, cadmium chromium, copper, lead, manganese, mercury, nickel and zinc; not all samples analysed for all metals

Analytical summary tables are presented in Appendix D, with quality assurance/quality control (QA/QC) summary tables in Appendix E. Laboratory reports are included in Appendix F.

5.4 SURVEYING OF MONITORING WELLS

WSP engaged Veris Surveyors to survey the monitoring wells (MW01 to MW05) in 2017. The survey included easting and northing coordinates for the monitoring wells and ground surface and top of standpipe elevation (Australian Height Datum). The surveying was undertaken on the 17 October 2017, survey data for the monitoring wells is provided in Appendix G.

6 ASSESSMENT CRITERIA

6.1 SOIL

6.1.1 HEALTH-BASED INVESTIGATION AND SCREENING LEVELS

The NEPM (2013) provides health investigation levels (HILs) and health screening levels (HSLs) for the assessment of impacted soil. HILs provide an assessment of potential risk to human health from chronic exposure to contaminants from dermal contact with soil, and have been developed based on land use setting. It is considered appropriate that the assessment considers the current and understood ongoing land use of the site. Based on this, the HIL D for commercial/industrial land use was adopted.

HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the vapour intrusion and inhalation pathway. The HSLs depend on specific soil physicochemical properties and land use scenarios. They apply to different soil types and depths. For the purpose of this assessment, the HSL D for commercial/industrial land use was adopted. HSLs have been adopted based on a subsurface comprising sand. This soil type has been selected based on site observations of the geology encountered.

HSLs are also provided for asbestos contamination in soil, for bonded ACM, friable asbestos (FA) and asbestos fines (AF). Comparison with asbestos HSLs has not been undertaken as asbestos testing was limited to presence/absence. Quantitative assessment of asbestos was not part of the current scope of work based on the assessment of the potential risk and proposed use of the site. For the current assessment the detection of asbestos has been adopted as an initial screening level for asbestos.

In addition, concentrations of hydrocarbons in soil have been compared to the HSLs for direct contact for commercial/industrial land use detailed in the Cooperative Research Council for Contamination Assessment and Remediation of the Environment (CRC CARE) Technical Report No. 10 (Friebel and Nadebaum, 2011).

The adopted criteria are summarised in Table 6.1.

Table 6.1 Soil assessment criteria – HILs/HSLs

ANALYTE	HSL D IN SAND ¹ (mg/kg)				HIL D ² (mg/kg)	DIRECT CONTACT ³ (mg/kg)
	0 - <1 m	1 - <2 m	2 - <4 m	4 m+		
TRH/BTEXN COMPOUNDS						
TRH C ₆ -C ₁₀ less BTEX (F1)	260	370	630	NL	-	26,000
TRH >C ₁₀ -C ₁₆ less naphthalene (F2)	NL	NL	NL	NL	-	20,000
TRH >C ₁₆ -C ₃₄	-	-	-	-	-	27,000
TRH >C ₃₄ -C ₄₀	-	-	-	-	-	38,000
Benzene	3	3	3	3	-	430
Toluene	NL	NL	NL	NL	-	99,000
Ethylbenzene	NL	NL	NL	NL	-	27,000
Xylene (total)	230	NL	NL	NL	-	81,000
Naphthalene (volatile)	NL	NL	NL	NL	-	11,000

ANALYTE	HSL D IN SAND ¹ (mg/kg)				HIL D ² (mg/kg)	DIRECT CONTACT ³ (mg/kg)
	0 - <1 m	1 - <2 m	2 - <4 m	4 m+		
PAHs						
PAHs (total)	-	-	-	-	4,000	-
Benzo(a)pyrene TEQ ⁴	-	-	-	-	40	-
METALS						
Arsenic	-	-	-	-	3,000	-
Cadmium	-	-	-	-	900	-
Chromium	-	-	-	-	3,600 ⁵	-
Copper	-	-	-	-	240,000	-
Lead	-	-	-	-	1,500	-
Mercury	-	-	-	-	730	-
Nickel	-	-	-	-	6,000	-
Zinc	-	-	-	-	400,000	-
PCBs						
Total PCBs	-	-	-	-	7	-
PESTICIDES						
Aldrin + dieldrin	-	-	-	-	45	-
Chlordane	-	-	-	-	530	-
DDT + DDE + DDD	-	-	-	-	3,600	-
Endosulfan	-	-	-	-	2,000	-
Endrin	-	-	-	-	100	-
Heptachlor	-	-	-	-	50	-
Hexachlorobenzene	-	-	-	-	80	-
Methoxychlor	-	-	-	-	2,500	-
Chlorpyrifos	-	-	-	-	2,000	-

(1) NEPM (2013) Schedule B1 Table 1A(3) Soil HSLs for vapour intrusion

(2) NEPM (2013) Schedule B1 Table 1A(1) Health investigation levels for soil contaminants

(3) CRC CARE technical report No. 10

(4) Benzo(a)pyrene toxicity equivalent quotient (TEQ), calculated as a sum of weighted selected PAHs. Further details available in NEPM (2013) Schedule B2

(5) HIL for chromium VI adopted for total chromium as a conservative approach

- No assessment criteria available

NL Non-limiting due to maximum vapour concentrations being below the acceptable health risk level

To provide a qualitative assessment of the risk to maintenance/excavation workers from identified impacts in soil via inhalation pathways and dermal contact, concentrations of hydrocarbons have been compared to risk-based HSLs detailed in CRC CARE Technical Report No. 10 (Friebel and Nadebaum, 2011).

HSLs for vapour exposure pathways have been developed for site-specific factors including soil types (sand, silt and clay) and depths below surface. The values for sand have been adopted, and criteria for depths less than 2 m have been considered, as the criteria for depths greater than 2 m is non-limiting. The adopted criteria are outlined in Table 6.2.

Table 6.2 Soil assessment criteria – HSLs for maintenance/excavation workers

ANALYTE	HSLs FOR VAPOUR INTRUSION (IN SAND) (mg/kg)	HSLs FOR DIRECT CONTACT (mg/kg)
	0 - <2 m	
TRH F1	NL	82,000
TRH F2	NL	62,000
TRH >C ₁₆ -C ₃₄	-	85,000
TRH >C ₃₄ -C ₄₀	-	120,000
Benzene	77	1,100
Toluene	NL	120,000
Ethylbenzene	NL	85,000
Xylene (total)	NL	130,000
Naphthalene	NL	29,000

- No assessment criteria available

NL Non-limiting due to maximum vapour concentrations being below the acceptable health risk level

6.1.2 ECOLOGICAL INVESTIGATION AND SCREENING LEVELS

The NEPM (2013) provides ecological screening levels (ESLs) for TRH, BTEX compounds and benzo(a)pyrene for use as an initial screening risk assessment to determine whether laboratory analysed concentrations of contaminants potentially pose a risk to plant growth. For the purpose of this investigation, ESLs for 'urban commercial/industrial' land uses with fine-grained soil textures have been considered. These are outlined in Table 6.3.

Table 6.3 Soil assessment criteria - ESLs

ANALYTE	ESLs FOR URBAN COMMERCIAL AND INDUSTRIAL - COARSE (mg/kg DRY SOIL)
TRH F1	215
TRH >C ₁₀ -C ₁₆	170
TRH >C ₁₆ -C ₃₄	1,700
TRH >C ₃₄ -C ₄₀	3,300
Benzene	75
Toluene	135
Ethylbenzene	165
Xylene (total)	180
Benzo(a)pyrene	0.7

6.1.3 ECOLOGICAL INVESTIGATION LEVELS

The NEPM (2013) also provides ecological investigation levels (EILs), which were developed for metals, naphthalene and pesticides. The EILs take into consideration the physicochemical properties of soil and contaminants and the capacity of the local ecosystem to accommodate increases in the contaminant levels. The EILs are derived using the following equation:

$$EIL = \text{added contaminant limit (ACL)} + \text{ambient background concentration (ABC)}$$

The ABC is the background contaminant level and requires measurement at appropriate reference points at the site. The ACL, which is provided in the NEPM (2013), is the maximum contaminant concentration added to the naturally occurring background level, exceedances of which may result in adverse effects on plant health.

Tables 1B(4) and 1B(5) of the NEPM (2013) provide generic EILs for aged arsenic and lead, and fresh DDT and naphthalene in soils (irrespective of their physicochemical properties). Aged values are applicable for contamination present in soil for at least two years. EILs are provided for various land uses including ‘areas of ecological significance’, ‘urban residential and open space’ and ‘commercial and industrial’. The ‘urban commercial/industrial’ land use EILs have been considered for this investigation.

Site-specific EILs have been calculated using the CSIRO Ecological Investigation Level Calculation Spreadsheet provided online in the ASC NEPM Toolbox (<http://www.scew.gov.au/node/941>). The site-specific ABCs

Site specific EILs for chromium, copper, nickel and zinc were able to be calculated based on ABCs determined using uncontaminated samples from the perimeter of the expansion area (test pits TP09, TP14, TP21 and TP25 to TP27). Although the soil parameters used to calculate the site-specific ACLs (cation exchange capacity, pH and clay content) were not analysed for the samples taken, EILs were still able to be created using the site-specific ABCs and the most conservative ACLs.

Table 6.4 outlines the EILs (generic and derived) for this investigation.

Table 6.4 Generic and calculated EIL concentrations

ANALYTE	EILs FOR URBAN COMMERCIAL AND INDUSTRIAL - COARSE (mg/kg DRY SOIL)
Arsenic ¹	160
Chromium (III) ²	340
Copper ²	112
DDT ¹	640
Lead ³	1,800
Nickel ²	87
Zinc ²	158
Naphthalene ¹	370

- (1) NEPM (2013) Schedule B1 Table 1B(5) Generic EILs for aged As, fresh DDT and fresh naphthalene in soils irrespective of their physicochemical properties
- (2) Calculated using the site-specific ABCs and most conservative ACLs
- (3) NEPM (2013) Schedule B1 Table 1B(4) Generic added contaminant limits for lead in soils irrespective of their physicochemical properties

6.2 WATER

The NEPM (2013) also provides a framework for the use of investigation and screening levels based on a matrix of human health and ecological, soil and groundwater risks. NEPM Schedule B1 presents groundwater investigation levels (GILs) for protection of receiving waters (ecological protection) and for human health (drinking water guidelines). It is necessary to assess the potential uses and receptors of groundwater downgradient of the site in order to correctly apply the GILs. GILs are based on the following guidelines:

- Australian and New Zealand Conservation Council (ANZECC)/Agriculture, and Resource Management Council of Australia and New Zealand (ARMCANZ) 2000, *National water quality management strategy. Australian and New Zealand guidelines for fresh and marine water quality*. This guideline has been superseded by an online resource prepared by the Australian and New Zealand Governments (ANZG) in 2018.
- National Health and Medical Research Council (NHMRC)/National Resource Management Ministerial Council (NRMMC) 2011, *Australian Drinking Water Guidelines 6*.
- NHMRC 2008, *Guidelines for Managing Risk in Recreational Waters 2008*.

The NEPM (2013) also provides HSLs for selected petroleum compounds (TRH and BTEXN) and are used for assessing human health risk via vapour intrusion. Groundwater HSLs have not been derived for groundwater at less than 2 mBGL. As with the soil HSLs, the criteria are based on soil type, depth to impact and land use.

The adopted criteria are outlined in Table 6.3.

Table 6.5 Adopted water assessment criteria

ANALYTES	95% FRESHWATER PROTECTION ¹ (µg/L)	HSL D SAND ² (µg/L)			RECREATIONAL WATER ³ (µg/L)
		2 - <4 m	4 - <8 m	> 8 m	
TRH/BTEXN COMPOUNDS					
TRH F1	-	6,000	6,000	7,000	-
TRH F2	-	NL	NL	NL	-
Benzene	950	5,000	5,000	5,000	10
Toluene	180	NL	NL	NL	80
Ethylbenzene	80	NL	NL	NL	300
m-, p-Xylene	75	-	-	-	-
o-Xylene	350	-	-	-	-
Total xylene	-	NL	NL	NL	60
Naphthalene (volatile)	16	NL	NL	NL	-
PAHs					
Naphthalene	16	-	-	-	-
Anthracene	0.1	-	-	-	-
Phenanthrene	0.6	-	-	-	-
Fluoranthene	1	-	-	-	-

ANALYTES	95% FRESHWATER PROTECTION ¹ (µg/L)	HSL D SAND ² (µg/L)			RECREATIONAL WATER ³ (µg/L)
		2 - <4 m	4 - <8 m	> 8 m	
Benzo(a)pyrene	0.1	-	-	-	0.1
METALS					
Aluminium	55	-	-	-	-
Arsenic	13	-	-	-	70
Cadmium	0.2	-	-	-	20
Chromium	1	-	-	-	500
Copper	1.4	-	-	-	20,000
Lead	3.4	-	-	-	100
Manganese	1,900	-	-	-	5,000
Mercury	0.06	-	-	-	10
Nickel	11	-	-	-	200
Zinc	8	-	-	-	-
PESTICIDES					
Aldrin + dieldrin	-	-	-	-	3
Chlordane	0.08	-	-	-	10
DDT	0.01	-	-	-	200
Endosulfan I	-	-	-	-	300
Endrin	0.02	-	-	-	-
Lindane	0.2	-	-	-	-
Heptachlor	0.09	-	-	-	3
Heptachlor epoxide	-	-	-	-	3

- (1) ANZECC/ARMCANZ (2000) water quality guidelines - trigger values for the protection of 95% freshwater ecosystem, including low reliability values
- (2) NEPM (2013) Schedule B1 Table 1A(4) Groundwater HSLs for vapour intrusion, commercial/industrial use in sand
- (3) NHMRC (2008) recreational water guidelines

All values are in µg/L

NL – non-limiting

7 QA/QC

Field sampling procedures conformed to WSP's QA/QC protocols to prevent cross-contamination, preserve sample integrity and allow for collection of a suitable data set. QA/QC sample results for soil and groundwater are presented in Tables C1, C2 and C3 in Appendix C. The laboratory reports and chain of custody documentation are provided in Appendix D.

Three intra-laboratory duplicate samples (QC01, QC04 and QA01) and three inter-laboratory duplicate samples (QC01A, QC04A and QA01A) were collected and analysed as part of the soil sampling.

Two intra-laboratory duplicate samples (QC01 and QA01) and two inter-laboratory duplicate samples (QC01A and QA01A) were collected and analysed as part of the groundwater and surface water sampling.

RPDs were calculated for the primary and duplicate sample for assessment of data quality, in particular for assessment of the reproducibility of the analytical data measurements or 'precision' given the adopted field and laboratory methods. The RPDs were calculated using the formula below, and the results are presented in Table E1 and E2 in Appendix E.

$$RPD\% = \frac{|R_o - R_d|}{|(R_o + R_d) / 2|} \times 100\%$$

Where R_o is the primary sample and R_d is the primary duplicate.

The Australian standard for non-volatile and semi-volatile compounds in soil (AS 4482.1-2005) states that typical RPDs for non- and semi-volatile analytes in soil are 30% to 50%, and that results can be expected to be higher for organic analytes than inorganic and for low concentrations. No range is given for volatile RPDs or RPDs in groundwater. The NEPM (2013), Schedule B(3) states the soil RPDs should in general be less than 30%, with no groundwater RPD ranges given. The RPD groundwater acceptance criteria for this report have been set at 50% for semi-volatiles and 100% for volatile organics.

RPDs for soil duplicates exceeded the acceptance criteria for:

- the intra-laboratory duplicate QC01 for lead, RPD of 53%, and TRH C_{16} - C_{34} , RPD of 89%
- the intra-laboratory duplicate QC04 for copper, RPD of 34%, and nickel, RPD of 37%
- the intra-laboratory duplicate QA01 for fluoranthene, RPD of 46%, pyrene, RPD of 67%, and copper, RPD of 44%
- the inter-laboratory duplicate QC01A for 11 PAH compounds, RPDs of 95% to 178%, and lead, RPD of 49%
- the inter-laboratory duplicate QC04A for lead, RPD of 34%, and nickel, RPD of 37%
- the inter-laboratory duplicate QA01A for TRH $>C_{16}$ - C_{34} , RPD of 35%, TRH $>C_{34}$ - C_{40} , RPD of 33%, and copper, RPD of 31%.

RPDs for groundwater duplicates exceeded the acceptance criteria for the inter-laboratory duplicate QC01A for arsenic, RPD of 120%, and copper, RPD of 67%.

The RPD exceedances for metals in soil are marginally above the criteria and results were in the same order of magnitude. These are considered to represent variations in the soil conditions. RPD exceedances for TRH and PAHs results indicate heterogeneous contamination is likely present. The results significantly below the assessment criteria for primary and duplicate samples. Based on this the potential variation in the soil results does not affect the outcome of the investigation.

Trip blank samples (TB) were provided by the laboratory and transported with each batch of samples to the laboratory for BTEX analysis. Two trip blanks were analysed during the soil sampling work and one during the groundwater

monitoring round. The results for each trip blank were below detection levels, suggesting that cross-contamination of volatiles did not occur during sampling and transport.

Quality assurance samples (TS) were spiked by the laboratory with a known concentration of BTEX compounds, transported with the other samples and analysed for these compounds at the completion of the fieldwork ('trip spike'). One trip spike was analysed during the soil sampling work and one during the groundwater monitoring round. Reported recovery rates of BTEX compounds ranged between 70–100%, within the acceptable range.

Results for the trip blank and trip spike are presented in Table E3 in Appendix E.

The sampling methods (including sample preservation, transport and decontamination procedures) and laboratory methods followed during this investigation works were consistent with standard protocols. It is therefore considered that the data is sufficiently precise and accurate for the purposes of this report.

8 INVESTIGATION RESULTS

8.1 SUBSURFACE CONDITIONS

8.1.1 GEOLOGY

The test pits and soil bores in the current facility and the expansion area encountered fill material used to achieve the current site level and shape. The fill material consisted of a predominantly low to medium plasticity clay with asphalt and gravel inclusions overlayed by the compacted gravel road base. Evidence of landfilling activities was observed at depths greater than 7.5 mBGL in boreholes on the northern boundary of the expansion area, installed to target regional groundwater.

Soil encountered adjacent to Prospect Creek during hand augering for MW04 through MW06 comprised sand or gravelly sand at the surface, underlain by clayey sand, sandy clay and/or clayey gravel from 1.5 mBGL.

No evidence of potential acid sulfate soil was encountered during the intrusive investigation.

Bore logs are presented in Appendix C.

8.1.2 GROUNDWATER

Three wells were installed and sampled in the expansion area (MW01, MW02 and MW03). Two wells were installed and sampled between the existing facility and Prospect Creek (MW04 and MW05). The wells were gauged prior to sampling for the depth to groundwater and to check for the presence of separate-phase hydrocarbons. No separate-phase liquids were found during gauging.

The depths to water were correlated to elevations using the survey data, showing that the groundwater in the expansion area ranged from 30.755 mAHD to 34.056 mAHD. The elevations indicate groundwater flow is to the west to north-west. The wells near Prospect Creek showed significantly lower groundwater elevation, of 26.662 mAHD and 26.111 mAHD, and support the groundwater flow to the west to north-west. The groundwater flow direction has been estimated based on limited data, and should be considered indicative only. However, the results support the assumed flow direction, based on the location of Prospect Creek and the regional topography.

Wells MW01 to MW03, in the expansion area, were monitored during sampling, with the following results:

- pH ranged from 6.50 to 7.11, indicating circumneutral groundwater.
- Electrical conductivity ranged from 3,440 $\mu\text{S}/\text{cm}$ to 7,180 $\mu\text{S}/\text{cm}$, indicating variable but fresh groundwater.
- Redox, corrected to a standard hydrogen electrode by adding 199 to each reading, ranged from 37 mV to 87 mV, indicating anaerobic conditions.
- Dissolved oxygen ranged from 0.08 ppm to 0.33 ppm, indicating poorly oxygenated groundwater.

Wells MW04 and MW05 did not have enough water for field screening.

Gauging and monitoring data is summarised in Tables D7 and D8, Appendix D.

8.2 ANALYTICAL RESULTS

8.2.1 SOIL

Selected soil samples collected from test pits and soil bores were analysed for contaminants of concern. Soil samples were selected based on a combination of sample location (to provide site coverage) and field observations (to target areas of potential concern). Analytical results are summarised in Tables D1 to D6, Appendix D.

BTEXN, PCBs, pesticides and asbestos were not detected in any samples analysed.

TRH was detected in six out of eight samples in the current facility area and three samples in the expansion area. The TRH concentrations were between 110 mg/kg and 1,980 mg/kg, and were all below the adopted health and ecological criteria. The carbon fractions detected were between C₁₆ and C₄₀, indicating the source was likely heavier than diesel fuel. The majority of the detections were shallow, 1 mBGL or less, although one detection was in a sample taken at 9 mBGL in BH02. This may represent contamination from the landfill material in the cell beneath the expansion area.

PAHs were detected in 10 samples, 6 in the expansion area and 4 in the current facility. The results for total PAHs ranged from 0.5 mg/kg to 39.8 mg/kg. Detections were one to four orders of magnitude lower than the relevant health-based assessment criteria, although one exceedance of the ecological criteria for benzo(a)pyrene was noted. That sample, the duplicate sample collected at 1 mBGL in TP04, had the highest PAH concentrations detected in any sample analysed from the site. No other ecological exceedances were found for PAHs.

Metals were detected in all samples, as arsenic, chromium, copper, lead, nickel and zinc. Concentrations were generally consistent across the site and all results were below the health and ecological assessment criteria. Some concentrations were elevated above the average for the site, primarily for zinc. Two zinc concentrations were above the EIL; however, these were collected from 7 and 9 mBGL and therefore are below the applicable depth. One elevated lead concentration was identified, at a depth of 7 mBGL in BH01, although it did not exceed the criteria.

8.2.2 GROUNDWATER

Groundwater analytical results are summarised in Tables D9 to D14, Appendix D.

Groundwater sampling results for the expansion area found hydrocarbons were present in samples from all three wells. Wells MW01 and MW02 had TRH indicative of diesel impact (>C₁₀-C₃₄ fractions), while MW03 had indications of petrol (C₆-C₁₀ and benzene) and diesel (C₁₀-C₃₄ and naphthalene). PAHs were present in the sample from MW03 only. Benzene and naphthalene in the sample from MW03 exceeded adopted criteria, for recreational water (benzene) and fresh water protection (naphthalene). Samples from MW04 and MW05, adjacent to Prospect Creek, were below reporting levels for TRH, BTEXN and PAHs.

Pesticides were below reporting levels for all samples analysed (MW01 to MW03 and MW05).

Metals were detected in samples from all wells, including some results exceeding the fresh water protection criteria for at least one of the following: arsenic, chromium, copper, nickel and zinc. The majority of the results were in a small range between the wells, indicating they may represent background concentrations. The arsenic result in MW01 and, to a lesser extent, nickel results in MW01 and MW03 were higher than other samples and likely evidence of contamination.

8.2.3 SURFACE WATER

8.2.3.1 INITIAL INVESTIGATION

Four surface water samples were collected during the initial investigation; three from Prospect Creek (SW01 to SW03) and one from the standing surface water in the gully where Canal Road is proposed (Outflow). Surface water analytical results are summarised in Tables D9 to D14, Appendix D.

The majority of analytes were not present in any of the surface water samples. TRH was detected in the outflow sample and in SW03, and toluene was detected in SW01, SW03 and the outflow sample. None of these analytes exceeded the adopted criteria. Metals were detected in the three creek samples, as copper, nickel and zinc, with zinc exceeding the freshwater protection criteria in samples SW01 and SW02. No metals were detected in the outflow sample. All other analytes were below PQLs.

8.2.3.2 SURFACE WATER SAMPLING

During the surface water sampling for the drop-off centre, TRH was detected in the recycling centre and creek samples during one round of sampling, in October 2018, although the fractions detected were different (TRH C₆-C₁₀ in the creek

and >C₁₆-C₄₀ in the recycling centre). Toluene and xylene were also detected in the creek sample in October 2018. No other TRH or BTEXN detections were present in the samples.

Metals were present in all samples, with copper exceeding the freshwater protection criteria every sample and zinc exceeded the criteria in every sample but one. The results for arsenic, cadmium, manganese and mercury were all either below PQLs or below the assessment criteria. Exceedances of freshwater protection criteria were present in at least one sample for aluminium, chromium, copper, lead, nickel and zinc. Copper exceeded the criteria in every sample and zinc exceeded the criteria in all but one sample, taken from the recycling centre. Comparison of the recycling centre samples to the buffer zone and creek samples generally shows that the concentrations in the recycling centre were similar to or lower than the samples from the buffer zone and creek.

Samples analysed for total metals in September 2019 were similar to or lower than the dissolved metals concentrations previously analysed. Based on these results, it is likely that there is limited impact from suspended solids on metals concentrations in the standing water during rain events.

The surface water sampling for the drop-off centre also included analysis of nitrate, nitrite, ammonia and phosphorus, to assess potential effect on the creek. The results showed that nitrate was higher in the creek than in the recycling centre or the buffer zone, while nitrite and ammonia had similar, low concentrations across the samples. Phosphorus was variable between the locations, but generally higher in the recycling centre and buffer zone samples.

8.2.3.3 ADDITIONAL INVESTIGATION

During the supplemental investigation in April 2020, samples were collected from the three surface water reservoirs on the site. These reservoirs are used for dust suppression, and if contaminants are present in the water they could subsequently cause contamination in other areas of the site.

The sample results showed that TRH was present in the samples from the reservoir in the south-east of the existing facility and south-west of the expansion area, both in the <C₁₆-C₃₄ fraction. Both detections were low. No other TRH was detected and BTEXN and PAHs were below the PQLs.

Metals were present in all three samples and exceeded freshwater protection criteria for chromium and copper in all samples and for lead, nickel and zinc in one sample. None of the samples exceeded the recreational criteria; although the water is not used for recreational purposes, these criteria assess the risk from incidental ingestion. PAHs were not detected above the PQLs in any of the samples.

9 DISCUSSION OF RESULTS

9.1 SOIL

The soil conditions at the site did not indicate any unacceptable risk to human health from the use of the site, for the currently licensed SRC facility or the expansion of the facility, although the ability to assess the material within the landfill cell was limited by depth. The soil results showed no human health criteria exceedances. One ecological exceedance was found, at a depth of 1 mBGL in the expansion area, for benzo(a)pyrene. As the facility and expansion area are of limited ecological value (e.g. they do not support flora or fauna habitats) no potential ecological risk is considered present in the expansion area. Surface runoff is diverted to the reservoirs on the site, and therefore potential ecological exposure from contamination running off-site is not considered to be a complete exposure pathway.

The proposed modification will include excavating a new sediment basin in the north-east of the expansion area. This excavation will be a maximum of 2 mBGL, and therefore is not anticipated to disturb the landfill cell, as the capping layer was at least 3 m thick based on the test pits excavated in the vicinity of the proposed basin. No structures with potential for vapour accumulation are anticipated as part of the proposed use, therefore even if material in the landfill cell contains significant contamination it would not represent a risk to future site users.

9.2 GROUNDWATER

Groundwater conditions beneath the expansion area indicate that some contamination is present, likely due to the landfill material. No human health risk to the future users of the site was identified, although the potential for human health or ecological risk to downgradient surface water receptors was present, for benzene, naphthalene and some metals.

The groundwater sampled between the current facility and Prospect Creek did not identify any human health or environmental risk from the SRC or the landfill leachate. No assessment between the expansion area and the creek was undertaken, however, the results of the expansion area groundwater samples did not find substantial contamination and is considered likely to diminish through dilution and degradation.

9.3 SURFACE WATER

The initial sampling of Prospect Creek showed that the majority of analytes did not change between the upgradient and downgradient samples. The exception was TRH, which increased significantly in the downgradient sample. The source of this contamination may be landfill leachate, based on the groundwater results in the expansion area and the outflow sample. The downgradient creek sample and outflow sample did not have any health or ecological criteria exceedances.

The surface water sampling undertaken for the recycling drop-off centre identified higher concentrations of metals in the creek samples than was found during the initial sampling in 2017. This is expected to be due to the influx of runoff into the creek from all sources during heavy rain events; the area surrounding the creek includes a number of industrial facilities and roadways which would contribute to contaminant loading. The standing water samples did indicate elevated concentrations of aluminium, copper and zinc, particularly, but did not show concentrations significantly higher than those measured in the creek.

The reservoir samples found some TRH present in one sample and metals across the samples. No human health exceedances were noted and the use of the water for dust suppression is not considered to pose a risk. Ecological criteria were exceeded in the reservoirs; however, they are not considered to be of any ecological value. The use of the water for dust suppression should not have significant effect on Prospect Creek as the runoff from the site is controlled.

9.4 REVISED CONCEPTUAL SITE MODEL

Based on the results of the investigation, a revised CSM has been summarised in Table 9.1.

Table 9.1 Preliminary CSM

Potential sources of impact	The potential sources of impact identified are: — historical land filling — uncontrolled fill material used for capping or levelling — vehicle use associated with the SRC.
Potentially impacted media	Soils: Impacts from fill or waste material, either surficial or buried in the landfill cell. Groundwater: Impacts from landfill leachate or migration from soil impacts
Contaminants of concern	Contaminants of concern for the site comprise: — metals — PAHs — petroleum hydrocarbons as TRH and BTEXN.
Migration pathways	Potential migration pathways include: — runoff of surface contaminants in rain water — vertical migration of contaminants in soil from infiltration of rain water — horizontal migration of contaminants along the hydraulic gradient or through underground service trenches — volatilisation of hydrocarbon contamination — airborne migration of contamination in dust or vapour.
Potential receptors	Based on the site setting, potential receptors comprise: — site users, including SRC workers, truck drivers delivering or collecting material and excavation/maintenance workers — nearby site users which might be impacted by airborne contamination — maintenance workers in nearby service trenches — users of groundwater or surface downgradient of the site — underlying soil and groundwater — surface water bodies which may be impacted by runoff or groundwater from the site, e.g. Prospect Creek.
Potential exposure pathways	Potential exposures pathways comprise: — inhalation of dust, vapour or fibres by site users or nearby site users — ingestion of or dermal contact with contaminated soil by sites users — ingestion of or dermal contact with contaminated water downgradient of the site through extraction of groundwater or the use of downgradient surface water bodies for recreation.

No complete, current exposure pathways were identified based on the sampling results with the exception of metals in Prospect Creek exceeding the fresh water criteria, particularly during heavy rainfall events. This is considered to be

affected by the industrial setting of the creek and to include naturally occurring metals. Based on the findings that impact was present in the upgradient sample and in groundwater across the wells and in standing water and in the creek in a similar range it is not considered that the site is contributing significantly to the water quality of the creek.

10 CONCLUSIONS

Fairfield City Council engaged WSP to undertake a DSI for the expansion area as part of the planning approvals process. The objectives of the DSI were to assess:

- the condition of the soil in the current facility and the proposed expansion area
- the groundwater quality beneath the expansion area
- the quality of surface water collected from the site and used for dust suppression
- the condition of soil, groundwater and any standing water present in the gully
- groundwater quality between the SRC facility and Prospect Creek.

The results of the investigation showed some contamination in the groundwater beneath the expansion area, likely a result of the landfill leachate. No human health risks related to the proposed redevelopment of the site were identified from soil or groundwater. The standing water in the gully and the samples of Prospect Creek found metals and hydrocarbons present. Hydrocarbons detected did not exceed any adopted assessment criteria and metals were considered to represent ambient conditions.

The soil and groundwater in the gully were unable to be assessed due to the vegetation present. However, test pits and soil bores were undertaken adjacent to the gully and a sample of the surface water outflow was collected. The outflow sample contained hydrocarbons, although no risks were identified.

Based on the results of the DSI neither the current operation of the facility or the proposed redevelopment of the site, including the expansion of the SRC and the filling of Canal Road, is considered to represent a risk to human health or the environment. During the construction phase controls to limit dust generation and manage water runoff would be included in a construction environmental management plan. The presence of the landfill material is not expected to impact the proposed redevelopment due to the thickness of the capping material.

Soil excavated for the new sedimentation basin in the expansion area is considered likely to be suitable for reuse at the site, based on the sampling results from test pits in the proposed area. However, if soil is removed from the site it must be sampled for waste classification before disposal.

The soil in the gully was unable to be sampled due to access restrictions. When it is cleared prior to construction of Canal Road additional soil sampling can be arranged, if required. However, no indications of contamination were identified.

The areas of the site where the carpark expansion, sedimentation basin in the north of the facility and flood compensation area are proposed were not assessed during this investigation. However, only limited potential risks are associated with the carpark expansion and sedimentation basin, comprising management of spoil, dust generation and water runoff, which can be adequately managed during the construction phase under the construction environmental management plan. Soil sampling for waste classification should be undertaken on any spoil material created during these works. The flood compensation basin is discussed in a separate memorandum, as it was added to the scope after the fieldwork was completed.

The site is considered suitable for the continued use as a recycling centre, with no remediation recommended based on the findings of this investigation.

11 LIMITATIONS

This Report is provided by WSP Australia Pty Limited (*WSP*) for Fairfield City Council (*Client*) in response to specific instructions from the Client and in accordance with WSP's proposal dated 23 September 2019 and agreement with the Client dated 13 December 2019 (*Agreement*).

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APPENDIX A

FIGURES





Map: PS102981_F001_fig1_A1

Author: AUTO503015



0 50 100 m

1:5,000

Coordinate system: GDA 1994 MGA Zone 56
Scale ratio correct when printed at A4



Source: © Department of Customer Service 2020

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Fairfield City Council

Detailed Site Investigation
Fairfield Sustainable Resource Centre Expansion
Figure 1
Site location plan

www.wsp.com





Map: PS102981_F003_fig3_A1

Author: AUTO503015



0 50 100
m
1:5,000



Coordinate system: GDA 1994 MGA Zone 56
Scale ratio correct when printed at A4

Date: 6/18/2020

Approved by: Amy Valentine

Source: © Department of Customer Service 2020

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Fairfield City Council

Detailed Site Investigation
Fairfield Sustainable Resource Centre Expansion
Figure 3
Water investigation locations

www.wsp.com



Map: PS102981_F004_fig4_A1
 Date: 6/18/2020
 Author: AUTO503015
 Approved by: Amy.Valentine



0 50 100
 m
 1:5,000



Coordinate system: GDA 1994 MGA Zone 56
 Scale ratio correct when printed at A4

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Fairfield City Council

Detailed Site Investigation
Fairfield Sustainable Resource Centre Expansion
Figure 4
 Indicative surface water investigation plan

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Legend

- Sustainable Resource Centre (SRC) boundary
- ◆ Water investigation location
- Soil investigation location
- Current SRC Facility
- Proposed expansion area
- Recycling drop-off area
- Watercourse

Map: PS102981_F005_fig5_A1

Author: AUTO503015

Date: 6/18/2020

Approved by: Amy.Valentine



0 50 100
m
1:5,000

Coordinate system: GDA 1994 MGA Zone 56
Scale ratio correct when printed at A4



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Fairfield City Council

Detailed Site Investigation
Fairfield Sustainable Resource Centre Expansion
Figure 5
Additional investigation plan

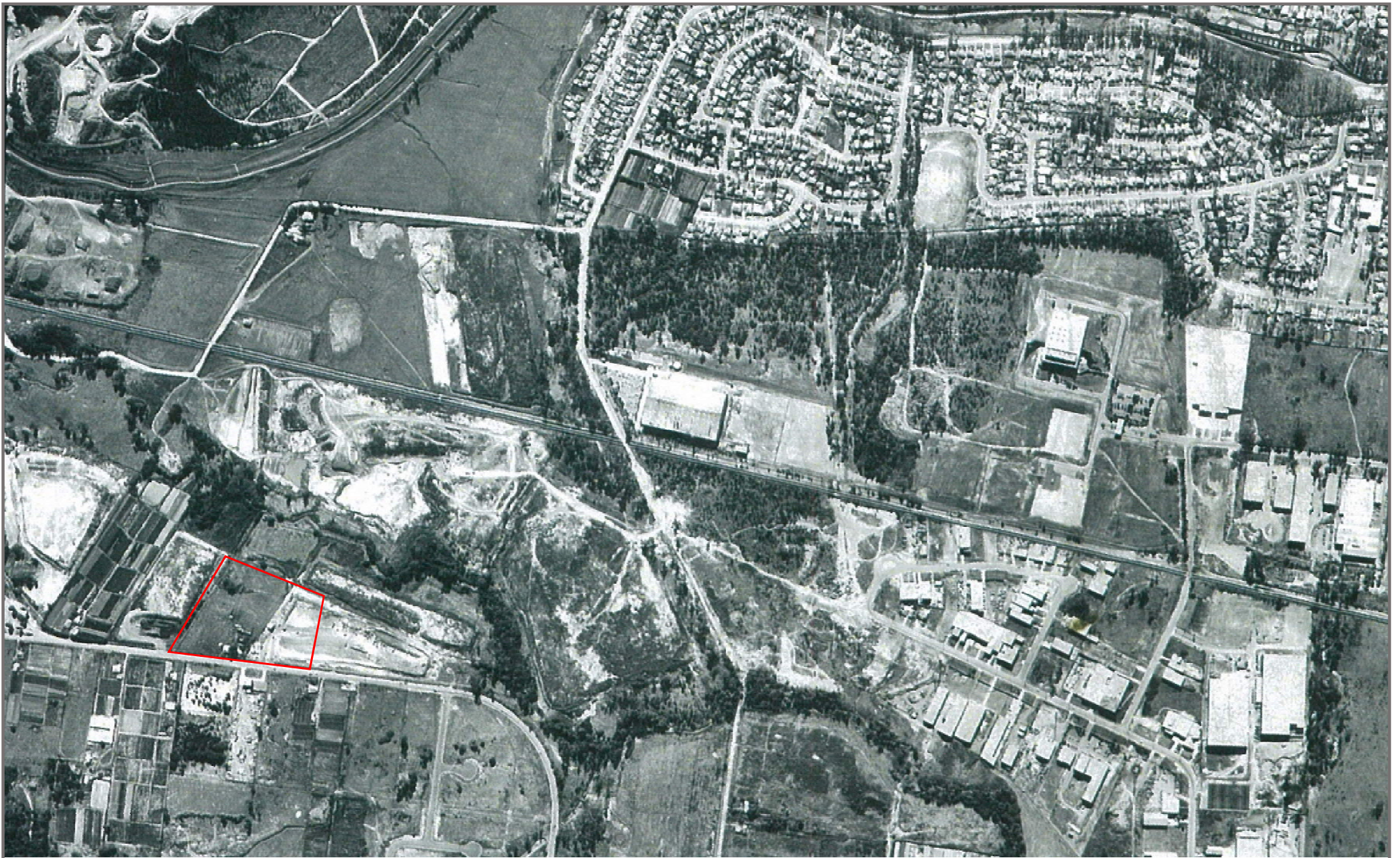
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APPENDIX B

AERIAL PHOTOGRAPHS













APPENDIX C

BORE LOGS



Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: 27/9/17
Date Completed: 27/9/17
Recorded By: CW
Log Checked By: AEV

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE VS FB L L S T H D	RELATIVE DENSITY /CONSISTENCY	PENETROMETER HAND (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D			
		1.00	PID=1.6 ppm	J		SW	Fill: Gravelly clayey SAND, fine to coarse grained, brown/black with low plasticity red/brown clay and asphalt inclusions				
		2.00	PID=2.2 ppm	J			increased asphalt inclusions				
		3	PID=2.2 ppm	J				W			Water seepage evident
							END OF TEST PIT AT 3.10 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: 27/9/17
Date Completed: 27/9/17
Recorded By: CW
Log Checked By: AEV

Excavation Method: **Excavator**

Surface RL:

Co-ords:

[illegible]

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



TEST PIT ENGINEERING LOG

TEST PIT NO.

TP03

SHEET 1 OF 1

Client: **Fairfield City Council**
Project: **Fairfield Sustainable Resource Centre Expansion**
Test Pit Location: **Hassall St & Widemere Rd, Wetherill Park NSW 2164**
Project Number: **PS102981**

Date Commenced: **27/9/17**
Date Completed: **27/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description											
1	2	3	4	5	6	7	8	9	10	11					
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS					
VS	FB	VL	MD	ST	VST	D	H	VS	FB	VL	MD	ST	VST	D	H
		0.30	PID=0.2 ppm	J		GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D							
		1.00	PID=0.6 ppm	J		SW	Fill: Gravelly clayey SAND, fine to coarse grained, brown with minor clay pockets and sandstone cobbles	M							
		2.00													
		2.50	PID=3.8 ppm	J		CL	Fill: Silty CLAY, low plasticity, red/brown mottled with minor black silt								Slight hydrocarbon odour
															</

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: **27/9/17**
Date Completed: **27/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL VH ST MD YST D H VD			
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D			
		1.00	1			CL	Fill: Silty CLAY, low plasticity, red/brown, with some gravel	M			
			PID=2.2 ppm	J							
		2.00	2			CL	Fill: Gravelly CLAY, low plasticity, red, with asphalt fragments	W			
			PID=2.1 ppm	J							
		3					END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



TEST PIT ENGINEERING LOG

TEST PIT NO.

TP05

SHEET 1 OF 1

Client: **Fairfield City Council**
Project: **Fairfield Sustainable Resource Centre Expansion**
Test Pit Location: **Hassall St & Widemere Rd, Wetherill Park NSW 2164**
Project Number: **PS102981**

Date Commenced: **27/9/17**
Date Completed: **27/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information					Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL L MD S F ST VST D H			
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown				
			PID=2.3 ppm	J							
		1									
		1.50	PID=1.6 ppm	J		CL	Fill: Silty CLAY, low plasticity, red/brown, with some gravel				
		2.00				GW	Fill: Sandy GRAVEL, fine to coarse, brown, with asphalt				
		2.90	PID=4.0 ppm	J		GW	Fill: Clayey GRAVEL, fine to coarse grained, red/brown/yellow				
		3					END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: **27/9/17**
Date Completed: **27/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

[illegible]

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



TEST PIT ENGINEERING LOG

TEST PIT NO.

TP07

SHEET 1 OF 1

Client: **Fairfield City Council**
Project: **Fairfield Sustainable Resource Centre Expansion**
Test Pit Location: **Hassall St & Widemere Rd, Wetherill Park NSW 2164**
Project Number: **PS102981**

Date Commenced: **27/9/17**
Date Completed: **27/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL L MD S F ST D VST H	HAND PENETROMETER (kPa)	
						SP	Fill: Silty SAND, fine to medium grained, dark brown, with some gravel and asphalt	M		
		1.00	PID=1.1 ppm	J		CL	Fill: Silty CLAY, low to medium plasticity, dark brown with asphalt			
		2								
		3	PID=1.0 ppm	J			END OF TEST PIT AT 3.00 m			

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



TEST PIT ENGINEERING LOG

TEST PIT NO.

TP08

SHEET 1 OF 1

Client: **Fairfield City Council**
Project: **Fairfield Sustainable Resource Centre Expansion**
Test Pit Location: **Hassall St & Widemere Rd, Wetherill Park NSW 2164**
Project Number: **PS102981**

Date Commenced: **27/9/17**
Date Completed: **27/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL S F ST VST H	MD L D		
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown				
		1.00	PID=2.5 ppm	J		SW	Fill: Silty SAND, fine to medium grained, dark brown/grey, with some gravel				
		2									
		3		J			END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: 27/9/17
Date Completed: 27/9/17
Recorded By: CW
Log Checked By: AEV

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB LL PL SH ST MD YST D H VD			
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D			
		1.00	PID=1.7 ppm	J		SW	Fill: Gravelly SAND, fine to coarse grained. dark brown, with anthropogenic inclusions				
		2.00	PID=4.4 ppm	J		CL	Fill: Sandy CLAY, low plasticity, red/brown, with small gravel inclusions				
							becoming red/white/black with increased clay content and plasticity				
		3		J			END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: 27/9/17
Date Completed: 27/9/17
Recorded By: CW
Log Checked By: AEV

Excavation Method: **Excavator**

Surface RL:

Co-ords:

[illegible]

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL L F ST MD VST D H			
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D			
		1.00	PID=3.6 ppm	J		CL	Fill: Sandy CLAY, low plasticity, red/yellow, with asphalt inclusions, minor gravels and anthropogenic inclusions (tin/metal)				
		2.50	PID=2.2 ppm	J		CL	Fill: Silty CLAY, low plasticity, red/yellow, with asphalt inclusions and minor gravels				
		3					END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: 28/9/17
Date Completed: 28/9/17
Recorded By: CW
Log Checked By: AEV

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE VS FB L L V L ST MD YST D H VD	RELATIVE DENSITY /CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
	0.80	PID=0.9 ppm	J		GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D				
		CL	Fill: Sandy CLAY, low plasticity, red/yellow, with minor asphalt and gravels								
		PID=2.0 ppm	J			increased plasticity and reduced asphalt and gravels					
	3					END OF TEST PIT AT 3.00 m					

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
VS	FB	VL	L	MD	VS	TD	H				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: 28/9/17
Date Completed: 28/9/17
Recorded By: CW
Log Checked By: AEV

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE VS FB V L S T H V D	RELATIVE DENSITY /CONSISTENCY	PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D			
		1.00	PID=1.9 ppm	J		CL	Fill: Silty CLAY, low plasticity, dark brown, with asphalt and gravel inclusions				
		2					increased clay content and plasticity				
		3	PID=1.6 ppm	J			END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



TEST PIT ENGINEERING LOG

TEST PIT NO.

TP15

SHEET 1 OF 1

Client: **Fairfield City Council**
Project: **Fairfield Sustainable Resource Centre Expansion**
Test Pit Location: **Hassall St & Widemere Rd, Wetherill Park NSW 2164**
Project Number: **PS102981**

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL S F ST VST H			
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D			
		1									
		1.50	PID=0.5 ppm	J		CL	Fill: Sandy CLAY, low plasticity, red/brown, with asphalt and large gravels				
		2									
			PID=1.5 ppm	J			medium plasticity, dark brown, with gravel inclusions				
		3					END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information					Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
		PID=0.6 ppm	J			GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D			
1		PID=3.8 ppm	J			CL	Fill: Sandy CLAY, medium plasticity, brown/red, with gravels				
2						CL	Fill: Silty CLAY, low plasticity, dark brown, with gravels				
3		PID=2.3 ppm	J				END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: 28/9/17
Date Completed: 28/9/17
Recorded By: CW
Log Checked By: AEV

Excavation Method: **Excavator**

Surface RL:

Co-ords:

[illegible]

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



TEST PIT ENGINEERING LOG

TEST PIT NO.

TP18

SHEET 1 OF 1

Client: **Fairfield City Council**
Project: **Fairfield Sustainable Resource Centre Expansion**
Test Pit Location: **Hassall St & Widemere Rd, Wetherill Park NSW 2164**
Project Number: **PS102981**

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL L MD S F ST D VST H	HAND PENETROMETER (kPa)	
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D		
		1.00	PID=2.3 ppm	J		CL	Fill: Sandy CLAY, low plasticity, dark brown, with gravels			
							increased clay content and plasticity			
		2	PID=5.8 ppm	J			END OF TEST PIT AT 2.00 m			
		3								

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



TEST PIT ENGINEERING LOG

TEST PIT NO.

TP19

SHEET 1 OF 1

Client: **Fairfield City Council**
Project: **Fairfield Sustainable Resource Centre Expansion**
Test Pit Location: **Hassall St & Widemere Rd, Wetherill Park NSW 2164**
Project Number: **PS102981**

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL L MD S F ST D VST H			
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D			
		1.00	PID=3.9 ppm	J		CL	Fill: Sandy CLAY, medium plasticity, dark brown/grey, with gravels present				
		2	PID=3.4 ppm	J			increased plasticity	M			
		3					END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

[illegible]

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL S F ST VST H			
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D			
		1.00	PID=2.7 ppm	J		SW	Fill: Gravelly SAND, fine to coarse grained, brown/grey, with gravels				
		1.80					Crushed asphalt, coarse grained, black with gravel and sand				
		2.00	PID=2.3 ppm	J		SP	Fill: Gravelly SAND, medium to coarse grained, brown/red, with minor clays and anthropogenic inclusions				
		3					END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	PENETROMETER	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL ST HT VD	HAND		
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D			
						CL	Fill: Gravelly CLAY, low plasticity, black, with gravels including large cobbles				
							anthropogenic inclusions				
							END OF TEST PIT AT 2.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



TEST PIT ENGINEERING LOG

TEST PIT NO.

TP23

SHEET 1 OF 1

Client: **Fairfield City Council**
Project: **Fairfield Sustainable Resource Centre Expansion**
Test Pit Location: **Hassall St & Widemere Rd, Wetherill Park NSW 2164**
Project Number: **PS102981**

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL S F ST VST H			
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D			
		0.50	PID=1.3 ppm	J		CL	Sandy CLAY, low plasticity, dark brown				
		1									
		2									
			PID=1.4 ppm	J							
		3					END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164
Project Number:	PS102981

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

[illegible]

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



TEST PIT ENGINEERING LOG

TEST PIT NO.

TP25

SHEET 1 OF 1

Client: **Fairfield City Council**
Project: **Fairfield Sustainable Resource Centre Expansion**
Test Pit Location: **Hassall St & Widemere Rd, Wetherill Park NSW 2164**
Project Number: **PS102981**

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL SL MD ST D VST H			
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D			
		1									
		1.20		J		SW	Fill: Gravelly SAND, fine to coarse grained, dark brown, with minor clay inclusions and concrete/asphalt cobbles				
		2		J							
		3					END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



TEST PIT ENGINEERING LOG

TEST PIT NO.

TP26

SHEET 1 OF 1

Client: **Fairfield City Council**
Project: **Fairfield Sustainable Resource Centre Expansion**
Test Pit Location: **Hassall St & Widemere Rd, Wetherill Park NSW 2164**
Project Number: **PS102981**

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D	VS FB VL SL FL ST MD VST D H		
	0.50	PID=1.6 ppm	J			SW	Fill: Gravelly SAND, fine to coarse grained, dark brown, with minor clay inclusions and concrete/asphalt cobbles				
		PID=1.6 ppm	J				Decreased gravel content				
	2.50					CL	Fill: Silty CLAY, medium plasticity, brown/grey, with cobbles of concrete/asphalt				
	3						END OF TEST PIT AT 3.00 m				

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



TEST PIT ENGINEERING LOG

TEST PIT NO.

TP27

SHEET 1 OF 1

Client: **Fairfield City Council**
Project: **Fairfield Sustainable Resource Centre Expansion**
Test Pit Location: **Hassall St & Widemere Rd, Wetherill Park NSW 2164**
Project Number: **PS102981**

Date Commenced: **28/9/17**
Date Completed: **28/9/17**
Recorded By: **CW**
Log Checked By: **AEV**

Excavation Method: **Excavator**

Surface RL:

Co-ords:

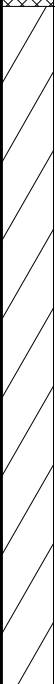
Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
								VS FB VL SL FL MD ST VD	HAND PENETROMETER (kPa)	
						GP	Fill: Sandy GRAVEL, fine to coarse grained, brown	D		
		0.50	PID=2.4 ppm	J		CL	Fill: CLAY, low to medium plasticity, red/grey, with asphalt and gravel inclusions			
		1								
		2	PID=2.3 ppm	J			becoming grey and increased anthropogenic inclusions			
		3					END OF TEST PIT AT 3.00 m			

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



Client:	Fairfield City Council	Date Commenced:	27/9/17
Project:	Fairfield Sustainable Resource Centre Expansion	Date Completed:	27/9/17
Borehole Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164	Recorded By:	MB
Project Number:	PS102981	Log Checked By:	AEV

Drill Model/Mounting:	Geoprobe Track	Driller:	Matrix Drilling	Surface RL:	
Borehole Diameter:	120 mm	Driller Lic No:		Co-ords:	

Borehole Information							Field Material Description							
1	2	3	4		5	6	7	8	9	10	11	12	13	
METHOD	SUPPORT	WATER	WELL CONSTRUCTION		RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA				Grout						SP	Fill: Silty SAND, fine to medium grained, brown, with some clay pockets	D	VS FB VL JL MD ST VST VD H	
			Bentonite			PID=4.1 ppm	J							
			Sand		1	PID=5.4 ppm	J							
SS			Filter Pack		2									
			End cap		3.00	3	PID=3.7 ppm	J		CH	CLAY, high plasticity, brown/black	M	VS FB VL JL MD ST VST VD H	
					4									
					5	PID=5.0 ppm	J				W	VS FB VL JL MD ST VST VD H		
					6									
					7									
					8									
					9									
					10									
END OF BOREHOLE AT 8.00 m														

This borehole log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



BOREHOLE ENVIRONMENTAL LOG

Client:	Fairfield City Council	Date Commenced:	27/9/17
Project:	Fairfield Sustainable Resource Centre Expansion	Date Completed:	27/9/17
Borehole Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164	Recorded By:	MB
Project Number:	PS102981	Log Checked By:	AEV

Drill Model/Mounting:	Geoprobe Track	Driller:	Matrix Drilling	Surface RL:	
Borehole Diameter:	120 mm	Driller Lic No:		Co-ords:	

Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA			Grout						SW	Fill: Gravelly SAND, fine to coarse grained, brown	D	
						PID=2.7 ppm	J					
					1	PID=5.6 ppm	J					Gravel cobbles present
SS					2							
					2.80							
					3	PID=6.4 ppm	J		CH	Fill: CLAY, high plasticity, brown/grey	M	
					4							
			Bentonite		5	PID=5.8 ppm	J					
			Sand		6							
			Filter Pack		7	PID=6.2 ppm	J					
					8							Anthropogenic inclusions of plastic, wire and rubber
					9		J					
			End cap		10.00					END OF BOREHOLE AT 10.00 m		



BOREHOLE ENVIRONMENTAL LOG

Client:	Fairfield City Council	Date Commenced:	27/9/17
Project:	Fairfield Sustainable Resource Centre Expansion	Date Completed:	27/9/17
Borehole Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164	Recorded By:	MB
Project Number:	PS102981	Log Checked By:	AEV

Drill Model/Mounting:	Geoprobe Track	Driller:	Matrix Drilling	Surface RL:	
Borehole Diameter:	120 mm	Driller Lic No:		Co-ords:	

Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m)	DEPTH(m)	FIELD TEST	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA			Grout						Fill: Clayey SAND, fine to coarse grained, brown, with minor gravels	D		
					1	PID=2.7 ppm J						
						PID=4.6 ppm J						
SS					2				increased gravel and clay content			Cobbles present
					3	PID=5.9 ppm J						
					3.60							
					4				Fill: CLAY, high plasticity, brown, with small gravels	M		
					5	PID=6.0 ppm J						
			Bentonite		6							
			Sand									
			Filter Pack		7	PID=6.8 ppm J						
					8				becoming orange/red with reduced gravel content	W		Anthropogenic material of plastic and aluminium present Leachate odour
					9	PID=7.5 ppm J						
					10							
			End cap		10.20				END OF BOREHOLE AT 10.20 m			

This borehole log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



Client:	Fairfield City Council	Date Commenced:	28/9/17
Project:	Fairfield Sustainable Resource Centre Expansion	Date Completed:	28/9/17
Borehole Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164	Recorded By:	MB
Project Number:	PS102981	Log Checked By:	AEV

Drill Model/Mounting:	Hand auger	Driller:	Matrix Drilling	Surface RL:	
Borehole Diameter:	120 mm	Driller Lic No:		Co-ords:	

Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	STRUCTURE AND ADDITIONAL OBSERVATIONS
											VS FB VL SL LT ST MD SD VD HT	
HA			Bentonite						SW	SAND, fine to coarse grained, brown with minor clays	D	
			Sand									
			Filter Pack									
					1							
											M	
				1.50		PID=3.2 ppm	J		SC	Clayey SAND, fine to medium grained, brown/grey		
					2							
				2.20					GC	Clayey GRAVEL, fine to coarse grained, brown, angular		
			End cap									
				2.50						END OF BOREHOLE AT 2.50 m		



BOREHOLE ENVIRONMENTAL LOG

Client:	Fairfield City Council	Date Commenced:	28/9/17
Project:	Fairfield Sustainable Resource Centre Expansion	Date Completed:	28/9/17
Borehole Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164	Recorded By:	MB
Project Number:	PS102981	Log Checked By:	AEV

Drill Model/Mounting:	Hand auger	Driller:	Matrix Drilling	Surface RL:	
Borehole Diameter:	120 mm	Driller Lic No:		Co-ords:	

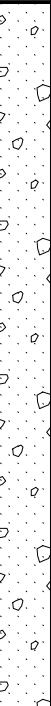
Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	STRUCTURE AND ADDITIONAL OBSERVATIONS
											VS FB VL LD ST VD ST H	
HA			Bentonite Sand Filter Pack						SW	SAND, fine to corase grained, brown, with minor clays		Hard compacted material
					1							Material becoming softer
					1.50				SC	Clayey SAND, fine to medium grained, brown		
					1.80				CL	Sandy CLAY, medium plasticity, brown		
					2		J					
			End cap		2.50					END OF BOREHOLE AT 2.50 m		



BOREHOLE ENVIRONMENTAL LOG

Client:	Fairfield City Council	Date Commenced:	28/9/17
Project:	Fairfield Sustainable Resource Centre Expansion	Date Completed:	28/9/17
Borehole Location:	Hassall St & Widemere Rd, Wetherill Park NSW 2164	Recorded By:	MB
Project Number:	PS102981	Log Checked By:	AEV

Drill Model/Mounting:	Hand auger	Driller:		Surface RL:	
Borehole Diameter:	120 mm	Driller Lic No:		Co-ords:	

Borehole Information							Field Material Description									
1	2	3	4		5	6	7	8	9	10		11	12		13	
METHOD	SUPPORT	WATER	WELL CONSTRUCTION		RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY		STRUCTURE AND ADDITIONAL OBSERVATIONS	
VS	FB	VL	LD	VD	ST	SH										
HA										SW	Gravelly SAND, fine to coarse grained, brown					
					0.70						END OF BOREHOLE AT 0.70 m					Refusal at 0.7 mbgl
						1										

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Stockpile area
Project Number:	PS102981

Date Commenced: **15/4/20**
Date Completed: **15/4/20**
Recorded By: **LB**
Log Checked By: **AEV**

Excavation Method:

Surface RL:

Co-ords: **E 306988 N 6253850.18**

[illegible]

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Beside reservoir 1
Project Number:	PS102981

Date Commenced: **15/4/20**
Date Completed: **15/4/20**
Recorded By: **LB**
Log Checked By: **AEV**

Excavation Method:

Surface RL:

Co-ords: **E 307041.28 N 6253866.12**

[illegible]

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Beside old pugmill
Project Number:	PS102981

Date Commenced: **15/4/20**
Date Completed: **15/4/20**
Recorded By: **LB**
Log Checked By: **AEV**

Excavation Method:

Surface RL:

Co-ords: **E 307091.68 N 6253855.27**

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
VS	FB	LL	SL	MD	ST	HT	VD				
Z						SM	Silty SAND; some fine sub-angular gravels, moist	M			
T											
G											
W											
O											

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Beside concrete ramp
Project Number:	PS102981

Date Commenced: **15/4/20**
Date Completed: **15/4/20**
Recorded By: **LB**
Log Checked By: **AEV**

Excavation Method:

Surface RL:

Co-ords: **E 307116.46 N 6253784.1**

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
VS	FB	VL	FL	MD	VST	DH					
2						GP	GRAVEL with sand; sub-angular to angular gravels, light grey, slightly moist	M			
3											
4											
5											
6											
7											
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This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Behind crusher
Project Number:	PS102981

Date Commenced: **15/4/20**
Date Completed: **15/4/20**
Recorded By: **LB**
Log Checked By: **AEV**

Excavation Method:

Surface RL:

Co-ords: **E 307192.45 N 6253785.09**

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
Z T G W O			PID=0.2 ppm	J+B		GP	Sandy GRAVEL; coarse angular gravels, light grey, slightly moist	M	VS FB LL PL ST MD YSTD H VD		
							Borehole refusal END OF TEST PIT AT 0.10 m				BH05_0.1

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.



TEST PIT ENGINEERING LOG

TEST PIT NO.

BH06

SHEET 1 OF 1

Client: **Fairfield City Council**
Project: **Fairfield Sustainable Resource Centre Expansion**
Test Pit Location: **Beside reservoir 2**
Project Number: **PS102981**

Date Commenced: **15/4/20**
Date Completed: **15/4/20**
Recorded By: **LB**
Log Checked By: **AEV**

Excavation Method:

Surface RL:

Co-ords: **E 307165.89 N 6253647.2**

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
VS	FB	VL	ST	MD	VST	D	H	VD			
N						SM	Silty SAND with coarse angular gravels, light brown	W			
F			PID=0.3 ppm	J+B							
G											
W											
O											
							Borehole refusal END OF TEST PIT AT 0.10 m				BH06_0.1

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Beside wash station
Project Number:	PS102981

Date Commenced: **15/4/20**
Date Completed: **15/4/20**
Recorded By: **LB**
Log Checked By: **AEV**

Excavation Method:

Surface RL:

Co-ords: **E 307057.26 N 6253717.67**

[illegible]

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

Client:	Fairfield City Council
Project:	Fairfield Sustainable Resource Centre Expansion
Test Pit Location:	Beside maintenance building parking lot
Project Number:	PS102981

Date Commenced: **15/4/20**
Date Completed: **15/4/20**
Recorded By: **LB**
Log Checked By: **AEV**

Excavation Method:

Surface RL:

Co-ords: **E 307008.11 N 6253716.67**

[illegible]

This test pit log should be read in conjunction with WSP | Parsons Brinckerhoff's accompanying standard notes.

APPENDIX D

ANALYTICAL SUMMARY TABLES



Table D1
Soil results - TRH and BTEXN
Fairfield SRC DSI

			TRH							BTEXN						
			C6-C10 fraction	C6 - C10 fraction minus BTEX (F1)	C10 - C16 fraction	TRH >C10-C16 fraction less naphthalene (F2)	C16 - C34 fraction	C34 - C40 fraction	C10 - C40 fraction (sum)	Benzene	Toluene	Ethylbenzene	o-Xylene	m- & p-Xylene	Total xylene	Naphthalene
EQL			10	10	50	50	100	100	50	0.2	0.5	0.5	0.5	0.5	0.5	1
HSL D, sand ¹		0-1 m	-	260	-	NL	-	-	-	3	NL	NL	-	-	230	NL
		1-2 m	-	370	-	NL	-	-	-	3	NL	NL	-	-	NL	NL
		2-4 m	-	630	-	NL	-	-	-	3	NL	NL	-	-	NL	NL
		>4 m	-	NL	-	NL	-	-	-	3	NL	NL	-	-	NL	NL
Direct contract HSLs, commercial/industrial ²			-	26,000	-	20,000	27,000	38,000	-	430	99,000	27,000	-	-	81,000	29,000
ESL, urban commercial/industrial ³			-	215	170	-	1,700	3,300	-	75	135	165	-	-	180	-
Field ID	Sample depth (mBGL)	Sample date														
2017 investigation																
BH02_9.0	9	27/09/2017	<10	<10	<50	<50	340	<100	340	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
BH03_9.0	9	27/09/2017	<10	<10	<50	<50	<100	<100	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
TP01_3.0	3	27/09/2017	<10	<10	<50	<50	<100	<100	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
TP04_1.0	1	27/09/2017	<10	<10	<50	<50	<100	<100	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
QC01A	Duplicate of TP04_1.0		<20	<20	<50	<50	260	<100	260	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
TP08_1.0	1	27/09/2017	<10	<10	<50	<50	<100	<100	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
TP10_0.4	0.4	27/09/2017	<10	<10	<50	<50	<100	<100	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
TP12_2.2	2.2	28/09/2017	<10	<10	<50	<50	<100	<100	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
TP13_3.0	3	28/09/2017	<10	<10	<50	<50	<100	<100	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
TP15_2.5	2.5	28/09/2017	<10	<10	<50	<50	<100	<100	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
TP17_3.0	3	28/09/2017	<10	<10	<50	<50	<100	<100	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
TP18_2.0	2	28/09/2017	<10	<10	<50	<50	<100	<100	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
TP22_1.0	1	28/09/2017	<10	<10	<50	<50	<100	110	110	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
2020 investigation																
BH01_0.1	0.1	15/04/2020	<10	<10	<50	<50	870	1,110	1,980	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
BH02_1.0	1	15/04/2020	<10	<10	<50	<50	<100	<100	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
BH03_0.15	0.15	15/04/2020	<10	<10	<50	<50	200	100	300	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
BH04_0.3	0.3	15/04/2020	<10	<10	<50	<50	<100	<100	<50	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
BH05_0.1	0.1	15/04/2020	<10	<10	<50	<50	140	<100	140	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
BH06_0.1	0.1	15/04/2020	<10	<10	<50	<50	1,190	600	1,790	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
BH07_0.3	0.3	15/04/2020	<10	<10	<50	<50	400	250	650	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1
BH08_0.2	0.2	15/04/2020	<10	<10	<50	<50	260	280	540	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<1

Notes:
Concentrations expressed as mg/kg
¹ NEPM (2013) Schedule B1 - Investigation levels for soil and groundwater - Table 1A(3) - Health screening levels for vapour intrusion
² Friebel & Nadebaum (2011) Health screening levels for petroleum hydrocarbons in soil and groundwater. Part 1: Technical development document. CRC CARE Technical Report no. 10
³ NEPM (2013) Schedule B1 - Investigation levels for soil and groundwater - Table 1B(6) - ESLs for TPH fractions F1-F4, BTEX and benzo(a)pyrene in soil
- Guidance values are not available
Bold Sample concentration exceeds the guidance values
ESL values apply to the top 2 m of soil only

Table D2
Soil results - Metals
Fairfield SRC DSI

	Metals							
	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	5	1	2	5	5	0.1	2	5
HIL D ¹	3,000	900	3,600	240,000	1,500	730	6,000	400,000
EIL, urban commercial/industrial ²	160	-	340	112	1,800	-	87	158

Field ID	Sample depth (mBGL)	Sample date								
2017 investigation										
BH01_7.0	7	27/09/2017	5	<1	27	43	246	<0.1	34	191
BH02_9.0	9	27/09/2017	5	<1	26	33	43	<0.1	36	266
BH03_9.0	9	27/09/2017	7	<1	21	14	18	<0.1	5	30
BH04_1.5	1.5	28/09/2017	<5	<1	16	15	13	<0.1	5	20
BH05_2.0	2	28/09/2017	6	<1	26	13	14	<0.1	10	19
TP01_3.0	3	27/09/2017	9	<1	19	23	39	<0.1	15	90
TP02_0.2	0.2	27/09/2017	6	<1	15	15	44	<0.1	10	59
TP03_2.5	2.5	27/09/2017	9	<1	17	27	21	<0.1	19	54
TP04_1.0	1	27/09/2017	6	<1	15	32	14	<0.1	14	56
TP05_1.5	1.5	27/09/2017	5	<1	16	33	12	<0.1	23	49
TP06_3.0	3	27/09/2017	6	<1	22	22	31	<0.1	12	65
TP07_3.0	3	27/09/2017	<5	<1	10	46	27	<0.1	10	70
TP08_1.0	1	27/09/2017	<5	<1	42	43	55	<0.1	57	63
TP09_2.0	2	27/09/2017	8	<1	33	15	20	<0.1	22	36
TP10_0.4	0.4	27/09/2017	<5	<1	16	24	17	<0.1	16	45
TP11_2.4	2.4	28/09/2017	7	<1	20	33	20	<0.1	29	58
TP12_2.2	2.2	28/09/2017	9	<1	16	24	13	<0.1	20	37
TP13_3.0	3	28/09/2017	<5	<1	15	20	30	<0.1	23	38
TP14_1.0	1	28/09/2017	9	<1	21	38	48	<0.1	26	91
TP15_2.5	2.5	28/09/2017	<5	<1	14	29	17	<0.1	29	51
TP16_0.7	0.7	28/09/2017	<5	<1	35	35	20	<0.1	52	45
TP17_3.0	3	28/09/2017	12	<1	19	39	18	<0.1	13	61
TP18_2.0	2	28/09/2017	7	<1	20	31	24	<0.1	27	57
TP19_2.0	2	28/09/2017	<5	<1	12	21	23	<0.1	10	50
TP20_1.0	1	28/09/2017	<5	<1	14	28	27	<0.1	20	54
TP21_1.0	1	28/09/2017	<5	<1	48	37	17	<0.1	66	50
TP22_1.0	1	28/09/2017	<5	<1	26	33	26	<0.1	39	43
TP23_2.5	2.5	28/09/2017	7	<1	18	23	18	<0.1	15	53
TP24_0.6	0.6	28/09/2017	6	<1	31	23	22	<0.1	28	26
TP25_2.0	2	28/09/2017	5	<1	25	25	18	<0.1	26	44
TP26_1.5	1.5	28/09/2017	5	<1	35	29	23	<0.1	40	52
TP27_0.5	0.5	28/09/2017	6	<1	21	9	11	<0.1	5	6
2020 investigation										
BH01_0.1	0.1	15/04/2020	<5	<1	5	80	8	<0.1	13	36
BH02_1.0	1	15/04/2020	7	<1	22	7	15	<0.1	4	6
BH03_0.15	0.15	15/04/2020	<5	<1	10	24	16	<0.1	8	41
BH04_0.3	0.3	15/04/2020	<5	<1	14	19	17	<0.1	10	44
BH05_0.1	0.1	15/04/2020	<5	<1	12	20	28	<0.1	8	56
BH06_0.1	0.1	15/04/2020	6	<1	22	55	40	<0.1	28	102
BH07_0.3	0.3	15/04/2020	7	<1	29	72	46	<0.1	25	145
BH08_0.2	0.2	15/04/2020	<5	<1	20	30	22	<0.1	20	56

Notes:

Concentrations expressed as mg/kg

¹ NEPM (2013) Schedule B1 - Investigation levels for soil and groundwater - Table 1A(1) - Health investigation levels for soil contaminants

² NEPM (2013) Schedule B1 - Investigation levels for soil and groundwater - Tables 1B(1) to 1B(5)

- Guidance values are not available

Bold Sample concentration exceeds the guidance values

EIL values apply to the top 2 m of soil only

Table D4
Soil results - OCPs
Fairfield SRC DSI

			OCP																															
			4,4-DDE	α-BHC	Aldrin	Aldrin + Dieldrin	β-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	γ-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	γ-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor							
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg							
EQL			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2								
HIL D ¹			-	-	-	45	-	530	-	-	-	-	3,600	-	2,000	-	-	-	100	-	-	-	50	-	80	2,500								
EIL, urban commercial/industrial ²			-	-	-	-	-	-	-	-	-	640	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
Field ID			Sample depth			Sample date																												
2017 investigation																																		
BH02_9.0	9	27/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2									
BH03_9.0	9	27/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2									
TP01_3.0	3	27/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2									
TP04_1.0	1	27/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2									
TP08_1.0	1	27/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2									
TP10_0.4	0.4	27/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2									
TP12_2.2	2.2	28/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2									
TP13_3.0	3	28/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2									
TP15_2.5	2.5	28/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2									
TP17_3.0	3	28/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2									
TP18_2.0	2	28/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2									
TP22_1.0	1	28/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2									

Notes:
Concentrations expressed as mg/kg
¹ NEPM (2013) Schedule B1 - Investigation levels for soil and groundwater - Table 1A(1) - Health investigation levels for soil contaminants
² NEPM (2013) Schedule B1 - Investigation levels for soil and groundwater - Table 1B(5) - Generic EILs for aged As, fresh DDT and fresh naphthalene in soils irrespective of their physiochemical properties
- Guidance values are not available

Bold Sample concentration exceeds the guidance values

EIL values apply to the top 2 m of soil only

Table D5
Soil results - OPPs
Fairfield SRC DSI

			OPP																		
			Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenthion	Malathion	Methyl parathion	Monocrotophos	Parathion	Pirimphos-ethyl	Prothiofos
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.2	0.2	0.05	0.05	
HIL D ¹			-	-	-	-	2,000	-	-	-	-	-	-	-	-	-	-	-	-	-	
Field ID Sample depth Sample date																					
2017 investigation																					
BH02_9.0	9	27/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
BH03_9.0	9	27/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
TP01_3.0	3	27/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
TP04_1.0	1	27/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
TP08_1.0	1	27/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
TP10_0.4	0.4	27/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
TP12_2.2	2.2	28/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
TP13_3.0	3	28/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
TP15_2.5	2.5	28/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
TP17_3.0	3	28/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
TP18_2.0	2	28/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
TP22_1.0	1	28/09/2017	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05

Notes:
Concentrations expressed as mg/kg
¹ NEPM (2013) Schedule B1 - Investigation levels for soil and groundwater - Table 1A(1) - Health investigation levels for soil contaminants
- Guidance values are not available
Bold Sample concentration exceeds the guidance values

Table D6
Soil results - Asbestos
Fairfield SRC DSI

	Asbestos	
	Asbestos fibres	Asbestos (trace)
	g/kg	Fibres
EQL	0.1	5

Field ID	Sample depth (mBGL)	Sample date		
2017 investigation				
BH01_0.5	0.5	27/09/2017	No	-
BH02_0.5	0.5	27/09/2017	No	-
BH03_0.5	0.5	27/09/2017	No	-
TP01_1.0	1	27/09/2017	No	-
TP02_0.2	0.2	27/09/2017	No	-
TP04_1.0	1	27/09/2017	No	-
TP05_0.4	0.4	27/09/2017	No	-
TP06_1.0	1	27/09/2017	No	-
TP07_1.0	1	27/09/2017	No	-
TP08_1.0	1	27/09/2017	No	-
TP09_1.0	1	27/09/2017	No	-
TP10_0.4	0.4	27/09/2017	No	-
TP11_1.0	1	28/09/2017	No	-
TP12_0.8	0.8	28/09/2017	No	-
TP13_1.0	1	28/09/2017	No	-
TP14_1.0	1	28/09/2017	No	-
TP15_1.5	1.5	28/09/2017	No	-
TP16_0.7	0.7	28/09/2017	No	-
TP17_1.2	1.2	28/09/2017	No	-
TP18_1.0	1	28/09/2017	No	-
TP19_1.0	1	28/09/2017	No	-
TP20_1.0	1	28/09/2017	No	-
TP21_1.0	1	28/09/2017	No	-
TP22_1.0	1	28/09/2017	No	-
TP23_0.5	0.5	28/09/2017	No	-
TP24_0.6	0.6	28/09/2017	No	-
TP25_1.2	1.2	28/09/2017	No	-
TP26_0.5	0.5	28/09/2017	No	-
TP27_0.5	0.5	28/09/2017	No	-
2020 investigation				
BH01_0.1	0.1	15/04/2020	No	No
BH02_0.5	0.5	15/04/2020	No	No
BH03_0.15	0.15	15/04/2020	No	No
BH04_0.3	0.3	15/04/2020	No	No
BH05_0.1	0.1	15/04/2020	No	No
BH06_0.1	0.1	15/04/2020	No	No
BH07_0.3	0.3	15/04/2020	No	No
BH08_0.2	0.2	15/04/2020	No	No

Notes:

¹ NEPM (2013) Schedule B1 - Investigation levels for soil and groundwater - Table 1A(1) - Health investigation levels for soil contaminants

- Guidance values are not available

Bold Sample concentration exceeds the guidance values

Table D7**Groundwater well gauging results****Fairfield SRC DSI**

Well ID	Date gauged	Well depth (m)	Top of casing elevation (mAHD)	Depth to water (mBTOC)	Depth to LNAPL (mBTOC)	Apparent LNAPL thickness (m)	LNAPL specific gravity (g/cm3)	Hydraulic equivalent (m)	Corrected depth to water (mBTOC)	Corrected water elevation (mAHD)	Comments
MW01	17/10/2017	8.0	41.16	7.104	-	-	-	-	7.104	34.056	
MW02	17/10/2017	10.0	41.57	7.956	-	-	-	-	7.956	33.614	
MW03	17/10/2017	10.2	39.7	8.945	-	-	-	-	8.945	30.755	
MW04	17/10/2017	3.7	29.68	3.569	-	-	-	-	3.569	26.111	
MW05	17/10/2017	3.7	30.05	3.388	-	-	-	-	3.388	26.662	

Notes:

mBTOC - metres below top of casing

mAHD - metres Australia Height Datum

LNAPL - light non-aqueous phase liquid

Specific gravity default is 0.8 unless tested

Table D8
Groundwater well purging results
Fairfield SRC DSI

Well ID	Date sampled	pH	Electrical conductivity (µS/cm)	Redox (mV)	Corrected redox (mV)	Dissolved oxygen (ppm)	Temperature (°C)
MW01	17/10/2017	6.90	3,440	-139	60	0.33	22.3
MW02	17/10/2017	6.50	3,980	-112	87	0.14	20.8
MW03	17/10/2017	7.11	7,180	-162	37	0.08	20.2

Notes:

Redox: Reduction-oxidation potential

Redox values collected in the field using a silver-silver chloride electrode have been corrected to standard hydrogen electrode values by adding 199 mV to each reading.

Table D9
Groundwater and surface water results - TRH and BTEXN
Fairfield SRC DSI

			TRH							BTEXN							
			C6-C10 fraction	C6 - C10 fraction minus BTEX (F1)	C10 - C16 fraction	TRH >C10-C16 fraction less naphthalene (F2)	C16 - C34 fraction	C34 - C40 fraction	C10 - C40 fraction (sum)	Benzene	Toluene	Ethylbenzene	o-Xylene	m- & p-Xylene	Total xylene	Naphthalene	
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EQL			20	20	100	100	100	100	100	1	2	2	2	2	2	1	
HSL D ¹ , sand			2-4m	-	6,000	-	NL	-	-	-	5,000	NL	NL	-	-	NL	NL
			4-8m	-	6,000	-	NL	-	-	-	5,000	NL	NL	-	-	NL	NL
			>8m	-	7,000	-	NL	-	-	-	5,000	NL	NL	-	-	NL	NL
Fresh water, 95% protection ²			-	-	-	-	-	-	-	950	180	80	350	75	-	16	
Recreational water ³			-	-	-	-	-	-	-	10	80	300	-	-	60	-	
Field ID		Sample date	Depth to water														
2017 investigation																	
MW01	17/10/2017	7.10	<20	<20	290	290	520	<100	810	<1	<2	<2	<2	<2	<2	<5	
MW02	17/10/2017	7.96	<20	<20	160	160	520	<100	680	<1	<2	<2	<2	<2	<2	<5	
MW03	17/10/2017	8.95	180	160	880	850	1,750	<100	2,630	21	<2	<2	<2	<2	<2	27	
MW04	17/10/2017	3.57	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
MW05	17/10/2017	3.39	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
SW01	17/10/2017	NA	<20	<20	<100	<100	<100	<100	<100	<1	3	<2	<2	<2	<2	<5	
SW02	17/10/2017	NA	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
SW03	17/10/2017	NA	<20	<20	260	260	2,020	530	2,810	<1	4	<2	<2	<2	<2	<5	
Outflow	17/10/2017	NA	50	<20	220	220	350	<100	570	<1	33	<2	<2	<2	<2	<5	
Field ID		Sample date	Location														
Surface water sampling																	
SW05A	20/06/2018	SRC facility	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
SW02A	20/06/2018	Recycling centre	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
SW03A	20/06/2018	Recycling centre	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
SW01A	20/06/2018	Creek	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
SW01B	5/10/2018	Recycling centre	<20	<20	<100	<100	730	200	930	<1	<2	<2	<2	<2	<2	<5	
SW02B	5/10/2018	Buffer zone	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
SW03B	5/10/2018	Buffer zone	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
CR01B	5/10/2018	Creek	140	140	<100	<100	<100	<100	<100	<1	2	<2	3	<2	3	<5	
SW1C	18/09/2019	Recycling centre	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
SW2C	18/09/2019	Buffer zone	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
SW3C	18/09/2019	Buffer zone	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
CR01C	18/09/2019	Creek	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
2020 investigation																	
RSV1	15/04/2020	NA	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<5	
RSV2	15/04/2020	NA	<20	<20	<100	<100	330	<100	330	<1	<2	<2	<2	<2	<2	<5	
RSV3	15/04/2020	NA	<20	<20	<100	<100	110	<100	110	<1	<2	<2	<2	<2	<2	<5	

Notes:
Concentrations expressed as µg/L
¹ NEPM (2013) Schedule B1 - Investigation levels for soil and groundwater - Table 1A(3) - Health screening levels for vapour intrusion
² ANZECC/ARMCANZ (2000) Fresh and Marine Water Quality Guidelines - trigger values for the protection of 95% freshwater ecosystem, including low reliability values
³ NHMRC (2008) Guidelines for Managing Risk in Recreational Waters 2008

- Guidance values are not available

Bold Sample concentration exceeds the guidance values

Table D10
Groundwater and surface water results - Metals
Fairfield SRC DSI

			Dissolved metals									
			Aluminium	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Nickel	Zinc
EQL			10	1	0.1	1	1	1	1	0.1	1	5
Fresh water, 95% protection ¹			55	13	0.2	1	1.4	3.4	1,900	0.6	11	8
Recreational water ²			-	70	20	500	20,000	100	500	10	200	-
Field ID	Sample date	Depth to water										
2017 investigation												
MW01	17/10/2017	7.10	-	51	<0.1	2	2	<1	-	<0.1	54	7
MW02	17/10/2017	7.96	-	3	<0.1	2	<1	<1	-	<0.1	26	9
MW03	17/10/2017	8.95	-	6	<0.1	4	<1	2	-	<0.1	82	11
MW05	17/10/2017	3.39	-	6	<0.1	<1	2	<1	-	<0.1	14	7
SW01	17/10/2017	NA	-	<1	<0.1	<1	1	<1	-	<0.1	1	11
SW02	17/10/2017	NA	-	<1	<0.1	<1	1	<1	-	<0.1	2	20
SW03	17/10/2017	NA	-	<1	<0.1	<1	1	<1	-	<0.1	2	5
Outflow	17/10/2017	NA	-	<1	<0.1	<1	<1	<1	-	<0.1	<1	<5
Field ID	Sample date	Location										
Surface water sampling												
SW05A	20/06/2018	SRC facility	10	3	-	2	30	1	5	-	7	17
SW02A	20/06/2018	Recycling centre	60	2	-	<1	65	4	38	-	17	96
SW03A	20/06/2018	Recycling centre	20	1	-	<1	26	1	9	-	5	38
SW01A	20/06/2018	Creek	50	<1	-	<1	19	1	24	-	4	79
SW01B	5/10/2018	Recycling centre	140	1	-	<1	20	2	19	-	5	36
SW02B	5/10/2018	Buffer zone	40	<1	-	<1	27	2	13	-	7	48
SW03B	5/10/2018	Buffer zone	200	<1	-	<1	20	2	13	-	9	77
CR01B	5/10/2018	Creek	150	<1	-	5	30	4	24	-	8	98
			Total metals									
			Aluminium	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Nickel	Zinc
EQL			10	1	0.1	1	1	1	1	0.1	1	5
Fresh water, 95% protection ¹			55	13	0.2	1	1.4	3.4	1,900	0.6	11	8
Recreational water ²			-	70	20	500	20,000	100	500	10	200	-
SW1C	18/09/2019	Recycling centre	-	1	<0.1	1	10	<1	-	<0.1	2	<5
SW2C	18/09/2019	Buffer zone	-	<1	<0.1	<1	7	<1	-	<0.1	1	41
SW3C	18/09/2019	Buffer zone	-	<1	<0.1	1	6	<1	-	<0.1	<1	20
CR01C	18/09/2019	Creek	-	1	<0.1	<1	5	<1	-	<0.1	1	44
2020 investigation												
RSV1	15/04/2020	North-west	-	2	<0.1	5	6	1	-	<0.1	3	6
RSV2	15/04/2020	South-east	-	7	0.1	46	37	15	-	<0.1	12	43
RSV3	15/04/2020	Expansion area	-	4	<0.1	2	8	3	-	<0.1	5	6

Notes:
Concentrations expressed as µg/L
¹ ANZECC/ARMCANZ (2000) Fresh and Marine Water Quality Guidelines - trigger values for the protection of 95% freshwater ecosystem, including low reliability values
² NHMRC (2008) Guidelines for Managing Risk in Recreational Waters 2008
- Guidance values are not available
Bold Sample concentration exceeds the guidance values

Table D11
Groundwater and surface water results - PAHs and PCBs
Fairfield SRC DSI

	Polycyclic aromatic hydrocarbons																	PCB
	Naphthalene	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	Sum of PAHs	PCBs (Sum of total)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	0.5	1
Fresh water, 95% protection ¹	16	-	-	-	2.0	0.4	1.4	-	-	-	-	-	0.1	-	-	-	-	-
Recreational water ²	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-

Field ID	Sample date	Depth to water																	
MW01	17/10/2017	7.10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<0.5	<1
MW02	17/10/2017	7.96	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<0.5	<1
MW03	17/10/2017	8.95	15.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	15.9
MW04	17/10/2017	3.57	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5
MW05	17/10/2017	3.39	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5
SW01	17/10/2017	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5
SW02	17/10/2017	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5
SW03	17/10/2017	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5
Outflow	17/10/2017	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5
2020 investigation																			
RSV1	15/04/2020	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5
RSV2	15/04/2020	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5
RSV3	15/04/2020	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5

Notes:
Concentrations expressed as µg/L
¹ ANZECC/ARMCANZ (2000) Fresh and Marine Water Quality Guidelines - trigger values for the protection of 95% freshwater ecosystem, including low reliability values
² NHMRC (2008) Guidelines for Managing Risk in Recreational Waters 2008
- Guidance values are not available
Bold Sample concentration exceeds the guidance values

Table D12
Groundwater and surface water results - OCPs
Fairfield SRC DSI

OCP																								
	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2
Fresh water, 95% protection ¹	-	-	-	-	-	0.08	-	-	-	-	0.01	-	-	-	-	-	0.02	-	-	0.2	0.09	-	-	-
Recreational water ²	-	-	-	3	-	10	-	-	-	-	200	-	-	300	-	-	-	-	-	-	3	3	-	-
Field ID	Sample date	Depth to water																						
MW01	17/10/2017	7.10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
MW02	17/10/2017	7.96	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
MW03	17/10/2017	8.95	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
MW05	17/10/2017	3.39	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Outflow	17/10/2017	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2

Notes:
Concentrations expressed as µg/L
¹ ANZECC/ARMCANZ (2000) Fresh and Marine Water Quality Guidelines - trigger values for the protection of 95% freshwater ecosystem, including low reliability values
² NHMRC (2008) Guidelines for Managing Risk in Recreational Waters 2008
- Guidance values are not available
Bold Sample concentration exceeds the guidance values

Table D13
Groundwater and surface water results - OPPs
Fairfield SRC DSI

	OPP																		
	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenthion	Malathion	Methyl parathion	Monocrotophos	Parathion	Pirimphos-ethyl	Prothiofos
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.5	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	2	2	2	0.5	0.5
Fresh water, 95% protection ¹	0.02	-	-	-	0.01	-	-	0.01	-	0.15	-	-	-	0.05	-	-	0.004	-	-
Recreational water ²	30	100	5	50	-	-	-	30	10	500	30	3	-	-	-	10	100	5	-
Field ID	Sample date	Depth to water																	
MW01	17/10/2017	7.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05
MW02	17/10/2017	7.96	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05
MW03	17/10/2017	8.95	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05
MW05	17/10/2017	3.39	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05
Outflow	17/10/2017	NA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05

Notes:
Concentrations expressed as µg/L
¹ ANZECC/ARMCANZ (2000) Fresh and Marine Water Quality Guidelines - trigger values for the protection of 95% freshwater ecosystem, including low reliability values
² NHMRC (2008) Guidelines for Managing Risk in Recreational Waters 2008
- Guidance values are not available
Bold Sample concentration exceeds the guidance values

Table D14

Groundwater and surface water results - Inorganic compounds

Fairfield SRC DSI

	Inorganic compounds			
	Phosphorus	Nitrate (as N)	Nitrite (as N)	Ammonia as N
	mg/L	mg/L	mg/L	mg/L
EQL	0.01	0.01	0.01	0.01
Fresh water, 95% protection ¹				0.9
Recreational water ²		500	30	

Field ID	Sample date	Location				
Surface water sampling						
SW05A	20/06/2018	SRC facility	3.62	0.28	0.11	0.07
SW02A	20/06/2018	Recycling centre	0.57	0.03	<0.01	0.03
SW03A	20/06/2018	Recycling centre	0.33	0.1	<0.01	0.03
SW01A	20/06/2018	Creek	0.07	0.36	0.07	0.2
SW01B	5/10/2018	Recycling centre	1.12	0.02	<0.01	<0.01
SW02B	5/10/2018	Buffer zone	1.28	0.02	<0.01	<0.01
SW03B	5/10/2018	Buffer zone	0.75	0.16	0.01	0.01
CR01B	5/10/2018	Creek	0.17	1.29	0.04	<0.01
SW1C	18/09/2019	Recycling centre	0.2	0.07	0.01	<0.01
SW2C	18/09/2019	Buffer zone	0.74	0.03	<0.01	0.07
SW3C	18/09/2019	Buffer zone	0.16	0.07	0.01	0.01
CR01C	18/09/2019	Creek	0.18	0.67	0.03	0.07

Notes:

Concentrations expressed as µg/L

¹ ANZECC/ARMCANZ (2000) Fresh and Marine Water Quality Guidelines - trigger values for the protection of 95% freshwater ecosystem, including low reliability values² NHMRC (2008) Guidelines for Managing Risk in Recreational Waters 2008

- Guidance values are not available

Bold Sample concentration exceeds the guidance values

APPENDIX E

QA/QC SUMMARY TABLES



Laboratory Field ID	ALS TP04_1.0	ALS QC01	RPD	ALS TP04_1.0	Eurofins QC01A	RPD
Sample date	27/09/2017	27/09/2017		27/09/2017	27/09/2017	

Chem_Group	ChemName	Units	EQL						
TRH	C6-C10	mg/kg	10 : 20 (Interlab)	<10	<10	0	<10	<20	0
	C10 - C16	mg/kg	50	<50	<50	0	<50	<50	0
	C16 - C34	mg/kg	100	<100	<100	0	<100	260	89
	C34 - C40	mg/kg	100	<100	<100	0	<100	<100	0
BTEXN	Benzene	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	0	<0.2	<0.1	0
	Toluene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Ethylbenzene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Xylene (o)	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Xylene (m & p)	mg/kg	0.5 : 0.2 (Interlab)	<0.5	<0.5	0	<0.5	<0.2	0
	Naphthalene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
PAH	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	4.3	158
	Anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	1.6	105
	Fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	8.7	178
	Pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	7.6	175
	Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	3.3	147
	Chrysene	mg/kg	0.5	<0.5	<0.5	0	<0.5	3.1	144
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	2.7	138
	Benzo(b,j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	1.8	113
	Benzo(a) pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	3.2	146
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	1.4	95
	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	0.6	18
	Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	1.5	100
	Naphthalene	mg/kg	1 : 0.5 (Interlab)	<1	<1	0	<1	<0.5	0
Dissolved metals	Arsenic	mg/kg	5 : 2 (Interlab)	6	5	18	6	6.4	6
	Cadmium	mg/kg	1 : 0.4 (Interlab)	<1	<1	0	<1	<0.4	0
	Chromium	mg/kg	2 : 5 (Interlab)	15	15	0	15	13	14
	Copper	mg/kg	5	32	40	22	32	30	6
	Lead	mg/kg	5	14	24	53	14	23	49
	Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Nickel	mg/kg	2 : 5 (Interlab)	14	14	0	14	11	24
	Zinc	mg/kg	5	56	64	13	56	50	11
OCP	4,4-DDE	µg/kg	50	<50	<50	0	<50	<50	0
	a-BHC	µg/kg	50	<50	<50	0	<50	<50	0
	Aldrin	µg/kg	50	<50	<50	0	<50	<50	0
	b-BHC	µg/kg	50	<50	<50	0	<50	<50	0
	chlordane	µg/kg	50 : 100 (Interlab)	<50	<50	0	<50	<100	0
	Chlordane (cis)	µg/kg	50	<50	<50	0	<50	-	-
	Chlordane (trans)	µg/kg	50	<50	<50	0	<50	-	-
	d-BHC	µg/kg	50	<50	<50	0	<50	<50	0
	DDD	µg/kg	50	<50	<50	0	<50	<50	0
	DDT	µg/kg	200 : 50 (Interlab)	<200	<200	0	<200	<50	0
	Dieldrin	µg/kg	50	<50	<50	0	<50	<50	0
	Endosulfan	µg/kg	50	<50	<50	0	<50	-	-
	Endosulfan I	µg/kg	50	<50	<50	0	<50	<50	0
	Endosulfan II	µg/kg	50	<50	<50	0	<50	<50	0
	Endosulfan sulphate	µg/kg	50	<50	<50	0	<50	<50	0
	Endrin	µg/kg	50	<50	<50	0	<50	<50	0
	Endrin aldehyde	µg/kg	50	<50	<50	0	<50	<50	0
	Endrin ketone	µg/kg	50	<50	<50	0	<50	<50	0
	g-BHC (Lindane)	µg/kg	50	<50	<50	0	<50	<50	0
	Heptachlor	µg/kg	50	<50	<50	0	<50	<50	0
OPP	Heptachlor epoxide	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	Hexachlorobenzene	µg/kg	50	<50	<50	0	<50	<50	0
	Methoxychlor	µg/kg	200	<200	<200	0	<200	<200	0
	Azinophos methyl	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Bromophos-ethyl	mg/kg	0.05	<0.05	<0.05	0	<0.05	-	-
	Carbophenothion	mg/kg	0.05	<0.05	<0.05	0	<0.05	-	-
	Chlorfenvinphos	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Chlorpyrifos	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Chlorpyrifos-methyl	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Demeton-S-methyl	mg/kg	0.05	<0.05	<0.05	0	<0.05	-	-
	Diazinon	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Dichlorvos	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Dimethoate	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Ethion	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Fenamiphos	mg/kg	0.05	<0.05	<0.05	0	<0.05	-	-
	Fenthion	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Malathion	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Methyl parathion	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0
	Monocrotophos	mg/kg	0.2 : 2 (Interlab)	<0.2	<0.2	0	<0.2	<2	0
	Parathion	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0
	Pirimphos-ethyl	mg/kg	0.05	<0.05	<0.05	0	<0.05	-	-
	Prothiofos	mg/kg	0.05	<0.05	<0.05	0	<0.05	-	-

Laboratory Field ID	ALS TP15_2.5	ALS QC04	RPD	ALS TP15_2.5	Eurofins QC04A	RPD
Sample date	28/09/2017	28/09/2017		28/09/2017	28/09/2017	

Chem_Group	ChemName	Units	EQL						
TRH	C6-C10	mg/kg	10 : 20 (Interlab)	<10	<10	0	<10	<20	0
	C10 - C16	mg/kg	50	<50	<50	0	<50	<50	0
	C16 - C34	mg/kg	100	<100	<100	0	<100	<100	0
	C34 - C40	mg/kg	100	<100	<100	0	<100	<100	0
BTEXN	Benzene	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	0	<0.2	<0.1	0
	Toluene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Ethylbenzene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Xylene (o)	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Xylene (m & p)	mg/kg	0.5 : 0.2 (Interlab)	<0.5	<0.5	0	<0.5	<0.2	0
	Naphthalene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
PAH	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Chrysene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(b,j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(a) pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Naphthalene	mg/kg	1 : 0.5 (Interlab)	<1	<1	0	<1	<0.5	0
Dissolved metals	Arsenic	mg/kg	5 : 2 (Interlab)	<5	<5	0	<5	5.3	6
	Cadmium	mg/kg	1 : 0.4 (Interlab)	<1	<1	0	<1	<0.4	0
	Chromium	mg/kg	2 : 5 (Interlab)	14	13	7	14	16	13
	Copper	mg/kg	5	29	41	34	29	34	16
	Lead	mg/kg	5	17	18	6	17	24	34
	Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Nickel	mg/kg	2 : 5 (Interlab)	29	20	37	29	20	37
	Zinc	mg/kg	5	51	66	26	51	56	9
OCP	4,4-DDE	µg/kg	50	<50	<50	0	<50	<50	0
	a-BHC	µg/kg	50	<50	<50	0	<50	<50	0
	Aldrin	µg/kg	50	<50	<50	0	<50	<50	0
	b-BHC	µg/kg	50	<50	<50	0	<50	<50	0
	chlordane	µg/kg	50 : 100 (Interlab)	<50	<50	0	<50	<100	0
	Chlordane (cis)	µg/kg	50	<50	<50	0	<50	-	-
	Chlordane (trans)	µg/kg	50	<50	<50	0	<50	-	-
	d-BHC	µg/kg	50	<50	<50	0	<50	<50	0
	DDD	µg/kg	50	<50	<50	0	<50	<50	0
	DDT	µg/kg	200 : 50 (Interlab)	<200	<200	0	<200	<50	0
	Dieldrin	µg/kg	50	<50	<50	0	<50	<50	0
	Endosulfan	µg/kg	50	<50	<50	0	<50	-	-
	Endosulfan I	µg/kg	50	<50	<50	0	<50	<50	0
	Endosulfan II	µg/kg	50	<50	<50	0	<50	<50	0
	Endosulfan sulphate	µg/kg	50	<50	<50	0	<50	<50	0
	Endrin	µg/kg	50	<50	<50	0	<50	<50	0
	Endrin aldehyde	µg/kg	50	<50	<50	0	<50	<50	0
	Endrin ketone	µg/kg	50	<50	<50	0	<50	<50	0
	g-BHC (Lindane)	µg/kg	50	<50	<50	0	<50	<50	0
	Heptachlor	µg/kg	50	<50	<50	0	<50	<50	0
	Heptachlor epoxide	mg/kg	0.05	<0.05	<0.05	0	<0.05	<0.05	0
OPP	Hexachlorobenzene	µg/kg	50	<50	<50	0	<50	<50	0
	Methoxychlor	µg/kg	200	<200	<200	0	<200	<200	0
	Azinophos methyl	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Bromophos-ethyl	mg/kg	0.05	<0.05	<0.05	0	<0.05	-	-
	Carbophenothion	mg/kg	0.05	<0.05	<0.05	0	<0.05	-	-
	Chlorfenvinphos	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Chlorpyrifos	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Chlorpyrifos-methyl	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Demeton-S-methyl	mg/kg	0.05	<0.05	<0.05	0	<0.05	-	-
	Diazinon	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Dichlorvos	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Dimethoate	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Ethion	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Fenamiphos	mg/kg	0.05	<0.05	<0.05	0	<0.05	-	-
	Fenthion	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Malathion	mg/kg	0.05 : 0.2 (Interlab)	<0.05	<0.05	0	<0.05	<0.2	0
	Methyl parathion	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0
	Monocrotophos	mg/kg	0.2 : 2 (Interlab)	<0.2	<0.2	0	<0.2	<2	0
	Parathion	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0
	Pirimphos-ethyl	mg/kg	0.05	<0.05	<0.05	0	<0.05	-	-
	Prothiofos	mg/kg	0.05	<0.05	<0.05	0	<0.05	-	-

Laboratory Field ID	ALS BH08_02	ALS QA01	RPD	ALS BH08_02	Eurofins QA01A	RPD
Sample date	15/04/2020	15/04/2020		15/04/2020	15/04/2020	

Chem_Group	ChemName	Units	EQL						
TRH	C6-C10	mg/kg	10 : 20 (Interlab)	<10	<10	0	<10	<20	0
	C10 - C16	mg/kg	50	<50	<50	0	<50	<50	0
	C16 - C34	mg/kg	100	260	260	0	260	370	35
	C34 - C40	mg/kg	100	280	260	7	280	390	33
BTEXN	Benzene	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	0	<0.2	<0.1	0
	Toluene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Ethylbenzene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Xylene (o)	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Xylene (m & p)	mg/kg	0.5 : 0.2 (Interlab)	<0.5	<0.5	0	<0.5	<0.2	0
	Naphthalene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
PAH	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Fluoranthene	mg/kg	0.5	<0.5	0.8	46	<0.5	<0.5	0
	Pyrene	mg/kg	0.5	0.5	1	67	0.5	<0.5	0
	Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Chrysene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(b&j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(a) pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Naphthalene	mg/kg	1 : 0.5 (Interlab)	<0.5	<0.5	0	<0.5	<0.5	0
Dissolved metals	Arsenic	mg/kg	5 : 2 (Interlab)	<5	<5	0	<5	3.7	0
	Cadmium	mg/kg	1 : 0.4 (Interlab)	<1	<1	0	<1	< 0.4	0
	Chromium	mg/kg	2 : 5 (Interlab)	20	18	11	20	27	30
	Copper	mg/kg	5	30	47	44	30	41	31
	Lead	mg/kg	5	22	19	15	22	17	26
	Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	< 0.1	0
	Nickel	mg/kg	2 : 5 (Interlab)	20	24	18	20	26	26
	Zinc	mg/kg	5	56	54	4	56	50	11
OCP	4,4-DDE	µg/kg	50	-	-	-	-	-	-
	a-BHC	µg/kg	50	-	-	-	-	-	-
	Aldrin	µg/kg	50	-	-	-	-	-	-
	b-BHC	µg/kg	50	-	-	-	-	-	-
	chlordane	µg/kg	50 : 100 (Interlab)	-	-	-	-	-	-
	Chlordane (cis)	µg/kg	50	-	-	-	-	-	-
	Chlordane (trans)	µg/kg	50	-	-	-	-	-	-
	d-BHC	µg/kg	50	-	-	-	-	-	-
	DDD	µg/kg	50	-	-	-	-	-	-
	DDT	µg/kg	200 : 50 (Interlab)	-	-	-	-	-	-
	Dieldrin	µg/kg	50	-	-	-	-	-	-
	Endosulfan	µg/kg	50	-	-	-	-	-	-
	Endosulfan I	µg/kg	50	-	-	-	-	-	-
	Endosulfan II	µg/kg	50	-	-	-	-	-	-
	Endosulfan sulphate	µg/kg	50	-	-	-	-	-	-
	Endrin	µg/kg	50	-	-	-	-	-	-
	Endrin aldehyde	µg/kg	50	-	-	-	-	-	-
	Endrin ketone	µg/kg	50	-	-	-	-	-	-
	g-BHC (Lindane)	µg/kg	50	-	-	-	-	-	-
	Heptachlor	µg/kg	50	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.05	-	-	-	-	-	-
OPP	Hexachlorobenzene	µg/kg	50	-	-	-	-	-	-
	Methoxychlor	µg/kg	200	-	-	-	-	-	-
	Azinophos methyl	mg/kg	0.05 : 0.2 (Interlab)	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.05	-	-	-	-	-	-
	Carbophenothion	mg/kg	0.05	-	-	-	-	-	-
	Chlorfenvinphos	mg/kg	0.05 : 0.2 (Interlab)	-	-	-	-	-	-
	Chlorpyrifos	mg/kg	0.05 : 0.2 (Interlab)	-	-	-	-	-	-
	Chlorpyrifos-methyl	mg/kg	0.05 : 0.2 (Interlab)	-	-	-	-	-	-
	Demeton-S-methyl	mg/kg	0.05	-	-	-	-	-	-
	Diazinon	mg/kg	0.05 : 0.2 (Interlab)	-	-	-	-	-	-
	Dichlorvos	mg/kg	0.05 : 0.2 (Interlab)	-	-	-	-	-	-
	Dimethoate	mg/kg	0.05 : 0.2 (Interlab)	-	-	-	-	-	-
	Ethion	mg/kg	0.05 : 0.2 (Interlab)	-	-	-	-	-	-
	Fenamiphos	mg/kg	0.05	-	-	-	-	-	-
	Fenthion	mg/kg	0.05 : 0.2 (Interlab)	-	-	-	-	-	-
	Malathion	mg/kg	0.05 : 0.2 (Interlab)	-	-	-	-	-	-
	Methyl parathion	mg/kg	0.2	-	-	-	-	-	-
	Monocrotophos	mg/kg	0.2 : 2 (Interlab)	-	-	-	-	-	-
	Parathion	mg/kg	0.2	-	-	-	-	-	-
	Pirimphos-ethyl	mg/kg	0.05	-	-	-	-	-	-
	Prothiofos	mg/kg	0.05	-	-	-	-	-	-



Table E2
Groundwater duplicates
Fairfield SRC DSI

Laboratory Field ID Sample date	ALS SW02 17/10/2017	ALS QC01 17/10/2017	RPD	ALS SW02 17/10/2017	Eurofins QC01A 17/10/2017	RPD	ALS RSV1 15/04/2020	ALS QA01 15/04/2020	RPD
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Chem_Group	ChemName	Units	EQL									
TRH	C6-C10	µg/L	20	<20	<20	0	<20	<20	0	<20	<20	0
	C10 - C16 Fraction	µg/L	100 : 50 (Interlab)	<100	<100	0	<100	<50	0	<100	<100	0
	C16 - C34 Fraction	µg/L	100	<100	<100	0	<100	<100	0	<100	<100	0
	C34 - C40 Fraction	µg/L	100	<100	<100	0	<100	<100	0	<100	<100	0
BTEXN	Benzene	µg/L	1	<1	<1	0	<1	<1	0	<1	<1	0
	Toluene	µg/L	2 : 1 (Interlab)	<2	<2	0	<2	1	0	<2	<2	0
	Ethylbenzene	µg/L	2 : 1 (Interlab)	<2	<2	0	<2	<1	0	<2	<2	0
	Xylene (o)	µg/L	2 : 1 (Interlab)	<2	<2	0	<2	<1	0	<2	<2	0
	Xylene (m & p)	µg/L	2	<2	<2	0	<2	<2	0	<2	<2	0
	Naphthalene	µg/L	1 : 10 (Interlab)	<1	<1	0	<1	<1	0	<1	<1	0
PAH	Acenaphthylene	µg/L	1	<1	<1	0	<1	<1	0	<1	<1	0
	Acenaphthene	µg/L	1	<1	<1	0	<1	<1	0	<1	<1	0
	Fluorene	µg/L	1	<1	<1	0	<1	<1	0	<1	<1	0
	Phenanthrene	µg/L	1	<1	<1	0	<1	<3	0	<1	<1	0
	Anthracene	µg/L	1	<1	<1	0	<1	<3	0	<1	<1	0
	Fluoranthene	µg/L	1	<1	<1	0	<1	<3	0	<1	<1	0
	Pyrene	µg/L	1	<1	<1	0	<1	<3	0	<1	<1	0
	Benz(a)anthracene	µg/L	1	<1	<1	0	<1	<3	0	<1	<1	0
	Chrysene	µg/L	1	<1	<1	0	<1	<3	0	<1	<1	0
	Benzo(k)fluoranthene	µg/L	1	<1	<1	0	<1	<3	0	<1	<1	0
	Benzo(b&j)fluoranthene	µg/L	1	<1	<1	0	<1	<3	0	<1	<1	0
	Benzo(a) pyrene	µg/L	0.5 : 1 (Interlab)	<0.5	<0.5	0	<0.5	<3	0	<0.5	<0.5	0
	Indeno(1,2,3-c,d)pyrene	µg/L	1	<1	<1	0	<1	<3	0	<1	<1	0
	Dibenz(a,h)anthracene	µg/L	1	<1	<1	0	<1	<3	0	<1	<1	0
	Benzo(g,h,i)perylene	µg/L	1	<1	<1	0	<1	<3	0	<1	<1	0
Dissolved metals	Naphthalene	µg/L	5 : 10 (Interlab)	<5	<5	0	<5	<1	0	<5	<5	0
	Arsenic (Filtered)	µg/l	1	<1	<1	0	<1	4	120	2	2	0
	Cadmium (Filtered)	µg/l	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.1	<0.2	0	<0.1	<0.1	0
	Chromium (Filtered)	µg/l	1	<1	<1	0	<1	<1	0	5	4	22
	Copper (Filtered)	µg/l	1	1	1	0	1	2	67	6	5	18
	Lead (Filtered)	µg/l	1	<1	<1	0	<1	1	0	1	<1	0
	Mercury (Filtered)	µg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Nickel (Filtered)	µg/l	1	2	2	0	2	2	0	3	2	40
	Zinc (Filtered)	µg/l	5	20	14	35	20	31	43	6	<5	18



Table E2
Groundwater duplicates
Fairfield SRC DSI

Laboratory	ALS	Eurofins	
Field ID	RSV1	QA01A	RPD
Sample date	15/04/2020	15/04/2020	

Chem_Group	ChemName	Units	EQL			
TRH	C6-C10	µg/L	20	<20	<20	0
	C10 - C16 Fraction	µg/L	100 : 50 (Interlab)	<100	<50	0
	C16 - C34 Fraction	µg/L	100	<100	<100	0
	C34 - C40 Fraction	µg/L	100	<100	<100	0
BTEXN	Benzene	µg/L	1	<1	<1	0
	Toluene	µg/L	2 : 1 (Interlab)	<2	<1	0
	Ethylbenzene	µg/L	2 : 1 (Interlab)	<2	<1	0
	Xylene (o)	µg/L	2 : 1 (Interlab)	<2	<1	0
	Xylene (m & p)	µg/L	2	<2	<2	0
	Naphthalene	µg/L	1 : 10 (Interlab)	<1	<1	0
PAH	Acenaphthylene	µg/L	1	<1	<1	0
	Acenaphthene	µg/L	1	<1	<1	0
	Fluorene	µg/L	1	<1	<1	0
	Phenanthrene	µg/L	1	<1	<1	0
	Anthracene	µg/L	1	<1	<1	0
	Fluoranthene	µg/L	1	<1	<1	0
	Pyrene	µg/L	1	<1	<1	0
	Benz(a)anthracene	µg/L	1	<1	<1	0
	Chrysene	µg/L	1	<1	<1	0
	Benzo(k)fluoranthene	µg/L	1	<1	<1	0
	Benzo(b&j)fluoranthene	µg/L	1	<1	<1	0
	Benzo(a) pyrene	µg/L	0.5 : 1 (Interlab)	<0.5	<1	0
	Indeno(1,2,3-c,d)pyrene	µg/L	1	<1	<1	0
	Dibenz(a,h)anthracene	µg/L	1	<1	<1	0
	Benzo(g,h,i)perylene	µg/L	1	<1	<1	0
Dissolved metals	Naphthalene	µg/L	5 : 10 (Interlab)	<5	<1	0
	Arsenic (Filtered)	µg/l	1	2	2	0
	Cadmium (Filtered)	µg/l	0.1 : 0.2 (Interlab)	<0.1	<0.2	0
	Chromium (Filtered)	µg/l	1	5	4	22
	Copper (Filtered)	µg/l	1	6	5	18
	Lead (Filtered)	µg/l	1	1	<1	0
	Mercury (Filtered)	µg/l	0.1	<0.1	<0.1	0
	Nickel (Filtered)	µg/l	1	3	2	40
	Zinc (Filtered)	µg/l	5	6	8	29



Blank samples
Fairfield SRC DSI

				TRH				BTEXN					
				C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Naphthalene
Matrix	Field_ID	Sampled Date											
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.2	0.5	0.5	1	0.2	0.5	0.5	0.5	0.5	1
Soil	TB01	28/09/2017		-	-	-	-	<0.2	<0.5	<0.5	<0.5	<0.5	<1
	TS01	28/09/2017	Recovery (%)	-	-	-	-	100%	94%	85%	100%	100%	100%
Units				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	2	2	5	1	2	2	2	2	5
Water	TB02	17/10/2017		-	-	-	-	<1	<2	<2	<2	<2	<5
	TS02	17/10/2017	Recovery (%)	-	-	-	-	90%	80%	75%	75%	70%	85%
	TB150420	15/04/2020		<20	<100	<100	<100	<1	<2	<2	<2	<2	<5
	RB150420	15/04/2020		<20	<100	<100	<100	<1	<2	<2	<2	<2	<5

APPENDIX F

LABORATORY DOCUMENTATION



CERTIFICATE OF ANALYSIS

Work Order : **ES1724542**
Client : **WSP Australia Pty Ltd**
Contact : **MS AMY VALENTINE**
Address : **ABN: 80 078 004 798 GPO BOX 5394**
SYDNEY NSW, AUSTRALIA 2001
Telephone : **+61 02 92725100**
Project : **2271108A Fairfield - SRC Assessment**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **EN/008/16**
No. of samples received : **87**
No. of samples analysed : **56**

Page : 1 of 50
Laboratory : Environmental Division Sydney
Contact : Loren Schiavon
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61 2 8784 8503
Date Samples Received : 29-Sep-2017 15:00
Date Analysis Commenced : 03-Oct-2017
Issue Date : 06-Oct-2017 17:56



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

This Certificate of Analysis contains the following information:

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

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, 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.

- EG005: Poor precision and poor spike recovery was obtained for Zinc on sample ES1724178-#001 due to sample heterogeneity. Results have been confirmed by re-extraction and reanalysis.
- 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.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_0.5	BH01_7.0	BH02_0.5	BH02_9.0	BH03_0.5
Client sampling date / time					27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-001	ES1724542-005	ES1724542-006	ES1724542-011	ES1724542-012
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		----	18.5	----	26.7	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	No	----	No
Asbestos Type	1332-21-4	-	--		-	----	-	----	-
Sample weight (dry)	----	0.01	g		322	----	310	----	252
APPROVED IDENTIFIER:	----	-	--		S.SPOONER	----	S.SPOONER	----	S.SPOONER
EG005T: 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		----	27	----	26	----
Copper	7440-50-8	5	mg/kg		----	43	----	33	----
Lead	7439-92-1	5	mg/kg		----	246	----	43	----
Nickel	7440-02-0	2	mg/kg		----	34	----	36	----
Zinc	7440-66-6	5	mg/kg		----	191	----	266	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	<0.1	----	<0.1	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg		----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg		----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg		----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg		----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg		----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	----	<0.05	----
4,4'-DDE	72-55-9	0.05	mg/kg		----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	<0.05	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH01_0.5	BH01_7.0	BH02_0.5	BH02_9.0	BH03_0.5
Client sampling date / time				27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit	ES1724542-001	ES1724542-005	ES1724542-006	ES1724542-011	ES1724542-012
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	<0.05	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	<0.2	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	<0.05	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	<0.05	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	<0.05	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	<0.05	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	<0.05	----
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	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_0.5	BH01_7.0	BH02_0.5	BH02_9.0	BH03_0.5
Client sampling date / time				27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit	ES1724542-001	ES1724542-005	ES1724542-006	ES1724542-011	ES1724542-012	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----	
Phenanthrene	85-01-8	0.5	mg/kg	----	0.7	----	<0.5	----	
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----	
Fluoranthene	206-44-0	0.5	mg/kg	----	1.3	----	<0.5	----	
Pyrene	129-00-0	0.5	mg/kg	----	1.1	----	<0.5	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	0.7	----	<0.5	----	
Chrysene	218-01-9	0.5	mg/kg	----	0.6	----	<0.5	----	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	0.7	----	<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	----	5.6	----	<0.5	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	0.6	----	<0.5	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.9	----	0.6	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	----	1.2	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----	
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----	
C15 - C28 Fraction	----	100	mg/kg	----	----	----	220	----	
C29 - C36 Fraction	----	100	mg/kg	----	----	----	190	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	410	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----	
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----	
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	340	----	
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	340	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----	
EP080: BTEXN									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_0.5	BH01_7.0	BH02_0.5	BH02_9.0	BH03_0.5
Client sampling date / time					27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-001	ES1724542-005	ES1724542-006	ES1724542-011	ES1724542-012
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	0.2	mg/kg		----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg		----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		----	----	----	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	----	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg		----	----	----	<1	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	93.7	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	122	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	86.9	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	82.6	----	72.5	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	88.2	----	78.4	----
2,4,6-Tribromophenol	118-79-6	0.5	%		----	71.2	----	84.9	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	80.3	----	75.9	----
Anthracene-d10	1719-06-8	0.5	%		----	90.9	----	87.6	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	90.0	----	85.5	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	99.7	----
Toluene-D8	2037-26-5	0.2	%		----	----	----	98.9	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	102	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH03_9.0	BH04_1.5	BH05_2.0	TP01_1.0	TP01_3.0
Client sampling date / time					27-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-017	ES1724542-018	ES1724542-019	ES1724542-020	ES1724542-022
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		23.6	18.6	18.5	----	16.0
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	----	No	----
Asbestos Type	1332-21-4	-	--		----	----	----	-	----
Sample weight (dry)	----	0.01	g		----	----	----	286	----
APPROVED IDENTIFIER:	----	-	--		----	----	----	S.SPOONER	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		7	<5	6	----	9
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	<1
Chromium	7440-47-3	2	mg/kg		21	16	26	----	19
Copper	7440-50-8	5	mg/kg		14	15	13	----	23
Lead	7439-92-1	5	mg/kg		18	13	14	----	39
Nickel	7440-02-0	2	mg/kg		5	5	10	----	15
Zinc	7440-66-6	5	mg/kg		30	20	19	----	90
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH03_9.0	BH04_1.5	BH05_2.0	TP01_1.0	TP01_3.0
Client sampling date / time				27-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit	ES1724542-017	ES1724542-018	ES1724542-019	ES1724542-020	ES1724542-022
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	<0.05
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

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH03_9.0	BH04_1.5	BH05_2.0	TP01_1.0	TP01_3.0
Client sampling date / time				27-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1724542-017	ES1724542-018	ES1724542-019	ES1724542-020	ES1724542-022	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	
Benzo(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	
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									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH03_9.0	BH04_1.5	BH05_2.0	TP01_1.0	TP01_3.0
Client sampling date / time					27-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-017	ES1724542-018	ES1724542-019	ES1724542-020	ES1724542-022
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	<0.2
^ Total Xylenes	1330-20-7	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	%		99.9	----	----	----	71.5
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		105	----	----	----	67.8
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		113	----	----	----	70.1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		77.6	75.2	81.8	----	76.0
2-Chlorophenol-D4	93951-73-6	0.5	%		83.2	75.7	75.3	----	89.8
2,4,6-Tribromophenol	118-79-6	0.5	%		64.1	59.8	61.6	----	70.3
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		83.7	79.5	77.0	----	79.0
Anthracene-d10	1719-06-8	0.5	%		96.2	90.8	89.8	----	90.6
4-Terphenyl-d14	1718-51-0	0.5	%		96.2	86.8	88.1	----	86.0
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		104	----	----	----	99.5
Toluene-D8	2037-26-5	0.2	%		102	----	----	----	88.6
4-Bromofluorobenzene	460-00-4	0.2	%		108	----	----	----	95.4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP02_0.2	TP03_2.5	TP04_1.0	TP05_0.4	TP05_1.5
Client sampling date / time					27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-023	ES1724542-027	ES1724542-029	ES1724542-031	ES1724542-032
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.8	16.2	19.3	----	17.5
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	No	No	----
Asbestos Type	1332-21-4	-	--		-	----	-	-	----
Sample weight (dry)	----	0.01	g		454	----	366	377	----
APPROVED IDENTIFIER:	----	-	--		S.SPOONER	----	S.SPOONER	S.SPOONER	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	9	6	----	5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	<1
Chromium	7440-47-3	2	mg/kg		15	17	15	----	16
Copper	7440-50-8	5	mg/kg		15	27	32	----	33
Lead	7439-92-1	5	mg/kg		44	21	14	----	12
Nickel	7440-02-0	2	mg/kg		10	19	14	----	23
Zinc	7440-66-6	5	mg/kg		59	54	56	----	49
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
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	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TP02_0.2	TP03_2.5	TP04_1.0	TP05_0.4	TP05_1.5
Client sampling date / time				27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit	ES1724542-023	ES1724542-027	ES1724542-029	ES1724542-031	ES1724542-032
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	<0.05	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	<0.05	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	<0.05	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	<0.2	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	<0.05	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	<0.05	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	<0.05	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	<0.2	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	<0.05	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	<0.05	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	<0.05	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	<0.2	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	<0.05	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	<0.05	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	<0.05	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	<0.05	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	<0.05	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	<0.05	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	<0.05	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	<0.05	----	----
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

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP02_0.2	TP03_2.5	TP04_1.0	TP05_0.4	TP05_1.5
Client sampling date / time				27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1724542-023	ES1724542-027	ES1724542-029	ES1724542-031	ES1724542-032	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	
Benzo(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	----	----	
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----	
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----	
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----	
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----	
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----	
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----	
EP080: BTEXN									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP02_0.2	TP03_2.5	TP04_1.0	TP05_0.4	TP05_1.5
Client sampling date / time					27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-023	ES1724542-027	ES1724542-029	ES1724542-031	ES1724542-032
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	----	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	----	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		----	----	<1	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	84.8	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	85.4	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	94.1	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		71.9	84.6	82.4	----	82.7
2-Chlorophenol-D4	93951-73-6	0.5	%		77.2	80.7	79.8	----	106
2,4,6-Tribromophenol	118-79-6	0.5	%		52.8	61.3	62.8	----	65.1
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		76.7	77.2	78.8	----	77.4
Anthracene-d10	1719-06-8	0.5	%		82.3	115	93.3	----	96.6
4-Terphenyl-d14	1718-51-0	0.5	%		77.2	83.2	91.3	----	92.4
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	111	----	----
Toluene-D8	2037-26-5	0.2	%		----	----	108	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	107	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP06_1.0	TP06_3.0	TP07_1.0	TP07_3.0	TP08_1.0
Client sampling date / time					27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-034	ES1724542-035	ES1724542-036	ES1724542-037	ES1724542-038
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		----	17.2	----	18.7	9.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	No	----	No
Asbestos Type	1332-21-4	-	--		-	----	-	----	-
Sample weight (dry)	----	0.01	g		305	----	333	----	392
APPROVED IDENTIFIER:	----	-	--		S.SPOONER	----	S.SPOONER	----	S.SPOONER
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	6	----	<5	<5
Cadmium	7440-43-9	1	mg/kg		----	<1	----	<1	<1
Chromium	7440-47-3	2	mg/kg		----	22	----	10	42
Copper	7440-50-8	5	mg/kg		----	22	----	46	43
Lead	7439-92-1	5	mg/kg		----	31	----	27	55
Nickel	7440-02-0	2	mg/kg		----	12	----	10	57
Zinc	7440-66-6	5	mg/kg		----	65	----	70	63
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	<0.1	----	<0.1	<0.1
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



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP06_1.0	TP06_3.0	TP07_1.0	TP07_3.0	TP08_1.0
Client sampling date / time					27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-034	ES1724542-035	ES1724542-036	ES1724542-037	ES1724542-038
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg		----	----	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg		----	----	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg		----	----	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg		----	----	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg		----	----	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	----	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		----	----	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg		----	----	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		----	----	----	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	----	----	<0.05
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

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP06_1.0	TP06_3.0	TP07_1.0	TP07_3.0	TP08_1.0
Client sampling date / time				27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1724542-034	ES1724542-035	ES1724542-036	ES1724542-037	ES1724542-038	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	
Benzo(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	0.7	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	<0.5	1.2	
^ 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	0.8	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	----	1.2	1.2	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10	
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	<50	
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	<100	
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10	
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	<50	
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100	
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50	
EP080: BTEXN									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP06_1.0	TP06_3.0	TP07_1.0	TP07_3.0	TP08_1.0
Client sampling date / time					27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-034	ES1724542-035	ES1724542-036	ES1724542-037	ES1724542-038
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	0.2	mg/kg		----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg		----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg		----	----	----	----	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	----	----	----	<0.5
Naphthalene	91-20-3	1	mg/kg		----	----	----	----	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	----	79.9
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	----	81.9
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	----	83.3
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	84.6	----	77.7	82.4
2-Chlorophenol-D4	93951-73-6	0.5	%		----	85.0	----	77.4	82.9
2,4,6-Tribromophenol	118-79-6	0.5	%		----	74.6	----	65.4	63.5
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	89.9	----	79.4	81.9
Anthracene-d10	1719-06-8	0.5	%		----	94.8	----	85.6	93.2
4-Terphenyl-d14	1718-51-0	0.5	%		----	87.3	----	77.9	88.5
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	----	109
Toluene-D8	2037-26-5	0.2	%		----	----	----	----	98.9
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	----	102



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP09_1.0	TP09_2.0	TP10_0.4	TP11_1.0	TP11_2.4
Client sampling date / time					27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-040	ES1724542-041	ES1724542-043	ES1724542-045	ES1724542-046
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		----	18.7	16.1	----	17.4
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	No	No	----
Asbestos Type	1332-21-4	-	--		-	----	-	-	----
Sample weight (dry)	----	0.01	g		364	----	336	323	----
APPROVED IDENTIFIER:	----	-	--		S.SPOONER	----	S.SPOONER	S.SPOONER	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	8	<5	----	7
Cadmium	7440-43-9	1	mg/kg		----	<1	<1	----	<1
Chromium	7440-47-3	2	mg/kg		----	33	16	----	20
Copper	7440-50-8	5	mg/kg		----	15	24	----	33
Lead	7439-92-1	5	mg/kg		----	20	17	----	20
Nickel	7440-02-0	2	mg/kg		----	22	16	----	29
Zinc	7440-66-6	5	mg/kg		----	36	45	----	58
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	<0.1	<0.1	----	<0.1
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	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP09_1.0	TP09_2.0	TP10_0.4	TP11_1.0	TP11_2.4
Client sampling date / time					27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-040	ES1724542-041	ES1724542-043	ES1724542-045	ES1724542-046
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	<0.05	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	<0.05	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	<0.05	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	<0.2	----	----
Dimethoate	60-51-5	0.05	mg/kg		----	----	<0.05	----	----
Diazinon	333-41-5	0.05	mg/kg		----	----	<0.05	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	<0.05	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	<0.2	----	----
Malathion	121-75-5	0.05	mg/kg		----	----	<0.05	----	----
Fenthion	55-38-9	0.05	mg/kg		----	----	<0.05	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	<0.05	----	----
Parathion	56-38-2	0.2	mg/kg		----	----	<0.2	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	<0.05	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	<0.05	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	<0.05	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	<0.05	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	<0.05	----	----
Ethion	563-12-2	0.05	mg/kg		----	----	<0.05	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	<0.05	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	<0.05	----	----
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

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP09_1.0	TP09_2.0	TP10_0.4	TP11_1.0	TP11_2.4
Client sampling date / time				27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1724542-040	ES1724542-041	ES1724542-043	ES1724542-045	ES1724542-046	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	
Benzo(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	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----	
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----	
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----	
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----	
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----	
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----	
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----	
EP080: BTEXN									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP09_1.0	TP09_2.0	TP10_0.4	TP11_1.0	TP11_2.4
Client sampling date / time					27-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-040	ES1724542-041	ES1724542-043	ES1724542-045	ES1724542-046
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	----	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	----	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		----	----	<1	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	82.0	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	77.5	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	86.5	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	85.3	82.3	----	84.7
2-Chlorophenol-D4	93951-73-6	0.5	%		----	84.0	80.0	----	85.2
2,4,6-Tribromophenol	118-79-6	0.5	%		----	75.2	57.9	----	73.5
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	92.5	75.1	----	90.0
Anthracene-d10	1719-06-8	0.5	%		----	95.9	90.6	----	95.1
4-Terphenyl-d14	1718-51-0	0.5	%		----	88.3	90.2	----	87.3
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	108	----	----
Toluene-D8	2037-26-5	0.2	%		----	----	96.9	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	99.3	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP12_0.8	TP12_2.2	TP13_1.0	TP13_3.0	TP14_1.0
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-047	ES1724542-048	ES1724542-049	ES1724542-050	ES1724542-051
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		----	17.7	----	8.3	10.0
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	No	----	No
Asbestos Type	1332-21-4	-	--		-	----	-	----	-
Sample weight (dry)	----	0.01	g		373	----	329	----	290
APPROVED IDENTIFIER:	----	-	--		S.SPOONER	----	S.SPOONER	----	G.MORGAN
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	9	----	<5	9
Cadmium	7440-43-9	1	mg/kg		----	<1	----	<1	<1
Chromium	7440-47-3	2	mg/kg		----	16	----	15	21
Copper	7440-50-8	5	mg/kg		----	24	----	20	38
Lead	7439-92-1	5	mg/kg		----	13	----	30	48
Nickel	7440-02-0	2	mg/kg		----	20	----	23	26
Zinc	7440-66-6	5	mg/kg		----	37	----	38	91
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	<0.1	----	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	<0.1	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	<0.05	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	<0.05	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg		----	<0.05	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg		----	<0.05	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	----	<0.05	----
4,4'-DDE	72-55-9	0.05	mg/kg		----	<0.05	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg		----	<0.05	----	<0.05	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TP12_0.8	TP12_2.2	TP13_1.0	TP13_3.0	TP14_1.0
Client sampling date / time				28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit	ES1724542-047	ES1724542-048	ES1724542-049	ES1724542-050	ES1724542-051
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	----	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	----	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	----	<0.05	----
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	----	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	----	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	----	<0.2	----
Malathion	121-75-5	0.05	mg/kg	----	<0.05	----	<0.05	----
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	----	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	----	<0.05	----
Parathion	56-38-2	0.2	mg/kg	----	<0.2	----	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	----	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	----	<0.05	----
Ethion	563-12-2	0.05	mg/kg	----	<0.05	----	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	----	<0.05	----
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

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP12_0.8	TP12_2.2	TP13_1.0	TP13_3.0	TP14_1.0
Client sampling date / time				28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1724542-047	ES1724542-048	ES1724542-049	ES1724542-050	ES1724542-051	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	
Benzo(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	
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									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP12_0.8	TP12_2.2	TP13_1.0	TP13_3.0	TP14_1.0
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-047	ES1724542-048	ES1724542-049	ES1724542-050	ES1724542-051
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	----	<0.2	----
^ Total Xylenes	1330-20-7	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	%		----	91.0	----	85.9	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	84.0	----	97.0	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	81.5	----	90.8	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	75.1	----	79.6	84.8
2-Chlorophenol-D4	93951-73-6	0.5	%		----	88.4	----	83.6	86.2
2,4,6-Tribromophenol	118-79-6	0.5	%		----	73.3	----	67.6	70.8
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	80.8	----	85.2	92.5
Anthracene-d10	1719-06-8	0.5	%		----	92.4	----	94.0	94.7
4-Terphenyl-d14	1718-51-0	0.5	%		----	87.8	----	88.9	86.7
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	113	----	116	----
Toluene-D8	2037-26-5	0.2	%		----	104	----	105	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	105	----	105	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP15_1.5	TP15_2.5	TP16_0.7	TP17_1.2	TP17_3.0
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-053	ES1724542-054	ES1724542-055	ES1724542-058	ES1724542-059
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		----	17.1	7.4	----	25.0
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	No	No	----
Asbestos Type	1332-21-4	-	--		-	----	-	-	----
Sample weight (dry)	----	0.01	g		288	----	444	517	----
APPROVED IDENTIFIER:	----	-	--		G.MORGAN	----	G.MORGAN	S.SPOONER	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	<5	<5	----	12
Cadmium	7440-43-9	1	mg/kg		----	<1	<1	----	<1
Chromium	7440-47-3	2	mg/kg		----	14	35	----	19
Copper	7440-50-8	5	mg/kg		----	29	35	----	39
Lead	7439-92-1	5	mg/kg		----	17	20	----	18
Nickel	7440-02-0	2	mg/kg		----	29	52	----	13
Zinc	7440-66-6	5	mg/kg		----	51	45	----	61
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	<0.1	<0.1	----	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	<0.1	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	<0.05	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	<0.05	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg		----	<0.05	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		----	<0.05	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	----	----	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg		----	<0.05	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg		----	<0.05	----	----	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TP15_1.5	TP15_2.5	TP16_0.7	TP17_1.2	TP17_3.0
Client sampling date / time				28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit	ES1724542-053	ES1724542-054	ES1724542-055	ES1724542-058	ES1724542-059
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg	----	<0.05	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg	----	<0.2	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg	----	<0.05	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	----	----	<0.05
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

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP15_1.5	TP15_2.5	TP16_0.7	TP17_1.2	TP17_3.0
Client sampling date / time				28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1724542-053	ES1724542-054	ES1724542-055	ES1724542-058	ES1724542-059	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	
Benzo(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	
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									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP15_1.5	TP15_2.5	TP16_0.7	TP17_1.2	TP17_3.0
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-053	ES1724542-054	ES1724542-055	ES1724542-058	ES1724542-059
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg		----	<0.5	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	----	----	<0.2
^ Total Xylenes	1330-20-7	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	%		----	81.5	----	----	77.0
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	91.4	----	----	93.8
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	87.6	----	----	82.5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	75.0	84.2	----	74.1
2-Chlorophenol-D4	93951-73-6	0.5	%		----	81.4	86.1	----	78.6
2,4,6-Tribromophenol	118-79-6	0.5	%		----	61.5	71.5	----	62.4
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	77.5	90.4	----	78.2
Anthracene-d10	1719-06-8	0.5	%		----	94.1	92.8	----	91.0
4-Terphenyl-d14	1718-51-0	0.5	%		----	86.7	86.0	----	86.1
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	108	----	----	96.6
Toluene-D8	2037-26-5	0.2	%		----	95.8	----	----	83.7
4-Bromofluorobenzene	460-00-4	0.2	%		----	95.7	----	----	84.8



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP18_1.0	TP18_2.0	TP19_1.0	TP19_2.0	TP20_1.0
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-060	ES1724542-061	ES1724542-062	ES1724542-063	ES1724542-064
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		----	17.4	----	12.1	11.7
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	No	----	No
Asbestos Type	1332-21-4	-	--		-	----	-	----	-
Sample weight (dry)	----	0.01	g		279	----	284	----	328
APPROVED IDENTIFIER:	----	-	--		S.SPOONER	----	S.SPOONER	----	G.MORGAN
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	7	----	<5	<5
Cadmium	7440-43-9	1	mg/kg		----	<1	----	<1	<1
Chromium	7440-47-3	2	mg/kg		----	20	----	12	14
Copper	7440-50-8	5	mg/kg		----	31	----	21	28
Lead	7439-92-1	5	mg/kg		----	24	----	23	27
Nickel	7440-02-0	2	mg/kg		----	27	----	10	20
Zinc	7440-66-6	5	mg/kg		----	57	----	50	54
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	<0.1	----	<0.1	<0.1
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	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP18_1.0	TP18_2.0	TP19_1.0	TP19_2.0	TP20_1.0
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-060	ES1724542-061	ES1724542-062	ES1724542-063	ES1724542-064
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		----	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg		----	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg		----	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg		----	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg		----	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		----	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg		----	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	<0.05	----	----	----
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

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP18_1.0	TP18_2.0	TP19_1.0	TP19_2.0	TP20_1.0
Client sampling date / time				28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1724542-060	ES1724542-061	ES1724542-062	ES1724542-063	ES1724542-064	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	0.6	
Benzo(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	----	0.6	----	<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	----	1.1	----	<0.5	0.6
^ Benzo(a)pyrene TEQ (zero)		----	0.5	mg/kg	----	0.6	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)		----	0.5	mg/kg	----	0.9	----	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)		----	0.5	mg/kg	----	1.2	----	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----	
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----	
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----	
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----	
^ C10 - C36 Fraction (sum)		----	50	mg/kg	----	<50	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)		C6_C10-BTEX	10	mg/kg	----	<10	----	----	
>C10 - C16 Fraction		----	50	mg/kg	----	<50	----	----	
>C16 - C34 Fraction		----	100	mg/kg	----	<100	----	----	
>C34 - C40 Fraction		----	100	mg/kg	----	<100	----	----	
^ >C10 - C40 Fraction (sum)		----	50	mg/kg	----	<50	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)		----	50	mg/kg	----	<50	----	----	
EP080: BTEXN									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP18_1.0	TP18_2.0	TP19_1.0	TP19_2.0	TP20_1.0
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-060	ES1724542-061	ES1724542-062	ES1724542-063	ES1724542-064
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg		----	<1	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	92.1	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	94.4	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	74.3	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	90.5	----	74.9	80.7
2-Chlorophenol-D4	93951-73-6	0.5	%		----	104	----	75.2	78.6
2,4,6-Tribromophenol	118-79-6	0.5	%		----	85.5	----	68.2	71.0
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	81.6	----	79.6	87.1
Anthracene-d10	1719-06-8	0.5	%		----	95.0	----	85.3	91.2
4-Terphenyl-d14	1718-51-0	0.5	%		----	89.1	----	78.0	83.4
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	112	----	----	----
Toluene-D8	2037-26-5	0.2	%		----	96.0	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	94.2	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP21_1.0	TP21_1.0	TP22_1.0	TP23_0.5	TP23_2.5
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-066	ES1724542-067	ES1724542-068	ES1724542-070	ES1724542-071
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		----	15.5	8.9	----	15.1
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	No	No	----
Asbestos Type	1332-21-4	-	--		-	----	-	-	----
Sample weight (dry)	----	0.01	g		314	----	441	313	----
APPROVED IDENTIFIER:	----	-	--		G.MORGAN	----	G.MORGAN	S.SPOONER	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	<5	<5	----	7
Cadmium	7440-43-9	1	mg/kg		----	<1	<1	----	<1
Chromium	7440-47-3	2	mg/kg		----	48	26	----	18
Copper	7440-50-8	5	mg/kg		----	37	33	----	23
Lead	7439-92-1	5	mg/kg		----	17	26	----	18
Nickel	7440-02-0	2	mg/kg		----	66	39	----	15
Zinc	7440-66-6	5	mg/kg		----	50	43	----	53
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	<0.1	<0.1	----	<0.1
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	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP21_1.0	TP21_1.0	TP22_1.0	TP23_0.5	TP23_2.5
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-066	ES1724542-067	ES1724542-068	ES1724542-070	ES1724542-071
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	<0.05	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	<0.05	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	<0.05	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	<0.2	----	----
Dimethoate	60-51-5	0.05	mg/kg		----	----	<0.05	----	----
Diazinon	333-41-5	0.05	mg/kg		----	----	<0.05	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	<0.05	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	<0.2	----	----
Malathion	121-75-5	0.05	mg/kg		----	----	<0.05	----	----
Fenthion	55-38-9	0.05	mg/kg		----	----	<0.05	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	<0.05	----	----
Parathion	56-38-2	0.2	mg/kg		----	----	<0.2	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	<0.05	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	<0.05	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	<0.05	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	<0.05	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	<0.05	----	----
Ethion	563-12-2	0.05	mg/kg		----	----	<0.05	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	<0.05	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	<0.05	----	----
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



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TP21_1.0	TP21_1.0	TP22_1.0	TP23_0.5	TP23_2.5
Client sampling date / time				28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit	ES1724542-066	ES1724542-067	ES1724542-068	ES1724542-070	ES1724542-071
				Result	Result	Result	Result	Result

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued

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

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	110	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	110	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----

EP080: BTEXN



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP21_1.0	TP21_1.0	TP22_1.0	TP23_0.5	TP23_2.5
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-066	ES1724542-067	ES1724542-068	ES1724542-070	ES1724542-071
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	----	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	----	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		----	----	<1	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	83.3	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	91.0	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	70.2	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	82.4	87.1	----	83.5
2-Chlorophenol-D4	93951-73-6	0.5	%		----	82.4	89.3	----	85.0
2,4,6-Tribromophenol	118-79-6	0.5	%		----	75.2	71.6	----	73.3
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	89.3	90.5	----	90.5
Anthracene-d10	1719-06-8	0.5	%		----	94.4	94.3	----	92.7
4-Terphenyl-d14	1718-51-0	0.5	%		----	85.2	96.2	----	85.1
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	115	----	----
Toluene-D8	2037-26-5	0.2	%		----	----	99.5	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	97.6	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP24_0.6	TP25_1.2	TP25_2.0	TP26_0.5	TP26_1.5
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-072	ES1724542-074	ES1724542-075	ES1724542-076	ES1724542-077
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		11.2	----	16.9	----	9.4
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	----	No	----
Asbestos Type	1332-21-4	-	--		-	-	----	-	----
Sample weight (dry)	----	0.01	g		231	496	----	387	----
APPROVED IDENTIFIER:	----	-	--		S.SPOONER	S.SPOONER	----	G.MORGAN	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	----	5	----	5
Cadmium	7440-43-9	1	mg/kg		<1	----	<1	----	<1
Chromium	7440-47-3	2	mg/kg		31	----	25	----	35
Copper	7440-50-8	5	mg/kg		23	----	25	----	29
Lead	7439-92-1	5	mg/kg		22	----	18	----	23
Nickel	7440-02-0	2	mg/kg		28	----	26	----	40
Zinc	7440-66-6	5	mg/kg		26	----	44	----	52
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	<0.1	----	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg		0.6	----	<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		0.6	----	<0.5	----	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP24_0.6	TP25_1.2	TP25_2.0	TP26_0.5	TP26_1.5
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-072	ES1724542-074	ES1724542-075	ES1724542-076	ES1724542-077
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	<0.5	----	<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	%		80.9	----	83.1	----	80.3
2-Chlorophenol-D4	93951-73-6	0.5	%		81.1	----	83.2	----	80.8
2,4,6-Tribromophenol	118-79-6	0.5	%		73.4	----	74.5	----	69.5
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		88.4	----	89.3	----	86.0
Anthracene-d10	1719-06-8	0.5	%		92.0	----	92.2	----	87.9
4-Terphenyl-d14	1718-51-0	0.5	%		84.1	----	85.3	----	81.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP27_0.5	TS01	TB01	QC01	TSC
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-078	ES1724542-080	ES1724542-081	ES1724542-082	ES1724542-083
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.9	25.8	29.5	20.0	5.9
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	----	----	----
Asbestos Type	1332-21-4	-	--		-	----	----	----	----
Sample weight (dry)	----	0.01	g		300	----	----	----	----
APPROVED IDENTIFIER:	----	-	--		G.MORGAN	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	----	----	5	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	<1	----
Chromium	7440-47-3	2	mg/kg		21	----	----	15	----
Copper	7440-50-8	5	mg/kg		9	----	----	40	----
Lead	7439-92-1	5	mg/kg		11	----	----	24	----
Nickel	7440-02-0	2	mg/kg		5	----	----	14	----
Zinc	7440-66-6	5	mg/kg		6	----	----	64	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	<0.1	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg		----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg		----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg		----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg		----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg		----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	----	<0.05	----
4,4'-DDE	72-55-9	0.05	mg/kg		----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	<0.05	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TP27_0.5	TS01	TB01	QC01	TSC
Client sampling date / time				28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit	ES1724542-078	ES1724542-080	ES1724542-081	ES1724542-082	ES1724542-083
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	<0.05	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	<0.2	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	<0.05	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	<0.05	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	<0.05	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	<0.05	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	<0.05	----
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	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP27_0.5	TS01	TB01	QC01	TSC
Client sampling date / time				28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1724542-078	ES1724542-080	ES1724542-081	ES1724542-082	ES1724542-083	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	<0.5	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	<0.5	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	<0.5	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	<0.5	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	<0.5	----	
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	<0.5	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	<0.5	----	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	<0.5	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	<0.5	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	<0.5	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	<0.5	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	<0.5	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	<0.5	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	<0.5	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	0.6	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	1.2	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----	
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----	
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----	
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----	
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----	
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----	
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----	
EP080: BTEXN									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP27_0.5	TS01	TB01	QC01	TSC
Client sampling date / time					28-Sep-2017 00:00	28-Sep-2017 00:00	28-Sep-2017 00:00	27-Sep-2017 00:00	27-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1724542-078	ES1724542-080	ES1724542-081	ES1724542-082	ES1724542-083
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		----	3.4	<0.5	<0.5	3.6
Ethylbenzene	100-41-4	0.5	mg/kg		----	0.6	<0.5	<0.5	0.7
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	4.1	<0.5	<0.5	4.1
ortho-Xylene	95-47-6	0.5	mg/kg		----	1.8	<0.5	<0.5	1.8
^ Sum of BTEX	----	0.2	mg/kg		----	9.9	<0.2	<0.2	10.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	5.9	<0.5	<0.5	5.9
Naphthalene	91-20-3	1	mg/kg		----	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	82.0	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	106	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	86.8	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		86.8	----	----	77.9	----
2-Chlorophenol-D4	93951-73-6	0.5	%		87.9	----	----	82.2	----
2,4,6-Tribromophenol	118-79-6	0.5	%		74.2	----	----	68.9	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		94.2	----	----	85.1	----
Anthracene-d10	1719-06-8	0.5	%		96.4	----	----	97.0	----
4-Terphenyl-d14	1718-51-0	0.5	%		88.7	----	----	87.9	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	115	105	108	116
Toluene-D8	2037-26-5	0.2	%		----	95.8	93.6	92.6	100
4-Bromofluorobenzene	460-00-4	0.2	%		----	99.2	88.8	90.8	98.9



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	QC04	----	----	----	----
Client sampling date / time				28-Sep-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1724542-086	-----	-----	-----	-----
Result				----	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	18.9	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	13	----	----	----	----
Copper	7440-50-8	5	mg/kg	41	----	----	----	----
Lead	7439-92-1	5	mg/kg	18	----	----	----	----
Nickel	7440-02-0	2	mg/kg	20	----	----	----	----
Zinc	7440-66-6	5	mg/kg	66	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
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	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				QC04	----	----	----	----
Client sampling date / time				28-Sep-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1724542-086	-----	-----	-----	-----
				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	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----

EP068B: Organophosphorus Pesticides (OP)

Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	----

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	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC04	----	----	----	----
Client sampling date / time					28-Sep-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1724542-086	-----	-----	-----	-----
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC04	----	----	----	----
Client sampling date / time					28-Sep-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1724542-086	-----	-----	-----	-----
					Result	----	----	----	----
EP080: BTEXN - Continued									
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		75.6	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		81.4	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		73.1	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		79.9	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		79.6	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		64.2	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		77.3	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		92.6	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		85.6	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		108	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		83.0	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		84.6	----	----	----	----



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	BH01_0.5 - 27-Sep-2017 00:00	Mid brown sandy soil.
EA200: Description	BH02_0.5 - 27-Sep-2017 00:00	Mid brown sandy soil.
EA200: Description	BH03_0.5 - 27-Sep-2017 00:00	Mid brown sandy soil.
EA200: Description	TP01_1.0 - 27-Sep-2017 00:00	Mid brown sandy soil.
EA200: Description	TP02_0.2 - 27-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP04_1.0 - 27-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP05_0.4 - 27-Sep-2017 00:00	Mid brown sandy soil.
EA200: Description	TP06_1.0 - 27-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP07_1.0 - 27-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP08_1.0 - 27-Sep-2017 00:00	Mid brown sandy soil.
EA200: Description	TP09_1.0 - 27-Sep-2017 00:00	Mid brown sandy soil.
EA200: Description	TP10_0.4 - 27-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP11_1.0 - 28-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP12_0.8 - 28-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP13_1.0 - 28-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP14_1.0 - 28-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP15_1.5 - 28-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP16_0.7 - 28-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP17_1.2 - 28-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP18_1.0 - 28-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP19_1.0 - 28-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP20_1.0 - 28-Sep-2017 00:00	Mid brown sandy soil.
EA200: Description	TP21_1.0 - 28-Sep-2017 00:00	Mid brown sandy soil.
EA200: Description	TP22_1.0 - 28-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP23_0.5 - 28-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP24_0.6 - 28-Sep-2017 00:00	Mid brown clay soil.
EA200: Description	TP25_1.2 - 28-Sep-2017 00:00	Mid brown sandy soil.
EA200: Description	TP26_0.5 - 28-Sep-2017 00:00	Mid brown sandy soil.
EA200: Description	TP27_0.5 - 28-Sep-2017 00:00	Mid brown clay 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
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

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES1724542	Page	: 1 of 10
Client	: WSP Australia Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: MS AMY VALENTINE	Telephone	: +61 2 8784 8503
Project	: 2271108A Fairfield - SRC Assessment	Date Samples Received	: 29-Sep-2017
Site	: ----	Issue Date	: 06-Oct-2017
Sampler	: ----	No. of samples received	: 87
Order number	: ----	No. of samples analysed	: 56

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	ES1724178--001	Anonymous	Zinc	7440-66-6	55.2 %	0% - 20%	RPD exceeds LOR based limits
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	ES1724178--001	Anonymous	Zinc	7440-66-6	55.2 %	70-130%	Recovery less than lower data quality objective

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.

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)	27-Sep-2017	----	----	----	03-Oct-2017	11-Oct-2017	✓
BH01_7.0, BH02_9.0,							
BH03_9.0, TP01_3.0,							
TP02_0.2, TP03_2.5,							
TP04_1.0, TP05_1.5,							
TP06_3.0, TP07_3.0,							
TP08_1.0, TP09_2.0,							
TP10_0.4, QC01, TSC							
Soil Glass Jar - Unpreserved (EA055)	28-Sep-2017	----	----	----	03-Oct-2017	12-Oct-2017	✓
BH04_1.5, BH05_2.0,							
TP11_2.4, TP12_2.2,							
TP13_3.0, TP14_1.0,							
TP15_2.5, TP16_0.7,							
TP17_3.0, TP18_2.0,							
TP19_2.0, TP20_1.0,							
TP21_1.0, TP22_1.0,							
TP23_2.5, TP24_0.6,							
TP25_2.0, TP26_1.5,							
TP27_0.5, TS01,							
TB01, QC04							

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 (EA200) BH01_0.5, BH03_0.5, TP02_0.2, TP05_0.4, TP07_1.0, TP09_1.0, BH02_0.5, TP01_1.0, TP04_1.0, TP06_1.0, TP08_1.0, TP10_0.4	27-Sep-2017	----	----	----	04-Oct-2017	26-Mar-2018	✓
Snap Lock Bag (EA200) TP11_1.0, TP13_1.0, TP15_1.5, TP17_1.2, TP19_1.0, TP21_1.0, TP23_0.5, TP25_1.2, TP27_0.5, TP12_0.8, TP14_1.0, TP16_0.7, TP18_1.0, TP20_1.0, TP22_1.0, TP24_0.6, TP26_0.5	28-Sep-2017	----	----	----	04-Oct-2017	27-Mar-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) BH01_7.0, BH03_9.0, TP02_0.2, TP04_1.0, TP06_3.0, TP08_1.0, TP10_0.4, BH02_9.0, TP01_3.0, TP03_2.5, TP05_1.5, TP07_3.0, TP09_2.0, QC01	27-Sep-2017	03-Oct-2017	26-Mar-2018	✓	03-Oct-2017	26-Mar-2018	✓
Soil Glass Jar - Unpreserved (EG005T) BH04_1.5, TP11_2.4, TP13_3.0, TP15_2.5, TP17_3.0, TP19_2.0, TP21_1.0, TP23_2.5, TP25_2.0, TP27_0.5, BH05_2.0, TP12_2.2, TP14_1.0, TP16_0.7, TP18_2.0, TP20_1.0, TP22_1.0, TP24_0.6, TP26_1.5, QC04	28-Sep-2017	03-Oct-2017	27-Mar-2018	✓	03-Oct-2017	27-Mar-2018	✓



Matrix: **SOIL**

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

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) BH01_7.0, BH02_9.0, TP01_3.0, TP02_0.2, TP03_2.5, TP04_1.0, TP05_1.5, TP06_3.0, TP07_3.0, TP08_1.0, TP09_2.0, TP10_0.4, QC01	27-Sep-2017	03-Oct-2017	25-Oct-2017	✔	03-Oct-2017	25-Oct-2017	✔	
Soil Glass Jar - Unpreserved (EG035T) BH04_1.5, BH05_2.0, TP11_2.4, TP12_2.2, TP13_3.0, TP14_1.0, TP15_2.5, TP16_0.7, TP17_3.0, TP18_2.0, TP19_2.0, TP20_1.0, TP21_1.0, TP22_1.0, TP23_2.5, TP24_0.6, TP25_2.0, TP26_1.5, TP27_0.5, QC04	28-Sep-2017	03-Oct-2017	26-Oct-2017	✔	03-Oct-2017	26-Oct-2017	✔	
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066) BH02_9.0, BH03_9.0, TP01_3.0, TP04_1.0, TP08_1.0, TP10_0.4, QC01	27-Sep-2017	03-Oct-2017	11-Oct-2017	✔	03-Oct-2017	12-Nov-2017	✔	
Soil Glass Jar - Unpreserved (EP066) TP12_2.2, TP13_3.0, TP15_2.5, TP17_3.0, TP18_2.0, TP22_1.0, QC04	28-Sep-2017	03-Oct-2017	12-Oct-2017	✔	03-Oct-2017	12-Nov-2017	✔	
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068) BH02_9.0, BH03_9.0, TP01_3.0, TP04_1.0, TP08_1.0, TP10_0.4, QC01	27-Sep-2017	03-Oct-2017	11-Oct-2017	✔	03-Oct-2017	12-Nov-2017	✔	
Soil Glass Jar - Unpreserved (EP068) TP12_2.2, TP13_3.0, TP15_2.5, TP17_3.0, TP18_2.0, TP22_1.0, QC04	28-Sep-2017	03-Oct-2017	12-Oct-2017	✔	03-Oct-2017	12-Nov-2017	✔	



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
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068)		27-Sep-2017	03-Oct-2017	11-Oct-2017	✓	03-Oct-2017	12-Nov-2017	✓
BH02_9.0, TP01_3.0, TP08_1.0, QC01	BH03_9.0, TP04_1.0, TP10_0.4,							
Soil Glass Jar - Unpreserved (EP068)		28-Sep-2017	03-Oct-2017	12-Oct-2017	✓	03-Oct-2017	12-Nov-2017	✓
TP12_2.2, TP15_2.5, TP18_2.0, QC04	TP13_3.0, TP17_3.0, TP22_1.0,							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))		27-Sep-2017	03-Oct-2017	11-Oct-2017	✓	03-Oct-2017	12-Nov-2017	✓
BH01_7.0, BH03_9.0, TP02_0.2, TP04_1.0, TP06_3.0, TP08_1.0, TP10_0.4,	BH02_9.0, TP01_3.0, TP03_2.5, TP05_1.5, TP07_3.0, TP09_2.0, QC01							
Soil Glass Jar - Unpreserved (EP075(SIM))		28-Sep-2017	03-Oct-2017	12-Oct-2017	✓	03-Oct-2017	12-Nov-2017	✓
BH04_1.5, TP11_2.4, TP13_3.0, TP15_2.5, TP17_3.0, TP19_2.0, TP21_1.0, TP23_2.5, TP25_2.0, TP27_0.5,	BH05_2.0, TP12_2.2, TP14_1.0, TP16_0.7, TP18_2.0, TP20_1.0, TP22_1.0, TP24_0.6, TP26_1.5, QC04							



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 (EP071) BH02_9.0, TP01_3.0, TP08_1.0, QC01	BH03_9.0, TP04_1.0, TP10_0.4,	27-Sep-2017	03-Oct-2017	11-Oct-2017	✔	03-Oct-2017	12-Nov-2017	✔
Soil Glass Jar - Unpreserved (EP080) BH02_9.0, TP01_3.0, TP08_1.0, QC01	BH03_9.0, TP04_1.0, TP10_0.4,	27-Sep-2017	03-Oct-2017	11-Oct-2017	✔	05-Oct-2017	11-Oct-2017	✔
Soil Glass Jar - Unpreserved (EP071) TP12_2.2, TP15_2.5, TP18_2.0, QC04	TP13_3.0, TP17_3.0, TP22_1.0,	28-Sep-2017	03-Oct-2017	12-Oct-2017	✔	03-Oct-2017	12-Nov-2017	✔
Soil Glass Jar - Unpreserved (EP080) TP12_2.2, TP15_2.5, TP18_2.0, QC04	TP13_3.0, TP17_3.0, TP22_1.0,	28-Sep-2017	03-Oct-2017	12-Oct-2017	✔	05-Oct-2017	12-Oct-2017	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071) BH02_9.0, TP01_3.0, TP08_1.0, QC01	BH03_9.0, TP04_1.0, TP10_0.4,	27-Sep-2017	03-Oct-2017	11-Oct-2017	✔	03-Oct-2017	12-Nov-2017	✔
Soil Glass Jar - Unpreserved (EP080) BH02_9.0, TP01_3.0, TP08_1.0, QC01	BH03_9.0, TP04_1.0, TP10_0.4,	27-Sep-2017	03-Oct-2017	11-Oct-2017	✔	05-Oct-2017	11-Oct-2017	✔
Soil Glass Jar - Unpreserved (EP071) TP12_2.2, TP15_2.5, TP18_2.0, QC04	TP13_3.0, TP17_3.0, TP22_1.0,	28-Sep-2017	03-Oct-2017	12-Oct-2017	✔	03-Oct-2017	12-Nov-2017	✔
Soil Glass Jar - Unpreserved (EP080) TP12_2.2, TP15_2.5, TP18_2.0, QC04	TP13_3.0, TP17_3.0, TP22_1.0,	28-Sep-2017	03-Oct-2017	12-Oct-2017	✔	05-Oct-2017	12-Oct-2017	✔

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) BH02_9.0, TP01_3.0, TP08_1.0, QC01, BH03_9.0, TP04_1.0, TP10_0.4, TSC		27-Sep-2017	03-Oct-2017	11-Oct-2017	✓	05-Oct-2017	11-Oct-2017	✓
Soil Glass Jar - Unpreserved (EP080) TP12_2.2, TP15_2.5, TP18_2.0, TS01, QC04 TP13_3.0, TP17_3.0, TP22_1.0, TB01,		28-Sep-2017	03-Oct-2017	12-Oct-2017	✓	05-Oct-2017	12-Oct-2017	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Moisture Content	EA055	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	4	34	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	6	54	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	7	54	12.96	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	54	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	54	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	54	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	54	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	54	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	54	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	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
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
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.
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
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)
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.

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Work Order : ES1724542
Client : WSP Australia Pty Ltd
Project : 2271108A Fairfield - SRC Assessment



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.

6/10/17

Project: [illegible] Assessment: [illegible] Date: [illegible]
 Client: [illegible] Location: [illegible] Analyst: [illegible]
 Standard: [illegible]

Sample ID	Date Sampled	Container	Medium	PAH	METALS (M8)	Asbestos (p/a)	TRH/BTEX	OCP/OPP	PCB	BTEX	Comments
1 BH01_0.5	27/09/2017	11, 1 ZIP	Soil			x					
2 BH01_1.0	27/09/2017	11	Soil								
3 BH01_3.0	27/09/2017	11	Soil								
4 BH01_5.0	27/09/2017	11	Soil								
5 BH01_7.0	27/09/2017	11	Soil	x	x						
6 BH02_0.5	27/09/2017	11, 1 ZIP	Soil			x					
7 BH02_1.0	27/09/2017	11	Soil								
8 BH02_3.0	27/09/2017	11	Soil								
9 BH02_5.0	27/09/2017	11	Soil								
10 BH02_7.0	27/09/2017	11	Soil								
11 BH02_9.0	27/09/2017	11	Soil	x	x		x	x	x		
12 BH03_0.5	27/09/2017	11, 1 ZIP	Soil			x					
13 BH03_1.0	27/09/2017	11	Soil								
14 BH03_3.0	27/09/2017	11	Soil								
15 BH03_5.0	27/09/2017	11	Soil								
16 BH03_7.0	27/09/2017	11	Soil								
17 BH03_9.0	27/09/2017	11	Soil	x	x		x	x	x		
18 BH04_1.5	28/09/2017	11	Soil	x	x						
19 BH05_2.0	28/09/2017	11	Soil	x	x						
20 TP01_1.0	27/09/2017	11, 1 ZIP	Soil			x					
21 TP01_2.0	27/09/2017	11	Soil								
22 TP01_3.0	27/09/2017	11	Soil	x	x		x	x	x		
23 TP02_0.2	27/09/2017	11, 1 ZIP	Soil	x	x	x					
24 TP02_1.5	27/09/2017	11	Soil								
25 TP03_0.3	27/09/2017	11, 1 ZIP	Soil			x					
26 TP03_1.0	27/09/2017	11	Soil								
27 TP03_2.5	27/09/2017	11	Soil	x	x						
28 TP03_3.0	27/09/2017	11	Soil								
29 TP04_1.0	27/09/2017	11, 1 ZIP	Soil	x	x	x	x	x	x		
30 TP04_2.0	27/09/2017	11	Soil								
31 TP05_0.4	27/09/2017	11, 1 ZIP	Soil			x					
32 TP05_1.5	27/09/2017	11	Soil	x	x						
33 TP05_2.9	27/09/2017	11	Soil								
34 TP06_1.0	27/09/2017	11, 1 ZIP	Soil			x					
35 TP06_3.4	27/09/2017	11	Soil	x	x						
36 TP07_1.0	27/09/2017	11, 1 ZIP	Soil			x					
37 TP07_3.0	27/09/2017	11	Soil	x	x						
38 TP08_1.0	27/09/2017	11, 1 ZIP	Soil	x	x	x	x	x	x		
39 TP08_3.0	27/09/2017	11	Soil								
40 TP09_1.0	27/09/2017	11, 1 ZIP	Soil			x					
41 TP09_2.0	27/09/2017	11	Soil	x	x						
42 TP09_3.0	27/09/2017	11	Soil								
43 TP10_0.4	27/09/2017	11, 1 ZIP	Soil	x	x	x	x	x	x		
44 TP10_2.0	27/09/2017	11	Soil								
45 TP11_1.0	28/09/2017	11, 1 ZIP	Soil			x					
46 TP11_2.5	28/09/2017	11	Soil	x	x						
47 TP12_0.8	28/09/2017	11, 1 ZIP	Soil			x					
48 TP12_2.2	28/09/2017	11	Soil	x	x		x	x	x		
49 TP13_1.0	28/09/2017	11, 1 ZIP	Soil			x					
50 TP13_3.0	28/09/2017	11	Soil	x	x		x	x	x		
51 TP14_1.0	28/09/2017	11, 1 ZIP	Soil	x	x	x					
52 TP14_3.0	28/09/2017	11	Soil								
53 TP15_1.5	28/09/2017	11, 1 ZIP	Soil			x					
54 TP15_2.5	28/09/2017	11	Soil	x	x		x	x	x		
55 TP16_0.7	28/09/2017	11, 1 ZIP	Soil	x	x	x					
56 TP16_1.5	28/09/2017	11	Soil								
57 TP16_3.0	28/09/2017	11	Soil								
58 TP17_1.2	28/09/2017	11, 1 ZIP	Soil			x					
59 TP17_3.0	28/09/2017	11	Soil	x	x		x	x	x		
60 TP18_1.0	28/09/2017	11, 1 ZIP	Soil			x					
61 TP18_2.0	28/09/2017	11	Soil	x	x		x	x	x		
62 TP19_1.0	28/09/2017	11, 1 ZIP	Soil			x					
63 TP19_2.0	28/09/2017	11	Soil	x	x						
64 TP20_1.0	28/09/2017	11, 1 ZIP	Soil	x	x	x					
65 TP20_2.0	28/09/2017	11	Soil								
66 TP21_1.0	28/09/2017	11, 1 ZIP	Soil			x					
67 TP21_2.0	28/09/2017	11	Soil	x	x						
68 TP22_1.0	28/09/2017	11, 1 ZIP	Soil	x	x	x	x	x	x		
69 TP22_2.0	28/09/2017	11	Soil								
70 TP23_0.5	28/09/2017	11, 1 ZIP	Soil			x					
71 TP23_2.5	28/09/2017	11	Soil	x	x						
72 TP24_0.6	28/09/2017	11, 1 ZIP	Soil	x	x	x					
73 TP24_2.5	28/09/2017	11	Soil								
74 TP25_1.2	28/09/2017	11, 1 ZIP	Soil			x					
75 TP25_2.0	28/09/2017	11	Soil	x	x						
76 TP26_0.5	28/09/2017	11, 1 ZIP	Soil			x					
77 TP26_1.5	28/09/2017	11	Soil	x	x						
78 TP27_0.5	28/09/2017	11, 1 ZIP	Soil	x	x	x					
79 TP27_2.0	28/09/2017	11	Soil								
TS01	28/09/2017	11	Soil							x	
TB01	28/09/2017	11	Soil							x	
QC01	27/09/2017	11	Soil	x	x		x	x	x		
QC01A	27/09/2017	11	Soil	x	x		x	x	x		

Environmental Division
Sydney

Work Order Reference

ES1724542



Telephone : +61-2-8784 8555

Subcon / Forward Lab / Split WO
 Lab / Analysis: QC01A, QC02A, QC03A, QC04A + QC05A
 Organised By / Date: [illegible]
 Relinquished By / Date: [illegible]
 Connote / Courier: 36, 38, 40, 43, 45, 47, 49, 51, 53, 55, 58, 60, 62, 64,
 WO No: 1-36, 38, 40, 43, 45, 47, 49, 51, 53, 55, 58, 60, 62, 64,
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Please forward to Eurofins for analysis

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Certificate of Analysis

WSP Australia P/L NSW
Level 27, Ernst & Young Centre
Sydney
NSW 2001



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Amy Valentine

Report 565856-S
Project name FAIRFIELD - SRC ASSESSMENT
Project ID 2271108A
Received Date Oct 03, 2017

Client Sample ID			QC04A	QC01A
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			S17-Oc01626	S17-Oc01629
Date Sampled			Sep 28, 2017	Sep 28, 2017
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	20	mg/kg	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	170
TRH C29-C36	50	mg/kg	< 50	140
TRH C10-36 (Total)	50	mg/kg	< 50	310
BTEX				
Benzene	0.1	mg/kg	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	83	86
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20
TRH C6-C10	20	mg/kg	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	260
TRH >C34-C40	100	mg/kg	< 100	< 100
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	4.8
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	4.8
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	4.8
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	1.6
Benz(a)anthracene	0.5	mg/kg	< 0.5	3.3
Benzo(a)pyrene	0.5	mg/kg	< 0.5	3.2
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	1.8
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	1.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	2.7
Chrysene	0.5	mg/kg	< 0.5	3.1
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	0.6

Client Sample ID			QC04A	QC01A
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			S17-Oc01626	S17-Oc01629
Date Sampled			Sep 28, 2017	Sep 28, 2017
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Fluoranthene	0.5	mg/kg	< 0.5	8.7
Fluorene	0.5	mg/kg	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	1.4
Naphthalene	0.5	mg/kg	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	4.3
Pyrene	0.5	mg/kg	< 0.5	7.6
Total PAH*	0.5	mg/kg	< 0.5	39.8
2-Fluorobiphenyl (surr.)	1	%	92	94
p-Terphenyl-d14 (surr.)	1	%	113	104
Organochlorine Pesticides				
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05
α-BHC	0.05	mg/kg	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05
β-BHC	0.05	mg/kg	< 0.05	< 0.05
δ-BHC	0.05	mg/kg	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05
γ-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1
Dibutylchlorobenzene (surr.)	1	%	100	82
Tetrachloro-m-xylene (surr.)	1	%	118	91
Organophosphorus Pesticides				
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	QC04A Soil S17-Oc01626 Sep 28, 2017	QC01A Soil S17-Oc01629 Sep 28, 2017
Organophosphorus Pesticides				
Disulfoton	0.2	mg/kg	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	102	102
Polychlorinated Biphenyls				
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5
Dibutylchloroendate (surr.)	1	%	100	82
Tetrachloro-m-xylene (surr.)	1	%	118	91
Heavy Metals				
Arsenic	2	mg/kg	5.3	6.4
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	16	13
Copper	5	mg/kg	34	30
Lead	5	mg/kg	24	23
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	20	11
Zinc	5	mg/kg	56	50
% Moisture	1	%	14	19

Sample History

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

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Sydney	Oct 03, 2017	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Oct 03, 2017	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Oct 03, 2017	14 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Oct 03, 2017	14 Day
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2140 PAH and Phenols in Soils by GCMS	Sydney	Oct 03, 2017	14 Days
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Oct 03, 2017	14 Day
Organophosphorus Pesticides - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS	Sydney	Oct 03, 2017	14 Day
Polychlorinated Biphenyls - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Oct 03, 2017	28 Days
Metals M8 - Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS	Sydney	Oct 03, 2017	28 Day
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Oct 03, 2017	14 Day

Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
Sydney
NSW 2001

Project Name: FAIRFIELD - SRC ASSESSMENT
Project ID: 2271108A

Order No.:
Report #: 565856
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Oct 3, 2017 12:10 PM
Due: Oct 10, 2017
Priority: 5 Day
Contact Name: Amy Valentine

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						HOLD	Polyyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271														
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736														
External Laboratory														
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID									
1	QC04A	Sep 28, 2017		Soil	S17-Oc01626		X	X	X	X	X	X	X	X
2	QC02A	Sep 27, 2017		Soil	S17-Oc01627	X								
3	QC03A	Sep 27, 2017		Soil	S17-Oc01628	X								
4	QC01A	Sep 28, 2017		Soil	S17-Oc01629		X	X	X	X	X	X	X	X
5	QC05A	Sep 27, 2017		Soil	S17-Oc01630	X								
Test Counts						3	2	2	2	2	2	2	2	2

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead				mg/kg	< 5			5	Pass	
Mercury				mg/kg	< 0.1			0.1	Pass	
Nickel				mg/kg	< 5			5	Pass	
Zinc				mg/kg	< 5			5	Pass	
LCS - % Recovery										
Polychlorinated Biphenyls										
Aroclor-1260				%	100			70-130	Pass	
LCS - % Recovery										
Heavy Metals										
Arsenic				%	88			70-130	Pass	
Cadmium				%	93			70-130	Pass	
Chromium				%	99			70-130	Pass	
Copper				%	104			70-130	Pass	
Lead				%	107			70-130	Pass	
Mercury				%	111			70-130	Pass	
Nickel				%	107			70-130	Pass	
Zinc				%	101			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Spike - % Recovery										
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					Result 1					
TRH C6-C9	S17-Oc01660	NCP	%	130			70-130	Pass		
TRH C10-C14	S17-Oc03690	NCP	%	73			70-130	Pass		
Spike - % Recovery										
BTEX					Result 1					
Benzene	S17-Oc01660	NCP	%	92			70-130	Pass		
Toluene	S17-Oc01660	NCP	%	91			70-130	Pass		
Ethylbenzene	S17-Oc01660	NCP	%	86			70-130	Pass		
m&p-Xylenes	S17-Oc01660	NCP	%	91			70-130	Pass		
o-Xylene	S17-Oc01660	NCP	%	83			70-130	Pass		
Xylenes - Total	S17-Oc01660	NCP	%	88			70-130	Pass		
Spike - % Recovery										
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					Result 1					
Naphthalene	S17-Oc01660	NCP	%	78			70-130	Pass		
TRH C6-C10	S17-Oc01660	NCP	%	123			70-130	Pass		
TRH >C10-C16	S17-Oc03690	NCP	%	85			70-130	Pass		
Spike - % Recovery										
Polycyclic Aromatic Hydrocarbons					Result 1					
Acenaphthene	S17-Oc01665	NCP	%	95			70-130	Pass		
Acenaphthylene	S17-Oc01665	NCP	%	92			70-130	Pass		
Anthracene	S17-Oc01665	NCP	%	105			70-130	Pass		
Benz(a)anthracene	S17-Oc01665	NCP	%	88			70-130	Pass		
Benzo(a)pyrene	S17-Oc01665	NCP	%	89			70-130	Pass		
Benzo(b&j)fluoranthene	S17-Oc01665	NCP	%	86			70-130	Pass		
Benzo(g,h,i)perylene	S17-Oc01665	NCP	%	88			70-130	Pass		
Benzo(k)fluoranthene	S17-Oc01665	NCP	%	85			70-130	Pass		
Chrysene	S17-Oc01665	NCP	%	92			70-130	Pass		
Dibenz(a,h)anthracene	S17-Oc01665	NCP	%	87			70-130	Pass		
Fluoranthene	S17-Oc01665	NCP	%	93			70-130	Pass		
Fluorene	S17-Oc01665	NCP	%	97			70-130	Pass		
Indeno(1.2.3-cd)pyrene	S17-Oc01665	NCP	%	87			70-130	Pass		
Naphthalene	S17-Oc01665	NCP	%	90			70-130	Pass		
Phenanthrene	S17-Oc01665	NCP	%	90			70-130	Pass		
Pyrene	S17-Oc01665	NCP	%	93			70-130	Pass		
Spike - % Recovery										

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Organochlorine Pesticides				Result 1					
4.4'-DDD	S17-Oc03666	NCP	%	120			70-130	Pass	
4.4'-DDE	S17-Oc03666	NCP	%	115			70-130	Pass	
4.4'-DDT	S17-Oc01659	NCP	%	38			70-130	Fail	Q08
a-BHC	S17-Oc03666	NCP	%	107			70-130	Pass	
Aldrin	S17-Oc03666	NCP	%	105			70-130	Pass	
b-BHC	S17-Oc03666	NCP	%	109			70-130	Pass	
d-BHC	S17-Oc03666	NCP	%	104			70-130	Pass	
Dieldrin	S17-Oc03666	NCP	%	110			70-130	Pass	
Endosulfan I	S17-Oc03666	NCP	%	110			70-130	Pass	
Endosulfan II	S17-Oc03666	NCP	%	109			70-130	Pass	
Endosulfan sulphate	S17-Oc03666	NCP	%	104			70-130	Pass	
Endrin	S17-Oc01659	NCP	%	91			70-130	Pass	
Endrin aldehyde	S17-Oc03666	NCP	%	117			70-130	Pass	
Endrin ketone	S17-Oc03666	NCP	%	103			70-130	Pass	
g-BHC (Lindane)	S17-Oc03666	NCP	%	102			70-130	Pass	
Heptachlor	S17-Oc03666	NCP	%	97			70-130	Pass	
Heptachlor epoxide	S17-Oc03666	NCP	%	111			70-130	Pass	
Hexachlorobenzene	S17-Oc03666	NCP	%	99			70-130	Pass	
Methoxychlor	S17-Oc03690	NCP	%	77			70-130	Pass	
Toxaphene	S17-Oc03666	NCP	%	103			70-130	Pass	
Spike - % Recovery									
Organophosphorus Pesticides				Result 1					
Diazinon	S17-Oc01665	NCP	%	94			70-130	Pass	
Dimethoate	S17-Oc01665	NCP	%	83			70-130	Pass	
Ethion	S17-Oc01665	NCP	%	94			70-130	Pass	
Fenitrothion	S17-Oc01665	NCP	%	83			70-130	Pass	
Methyl parathion	S17-Oc01665	NCP	%	73			70-130	Pass	
Mevinphos	S17-Oc01665	NCP	%	119			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S17-Oc04337	NCP	%	89			70-130	Pass	
Cadmium	S17-Oc04337	NCP	%	95			70-130	Pass	
Chromium	S17-Oc04337	NCP	%	91			70-130	Pass	
Copper	S17-Oc04337	NCP	%	92			70-130	Pass	
Lead	S17-Oc04337	NCP	%	95			70-130	Pass	
Mercury	S17-Oc04337	NCP	%	95			70-130	Pass	
Nickel	S17-Oc04337	NCP	%	98			70-130	Pass	
Zinc	S17-Oc04337	NCP	%	100			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S17-Oc01650	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S17-Se36656	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S17-Se36656	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S17-Se36656	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S17-Oc01650	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S17-Oc01650	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S17-Oc01650	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S17-Oc01650	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S17-Oc01650	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S17-Oc01650	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S17-Oc01650	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S17-Oc01650	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S17-Se36656	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S17-Se36656	NCP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S17-Se36656	NCP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Fluoranthene	S17-Oc01659	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S17-Oc01659	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S17-Oc01658	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S17-Oc01658	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S17-Oc01658	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Toxaphene	S17-Oc01658	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	S17-Se35611	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1221	S17-Se35611	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	S17-Se35611	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1242	S17-Se35611	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1248	S17-Se35611	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1254	S17-Se35611	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1260	S17-Se35611	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S17-Oc04336	NCP	mg/kg	3.8	4.4	15	30%	Pass
Cadmium	S17-Oc04336	NCP	mg/kg	0.4	< 0.4	16	30%	Pass
Chromium	S17-Oc04336	NCP	mg/kg	8.8	9.5	9.0	30%	Pass
Copper	S17-Oc04336	NCP	mg/kg	35	21	48	30%	Fail
Lead	S17-Oc04336	NCP	mg/kg	180	150	15	30%	Pass
Mercury	S17-Oc04336	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	S17-Oc04336	NCP	mg/kg	5.8	8.1	33	30%	Fail
Zinc	S17-Oc04336	NCP	mg/kg	370	500	30	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S17-Oc01626	CP	%	14	16	10	30%	Pass

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S17-Oc01629	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S17-Oc01629	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S17-Oc01629	CP	mg/kg	1.6	< 0.5	180	30%	Fail Q15
Benz(a)anthracene	S17-Oc01629	CP	mg/kg	3.3	< 0.5	180	30%	Fail Q15
Benzo(a)pyrene	S17-Oc01629	CP	mg/kg	3.2	< 0.5	160	30%	Fail Q15
Benzo(b&j)fluoranthene	S17-Oc01629	CP	mg/kg	1.8	< 0.5	160	30%	Fail Q15
Benzo(g,h,i)perylene	S17-Oc01629	CP	mg/kg	1.5	< 0.5	160	30%	Fail Q15
Benzo(k)fluoranthene	S17-Oc01629	CP	mg/kg	2.7	< 0.5	170	30%	Fail Q15
Chrysene	S17-Oc01629	CP	mg/kg	3.1	< 0.5	170	30%	Fail Q15
Dibenz(a,h)anthracene	S17-Oc01629	CP	mg/kg	0.6	< 0.5	160	30%	Fail Q15
Fluorene	S17-Oc01629	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S17-Oc01629	CP	mg/kg	1.4	< 0.5	160	30%	Fail Q15
Naphthalene	S17-Oc01629	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S17-Oc01629	CP	mg/kg	4.3	< 0.5	180	30%	Fail Q15
Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Bolstar	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorfenvinphos	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos-methyl	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Coumaphos	S17-Oc01629	CP	mg/kg	< 2	< 2	<1	30%	Pass
Demeton-S	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Demeton-O	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Diazinon	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dichlorvos	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dimethoate	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Disulfoton	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
EPN	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethion	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethoprop	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethyl parathion	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenitrothion	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fensulfothion	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenthion	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Malathion	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Merphos	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methyl parathion	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Mevinphos	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Monocrotophos	S17-Oc01629	CP	mg/kg	< 2	< 2	<1	30%	Pass
Naled	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Omethoate	S17-Oc01629	CP	mg/kg	< 2	< 2	<1	30%	Pass
Phorate	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pirimiphos-methyl	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pyrazophos	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ronnel	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Terbufos	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tetrachlorvinphos	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tokuthion	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Trichloronate	S17-Oc01629	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Nibha Vaidya Analytical Services Manager



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

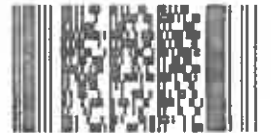
* Indicates NATA accreditation does not cover the performance of this service

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

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Sample ID	Date Sampled	Container	Medium	PAH	METALS (Mg)	Asbestos (p/a)	TRH/BTEX	OCP/OPP	PCB	BTEX	Comments
BH01_0.5	27/09/2017	1J, 1 ZIP	Soil			x					
BH01_1.0	27/09/2017	1J	Soil								
BH01_3.0	27/09/2017	1J	Soil								
BH01_5.0	27/09/2017	1J	Soil								
BH01_7.0	27/09/2017	1J	Soil	x	x						
BH02_0.5	27/09/2017	1J, 1 ZIP	Soil			x					
BH02_1.0	27/09/2017	1J	Soil								
BH02_3.0	27/09/2017	1J	Soil								
BH02_5.0	27/09/2017	1J	Soil								
BH02_7.0	27/09/2017	1J	Soil								
BH02_9.0	27/09/2017	1J	Soil	x	x		x	x	x		
BH03_0.5	27/09/2017	1J, 1 ZIP	Soil			x					
BH03_1.0	27/09/2017	1J	Soil								
BH03_3.0	27/09/2017	1J	Soil								
BH03_5.0	27/09/2017	1J	Soil								
BH03_7.0	27/09/2017	1J	Soil								
BH03_9.0	27/09/2017	1J	Soil	x	x		x	x	x		
BH04_1.5	28/09/2017	1J	Soil	x	x						
BH05_2.0	28/09/2017	1J	Soil	x	x						
TP01_1.0	27/09/2017	1J, 1 ZIP	Soil			x					
TP01_2.0	27/09/2017	1J	Soil								
TP01_3.0	27/09/2017	1J	Soil	x	x		x	x	x		
TP02_0.2	27/09/2017	1J, 1 ZIP	Soil	x	x	x					
TP02_1.5	27/09/2017	1J	Soil								
TP03_0.3	27/09/2017	1J, 1 ZIP	Soil			x					
TP03_1.0	27/09/2017	1J	Soil								
TP03_2.5	27/09/2017	1J	Soil	x	x						
TP03_3.0	27/09/2017	1J	Soil								
TP04_1.0	27/09/2017	1J, 1 ZIP	Soil	x	x	x	x	x	x		
TP04_2.0	27/09/2017	1J	Soil								
TP05_0.4	27/09/2017	1J, 1 ZIP	Soil			x					
TP05_1.5	27/09/2017	1J	Soil	x	x						
TP05_2.9	27/09/2017	1J	Soil								
TP06_1.0	27/09/2017	1J, 1 ZIP	Soil			x					
TP06_3.4	27/09/2017	1J	Soil	x	x						
TP07_1.0	27/09/2017	1J, 1 ZIP	Soil			x					
TP07_3.0	27/09/2017	1J	Soil	x	x						
TP08_1.0	27/09/2017	1J, 1 ZIP	Soil	x	x	x	x	x	x		
TP08_3.0	27/09/2017	1J	Soil								
TP09_1.0	27/09/2017	1J, 1 ZIP	Soil			x					
TP09_2.0	27/09/2017	1J	Soil	x	x						
TP09_3.0	27/09/2017	1J	Soil								
TP10_0.4	27/09/2017	1J, 1 ZIP	Soil	x	x	x	x	x	x		
TP10_2.0	27/09/2017	1J	Soil								
TP11_1.0	28/09/2017	1J, 1 ZIP	Soil			x					
TP11_2.5	28/09/2017	1J	Soil	x	x						
TP12_0.8	28/09/2017	1J, 1 ZIP	Soil			x					
TP12_2.2	28/09/2017	1J	Soil	x	x		x	x	x		
TP13_1.0	28/09/2017	1J, 1 ZIP	Soil			x					
TP13_3.0	28/09/2017	1J	Soil	x	x		x	x	x		
TP14_1.0	28/09/2017	1J, 1 ZIP	Soil	x	x	x					
TP14_3.0	28/09/2017	1J	Soil								
TP15_1.5	28/09/2017	1J, 1 ZIP	Soil			x					
TP15_2.5	28/09/2017	1J	Soil	x	x		x	x	x		
TP16_0.7	28/09/2017	1J, 1 ZIP	Soil	x	x	x					
TP16_1.5	28/09/2017	1J	Soil								
TP16_3.0	28/09/2017	1J	Soil								
TP17_1.2	28/09/2017	1J, 1 ZIP	Soil	x	x	x	x	x	x		
TP17_3.0	28/09/2017	1J	Soil								
TP18_1.0	28/09/2017	1J, 1 ZIP	Soil	x	x	x	x	x	x		
TP18_2.0	28/09/2017	1J	Soil	x	x		x	x	x		
TP19_1.0	28/09/2017	1J, 1 ZIP	Soil			x					
TP19_2.0	28/09/2017	1J	Soil	x	x						
TP20_1.0	28/09/2017	1J, 1 ZIP	Soil	x	x	x					
TP20_2.0	28/09/2017	1J	Soil								
TP21_1.0	28/09/2017	1J, 1 ZIP	Soil			x					
TP21_2.0	28/09/2017	1J	Soil	x	x						
TP22_1.0	28/09/2017	1J, 1 ZIP	Soil	x	x	x	x	x	x		
TP22_2.0	28/09/2017	1J	Soil								
TP23_0.5	28/09/2017	1J, 1 ZIP	Soil			x					
TP23_2.5	28/09/2017	1J	Soil	x	x						
TP24_0.6	28/09/2017	1J, 1 ZIP	Soil	x	x	x					
TP24_2.5	28/09/2017	1J	Soil								
TP25_1.2	28/09/2017	1J, 1 ZIP	Soil			x					
TP25_2.0	28/09/2017	1J	Soil	x	x						
TP26_0.5	28/09/2017	1J, 1 ZIP	Soil			x					
TP26_1.5	28/09/2017	1J	Soil	x	x						
TP27_0.5	28/09/2017	1J, 1 ZIP	Soil	x	x	x					
TP27_2.0	28/09/2017	1J	Soil								
TS01	28/09/2017	1J	Soil								
TS01	28/09/2017	1J	Soil								
QC02	27/09/2017	1J	Soil	x	x		x	x	x		
QC01A	27/09/2017	1J	Soil	x	x		x	x	x		

Environmental Division
Sydney
Work Order Reference
ES1724542



Telephone : +61-2-8784 8555

Subcon / Forward Lab / Split WO
Lab / Analysis: QC01A, QC02A, QC03A, QC04A + QC05A
Organised By / Date: Geochem
Relinquished By / Date: Asbestos - N/A - Geochem
Comnote / Courier: 16, 17, 20, 23, 25, 29, 31, 34,
36, 38, 40, 43, 45, 47, 49, 51, 53, 55, 58, 60, 62, 64,
WO Not: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 18, 19, 21, 22, 24, 26, 27, 28, 30, 32, 33, 35, 37, 39, 41, 42, 44, 46, 48, 50, 52, 54, 56, 57, 59, 61, 63, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100
Attach By PO / Internal Sheet: 100

Please forward to Eurofins for analysis

Received by A.S. 29/9/17 1500
23-7c

[illegible]

CERTIFICATE OF ANALYSIS

Work Order	: ES1726154	Page	: 1 of 15
Amendment	: 1		
Client	: WSP Australia Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: MS AMY VALENTINE	Contact	: Brenda Hong
Address	: ABN: 80 078 004 798 GPO BOX 5394 SYDNEY NSW, AUSTRALIA 2001	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 92725100	Telephone	: (02) 8784 8504
Project	: 2271108A Fairfield - SRC Assessment	Date Samples Received	: 18-Oct-2017 16:25
Order number	: ----	Date Analysis Commenced	: 19-Oct-2017
C-O-C number	: ----	Issue Date	: 01-Nov-2017 19:38
Sampler	: ----		
Site	: ----		
Quote number	: EN/008/17		
No. of samples received	: 13		
No. of samples analysed	: 13		



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

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

This 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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Pabi Subba	Senior Organic Chemist	Sydney Organics, Smithfield, NSW
Raymond Commodore	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW



General Comments

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

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

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

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

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

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

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

LOR = Limit of reporting

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Amendment (01/11/2017): This report has been amended and re-released to allow the reporting of additional analytical data.
- 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.
- 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.



Analytical Results

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

Client sample ID

				MW01	MW02	MW03	MW04	MW05
Client sampling date / time				17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00
Compound	CAS Number	LOR	Unit	ES1726154-001	ES1726154-002	ES1726154-003	ES1726154-004	ES1726154-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.051	0.003	0.006	----	0.006
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.004	----	<0.001
Copper	7440-50-8	0.001	mg/L	0.002	<0.001	<0.001	----	0.002
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.002	----	<0.001
Nickel	7440-02-0	0.001	mg/L	0.054	0.026	0.082	----	0.014
Zinc	7440-66-6	0.005	mg/L	0.007	0.009	0.011	----	0.007
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	<0.0001
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<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
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<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
gamma-BHC	58-89-9	0.5	µg/L	<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
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Aldrin	309-00-2	0.5	µg/L	<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
trans-Chlordane	5103-74-2	0.5	µg/L	<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
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Dieldrin	60-57-1	0.5	µg/L	<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
Endrin	72-20-8	0.5	µg/L	<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
4,4'-DDD	72-54-8	0.5	µg/L	<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
Endosulfan sulfate	1031-07-8	0.5	µg/L	<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
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	----	<2.0
^ Total Chlordane (sum)	----	0.5	µg/L	<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				17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00
Compound	CAS Number	LOR	Unit	ES1726154-001	ES1726154-002	ES1726154-003	ES1726154-004	ES1726154-005
				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
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	----	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	----	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	----	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	----	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<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	15.9	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

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

Client sample ID

				MW01	MW02	MW03	MW04	MW05
Client sampling date / time				17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00
Compound	CAS Number	LOR	Unit	ES1726154-001	ES1726154-002	ES1726154-003	ES1726154-004	ES1726154-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	15.9	<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	170	<20	<20
C10 - C14 Fraction	----	50	µg/L	230	80	580	<50	<50
C15 - C28 Fraction	----	100	µg/L	550	590	2060	<100	<100
C29 - C36 Fraction	----	50	µg/L	50	<50	60	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	830	670	2700	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	180	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	160	<20	<20
>C10 - C16 Fraction	----	100	µg/L	290	160	880	<100	<100
>C16 - C34 Fraction	----	100	µg/L	520	520	1750	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	810	680	2630	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	290	160	850	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	21	<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	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	21	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	27	<5	<5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	85.3	82.2	84.3	----	81.0



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW01	MW02	MW03	MW04	MW05
Client sampling date / time					17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		ES1726154-001	ES1726154-002	ES1726154-003	ES1726154-004	ES1726154-005
					Result	Result	Result	Result	Result
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		83.9	80.0	90.8	----	92.6
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		83.9	64.2	67.8	----	71.9
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		29.2	27.8	27.8	22.9	20.4
2-Chlorophenol-D4	93951-73-6	1.0	%		60.0	55.3	61.0	46.4	56.9
2,4,6-Tribromophenol	118-79-6	1.0	%		76.8	78.0	83.1	53.9	51.0
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		85.6	83.9	86.7	72.8	90.7
Anthracene-d10	1719-06-8	1.0	%		84.5	75.8	77.1	75.7	78.1
4-Terphenyl-d14	1718-51-0	1.0	%		75.5	71.8	73.6	67.6	77.5
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		108	104	113	97.2	99.6
Toluene-D8	2037-26-5	2	%		108	96.5	122	83.8	81.6
4-Bromofluorobenzene	460-00-4	2	%		104	94.2	108	83.9	84.6



Analytical Results

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

Client sample ID

				SW01	SW02	SW03	Outflow	QC01
Client sampling date / time				17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00
Compound	CAS Number	LOR	Unit	ES1726154-006	ES1726154-007	ES1726154-008	ES1726154-009	ES1726154-010
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
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
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.001	0.002	0.002	<0.001	0.002
Zinc	7440-66-6	0.005	mg/L	0.011	0.020	0.005	<0.005	0.014
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
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

				SW01	SW02	SW03	Outflow	QC01
Client sampling date / time				17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00
Compound	CAS Number	LOR	Unit	ES1726154-006	ES1726154-007	ES1726154-008	ES1726154-009	ES1726154-010
				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	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	----	----	----	<0.5	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	----	----	----	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	----	----	----	<0.5	----
Monocrotophos	6923-22-4	2.0	µg/L	----	----	----	<2.0	----
Dimethoate	60-51-5	0.5	µg/L	----	----	----	<0.5	----
Diazinon	333-41-5	0.5	µg/L	----	----	----	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	----	----	----	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L	----	----	----	<2.0	----
Malathion	121-75-5	0.5	µg/L	----	----	----	<0.5	----
Fenthion	55-38-9	0.5	µg/L	----	----	----	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L	----	----	----	<0.5	----
Parathion	56-38-2	2.0	µg/L	----	----	----	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	----	----	----	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	----	----	----	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	----	----	----	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	----	----	----	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	----	----	----	<0.5	----
Ethion	563-12-2	0.5	µg/L	----	----	----	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	----	----	----	<0.5	----
Azinphos Methyl	86-50-0	0.5	µg/L	----	----	----	<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
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

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

Client sample ID

				SW01	SW02	SW03	Outflow	QC01
Client sampling date / time				17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00
Compound	CAS Number	LOR	Unit	ES1726154-006	ES1726154-007	ES1726154-008	ES1726154-009	ES1726154-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	60	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	220	180	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	1210	340	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	1110	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	2540	520	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	50	<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	260	220	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	2020	350	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	530	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	2810	570	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	260	220	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	3	<2	4	33	<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	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	3	<1	4	33	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	----	----	----	93.9	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW01	SW02	SW03	Outflow	QC01
Client sampling date / time					17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		ES1726154-006	ES1726154-007	ES1726154-008	ES1726154-009	ES1726154-010
					Result	Result	Result	Result	Result
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		----	----	----	94.4	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		----	----	----	73.2	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		26.6	23.5	25.8	27.4	22.3
2-Chlorophenol-D4	93951-73-6	1.0	%		67.1	59.9	48.8	75.2	64.5
2,4,6-Tribromophenol	118-79-6	1.0	%		67.5	71.5	71.3	65.4	61.7
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		92.4	93.6	75.0	78.8	83.3
Anthracene-d10	1719-06-8	1.0	%		82.9	86.6	74.4	97.7	73.7
4-Terphenyl-d14	1718-51-0	1.0	%		82.2	84.7	69.5	76.9	70.1
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		96.4	101	109	89.8	101
Toluene-D8	2037-26-5	2	%		89.2	86.9	113	110	89.9
4-Bromofluorobenzene	460-00-4	2	%		82.1	85.9	107	102	87.7



Analytical Results

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

Client sample ID

				RB01	TS02	TB02	----	----
Client sampling date / time				17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1726154-011	ES1726154-012	ES1726154-013	-----	-----
				Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
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

				RB01	TS02	TB02	----	----
Client sampling date / time				17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1726154-011	ES1726154-012	ES1726154-013	-----	-----
				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	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----
Azinphos Methyl	86-50-0	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	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	----	----	----	----



Analytical Results

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

Client sample ID

				RB01	TS02	TB02	----	----
Client sampling date / time				17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1726154-011	ES1726154-012	ES1726154-013	-----	-----
				Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	18	<1	----	----
Toluene	108-88-3	2	µg/L	<2	16	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	15	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	14	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	15	<2	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	29	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	78	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	17	<5	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	77.4	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB01	TS02	TB02	----	----
Client sampling date / time					17-Oct-2017 00:00	17-Oct-2017 00:00	17-Oct-2017 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1726154-011	ES1726154-012	ES1726154-013	-----	-----
					Result	Result	Result	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		74.6	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		63.6	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		23.6	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		63.8	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		53.7	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		81.8	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		81.3	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		74.0	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		102	119	119	----	----
Toluene-D8	2037-26-5	2	%		88.6	112	108	----	----
4-Bromofluorobenzene	460-00-4	2	%		82.1	92.8	89.8	----	----



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	30	120
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	27	129
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

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **ES1726154**

Page : 1 of 7

Amendment : **1**

Client : **WSP Australia Pty Ltd**
Contact : **MS AMY VALENTINE**
Project : **2271108A Fairfield - SRC Assessment**
Site : ----
Sampler : ----
Order number : ----

Laboratory : **Environmental Division Sydney**
Telephone : **(02) 8784 8504**
Date Samples Received : **18-Oct-2017**
Issue Date : **01-Nov-2017**
No. of samples received : **13**
No. of samples analysed : **13**

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank** value outliers occur.
- **NO Duplicate** outliers occur.
- **NO Laboratory Control** outliers occur.
- **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 Outflow	27-Oct-2017	24-Oct-2017	3	----	----	----
EP068A: Organochlorine Pesticides (OC)						
Amber Glass Bottle - Unpreserved Outflow	27-Oct-2017	24-Oct-2017	3	----	----	----
EP068B: Organophosphorus Pesticides (OP)						
Amber Glass Bottle - Unpreserved Outflow	27-Oct-2017	24-Oct-2017	3	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
Amber Glass Bottle - Unpreserved Outflow	27-Oct-2017	24-Oct-2017	3	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Amber Glass Bottle - Unpreserved Outflow	27-Oct-2017	24-Oct-2017	3	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Amber Glass Bottle - Unpreserved Outflow	27-Oct-2017	24-Oct-2017	3	----	----	----

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)		1	15	6.67	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction		1	15	6.67	10.00	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		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Container / Client Sample ID(s)							



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) MW01, MW03, SW01, SW03, RB01	MW02, MW05, SW02, QC01,	17-Oct-2017	----	----	----	20-Oct-2017	15-Apr-2018	✔
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) Outflow		17-Oct-2017	----	----	----	28-Oct-2017	15-Apr-2018	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MW01, MW03, SW01, SW03, RB01	MW02, MW05, SW02, QC01,	17-Oct-2017	----	----	----	23-Oct-2017	14-Nov-2017	✔
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) Outflow		17-Oct-2017	----	----	----	30-Oct-2017	14-Nov-2017	✔
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) MW01, MW03, RB01	MW02, MW05,	17-Oct-2017	19-Oct-2017	24-Oct-2017	✔	23-Oct-2017	28-Nov-2017	✔
Amber Glass Bottle - Unpreserved (EP066) Outflow		17-Oct-2017	27-Oct-2017	24-Oct-2017	✖	31-Oct-2017	06-Dec-2017	✔
EP068A: Organochlorine Pesticides (OC)								
Amber Glass Bottle - Unpreserved (EP068) MW01, MW03, RB01	MW02, MW05,	17-Oct-2017	19-Oct-2017	24-Oct-2017	✔	23-Oct-2017	28-Nov-2017	✔
Amber Glass Bottle - Unpreserved (EP068) Outflow		17-Oct-2017	27-Oct-2017	24-Oct-2017	✖	31-Oct-2017	06-Dec-2017	✔
EP068B: Organophosphorus Pesticides (OP)								
Amber Glass Bottle - Unpreserved (EP068) MW01, MW03, RB01	MW02, MW05,	17-Oct-2017	19-Oct-2017	24-Oct-2017	✔	23-Oct-2017	28-Nov-2017	✔
Amber Glass Bottle - Unpreserved (EP068) Outflow		17-Oct-2017	27-Oct-2017	24-Oct-2017	✖	31-Oct-2017	06-Dec-2017	✔



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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))		17-Oct-2017	19-Oct-2017	24-Oct-2017	✓	23-Oct-2017	28-Nov-2017	✓
MW01, MW03, MW05, SW02, QC01,	MW02, MW04, SW01, SW03, RB01							
Amber Glass Bottle - Unpreserved (EP075(SIM))		17-Oct-2017	27-Oct-2017	24-Oct-2017	✗	30-Oct-2017	06-Dec-2017	✓
Outflow								
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)		17-Oct-2017	19-Oct-2017	24-Oct-2017	✓	23-Oct-2017	28-Nov-2017	✓
MW01, MW03, MW05, SW02, QC01,	MW02, MW04, SW01, SW03, RB01							
Amber Glass Bottle - Unpreserved (EP071)		17-Oct-2017	27-Oct-2017	24-Oct-2017	✗	30-Oct-2017	06-Dec-2017	✓
Outflow								
Amber VOC Vial - Sulfuric Acid (EP080)		17-Oct-2017	24-Oct-2017	31-Oct-2017	✓	24-Oct-2017	31-Oct-2017	✓
MW01, MW03, MW05, SW02, QC01,	MW02, MW04, SW01, SW03, RB01							
Amber VOC Vial - Sulfuric Acid (EP080)		17-Oct-2017	30-Oct-2017	31-Oct-2017	✓	30-Oct-2017	31-Oct-2017	✓
Outflow								
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)		17-Oct-2017	19-Oct-2017	24-Oct-2017	✓	23-Oct-2017	28-Nov-2017	✓
MW01, MW03, MW05, SW02, QC01,	MW02, MW04, SW01, SW03, RB01							
Amber Glass Bottle - Unpreserved (EP071)		17-Oct-2017	27-Oct-2017	24-Oct-2017	✗	30-Oct-2017	06-Dec-2017	✓
Outflow								
Amber VOC Vial - Sulfuric Acid (EP080)		17-Oct-2017	24-Oct-2017	31-Oct-2017	✓	24-Oct-2017	31-Oct-2017	✓
MW01, MW03, MW05, SW02, QC01,	MW02, MW04, SW01, SW03, RB01							
Amber VOC Vial - Sulfuric Acid (EP080)		17-Oct-2017	30-Oct-2017	31-Oct-2017	✓	30-Oct-2017	31-Oct-2017	✓
Outflow								

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)		17-Oct-2017	24-Oct-2017	31-Oct-2017	✓	24-Oct-2017	31-Oct-2017	✓
MW01,	MW02,							
MW03,	MW04,							
MW05,	SW01,							
SW02,	SW03,							
QC01,	RB01,							
TS02,	TB02							
Amber VOC Vial - Sulfuric Acid (EP080) Outflow		17-Oct-2017	30-Oct-2017	31-Oct-2017	✓	30-Oct-2017	31-Oct-2017	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **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	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	15	6.67	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	6.67	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	15	13.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	7	28.57	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	6	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	15	13.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	59	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	15	13.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	7	28.57	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	6	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	15	13.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	59	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	7	14.29	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	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	59	5.08	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 60mL 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.

Job Title: Fairfield - SRC Assessment WSP Job Number: 2274108A
 LAB: ALS Job Location: Sydney
 Quote Number:
 Project Manager: Amy Valentine/Matt Barry Invoice: APInvoices@pb.com.au
 T.A.T: Standard

Sample ID	Date Sampled	Container	Medium	W26 - TRH/BTEXN/PAH/8 Metals	W13 - OC/OP/PCB	W7 - TRH/BTEXN/PAH	BTEX	Hold	Comments
1 MW01	17/10/2017	2A, 2V, 1P	Water	x	x				
2 MW02	17/10/2017	2A, 2V, 1P	Water	x	x				
3 MW03	17/10/2017	2A, 2V, 1P	Water	x	x				
4 MW04	17/10/2017	2A, 1V	Water			x			
5 MW05	17/10/2017	2A, 2V, 1P	Water	x	x				
6 SW01	17/10/2017	2A, 2V, 1P	Water	x					
7 SW02	17/10/2017	2A, 2V, 1P	Water	x					
8 SW03	17/10/2017	2A, 2V, 1P	Water	x					
9 Outflow	17/10/2017	2A, 2V, 1P	Water					x	Potential Faecal Contamination
10 QC01	17/10/2017	2A, 2V, 1P	Water	x					
11 QC01A	17/10/2017	2A, 2V, 1P	Water	x					Please forward to Eurofins for analysis
11 RB01	17/10/2017	2A, 2V, 1P	Water	x	x				
12 TS01	17/10/2017	1v	Water				x		
13 TB01	17/10/2017	1v	Water				x		

Count of Samples	10	5	1	2	1
------------------	----	---	---	---	---

Subject / PO Ref: _____
 Lab / Analysis: QC01A - Eurofins
 Organised By / Date: _____
 Relinquished By / Date: _____
 Connote / Courier: _____
 WO No: _____
 Attach By PO / Inter: _____

Environmental Division
 Sydney
 Work Order Reference
ES1726154



Telephone : + 61-2-6784 8555

Site: Fairfield SRC Assessment WSP009 Number: 33771096
 Date: 17/10/2017 Location: Version: 1
 Client Number: Project Manager: Anna Valentine / Matt O'Sullivan Project:

Sample ID	Date Sampled	Container	Medium	W26 - TRH/BTEXN/PAH/8 Metals	W13 - OC/OP/PCB	W7 - TRH/BTEXN/PAH	BTEX	Hold	Comments
MW01	17/10/2017	2A, 2V, 1P	Water	x	x				
MW02	17/10/2017	2A, 2V, 1P	Water	x	x				
MW03	17/10/2017	2A, 2V, 1P	Water	x	x				
MW04	17/10/2017	2A, 1V	Water			x			
MW05	17/10/2017	2A, 2V, 1P	Water	x	x				
SW01	17/10/2017	2A, 2V, 1P	Water	x					
SW02	17/10/2017	2A, 2V, 1P	Water	x					
SW03	17/10/2017	2A, 2V, 1P	Water	x					
Outflow	17/10/2017	2A, 2V, 1P	Water					x	Potential Faecal Contamination
QC01	17/10/2017	2A, 2V, 1P	Water	x					
QC01A	17/10/2017	2A, 2V, 1P	Water	x					
RB01	17/10/2017	2A, 2V, 1P	Water	x	x				Please forward to Eurofins for analysis
TS01	17/10/2017	1v	Water				x		
TB01	17/10/2017	1v	Water				x		

Count of Samples	10	5	1	2	1
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J. Curren ALS
 18/10/17 16:25

Certificate of Analysis

WSP Australia P/L NSW
Level 27, Ernst & Young Centre
Sydney
NSW 2001



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Amy Valentine

Report 568700-W
Project name FAIRFIELD-SRC ASSESSMENT
Project ID 2271108A
Received Date Oct 20, 2017

Client Sample ID			QC01A
Sample Matrix			Water
Eurofins mgt Sample No.			S17-Oc24432
Date Sampled			Oct 17, 2017
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	86
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.01	mg/L	< 0.01
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02
TRH C6-C10	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	< 0.003
Benz(a)anthracene	0.001	mg/L	< 0.003
Benzo(a)pyrene	0.001	mg/L	< 0.003
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.003
Benzo(g,h,i)perylene	0.001	mg/L	< 0.003
Benzo(k)fluoranthene	0.001	mg/L	< 0.003
Chrysene	0.001	mg/L	< 0.003
Dibenz(a,h)anthracene	0.001	mg/L	< 0.003
Fluoranthene	0.001	mg/L	< 0.003
Fluorene	0.001	mg/L	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.003

Client Sample ID			QC01A
Sample Matrix			Water
Eurofins mgt Sample No.			S17-Oc24432
Date Sampled			Oct 17, 2017
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Naphthalene	0.001	mg/L	< 0.001
Phenanthrene	0.001	mg/L	< 0.003
Pyrene	0.001	mg/L	< 0.003
Total PAH*	0.001	mg/L	< 0.003
2-Fluorobiphenyl (surr.)	1	%	82
p-Terphenyl-d14 (surr.)	1	%	86
Heavy Metals			
Arsenic (filtered)	0.001	mg/L	0.004
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	0.002
Lead (filtered)	0.001	mg/L	0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel (filtered)	0.001	mg/L	0.002
Zinc (filtered)	0.005	mg/L	0.031

Sample History

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

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Sydney	Oct 20, 2017	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Oct 20, 2017	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Oct 20, 2017	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Oct 20, 2017	14 Day
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Water by GCMS	Sydney	Oct 20, 2017	7 Days
Metals M8 filtered - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 23, 2017	28 Day

Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
Sydney
NSW 2001
Project Name: FAIRFIELD-SRC ASSESSMENT
Project ID: 2271108A

Order No.:
Report #: 568700
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Oct 20, 2017 11:55 AM
Due: Oct 27, 2017
Priority: 5 Day
Contact Name: Amy Valentine

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Polycyclic Aromatic Hydrocarbons	Metals M8 filtered	BTEX and Naphthalene	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217						X	X	X	X
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID				
1	QC01A	Oct 17, 2017		Water	S17-Oc24432	X	X	X	X
Test Counts						1	1	1	1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	87			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
BTEX							
Benzene	%	92			70-130	Pass	
Toluene	%	99			70-130	Pass	
Ethylbenzene	%	104			70-130	Pass	
m&p-Xylenes	%	101			70-130	Pass	
o-Xylene	%	102			70-130	Pass	
Xylenes - Total	%	101			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	107			70-130	Pass	
TRH C6-C10	%	91			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	97			70-130	Pass	
Acenaphthylene	%	109			70-130	Pass	
Anthracene	%	112			70-130	Pass	
Benz(a)anthracene	%	117			70-130	Pass	
Benzo(a)pyrene	%	114			70-130	Pass	
Benzo(b&j)fluoranthene	%	113			70-130	Pass	
Benzo(g,h,i)perylene	%	116			70-130	Pass	
Benzo(k)fluoranthene	%	116			70-130	Pass	
Chrysene	%	109			70-130	Pass	
Dibenz(a,h)anthracene	%	119			70-130	Pass	
Fluoranthene	%	115			70-130	Pass	
Fluorene	%	109			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	120			70-130	Pass	
Naphthalene	%	98			70-130	Pass	
Phenanthrene	%	110			70-130	Pass	
Pyrene	%	113			70-130	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

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

Authorised By

Nibha Vaidya Analytical Services Manager



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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nat

Job Title:	Fairfield - SRC Assessment	WSP Job Number:	127/1084
LAB:	A-5	Job Location:	Sydney
Quote Number:			
Project Manager:	Amy Valentine / Matt Barry	Invoice:	APInvoice@lab.com.au
Tr-AI:	Standard		

Sample ID	Date Sampled	Container	Medium	W26 - TRH/BTEXN/PAH/8 Metals	W13 - OC/OP/PCB	W7 - TRH/BTEXN/PAH	BTEX	Hold	Comments
1 MW01	17/10/2017	2A, 2V, 1P	Water	x	x				
2 MW02	17/10/2017	2A, 2V, 1P	Water	x	x				
3 MW03	17/10/2017	2A, 2V, 1P	Water	x	x				
4 MW04	17/10/2017	2A, 1V	Water			x			
5 MW05	17/10/2017	2A, 2V, 1P	Water	x	x				
6 SW01	17/10/2017	2A, 2V, 1P	Water	x					
7 SW02	17/10/2017	2A, 2V, 1P	Water	x					
8 SW03	17/10/2017	2A, 2V, 1P	Water	x					
9 Outflow	17/10/2017	2A, 2V, 1P	Water					x	Potential Faecal Contamination
10 QC01	17/10/2017	2A, 2V, 1P	Water	x					
11 QC01A	17/10/2017	2A, 2V, 1P	Water	x					
12 RB01	17/10/2017	2A, 2V, 1P	Water	x	x				Please forward to Eurofins for analysis
13 TS01	17/10/2017	1v	Water				x		
14 TB01	17/10/2017	1v	Water				x		
Count of Samples				10	5	1	2	1	

Lab / Analysis: RCOIA - Eurofins
 Organised By / Date: _____
 Relinquished By / Date: _____
 Connote / Courier: _____
 WO No: _____
 Attach: by PO / Inter

Mores 13°C
 27/10/17 11:55
 5 68700

Environmental Division
 Sydney
 Work Order Reference
ES1726154



CERTIFICATE OF ANALYSIS

Work Order : **ES1818186**
Client : **WSP Australia Pty Ltd**
Contact : **MS AMY VALENTINE**
Address : **ABN: 80 078 004 798 GPO BOX 5394
SYDNEY NSW, AUSTRALIA 2001**
Telephone : **----**
Project : **FAIRFIELD**
Order number : **PS10981**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **EN/008/17**
No. of samples received : **5**
No. of samples analysed : **4**

Page : 1 of 5
Laboratory : Environmental Division Sydney
Contact : Brenda Hong
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : (02) 8784 8504
Date Samples Received : 20-Jun-2018 17:45
Date Analysis Commenced : 22-Jun-2018
Issue Date : 28-Jun-2018 16:38



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	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.



Analytical Results

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

Client sample ID

				SW01	SW02	SW03	SW05	----
Client sampling date / time				20-Jun-2018 00:00	20-Jun-2018 00:00	20-Jun-2018 00:00	20-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit	ES1818186-001	ES1818186-002	ES1818186-003	ES1818186-005	-----
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.05	0.06	0.02	0.01	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	0.001	0.003	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	0.002	----
Copper	7440-50-8	0.001	mg/L	0.019	0.065	0.026	0.030	----
Lead	7439-92-1	0.001	mg/L	0.001	0.004	0.001	0.001	----
Manganese	7439-96-5	0.001	mg/L	0.024	0.038	0.009	0.005	----
Nickel	7440-02-0	0.001	mg/L	0.004	0.017	0.005	0.007	----
Zinc	7440-66-6	0.005	mg/L	0.079	0.096	0.038	0.017	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.20	0.03	0.03	0.07	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.07	<0.01	<0.01	0.11	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.36	0.03	0.10	0.28	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.43	0.03	0.10	0.39	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.07	0.57	0.33	3.62	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW01	SW02	SW03	SW05	----
Client sampling date / time					20-Jun-2018 00:00	20-Jun-2018 00:00	20-Jun-2018 00:00	20-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		ES1818186-001	ES1818186-002	ES1818186-003	ES1818186-005	-----
					Result	Result	Result	Result	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		94.9	97.2	89.3	95.8	----
Toluene-D8	2037-26-5	2	%		93.6	91.9	79.4	89.7	----
4-Bromofluorobenzene	460-00-4	2	%		94.2	95.1	86.3	93.6	----



Surrogate Control Limits

Sub-Matrix: **WATER**

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

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES1818186	Page	: 1 of 5
Client	: WSP Australia Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: MS AMY VALENTINE	Telephone	: (02) 8784 8504
Project	: FAIRFIELD	Date Samples Received	: 20-Jun-2018
Site	: ----	Issue Date	: 28-Jun-2018
Sampler	: ----	No. of samples received	: 5
Order number	: PS10981	No. of samples analysed	: 4

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	ES1818150--001	Anonymous	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	ES1817359--005	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
TRH - Semivolatile Fraction	0	10	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Semivolatile Fraction	0	10	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

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)		20-Jun-2018	----	----	----	26-Jun-2018	17-Dec-2018	✓
SW01,	SW02,							
SW03,	SW05							
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G)		20-Jun-2018	----	----	----	26-Jun-2018	18-Jul-2018	✓
SW01,	SW02,							
SW03,	SW05							
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G)		20-Jun-2018	----	----	----	22-Jun-2018	22-Jun-2018	✓
SW01,	SW02,							
SW03,	SW05							



Matrix: **WATER**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G)								
SW01,	SW02,	20-Jun-2018	----	----	----	26-Jun-2018	18-Jul-2018	✓
SW03,	SW05							
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G)								
SW01,	SW02,	20-Jun-2018	26-Jun-2018	18-Jul-2018	✓	26-Jun-2018	18-Jul-2018	✓
SW03,	SW05							
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
SW01,	SW02,	20-Jun-2018	23-Jun-2018	27-Jun-2018	✓	26-Jun-2018	02-Aug-2018	✓
SW03,	SW05							
Amber VOC Vial - Sulfuric Acid (EP080)								
SW01,	SW02,	20-Jun-2018	27-Jun-2018	04-Jul-2018	✓	27-Jun-2018	04-Jul-2018	✓
SW03,	SW05							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
SW01,	SW02,	20-Jun-2018	23-Jun-2018	27-Jun-2018	✓	26-Jun-2018	02-Aug-2018	✓
SW03,	SW05							
Amber VOC Vial - Sulfuric Acid (EP080)								
SW01,	SW02,	20-Jun-2018	27-Jun-2018	04-Jul-2018	✓	27-Jun-2018	04-Jul-2018	✓
SW03,	SW05							
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
SW01,	SW02,	20-Jun-2018	27-Jun-2018	04-Jul-2018	✓	27-Jun-2018	04-Jul-2018	✓
SW03,	SW05							



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	10	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	19	15.79	15.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	10	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard



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.
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G. Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A. The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
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
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. 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 60mL 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 →

ADELAIDE 21 Burne Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053
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SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-16 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembbla@alsglobal.com

CLIENT: WSP	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):	FOR LABORATORY USE ONLY (Circle) Custody Seal intact? Yes No Free ice / frozen ice bricks present upon receipt? Yes No Random Sample Temperature on Receipt: 13.6°C Other comment:
OFFICE: L27, 680 George St, Sydney NSW 2000	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7	
PROJECT: FAIRFIELD			
ORDER NUMBER: PS 102981			
PROJECT MANAGER: Amy Valentine	CONTACT PH:		
SAMPLER: Amy Wray	SAMPLER MOBILE: 0448429676	RELINQUISHED BY: Amy Wray	RECEIVED BY: M. Chan
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):	DATE/TIME: 20/6 5:40	DATE/TIME: 20/6/18 17:45
Email Reports to: Amy.V Valentine @wsp.com			
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 codes below	(refer to	TOTAL CONTAINERS	Asbestos	Asbestos (if required)	TRH	BTEXN	Al, Ar, Ch Cu, Pb, Mn	Ni, Zn	Nitrate, Nitrite Ammonia	P	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	SW01	20/6/18	W			6			X	X	X	X	X	X	
2	SW02	"	W			6			X	X	X	X	X	X	
3	SW03	"	W			6			X	X	X	X	X	X	
4	SW05	"	W			6			X	X	X	X	X	X	
Environmental Division Sydney Work Order Reference ES1818186															
															
Telephone : + 61-2-8784 8555															
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.

8786

CERTIFICATE OF ANALYSIS

Work Order : **ES1829464**
Client : **WSP Australia Pty Ltd**
Contact : **MS AMY VALENTINE**
Address : **GPO BOX 5394**
 SYDNEY NSW, AUSTRALIA 2001
Telephone : **----**
Project : **PS102981**
Order number : **----**
C-O-C number : **----**
Sampler : **Amy Wray**
Site : **----**
Quote number : **EN/008/18**
No. of samples received : **4**
No. of samples analysed : **4**

Page : 1 of 5
Laboratory : Environmental Division Sydney
Contact : Brenda Hong
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : (02) 8784 8504
Date Samples Received : 05-Oct-2018 11:45
Date Analysis Commenced : 06-Oct-2018
Issue Date : 11-Oct-2018 13:29



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by 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	SW01	SW02	SW03	CR01	----
Client sampling date / time					05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00	----
Compound	CAS Number	LOR	Unit		ES1829464-001	ES1829464-002	ES1829464-003	ES1829464-004	-----
					Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		0.14	0.04	0.20	0.15	----
Arsenic	7440-38-2	0.001	mg/L		0.001	<0.001	<0.001	<0.001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	0.005	----
Copper	7440-50-8	0.001	mg/L		0.020	0.027	0.020	0.030	----
Lead	7439-92-1	0.001	mg/L		0.002	0.002	0.002	0.004	----
Manganese	7439-96-5	0.001	mg/L		0.019	0.013	0.013	0.024	----
Nickel	7440-02-0	0.001	mg/L		0.005	0.007	0.009	0.008	----
Zinc	7440-66-6	0.005	mg/L		0.036	0.048	0.077	0.098	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		<0.01	<0.01	0.01	<0.01	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	0.01	0.04	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.02	0.02	0.16	1.29	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.02	0.02	0.17	1.33	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		1.12	1.28	0.75	0.17	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	120	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		460	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		370	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		830	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	140	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	140	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		730	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		200	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		930	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW01	SW02	SW03	CR01	----
Client sampling date / time					05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00	----
Compound	CAS Number	LOR	Unit		ES1829464-001	ES1829464-002	ES1829464-003	ES1829464-004	-----
					Result	Result	Result	Result	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	3	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	3	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	5	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		102	99.0	100	104	----
Toluene-D8	2037-26-5	2	%		106	105	116	117	----
4-Bromofluorobenzene	460-00-4	2	%		102	99.7	109	114	----



Surrogate Control Limits

Sub-Matrix: **WATER**

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

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES1829464	Page	: 1 of 5
Client	: WSP Australia Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: MS AMY VALENTINE	Telephone	: (02) 8784 8504
Project	: PS102981	Date Samples Received	: 05-Oct-2018
Site	: ----	Issue Date	: 11-Oct-2018
Sampler	: Amy Wray	No. of samples received	: 4
Order number	:	No. of samples analysed	: 4

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK067G: Total Phosphorus as P by Discrete Analyser	ES1829359--001	Anonymous	Total Phosphorus as P	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
SW01,	SW02,	----	----	----	08-Oct-2018	06-Oct-2018	2
SW03,	CR01						
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Natural							
SW01,	SW02,	----	----	----	08-Oct-2018	07-Oct-2018	1
SW03,	CR01						
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Natural							
SW01,	SW02,	08-Oct-2018	07-Oct-2018	1	----	----	----
SW03,	CR01						

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)					
TRH - Semivolatile Fraction	0	12	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Semivolatile Fraction	0	12	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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



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)								
SW01, SW03,	SW02, CR01	05-Oct-2018	----	----	----	07-Oct-2018	03-Apr-2019	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK055G)								
SW01, SW03,	SW02, CR01	05-Oct-2018	----	----	----	08-Oct-2018	06-Oct-2018	✗
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G)								
SW01, SW03,	SW02, CR01	05-Oct-2018	----	----	----	06-Oct-2018	07-Oct-2018	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Natural (EK059G)								
SW01, SW03,	SW02, CR01	05-Oct-2018	----	----	----	08-Oct-2018	07-Oct-2018	✗
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Natural (EK067G)								
SW01, SW03,	SW02, CR01	05-Oct-2018	08-Oct-2018	07-Oct-2018	✗	08-Oct-2018	05-Nov-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
SW01, SW03,	SW02, CR01	05-Oct-2018	08-Oct-2018	12-Oct-2018	✓	09-Oct-2018	17-Nov-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
SW01, SW03,	SW02, CR01	05-Oct-2018	08-Oct-2018	19-Oct-2018	✓	08-Oct-2018	19-Oct-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
SW01, SW03,	SW02, CR01	05-Oct-2018	08-Oct-2018	12-Oct-2018	✓	09-Oct-2018	17-Nov-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
SW01, SW03,	SW02, CR01	05-Oct-2018	08-Oct-2018	19-Oct-2018	✓	08-Oct-2018	19-Oct-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
SW01, SW03,	SW02, CR01	05-Oct-2018	08-Oct-2018	19-Oct-2018	✓	08-Oct-2018	19-Oct-2018	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	12	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	12	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
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.
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G. Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A. The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
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
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. 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 60mL 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.



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02 422 222 2227 www.qwollo.com.au

Airfreight Unpreserved Plastic
Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;

HIT

CERTIFICATE OF ANALYSIS

Work Order : **ES1930611**
Client : **WSP Australia Pty Ltd**
Contact : **MS AMY VALENTINE**
Address : **ABN: 80 078 004 798 GPO BOX 5394**
SYDNEY NSW, AUSTRALIA 2001
Telephone : **----**
Project : **PS102981**
Order number : **----**
C-O-C number : **----**
Sampler : **Christopher Virtue**
Site : **----**
Quote number : **EN/008/18 B**
No. of samples received : **4**
No. of samples analysed : **4**

Page : 1 of 5
Laboratory : Environmental Division Sydney
Contact : Brenda Hong
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61 2 8784 8555
Date Samples Received : 20-Sep-2019 15:00
Date Analysis Commenced : 20-Sep-2019
Issue Date : 27-Sep-2019 16:24



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	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.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW1	SW2	SW3	CR01	----
Client sampling date / time					18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	----
Compound	CAS Number	LOR	Unit		ES1930611-001	ES1930611-002	ES1930611-003	ES1930611-004	-----
					Result	Result	Result	Result	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		0.001	<0.001	<0.001	0.001	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		0.001	<0.001	0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		0.010	0.007	0.006	0.005	----
Nickel	7440-02-0	0.001	mg/L		0.002	0.001	<0.001	0.001	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L		<0.005	0.041	0.020	0.044	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		<0.01	0.07	0.01	0.07	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		0.01	<0.01	0.01	0.03	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.07	0.03	0.07	0.67	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.08	0.03	0.08	0.70	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.20	0.74	0.16	0.18	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW1	SW2	SW3	CR01	----
Client sampling date / time					18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	----
Compound	CAS Number	LOR	Unit		ES1930611-001	ES1930611-002	ES1930611-003	ES1930611-004	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		98.4	107	95.4	105	----
Toluene-D8	2037-26-5	2	%		97.2	110	91.2	106	----
4-Bromofluorobenzene	460-00-4	2	%		96.0	107	94.0	106	----



Surrogate Control Limits

Sub-Matrix: **WATER**

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

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES1930611	Page	: 1 of 6
Client	: WSP Australia Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: MS AMY VALENTINE	Telephone	: +61 2 8784 8555
Project	: PS102981	Date Samples Received	: 20-Sep-2019
Site	: ----	Issue Date	: 27-Sep-2019
Sampler	: Christopher Virtue	No. of samples received	: 4
Order number	: ----	No. of samples analysed	: 4

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	EN1906517--002	Anonymous	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EN1906517--002	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
SW1,	SW2,	----	----	----	24-Sep-2019	19-Sep-2019	5
SW3,	CR01						
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Natural							
SW1,	SW2,	----	----	----	24-Sep-2019	20-Sep-2019	4
SW3,	CR01						
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Natural							
SW1,	SW2,	24-Sep-2019	20-Sep-2019	4	----	----	----
SW3,	CR01						

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)					
TRH - Semivolatile Fraction	0	9	0.00	10.00	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; Unfiltered (EG020A-T) SW1, SW3, SW2, CR01	18-Sep-2019	23-Sep-2019	16-Mar-2020	✓	23-Sep-2019	16-Mar-2020	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) SW1, SW3, SW2, CR01	18-Sep-2019	----	----	----	24-Sep-2019	16-Oct-2019	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK055G) SW1, SW3, SW2, CR01	18-Sep-2019	----	----	----	24-Sep-2019	19-Sep-2019	✗
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) SW1, SW3, SW2, CR01	18-Sep-2019	----	----	----	20-Sep-2019	20-Sep-2019	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Natural (EK059G) SW1, SW3, SW2, CR01	18-Sep-2019	----	----	----	24-Sep-2019	20-Sep-2019	✗
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Natural (EK067G) SW1, SW3, SW2, CR01	18-Sep-2019	24-Sep-2019	20-Sep-2019	✗	24-Sep-2019	22-Oct-2019	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) SW1, SW3, SW2, CR01	18-Sep-2019	22-Sep-2019	25-Sep-2019	✓	25-Sep-2019	01-Nov-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) SW1, SW3, SW2, CR01	18-Sep-2019	26-Sep-2019	02-Oct-2019	✓	26-Sep-2019	02-Oct-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) SW1, SW3, SW2, CR01	18-Sep-2019	22-Sep-2019	25-Sep-2019	✓	25-Sep-2019	01-Nov-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) SW1, SW3, SW2, CR01	18-Sep-2019	26-Sep-2019	02-Oct-2019	✓	26-Sep-2019	02-Oct-2019	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) SW1, SW3, SW2, CR01	18-Sep-2019	26-Sep-2019	02-Oct-2019	✓	26-Sep-2019	02-Oct-2019	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	9	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	11	27.27	15.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
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)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
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
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)



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

CERTIFICATE OF ANALYSIS

Work Order : **ES2012822**
Client : **WSP Australia Pty Ltd**
Contact : **MS AMY VALENTINE**
Address : **ABN: 80 078 004 798 GPO BOX 5394**
SYDNEY NSW, AUSTRALIA 2001
Telephone : **----**
Project : **PS102981 Fairfield Sustainable Resource Centre**
Order number : **----**
C-O-C number : **----**
Sampler : **Leila Bowe**
Site : **----**
Quote number : **SY/085/17 V3**
No. of samples received : **17**
No. of samples analysed : **16**

Page : 1 of 13
Laboratory : Environmental Division Sydney
Contact : Grace White
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61 2 8784 8555
Date Samples Received : 16-Apr-2020 12:20
Date Analysis Commenced : 17-Apr-2020
Issue Date : 22-Apr-2020 20:33



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

This Certificate of Analysis contains the following information:

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

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

Where the LOR of a reported result differs from standard LOR, this may be due to high 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.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_0.1	BH02_0.5	BH02_1.0	BH03_0.15	BH04_0.3
Client sampling date / time					15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00
Compound	CAS Number	LOR	Unit		ES2012822-001	ES2012822-002	ES2012822-003	ES2012822-004	ES2012822-005
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		1.8	----	17.6	20.1	17.4
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	----	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	----	No	No
Asbestos Type	1332-21-4	-	--		-	-	----	-	-
Sample weight (dry)	----	0.01	g		110	200	----	144	79.3
APPROVED IDENTIFIER:	----	-	--		A. SMYLLIE	A. SMYLLIE	----	A. SMYLLIE	A. SMYLLIE
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	----	7	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	----	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		5	----	22	10	14
Copper	7440-50-8	5	mg/kg		80	----	7	24	19
Lead	7439-92-1	5	mg/kg		8	----	15	16	17
Nickel	7440-02-0	2	mg/kg		13	----	4	8	10
Zinc	7440-66-6	5	mg/kg		36	----	6	41	44
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	<0.1	<0.1	<0.1
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		0.7	----	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		0.8	----	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID		BH01_0.1	BH02_0.5	BH02_1.0	BH03_0.15	BH04_0.3	
Client sampling date / time				15-Apr-2020 00:00		15-Apr-2020 00:00		15-Apr-2020 00:00		15-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	ES2012822-001		ES2012822-002		ES2012822-003		ES2012822-004	
				Result		Result		Result		Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued											
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	2.0		----		<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	
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	----	10	mg/kg	<10		----		<10		<10	
C10 - C14 Fraction	----	50	mg/kg	<50		----		<50		<50	
C15 - C28 Fraction	----	100	mg/kg	340		----		<100		<100	
C29 - C36 Fraction	----	100	mg/kg	840		----		<100		140	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	1180		----		<50		140	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions											
C6 - C10 Fraction	C6_C10	10	mg/kg	<10		----		<10		<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10		----		<10		<10	
>C10 - C16 Fraction	----	50	mg/kg	<50		----		<50		<50	
>C16 - C34 Fraction	----	100	mg/kg	870		----		<100		200	
>C34 - C40 Fraction	----	100	mg/kg	1110		----		<100		100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	1980		----		<50		300	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50		----		<50		<50	
EP080: BTEXN											
Benzene	71-43-2	0.2	mg/kg	<0.2		----		<0.2		<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5		----		<0.5		<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5		----		<0.5		<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5		----		<0.5		<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5		----		<0.5		<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2		----		<0.2		<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5		----		<0.5		<0.5	
Naphthalene	91-20-3	1	mg/kg	<1		----		<1		<1	
EP075(SIM)S: Phenolic Compound Surrogates											
Phenol-d6	13127-88-3	0.5	%	82.1		----		75.6		76.0	
2-Chlorophenol-D4	93951-73-6	0.5	%	85.8		----		79.9		80.9	
2,4,6-Tribromophenol	118-79-6	0.5	%	71.2		----		68.2		62.1	
EP075(SIM)T: PAH Surrogates											



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_0.1	BH02_0.5	BH02_1.0	BH03_0.15	BH04_0.3
Client sampling date / time					15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00
Compound	CAS Number	LOR	Unit		ES2012822-001	ES2012822-002	ES2012822-003	ES2012822-004	ES2012822-005
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.5	%		96.2	----	94.5	93.6	96.5
Anthracene-d10	1719-06-8	0.5	%		90.3	----	88.5	86.6	89.5
4-Terphenyl-d14	1718-51-0	0.5	%		95.1	----	95.0	93.2	93.7
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		112	----	96.3	104	105
Toluene-D8	2037-26-5	0.2	%		128	----	108	120	124
4-Bromofluorobenzene	460-00-4	0.2	%		117	----	101	110	113



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH05_0.1	BH06_0.1	BH07_0.3	BH08_0.2	QA01
Client sampling date / time					15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00
Compound	CAS Number	LOR	Unit		ES2012822-006	ES2012822-007	ES2012822-008	ES2012822-009	ES2012822-010
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		11.5	26.2	26.1	21.9	11.6
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	----
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	----
Asbestos Type	1332-21-4	-	--		-	-	-	-	----
Sample weight (dry)	-----	0.01	g		75.9	104	50.6	66.8	----
APPROVED IDENTIFIER:	-----	-	--		A. SMYLLIE	A. SMYLLIE	A. SMYLLIE	A. SMYLLIE	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	6	7	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		12	22	29	20	18
Copper	7440-50-8	5	mg/kg		20	55	72	30	47
Lead	7439-92-1	5	mg/kg		28	40	46	22	19
Nickel	7440-02-0	2	mg/kg		8	28	25	20	24
Zinc	7440-66-6	5	mg/kg		56	102	145	56	54
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
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	1.0	<0.5	<0.5	0.8
Pyrene	129-00-0	0.5	mg/kg		<0.5	1.1	0.6	0.5	1.0
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

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID		BH05_0.1	BH06_0.1	BH07_0.3	BH08_0.2	QA01	
Client sampling date / time				15-Apr-2020 00:00		15-Apr-2020 00:00		15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	ES2012822-006		ES2012822-007		ES2012822-008	ES2012822-009	ES2012822-010	
				Result		Result		Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued											
^ Sum of polycyclic aromatic hydrocarbons				----	0.5	mg/kg	<0.5	2.1	0.6	0.5	1.8
^ 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	620	190	<100	120
C29 - C36 Fraction				----	100	mg/kg	<100	820	300	240	220
^ C10 - C36 Fraction (sum)				----	50	mg/kg	<50	1440	490	240	340
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	140	1190	400	260	260
>C34 - C40 Fraction				----	100	mg/kg	<100	600	250	280	260
^ >C10 - C40 Fraction (sum)				----	50	mg/kg	140	1790	650	540	520
^ >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
EP075(SIM)S: Phenolic Compound Surrogates											
Phenol-d6				13127-88-3	0.5	%	79.6	72.0	77.2	82.4	72.5
2-Chlorophenol-D4				93951-73-6	0.5	%	84.2	79.7	83.2	84.4	82.9
2,4,6-Tribromophenol				118-79-6	0.5	%	55.8	62.4	66.8	70.5	62.7
EP075(SIM)T: PAH Surrogates											



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH05_0.1	BH06_0.1	BH07_0.3	BH08_0.2	QA01
Client sampling date / time				15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00
Compound	CAS Number	LOR	Unit	ES2012822-006	ES2012822-007	ES2012822-008	ES2012822-009	ES2012822-010
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
2-Fluorobiphenyl	321-60-8	0.5	%	96.9	93.4	95.2	92.5	93.1
Anthracene-d10	1719-06-8	0.5	%	89.7	95.1	87.9	85.6	97.3
4-Terphenyl-d14	1718-51-0	0.5	%	98.2	90.3	95.2	92.5	91.9
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	109	93.0	101	102	99.1
Toluene-D8	2037-26-5	0.2	%	119	106	113	111	113
4-Bromofluorobenzene	460-00-4	0.2	%	113	109	108	104	105



Analytical Results

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

Client sample ID

				RSV1	RSV2	RSV3	QA01	TB150420
Client sampling date / time				15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00
Compound	CAS Number	LOR	Unit	ES2012822-012	ES2012822-013	ES2012822-014	ES2012822-015	ES2012822-016
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.002	0.007	0.004	0.002	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	0.005	0.046	0.002	0.004	----
Copper	7440-50-8	0.001	mg/L	0.006	0.037	0.008	0.005	----
Lead	7439-92-1	0.001	mg/L	0.001	0.015	0.003	<0.001	----
Nickel	7440-02-0	0.001	mg/L	0.003	0.012	0.005	0.002	----
Zinc	7440-66-6	0.005	mg/L	0.006	0.043	0.006	<0.005	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	280	120	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	110	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	390	120	<50	<50



Analytical Results

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

Client sample ID

				RSV1	RSV2	RSV3	QA01	TB150420
Client sampling date / time				15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00	15-Apr-2020 00:00
Compound	CAS Number	LOR	Unit	ES2012822-012	ES2012822-013	ES2012822-014	ES2012822-015	ES2012822-016
				Result	Result	Result	Result	Result
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	330	110	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	330	110	<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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	27.0	24.2	26.3	21.9	----
2-Chlorophenol-D4	93951-73-6	1.0	%	52.2	45.2	55.9	42.5	----
2,4,6-Tribromophenol	118-79-6	1.0	%	53.6	41.2	75.7	48.0	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	84.2	75.8	77.9	69.4	----
Anthracene-d10	1719-06-8	1.0	%	112	88.7	116	99.5	----
4-Terphenyl-d14	1718-51-0	1.0	%	92.4	89.9	93.7	86.3	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	121	124	118	112	112
Toluene-D8	2037-26-5	2	%	113	112	112	103	102
4-Bromofluorobenzene	460-00-4	2	%	111	112	111	102	104



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	RB150420	----	----	----	----
Client sampling date / time				15-Apr-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2012822-017	-----	-----	-----	-----
Result				----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----
^ Total Xylenes	----	2	µg/L	<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	101	----	----	----	----
Toluene-D8	2037-26-5	2	%	91.3	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	95.0	----	----	----	----



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	BH01_0.1 - 15-Apr-2020 00:00	Mid brown soil.
EA200: Description	BH02_0.5 - 15-Apr-2020 00:00	Mid brown soil.
EA200: Description	BH03_0.15 - 15-Apr-2020 00:00	Mid brown soil.
EA200: Description	BH04_0.3 - 15-Apr-2020 00:00	Mid brown soil.
EA200: Description	BH05_0.1 - 15-Apr-2020 00:00	Mid brown soil.
EA200: Description	BH06_0.1 - 15-Apr-2020 00:00	Mid brown soil.
EA200: Description	BH07_0.3 - 15-Apr-2020 00:00	Mid brown soil.
EA200: Description	BH08_0.2 - 15-Apr-2020 00:00	Mid brown soil.



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
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
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

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2012822	Page	: 1 of 9
Client	: WSP Australia Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: MS AMY VALENTINE	Telephone	: +61 2 8784 8555
Project	: PS102981 Fairfield Sustainable Resource Centre	Date Samples Received	: 16-Apr-2020
Site	: ----	Issue Date	: 22-Apr-2020
Sampler	: Leila Bowe	No. of samples received	: 17
Order number	: ----	No. of samples analysed	: 16

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.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

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.



Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)T: PAH Surrogates	ES2012822-014	RSV3	Anthracene-d10	1719-06-8	116 %	27.4-113 %	Recovery greater than upper 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	9	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	11	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	11	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
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)	15-Apr-2020	----	----	----	20-Apr-2020	29-Apr-2020	✓
BH01_0.1, BH02_1.0, BH03_0.15, BH04_0.3, BH05_0.1, BH06_0.1, BH07_0.3, BH08_0.2, QA01							
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)	15-Apr-2020	----	----	----	21-Apr-2020	12-Oct-2020	✓
BH02_0.5							
Snap Lock Bag - Subsampled by ALS (EA200)	15-Apr-2020	----	----	----	21-Apr-2020	12-Oct-2020	✓
BH01_0.1, BH03_0.15, BH04_0.3, BH05_0.1, BH06_0.1, BH07_0.3, BH08_0.2							



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	
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) BH01_0.1, BH02_1.0, BH03_0.15, BH04_0.3, BH05_0.1, BH06_0.1, BH07_0.3, BH08_0.2, QA01	15-Apr-2020	20-Apr-2020	12-Oct-2020	✔	21-Apr-2020	12-Oct-2020	✔	
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) BH01_0.1, BH02_1.0, BH03_0.15, BH04_0.3, BH05_0.1, BH06_0.1, BH07_0.3, BH08_0.2, QA01	15-Apr-2020	20-Apr-2020	13-May-2020	✔	22-Apr-2020	13-May-2020	✔	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) BH01_0.1, BH02_1.0, BH03_0.15, BH04_0.3, BH05_0.1, BH06_0.1, BH07_0.3, BH08_0.2, QA01	15-Apr-2020	20-Apr-2020	29-Apr-2020	✔	20-Apr-2020	30-May-2020	✔	
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071) BH01_0.1, BH02_1.0, BH03_0.15, BH04_0.3, BH05_0.1, BH06_0.1, BH07_0.3, BH08_0.2, QA01	15-Apr-2020	20-Apr-2020	29-Apr-2020	✔	20-Apr-2020	30-May-2020	✔	
Soil Glass Jar - Unpreserved (EP080) BH01_0.1, BH02_1.0, BH03_0.15, BH04_0.3, BH05_0.1, BH06_0.1, BH07_0.3, BH08_0.2, QA01	15-Apr-2020	20-Apr-2020	29-Apr-2020	✔	21-Apr-2020	29-Apr-2020	✔	

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

Matrix: **WATER** Evaluation: **x** = 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; Unfiltered (EG020A-T)		15-Apr-2020	17-Apr-2020	12-Oct-2020	✓	17-Apr-2020	12-Oct-2020	✓
RSV1,	RSV2,							
RSV3,	QA01							
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)		15-Apr-2020	----	----	----	20-Apr-2020	13-May-2020	✓
RSV1,	RSV2,							
RSV3,	QA01							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))		15-Apr-2020	20-Apr-2020	22-Apr-2020	✓	21-Apr-2020	30-May-2020	✓
RSV1,	RSV2,							
RSV3,	QA01							



Matrix: **WATER**

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

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RSV1, RSV3, TB150420, RSV2, QA01, RB150420	15-Apr-2020	20-Apr-2020	22-Apr-2020	✓	21-Apr-2020	30-May-2020	✓	
Amber VOC Vial - Sulfuric Acid (EP080) RSV1, RSV3, TB150420, RSV2, QA01, RB150420	15-Apr-2020	20-Apr-2020	29-Apr-2020	✓	20-Apr-2020	29-Apr-2020	✓	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RSV1, RSV3, TB150420, RSV2, QA01, RB150420	15-Apr-2020	20-Apr-2020	22-Apr-2020	✓	21-Apr-2020	30-May-2020	✓	
Amber VOC Vial - Sulfuric Acid (EP080) RSV1, RSV3, TB150420, RSV2, QA01, RB150420	15-Apr-2020	20-Apr-2020	29-Apr-2020	✓	20-Apr-2020	29-Apr-2020	✓	
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) RSV1, RSV3, TB150420, RSV2, QA01, RB150420	15-Apr-2020	20-Apr-2020	29-Apr-2020	✓	20-Apr-2020	29-Apr-2020	✓	



Quality Control Parameter Frequency Compliance

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

Matrix: **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	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **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	9	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	8	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	11	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS) - Continued							
Total Mercury by FIMS	EG035T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	9	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	11	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
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 6.1 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
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
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.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270E. 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 - 8260D. 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.
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)
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 - 8270E 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)



Analytical Methods	Method	Matrix	Method Descriptions
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260D 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
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)
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.
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.

WSP Australia P/L NSW
Level 27, Ernst & Young Centre
Sydney
NSW 2001

Attention: Amy Valentine

Report **714676-S**
Project name **FAIRFIELD SUSTAINABLE RESOURCE CENTRE**
Project ID **PS102981**
Received Date **Apr 20, 2020**

Client Sample ID			QA01A
Sample Matrix			Soil
Eurofins Sample No.			S20-Ap28000
Date Sampled			Apr 15, 2020
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	30
TRH C15-C28	50	mg/kg	180
TRH C29-C36	50	mg/kg	290
TRH C10-C36 (Total)	50	mg/kg	500
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	93
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	370
TRH >C34-C40	100	mg/kg	390
TRH >C10-C40 (total)*	100	mg/kg	760
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5

Client Sample ID			QA01A
Sample Matrix			Soil
Eurofins Sample No.			S20-Ap28000
Date Sampled			Apr 15, 2020
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	96
p-Terphenyl-d14 (surr.)	1	%	99
Heavy Metals			
Arsenic	2	mg/kg	3.7
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	27
Copper	5	mg/kg	41
Lead	5	mg/kg	17
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	26
Zinc	5	mg/kg	50
% Moisture	1	%	14

Sample History

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

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 24, 2020	14 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 24, 2020	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 24, 2020	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 24, 2020	
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Apr 24, 2020	14 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Apr 24, 2020	180 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Apr 20, 2020	14 Days

Australia

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Site # 1254 & 14271

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Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
Sydney
NSW 2001

Project Name: FAIRFIELD SUSTAINABLE RESOURCE CENTRE
Project ID: PS102981

Order No.:
Report #: 714676
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Apr 20, 2020 3:32 PM
Due: Apr 27, 2020
Priority: 5 Day
Contact Name: Amy Valentine

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Moisture Set	Eurofins mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	QA01A	Apr 15, 2020		Soil	S20-Ap28000	X	X
2	QA01A	Apr 15, 2020		Water	S20-Ap28001		X
Test Counts						1	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ug/L: micrograms per litre
ppm: Parts per million	ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	104			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14			%	78			70-130	Pass	
LCS - % Recovery									
BTEX									
Benzene			%	98			70-130	Pass	
Toluene			%	103			70-130	Pass	
Ethylbenzene			%	109			70-130	Pass	
m&p-Xylenes			%	106			70-130	Pass	
o-Xylene			%	108			70-130	Pass	
Xylenes - Total*			%	107			70-130	Pass	
LCS - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions									
Naphthalene			%	106			70-130	Pass	
TRH C6-C10			%	100			70-130	Pass	
TRH >C10-C16			%	79			70-130	Pass	
LCS - % Recovery									
Polycyclic Aromatic Hydrocarbons									
Acenaphthene			%	118			70-130	Pass	
Acenaphthylene			%	119			70-130	Pass	
Anthracene			%	116			70-130	Pass	
Benz(a)anthracene			%	111			70-130	Pass	
Benzo(a)pyrene			%	115			70-130	Pass	
Benzo(b&j)fluoranthene			%	129			70-130	Pass	
Benzo(g.h.i)perylene			%	97			70-130	Pass	
Benzo(k)fluoranthene			%	112			70-130	Pass	
Chrysene			%	114			70-130	Pass	
Dibenz(a.h)anthracene			%	87			70-130	Pass	
Fluoranthene			%	111			70-130	Pass	
Fluorene			%	115			70-130	Pass	
Indeno(1.2.3-cd)pyrene			%	97			70-130	Pass	
Naphthalene			%	118			70-130	Pass	
Phenanthrene			%	114			70-130	Pass	
Pyrene			%	111			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	103			70-130	Pass	
Cadmium			%	97			70-130	Pass	
Chromium			%	102			70-130	Pass	
Copper			%	101			70-130	Pass	
Lead			%	106			70-130	Pass	
Mercury			%	107			70-130	Pass	
Nickel			%	104			70-130	Pass	
Zinc			%	98			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S20-Ap27924	NCP	%	96			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-Ap27924	NCP	%	95			70-130	Pass	
Toluene	S20-Ap27924	NCP	%	98			70-130	Pass	
Ethylbenzene	S20-Ap27924	NCP	%	99			70-130	Pass	
m&p-Xylenes	S20-Ap27924	NCP	%	99			70-130	Pass	
o-Xylene	S20-Ap27924	NCP	%	99			70-130	Pass	
Xylenes - Total*	S20-Ap27924	NCP	%	99			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-Ap27924	NCP	%	98			70-130	Pass	
TRH C6-C10	S20-Ap27924	NCP	%	98			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	S20-Ap30091	NCP	%	113			70-130	Pass	
Chromium	S20-Ap30091	NCP	%	117			70-130	Pass	
Nickel	S20-Ap30091	NCP	%	118			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S20-Ap27923	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Ap27923	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S20-Ap27923	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S20-Ap27923	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S20-Ap27923	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S20-Ap27923	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S20-Ap27923	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Ap27923	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S20-Ap27923	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g,h,i)perylene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a,h)anthracene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S20-Ap26644	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-Ap30090	NCP	mg/kg	15	19	26	30%	Pass	
Cadmium	S20-Ap30090	NCP	mg/kg	0.6	1.4	84	30%	Fail	Q15
Chromium	S20-Ap30090	NCP	mg/kg	21	19	11	30%	Pass	
Copper	S20-Ap30090	NCP	mg/kg	54	55	3.0	30%	Pass	
Lead	S20-Ap30090	NCP	mg/kg	130	150	10	30%	Pass	
Mercury	S20-Ap30090	NCP	mg/kg	0.2	0.1	17	30%	Pass	
Nickel	S20-Ap30090	NCP	mg/kg	15	24	49	30%	Fail	Q15
Zinc	S20-Ap30090	NCP	mg/kg	240	900	120	30%	Fail	Q02

Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-Ap28654	NCP	%	11	14	27	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q02	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Alena Bounkeua	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)



Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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WSP Australia P/L NSW
Level 27, Ernst & Young Centre
Sydney
NSW 2001



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Amy Valentine

Report 714676-W
Project name FAIRFIELD SUSTAINABLE RESOURCE CENTRE
Project ID PS102981
Received Date Apr 20, 2020

Client Sample ID			QA01A
Sample Matrix			Water
Eurofins Sample No.			S20-Ap28001
Date Sampled			Apr 15, 2020
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	99
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.01	mg/L	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	< 0.001
Fluorene	0.001	mg/L	< 0.001

Client Sample ID			QA01A
Sample Matrix			Water
Eurofins Sample No.			S20-Ap28001
Date Sampled			Apr 15, 2020
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001
Naphthalene	0.001	mg/L	< 0.001
Phenanthrene	0.001	mg/L	< 0.001
Pyrene	0.001	mg/L	< 0.001
Total PAH*	0.001	mg/L	< 0.001
2-Fluorobiphenyl (surr.)	1	%	143
p-Terphenyl-d14 (surr.)	1	%	147
Heavy Metals			
Arsenic	0.001	mg/L	0.002
Cadmium	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	0.004
Copper	0.001	mg/L	0.005
Lead	0.001	mg/L	< 0.001
Mercury	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	0.002
Zinc	0.005	mg/L	0.008

Sample History

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

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 20, 2020	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 20, 2020	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 20, 2020	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 20, 2020	
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Apr 20, 2020	7 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Apr 20, 2020	180 Days

Australia

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Site # 1254 & 14271

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Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
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NSW 2001

Project Name: FAIRFIELD SUSTAINABLE RESOURCE CENTRE
Project ID: PS102981

Order No.:
Report #: 714676
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Apr 20, 2020 3:32 PM
Due: Apr 27, 2020
Priority: 5 Day
Contact Name: Amy Valentine

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Moisture Set	Eurofins mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	QA01A	Apr 15, 2020		Soil	S20-Ap28000	X	X
2	QA01A	Apr 15, 2020		Water	S20-Ap28001		X
Test Counts						1	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	109			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	110			70-130	Pass	
Toluene	%	115			70-130	Pass	
Ethylbenzene	%	114			70-130	Pass	
m&p-Xylenes	%	115			70-130	Pass	
o-Xylene	%	117			70-130	Pass	
Xylenes - Total*	%	115			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	124			70-130	Pass	
TRH C6-C10	%	120			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	92			70-130	Pass	
Cadmium	%	86			70-130	Pass	
Chromium	%	82			70-130	Pass	
Copper	%	84			70-130	Pass	
Lead	%	96			70-130	Pass	
Mercury	%	105			70-130	Pass	
Nickel	%	84			70-130	Pass	
Zinc	%	83			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S20-Ap27985	NCP	%	102			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-Ap27985	NCP	%	108			70-130	Pass	
Toluene	S20-Ap27985	NCP	%	108			70-130	Pass	
Ethylbenzene	S20-Ap27985	NCP	%	109			70-130	Pass	
m&p-Xylenes	S20-Ap27985	NCP	%	105			70-130	Pass	
o-Xylene	S20-Ap27985	NCP	%	110			70-130	Pass	
Xylenes - Total*	S20-Ap27985	NCP	%	107			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-Ap27985	NCP	%	116			70-130	Pass	
TRH C6-C10	S20-Ap27985	NCP	%	112			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S20-Ap32662	NCP	%	92			70-130	Pass	
Cadmium	S20-Ap32662	NCP	%	85			70-130	Pass	
Chromium	S20-Ap32662	NCP	%	80			70-130	Pass	
Copper	S20-Ap32662	NCP	%	82			70-130	Pass	
Lead	S20-Ap32662	NCP	%	97			70-130	Pass	
Mercury	S20-Ap32662	NCP	%	111			70-130	Pass	
Nickel	S20-Ap32662	NCP	%	82			70-130	Pass	
Zinc	S20-Ap32662	NCP	%	81			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S20-Ap27984	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Ap27984	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S20-Ap27984	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S20-Ap27984	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S20-Ap27984	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S20-Ap27984	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	S20-Ap27984	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Ap27984	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S20-Ap27984	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-Ap25440	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S20-Ap25440	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S20-Ap25440	NCP	mg/L	0.001	< 0.001	16	30%	Pass	
Copper	S20-Ap25440	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	S20-Ap25440	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	S20-Ap25440	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S20-Ap25440	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	S20-Ap25440	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

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

Authorised By

Alena Bounkeua	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)



Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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#714676



CHAIN OF
USTODY

ALS Laboratory:
please tick →

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Website: www.als.com.au

Environmental Division
Sydney
Work Order Reference
ES2012822



Telephone : +61-2-8784 8555

CLIENT: WSP		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):		FOR LABORATORY Custody Seal intact Free ice / frozen liquid Random Sample Other comment:
OFFICE: Environmental Protection Unit, Sydney Water		ALS QUOTE NO.: EN-085-17		
PROJECT: PS102981 Fairfield Sustainable Resource Centre		COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7		
ORDER NUMBER:		RECEIVED BY: <i>[Signature]</i> DATE/TIME: 16/4/20 12:24		
PROJECT MANAGER: Amy Valentine		CONTACT PH: 02 92725139		RELINQUISHED BY: <i>[Signature]</i> DATE/TIME: 15/04/2020
SAMPLER: Leila Bowe		SAMPLER MOBILE: 0468 453 715		
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default): Esdat and PDF		
Email Reports to: amy.valentine@wsp.com, leila.bowe@wsp.com		Email Invoice to (will default to PM if no other addressees are listed): amy.valentine@wsp.com		

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE		SAMPLE DETAILS		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract a charge. Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered water required).												Telephone : + 61-2-8784 6555	
		MATRIX SOLID (S) WATER (W)																	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26 (TRH, BTEXN, PAHs, 8 metals)	Asbestos Presence/Absence	W-4 (TRH, BTEXN)	W-26T (TRH, BTEXN, PAH, 8 metals - total)								Additional Information Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.		
1	BH01_0.1	15/04/2020	Soil		1	X	X												
2	BH02_0.5	15/04/2020	Soil		1		X												
3	BH02_1.0	15/04/2020	Soil		1	X													
4	BH03_0.15	15/04/2020	Soil		1	X	X												
5	BH04_0.3	15/04/2020	Soil		1	X	X												
6	BH05_0.1	15/04/2020	Soil		1	X	X												
7	BH06_0.1	15/04/2020	Soil		1	X	X												
8	BH07_0.3	15/04/2020	Soil		1	X	X												
9	BH08_0.2	15/04/2020	Soil		1	X	X												
10	QA01	15/04/2020	Soil		1	X													
X	QA01A	15/04/2020	Soil		1	X											Please send to Eurofins		
11	SW1	15/04/2020	Water		4												On hold		
12	RSV1	15/04/2020	Water		4				X										
13	RSV2	15/04/2020	Water		4				X										
14	RSV3	15/04/2020	Water		4				X										
15	QA01	15/04/2020	Water		4				X										
X	QA01A	15/04/2020	Water		4				X								Please send to Eurofins		
16	TB150420	15/04/2020	Water		3			X											
17	RB150420	15/04/2020	Water		3			X											
TOTAL					41	10	8	2	5										

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 Solids; B = Unpreserved Bag

APPENDIX G

SURVEY RESULTS





A Veris Company



Surveying Development GIS

ADDRESS: **Fairfield sustainable resource centre**
Hassal street
wetherill park

Job No: 17587
Date: 10/17/2017

POINT ID	MGA EASTING	MGA NORTHING	GROUND LEVEL	TOP OF PVC CASING
mw01	307285.34	6253660.49	40.23	41.16
mw02	307374.54	6253716.17	40.94	41.57
mw03	307443.21	6253680.29	39.06	39.70
mw04	307294.72	6253804.07	28.37	29.68
mw05	307248.05	6253850.55	28.84	30.05

DATE SURVEYED : 10/17/2017
SURVEYOR : CRAIG TULLOCH

ORIGIN OF COORDINATES SSM 154595
SCIMS DATE : 10/17/2017

GENERAL NOTES:
MONITORING WELLS WERE SURVEYED USING GNSS CORSnet- NSW.
G.P.S. ACCURACY +/- 20MM
RESULTS GIVEN TO THE NEAREST CENTIMETER

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