CO-OP Studio

Stage 1 Site Contamination Assessment

Proposed Aquatic Facility

Gordon Street, Port Macquarie

Report No. RGS21005.6-AC

23 May 2023

REGIONAL GEOTECHNICAL SOLUTIONS

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Manning-Great Lakes
Port Macquarie
Coffs Harbour

RGS21005.6-AC

23 May 2023

CO-OP Studio
35 Richards Avenue
SURREY HILLS NSW 2010

Attention: Steven Donaghey

Dear Steven,

RE: Proposed Aquatic Facility – Gordon Street, Port Macquarie

Stage 1 Site Contamination Assessment

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken a Stage 1 Site Contamination Assessment for the proposed development at Gordon Street, Port Macquarie.

The assessment included identification of areas of environmental concern based on site observations and past landuse, and a limited amount of sampling in the identified areas. The results did not reveal contamination exceeding guidelines for recreational land use for the proposed aquatic centre development. Some uncontrolled filling from unknown sources was identified that included mixed waste materials.

The uncontrolled fill areas will require a Stage 2 Contamination Assessment once further details of the proposed development are known including potential excavations or placement of fill over the existing profile. A Remedial Action Plan may then be required for the treatment or removal of any identified contamination.

However, the findings of this assessment indicate that it is likely that the site can be remediated to a standard appropriate for the proposed aquatic centre development from a site contamination perspective provided the recommendations and advice of this report are adopted. It is noted that details of the proposed development are not yet available and proposed filling/excavations etc will have implications for the extent or need for remediation works.

The work presented herein was reviewed by Dr David Tully CEnvP SC. A copy of Dr Tully's letter pertaining to the review is appended to the report.

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If you have any questions regarding this project, please contact the undersigned.

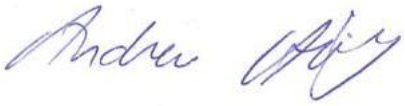
For and on behalf of **Regional Geotechnical Solutions Pty Ltd**

Prepared by

Tim Morris

Principal Engineering Geologist

Reviewed by



Andrew Hills

Senior Environmental Engineer

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1 INTRODUCTION

Regional Geotechnical Solutions Pty Ltd (RGS) have undertaken a Stage 1 Site Contamination Assessment for a proposed Aquatic Facility at Macquarie Park, Gordon Street, Port Macquarie. It comprises 14 lots:

- Lots No's 5 – 9;
- Part of Lot No's 14 – 20 (DP758852);
- Part of Lot No 7063 (DP1040735); and
- Lot No 2 (DP808449).

The site is approximately 2.5 ha and comprises grass playing fields and an open grassed area. It also includes part of an existing sealed car park in Munster Street. Details of the proposed development are not yet available but are likely to include buildings and pool(s) in the northern half of the site and car parking in the southern half. The site location is shown on Figure 1.

The area of assessment excludes the netball courts and the associated amenities block to the south. The sewer pump station at Lot 1 DP808449 in the west of the site is also excluded from the area of assessment.

The purpose of the work described herein was to assess the suitability of the site for the proposed development, with respect to the presence of site contamination resulting from past land use and activities, as well as providing discussions and recommendations regarding:

- Identification of Areas of Environmental Concern (AEC) and Chemicals of Concern (COC);
- The undertaking of limited targeted sampling and analysis at the selected AEC to allow some preliminary analysis of the presence of contamination;
- Evaluation of test results against industry accepted criteria for the intended landuse;
- Conclusions regarding the presence of contamination at the site and its potential impacts on the proposed recreational landuse; and
- The requirement for remediation, further investigation, or ongoing management of site contamination.

The work was commissioned by Steven Donaghey on behalf of CO-OP Studio Pty Ltd and was undertaken in accordance with proposal number RGS21005.6-AA dated 2 February 2021. The project was paused after fieldwork was undertaken and has recently recommenced.

2 GUIDELINES AND ASSESSMENT CRITERIA

The assessment was aimed at fulfilling the requirements of a Stage 1 Contaminated Site Assessment in accordance with NSW EPA *Guidelines for Consultants Reporting on Contaminated Land (2020)*

To evaluate results and for guidance on assessment requirements, the assessment adopted the guidelines provided in the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM 2013)*. The NEPM document provides a range of guidelines for assessment of contaminants for various land use scenarios. The proposed land use is considered equivalent to Public Open Space and as such comparison with the NEPM guideline values for HIL C land use was considered appropriate. However, it is noted that some areas of the site will be used for car parking and the proposed swimming pool complex which may have limited opportunities for soil

access, and a Commercial type land use may then be more appropriate. This should be reviewed once more details of the proposed development are available.

In accordance with the NEPM guideline the following criteria were adopted for this assessment:

- Health Investigation Levels (HILs) for Recreational C (Public Open Space) land use were used to assess the potential human health impact of heavy metals and polycyclic aromatic hydrocarbons (PAH);
- Health Screening Levels (HSLs) for coarse textured (sand) or fine textured (silt and clay) soils on a Commercial D site with respect to inhalation of indoor air were adopted as appropriate for the soils encountered to assess the potential human health impact of petroleum hydrocarbons and benzene, toluene, ethyl-benzene, xylenes (BTEX) compounds;
- Ecological Investigation Levels (EILs) for Recreational C (Public Open Space) land use were used for evaluation of the potential ecological / environmental impact of heavy metals and naphthalene;
- Ecological Screening Levels (ESLs) for coarse textured (sand) soils or fine textured (silt and clay) soils on a Recreational C (Public Open Space) land use site were adopted as appropriate for the soils encountered, to assess the potential ecological / environmental impact of petroleum hydrocarbons, BTEX compounds and benzo(a)pyrene.

In accordance with NEPM 2013, exceedance of the criteria does not necessarily deem that remediation is required, but is a trigger for further assessment of the extent of contamination and associated risks. The adopted criteria are presented in the results summary table in Appendix C.

3 METHODOLOGY

In accordance with the relevant sections of the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013*), the assessment involved the following process:

- A brief study of site history, with the aim of identifying past activities on or near the site that might have the potential to cause contamination;
- Review of selected available recent and historical aerial photography for the last 50 years;
- A search of NSW EPA records, or contaminated land notifications on the site;
- Government records of groundwater bores in the area;
- Land title search of the respective lots available from the Land Titles Office;
- Using the above information, characterise the site into Areas of Environmental Concern, in which the potential for contamination has been identified, and nominate Chemicals of Concern that might be associated with those activities;
- Undertake targeted judgemental sampling and analysis at the selected Areas of Concern to allow some preliminary analysis of the presence of contamination;
- Analyse samples for a suite of potential contaminants associated with the past activities; and
- Evaluate the results against industry accepted criteria for the proposed land use.

4 SITE SETTING AND HISTORY

4.1 Site Description

The approximately 2.5ha area of assessment is within Macquarie Park which comprises grassed playing fields with surface elevations ranging from approximately RL 3m in the south west to RL 5m in the north east.

The site is situated at the toe of a south facing ridge slope and grades down to the south towards Wrights Creek. It appears to have been a low lying landscape that has been historically modified by site filling works.

A satellite image that shows the location of the site and the site setting is reproduced in Plate 1.

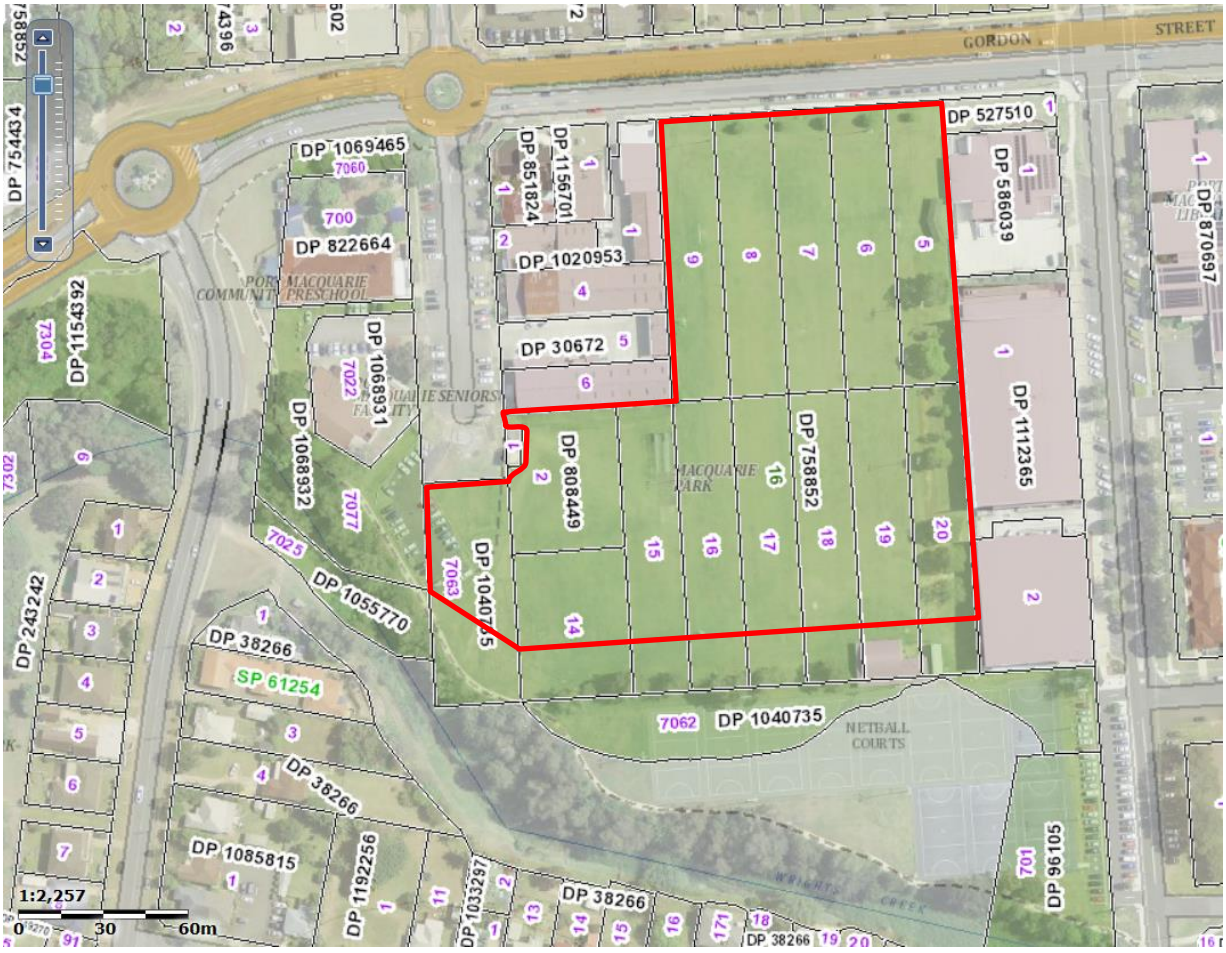


Plate 1: *Satellite image dated 2012 obtained from the NSW Government 'Six Maps' website that illustrates the site location and setting at Macquarie Park. The approximate area of assessment is outlined in red. The northern half of the site is proposed for pools and structures and the southern half for car parking.*

Grassed playing fields are present in Lot No's 5 to 9 and 16 to 20 and have lighting towers at regular interval around the perimeter. A brick amenities block with tile roof and a metal shipping container are present in the northeast corner of the site in Lot No. 5. Lot No's 2, 14 and 15 comprise an open grassed area. A set of cricket nets are visible in the 2012 satellite imagery in Lot 15 but have since been removed.

A fill embankment for spectator viewing approximately 115m in length, 8m width and 1.5m in height is present along the eastern boundary in Lot No's 5 and 20. Orange/red clay soils were exposed on the sides of the mound and the material may have been imported to site.

The site also includes a portion of an existing car park, located in part of Lot 7063 at the southern end of Munster Street. The car park has a two-coat seal and the pavement condition is variable with some patching and an uneven surface. A north – south concrete footpath is also present within Lot 7063.

Vegetation consists of short, maintained grass and medium sized trees along the north, east and southern boundaries.

Drainage of the site would be via a combination of overland flow towards the south and surface infiltration. Some localised depressions were present in the southwest of the site and contained surface water at the time of the assessment on 18 March 2021. Wrights Creek is located on the southwestern boundary of the site and flows to the west. It is subject to limited tidal exchange at the Lake Road culvert crossing. Vehicle access to the site was restricted to tracked plant when fieldwork was undertaken on 18 March 2021 due to surface water and slippery conditions.

The site is bound by Gordon Street to the north, three storey commercial office buildings to the east, concrete netball courts to the south, Wrights Creek to the south-west and portal frame commercial buildings to the west. A raised brick sewer pump station is located in the west of the site near Munster Street within Lot 1 DP808449.

Selected site photographs are presented below.

Looking north east towards brick amenities block and metal shipping container in north east corner of site.

Looking south across playing fields. Site has been modified by filling works to create a near level surface. Lighting poles line the perimeter of the sporting fields.

Looking south across open grassed area in southwest of site on 18 March 2021.

Raised spectator mound on eastern site boundary. Some red clay soils exposed on side of mound.

Looking north towards sewer pump station located on western site boundary adjacent to Munster Street.

Looking south over pump station and car park. The car park is partially located within the site.

4.2 Historical Aerial Photography

Some historical aerial photographs of the site were supplied by Council and others were accessed from publicly available databases. The photographs and available satellite imagery was reviewed to assist in identifying past land uses that may contribute to site contamination. The results of the review are summarised in

Table 1.

Table 1 - Aerial Photograph and Imagery Summary

Year	Site	Surrounding Land
1956	Site appears to be mostly cleared with some trees in the centre of the site. Possibly used for grazing purposes. Darker shade of vegetation in north and south of site may be indicative of low lying areas.	A dwelling is located outside the north east corner of the site. near the intersection of Munster and Grant Street. Adjacent streets appear to be of gravel construction. Munster Street continues south and crosses Wilson Creek onto Lake Road, to the east of the current creek crossing alignment.
1959 (Figure 3)	No significant change. Darker shade of vegetation in north and south of site indicates low lying alluvial depressions.	An additional large building is present to the south east of the site on Grant Street. Filling works appear to have occurred to the north west of the site and a large commercial type building is present.
1969 (Figure 4)	Image is of poor resolution, however, it appears that the site has been or is being modified by filling works with a pale coloured fill material present across most of the site footprint.	An additional building is present on the eastern boundary on Grant Street.
1979	Sewer pump station visible in Lot 2. Service trench excavations are visible from the pump station to the south, through Lot 7063.	The existing portal frame shed at the end of Munster Street is visible, as well as additional commercial type structures to the north. A building is present on the corner of Grant and Gordon Street.
1981	Poor quality images, however, filling works are occurring in the south west corner of the site in the vicinity of the existing Munster Street car park.	Filling works occurring to south of site near Wilson Creek, where netball courts are now present.
1991 (Figure 5)	Cricket nets are present in the west of the site. Amenities block is visible in the north east corner of the site. Spectator mound present on eastern boundary.	Paved netball courts constructed to south of site and an amenities block is visible. Additional building and swimming pool at building complex on eastern boundary.
2009 Google Earth	Sealed car park has been constructed in south west corner of site in Lot 7063. Light towers are visible.	The buildings on the eastern boundary have been redeveloped as a large commercial complex comprising three separate large office blocks. Additional netball courts have been constructed to the south, towards Grant Street. An additional amenities block/ clubhouse is present to the north of the netball courts.
2022 Google Earth	The cricket nets have been removed, although ground disturbance in their former vicinity is still visible.	No significant change.

4.3 NSW EPA Records

A check with the NSW EPA website (www.epa.nsw.gov.au) revealed that no notices have been issued on the site under the Contaminated Land Management Act (1997).

4.4 Land Title Search

A list of past registered proprietors and lessors of one lot of the 14 present was obtained from the Land Titles Office. A summary of the title details is included in Appendix A.

The title history search revealed the following:

- 1951 – 1990: Crown Land
- 1990 – to date: State of NSW

Prior to 1950, allotments 5 to 9 and 13 to 20 of Section 16 were in the possession of T Hughes, D Peden, B Conroy, W Danvers, C Wilkinson and D Gillespie prior to the area being resumed under the Publics Works Act for public purpose – namely a public school, on 20 December 1950.

4.5 Geology

The site is located in an area of gently undulating topography that is underlain by deeply weathered geological units of the Port Macquarie Block which includes slate, chert, basalt, serpentinite and dolerite.

Reference to the Port Macquarie Quaternary Geology Sheet indicates there are Quaternary alluvial valley fill deposits present in the southwest of the site that may comprise alluvial clays, silts, sand or gravel.

Reference to the Port Macquarie 1:25,000 Acid Sulfate Soils (ASS) Risk Map indicates there is a low probability of ASS between 1m and 3m in an alluvial plain located near the southern boundary of the site.

Reference to historical aerial photographs indicate that in 1959 there was an alluvial drainage line located near the northern site boundary as shown in Figure 3. By 1969 the north of the site had been modified by filling works. In 1981 further site filling works are occurring in the south west corner of the site near the existing Munster Street car park.

4.6 Groundwater

A groundwater bore search on the Water NSW website indicates that there is one licensed groundwater bore within 200 m of the site boundary and licensed for commercial and industrial use. The bore is located approximately 120 m to the northwest of the site as shown in Plate 2.

Plate 2: *Nearest licensed groundwater bore (GW73259) highlighted in blue is located approximately 120m to the north-west of the site. The approximate site boundaries are outlined in red.*

Groundwater bore GW73259 was installed in 1994. The recorded profile comprised fill to 7.6m overlying yellow shale to 16.6m. Groundwater inflow was encountered from 14.6 to 15m with a standing water level at 3m.

Groundwater inflow was encountered during the geotechnical investigation undertaken by RGS at the site in 2021 at the levels shown in Table 2. It should be noted that fluctuations in groundwater levels can occur as a result of seasonal variations, temperature, rainfall and other similar factors, the influence of which may not have been apparent at the time of the assessment.

Two temporary groundwater monitoring wells were installed at the site for ongoing monitoring as part of the geotechnical assessment. A summary of the groundwater monitoring data collected to date is presented in Table 2.

Table 2 – Summary of Groundwater Monitoring

Borehole	Date	Water Depth (m)	Surface Level (m RL)	Reduced Level of Water Table (m RL)
BH3B	18/3/2021 (Installation)	1.0	3.4	RL 2.40 m
BH3B	11/6/2021	0.97	3.4	RL 2.43 m
BH101	19/4/2021 (Installation)	0.6	4.3	RL 3.70 m

4.7 Land Zoning

Reference to the Port Macquarie Hastings Council Local Environment Plan (LEP) shows the site is currently zoned RE1, Public Recreation.

4.8 Historical Information

Initial discussions with Council suggested that the site was previously used as a landfill facility.

Council subsequently provided additional documentation, a copy of which is presented in Appendix A. It shows an application by Port Macquarie Municipal Council for approval of a site described as "*a sanitary depot for the disposal of garbage*" was approved in 1961 in Section 15 of the town of Port Macquarie, between Lord Street and Grant Street. This is the site of the existing Port Macquarie Swimming Pool, at 28 Gordon Street (Lot 13-15 DP 758852) rather than the subject site. A note in the file states the facility ceased operation in 1966.

It is noted that filling works within the subject site appear to have taken place between 1959 and 1969, the same period that the "*sanitary depot*" was in operation at the Port Macquarie Swimming Pool site. There is a possibility that both sites were used for disposal of waste material during this period.

Discussions with a local earthworks contractor indicate that a motel was previously located on the west side of Grant Street where the commercial office buildings are now present in Lot 1 and 2 DP1112365. No further details of the motel are available but this is consistent with the large buildings visible in the historical aerial photography.

4.9 Site History Summary

Based on available data the chronological development of the site was undertaken as summarised below:

- Allotments 5 to 9 and 13 to 20 of Section 16 were in the possession of various individuals prior to the area being resumed for a proposed school in 1951;
- An alluvial depression is visible in the 1959 and 1965 near the northern and southern site boundaries;
- The majority of the site was filled between 1959 and 1969, including the alluvial depression;
- Additional filling works in the south west corner of the site between 1979 and 1981;
- The source of the fill material is not known;
- Large buildings were present since 1959 on the eastern site boundary along Grant Street and the number of buildings increased until about 2009. The buildings may have been part of a motel but this is not confirmed. The buildings were then demolished prior to 2009 and replaced by three large commercial office buildings of two to three storeys;
- Sewer pump station near the western boundary of the site was installed prior to 1979;
- Cricket nets were installed in 1991 and removed in 2017;
- A brick amenities block has been present in the north east corner of the site since at least 1991;
- The car park in the south west corner of the site was constructed between 1997 and 2009; and
- Lighting towers were installed in 2010 around the sports field.

5 SITE CONTAMINATION ASSESSMENT

5.1 Conceptual Site Model

Based on the site observations and knowledge obtained about site activities as outlined above, potential Areas of Concern and Chemicals of Concern were identified for the assessment as outlined in Table 3. Refer to Figure 2 for location of the identified AECs within the site.

Table 3 - Conceptual Site Model

Area of Environmental Concern	Mode of Potential Contamination	Chemicals of Concern	Targeted Sampling Location
AEC1: Soils associated with historical filling works	Imported fill of unknown origin.	Heavy Metals, TRH, BTEX, PAH, OC/OPP, asbestos	BH4, BH5 and BH6
AEC2: Soils associated with imported fill for spectator mound	Imported fill of unknown origin.	Heavy Metals, TRH, BTEX, PAH, OC/OPP, asbestos	None to date
AEC3: Soils in vicinity of amenities block	Asbestos building materials, lead based paint	Heavy Metals, asbestos	None to date

Heavy Metals - Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
TRH - Total Recoverable Hydrocarbons
PAH – Polycyclic Aromatic Hydrocarbons
OC/OPP – Organochlorine and Organophosphorus Pesticides

An assessment of groundwater assessment was not undertaken as part of this preliminary contamination assessment. Assessment of soil vapours were not undertaken as it is also beyond the scope of this preliminary contamination assessment. Details of future works including potential excavations, if any, are not known.

The presence of measurable concentrations of chemical substances does not automatically imply that the site will cause harm. In order for this to be the case, an exposure route must be present allowing a source to adversely affect a receptor.

Based on the site observations and knowledge obtained about site activities as outlined above, potential exposure routes linking chemicals of concern with identified receptors to form plausible exposure routes are summarised in

Table 4.

Table 4 - Plausible Exposure Pathways

Area of Environmental Concern	Chemicals of Concern	Exposure Route	Receptors	Comment
AEC1: Soils associated with historical filling	Heavy Metals, TRH, BTEX, PAH, OC/OPP, asbestos	Inhalation, dermal contact, ingestion	Site users, construction workers, services maintenance workers	Imported fill of unknown origin
AEC2: Soils associated with imported fill for spectator mound	Heavy Metals, TRH, BTEX, PAH, OC/OPP, asbestos	Inhalation, dermal contact, ingestion	Site users, construction workers, services maintenance workers	Imported fill of unknown origin
AEC3: Soils in vicinity of amenities block	Asbestos building materials, lead based paint	Inhalation, dermal contact, ingestion	Site users, construction workers, services maintenance workers	Age of building not known.

5.2 Field Work

Field work for the assessment was undertaken on 18 March and 19 April 2021 in conjunction with a geotechnical assessment of the site and was based on the supplied drawing titled "PMAF_Likley Building and Pavements Zones 29.01.2021_nts_CO-OP". Fieldwork included:

- Site walkover to assess visible surface conditions and identify evidence of contamination, or past activities that may cause contamination;
- Nine boreholes undertaken by a 4WD mounted or track mounted drilling rig using augering or push tube methods to depths of between 2.2 and 3.2 m;
- Collection of samples for subsequent environmental laboratory testing; and
- Borehole locations were based on professional judgement with consideration of the site history and visible site features.

Engineering logs of the boreholes are presented in Appendix B. Investigation locations are shown on the attached Figure 2 and were obtained by approximate measurements to prominent site features. Coordinates of investigation locations were recorded using a handheld GPS and the coordinates are shown on the engineering logs.

Soil samples were taken from selected intervals in the borehole locations from the push tubes using disposable gloves and hand tools which were decontaminated between sampling points using Decon90 detergent and deionised water. The samples were collected in acid-rinsed 250mL glass jars and placed in an ice-chilled cooler box.

5.3 Ground Conditions Encountered

The materials encountered during the investigation are summarised in Table 5 and Table 6. Further details are presented on the engineering logs in Appendix A.

Table 5 - Summary of Geotechnical Units

Unit	Material	Material Description
UNIT 1A	TOPSOIL/ FILL	Sandy SILT, low plasticity, dark brown, trace grass roots
UNIT 1B	FILL - CLAY	Mixture of Sandy CLAY, brown / pale brown, very stiff. Metal sheeting fragments encountered fill profile in BH3. Hole collapsed at BH3, suggesting presence of voids.
UNIT 2	TOPSOIL	Sandy Clayey SILT, dark grey, with grass roots
UNIT 3A	ALLUVIUM (Soft)	Sandy CLAY to Clayey SILT, grey dark grey, soft to firm
UNIT 3B	ALLUVIUM (Stiff)	Inferred Pleistocene alluvial deposits of Sandy CLAY, brown / grey, to Gravelly Sandy CLAY, orange/brown with red mottling, stiff to very stiff
UNIT 3C	ALLUVIUM (Sand)	Inferred Pleistocene alluvial deposits of alluvial Gravelly Clayey SAND, brown, dense
UNIT 4	RESIDUAL CLAY	CLAY, medium to high plasticity, pale brown/grey, stiff
UNIT 5	EW SERPENTINE	Extremely Weathered Serpentinite, recovered as Sandy Silty CLAY, mixed grey / green / pale brown, stiff/ very stiff

Table 6 - Summary of Subsurface Materials

Investigation	Depth to Base of Material Layer (m)								
	Unit 1A Fill/Topsoil	**Unit 1B Mixed Clay FILL**	**Unit 2 Topsoil**	**Unit 3A Alluvial (Firm Clay)**	**Unit 3B Alluvial (Stiff Clay)**	**Unit 3C Alluvial (Sand)**	**Unit 4 Residual**	**Unit 5 EW Serpentinite (As Clay)**	***Water Inflow (m)***
BH1	0.0 – 0.15	0.15 – 0.45	0.45 – 0.6	0.6 – 2.1	--	2.1– 2.5	2.5 – 2.7	2.7 ≥ 3.2	*0.8*
BH2	0.0 – 0.3	0.3 – 1.0	1.0 – 1.3	1.3 – 1.6	1.6 - ≥ 3.2	--	--	--	*1.3*
BH3	0.0 – 0.2	0.2 – 2.95*	--	--	--	--	--	--	*1.0*
BH3B	0.0 – 0.2	0.2 – 2.0	--	2.0 ≥ 3.1	--	--	--	--	*1.0*
BH4	0.0 – 0.25	0.25 – 2.2	--	2.2 – 2.7	--	--	2.7 ≥ 2.95	--	*2.0*
BH5	0.0 – 0.25	0.25 – 2.8	--	2.8 ≥ 3.0	--	--	--	--	*2.0*
BH6	0.0 – 0.3	0.3 – 2.1	--	2.1 – 2.5	2.5 ≥ 3.0	--	--	--	*2.0*
BH101	0.0 – 0.2	--	--	--	0.2 ≥ 3.1	--	--	--	*1.9*
BH102	0.0 – 0.2	0.2 – 1.3	--	1.3 ≥ 2.2	1.3 ≥ 4.0	--	--	--	--

Note: ≥ *Indicates that base of material layer was not encountered*
* *Indicates that the test was terminated due hole collapse*
-- *Indicates that the material was not encountered at the test location*

5.4 Laboratory Testing

Samples were transported under chain-of-custody conditions to a NATA accredited specialist chemical testing laboratory, to be tested for the following suite of common contaminants:

- Polycyclic Aromatic Hydrocarbons (PAH);
- Total Recoverable Hydrocarbons (TRH) and Total Petroleum Hydrocarbons (TPH);
- Benzene, Toluene, Ethyl-benzene, Xylenes (BTEX);
- Organochlorine and organophosphorus pesticides (OC/OPs);
- Heavy metals (arsenic, cadmium, chromium, cobalt, copper, lead, mercury, and zinc);
- Asbestos identification in accordance with AS4964; and
- Soil pH, total organic carbon content (TOC), cation exchange capacity (CEC) and electrical conductivity (EC) for the purposes of determination of ecological investigation levels (see Section 5.6).

The results are presented in Appendix C. A summary table of the results comparing them to the adopted guidelines is also presented in Appendix C.

5.5 Quality Control

Samples were obtained using industry accepted protocols for sample treatment, preservation, and equipment decontamination. A duplicate soil sample of BH5 (2.5 – 2.6m) was submitted to the laboratory for analysis as DP1.

The Relative Percent Differences (RPDs) were calculated for the duplicate sample and presented in the results summary table in Appendix B. RPD exceeded 40% in one sample, however, where results for the primary and duplicate samples were less than 10 times the laboratory limit of reporting (LOR), the RPDs have been disregarded.

In addition to the field QC procedures, the laboratory conducted internal quality control testing including surrogates, blanks, and laboratory duplicate samples. The results are presented with the laboratory test results in Appendix B.

On the basis of the results of the field and laboratory quality control procedures and testing the data is considered to reasonably represent the concentrations of contaminants in the soils at the sample locations at the time of sampling and the results can be adopted for this assessment.

5.6 Analysis Results

An appraisal of the laboratory test results presented in Appendix C is provided below with reference to the adopted soil investigation and screening levels discussed in Section 2.

EILs are site specific and are determined by calculating an Ambient Background Concentration (ABC) and an Added Contaminant Limit (ACL) for the site. ABC values were adopted using results from soil sample BH6 (2.5 – 2.6m) in the northern western corner within undisturbed natural soils. EILs are presented in the Summary Table in Appendix C and summarised in

- Table 7.

Table 7 - EILs Summary (With Reference to NEPM, Schedule B1)

Analyte	ABC – BH6 (2.5 – 2.7m) (mg/kg)	EIL – Aged Recreational Landuse (mg/kg)
Copper	6	35
Arsenic	<5	100
Lead	<5	1100
Nickel	27	30
Chromium (III)	209	780
Zinc	<5	140

- Concentrations of heavy metals exceeded the calculated EILs for Nickel and Copper at multiple locations, typically in the fill profiles;
- Elevated concentrations of Total Chromium were present in several samples. Speciation analysis previously undertaken in the Port Macquarie area has shown that the natural soils are enriched in Chromium III. Chromium VI concentrations are typically below detection. There is no HIL for Chromium III or total Chromium, only for Chromium VI;
- Concentrations of remaining heavy metals were above the laboratory limit of reporting (LOR), but were below adopted health investigation criteria for a recreational site in each of the samples analysed;
- Concentrations of Total Recoverable Hydrocarbon (TRH) were below LOR in in each of the samples analysed;
- Concentrations of PAHs were above LOR in one sample (BH5 0.5 – 0.6 m), but below the adopted health investigation criteria for a recreational site in each of the samples analysed;
- Concentrations of BTEX and PCB contaminants were below LOR in each of the samples analysed;
- Concentrations of pesticide contaminants were below LOR in each of the samples analysed; and
- Asbestos was not detected in the two soil samples (BH4, 1 – 1.1m & BH6, 1 – 1.1m) submitted for screening, nor were asbestos type building materials observed on the surface or within the fill profiles.

6 ASSESSMENT AND CONCLUSIONS REGARIDNG SITE CONTAMINATION

A Stage 1 Site Contamination Assessment was undertaken to assess past and present potentially contaminating activities and contamination types and evaluate the site's suitability for recreational use from a contamination perspective.

6.1 Summary

Based on the results outlined in this report the following points and recommendations are made:

- The site comprises grassed playing fields that are currently zoned for recreational land use. An aquatic facility is proposed for the site and is likely to comprise pools and associated structures in the north of the site and car park areas in the south of the site;
- The site has undergone historical filling works with fill thicknesses ranging from 0.2 to 2.8m. Most of the filling works occurred prior to 1969. Trace metal fragments and a possible void (s) were encountered within the fill at BH3 suggesting potential for mixed fill and waste to be present at the site;
- Considering the age of the existing amenities block (pre 1991) there is the potential for asbestos type building materials to have been used in its construction. Prior to site demolition works a hazardous material inspection should therefore be undertaken to determine if hazardous materials including asbestos are present;
- It is recommended that a Stage 2 Contamination Assessment that includes further sampling and analysis be undertaken during site preparation and earthworks for the proposed aquatic facility; and
- Should any existing fill require removal off-site, it will require assessment for a Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014 in accordance with the Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – the Excavated Natural Material (ENM) Order 2014. It is noted that elevated concentrations of Total Chromium and Nickel in some samples would exceed the ENM Order requirements. Fill that does not meet the ENM order may require a Site Specific Exemption in accordance with NSW EPA requirements if it is to be removed from site for reuse, or, waste classification in accordance with NSW EPA requirements if material is proposed to be taken off site and disposed of at a licensed landfill facility.

6.2 Recommended Stage 2 Contamination Assessment

A Stage 2 Contamination assessment is recommended for the following Areas of Concern identified within the site, once details of the proposed development are known:

- AEC1 – Soils within the footprint of future works where excavations are proposed within areas impacted by historical filling works. A sampling grid with test pits through the fill profile is recommended in accordance with the NSW EPA *Sampling Design Guidelines* (2022) to delineate the potential extent of contaminants which may include asbestos containing materials (ACM), heavy metals and PAHs associated with imported fill of unknown origins. Groundwater assessment may also be required if excavation(s) are proposed;
- AEC2 – Existing spectator mound where excavations are proposed within areas impacted by historical filling works. A sampling grid is recommended in accordance with the NSW EPA *Sampling Design Guidelines* (2022) to delineate the potential extent of contaminants which may include asbestos containing materials (ACM), heavy metals and PAHs associated with imported fill of unknown origins; and
- AEC3 – Soils within the vicinity of the existing amenities block following demolition works as there is the potential for asbestos type building materials or lead based paint to have been used in its construction.

6.3 Conclusion

Based on the results obtained in this investigation the site is considered likely can be made suitable for the proposed recreational land use with regard to the presence of soil contamination provided the recommendations and advice of this report are adopted including the undertaking of a Stage 2 Site Contamination Assessment, and if necessary subsequent remediation works, and site preparation works are conducted in accordance with appropriate site management protocols and legislative requirements.

Should potential evidence of site contamination be identified during development activities, such as soil staining, odours or possible asbestos cement sheeting, then a site contamination specialist should be contacted for advice without delay.

7 LIMITATIONS

This report comprises the results of an investigation carried out for a specific purpose and client as defined in the document. The report should not be used by other parties or for purposes or projects other than those assumed and stated within the report, as it may not contain adequate or appropriate information for applications other than those assumed or advised at the time of its preparation. The contents of the report are for the sole use of the client and no responsibility or liability will be accepted to any third party. The report should not be reproduced either in part or in full, without the express permission of Regional Geotechnical Solutions Pty Ltd.

Contaminated site investigations are based on data collection, judgment, experience, and opinion. By nature, these investigations are less exact than other engineering disciplines. The findings presented in this report and used as the basis for the recommendations presented herein were obtained using normal, industry accepted practises and standards. To our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

Recommendations regarding ground conditions referred to in this report are estimates based on the information available at the time of its writing. Estimates are influenced and limited by the fieldwork method and testing carried out in the site investigation, and other relevant information as has been made available. In cases where information has been provided to Regional Geotechnical Solutions for the purposes of preparing this report it has been assumed that the information is accurate and appropriate for such use. No responsibility is accepted by Regional Geotechnical Solutions for inaccuracies within any data supplied by others.

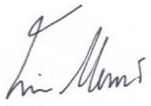
If site conditions encountered during construction vary significantly from those discussed in this report, Regional Geotechnical Solutions Pty Ltd should be contacted for further advice.

This report alone should not be used by contractors as the basis for preparation of tender documents or project estimates. Contractors using this report as a basis for preparation of tender documents should avail themselves of all relevant background information regarding the site before deciding on selection of construction materials and equipment.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

For and on behalf of **Regional Geotechnical Solutions Pty Ltd**

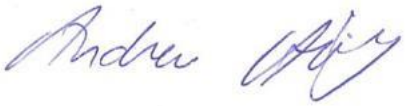
Prepared by



Tim Morris

Principal Engineering Geologist

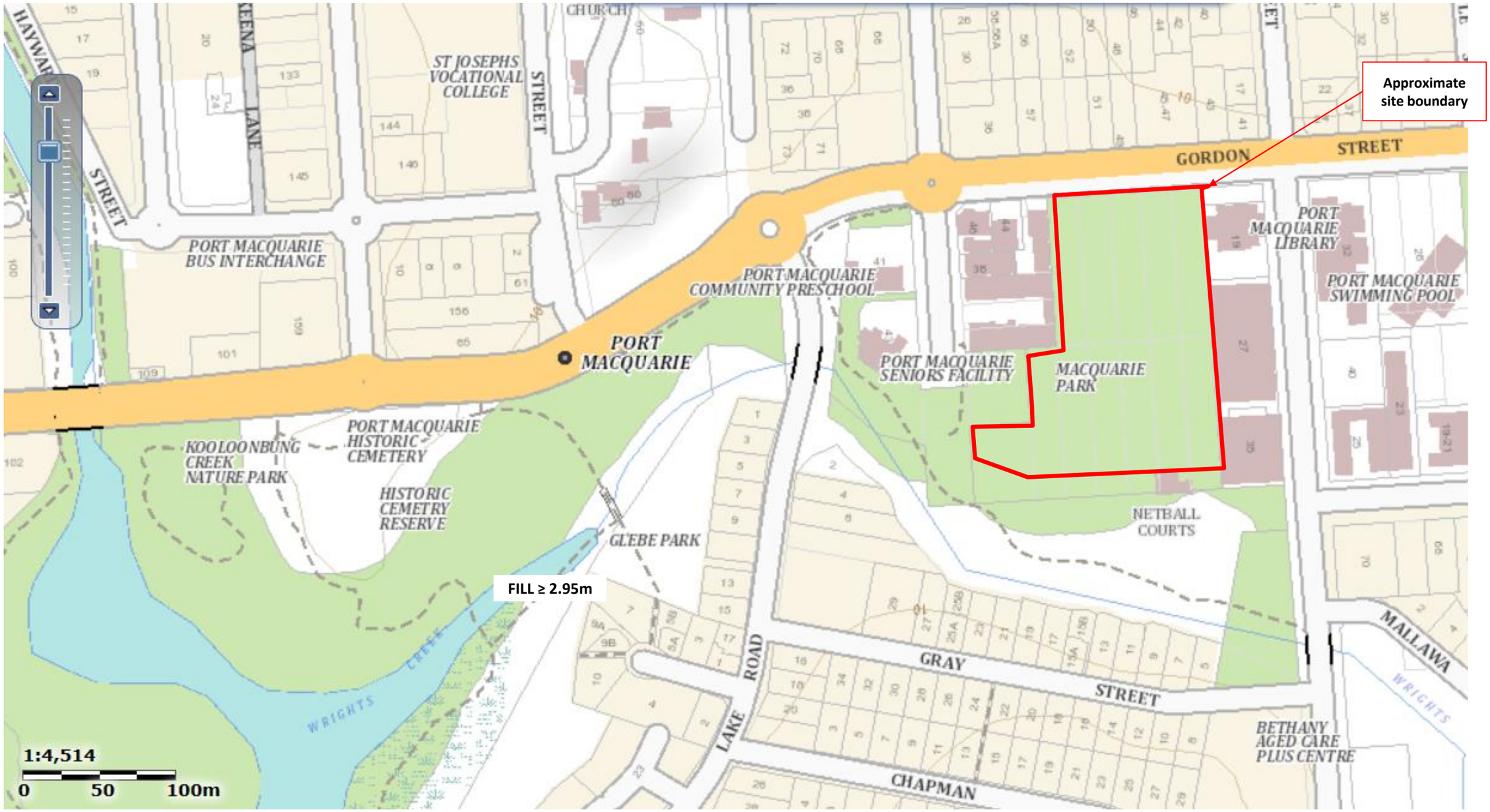
Reviewed by



Andrew Hills

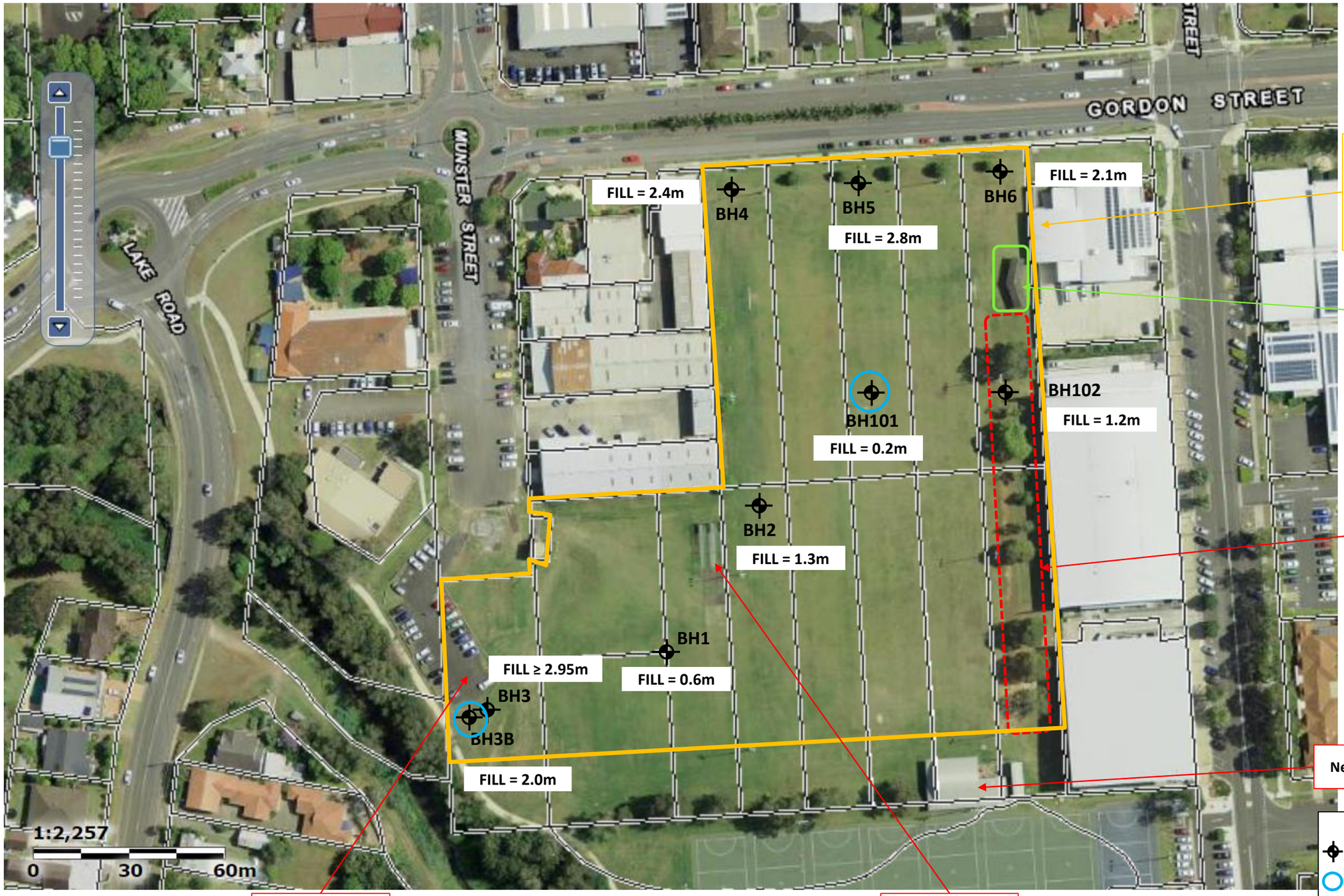
Senior Environmental Engineer

Figures



Based on SixViewer image

REGIONAL GEOTECHNICAL SOLUTIONS	**Client:**	CO-OP STUDIO	Job No.	RGS21005.6
	Project:	PROPOSED AQUATIC CENTRE MACQUARIE PARK, GORDON STREET, PORT MACQUARIE	Drawn By:	TM
			Scale:	NTS
			Date:	11-May-23
	Title:	SITE LOCATION PLAN	Figure No.	**1**



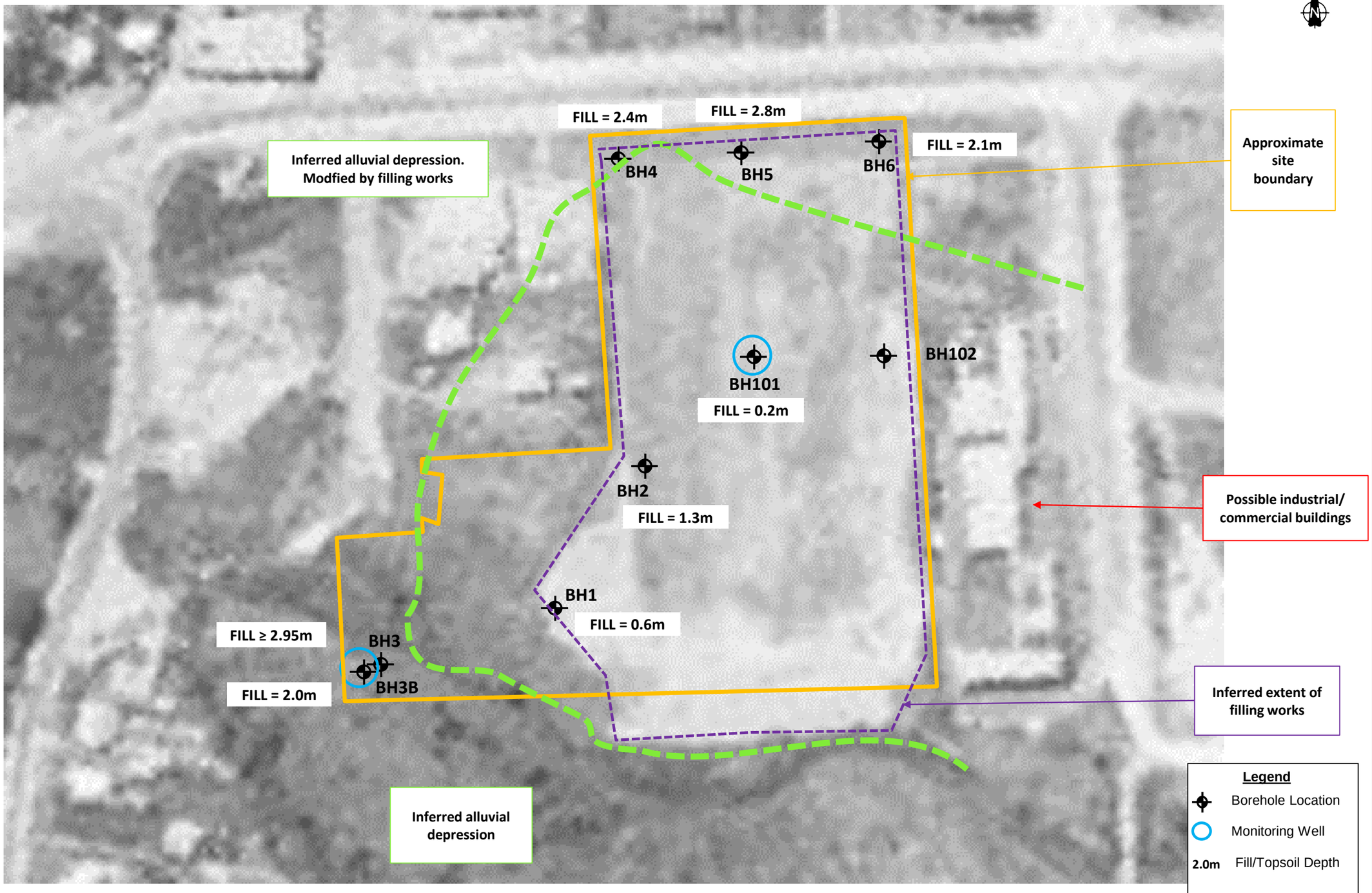
Based on SixViewer 2012 satellite image

REGIONAL GEOTECHNICAL SOLUTIONS

Client:	CO-OP STUDIO	Job No.	RGS21005.6
Project:	PROPOSED AQUATIC CENTRE MACQUARIE PARK, GORDON STREET, PORT MACQUARIE	Drawn By:	TM
		Scale:	NTS
		Date:	11-May-23
Title:	INVESTIGATION LOCATION PLAN	Figure No.	2

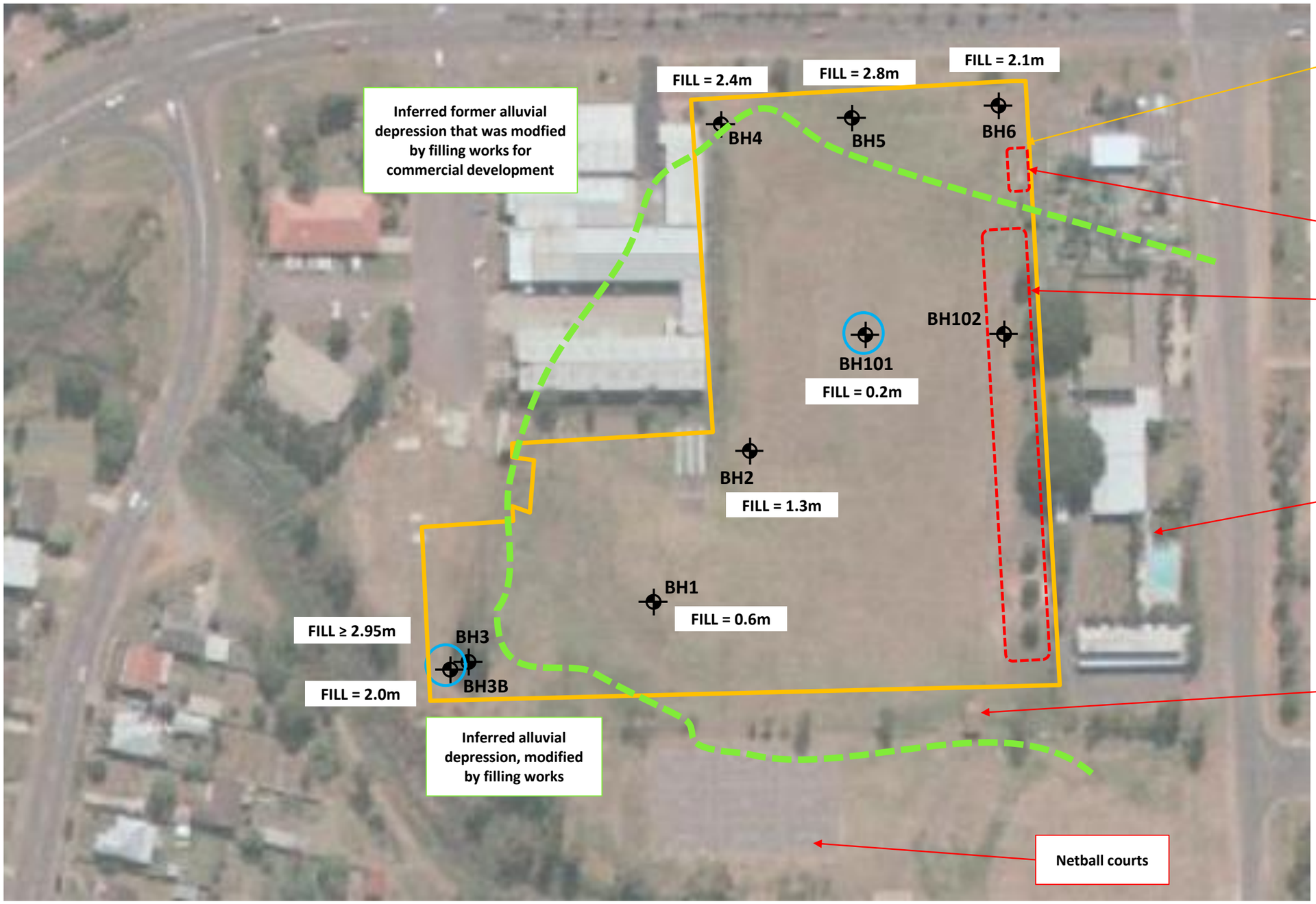
Based on supplied 1959 aerial photograph

REGIONAL GEOTECHNICAL SOLUTIONS	Client:	CO-OP STUDIO	Job No.	RGS21005.6
	Project:	PROPOSED AQUATIC CENTRE MACQUARIE PARK, GORDON STREET, PORT MACQUARIE	Drawn By:	TM
			Scale:	NTS
			Date:	11-May-23
	Title:	INVESTIGATION LOCATION PLAN - 1959 AERIAL PHOTOGRAPH	Figure No.	3



Based on supplied 1969 aerial photograph

REGIONAL GEOTECHNICAL SOLUTIONS	**Client:**	CO-OP STUDIO	Job No. RGS21005.6
	Project:	PROPOSED AQUATIC CENTRE MACQUARIE PARK, GORDON STREET, PORT MACQUARIE	Drawn By: TM Scale: NTS Date: 11-May-23
	Title:	INVESTIGATION LOCATION PLAN - 1969 AERIAL PHOTOGRAPH	Figure No. **4**



Based on supplied 1991 aerial photograph

REGIONAL GEOTECHNICAL SOLUTIONS	Client:	CO-OP STUDIO	Job No.	RGS21005.6
	Project:	PROPOSED AQUATIC CENTRE MACQUARIE PARK, GORDON STREET, PORT MACQUARIE	Drawn By:	TM
			Scale:	NTS
			Date:	11-May-23
	Title:	INVESTIGATION LOCATION PLAN - 1991 AERIAL PHOTOGRAPH	Figure No.	5

Appendix A

Site History Documentation

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)
ABN 82 147 943 842

18/36 Osborne Road,
Manly NSW 2095

Telephone: +612 9977 6713
Mobile: 0412 169 809
Email: search@alsearchers.com.au

10th February, 2021

REGIONAL GEOTECHNICAL SOLUTIONS PTY LTD
1/12 Jinalee Road,
PORT MACQUARIE, NSW, 2444

Attention: Tim Morris

RE: **Gordon Street,**
Port Macquarie
RGS21005.6

Current Search

Folio Identifier 5/16/758852 (title attached)
Crown Plan 16-706 (plan attached)
Dated 08th February, 2021
Registered Proprietor:
STATE OF NEW SOUTH WALES

Title Tree
Lot 5 Section 16 DP 758852

Folio Identifier 5/16/758852

CA 125837

Crown Land

Government Gazette 24th May 1968

Government Gazette 12th January 1951

****

Summary of proprietor(s)
Lot 5 Section 16 DP 758852

Year	Proprietor(s)
	(Lot 5 Section 16 DP 758852)
1990 – todate	State of New South Wales
(1990 – todate)	*(Reserve 86749 for Public Recreation)*
	(Allotment 5 Section 16 Town Port Macquarie)
1951 – 1990	Crown Land
(1968 – 1990)	*(Reserve 86749 for Public Recreation)*
(1968 – 1968)	*(Reserve 86748 from sale or lease generally)*
(1951 – 1968)	*(Resumed for Public School, vide Government Gazette 12th January 1951 Fol 70)*

****

NOTIFICATION OF RESUMPTION OF LAND UNDER THE PUBLIC WORKS ACT, 1912, AS AMENDED.

IT is hereby notified and declared by His Excellency the Governor, acting with the advice of the Executive Council, that so much of the land described in the Schedule hereto as is Crown land is hereby appropriated, and so much of the said land as is private property is hereby resumed, under the Public Works Act, 1912, as amended, for the following public purpose, namely, a Public School at PORT MACQUARIE, and that the said land is vested in the Minister of Public Instruction as Constructing Authority on behalf of His Majesty the King.

Dated this twentieth day of December, one thousand nine hundred and fifty.

J. NORTHCOTT, Governor.

By His Excellency's Command,

R. J. HEFFRON, Minister of Public Instruction.

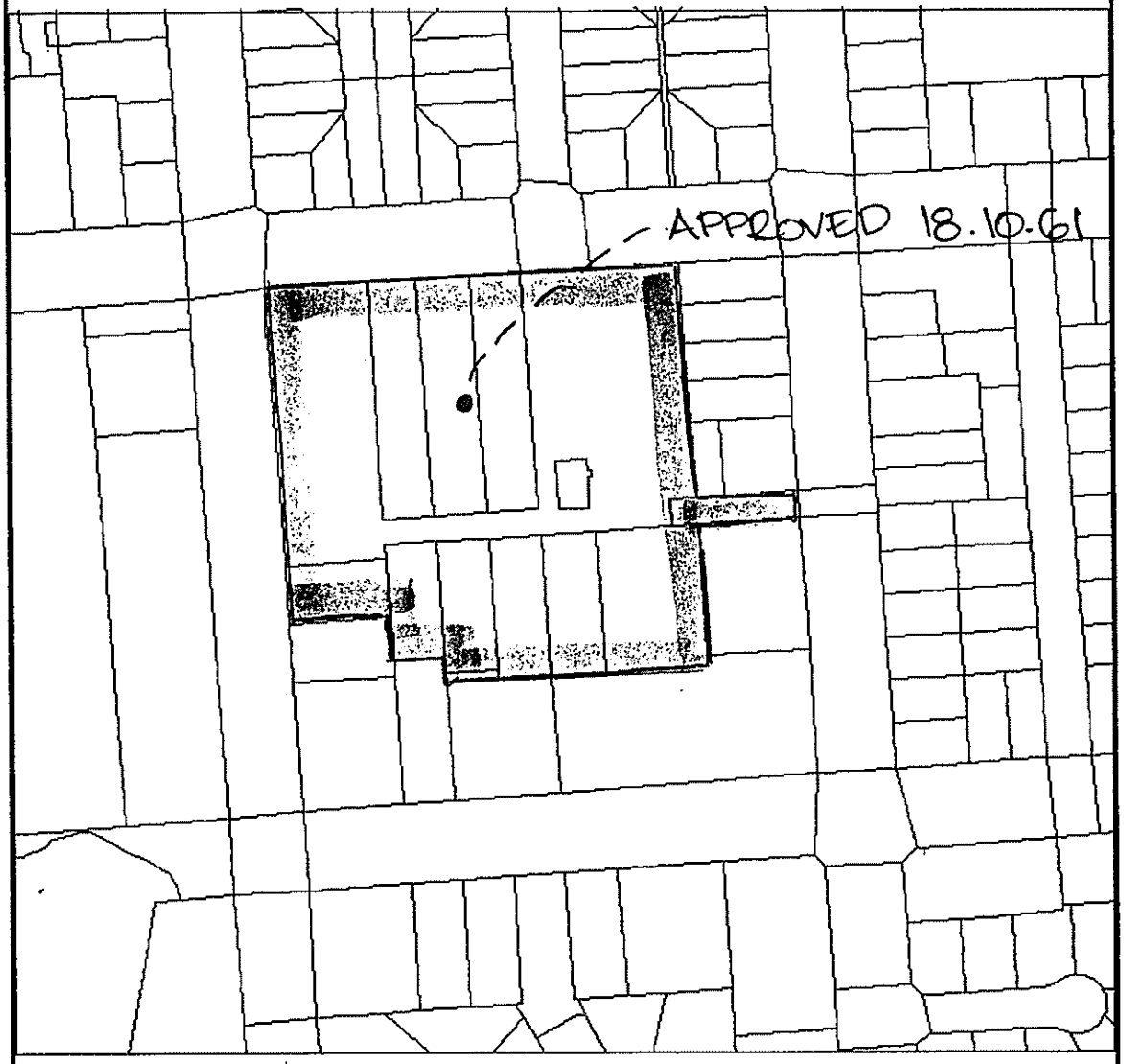
THE SCHEDULE.

All that piece or parcel of land situate in the Municipality of Port Macquarie, town of Port Macquarie, parish of Macquarie, county of Macquarie, and State of New South Wales, being the whole of allotments 5 to 9 inclusive, and allotments 13 to 20 inclusive, of section 16,—having an area of 6 acres 2 roods or thereabouts, and said to be in the possession of A. M. McI. Thomson and others. (120)

SEQ. Nº 4034 – PORT MACQUARIE GARBAGE DEPOT

* EXTRACTED FROM D.O.H. FILE 183022

NOTE: AREA OF 5a. 1r. 31p. APPROVED 18.10.61 – CLOSED 1966 – NO RECORD OF UBL DECLARATION – NOW IS RESERVE AND LIC. MAP Nº PORT 225 MUNICIPAL POOL.



LOCATION CO-ORDS: E: 491729.34108
N: 6572151.46411

LAT: -31.43530 LONG: 152.91495

ENTERED INTO TEXT DATA BASE 13.2.05

MEETING OF THE BOARD OF HEALTH, held at 2 p.m.

on Wednesday, the 11th day of October, 1961.

SEQ. No 4034

LOCAL GOVERNMENT ACT:

Application by the Port Macquarie Municipal Council for approval of a site described hereunder for use as a sanitary depot for the disposal of garbage, was considered. Decided that the application be forwarded to the Minister for Health with a recommendation that the situation of the area be approved in accordance with the provisions of Section 283 (4) of the Act:

DESCRIPTION OF AREA:

All that piece or parcel of land situate in Section 15 of the Town of Port Macquarie, Municipality of Port Macquarie, Parish and County of Macquarie commencing at the north western corner of allotment 12, bounded thence easterly by the southern alignment of Bridge Street to the north eastern corner of allotment 18; southerly by the eastern boundary of allotment 18 to its south eastern corner; easterly by the southern boundary of allotment 20 to the western alignment of Lord Street, southerly by that alignment to the north eastern corner of allotment 9; westerly by the northern boundary of allotment 9 to its north western corner; southerly by the eastern boundary of allotment 7 distant 180 feet; westerly by a line parallel to Bridge Street to the western boundary of allotment 3; northerly by that western boundary distant 80 feet; westerly by a line parallel to Bridge Street to the eastern boundary of allotment 10; northerly by that boundary to the north eastern corner of allotment 10; westerly by the northern boundary of allotment 10 to the eastern alignment of Grant Street and finally northerly by that alignment of Grant Street to the point of commencement; comprising a total area of 5 acres, 1 rood, 31 perches.

Depot Approval Garbage & Description 18/10/61

Chas. R. Lowtumer

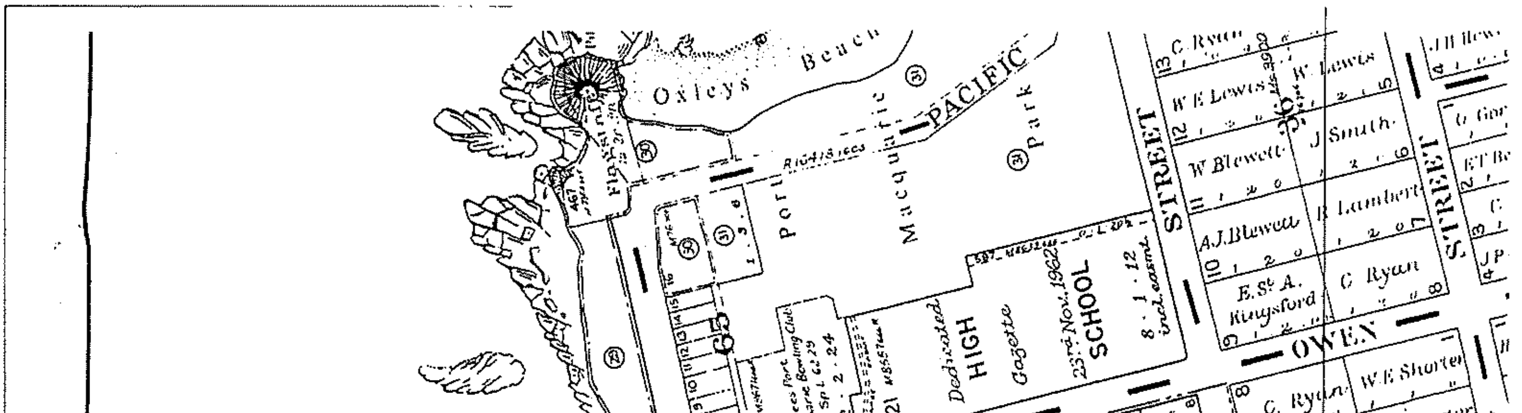
Secretary.

for favour of submission to the Minister.

13.10.61.

Submitted for Ministerial approval.

J. D. RIMES



Oxleys Beach
PACIFIC
Port Macquarie Park
Dedicated HIGH SCHOOL Gazette 23rd Nov. 1962
OWEN
LORD
GRANT
MOWLE ST
JOFFRE ST
STEWART ST
EAST
BURRAWAN
STREET
Trustees Port Macquarie Bowling Club

Appendix B

Results of Field Investigations

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH1

CLIENT: CO-OP Studio
PAGE: 1 of 1
PROJECT NAME: Proposed Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Macquarie Park, Gordon Street, Port Macquarie
LOGGED BY: GC
TEST LOCATION: Refer to Figure
DATE: 18/3/21

DRILL TYPE: Track Drill Rig
EASTING: 491752 m
SURFACE RL: 3.0 m
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522218 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Push Tube		E 0.10m 0.20m E 0.30m				MH	0.15m **FILL** Sandy Clayey SILT, dark brown, traces of grass roots to 5mm.	M	Fb			FILL/TOPSOIL
						CH	**FILL** Sandy CLAY, medium plasticity, brown/pale brown, sand fine to medium grained, some gravel fine to medium grained, subangular. 0.45m	M > w_P	Fb / VSt	HP	250	FILL-CLAY
			2.5	0.5		MH	0.60m **TOPSOIL** Sandy Clayey SILT, dark grey, traces of grass roots to 5mm.	M	Fb			TOPSOIL
						CH	0.80m **Sandy CLAY** medium plasticity, brown, sand fine to medium grained, traces of gravel, fine grained, subrounded.	M > w_P	Fb / St	HP	150	ALLUVIAL-CLAY
	▶					SP	1.00m **Gravelly Clayey SAND** fine to coarse grained, grey.	W		HP	80	ALLUVIAL-SAND
			2.0	1.0		CH	**Gravelly Sandy CLAY** medium to high plasticity, brown with red mottling, gravel fine to medium grained, subrounded.	M > w_P	Fb / F	HP	30	ALLUVIAL CLAY
			1.5	1.5					Fb / S	HP	30	
										HP	120	
			1.0	2.0			2.10m		St	HP	150	
						SP	**Gravelly Clayey SAND** fine to coarse grained, brown. 2.50m	W				ALLUVIAL-SAND
			0.5	2.5		CH	**CLAY** medium to high plasticity, grey. 2.70m	M > w_P	Fb / St	HP	180	RESIDUAL
						CH	**Sandy Silty CLAY** medium plasticity, mixed grey/green/pale brown, some rock fabric.		VSt	HP	190	EXTREMELY WEATHERED SERPENTINITE
			0.0	3.0			3.20m			HP	250	
			-0.5	3.5			Hole Terminated at 3.20 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH2

CLIENT: CO-OP Studio | **PAGE:** 1 of 1

PROJECT NAME: Proposed Aquatic Facility | **JOB NO:** RGS21005.6

SITE LOCATION: Macquarie Park, Gordon Street, Port Macquarie | **LOGGED BY:** GC

TEST LOCATION: Refer to Figure | **DATE:** 18/3/21

DRILL TYPE: Track Drill Rig | **EASTING:** 491763 m | **SURFACE RL:** 3.5 m

BOREHOLE DIAMETER: 50 mm | **INCLINATION:** 90° | **NORTHING:** 6522265 m | **DATUM:** AHD

Drilling and Sampling					Material description and profile information						Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Push Tube		E 0.10m				MH	**FILL** Sandy Clayey SILT, dark grey/dark brown, traces of grass roots to 5mm.	M	Fb			FILL/TOPSOIL
		0.30m					0.30m					
		E 0.40m				CH	**FILL** Clayey SAND, fine to medium grained, dark grey.					FILL-SAND
		0.60m	3.0	0.5			0.45m					
		E 0.70m				CH	**FILL** Sandy CLAY, medium plasticity, brown/red/grey, sand fine to medium grained, some gravel, fine to medium grained, subangular.	M < w_P	Fb / VSt	HP HP	350 380	FILL-CLAY
			2.5	1.0			1.00m					
						MH	**TOPSOIL** Sandy Clayey SILT, dark grey, traces of grass roots to 5mm.	M				TOPSOIL
	▶						1.30m					
						CH	**Sandy CLAY** medium to high plasticity, grey, sand fine to coarse grained.	M > w_P	Fb / F	HP HP	60 50	ALLUVIAL-CLAY
			2.0	1.5			1.60m					
						CH	**Sandy CLAY** medium to high plasticity, brown with red mottling, sand fine to medium grained, traces of gravel, fine to medium grained, subrounded.		Fb / St	HP HP	120 150	
			1.5	2.0			2.30m		Fb / VSt	HP	250	
						CH	**Gravelly Sandy CLAY** medium plasticity, pale brown, traces of white, gravel is fine to medium grained, subrounded/rounded, sand fine to coarse grained.			HP	300	
			1.0	2.5								
			0.5	3.0						HP	320	
							3.20m					
			0.0	3.5			Hole Terminated at 3.20 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH3

CLIENT: CO-OP Studio
PAGE: 1 of 1
PROJECT NAME: Proposed Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Macquarie Park, Gordon Street, Port Macquarie
LOGGED BY: GC
TEST LOCATION: Refer to Figure
DATE: 18/3/21

DRILL TYPE: Track Drill Rig
EASTING:
SURFACE RL: 3.4 m
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T			3.4	0.0		MH	**FILL** Clayey SILT, dark grey, traces of grass roots to 5mm.	M	Fb			FILL/TOPSOIL
				0.20m		CH	**FILL** Sandy CLAY, medium plasticity, brown, traces of gravel fine to medium grained, subrounded/rounded. Some gravel, fine to coarse grained, subangular, traces of metal.	M < w_P	Fb / St	HP	120	FILL
			3.0	0.5			Traces of metal sheeting to 150mm length from 0.5m			HP	150	
	▶	1.0m SPT N=28	2.5	1.0								
			2.0	1.5								Borehole collapsing from 1.5m
			1.5	2.0								
		2.5m SPT N=1	1.0	2.5					S / Fb			Possible alluvial interface?
			0.5	2.95m								
			0.0	3.0			Hole abandoned @2.95m due to hole collapsing @1.5m Hole Terminated at 2.95 m					
			-0.5	3.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH3B

CLIENT: CO-OP Studio
PAGE: 1 of 1
PROJECT NAME: Proposed Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Macquarie Park, Gordon Street, Port Macquarie
LOGGED BY: GC
TEST LOCATION: Rebated 2m West of BH3
DATE: 18/3/21

DRILL TYPE: Track Drill Rig
EASTING:
SURFACE RL: 3.4 m
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T			3.4	0.0		MH	**FILL** Clayey SILT, dark grey, traces of grass roots to 5mm.	M	Fb			FILL/TOPSOIL
							0.20m					
		0.30m				CH	**FILL** Sandy CLAY, medium plasticity, brown, traces of gravel fine to medium grained, subangular.	M > w_P	Fb / St	HP	120	FILL-CLAY
		CBR 0.50m	3.0	0.5								
	▶									HP	150	
			2.5	1.0								
			2.0	1.5								
			1.5	2.0								
		2.00m					2.00m					
		ASS				MH	**Clayey SILT** dark grey/grey.		S / Fb	HP	30	ALLUVIAL
		2.50m SPT N=2	1.0	2.5								
										HP	25	
			0.5	3.0								
							3.10m					
			0.0	3.5			Hole Terminated at 3.10 m					
			-0.5									

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH4

CLIENT: CO-OP Studio | **PAGE:** 1 of 1

PROJECT NAME: Proposed Aquatic Facility | **JOB NO:** RGS21005.6

SITE LOCATION: Macquarie Park, Gordon Street, Port Macquarie | **LOGGED BY:** GC

TEST LOCATION: Refer to Figure | **DATE:** 18/3/21

DRILL TYPE: Track Drill Rig | **EASTING:** 491767 m | **SURFACE RL:** 4.1 m

BOREHOLE DIAMETER: 50 mm | **INCLINATION:** 90° | **NORTHING:** 6522381 m | **DATUM:** AHD

Drilling and Sampling					Material description and profile information						Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
PT		E 0.10m	4.0			MH	**FILL** Sandy Clayey SILT, dark grey/dark brown, sand fine to medium grained, traces of grass roots to 5mm.	M	Fb			FILL/TOPSOIL
						CH	0.15m 0.25m **FILL** Sandy CLAY, medium plasticity, brown/red/grey, sand fine to medium grained, some gravel fine to medium grained, subangular.	M > w_P	Fb / VSt	HP	300	FILL-CLAY
		0.50m E 0.60m	3.5	0.5								
		1.00m SPT N=2	3.0	1.0					St	HP	120	
										HP	130	
		1.50m SPT N=1	2.5	1.5								
	▶	2.00m	2.0	2.0								
		E 2.20m	2.0			MH	**Clayey SILT** dark grey, some organics, some gravel, fine to medium grained, subrounded.	W	S			ALLUVIAL-SILT
			1.5	2.5								RESIDUAL
							2.90m 2.95m			HP	110	
			1.0	3.0		CH	**CLAY** medium to high plasticity, yellow with grey mottling.	M > w_P	St			
			0.5	3.5			Hole Terminated at 2.95 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH5

CLIENT: CO-OP Studio
PAGE: 1 of 1
PROJECT NAME: Proposed Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Macquarie Park, Gordon Street, Port Macquarie
LOGGED BY: GC
TEST LOCATION: Refer to Figure
DATE: 18/3/21

DRILL TYPE: Track Drill Rig
EASTING: 491745 m
SURFACE RL: 4.5 m
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522378 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
PT		E 0.10m				MH	**FILL** Sandy Clayey SILT, dark grey/dark brown, traces of grass roots to 5mm.	M	Fb			FILL/TOPSOIL
							0.25m					
		0.50m	4.0	0.5		CH	**FILL** Gravelly Sandy CLAY, medium plasticity, red/brown/grey/dark grey, gravel fine to medium grained, subangular.	M < w_P	Fb / VSt	HP	350	FILL-CLAY
		E 0.60m								HP	380	
							0.80m					
						CH	**FILL** Sandy CLAY medium plasticity, red/brown, traces to some gravel, fine grained, subrounded.			HP	300	
			3.5	1.0								
										HP	320	
			3.0	1.5								
								M > w_P	St	HP	180	
										HP	190	
	▶		2.5	2.0								
		2.50m	2.0	2.5								
		E 2.60m										
							2.80m					
						MH	**Sandy Clayey SILT** pale grey/grey, some organics.	M	F	HP	60	ALLUVIAL-SILT
			1.5	3.0			3.00m					
							Hole Terminated at 3.00 m					
			1.0	3.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH6

CLIENT: CO-OP Studio
PAGE: 1 of 1
PROJECT NAME: Proposed Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Macquarie Park, Gordon Street, Port Macquarie
LOGGED BY: GC
TEST LOCATION: Refer to Figure
DATE: 18/3/21

DRILL TYPE: Track Drill Rig
EASTING: 491854 m
SURFACE RL: 5.0 m
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522387 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
PT		E 0.10m				MH	**FILL** Sandy Clayey SILT, dark grey/dark brown, traces of grass roots to 5mm.	M	Fb			FILL/TOPSOIL
							0.30m					
			4.5	0.5		CH	**FILL** Gravelly Sandy CLAY, medium plasticity, red/brown/grey, gravel, fine to medium grained, subangular.	$M > w_P$	Fb / VSt	HP	300	FILL-CLAY
		0.60m E 0.70m								HP	250	
		1.00m SPT N=3	4.0	1.0								
			3.5	1.5					Fb / St	HP	120	
		1.80m								HP	130	
		E 2.00m	3.0	2.0								
							2.10m					
						MH	**Sandy Clayey SILT**, dark grey/grey, some gravel, fine grained subrounded/rounded.	W	S			ALLUVIAL-SILT
										HP	25	
		2.50m SPT N=5	2.5	2.5								
						CH	**Sandy Silty CLAY** medium to high plasticity, pale brown, sand fine to coarse grained, traces of gravel, fine grained, subrounded/rounded.	$M > w_P$	Fb / St	HP	150	ALLUVIAL-CLAY
			2.0	3.0			3.00m					
							Hole Terminated at 3.00 m					
			1.5	3.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

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MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Appendix C

Laboratory Test Result Sheets

Comparison of Contamination Analysis Results with Adopted Investigation Levels (Results in mg/kg)

National Environment Protection (Assessment of Site Contamination) Measure (NEPM 2013)

REGIONAL GEOTECHNICAL SOLUTIONS

Client: CO-OP Studio
Job No. RGS21005.6
Project: Proposed Aquatic Facility
Location: Gordon Street, Port Macquarie

SAMPLE	DEPTH	Material	Asbestos Presence	TOTAL RECOVERABLE HYDROCARBONS					PAH		DDT+DDE	Aldrin	PCB	BTEX		Heavy Metals							
	(m)			C6-C10	C10-C16	C16-C34	C34-C40	TOTAL	Total	b-a-p (TEQ)	Pesticides	Pesticides		Sum	Napthalene	As	Cd	Cr (Total)#	Cu	Pb	Ni	Zn	Hg
BH1	0.0 - 0.1	Fill - topsoil	--	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	27	<1	183	26	17	24	27	<0.1
BH1	0.2 - 0.3	Fill - Clay	--	--	--	--	--	--	--	--	--	--	--	--	--	<5	<1	215	8	8	30	7	<0.1
BH2	0.0 - 0.1	Fill - topsoil	--	--	--	--	--	--	--	--	--	--	--	--	--	5	<1	54	10	8	12	60	<0.1
BH2	0.3 - 0.4	Fill - sand	--	--	--	--	--	--	--	--	--	--	--	--	--	<5	<1	14	<5	<5	3	8	<0.1
BH2	0.6 - 0.7	Fill - Clay	--	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<5	<1	**748**	32	18	94	13	<0.1
BH4	0.0 - 0.1	Fill - topsoil	--	--	--	--	--	--	--	--	--	--	--	--	--	<5	<1	196	23	26	50	26	<0.1
BH4	0.5 - 0.6	Fill - Clay	--	--	--	--	--	--	--	--	--	--	--	--	--	8	<1	282	19	24	46	18	<0.1
BH4	1.0 - 1.1	Fill - Clay	No	--	--	--	--	--	--	--	--	--	--	--	--	<5	<1	**360**	24	20	165	73	<0.1
BH4	2.0 - 2.2	Fill - Clay	--	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<5	<1	170	45	7	23	14	<0.1
BH5	0.0 - 0.1	Fill - topsoil	--	--	--	--	--	--	--	--	--	--	--	--	--	<5	<1	211	24	27	58	29	<0.1
BH5	0.5 - 0.6	Fill - Clay	--	<10	<50	<100	<100	<50	1.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	29	<1	**438**	30	10	57	13	<0.1
BH5	2.5 - 2.6	Fill - Clay	--	--	--	--	--	--	--	--	--	--	--	--	--	<5	2	**317**	82	7	38	15	<0.1
BH6	0.0 - 0.1	Fill - topsoil	--	--	--	--	--	--	--	--	--	--	--	--	--	<5	<1	214	16	26	36	44	<0.1
BH6	0.6 - 0.7	Fill - Clay	--	--	--	--	--	--	--	--	--	--	--	--	--	<5	<1	**551**	15	12	120	10	<0.1
BH6	1.0 - 1.1	Fill - Clay	No	--	--	--	--	--	--	--	--	--	--	--	--	----	----	----	----	----	----	----	<0.1
BH6	1.8 - 2.0	Fill - Clay	--	--	--	--	--	--	--	--	--	--	--	--	--	14	2	**715**	59	14	31	<5	<0.1
BH6	2.5 - 2.7	Fill - Clay	--	--	--	--	--	--	--	--	--	--	--	--	--	<5	<1	209	6	<5	27	<5	<0.1
D1	BH5 (2.5-2.6)			--	--	--	--	--	--	--	--	--	--	--	--	5	1	**322**	78	7	49	19	<0.2
RPD																--	67%	-2%	5%	0%	-25%	-24%	--
CRITERIA (NEPM 2013)																							
Health Investigation Level (HIL):*				*NL*	*NL*	*NL*	*NL*	*NL*	*300*	*3*	*400*	*10*	*1*			*300*	*90*	*300*	*17000*	*600*	*1200*	*30000*	*80*
*Health Screening Level (HSL)***																							
*Ecological Screening Level (ESL)****				*180*	*120*	*300*	*2800*																
Ecological Investigation Level (EIL)@															*170*	*100*		*780*	*35*	*1100*	*30*	*140*	

CRITERIA:

* Health Based Investigation Levels for Recreational Use (NEPM 2013)
** Health Screening Level (F2) for residential land use and fine grained soil (clay), 0 - 1m depth
*** Ecological Screening Level for recreational land use
@ Ecological Investigation Level - aged (>2 years) for recreational landuse
# Total Chromium (CRIII + CRVI)

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2110756**	Page	: 1 of 17
Client	: **REGIONAL GEOTECHNICAL SOLUTION**	Laboratory	: Environmental Division Sydney
Contact	: MR TIM MORRIS	Contact	: Customer Services ES
Address	: 1/12 Jindalee Road Port Macquarie NSW 2444	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 6553 5641	Telephone	: +61-2-8784 8555
Project	: Proposed Aquatic Facility	Date Samples Received	: 25-Mar-2021 09:50
Order number	: ----	Date Analysis Commenced	: 26-Mar-2021
C-O-C number	: ----	Issue Date	: 01-Apr-2021 12:20
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 19		
No. of samples analysed	: 19		

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

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

This Certificate of Analysis contains the following information:

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

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Aleksandar Vujkovic	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H+ + Al3+).
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH1 0-0.1	BH1 0.2-0.3	BH2 0-0.1	BH2 0.3-0.4	BH2 0.6-0.7
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	ES2110756-001	ES2110756-002	ES2110756-003	ES2110756-004	ES2110756-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	34.4	15.8	28.9	15.6	20.7
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	27	<5	5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	183	215	54	14	748
Copper	7440-50-8	5	mg/kg	26	8	10	<5	32
Lead	7439-92-1	5	mg/kg	17	8	8	<5	18
Nickel	7440-02-0	2	mg/kg	24	30	12	3	94
Zinc	7440-66-6	5	mg/kg	27	7	60	8	13
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<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
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH1 0-0.1	BH1 0.2-0.3	BH2 0-0.1	BH2 0.3-0.4	BH2 0.6-0.7
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	ES2110756-001	ES2110756-002	ES2110756-003	ES2110756-004	ES2110756-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
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
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH1 0-0.1	BH1 0.2-0.3	BH2 0-0.1	BH2 0.3-0.4	BH2 0.6-0.7
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	ES2110756-001	ES2110756-002	ES2110756-003	ES2110756-004	ES2110756-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH1 0-0.1	BH1 0.2-0.3	BH2 0-0.1	BH2 0.3-0.4	BH2 0.6-0.7
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	ES2110756-001	ES2110756-002	ES2110756-003	ES2110756-004	ES2110756-005
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	----	----	----	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	----	----	----	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**74.6**	----	----	----	**74.0**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**97.1**	----	----	----	**75.6**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**125**	----	----	----	**91.7**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**69.0**	----	----	----	**75.2**
2-Chlorophenol-D4	93951-73-6	0.5	%	**88.7**	----	----	----	**80.2**
2.4.6-Tribromophenol	118-79-6	0.5	%	**91.6**	----	----	----	**70.2**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**104**	----	----	----	**102**
Anthracene-d10	1719-06-8	0.5	%	**123**	----	----	----	**112**
4-Terphenyl-d14	1718-51-0	0.5	%	**104**	----	----	----	**94.6**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**78.6**	----	----	----	**90.8**
Toluene-D8	2037-26-5	0.2	%	**81.1**	----	----	----	**97.4**
4-Bromofluorobenzene	460-00-4	0.2	%	**82.9**	----	----	----	**79.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH4 0-0.1	BH4 0.5-0.6	BH4 1-1.1	BH4 2-2.2	BH5 0-0.1
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	ES2110756-006	ES2110756-007	ES2110756-008	ES2110756-009	ES2110756-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	30.5	14.6	18.9	27.2	33.5
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	No	----	----
Asbestos Type	1332-21-4	-	--	----	----	-	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	----	----	No	----	----
Organic Fibre	----	0.1	g/kg	----	----	No	----	----
Sample weight (dry)	----	0.01	g	----	----	12.4	----	----
APPROVED IDENTIFIER:	----	-	--	----	----	A. SMYLIE	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	8	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	196	282	360	170	211
Copper	7440-50-8	5	mg/kg	23	19	24	45	24
Lead	7439-92-1	5	mg/kg	26	24	20	7	27
Nickel	7440-02-0	2	mg/kg	50	46	165	23	58
Zinc	7440-66-6	5	mg/kg	26	18	73	14	29
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<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	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH4 0-0.1	BH4 0.5-0.6	BH4 1-1.1	BH4 2-2.2	BH5 0-0.1
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	ES2110756-006	ES2110756-007	ES2110756-008	ES2110756-009	ES2110756-010
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
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								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH4 0-0.1	BH4 0.5-0.6	BH4 1-1.1	BH4 2-2.2	BH5 0-0.1
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	ES2110756-006	ES2110756-007	ES2110756-008	ES2110756-009	ES2110756-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
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	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH4 0-0.1	BH4 0.5-0.6	BH4 1-1.1	BH4 2-2.2	BH5 0-0.1
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	ES2110756-006	ES2110756-007	ES2110756-008	ES2110756-009	ES2110756-010
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg	----	----	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	**79.2**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	**102**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	**102**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	**72.3**	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	**81.0**	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	**79.4**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	**99.8**	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	**104**	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	**94.4**	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	**87.4**	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	**95.9**	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	**81.8**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH5 0.5-0.6	BH5 2.5-2.6	BH6 0-0.1	BH6 0.6-0.7	BH6 1-1.1
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	ES2110756-011	ES2110756-012	ES2110756-013	ES2110756-014	ES2110756-015
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	11.4	30.1	36.3	12.5	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	----	No
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	----	----	No
Asbestos Type	1332-21-4	-	--	----	----	----	----	-
Synthetic Mineral Fibre	----	0.1	g/kg	----	----	----	----	No
Organic Fibre	----	0.1	g/kg	----	----	----	----	No
Sample weight (dry)	----	0.01	g	----	----	----	----	131
APPROVED IDENTIFIER:	----	-	--	----	----	----	----	A. SMYLIE
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	29	<5	<5	<5	----
Cadmium	7440-43-9	1	mg/kg	<1	2	<1	<1	----
Chromium	7440-47-3	2	mg/kg	438	317	214	551	----
Copper	7440-50-8	5	mg/kg	30	82	16	15	----
Lead	7439-92-1	5	mg/kg	10	7	26	12	----
Nickel	7440-02-0	2	mg/kg	57	38	36	120	----
Zinc	7440-66-6	5	mg/kg	13	15	44	10	----
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	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH5 0.5-0.6	BH5 2.5-2.6	BH6 0-0.1	BH6 0.6-0.7	BH6 1-1.1
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	ES2110756-011	ES2110756-012	ES2110756-013	ES2110756-014	ES2110756-015
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
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								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH5 0.5-0.6	BH5 2.5-2.6	BH6 0-0.1	BH6 0.6-0.7	BH6 1-1.1
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	ES2110756-011	ES2110756-012	ES2110756-013	ES2110756-014	ES2110756-015
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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	**0.8**	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	**0.7**	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	**1.5**	----	----	----	----
^ 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	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH5 0.5-0.6	BH5 2.5-2.6	BH6 0-0.1	BH6 0.6-0.7	BH6 1-1.1
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	ES2110756-011	ES2110756-012	ES2110756-013	ES2110756-014	ES2110756-015
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**74.2**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**70.6**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**61.3**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**79.1**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**85.5**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**67.0**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**99.0**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**109**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**92.8**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**91.4**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**101**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**84.3**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH6 1.8-2	BH6 2.5-2.7	BH6 2.5-2.7	D1	----
			Sampling date / time	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	19-Mar-2021 00:00	----
Compound	CAS Number	LOR	Unit	ES2110756-016	ES2110756-017	ES2110756-018	ES2110756-019	--------
				Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	----	4.7	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	----	----	5.0	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	16	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	----	----	18.3	----	----
Moisture Content	----	1.0	%	30.3	22.6	----	27.5	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	----	29	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	2.63	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	0.9	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	0.6	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	<0.1	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	0.2	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	1.7	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	----	----	2.53	----	----
Arsenic	7440-38-2	5	mg/kg	14	<5	----	5	----
Cadmium	7440-43-9	1	mg/kg	2	<1	----	1	----
Chromium	7440-47-3	2	mg/kg	715	209	----	322	----
Copper	7440-50-8	5	mg/kg	59	6	----	78	----
Lead	7439-92-1	5	mg/kg	14	<5	----	7	----
Nickel	7440-02-0	2	mg/kg	31	27	----	49	----
Zinc	7440-66-6	5	mg/kg	<5	<5	----	19	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	1.2	----	----
Total Organic Carbon	----	0.5	%	----	----	0.7	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	BH6 1-1.1 - 19-Mar-2021 00:00	Mid brown soil.
EA200: Description	BH4 1-1.1 - 19-Mar-2021 00:00	Mid brown soil.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
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

Inter-Laboratory Testing

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

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

(SOIL) EA150: Soil Classification based on Particle Size

(SOIL) EA152: Soil Particle Density

LABORATORY TEST REQUEST

REGIONAL GEOTECHNICAL SOLUTIONS

PROJECT NUMBER:

CLIENT: Co-Op

PROJECT : Proposed Aquatic Facility

LOCATION: Gordon Street, Port Macquarie DATE: 19/03/2021

TEST LABORATORY: ALS

LOCATION: 277-289 Woodpark Road, Smithfield NSW 2164

ALS QUOTE NUMBER: SYBQ/303/16

	SAMPLE LOCATION & DEPTH:			SAMPLE TYPE	Sutie 16	S-2 (8 Metals)	P-22	EA200 (Asbestos)		
		Start	End							
1	BH1	0	0.1	SOIL	1					
2	BH1	0.2	0.3	SOIL		1				
3	BH2	0	0.1	SOIL		1				
4	BH2	0.3	0.4	SOIL		1				
5	BH2	0.6	0.7	SOIL	1					
6	BH4	0	0.1	SOIL		1				
7	BH4	0.5	0.6	SOIL		1				
8	BH4	1	1.1	SOIL		1		1		
9	BH4	2	2.2	SOIL	1					
10	BH5	0	0.1	SOIL		1				
11	BH5	0.5	0.6	SOIL	1					
12	BH5	2.5	2.6	SOIL		1				
13	BH6	0	0.1	SOIL		1				
14	BH6	0.6	0.7	SOIL		1				
15	BH6	1	1.1	SOIL				1		
16	BH6	1.8	2	SOIL		1				
17	BH6	2.5	2.7	SOIL		1				
18	BH6	2.5	2.7	SOIL			1			
19	D1			SOIL		1				
	SubTotal				*4*	*13*	*1*	*2*		

Environmental Division
Sydney
Work Order Reference
ES2110756

Telephone - 61-2-8784 8555

Report Results to:	Tim Morris - 0434 106 594	Grant Colliar - 0437 188 162
Email:	tim.morris@regionalgeotech.com.au	grant.c@regionalgeotech.com.au

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Ph. (02) 6553 5641
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rec: Tim 25/3/21 9:50am

Appendix D

Letter from Dr David Tully CEnvP SC

Contaminated Land Solutions

24 May 2023

Ref: CLS0268.L01.1

Regional Geotechnical Solutions Pty Ltd
1/12 Jindalee Road
Port Macquarie
NSW 2444

For the attention of Tim Morris

Dear Tim,

RE: Review of Stage 1 Site Contamination Assessment Report – Proposed Aquatic Facility, Gordon Street, Port Macquarie

I, Dr David Tully of Contaminated Land Solutions Pty Ltd, am a Certified Environmental Practitioner Site Contamination Specialist (General Certified Environmental Practitioner certification no. 1138 and Site Contamination Specialist certification no. SC40084).

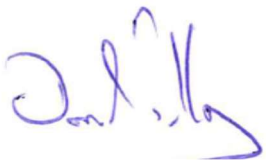
I confirm I have reviewed the Regional Geotechnical Solutions report entitled "Stage 1 Site Contamination Assessment Report – *Proposed Aquatic Facility, Gordon Street, Port Macquarie*" (Ref: RGS21005.6.1-AC), dated 23 May 2023 and a copy of which I have retained.

I can confirm that on the basis of the information contained within the report, I support the conclusions and recommendations provided therein.

Should the client, regulator or local authority have any queries regarding the report review, I can be contacted by e-mail via david.tully@contaminatedlandsolutions.com.au. Specific queries regarding the content of the report should be addressed to Tim Morris at Regional Geotechnical Solutions.

For and on behalf of

Contaminated Land Solutions Pty Ltd



Dr David Tully CEnvP SC
Director
Contaminated Land Solutions Pty Ltd

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CO-Op Studio

Stage 2 Site Contamination Assessment

Proposed Development

Aquatic Facility – Gordon Street, Port Macquarie

Report No. RGS21005.6-AG

22 September 2024

REGIONAL GEOTECHNICAL SOLUTIONS

REGIONAL GEOTECHNICAL SOLUTIONS

Manning-Great Lakes
Port Macquarie
Coffs Harbour

RGS21005.6-AG

22 September 2024

CO-Op Studio
35 Richards Avenue
Surrey Hills NSW 2010

Attention: David Huntley

Dear David,

RE: Proposed Development – Aquatic Facility – Gordon Street, Port Macquarie
Stage 2 Site Contamination Assessment

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken a Stage 2 Site Contamination Assessment for the proposed development at Gordon Street, Port Macquarie.

Presented herein is a summary of the work undertaken, the findings of the Stage 2 site contamination assessment and a review of the laboratory test results compared to the NEPM (2013) guidelines. The assessment found elevated concentrations of copper, chromium, nickel and total recoverable hydrocarbons in several locations across the site that exceeded the adopted Ecological Investigation Levels (EILs) for Recreational land use.

The site can be made suitable for the proposed aquatic facility with regard to soil contamination, provided the recommendations and advice of this report are adopted, and demolition and site preparation works are conducted in accordance with appropriate site management protocols and legislative requirements.

The work presented herein was reviewed by Dr David Tully CEnvP SC. A copy of Dr Tully's letter pertaining to the review is appended to the report.

If you have any questions regarding this project, please contact the undersigned.

For and on behalf of **Regional Geotechnical Solutions Pty Ltd**

Prepared by

Grant Colliar

Senior Engineering Geologist

Reviewed by

Andrew Hills

Associate Environmental Engineer

Regional Geotechnical Solutions Pty Ltd
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1 INTRODUCTION

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken a Stage 2 Site Contamination Assessment for the proposed development at Gordon Street, Port Macquarie.

The project involves the development of a new aquatic facility located at Macquarie Park, Port Macquarie complete with an indoor aquatic hall including water play area, health fitness and wellness building, building entrance and amenities, change rooms and kiosk and an outdoor aquatic area including an eight lane 50m pool with spectator seating. The project is anticipated to be staged in its delivery to assist with grant funding opportunities. Firm design proposals in relation to the layout of the facility are not yet available.

The site is approximately 2.8ha and comprises grass playing fields and an open grassed area bound by Gordon Street to the north, commercial buildings adjacent to Grant Street to the east, netball court facility to the south, Wrights Creek to the south west and mixed commercial buildings to the west. Munster Street provides access to the west of the site.

The purpose of the contamination assessment was to provide discussion and recommendations regarding:

- The potential for the site to have been impacted by contamination due to past activities, that may affect future use of the land for redevelopment development;
- Evaluation of the analysis results against industry accepted criteria (NEPM 2013) for recreational landuse;
- Provide a plan indicating the location and concentration of contamination across the site including the lateral extent (if found); and
- Provide recommendations on site management, the need and options for remediation and any further detailed investigation and testing that is recommended / required.

The work was commissioned by David Huntley on behalf of Co.Op Studio and was undertaken in accordance with proposal number RGS21005.6-AE dated 28 March 2024.

2 PREVIOUS INVESTIGATION

A Stage 1 SCA has been undertaken by RGS, the findings of which are presented in report RGS21005.6-AC, dated 23 May 2023. This Stage 2 SCA report should be read in conjunction with the Stage 1 SCA report. The RGS Stage 1 SCA report identified the following Areas of Environmental Concern (AEC) and made the following recommendation with respect to each AEC:

- AEC1 – Soils within the footprint of future works where excavations are proposed within areas impacted by historical filling works. A sampling grid with test pits through the fill profile is recommended in accordance with the NSW EPA *Sampling Design Guidelines* (2022) to delineate the potential extent of contaminants which may include asbestos containing materials (ACM), heavy metals and polycyclic aromatic hydrocarbons (PAHs) associated with imported fill of unknown origins. Groundwater assessment may also be required if excavation(s) are proposed;

- AEC2 – Existing spectator mound adjacent to the eastern site boundary where excavations are proposed within areas impacted by historical filling works. A sampling grid is recommended in accordance with the NSW EPA *Sampling Design Guidelines* (2022) to

delineate the potential extent of contaminants which may include ACM, heavy metals and PAHs associated with imported fill of unknown origins; and

- AEC3 – Soils within the vicinity of the existing amenities block following demolition works as there is the potential for asbestos type building materials or lead based paint to have been used in its construction.

The AEC locations are shown on Figure 1 of the Stage 1 SCA report.

3 GUIDELINES AND ASSESSMENT CRITERIA

The assessment was aimed at fulfilling the requirements of a Stage 2 Contaminated Site Assessment in accordance with NSW EPA *Guidelines for Consultants Reporting on Contaminated Sites (2020)*.

To evaluate results and for guidance on assessment requirements, the assessment adopted the guidelines provided in the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM 2013)*. The NEPM document provides a range of guidelines for assessment of contaminants for various land use scenarios. The proposed land use is considered equivalent to Public Open Space and as such comparison with the NEPM guideline values for HIL C land use was considered appropriate. However, it is noted that some areas of the site will be used for car parking and the proposed swimming pool complex which may have limited opportunities for soil access, and a Commercial type land use may then be more appropriate. This should be reviewed once more details of the proposed development are available.

In accordance with the NEPM guideline the following criteria were adopted for this assessment:

- Health Investigation Levels (HILs) for Recreational C (Public Open Space) land use were used as a conservative approach to assess the potential human health impact of heavy metals and polycyclic aromatic hydrocarbons (PAH);
- Health Screening Levels (HSLs) for coarse textured (sand) or fine textured (silt and clay) soils on a Commercial D site with respect to inhalation of indoor air were adopted as appropriate for the soils encountered to assess the potential human health impact of petroleum hydrocarbons and benzene, toluene, ethyl-benzene, xylenes (BTEX) compounds;
- Ecological Investigation Levels (EILs) for Recreational C (Public Open Space) land use were used as a conservative approach for evaluation of the potential ecological / environmental impact of heavy metals and naphthalene; and
- Ecological Screening Levels (ESLs) for coarse textured (sand) soils or fine textured (silt and clay) soils on a Recreational C (Public Open Space) land use site were as a conservative approach, to assess the potential ecological / environmental impact of petroleum hydrocarbons, BTEX compounds and benzo(a)pyrene.

In accordance with NEPM 2013, exceedance of the criteria does not necessarily deem that remediation or cleanup is required, but is a trigger for further assessment of the extent of contamination and associated risks. The adopted criteria are presented in the results summary table in Appendix B.

4 METHODOLOGY

In accordance with the relevant sections of the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013*), the assessment involved the following process:

- Undertake targeted sampling and analysis at the selected AECs for the presence and extent of heavy metal contamination and uncontrolled fill;
- Analyse samples for a suite of potential contaminants associated with the past activities; and
- Evaluate the results against industry accepted criteria for the proposed land use and NSW EPA Waste Classification Guidelines (2014).

5 SITE SETTING AND HISTORY

5.1 Site Description

The approximately 2.5ha area of assessment is within Macquarie Park which comprises grassed playing fields with surface elevations ranging from approximately RL 3m in the south west to RL 5m in the north east.

The site is situated at the toe of a south facing ridge slope and grades down to the south towards Wrights Creek. It appears to have been a low lying landscape that has been historically modified by site filling works.

A satellite image that shows the location of the site and the site setting is reproduced in Plate 1.

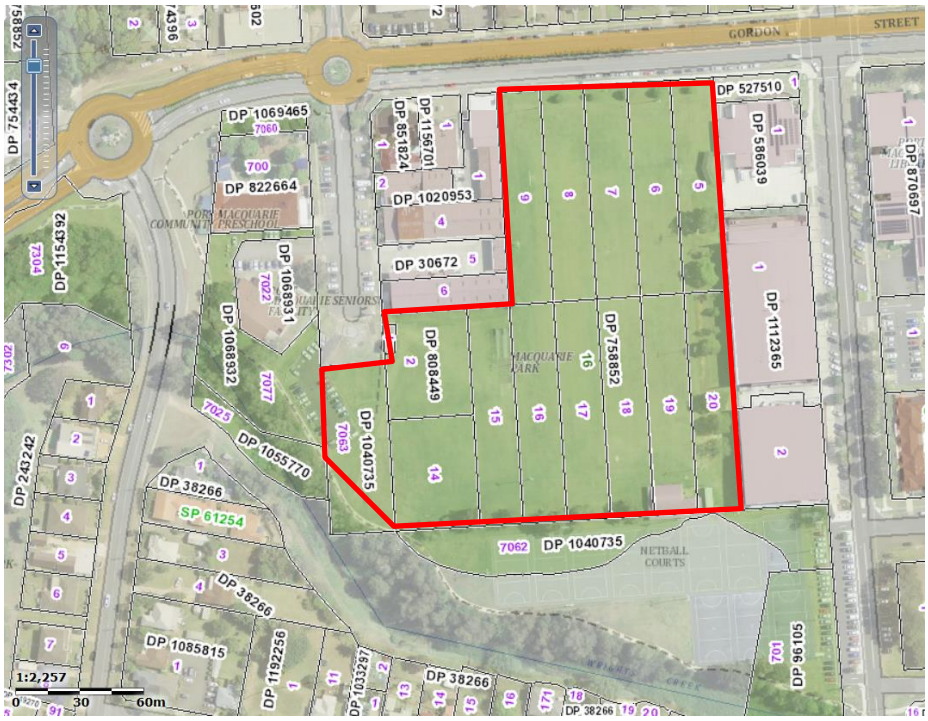


Plate 1: *Satellite image dated 2012 obtained from the NSW Government 'Six Maps' website that illustrates the site location and setting at Macquarie Park. The approximate area of assessment is outlined in red. The northern half of the site is proposed for pools and structures and the southern half for car parking.*

5.2 Site History Summary

Details of the site history are presented in Report RGS21005.6-AC which should be read in conjunction with this report. Based on available data the chronological development of the subject site is summarised below:

- Allotments 5 to 9 and 13 to 20 of Section 16 were in the possession of various individuals prior to the area being resumed for a proposed school in 1951;
- An alluvial depression is visible in the 1959 and 1965 near the northern and southern site boundaries;
- The majority of the site was filled between 1959 and 1969, including the alluvial depression;
- Additional filling works in the south west corner of the site between 1979 and 1981;
- The source of the fill material is not known;
- Large buildings were present since 1959 beyond the eastern site boundary along Grant Street and the number of buildings increased until about 2009. The buildings may have been part of a motel but this is not confirmed. The buildings were then demolished prior to 2009 and replaced by three large commercial office buildings of two to three storeys;
- Sewer pump station near the western boundary of the site was installed prior to 1979;
- Cricket nets were installed in 1991 and removed in 2017;
- A brick amenities block has been present in the north east corner of the site since at least 1991;
- The car park in the south west corner of the site was constructed between 1997 and 2009; and
- Lighting towers were installed in 2010 around the sports field.

5.3 Geology

The site is situated in an area that is underlain by deeply weathered geological units of the Port Macquarie Block which includes slate, chert, basalt, serpentinite and dolerite.

5.4 Site Observations

Observations made during the previous Stage 1 SCA are summarised below:

- Grassed playing fields are present in Lot No's 5 to 9 and 16 to 20 and have lighting towers at regular interval around the perimeter. A brick amenities block with tile roof and a metal shipping container are present in the northeast corner of the site in Lot No. 5. Lot No's 2, 14 and 15 comprise an open grassed area. A set of cricket nets are visible in the 2012 satellite imagery in Lot 15 but have since been removed;
- A fill embankment for spectator viewing approximately 115m in length, 8m width and 1.5m in height is present along the eastern boundary in Lot No's 5 and 20. Orange/red clay soils were exposed on the sides of the mound and the material may have been imported to site;

- The site also includes a portion of an existing car park, located in part of Lot 7063 at the southern end of Munster Street. The car park has a two-coat seal and the pavement condition is variable with some patching and an uneven surface. A north – south concrete footpath is also present within Lot 7063; and
- Vegetation consists of short, maintained grass and medium sized trees along the north, east and southern boundaries.

No significant changes from the previous Stage 1 SCA to current date.

A selection of images of the site is presented below.

Looking north east towards brick amenities block and metal shipping container in north east corner of site.

Looking south across playing fields. Site has been modified by filling works to create a near level surface. Lighting poles line the perimeter of the sporting fields.

Looking south across open grassed area in southwest of site on 18 March 2021.

Raised spectator mound on eastern site boundary. Some red clay soils exposed on side of mound.

6 CONCEPTUAL SITE MODEL

6.1 Revised Conceptual Site Model

The initial Conceptual Site Model from the Stage 1 SCA was presented in Table 1. Based on the site observations and knowledge obtained during the Stage 1 SCA, potential AECs where site contamination is potentially situated, and Chemicals of Concern (CoCs) associated with that site contamination were revised as outlined in Table 1.

Table 1: Revised Conceptual Site Model

Area of Environmental Concern	Mode of Potential Contamination	Chemicals of Concern	Targeted Sampling Location
AEC1: Soils associated with historical filling works	Imported fill of unknown origin	Heavy Metals, TRH, BTEX, PAH, OC/OPP, asbestos	TP1, TP5, TP6, TP7, TP8, TP8, TP9, TP10, BH302, BH303, BH306, BH307, BH308, BH310, BH311, BH312, BH313, BH314, BH315, BH316, BH317, BH318, BH319, BH320, BH321, BH322, BH323, BH324, BH325, BH326
AEC2: Soils associated with imported fill for spectator mound adjacent to the eastern site boundary	Imported fill of unknown origin	Heavy Metals, TRH, BTEX, PAH, OC/OPP, asbestos	TP3, BH304, BH305, BH309
AEC3: Soils in vicinity of existing structures	Asbestos building materials, lead based paint	Heavy Metals, asbestos	TP2, TP4, BH301, BH309
Heavy Metals - Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc *BTEX - Benzene, Toluene, Ethylbenzene and Xylene* *TRH - Total Recoverable Hydrocarbons* *PAH – Polycyclic Aromatic Hydrocarbons* *OC/OPP – Organochlorine and Organophosphorus Pesticides*			

6.2 Potentially Sensitive Receptors

The site is public space and is currently being used as playing fields.

Potentially sensitive receptors are therefore likely to comprise:

- The public using sports fields;
- Potential runoff to adjacent creek;
- Future construction and site workers; and

- Future site users.

6.3 Plausible Exposure Pathways

The presence of measurable concentrations of chemical substances does not automatically imply that the site will cause harm. In order for this to be the case an exposure route must be present allowing a source to adversely affect a receptor.

Based on the site observations and knowledge obtained about site activities as outlined above, potential exposure routes linking chemicals of concern with identified receptors to form plausible exposure routes are summarised in Table 2.

Table 2 - Plausible Exposure Pathways

Area of Environmental Concern	Chemicals of Concern	Exposure Route	Receptors	Comment
AEC1: Soils associated with historical filling	Heavy Metals, TRH, BTEX, PAH, OC/OPP, asbestos	Inhalation, dermal contact, ingestion	Site users, construction workers, services maintenance workers	Imported fill of unknown origin
AEC2: Soils associated with imported fill for spectator mound	Heavy Metals, TRH, BTEX, PAH, OC/OPP, asbestos	Inhalation, dermal contact, ingestion	Site users, construction workers, services maintenance workers	Imported fill of unknown origin
AEC3: Soils in vicinity of existing structures	Asbestos building materials, lead based paint	Inhalation, dermal contact, ingestion	Site users, construction workers, services maintenance workers	Age of building not known.

7 ASSESSMENT METHODOLOGY

7.1 Date Quality Objectives

Data Quality Objectives (DQO) have been prepared for the site to assist the development of the Sampling and Analysis Quality Plan (SAQP). The DQO's have been developed for the site with reference to the seven steps outlined in the DQO process, National Environment Protection Measure (NEPM) Schedule B2, Appendix B, as outlined below.

7.1.1 State the Problem

Previous activities may have resulted in contamination of site soils that exceed adopted guidelines relevant for the proposed future use.

7.1.2 Identify the Goal

The goal of the assessment is to determine if the plausible exposure pathways identified in Section 6 are complete.

7.1.3 Identify the Information Inputs

The information inputs required to attain the goal includes:

- Description of materials present;
- Concentration (s) of potential contaminants; and
- Analytical methods that are required for chemicals of potential concern so that assessment can be made relative to the site criteria.

7.1.4 Define Study Boundaries

For the purposes of the assessment the study is limited to the nominated site area within part of Lot 3 DP831325 as shown in the supplied drawing presented in Figure 1.

7.1.5 Develop a Decision Rule

If the data from the assessment exceeds adopted guideline criteria then further assessment and/or remediation may be required.

7.1.6 Specify Acceptance Criteria

A summary of some of the acceptance criteria is provided in Table 3.

Table 3: Summary of Acceptance Criteria

Parameter	Data Quality Objective
Laboratory duplicate samples	Relative percent difference (RPD) <40% or as per laboratory requirements
Chain of Custody forms	100% complete
Field duplicate samples	Relative percent difference (RPD) <40%
Sample receipt from laboratory	Sample names/numbers received agree with Chain of Custody Samples received intact Samples received at specific temperature Samples received within laboratory holding times

7.1.7 Optimise the Design for Obtaining Data

Undertake sampling and analysis of soil samples in accordance with NSW EPA (2022) *Sampling Design Guidelines*.

7.2 Sampling and Analysis Quality Plan

A sampling and analysis quality plan (SAQP) was developed based on the DQO's outlined above and is summarised below.

7.2.1 Sampling Rationale, Locations and Sample Numbers

Undertake sampling and analysis of soil samples in accordance with NSW EPA (2022) *Sampling Design Guidelines* which for a site of 2.8 ha requires thirty-five sample points using a grid based approach. In addition, a judgemental approach was used to target the AEC's listed in Table 1.

7.2.2 Sampling

Soil samples are to be collected using disposable gloves and hand tools which are to be decontaminated between sampling points using Decon90 detergent and deionised water. Samples collected will be placed in laboratory supplied 250ml glass jars and placed in an ice-chilled cooler box.

7.3 Field Work

Field work for the contamination assessment was undertaken on 15-16 August 2024 by an Environmental Engineer from RGS and included:

- Site walkover to assess visible surface conditions and identify evidence of contamination, or past activities that may cause contamination;
- Ten (10) test pits were undertaken with a mini excavator, logged and sampled by an Environmental Engineer; and
- Twenty-seven (27) boreholes were undertaken with a 4WD drill rig, logged and sampled by an Environmental Engineer.

Engineering logs of the test pits and boreholes are presented in Appendix B. The locations of the test locations are shown on Figure 1. They were obtained on site by measurement relative to existing site features.

Soil samples were taken from selected intervals in the excavated test pits following the procedure set out in Section 7.2.2.

7.4 Ground Conditions Encountered

The materials encountered during the investigation are summarised in Tables 4 and 5. Further details are presented on the engineering logs in Appendix A.

Table 4: Summary of Geotechnical Units

Unit	Material	Material Description
UNIT 1	FILL/TOPSOIL	Silty sandy CLAY, high plasticity, dark brown, sand is fine to medium grained, grass roots to 5mm.

Unit	Material	Material Description
UNIT 2	FILL CLAY	Sandy gravelly CLAY to Silty sandy CLAY, medium to high plasticity, red, brown, grey and orange, sand is fine to coarse grained, gravel is fine to medium.
UNIT 3	TOPSOIL	Silty sandy CLAY, high plasticity, brown and dark grey, sand is fine to medium grained.
UNIT 4	ALLUVIAL	Silty CLAY to silty sandy CLAY, medium to high plasticity, pale brown and dark grey, sand is fine to medium.
UNIT 5A	RESIDUAL	Sandy CLAY, medium plasticity, yellow brown and orange brown, sand is fine to medium grained.
UNIT 5B	RESIDUAL	Sandy CLAY, low plasticity, red and brown, sand is fine to medium grained.
UNIT 6	EXTREMELY WEATHERED ROCK	Recovered as Sandy gravelly CLAY, low plasticity, sand is fine to medium grained, gravel is fine to medium subangular to subrounded.

Table 5: Summary of Subsurface Materials

Test Pit	Depth to Base of Material Layer (m)						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5A	Unit 5B	Unit 6
BH301	0.2	2.0	--	≥2.0	--	--	--
BH302	0.6	0.9	--	--	--	1.9	≥3.0
BH303	0.2	0.7	--	--	1.2	≥1.5	--
BH304	0.6	--	0.75	--	≥1.9	1.6	--
BH305	0.2	--	--	--	0.9	≥1.5	--
BH306	0.2	--	--	--	1.3	≥1.5	--
BH307	0.2	--	--	--	--	≥1.5	--
BH308	0.2	0.5	--	≥1.5	--	--	--
BH309	0.4	0.8	--	--	≥1.6	--	--
BH310	0.2	0.6	--	0.8	1.3	≥1.8	--
BH311	0.25	0.75	--	0.9	2.0	--	≥3.0
BH312	0.4	0.9	--	≥2.0	--	--	--
BH313	0.4	--	--	0.8	≥1.5	--	--
BH314	0.15	0.8	--	1.3	≥1.6	--	--
BH315	0.4	0.6	--	1.1	≥1.6	--	--

Test Pit	Depth to Base of Material Layer (m)						
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5A	Unit 5B	Unit 6
BH316	0.2	1.0	--	--	≥2.2	--	--
BH317	0.25	0.8	--	1.3	≥1.5	--	--
BH318	0.2	0.4	--	0.6	≥1.5	--	--
BH319	0.3	--	--	0.5	1.1	≥1.5	--
BH320	0.3	--	--	0.6	--	≥1.5	--
BH321	0.2	1.1	--	1.4	≥1.9	--	--
BH322	0.2	0.9	--	1.3	≥1.6	--	--
BH323	0.2	--	--	--	0.6	≥1.5	--
BH324	0.2	--	--	--	0.6	≥1.7	--
BH325	0.2	0.9	--	1.5	≥2.5	--	--
BH326	0.3	1.8	--	2.4	≥3.0	--	--
BH327	0.5	2.6	--	≥3.0	--	--	--
TP1	0.3	1.0	--	≥1.5	--	--	--
TP2	0.15	0.4	--	--	≥1.0	--	--
TP3	0.25	0.7	1.1	--	≥1.5	--	--
TP4	0.3	--	--	1.0	--	--	--
TP5	0.3	0.8	--	≥1.5	--	--	--
TP6	0.2	0.5	0.6	≥1.0	--	--	--
TP7	0.2	1.2	--	≥1.5	--	--	--
TP8	0.2	0.7	0.9	≥1.2	--	--	--
TP9	0.2	0.6	0.7	≥1.2	--	--	--
TP10	0.3	1.5	1.7	≥2.0	--	--	--

Note: ≥ Indicates that base of material layer was not encountered

-- Indicates that the material was not encountered at the test location

No visible evidence of liquid hydrocarbon contamination or odours were noted in the excavated soil profiles. No evidence of ACM was observed.

The soils encountered are consistent with the deeply weathered geological units of the Port Macquarie block that can include slate, dolerite and serpentinite.

7.5 Laboratory Testing

Samples were transported under chain-of-custody conditions to a NATA accredited specialist chemical testing laboratory where they were tested for heavy metals.

The results are presented in Appendix B. A summary table of the results comparing them to the adopted guidelines is also presented in Appendix B.

7.6 Quality Control

Samples were obtained using industry accepted protocols for sample treatment, preservation, and equipment decontamination.

Duplicates were submitted to the laboratory for analysis and are summarised below:

- D1= TP1, 0 – 0.1m
- D2 = BH302, 1.1 – 1.2m
- D3 = BH306, 0.1 – 0.2m
- D4 = BH312, 0.8 – 0.9m
- D5 = BH319, 0.2 – 0.3m
- D6 = BH327, 1.2 – 1.3m

Results of the duplicate analysis indicated heavy metal concentrations correlated well between the samples.

The Relative Percent Differences (RPDs) were calculated for the duplicate samples and presented in the results summary table in Appendix B. RPD exceeded 40% in several samples. The elevated RPD is likely to be due to the heterogeneity of contaminant distribution within the material from which the samples were collected and is not considered to affect the usability of the results.

In addition to the field QC procedures, the laboratory conducted internal quality control testing including surrogates, blanks, and laboratory duplicate samples. The results are presented with the laboratory test results in Appendix C.

On the basis of the results of the field and laboratory quality control procedures and testing the data is considered to reasonably represent the concentrations of contaminants in the soils at the sample locations at the time of sampling and the results can be adopted for this assessment.

7.7 Analysis Results

An appraisal of the laboratory test results presented in Appendix B is provided below with reference to the adopted soil investigation and screening levels discussed in Section 3.

EILs are site specific and are determined by calculating an Ambient Background Concentration (ABC) and an Added Contaminant Limit (ACL) for the site. ABC values were adopted using results from the Stage 1 soil sample BH6 (2.5 – 2.6m) in the north western corner within undisturbed natural soils. EILs are presented in the Summary Table in Appendix C and summarised in Table 6.

Table 6 - EILs Summary (With Reference to NEPM, Schedule B1)

Analyte	ABC – BH6 (2.5 – 2.7m) (mg/kg)	EIL – Aged Recreational Landuse (mg/kg)
Copper	6	35

Analyte	ABC – BH6 (2.5 – 2.7m) (mg/kg)	EIL – Aged Recreational Landuse (mg/kg)
Arsenic	<5	100
Lead	<5	1100
Nickel	27	30
Chromium (III)	209	780
Zinc	<5	140

- Concentrations of heavy metals exceeded the calculated EILs for Nickel, Chromium and Copper at multiple locations within AEC1, typically in the fill profiles, although with regard to Copper and Nickel, exceedances were also apparent in natural soils;
- Concentrations of Total Recoverable Hydrocarbon (TRH) were detected in multiple locations with one sample (BH311, 0.8-0.9m) exceeding the adopted ESLs;
- Elevated concentrations of Total Chromium were present in several samples. Speciation analysis previously undertaken in the Port Macquarie area has shown that the natural soils are enriched in Chromium III. Chromium VI concentrations are typically below detection. There is no HIL for Chromium III or total Chromium, only for Chromium VI;
- Concentrations of remaining heavy metals were generally above the laboratory limit of reporting (LOR), but were below adopted health investigation criteria for a recreational site in each of the samples analysed;
- Concentrations of PAHs were above LOR in one sample (BH326, 0.2 -0.3m), but below the adopted health investigation criteria for a recreational site in each of the samples analysed;
- Concentrations of BTEX and PCB contaminants were below LOR in each of the samples analysed;
- Concentrations of pesticide contaminants were below LOR in each of the samples analysed; and
- Asbestos was not detected in the soil samples submitted for screening, nor were asbestos type building materials observed on the surface or within the fill profiles.

8 ASSESSMENT AND CONCLUSIONS REGARDING SITE CONTAMINATION

The Stage 1 SCA identified a number of AEC's that warranted further investigation due to the presence of historical filling works. As such, the results of the laboratory analysis of surface and near-surface soil sampling collected from the AEC's during the Stage 2 assessment revealed concentrations of some heavy metals and hydrocarbons which exceeded the adopted investigation criteria for a recreational site in some locations as summarised below.

8.1 Summary

Based on the results outlined in this report the following points and recommendations are made:

- **AEC1** – Soils within the footprint of future works where excavations are proposed within areas impacted by historical filling works were investigated. A program of grid sampling revealed that:
  - Elevated concentrations of copper, chromium and nickel were apparent in several samples across the site, locally in excess of ecological guideline criteria for copper and chromium, but commonly in excess (approximately 50% of samples) in both topsoil, fill and natural soil samples. In view of this it is considered likely that the apparent elevated heavy metal concentrations detected are of natural origin either within on-site soils or soils imported from the site vicinity.
  - Elevated concentrations of Total Recoverable Hydrocarbon (TRH) were detected in four samples of fill or fill/topsoil and two samples of natural alluvial soils with concentrations in one sample of alluvial soil (BH311, 0.8-0.9m) in excess of ecological guideline criterion. An absence of impacts in overlying samples (where tested) indicates that these impacts are unlikely to be the result of surface spills of fuels or lubricants. It is possible that they are natural in origin due to the presence of materials such as humic and fulvic acids, tannins and lignans within the soils.
  - The site has undergone historical filling works with fill thicknesses ranging from 0.2 to 2.8m. Most of the filling works occurred prior to 1969. Trace metal fragments and a possible void (s) were encountered within the fill at BH3 (Stage 1) suggesting potential for mixed fill and waste to be present at the site.
  - Asbestos was not encountered in any of the soil samples analysed for asbestos fibres collected from this AEC.
- **AEC2** – Existing spectator mound adjacent to the eastern site boundary where excavations are proposed within areas impacted by historical filling works. A longitudinal sampling grid was undertaken with concentrations of analytes found to be below the laboratory LOR, indicating generally low levels of anthropogenic impacts in this soil; and
- **AEC3** – Soils within the vicinity of the existing structures were sampled due to the potential for asbestos type building materials or lead based paint to be present in the vicinity. The sampling and analysis did not reveal the presence of soil impacts associated with these materials. Considering the age of the existing amenities block (pre 1991) there is the potential for asbestos type building materials to have been used in its construction. Prior to site demolition works a hazardous material inspection should therefore be undertaken to determine if hazardous materials including asbestos are present.

8.2 Conclusions

The program of soil sampling completed during the DSI did not reveal chemical concentrations within the soils analysed that might pose a potential human health risk with regard to the proposed site use as an aquatic centre.

In view of the exceedances of EIL's and ESL's recorded in some soil samples from the site there may be potential for inhibition of growth of some plant species etc, however, it is considered likely that the chemical concentrations (heavy metals and hydrocarbons) are, for the most part, natural in origin. Firm layout design proposals are not yet available, but it is probable that the proposed development will cover the majority of the site, limiting the potential for fauna and flora uptake of chemical substances on the site. If grass, gardens or vegetation growth is required then some localised excavation and replacement of the growing medium may be appropriate. Consideration

of the nature and extent of such remedial action should be made once firm design proposals are available and it may be appropriate to seek the advice of a landscape specialist.

Should any existing soil require removal off-site, it will require assessment for a Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014 in accordance with the Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – the Excavated Natural Material (ENM) Order 2014.

A preliminary waste classification for the site soils has been provided below in Section 10.

Imported fill should comprise materials that classify as Virgin Excavated Natural Material (VENM) or Excavated Natural Material (ENM) in accordance with NSW EPA (2014) Waste Classification Guidelines. Imported VENM or ENM material should be accompanied by appropriate documentation outlining these classifications.

As recommended by the Stage 1 SCA, a hazardous material inspection should be undertaken prior to demolition works commencing to determine if hazardous materials including asbestos are present. Where asbestos containing material is present an Asbestos Management Plan will require preparation by a person with management or control of the workplace and should be prepared with reference to the relevant SafeWork Australia's Code of Practices for asbestos management and removal to an appropriately licensed waste management facility.

Should materials suspected of being contaminated (by way of visual or olfactory evidence) be encountered during development of the site or if there are soils encountered that differ from those sampled and analysed during this investigation, it is recommended that advice from a suitably qualified and experienced environmental consultant be sought without delay.

Based on the results of the Stage 2 site contamination assessment presented herein, the site can be made suitable for the proposed land use as an aquatic centre provided the recommendations and advice of this report are adopted, and demolition and site preparation works are conducted in accordance with appropriate site management protocols and legislative requirements.

Should the proposed land use change in the future, the findings of this sampling program must be reassessed accordingly.

9 WASTE CLASSIFICATION

Table 2 of the '*Waste Classification Guidelines (2014)*' nominates a suite of analytes to be tested (Column 1) and also provides the maximum concentration (CT1) allowable within the soil for classification without the need for additional toxicity characteristics leaching procedure (TCLP) testing for both general solid waste (Column 2) and restricted solid waste (Column 3) for each analyte. Should the CT1 values be exceeded, the guidelines provide a Specific Contaminant Concentration (SCC) value to allow further evaluation of contaminant concentrations in conjunction with TCLP testing.

The laboratory results indicate that the site soils which were sampled during this investigation would meet the requirement for General Solid Waste.

Further waste classification testing of soils may be required should excavations extend to areas not previously samples by either the Stage 1 or Stage 2 investigations. Additional testing should be undertaken prior to construction work commencing to prevent delays during the testing and reporting process.

10 LIMITATIONS

This report comprises the results of an investigation carried out for a specific purpose and client as defined in the document. The report should not be used by other parties or for purposes or projects other than those assumed and stated within the report, as it may not contain adequate or appropriate information for applications other than those assumed or advised at the time of its preparation. The contents of the report are for the sole use of the client and no responsibility or liability will be accepted to any third party. The report should not be reproduced either in part or in full, without the express permission of Regional Geotechnical Solutions Pty Ltd.

Contaminated site investigations are based on data collection, judgment, experience, and opinion. By nature, these investigations are less exact than other engineering disciplines. The findings presented in this report and used as the basis for the recommendations presented herein were obtained using normal, industry accepted practises and standards. To our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

Recommendations regarding ground conditions referred to in this report are estimates based on the information available at the time of its writing. Estimates are influenced and limited by the fieldwork method and testing carried out in the site investigation, and other relevant information as has been made available. In cases where information has been provided to Regional Geotechnical Solutions for the purposes of preparing this report it has been assumed that the information is accurate and appropriate for such use. No responsibility is accepted by Regional Geotechnical Solutions for inaccuracies within any data supplied by others.

If site conditions encountered during construction vary significantly from those discussed in this report, Regional Geotechnical Solutions Pty Ltd should be contacted for further advice.

This report alone should not be used by contractors as the basis for preparation of tender documents or project estimates. Contractors using this report as a basis for preparation of tender documents should avail themselves of all relevant background information regarding the site before deciding on selection of construction materials and equipment.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

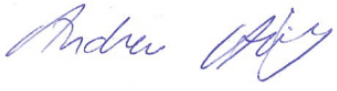
For and on behalf of **Regional Geotechnical Solutions Pty Ltd**

Prepared by

Grant Colliar

Senior Engineering Geologist

Reviewed by



Andrew Hills

Associate Environmental Engineer

Figures

Legend

- Borehole Location
- Trial Pit Locations
- Nickel Exceedance
- Copper Exceedance
- TRH Exceedance
- Chromimum Exceedance

Based on SixViewer 2012 satellite image

REGIONAL GEOTECHNICAL SOLUTIONS

Client:	CO-OP STUDIO	Job No.	RGS21005.6
Project:	PROPOSED AQUATIC CENTRE MACQUARIE PARK, GORDON STREET, PORT MACQUARIE	Drawn By:	HM
		Scale:	NTS
		Date:	27-Aug-24
Title:	INVESTIGATION LOCATION PLAN	Figure No.	**1**

Appendix A

Results of Field Investigations

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH301

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491842 m
NORTHING: 6522356 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
AD/T		0.10m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.	M < w_P	F			TOPSOIL/ FILL
							0.20m					
						CL	**Sandy Gravelly CLAY:** Medium plasticity, orange brown, sand, fine to coarse grained, gravel, fine to medium grained, angular to subrounded.		St	HP HP	180 180	FILL
							0.40m					
		0.50m ES		0.5		CI	**Silty Sandy CLAY:** Medium plasticity, white mottled red, sand, fine to coarse grained.		VSt	HP HP HP	300 250 250	FILL
				1.0			1.00m					
	15/8/2024					CI	**Silty Sandy CLAY:** High plasticity, red, sand, fine to medium grained.	M > w_P	St	HP HP HP	110 180 110	FILL
				1.5								
				2.0			2.00m					
		2.10m				CH	**Silty Sandy CLAY:** High plasticity, dark grey, sand, fine to medium grained.		S	HP HP HP	30 30 40	ALLUVIUM
		ASS 2.20m		2.5			2.50m					
							Hole Terminated at 2.50 m					
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH302

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491821 m
NORTHING: 6522346 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
AD/T	Not Encountered	0.30m ES		0.5		SC	**TOPSOIL:** Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.	M < w_P	Fr			TOPSOIL/ FILL
							0.60m					
						Cl	**Silty Sandy CLAY:** Pale brown, sand, fine to coarse grained.		VSt			FILL
							0.90m					
		1.10m ES		1.0		CL	**Sandy Gravelly CLAY:** Medium plasticity, red, sand, fine to coarse grained, gravel, fine to medium grained, subangular to subrounded.			HP	190	FILL
										HP	220	
				1.5						HP	240	
							1.90m					
		2.10m		2.0		CL	**Silty Sandy CLAY:** Bluish pale grey, sand, fine to medium grained.			HP	300	ALLUVIAL
		ASS 2.20m								HP	300	
				2.5						HP	280	
				3.0			3.00m					
							Hole Terminated at 3.00 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH303

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491822 m
NORTHING: 6522331 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.30m ES		0.5		SC	**FILL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.20m		F			FILL/TOPSOIL
						CL	**FILL CLAY:** Medium plasticity, red. 0.70m					FILL CLAY
		1.10m		1.0		CL	**FILL CLAY:** Medium plasticity, orange brown. 1.20m		St			RESIDUAL
		ASS 1.20m				CL	1.30m **Sandy Gravelly CLAY:** Reddish brown, low plasticity, sand, fine to coarse grained, gravel, fine grained, subangular to subrounded.		St			ALLUVIAL
				1.5			Hole Terminated at 1.30 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH304

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491853 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522310 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.20m ES		0.5		SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL/ FILL
						ML	0.60m **Silty Sandy CLAY:** pale brown, sand, fine to medium grained.		VS	HP	20	SLOPEWASH/ FILL
		0.80m ES		1.0		CL	0.75m **CLAY:** Medium plasticity, reddish orange.		St	HP HP HP HP	30 20 240 260	RESIDUAL
				1.5		CL	1.60m 1.70m **Sandy CLAY:** Medium plasticity, orange brown, sand, fine to medium grained.		St	HP HP HP HP	250 240 220 220	RESIDUAL
				2.0			Hole Terminated at 1.90 m					
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH305

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491848 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522290 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.10m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL/ FILL
							0.20m					
						CL	**Sandy CLAY:** Medium plasticity, orangish brown, sand, fine to coarse grained.		F	HP	260	RESIDUAL
				0.5						HP	220	
										HP	240	
							0.90m					
		1.00m ES		1.0		CL	**Sandy CLAY:** Medium plasticity, reddish brown, sand, fine to medium grained.		St	HP	340	RESIDUAL
										HP	410	
				1.5			1.50m			HP	420	
							Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH306

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491822 m
NORTHING: 6522291 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
AD/T	Not Encountered	0.10m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL
							0.20m					
		0.40m ES		0.5		CL	**Sandy CLAY:** Medium plasticity, reddish brown, sand, fine to coarse grained, traces of gravel, fine to medium grained, subangular to subrounded.		St	HP HP HP	260 280 280	RESIDUAL
				1.0			1.00m					
		1.20m				CL	**Sandy CLAY:** Medium plasticity, orange brown, sand, fine to coarse grained, traces of gravel, fine to medium grained, angular to subangular.		St	HP HP HP	340 320 380	RESIDUAL
		ASS 1.30m					1.30m					
				1.5		CL	**Sandy Gravelly CLAY:**Low plasticity, grey and brown, sand, fine to coarse grained, gravel, fine to medium grained, subangular to subrounded.		St			EXTREMELY WEATHERED
							1.50m					
							Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH307

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491827 m
NORTHING: 6522263 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.10m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL
							0.20m					
						CL	**Sandy CLAY:** Low plasticity, reddish brown, sand, fine to medium grained, subangular to subrounded.			HP	450	RESIDUAL
										HP	420	
				0.5						HP	430	
				1.0								
				1.5			1.50m					
							Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH308

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491830 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522238 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.30m ES		0		SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL
							0.20m			HP	200	
						CL	**Sandy Gravelly CLAY:** Medium plasticity, pale brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded.		St	HP	200	FILL
				0.5			0.50m			HP	210	
		0.60m ES				CL	**Silty Sandy CLAY:** Medium plasticity, pale grey, pale brown, sand, fine to medium grained, traces of gravel, fine to medium grained, subangular to subrounded.		F	HP	60	ALLUVIUM
				1.0						HP	100	
				1.5			1.50m					
							Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH309

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491859 m
NORTHING: 6522208 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.20m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL
							0.40m			HP	10	
		0.60m ES		0.5		OL	**Silty Sandy CLAY:** High plasticity, pale brown, sand, fine to medium grained.		S	HP	10	FILL
							0.80m			HP	10	
										HP	310	
						CL	**Sandy Gravelly CLAY:** Medium plasticity, orangish brown, sand, fine to medium grained, subangular to subrounded.		St	HP	290	RESIDUAL
				1.0						HP	300	
							1.30m			HP	450	
						CL	**Sandy CLAY:** Medium plasticity, brown, sand, fine to coarse grained, traces of gravel, fine to medium grained, subangular to rounded.		St	HP	420	RESIDUAL
				1.5						HP	410	
							1.60m					
							Hole Terminated at 1.60 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH310

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491788 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522216 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.30m ES		0		SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL/ FILL
							0.20m			HP	80	
						CI	**Sandy Gravelly CLAY:** Medium plasticity, dark brown, sand, fine to medium grained.		F	HP	100	FILL
				0.5						HP	100	
							0.60m			HP	30	
						OL	**Silty Sandy CLAY:** High plasticity, pale brown, sand, fine to medium grained.		S	HP	40	ALLUVIUM
							0.80m			HP	50	
		0.90m ES								HP	250	RESIDUAL
				1.0		CL	**Sandy Gravelly CLAY:** Medium plasticity, orange brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded.		F	HP	250	
							1.30m			HP	230	
						CL	**Sandy Gravelly CLAY:** Low plasticity, red, sand fine to medium grained, subrounded to rounded.		St			RESIDUAL
				1.5			1.80m					
							Hole Terminated at 1.80 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH311

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491766 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522203 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	15/8/2024	0.30m ES		0.5		SC	**TOPSOIL:** Silty Sandy CLAY, medium plasticity, dark brown, sand, fine to medium grained. 0.25m		F			TOPSOIL
							Sandy Gravelly CLAY: Reddish brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded. 0.50m		F	HP HP HP	80 90 70	FILL
							Sandy CLAY: High plasticity, dark brown, sand, fine to medium grained. 0.75m		S	HP HP HP	20 30 40	FILL
		0.90m ES		1.0			**Sandy Gravelly CLAY:** High plasticity, pale brown, sand, fine to medium grained. 0.90m		S	HP HP	40 50	ALLUVIUM
							Sandy Gravelly CLAY: Medium plasticity, orange brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded. 2.00m		F	HP HP HP	250 260 250	
		2.20m ASS 2.30m		2.5			**Sandy Gravelly CLAY:** Low plasticity, sand, fine to medium grained, sand, fine to medium grained. 3.00m		St			
				3.0			Hole Terminated at 3.00 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH312

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491709 m
NORTHING: 6522211 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	15/8/2024	0.20m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.40m		F			TOPSOIL/ FILL
				0.5		ML	**Silty Sandy Gravelly CLAY:** High plasticity, pale brown. 0.70m		S	HP	150	FILL
										HP	200	
										HP	150	
		0.80m ES				CI	**Sandy Gravelly CLAY:** Medium plasticity, reddish brown, sand, fine to coarse grained, gravel, fine to medium grained, angular to subrounded. 0.90m		F	HP	250	FILL
										HP	250	
				1.0		CH	**Silty Sandy CLAY:** Dark grey, high plasticity, sand, fine to medium grained, angular to subangular. 1.30m		S	HP	220	ALLUVIUM
										HP	50	
										HP	90	
										HP	50	
				1.5		CH	**Silty Sandy Gravelly CLAY:** High plasticity, pale brown, sand, fine to coarse grained, gravel, fine grained, subangular to subrounded.		S	HP	30	ALLUVIUM
										HP	60	
										HP	40	
				2.0			2.00m			HP	50	
							Hole Terminated at 2.00 m					
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH313

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491719 m
NORTHING: 6522242 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T						SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL/ FILL
							0.40m			HP	20	
		0.50m ES		0.5		CH	**Silty Sandy CLAY:** High plasticity, pale brown, sand, fine to medium grained.		S	HP	10	ALLUVIUM
										HP	20	
							0.80m			HP	300	
	15/8/2024					CL	**Sandy Gravelly CLAY:** Medium plasticity, orange brown, sand, fine to coarse grained, gravel, fine to medium grained, subangular to subrounded.		St	HP	260	RESIDUAL
				1.0						HP	260	
							1.30m			HP	300	
						CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained.		St	HP	280	RESIDUAL
				1.5			1.50m			HP	300	
							Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH314

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491755 m
NORTHING: 6522246 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	15/8/2024	0.10m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.15m		F			TOPSOIL/ FILL
						CL	**Sandy CLAY:** Medium plasticity, reddish brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded.		St	HP HP HP HP	220 230 250 70	FILL
				0.5			0.60m					
		0.70m ES				CH	**Sandy Gravelly CLAY:** High plasticity, dark grey, sand, fine to coarse grained, gravel, fine to medium grained, angular to rounded. 0.80m		S	HP HP HP	80 70 30	FILL
						CH	**Silty Sandy CLAY:** High plasticity, pale grey, sand, fine to coarse grained.		S	HP HP HP	40 40 90	ALLUVIUM
				1.0			1.10m					
						CL	**Silty Sandy CLAY:** High plasticity, yellow brown, sand, fine to medium grained. 1.30m		S	HP HP	110 110	ALLUVIUM
						CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained.		F	HP HP HP	180 220 200	RESIDUAL
				1.5			1.60m					
							Hole Terminated at 1.60 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH315

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491709 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522255 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	15/8/2024					SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL
		0.50m ES		0.5		CH	**Silty Sandy Gravelly CLAY:** High plasticity, dark grey, sand, fine to coarse grained, gravel, fine to medium grained, subangular to subrounded.		S	HP	80	FILL
						CH	**Silty Sandy CLAY:** High plasticity, pale grey, sand, fine to coarse grained.		S	HP HP HP HP	90 70 40 60	ALLUVIUM
				1.0						HP	50	
		1.50m ES		1.5		CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained.		St	HP HP HP	300 340 320	RESIDUAL
				2.0			Hole Terminated at 1.60 m					
				2.5								
				3.0								

0.40m
0.60m
1.10m
1.60m

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH316

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491716 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522278 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.30m ES		0		SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL
							0.20m					
						CH	**Sandy Gravelly CLAY:** Medium plasticity, pale brown, sand, fine to medium grained, gravel, fine to medium grained, angular to subangular.		F			FILL
				0.5			0.60m					
						CH	**Sandy CLAY:** Brown, sand, fine to medium grained, traces of gravel, fine to medium grained, subangular to subrounded.		F	HP HP HP	180 180 200	FILL
							0.80m					
						CH	**Silty Sandy CLAY:** High plasticity, dark grey, sand, fine to medium grained.		S	HP HP	150 80	FILL
				1.0			1.00m					
						CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained.			HP HP HP HP	80 140 190 210	RESIDUAL
				1.5								
				2.0			2.00m					
							Hole Terminated at 2.00 m					
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH317

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491757 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522272 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	15/8/2024	0.20m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.25m		F			TOPSOIL/ FILL
						CL	**Sandy Gravelly CLAY:** Medium plasticity, orange brown, sand, fine to coarse grained, gravel, fine to medium grained, angular to subrounded. 0.50m		F	HP HP HP	110 110 160	FILL
		0.50m ES		0.5		CL	**Sandy CLAY:** High plasticity, reddish brown, sand, fine to coarse grained, traces of gravel, fine to medium grained, subangular to subrounded. 0.80m		F	HP HP HP	110 90 100	FILL
				1.0		CH	**Silty Sandy CLAY:** High plasticity, pale grey, sand, fine to coarse grained. 1.30m		S	HP HP HP	10 20 20	ALLUVIUM
				1.5		CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained. 1.50m		F	HP HP HP	110 120 110	RESIDUAL
				2.0			Hole Terminated at 1.50 m					
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH318

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491735 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522252 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.30m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL
							0.20m			HP	100	
						CH	**Sandy Gravelly CLAY:** Medium plasticity, orange brown, sand, fine to coarse grained, gravel, fine to medium grained, angular to subrounded.		F	HP	110	FILL
							0.40m			HP	100	
				0.5		CH	**Silty Sandy CLAY:** High plasticity, pale grey, sand, fine to coarse grained.		S	HP	20	ALLUVIUM
							0.60m			HP	20	
						CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained.		F	HP	20	
										HP	200	RESIDUAL
				1.0						HP	170	
										HP	160	
							1.10m					
						CL	**CLAY:** Low plasticity, yellow brown.		St	HP	300	RESIDUAL
				1.5			1.50m			HP	260	
							Hole Terminated at 1.50 m			HP	290	
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH319

CLIENT:	Co-Op Studio	**PAGE:**	1 of 1
PROJECT NAME:	Aquatic Facility	**JOB NO:**	RGS21005.6
SITE LOCATION:	Gordon Street, Port Macquarie	**LOGGED BY:**	HM
TEST LOCATION:	Refer to Figure	**DATE:**	16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig **EASTING:** 491801 m **SURFACE RL:**

BOREHOLE DIAMETER: 50 mm **INCLINATION:** 90° **NORTHING:** 6522266 m **DATUM:** AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.20m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.30m	M < w_P	Fr			TOPSOIL
						CH	**Silty Sandy CLAY:** Medium plasticity, greyish brown, gravel, fine to medium grained. 0.50m		St	HP	150	ALLUVIUM
				0.5						HP	120	
						CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained.			HP	110	RESIDUAL
		0.70m							VSt	HP	250	
		ASS 0.80m								HP	240	
				1.0						HP	250	
							1.10m					
						CL	**Sandy CLAY:** Low plasticity, reddish brown, sand, fine to medium grained.			HP	350	RESIDUAL
										HP	320	
				1.5			1.50m			HP	310	
							Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		**UCS (kPa)**
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density		
	V	Very Loose — Density Index <15%
	L	Loose — Density Index 15 - 35%
	MD	Medium Dense — Density Index 35 - 65%
	D	Dense — Density Index 65 - 85%
	VD	Very Dense — Density Index 85 - 100%

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH320

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491797 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522294 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.40m ES		0.5		SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.30m		F			TOPSOIL
						OH	**Silty Sandy CLAY:** Medium plasticity, pale brown, sand, fine to medium grained. 0.60m		F	HP	160	ALLUVIUM
										HP	140	
										HP	140	
				1.0		CL	**Sandy CLAY:** Medium plasticity, reddish brown, sand, fine to medium grained. 1.50m		St	HP	400	RESIDUAL
										HP	300	
										HP	300	
				1.5			Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH321

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491767 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522273 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.10m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.20m	M < w_P	Fr			TOPSOIL/ FILL
						CL	**Sandy CLAY:** Medium plasticity, reddish brown, sand, fine to coarse grained. 0.90m		VSt	HP	350	FILL
				0.5						HP	340	
										HP	360	
				1.0		CH	**Silty Sandy CLAY:** High plasticity, dark grey, sand, fine to coarse grained. 1.10m		S	HP	30	FILL
										HP	30	
		1.20m				OH	**Silty Sandy CLAY:** High plasticity, pale grey, sand, fine to medium grained. 1.40m		F	HP	80	ALLUVIUM
		ASS 1.30m								HP	80	
										HP	80	
				1.5		CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained. 1.90m		St	HP	40	
										HP	200	
										HP	180	
										HP	190	
				2.0			Hole Terminated at 1.90 m					
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - BOREHOLE

REGIONAL GEOTECHNICAL SOLUTIONS

BOREHOLE NO: BH322

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491767 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522303 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	16/8/2024	0.30m ES		0.5		SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.20m		F			TOPSOIL/ FILL
						CL	**Sandy CLAY:** Medium plasticity, reddish brown, sand, fine to coarse grained. 0.40m		St	HP	300	FILL
						CL	**Sandy CLAY:** Medium plasticity, orange brown, sand, fine to medium grained. 0.90m		St	HP	270	
				1.0		OH	**Silty Sandy CLAY:** High plasticity, pale grey, sand, fine to medium grained. 1.30m		VS	HP	260	FILL
						CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medum grained. 1.60m		F	HP	220	
				1.5			Hole Terminated at 1.60 m			HP	230	
										HP	260	
										HP	10	ALLUVIUM
										HP	10	
										HP	10	
										HP	150	RESIDUAL
										HP	160	
										HP	180	
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH323

CLIENT:	Co-Op Studio	**PAGE:**	1 of 1
PROJECT NAME:	Aquatic Facility	**JOB NO:**	RGS21005.6
SITE LOCATION:	Gordon Street, Port Macquarie	**LOGGED BY:**	HM
TEST LOCATION:	Refer to Figure	**DATE:**	16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig **EASTING:** 491799 m **SURFACE RL:**

BOREHOLE DIAMETER: 50 mm **INCLINATION:** 90° **NORTHING:** 6522334 m **DATUM:** AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.20m ES 0.30m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL
							0.20m					
						CL	**Sandy CLAY:** Medium plasticity, orangish brown, sand, fine to medium grained.		St	HP HP HP	200 180 180	RESIDUAL
				0.5								
							0.60m					
						CL	**Sandy CLAY:** Medium plasticity, reddish brown, sand, fine to medium grained.		St	HP HP HP	300 300 300	RESIDUAL
				1.0								
				1.5			1.50m					
							Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH324

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491799 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522358 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
AD/T	Not Encountered					SC	**FILL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.	M < w_P	Fr			FILL/TOPSOIL
							0.20m			HP	160	
						CL	**FILL:** Sandy CLAY, medium plasticity, orangish brown, sand, fine to medium grained.		St	HP	180	FILL
				0.5						HP	160	
							0.60m			HP	480	
		0.70m ES				CL	**FILL:** Sandy Clay, low plasticity, reddish brown, sand, fine to medium grained, traces of gravel, fine to medium grained, subangular to rounded.		VSt	HP	400	ALLUVIAL
		1.00m		1.0						HP	380	
		ASS 1.20m					1.40m			HP	250	
				1.5		CL	**Sandy Gravelly CLAY:** Medium plasticity, orangish brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded.			HP	270	RESIDUAL
							1.70m			HP	270	
							Hole Terminated at 1.70 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH325

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491765 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522342 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered					SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL
							0.20m			HP	250	
						CL	**Sandy CLAY:** Medium plasticity, reddish brown, sand, fine to medium grained, traces of gravel, fine to medium grained, subangular to subrounded.		St	HP	270	FILL
		0.50m ES		0.5						HP	280	
							0.90m			HP	40	
				1.0		CH	**Silty Sandy CLAY:** High plasticity, dark brown, sand, fine to medium grained.		VS	HP	30	ALLUVIUM
										HP	40	
				1.5			1.50m			HP	220	
						CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained.		S	HP	210	RESIDUAL
							1.75m			HP	210	
						CL	**Sandy CLAY:** Low plasticity, yellow brown, sand, fine to medium grained.		St	HP	330	RESIDUAL
		2.00m ES		2.0						HP	350	
										HP	350	
				2.5			2.50m					
							Hole Terminated at 2.50 m					
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH326

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491762 m
NORTHING: 6522376 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.20m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.30m	M < w_P	F			TOPSOIL
				0.5		CL	**Sandy CLAY:** Low plasticity, pale grey, sand, fine to medium grained, traces of gravel, fine to medium grained, subangular to subrounded. 0.60m		VSt	HP HP HP	330 330 320	FILL
		0.90m ES		1.0		CL	**Sandy Gravelly CLAY:** Medium plasticity, orange brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded. 1.30m			HP HP HP	300 300 280	FILL
				1.5		CL	**Sandy Gravelly CLAY:** Medium plasticity, reddish brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded. 1.80m			HP HP HP	250 280 230	FILL
				2.0		CH	**Silty Sandy CLAY:** High plasticity, dark grey, sand, fine to medium grained. 2.40m	M > w_P	S	HP HP HP	10 10 20	ALLUVIUM
		2.50m ASS 2.60m		2.5		CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained.		St	HP HP HP	110 120 110	
				3.0			3.00m					
							Hole Terminated at 3.00 m Install to 2.7m, slotted 0.7, plain 2.0					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH327

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491817 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522377 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	16/8/2024	0.60m ES		0.5		SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL
							0.50m					
						CL	**Sandy CLAY:** Low plasticity, dark grey, sand, fine to medium grained, traces of gravel, fine to medium grained, subangular to subrounded.		St	HP	300	FILL
							0.70m			HP	330	
						GC	**Clayey Sandy GRAVEL:** Fine to medium grained, subangular to subrounded, sand, fine to medium grained.		L	HP	350	FILL
				1.0			1.00m					
		1.20m ES				CL	**Sandy Gravelly CLAY:** Medium plasticity, reddish brown, sand, fine to medium grained.		F	HP	200	FILL
										HP	190	
				1.5						HP	200	
				2.0			2.00m					
						CL	**Silty Sandy CLAY:** Medium plasticity, sand, fine to medium grained, traces of gravel, fine to medium grained, subangular to subrounded.		F	HP	100	FILL
										HP	100	
				2.5			2.60m					
						OH	**Silty Sandy CLAY:** High plasticity, dark grey, sand, fine to medium grained.		S	HP	50	ALLUVIUM
				3.0			3.00m			HP	50	
							Hole Terminated at 3.00 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

REGIONAL GEOTECHNICAL SOLUTIONS

CLIENT:	Co-Op Studio	**TEST PIT NO:**	**TP1**
PROJECT NAME:	Aquatic Facility	**PAGE:**	1 of 1
SITE LOCATION:	Gordon Street, Port Macquarie	**JOB NO:**	RGS21005.6
TEST LOCATION:	Refer to Figure	**LOGGED BY:**	HM
		DATE:	16/8/24

EQUIPMENT TYPE:	RGS Ute Mounted Drill Rig	**EASTING:**	491827 m	**SURFACE RL:**	
TEST PIT LENGTH:	**WIDTH:**	**NORTHING:**	6522372 m	**DATUM:**	AHD

Excavation and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		E 0.10m				SC	**FILL:** Sandy CLAY, low plasticity, dark grey, traces of grass roots to 5mm. 0.30m	M > w_P	Fr			FILL/ TOPSOIL
		0.50m		0.5		CL	**FILL:** Sandy CLAY, medium plasticity, brown/ red, some gravel, fine to medium grained, subangular. 0.60m					FILL CLAY
		E 0.60m				CL	**FILL:** Gravelly Sandy CLAY, medium plasticity, pink/ pink grey, traces of bricks, traces of glass.					
		0.90m					1.00m					
		E 1.00m		1.0		SC	**TOPSOIL:** Clayey SILT, dark grey, traces of tree roots to 5mm. 1.30m					TOPSOIL
		1.30m				OH	**Silty CLAY:** Low to medium plasticity, pale brown/ grey. 1.50m					ALLUVIUM
	▶	ASS 1.50m		1.5			Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - TEST PIT

TEST PIT NO: TP2

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

EQUIPMENT TYPE: RGS Ute Mounted Drill Rig
EASTING: 491847 m
SURFACE RL:
TEST PIT LENGTH:
WIDTH:
NORTHING: 6522327 m
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	Not Encountered	E 0.10m 0.20m E 0.30m				SC	**FILL:** Sandy CLAY, low plasticity, dark brown/ dark grey, traces of grass roots to 5mm.	$M > w_P$	Fr			FILL/ TOPSOIL
							0.15m					
						CL	**FILL:** Sandy CLAY, medium plasticity, red/ orange, traces of gravel, fine grained, subangular.					FILL CLAY
							0.40m					
				0.5		CL	**Sandy CLAY:** Medium plasticity, orange/ brown with pale brown mottling.					RESIDUAL
				1.0			1.00m					
							Hole Terminated at 1.00 m					
				1.5								
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - TEST PIT

TEST PIT NO: TP3

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

EQUIPMENT TYPE: RGS Ute Mounted Drill Rig
EASTING: 491863 m
SURFACE RL:
TEST PIT LENGTH:
WIDTH:
NORTHING: 6522248 m
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	Not Encountered	E 0.10m				CL	**FILL:** Sandy CLAY, low plasticity, dark grey/ dark brown, traces of grass roots to 5mm.	$M > w_P$	Fr			FILL/ TOPSOIL
		0.40m					0.25m					
		E 0.50m		0.5		Cl	**Sandy CLAY:** Medium plasticity, brown/ grey/ orange, traces of gravel, angular to subangular.					FILL CLAY
							0.70m					
				1.0		MH	**TOPSOIL:** Clayey SILT.					TOPSOIL
							1.10m					
				1.5		CH	**Sandy CLAY:** Medium plasticity, pale brown/ orange.					RESIDUAL
							1.50m					
							Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - TEST PIT

TEST PIT NO: TP4

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

EQUIPMENT TYPE: RGS Ute Mounted Drill Rig
EASTING: 491826 m
SURFACE RL:
TEST PIT LENGTH:
WIDTH:
NORTHING: 6522205 m
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	Not Encountered	E 0.10m				CL	**FILL:** Sandy CLAY, low plasticity, dark grey, traces of grass roots to 5mm.	$M > w_P$	Fr			FILL/ TOPSOIL
							0.30m					
				0.5		CH	**Sandy CLAY:** Medium plasticity, pale brown.					ALLUVIUM
				1.0			1.00m					
							Hole Terminated at 1.00 m					
				1.5								
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - TEST PIT

TEST PIT NO: TP5

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

EQUIPMENT TYPE: RGS Ute Mounted Drill Rig
EASTING: 491795 m
SURFACE RL:
TEST PIT LENGTH:
WIDTH:
NORTHING: 6522205 m
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	Not Encountered			0.5		SC	**FILL:** Sandy CLAY, low plasticity, dark brown, traces of grass rootrs to 5mm. 0.30m	M > w_P	Fr			FILL/ TOPSOIL
						CL	**FILL:** Sandy CLAY, medium plasticity, brown, traces of gravel, fine rto medium grained, subangular. 0.75m					FILL CLAY
				1.0		Cl	**Gravelly Sandy CLAY:** Medium plasticity, yellow/ pale brown, gravel, fine to medium grained. 1.50m					ALLUVIUM
				1.5			Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density		
	V	Very Loose — Density Index <15%
	L	Loose — Density Index 15 - 35%
	MD	Medium Dense — Density Index 35 - 65%
	D	Dense — Density Index 65 - 85%
	VD	Very Dense — Density Index 85 - 100%

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - TEST PIT

TEST PIT NO: TP6

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

EQUIPMENT TYPE: RGS Ute Mounted Drill Rig
EASTING: 491731 m
SURFACE RL:
TEST PIT LENGTH:
WIDTH:
NORTHING: 6522206 m
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		E 0.20m				CL	**FILL:** Sandy CLAY, low plasticity, dark grey, traces of grass roots to 5mm.	$M > w_P$				FILL/ TOPSOIL
		0.25m										
		0.40m				CH	**FILL:** Sandy CLAY, medium plasticity, red.					FILL CLAY
		E 0.50m		0.5								
		0.50m				MH	**TOPSOIL:** Clayey SILT, dark grey.					TOPSOIL
		0.60m										
						CI	**Gravelly Sandy CLAY:** Pale grey/ pale brown, gravel, fine to medium grained, subangular.					ALLUVIUM
		0.90m ASS		1.0								
							1.00m					
							Hole Terminated at 1.00 m					
				1.5								
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

REGIONAL GEOTECHNICAL SOLUTIONS

CLIENT:	Co-Op Studio	**TEST PIT NO:**	**TP7**
PROJECT NAME:	Aquatic Facility	**PAGE:**	1 of 1
SITE LOCATION:	Gordon Street, Port Macquarie	**JOB NO:**	RGS21005.6
TEST LOCATION:	Refer to Figure	**LOGGED BY:**	HM
		DATE:	16/8/24

EQUIPMENT TYPE:	RGS Ute Mounted Drill Rig	**EASTING:**	491707 m	**SURFACE RL:**	
TEST PIT LENGTH:	**WIDTH:**	**NORTHING:**	6522192 m	**DATUM:**	AHD

Excavation and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	Not Encountered			0		CL	**FILL:** Sandy CLAY, low plasticity, dark grey, traces of grass roots to 5mm.					FILL/ TOPSOIL
							0.25m					
						CL	**FILL:** Sandy CLAY, medium plasticity, orange/ brown/ red, traces of gravel, fine to coarse grained, subrounded.					
				0.5								
				1.0								
							1.20m					
						CH	**Clayey SILT:** Dark grey.					ALLUVIUM
				1.5			1.50m					
							Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - TEST PIT

TEST PIT NO: TP8

CLIENT: Co-Op Studio | **PAGE:** 1 of 1

PROJECT NAME: Aquatic Facility | **JOB NO:** RGS21005.6

SITE LOCATION: Gordon Street, Port Macquarie | **LOGGED BY:** HM

TEST LOCATION: Refer to Figure | **DATE:** 16/8/24

EQUIPMENT TYPE: RGS Ute Mounted Drill Rig | **EASTING:** 491777 m | **SURFACE RL:**

TEST PIT LENGTH: | **WIDTH:** | **NORTHING:** 6522241 m | **DATUM:** AHD

Excavation and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
						SC	**FILL:** Sandy CLAY, low plasticity, dark brown, traces of grass roots to 5mm. 0.25m					FILL/ TOPSOIL
		0.30m E 0.40m		0.5		CL	**FILL:** Sandy CLAY, medium plasticity, red/ pale brown, traces of gravel, fine to medium grained, subangular. 0.70m					FILL CLAY
		0.70m ASS 0.90m				MH	**TOPSOIL:** Clayey SILT, dark grey. 0.90m					TOPSOIL/ ALLUVIUM
	▶	0.90m ASS		1.0		CL	**Clayey SILT:** Pale grey. 1.20m					ALLUVIUM
		1.20m					Hole Terminated at 1.20 m					
				1.5								
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - TEST PIT

TEST PIT NO: TP9

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

EQUIPMENT TYPE: RGS Ute Mounted Drill Rig
EASTING: 491769 m
SURFACE RL:
TEST PIT LENGTH:
WIDTH:
NORTHING: 6522327 m
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	Not Encountered	0.20m E 0.30m		0.5		CL	**FILL:** Sandy CLAY, low plasticity, dark brown, traces of grass roots to 5mm. 0.15m					FILL/ TOPSOIL
						CH	**FILL:** Sandy CLAY, medium plasticity, orange/ red. 0.60m					FILL CLAY
		0.70m				ML	**TOPSOIL:** Sandy SILT, dark grey. 0.70m					TOPSOIL
		E 0.80m		1.0		CH	**Gravelly Sandy CLAY:** Medium plasticity, yellow/ pale brown. 1.20m					ALLUVIUM
				1.5			Hole Terminated at 1.20 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density		
	V	Very Loose — Density Index <15%
	L	Loose — Density Index 15 - 35%
	MD	Medium Dense — Density Index 35 - 65%
	D	Dense — Density Index 65 - 85%
	VD	Very Dense — Density Index 85 - 100%

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

REGIONAL GEOTECHNICAL SOLUTIONS

CLIENT:	Co-Op Studio	**TEST PIT NO:**	**TP10**
PROJECT NAME:	Aquatic Facility	**PAGE:**	1 of 1
SITE LOCATION:	Gordon Street, Port Macquarie	**JOB NO:**	RGS21005.6
TEST LOCATION:	Refer to Figure	**LOGGED BY:**	HM
		DATE:	16/8/24

EQUIPMENT TYPE:	RGS Ute Mounted Drill Rig	**EASTING:**	491795 m	**SURFACE RL:**	
TEST PIT LENGTH:	**WIDTH:**	**NORTHING:**	6522371 m	**DATUM:**	AHD

Excavation and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		0.30m				CL	**FILL:** Sandy CLAY, low plasticity, dark brown, traces of grass roots to 5mm. 0.30m	$M > w_P$	Fr			FILL/ TOPSOIL
		E 0.40m		0.5		CH	**FILL:** Silty CLAY, white/ pale grey/ yellow, traces of gravel, fine to medium grained, subangular. 0.40m					FILL CLAY
						CH	**FILL:** Sandy CLAY, medium to high plasticirty, red/ orange, some gravel, fine to medium grained.					
				1.0			Traces of boulders to 300mm. Colour change to grey/ pale brown.					
		1.50m		1.5			1.50m					
	▶	ASS 1.80m				ML	**TOPSOIL:** Clayey SILT, dark grey. 1.80m					TOPSOIL
		ASS 2.00m		2.0		CH	**Silty CLAY:** Medium plasticity, pale grey. 2.00m					ALLUVIUM
							Hole Terminated at 2.00 m					
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Appendix B

Laboratory Test Result Sheets

Certificate of Analysis

eurofins | Environment Testing

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Regional Geotechnical Solutions
44 Bent Street
Wingham
NSW 2429

Attention:	Grant Colliar
Report	1132108-AID
Project Name	AQUATIC FACILITY
Project ID	RGS21005.6
Received Date	Aug 26, 2024
Date Reported	Sep 12, 2024

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name AQUATIC FACILITY
Project ID RGS21005.6
Date Sampled Aug 15, 2024 to Aug 16, 2024
Report 1132108-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH301 0.1-0.2 bg	24-Au0066312	Aug 15, 2024	Approximate Sample 394g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH301 0.5-0.6 bg	24-Au0066314	Aug 15, 2024	Approximate Sample 516g Sample consisted of: Off-white fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH302 0.3-0.4 bg	24-Au0066317	Aug 15, 2024	Approximate Sample 392g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH302 1.1-1.2 bg	24-Au0066319	Aug 15, 2024	Approximate Sample 354g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH303 0.3-0.4 bg	24-Au0066322	Aug 15, 2024	Approximate Sample 433g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH304 0.2-0.3 bg	24-Au0066325	Aug 15, 2024	Approximate Sample 509g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH304 0.8-0.9 bg	24-Au0066327	Aug 15, 2024	Approximate Sample 818g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH305 0.-0.2 bg	24-Au0066329	Aug 15, 2024	Approximate Sample 254g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH305 1-1.1 bg	24-Au0066331	Aug 15, 2024	Approximate Sample 407g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH306 0.4-0.5 bg	24-Au0066335	Aug 15, 2024	Approximate Sample 546g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH307 0.1-0.2 bg	24-Au0066337	Aug 15, 2024	Approximate Sample 800g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH307 0.4-0.5 bg	24-Au0066338	Aug 15, 2024	Approximate Sample 524g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH308 0.3-0.4 bg	24-Au0066340	Aug 15, 2024	Approximate Sample 309g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH308 0.6-0.7 bg	24-Au0066342	Aug 15, 2024	Approximate Sample 361g Sample consisted of: Off-white coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH309 0.2-0.3 bg	24-Au0066344	Aug 15, 2024	Approximate Sample 418g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH309 0.6-0.7 bg	24-Au0066346	Aug 15, 2024	Approximate Sample 838g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH310 0.3-0.4 bg	24-Au0066349	Aug 15, 2024	Approximate Sample 354g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH310 0.9-1.0 bg	24-Au0066351	Aug 15, 2024	Approximate Sample 429g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH311 0.3-0.4 bg	24-Au0066353	Aug 15, 2024	Approximate Sample 583g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH311 0.8-0.9 bg	24-Au0066355	Aug 15, 2024	Approximate Sample 758g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH311 1.2-13 bg	24-Au0066356	Aug 15, 2024	Approximate Sample 598g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH312 0.2-0.3 bg	24-Au0066359	Aug 15, 2024	Approximate Sample 650g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH312 0.8-0.9 bg	24-Au0066361	Aug 15, 2024	Approximate Sample 556g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH312 1.4-1.5 bg	24-Au0066362	Aug 15, 2024	Approximate Sample 413g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH313 0.5-0.6 bg	24-Au0066364	Aug 15, 2024	Approximate Sample 979g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH313 1.4-1.5 bg	24-Au0066365	Aug 15, 2024	Approximate Sample 418g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH314 0.1-0.2 bg	24-Au0066367	Aug 15, 2024	Approximate Sample 514g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH314 0.7-0.8 bg	24-Au0066369	Aug 15, 2024	Approximate Sample 506g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH315 0.5-0.6 bg	24-Au0066372	Aug 15, 2024	Approximate Sample 343g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH316 0.3-0.4 bg	24-Au0066376	Aug 16, 2024	Approximate Sample 405g Sample consisted of: Beige coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH316 1.3-1.4 Bg	24-Au0066377	Aug 16, 2024	Approximate Sample 529g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH317 0.2-0.3 bg	24-Au0066379	Aug 16, 2024	Approximate Sample 366g Sample consisted of: Dark brown fine-grained sandy soil, organic debris and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH317 0.6-0.7 bg	24-Au0066381	Aug 16, 2024	Approximate Sample 673g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH318 0.3-0.4 bg	24-Au0066384	Aug 16, 2024	Approximate Sample 255g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH319 0.2-0.3 bg	24-Au0066387	Aug 16, 2024	Approximate Sample 437g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH320 0.4-0.5 bg	24-Au0066391	Aug 16, 2024	Approximate Sample 403g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH320 1-1.1 bg	24-Au0066392	Aug 16, 2024	Approximate Sample 498g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH321 0.1-0.2 bg	24-Au0066394	Aug 16, 2024	Approximate Sample 335g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH321 0.5-0.6 bg	24-Au0066395	Aug 16, 2024	Approximate Sample 406g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH322 0.3-0.4 bg	24-Au0066399	Aug 16, 2024	Approximate Sample 411g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH322 1.5-1.6 bg	24-Au0066400	Aug 16, 2024	Approximate Sample 572g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH323 0.2-0.25 bg	24-Au0066402	Aug 16, 2024	Approximate Sample 265g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH323 0.3-0.4 bg	24-Au0066404	Aug 16, 2024	Approximate Sample 473g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH324 0.7-0.8 bg	24-Au0066406	Aug 16, 2024	Approximate Sample 459g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH325 0.5-0.6 bg	24-Au0066408	Aug 16, 2024	Approximate Sample 517g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH325 2-2.1 bg	24-Au0066410	Aug 16, 2024	Approximate Sample 622g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH326 0.2-0.3 bg	24-Au0066412	Aug 16, 2024	Approximate Sample 321g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH326 0.9-1 bg	24-Au0066414	Aug 16, 2024	Approximate Sample 536g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH327 0.6-0.7 bg	24-Au0066417	Aug 16, 2024	Approximate Sample 609g Sample consisted of: Off-white brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH327 1.2-1.3 bg	24-Au0066419	Aug 16, 2024	Approximate Sample 284g Sample consisted of: Red brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH327 2.8-2.9 bg	24-Au0066420	Aug 16, 2024	Approximate Sample 504g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
TP1 1.5 bg	24-Au0066424	Aug 16, 2024	Approximate Sample 81g Sample consisted of: Grey fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP6 0.9-1 bg	24-Au0066432	Aug 16, 2024	Approximate Sample 226g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP8 0.7-0.9 bg	24-Au0066435	Aug 16, 2024	Approximate Sample 155g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP8 0.9-1.2 bg	24-Au0066436	Aug 16, 2024	Approximate Sample 81g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP10 1.5-1.8 bg	24-Au0066440	Aug 16, 2024	Approximate Sample 65g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP10 1.8-2 bg	24-Au0066441	Aug 16, 2024	Approximate Sample 64g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Sample History

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

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
Asbestos - LTM-ASB-8020	Sydney	Sep 12, 2024	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Sep 12, 2024	Indefinite

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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Regional Geotechnical Solutions
Address: 44 Bent Street
Wingham
NSW 2429

Project Name: AQUATIC FACILITY
Project ID: RGS21005.6

Order No.:
Report #: 1132108
Phone: (02) 65535641
Fax:

Received: Aug 26, 2024 10:30 AM
Due: Sep 2, 2024
Priority: 5 Day
Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	BH301 0.1-0.2	Aug 15, 2024		Soil	X24-Au0066311					X		X	X
2	BH301 0.1-0.2 bg	Aug 15, 2024		Soil	X24-Au0066312		X						
3	BH301 0.5-0.6	Aug 15, 2024		Soil	X24-Au0066313					X		X	X
4	BH301 0.5-0.6 bg	Aug 15, 2024		Soil	X24-Au0066314		X						
5	BH301 2.1 2.2 bg	Aug 15, 2024		Soil	X24-Au0066315			X					
6	BH302 0.3-0.4	Aug 15, 2024		Soil	X24-Au0066316					X		X	X
7	BH302 0.3-0.4 bg	Aug 15, 2024		Soil	X24-Au0066317		X						
8	BH302 1.1-1.2	Aug 15, 2024		Soil	X24-Au0066318					X		X	X
9	BH302 1.1-1.2 bg	Aug 15, 2024		Soil	X24-Au0066319		X						
10	BH302 2.1-2.2 bg	Aug 15, 2024		Soil	X24-Au0066320			X					

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Phone: (02) 65535641
Fax:

Received: Aug 26, 2024 10:30 AM
Due: Sep 2, 2024
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Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
11	BH303 0.3-0.4	Aug 15, 2024		Soil	X24-Au0066321					X		X	X
12	BH303 0.3-0.4 bg	Aug 15, 2024		Soil	X24-Au0066322		X						
13	BH303 1-1.1 bg	Aug 15, 2024		Soil	X24-Au0066323			X					
14	BH304 0.2-0.3	Aug 15, 2024		Soil	X24-Au0066324					X		X	X
15	BH304 0.2-0.3 bg	Aug 15, 2024		Soil	X24-Au0066325		X						
16	BH304 0.8-0.9	Aug 15, 2024		Soil	X24-Au0066326					X		X	X
17	BH304 0.8-0.9 bg	Aug 15, 2024		Soil	X24-Au0066327		X						
18	BH305 0.-0.2	Aug 15, 2024		Soil	X24-Au0066328					X		X	X
19	BH305 0.-0.2 bg	Aug 15, 2024		Soil	X24-Au0066329		X						
20	BH305 1-1.1	Aug 15, 2024		Soil	X24-Au0066330					X		X	X
21	BH305 1-1.1 bg	Aug 15, 2024		Soil	X24-Au0066331		X						
22	BH306 0.1-0.2	Aug 15, 2024		Soil	X24-Au0066332					X		X	X
23	BH306 0.1-0.2	Aug 15, 2024		Soil	X24-Au0066333			X					

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Project ID: RGS21005.6

Order No.:
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Phone: (02) 65535641
Fax:

Received: Aug 26, 2024 10:30 AM
Due: Sep 2, 2024
Priority: 5 Day
Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
23	BH306 0.1-0.2 bg	Aug 15, 2024		Soil	X24-Au0066333								
24	BH306 0.4-0.5	Aug 15, 2024		Soil	X24-Au0066334					X		X	X
25	BH306 0.4-0.5 bg	Aug 15, 2024		Soil	X24-Au0066335		X						
26	BH307 0.1-0.2	Aug 15, 2024		Soil	X24-Au0066336					X		X	X
27	BH307 0.1-0.2 bg	Aug 15, 2024		Soil	X24-Au0066337		X						
28	BH307 0.4-0.5 bg	Aug 15, 2024		Soil	X24-Au0066338		X						
29	BH308 0.3-0.4	Aug 15, 2024		Soil	X24-Au0066339					X		X	X
30	BH308 0.3-0.4 bg	Aug 15, 2024		Soil	X24-Au0066340		X						
31	BH308 0.6-0.7	Aug 15, 2024		Soil	X24-Au0066341					X		X	X
32	BH308 0.6-0.7 bg	Aug 15, 2024		Soil	X24-Au0066342		X						
33	BH309 0.2-0.3	Aug 15, 2024		Soil	X24-Au0066343					X		X	X
34	BH309 0.2-0.3 bg	Aug 15, 2024		Soil	X24-Au0066344		X						

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Phone: (02) 65535641
Fax:

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Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
35	BH309 0.6-0.7	Aug 15, 2024		Soil	X24-Au0066345					X		X	X
36	BH309 0.6-0.7 bg	Aug 15, 2024		Soil	X24-Au0066346		X						
37	BH309 1.4-1.5 bg	Aug 15, 2024		Soil	X24-Au0066347			X					
38	BH310 0.3-0.4	Aug 15, 2024		Soil	X24-Au0066348					X		X	X
39	BH310 0.3-0.4 bg	Aug 15, 2024		Soil	X24-Au0066349		X						
40	BH310 0.9-1.0	Aug 15, 2024		Soil	X24-Au0066350					X		X	X
41	BH310 0.9-1.0 bg	Aug 15, 2024		Soil	X24-Au0066351		X						
42	BH311 0.3-0.4	Aug 15, 2024		Soil	X24-Au0066352					X		X	X
43	BH311 0.3-0.4 bg	Aug 15, 2024		Soil	X24-Au0066353		X						
44	BH311 0.8-0.9	Aug 15, 2024		Soil	X24-Au0066354					X		X	X
45	BH311 0.8-0.9 bg	Aug 15, 2024		Soil	X24-Au0066355		X						
46	BH311 1.2-13 bg	Aug 15, 2024		Soil	X24-Au0066356		X						

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Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
47	BH311 2.2-2.3 bg	Aug 15, 2024		Soil	X24-Au0066357			X					
48	BH312 0.2-0.3	Aug 15, 2024		Soil	X24-Au0066358					X		X	X
49	BH312 0.2-0.3 bg	Aug 15, 2024		Soil	X24-Au0066359		X						
50	BH312 0.8-0.9	Aug 15, 2024		Soil	X24-Au0066360					X		X	X
51	BH312 0.8-0.9 bg	Aug 15, 2024		Soil	X24-Au0066361		X						
52	BH312 1.4-1.5 bg	Aug 15, 2024		Soil	X24-Au0066362		X						
53	BH313 0.5-0.6	Aug 15, 2024		Soil	X24-Au0066363					X		X	X
54	BH313 0.5-0.6 bg	Aug 15, 2024		Soil	X24-Au0066364		X						
55	BH313 1.4-1.5 bg	Aug 15, 2024		Soil	X24-Au0066365		X						
56	BH314 0.1-0.2	Aug 15, 2024		Soil	X24-Au0066366					X		X	X
57	BH314 0.1-0.2 bg	Aug 15, 2024		Soil	X24-Au0066367		X						
58	BH314 0.7-0.8	Aug 15, 2024		Soil	X24-Au0066368					X		X	X

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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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Eurofins Environment Testing NZ Ltd
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Auckland	Auckland (Focus)	Christchurch	Tauranga
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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Regional Geotechnical Solutions
Address: 44 Bent Street
Wingham
NSW 2429

Project Name: AQUATIC FACILITY
Project ID: RGS21005.6

Order No.:
Report #: 1132108
Phone: (02) 65535641
Fax:

Received: Aug 26, 2024 10:30 AM
Due: Sep 2, 2024
Priority: 5 Day
Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
59	BH314 0.7-0.8 bg	Aug 15, 2024		Soil	X24-Au0066369		X						
60	BH314 1.2-1.3 bg	Aug 15, 2024		Soil	X24-Au0066370			X					
61	BH315 0.5-0.6	Aug 15, 2024		Soil	X24-Au0066371					X		X	X
62	BH315 0.5-0.6 bg	Aug 15, 2024		Soil	X24-Au0066372		X						
63	BH315 1.5-1.6	Aug 15, 2024		Soil	X24-Au0066373					X		X	X
64	BH315 1.5-1.6 bg	Aug 15, 2024		Soil	X24-Au0066374			X					
65	BH316 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066375					X		X	X
66	BH316 0.3-0.4 bg	Aug 16, 2024		Soil	X24-Au0066376		X						
67	BH316 1.3-1.4 Bg	Aug 16, 2024		Soil	X24-Au0066377		X						
68	BH317 0.2-0.3	Aug 16, 2024		Soil	X24-Au0066378					X		X	X
69	BH317 0.2-0.3 bg	Aug 16, 2024		Soil	X24-Au0066379		X						
70	BH317 0.6-0.7	Aug 16, 2024		Soil	X24-Au0066380					X		X	X

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
71	BH317 0.6-0.7 bg	Aug 16, 2024		Soil	X24-Au0066381		X						
72	BH317 1-1 bg	Aug 16, 2024		Soil	X24-Au0066382			X					
73	BH318 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066383					X		X	X
74	BH318 0.3-0.4 bg	Aug 16, 2024		Soil	X24-Au0066384		X						
75	BH318 1.2-1.3 bg	Aug 16, 2024		Soil	X24-Au0066385			X					
76	BH319 0.2-0.3	Aug 16, 2024		Soil	X24-Au0066386					X		X	X
77	BH319 0.2-0.3 bg	Aug 16, 2024		Soil	X24-Au0066387		X						
78	BH319 0.7-0.8	Aug 16, 2024		Soil	X24-Au0066388					X		X	X
79	BH319 0.7-0.8 bg	Aug 16, 2024		Soil	X24-Au0066389			X					
80	BH320 0.4-0.5	Aug 16, 2024		Soil	X24-Au0066390					X		X	X
81	BH320 0.4-0.5 bg	Aug 16, 2024		Soil	X24-Au0066391		X						
82	BH320 1-1.1 bg	Aug 16, 2024		Soil	X24-Au0066392		X						

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
83	BH321 0.1-0.2	Aug 16, 2024		Soil	X24-Au0066393					X		X	X
84	BH321 0.1-0.2 bg	Aug 16, 2024		Soil	X24-Au0066394		X						
85	BH321 0.5-0.6 bg	Aug 16, 2024		Soil	X24-Au0066395		X						
86	BH321 1.2-1.3	Aug 16, 2024		Soil	X24-Au0066396					X		X	X
87	BH321 1.2-1.3 bg	Aug 16, 2024		Soil	X24-Au0066397			X					
88	BH322 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066398					X		X	X
89	BH322 0.3-0.4 bg	Aug 16, 2024		Soil	X24-Au0066399		X						
90	BH322 1.5-1.6 bg	Aug 16, 2024		Soil	X24-Au0066400		X						
91	BH323 0.2-0.25	Aug 16, 2024		Soil	X24-Au0066401					X		X	X
92	BH323 0.2-0.25 bg	Aug 16, 2024		Soil	X24-Au0066402		X						
93	BH323 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066403					X		X	X
94	BH323 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066404		X						

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
	bg												
95	BH324 0.7-0.8	Aug 16, 2024		Soil	X24-Au0066405					X		X	X
96	BH324 0.7-0.8 bg	Aug 16, 2024		Soil	X24-Au0066406		X						
97	BH325 0.5-0.6	Aug 16, 2024		Soil	X24-Au0066407					X		X	X
98	BH325 0.5-0.6 bg	Aug 16, 2024		Soil	X24-Au0066408		X						
99	BH325 2-2.1	Aug 16, 2024		Soil	X24-Au0066409					X		X	X
100	BH325 2-2.1 bg	Aug 16, 2024		Soil	X24-Au0066410		X						
101	BH326 0.2-0.3	Aug 16, 2024		Soil	X24-Au0066411					X		X	X
102	BH326 0.2-0.3 bg	Aug 16, 2024		Soil	X24-Au0066412		X						
103	BH326 0.9-1	Aug 16, 2024		Soil	X24-Au0066413					X		X	X
104	BH326 0.9-1 bg	Aug 16, 2024		Soil	X24-Au0066414		X						
105	BH326 2.5-2.6 bg	Aug 16, 2024		Soil	X24-Au0066415			X					
106	BH327 0.6-0.7	Aug 16, 2024		Soil	X24-Au0066416					X		X	X

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
107	BH327 0.6-0.7 bg	Aug 16, 2024		Soil	X24-Au0066417		X						
108	BH327 1.2-1.3	Aug 16, 2024		Soil	X24-Au0066418					X		X	X
109	BH327 1.2-1.3 bg	Aug 16, 2024		Soil	X24-Au0066419		X						
110	BH327 2.8-2.9 bg	Aug 16, 2024		Soil	X24-Au0066420		X						
111	TP1 0-0.1	Aug 16, 2024		Soil	X24-Au0066421					X		X	X
112	TP1 0.5-0.6	Aug 16, 2024		Soil	X24-Au0066422					X		X	X
113	TP1 0.9-1.0	Aug 16, 2024		Soil	X24-Au0066423			X					
114	TP1 1.5 bg	Aug 16, 2024		Soil	X24-Au0066424	X							
115	TP2 0.1-0.1	Aug 16, 2024		Soil	X24-Au0066425					X		X	X
116	TP2 0.2-0.3	Aug 16, 2024		Soil	X24-Au0066426					X		X	X
117	TP3 0-0.1	Aug 16, 2024		Soil	X24-Au0066427					X		X	X
118	TP3 0.4-0.5	Aug 16, 2024		Soil	X24-Au0066428					X		X	X
119	TP4 0-0.1	Aug 16, 2024		Soil	X24-Au0066429					X		X	X
120	TP6 0-0.1	Aug 16, 2024		Soil	X24-Au0066430					X		X	X
121	TP6 0.4-0.5	Aug 16, 2024		Soil	X24-Au0066431					X		X	X

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
122	TP6 0.9-1 bg	Aug 16, 2024		Soil	X24-Au0066432	X							
123	TP7 0.5-0.6	Aug 16, 2024		Soil	X24-Au0066433					X		X	X
124	TP8 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066434					X		X	X
125	TP8 0.7-0.9 bg	Aug 16, 2024		Soil	X24-Au0066435	X							
126	TP8 0.9-1.2 bg	Aug 16, 2024		Soil	X24-Au0066436	X							
127	TP9 0.2-0.3	Aug 16, 2024		Soil	X24-Au0066437					X		X	X
128	TP9 0.7-0.8	Aug 16, 2024		Soil	X24-Au0066438					X		X	X
129	TP10 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066439					X		X	X
130	TP10 1.5-1.8 bg	Aug 16, 2024		Soil	X24-Au0066440	X							
131	TP10 1.8-2 bg	Aug 16, 2024		Soil	X24-Au0066441	X							
132	D1 0-0.1	Aug 16, 2024		Soil	X24-Au0066442						X	X	
133	D2	Aug 16, 2024		Soil	X24-Au0066443						X	X	
134	D3	Aug 16, 2024		Soil	X24-Au0066444						X	X	
135	D4	Aug 16, 2024		Soil	X24-Au0066445						X	X	
136	D5	Aug 16, 2024		Soil	X24-Au0066446						X	X	
137	D6	Aug 16, 2024		Soil	X24-Au0066447						X	X	

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Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Regional Geotechnical Solutions
Address: 44 Bent Street
Wingham
NSW 2429

Project Name: AQUATIC FACILITY
Project ID: RGS21005.6

Order No.:
Report #: 1132108
Phone: (02) 65535641
Fax:

Received: Aug 26, 2024 10:30 AM
Due: Sep 2, 2024
Priority: 5 Day
Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
138	TP5 0-0.1	Aug 15, 2024		Soil	X24-Au0066668				X				
139	TP5 0.5-0.6	Aug 15, 2024		Soil	X24-Au0066669				X				
140	TP7 1-1.1	Aug 15, 2024		Soil	X24-Au0066670				X				
141	TP10 1-1.2	Aug 15, 2024		Soil	X24-Au0066671				X				
Test Counts						6	51	14	4	60	6	66	60

Internal Quality Control Review and Glossary General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).
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.

Units

% w/w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (**% w/w**)
F/fld	Airborne fibre filter loading as Fibres (**N**) per Fields counted (**n**)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (**C**)
g, kg	Mass, e.g. of whole sample (**M**) or asbestos-containing find within the sample (**m**)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (**V** = **r** x **t**)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (**r**)
min	Time (**t**), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration: $C = \left(\frac{A}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{r}\right) \times \left(\frac{1}{t}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{V}\right)$

Asbestos Content (as asbestos): $\%\, w/w = \frac{(m \times P_A)}{M}$

Weighted Average (of asbestos): $\%_{WA} = \sum \frac{(m \times P_A)_x}{x}$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix may be derived from knowledge or experience of the material, informed by HSG264 *Appendix 2*, else assumed to be 15% in accordance with WA DOH *Appendix 2* (**P_A**). This estimate is not NATA-accredited.
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to “non-bonded / friable”.
AFM	Airborne Fibre Monitoring, e.g., by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total %w/w asbestos content in asbestos-containing finds in a soil sample (**% w/w**).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 4964-2004.
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 4964-2004.
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for Unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to visibly distinguish and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 4964-2004. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
HSG248	UK HSE HSG248, *Asbestos: The Analysts Guide*, 2nd Edition (2021).
HSG264	UK HSE HSG264, *Asbestos: The Survey Guide* (2012).
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (**K**) as derived from the effective filter area of the given AFM membrane used for collecting the sample (**A**) and the projected eyepiece graticule area of the specific microscope used for the analysis (**a**).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*, 2nd Edition [NOHSC:3003(2005)].
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 4964-2004.
PCM	Phase Contrast Microscopy. As used for Fibre Counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 4964-2004.
Sampling	Unless otherwise stated Eurofins are not responsible for sampling equipment or the sampling process.
SMF	Synthetic Mineral Fibre Detected. SMF may also refer to Man Made Vitreous Fibres. Identified in accordance with AS 4964-2004.
SRA	Sample Receipt Advice.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according the AS 4964-2004. May include (but not limited to) Actinolite, Anthophyllite or Tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (updated 2021), including Appendix Four: *Laboratory analysis*
Weighted Average	Combined average %w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (**$\%_{WA}$**).

Comments

24-Au0066312, 24-Au0066317 - 24-Au0066322, 24-Au0066329, 24-Au0066331, 24-Au0066340 - 24-Au0066344, 24-Au0066349, 24-Au0066351, 24-Au0066362, 24-Au0066365, 24-Au0066372, 24-Au0066376, 24-Au0066379, 24-Au0066384 - 24-Au0066399, 24-Au0066402 - 24-Au0066406, 24-Au0066412, 24-Au0066419: Samples received were less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

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

Asbestos Counter/Identifier:

Sayeed Abu	Senior Analyst-Asbestos

Authorised by:

Chamath JHM Annakkage	Senior Analyst-Asbestos

Glenn Jackson
Managing Director

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.

Regional Geotechnical Solutions
44 Bent Street
Wingham
NSW 2429

Attention: **Grant Colliar**

Report **1132108-S**
Project name AQUATIC FACILITY
Project ID RGS21005.6
Received Date Aug 26, 2024

Client Sample ID			**BH301 0.1-0.2**	**BH301 0.5-0.6**	**BH302 0.3-0.4**	**BH302 1.1-1.2**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**X24-Au0066311**	**X24-Au0066313**	**X24-Au0066316**	**X24-Au0066318**
Date Sampled			**Aug 15, 2024**	**Aug 15, 2024**	**Aug 15, 2024**	**Aug 15, 2024**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	97	125	105	62
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH301 0.1-0.2	BH301 0.5-0.6	BH302 0.3-0.4	BH302 1.1-1.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066311	X24-Au0066313	X24-Au0066316	X24-Au0066318
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	130	100	99	68
p-Terphenyl-d14 (surr.)	1	%	143	111	128	86
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	123	77	72	66
Tetrachloro-m-xylene (surr.)	1	%	130	91	93	55
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	123	77	72	66
Tetrachloro-m-xylene (surr.)	1	%	130	91	93	55
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100

Client Sample ID			BH301 0.1-0.2	BH301 0.5-0.6	BH302 0.3-0.4	BH302 1.1-1.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066311	X24-Au0066313	X24-Au0066316	X24-Au0066318
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Metals M8						
Arsenic	2	mg/kg	5.2	12	2.9	3.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	85	32	300	200
Copper	5	mg/kg	6.9	< 5	7.2	5.7
Lead	5	mg/kg	11	11	12	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	28	< 5	70	16
Zinc	5	mg/kg	16	< 5	17	< 5
Sample Properties						
% Moisture	1	%	21	21	21	14

Client Sample ID			BH303 0.3-0.4	BH304 0.2-0.3	BH304 0.8-0.9	BH305 0.-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066321	X24-Au0066324	X24-Au0066326	X24-Au0066328
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	91	109	115	110
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH303 0.3-0.4	BH304 0.2-0.3	BH304 0.8-0.9	BH305 0.-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066321	X24-Au0066324	X24-Au0066326	X24-Au0066328
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	106	52	64	98
p-Terphenyl-d14 (surr.)	1	%	130	INT	111	111
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 10	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.5	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	122	53	85	76
Tetrachloro-m-xylene (surr.)	1	%	109	57	80	82
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	122	53	85	76
Tetrachloro-m-xylene (surr.)	1	%	109	57	80	82

Client Sample ID			BH303 0.3-0.4	BH304 0.2-0.3	BH304 0.8-0.9	BH305 0.-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066321	X24-Au0066324	X24-Au0066326	X24-Au0066328
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	4.0	< 2	< 2	2.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	340	110	170	120
Copper	5	mg/kg	< 5	8.3	< 5	7.2
Lead	5	mg/kg	6.3	40	7.4	13
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	31	29	28	23
Zinc	5	mg/kg	< 5	23	< 5	22
Sample Properties						
% Moisture	1	%	21	21	17	21

Client Sample ID			BH305 1-1.1	BH306 0.1-0.2	BH306 0.4-0.5	BH307 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066330	X24-Au0066332	X24-Au0066334	X24-Au0066336
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	113	86	119	98
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH305 1-1.1	BH306 0.1-0.2	BH306 0.4-0.5	BH307 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066330	X24-Au0066332	X24-Au0066334	X24-Au0066336
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	112	72	86	117
p-Terphenyl-d14 (surr.)	1	%	128	102	91	INT
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 10
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Dibutylchlorendate (surr.)	1	%	110	72	69	70
Tetrachloro-m-xylene (surr.)	1	%	113	72	82	106

Client Sample ID			BH305 1-1.1	BH306 0.1-0.2	BH306 0.4-0.5	BH307 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066330	X24-Au0066332	X24-Au0066334	X24-Au0066336
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Dibutylchlorendate (surr.)	1	%	110	72	69	70
Tetrachloro-m-xylene (surr.)	1	%	113	72	82	106
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	3.9	2.0	4.9	2.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	220	120	290	75
Copper	5	mg/kg	8.5	5.2	12	11
Lead	5	mg/kg	5.5	13	9.8	13
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	9.7	19	11	14
Zinc	5	mg/kg	< 5	16	< 5	26
Sample Properties						
% Moisture	1	%	16	19	15	19

Client Sample ID			BH308 0.3-0.4	BH308 0.6-0.7	BH309 0.2-0.3	BH309 0.6-0.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066339	X24-Au0066341	X24-Au0066343	X24-Au0066345
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	110	110	120	113

Client Sample ID			BH308 0.3-0.4	BH308 0.6-0.7	BH309 0.2-0.3	BH309 0.6-0.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066339	X24-Au0066341	X24-Au0066343	X24-Au0066345
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	121	96	125	120
p-Terphenyl-d14 (surr.)	1	%	146	103	138	119
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH308 0.3-0.4	BH308 0.6-0.7	BH309 0.2-0.3	BH309 0.6-0.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066339	X24-Au0066341	X24-Au0066343	X24-Au0066345
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	123	97	122	114
Tetrachloro-m-xylene (surr.)	1	%	121	91	119	115
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	123	97	122	114
Tetrachloro-m-xylene (surr.)	1	%	121	91	119	115
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	< 2	2.5	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	96	83	58	69
Copper	5	mg/kg	6.8	15	< 5	< 5
Lead	5	mg/kg	18	6.8	6.6	< 5
Mercury	0.1	mg/kg	< 0.1	0.2	< 0.1	< 0.1
Nickel	5	mg/kg	15	67	13	12
Zinc	5	mg/kg	6.2	19	8.2	< 5
Sample Properties						
% Moisture	1	%	16	29	18	15

Client Sample ID			BH310 0.3-0.4	BH310 0.9-1.0	BH311 0.3-0.4	BH311 0.8-0.9
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066348	X24-Au0066350	X24-Au0066352	X24-Au0066354
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	36
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	680
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	540
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	1256

Client Sample ID			BH310 0.3-0.4	BH310 0.9-1.0	BH311 0.3-0.4	BH311 0.8-0.9
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066348	X24-Au0066350	X24-Au0066352	X24-Au0066354
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	85	104	98	126
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	86
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	109	87	INT	121
p-Terphenyl-d14 (surr.)	1	%	123	108	INT	124
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			BH310 0.3-0.4	BH310 0.9-1.0	BH311 0.3-0.4	BH311 0.8-0.9
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066348	X24-Au0066350	X24-Au0066352	X24-Au0066354
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	135	70	INT	120
Tetrachloro-m-xylene (surr.)	1	%	111	77	INT	124
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	135	70	INT	120
Tetrachloro-m-xylene (surr.)	1	%	111	77	INT	124
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	86
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	1000
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	360
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	1446
Metals M8						
Arsenic	2	mg/kg	2.7	< 2	12	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	180	77	160	120
Copper	5	mg/kg	8.2	< 5	17	6.0
Lead	5	mg/kg	10	< 5	16	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	46	20	23	80
Zinc	5	mg/kg	8.7	< 5	25	7.3
Sample Properties						
% Moisture	1	%	19	13	23	14

Client Sample ID			BH312 0.2-0.3	BH312 0.8-0.9	BH313 0.5-0.6	BH314 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066358	X24-Au0066360	X24-Au0066363	X24-Au0066366
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	102	81	101	86
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	81	95	73	68
p-Terphenyl-d14 (surr.)	1	%	105	73	90	INT
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 1	< 1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05

Client Sample ID			BH312 0.2-0.3	BH312 0.8-0.9	BH313 0.5-0.6	BH314 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066358	X24-Au0066360	X24-Au0066363	X24-Au0066366
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 15, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
b-HCH	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 10	< 10	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.5	< 0.5	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 1	< 1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 1	< 1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	74	INT	76	55
Tetrachloro-m-xylene (surr.)	1	%	97	116	71	60
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 1	< 1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 1	< 1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 1	< 1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 1	< 1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 1	< 1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 1	< 1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 1	< 1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 1	< 1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	74	INT	76	55
Tetrachloro-m-xylene (surr.)	1	%	97	116	71	60
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	4.5	9.9	< 2	5.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	170	790	70	190
Copper	5	mg/kg	18	25	5.4	12
Lead	5	mg/kg	27	22	< 5	11
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	49	180	13	20
Zinc	5	mg/kg	37	21	5.0	12
Sample Properties						
% Moisture	1	%	20	15	13	23

Client Sample ID			BH314 0.7-0.8	BH315 0.5-0.6	BH315 1.5-1.6	BH316 0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066368	X24-Au0066371	X24-Au0066373	X24-Au0066375
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	60	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	60	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	67	146	86	87
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	53	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	57	79	70	55
p-Terphenyl-d14 (surr.)	1	%	86	INT	62	69
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			BH314 0.7-0.8	BH315 0.5-0.6	BH315 1.5-1.6	BH316 0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066368	X24-Au0066371	X24-Au0066373	X24-Au0066375
Date Sampled			Aug 15, 2024	Aug 15, 2024	Aug 15, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	54	63	68	50
Tetrachloro-m-xylene (surr.)	1	%	54	73	65	54
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	54	63	68	50
Tetrachloro-m-xylene (surr.)	1	%	54	73	65	54
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	53	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	< 2	2.4	8.8	7.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	60	59	200	150
Copper	5	mg/kg	5.3	10	49	25
Lead	5	mg/kg	5.7	10	5.6	5.4
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	31	21	200	200
Zinc	5	mg/kg	8.0	15	51	11
Sample Properties						
% Moisture	1	%	19	20	24	16

Client Sample ID			BH317 0.2-0.3	BH317 0.6-0.7	BH318 0.3-0.4	BH319 0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066378	X24-Au0066380	X24-Au0066383	X24-Au0066386
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	113	118	99	96
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	53	79	INT	135
p-Terphenyl-d14 (surr.)	1	%	INT	104	INT	INT
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05

Client Sample ID			BH317 0.2-0.3	BH317 0.6-0.7	BH318 0.3-0.4	BH319 0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066378	X24-Au0066380	X24-Au0066383	X24-Au0066386
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 10	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Dibutylchlorendate (surr.)	1	%	70	94	70	107
Tetrachloro-m-xylene (surr.)	1	%	61	86	70	128
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Dibutylchlorendate (surr.)	1	%	70	94	70	107
Tetrachloro-m-xylene (surr.)	1	%	61	86	70	128
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	< 2	12	6.1	2.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	22	140	150	87
Copper	5	mg/kg	< 5	17	17	11
Lead	5	mg/kg	5.0	7.5	110	12
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	9.8	70	24	15
Zinc	5	mg/kg	15	17	82	22
Sample Properties						
% Moisture	1	%	19	19	16	22

Client Sample ID			BH319 0.7-0.8	BH320 0.4-0.5	BH321 0.1-0.2	BH321 1.2-1.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066388	X24-Au0066390	X24-Au0066393	X24-Au0066396
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	84	< 50	52
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	84	< 50	52
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	74	122	90	107
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	64	122	80	69
p-Terphenyl-d14 (surr.)	1	%	134	114	97	77
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			BH319 0.7-0.8	BH320 0.4-0.5	BH321 0.1-0.2	BH321 1.2-1.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066388	X24-Au0066390	X24-Au0066393	X24-Au0066396
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	90	121	100	61
Tetrachloro-m-xylene (surr.)	1	%	80	131	86	68
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	90	121	100	61
Tetrachloro-m-xylene (surr.)	1	%	80	131	86	68
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	2.2	< 2	48	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	140	170	220	75
Copper	5	mg/kg	< 5	< 5	33	< 5
Lead	5	mg/kg	6.4	< 5	16	5.2
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	28	150	35	21
Zinc	5	mg/kg	< 5	6.2	22	< 5
Sample Properties						
% Moisture	1	%	20	15	22	20

Client Sample ID			BH322 0.3-0.4	BH323 0.2-0.25	BH323 0.3-0.4	BH324 0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066398	X24-Au0066401	X24-Au0066403	X24-Au0066405
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	21	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	119	116	87	126
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	21	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	21	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	108	83	66	103
p-Terphenyl-d14 (surr.)	1	%	144	92	79	114
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			BH322 0.3-0.4	BH323 0.2-0.25	BH323 0.3-0.4	BH324 0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066398	X24-Au0066401	X24-Au0066403	X24-Au0066405
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	132	71	INT	96
Tetrachloro-m-xylene (surr.)	1	%	111	82	56	103
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	132	71	INT	96
Tetrachloro-m-xylene (surr.)	1	%	111	82	56	103
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	36	< 2	3.2	2.7
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	250	170	260	150
Copper	5	mg/kg	24	< 5	< 5	< 5
Lead	5	mg/kg	11	< 5	6.1	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	34	30	29	12
Zinc	5	mg/kg	7.4	< 5	< 5	< 5
Sample Properties						
% Moisture	1	%	20	15	21	16

Client Sample ID			BH325 0.5-0.6	BH325 2-2.1	BH326 0.2-0.3	BH326 0.9-1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066407	X24-Au0066409	X24-Au0066411	X24-Au0066413
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	119	122	106	125
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	1.3	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	1.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.8	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	0.8	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	1.0	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	1.1	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	0.7	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	1.3	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	2.4	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	1.1	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	2.4	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	11	< 0.5
2-Fluorobiphenyl (surr.)	1	%	109	121	106	131
p-Terphenyl-d14 (surr.)	1	%	INT	134	109	143
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 1	< 0.1	< 1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
a-HCH	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Aldrin	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05

Client Sample ID			BH325 0.5-0.6	BH325 2-2.1	BH326 0.2-0.3	BH326 0.9-1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066407	X24-Au0066409	X24-Au0066411	X24-Au0066413
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
b-HCH	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
d-HCH	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Dieldrin	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Endosulfan I	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Endosulfan II	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Endrin	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Endrin ketone	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Heptachlor	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Methoxychlor	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Toxaphene	0.5	mg/kg	< 10	< 0.5	< 10	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.5	< 0.05	< 0.5	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 1	< 0.1	< 1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 1	< 0.1	< 1	< 0.1
Dibutylchlorendate (surr.)	1	%	INT	126	68	132
Tetrachloro-m-xylene (surr.)	1	%	104	131	106	128
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 1	< 0.1	< 1	< 0.1
Aroclor-1221	0.1	mg/kg	< 1	< 0.1	< 1	< 0.1
Aroclor-1232	0.1	mg/kg	< 1	< 0.1	< 1	< 0.1
Aroclor-1242	0.1	mg/kg	< 1	< 0.1	< 1	< 0.1
Aroclor-1248	0.1	mg/kg	< 1	< 0.1	< 1	< 0.1
Aroclor-1254	0.1	mg/kg	< 1	< 0.1	< 1	< 0.1
Aroclor-1260	0.1	mg/kg	< 1	< 0.1	< 1	< 0.1
Total PCB*	0.1	mg/kg	< 1	< 0.1	< 1	< 0.1
Dibutylchlorendate (surr.)	1	%	INT	126	68	132
Tetrachloro-m-xylene (surr.)	1	%	104	131	106	128
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	5.4	2.0	8.6	10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	220	110	220	870
Copper	5	mg/kg	7.4	130	17	11
Lead	5	mg/kg	7.9	5.2	23	12
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	27	450	16	55
Zinc	5	mg/kg	15	190	26	8.9
Sample Properties						
% Moisture	1	%	20	25	16	14

Client Sample ID			BH327 0.6-0.7	BH327 1.2-1.3	TP1 0-0.1	TP1 0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066416	X24-Au0066418	X24-Au0066421	X24-Au0066422
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	57	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	57	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	89	74	110	INT
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	99	112	142	96
p-Terphenyl-d14 (surr.)	1	%	104	133	INT	109
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5

Client Sample ID			BH327 0.6-0.7	BH327 1.2-1.3	TP1 0-0.1	TP1 0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066416	X24-Au0066418	X24-Au0066421	X24-Au0066422
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 10
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Dibutylchlorendate (surr.)	1	%	73	79	98	77
Tetrachloro-m-xylene (surr.)	1	%	80	93	138	112
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Dibutylchlorendate (surr.)	1	%	73	79	98	77
Tetrachloro-m-xylene (surr.)	1	%	80	93	138	112
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	120	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	120	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	7.8	17	3.4	7.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	390	1200	450	1300
Copper	5	mg/kg	10.0	39	11	23
Lead	5	mg/kg	13	15	29	26
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	74	69	69	190
Zinc	5	mg/kg	36	16	61	35
Sample Properties						
% Moisture	1	%	23	28	28	20

Client Sample ID			TP2 0.1-0.1	TP2 0.2-0.3	TP3 0-0.1	TP3 0.4-0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066425	X24-Au0066426	X24-Au0066427	X24-Au0066428
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	89	92	93	INT
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	93	98	130	86
p-Terphenyl-d14 (surr.)	1	%	INT	86	INT	103
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05

Client Sample ID			TP2 0.1-0.1	TP2 0.2-0.3	TP3 0-0.1	TP3 0.4-0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066425	X24-Au0066426	X24-Au0066427	X24-Au0066428
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 10	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.5	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Dibutylchlorendate (surr.)	1	%	120	135	70	67
Tetrachloro-m-xylene (surr.)	1	%	111	122	60	74
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 1	< 0.1
Dibutylchlorendate (surr.)	1	%	120	135	70	67
Tetrachloro-m-xylene (surr.)	1	%	111	122	60	74
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	2.4	3.0	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	140	220	99	92
Copper	5	mg/kg	9.1	< 5	6.7	< 5
Lead	5	mg/kg	17	8.8	15	7.7
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	35	26	27	19
Zinc	5	mg/kg	34	< 5	34	16
Sample Properties						
% Moisture	1	%	19	20	20	14

Client Sample ID			TP4 0-0.1	TP6 0-0.1	TP6 0.4-0.5	TP7 0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066429	X24-Au0066430	X24-Au0066431	X24-Au0066433
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	52	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	52	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	89	102	80	93
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	99	59	64	73
p-Terphenyl-d14 (surr.)	1	%	103	109	81	INT
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5

Client Sample ID			TP4 0-0.1	TP6 0-0.1	TP6 0.4-0.5	TP7 0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066429	X24-Au0066430	X24-Au0066431	X24-Au0066433
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 10
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.5
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Dibutylchlorendate (surr.)	1	%	67	50	INT	67
Tetrachloro-m-xylene (surr.)	1	%	78	60	54	62
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 1
Dibutylchlorendate (surr.)	1	%	67	50	INT	67
Tetrachloro-m-xylene (surr.)	1	%	78	60	54	62
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	110	110
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	110	110
Metals M8						
Arsenic	2	mg/kg	< 2	2.8	7.4	7.7
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	120	90	250	400
Copper	5	mg/kg	8.9	19	88	25
Lead	5	mg/kg	12	< 5	5.4	19
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	40	44	81	150
Zinc	5	mg/kg	27	10	41	42
Sample Properties						
% Moisture	1	%	26	24	25	22

Client Sample ID			TP8 0.3-0.4	TP9 0.2-0.3	TP9 0.7-0.8	TP10 0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066434	X24-Au0066437	X24-Au0066438	X24-Au0066439
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	90	95	85	89
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	102	100	64	86
p-Terphenyl-d14 (surr.)	1	%	113	113	117	104
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			TP8 0.3-0.4	TP9 0.2-0.3	TP9 0.7-0.8	TP10 0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066434	X24-Au0066437	X24-Au0066438	X24-Au0066439
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	68	114	119	60
Tetrachloro-m-xylene (surr.)	1	%	84	123	108	73
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	68	114	119	60
Tetrachloro-m-xylene (surr.)	1	%	84	123	108	73
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	2.6	3.7	< 2	8.8
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	220	310	130	62
Copper	5	mg/kg	6.1	< 5	< 5	5.7
Lead	5	mg/kg	6.8	7.9	< 5	8.1
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	51	42	29	8.8
Zinc	5	mg/kg	7.1	7.3	7.2	6.1
Sample Properties						
% Moisture	1	%	18	19	15	18

Client Sample ID			D1 0-0.1	D2	D3	D4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			X24-Au0066442	X24-Au0066443	X24-Au0066444	X24-Au0066445
Date Sampled			Aug 16, 2024	Aug 16, 2024	Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit				
Metals M8						
Arsenic	2	mg/kg	< 2	3.6	3.0	11
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	110	190	150	470
Copper	5	mg/kg	< 5	9.0	8.5	25
Lead	5	mg/kg	12	< 5	16	21
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	20	11	27	110
Zinc	5	mg/kg	15	< 5	23	18
Sample Properties						
% Moisture	1	%	18	13	14	15

Client Sample ID			D5	D6
Sample Matrix			Soil	Soil
Eurofins Sample No.			X24-Au0066446	X24-Au0066447
Date Sampled			Aug 16, 2024	Aug 16, 2024
Test/Reference	LOR	Unit		
Metals M8				
Arsenic	2	mg/kg	< 2	7.4
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	49	530
Copper	5	mg/kg	7.6	14
Lead	5	mg/kg	8.5	8.0
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	9.8	43
Zinc	5	mg/kg	17	12
Sample Properties				
% Moisture	1	%	23	18

Sample History

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

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
Eurofins Suite B9			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Aug 30, 2024	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Aug 30, 2024	14 Days
- Method: LTM-ORG-2010 BTEX and Volatile TRH			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Aug 30, 2024	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Aug 30, 2024	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Sydney	Aug 31, 2024	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Aug 30, 2024	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8	Sydney	Aug 30, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Polychlorinated Biphenyls	Sydney	Aug 31, 2024	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
% Moisture	Sydney	Aug 26, 2024	14 Days
- Method: LTM-GEN-7080 Moisture			

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Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Regional Geotechnical Solutions
Address: 44 Bent Street
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NSW 2429

Project Name: AQUATIC FACILITY
Project ID: RGS21005.6

Order No.:
Report #: 1132108
Phone: (02) 65535641
Fax:

Received: Aug 26, 2024 10:30 AM
Due: Sep 2, 2024
Priority: 5 Day
Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail	Asbestos - AS4964	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217	X	X	X	X	X	X	X
External Laboratory							

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID							
1	BH301 0.1-0.2	Aug 15, 2024		Soil	X24-Au0066311				X		X	X
2	BH301 0.1-0.2 bg	Aug 15, 2024		Soil	X24-Au0066312	X						
3	BH301 0.5-0.6	Aug 15, 2024		Soil	X24-Au0066313				X		X	X
4	BH301 0.5-0.6 bg	Aug 15, 2024		Soil	X24-Au0066314	X						
5	BH301 2.1 2.2 bg	Aug 15, 2024		Soil	X24-Au0066315		X					
6	BH302 0.3-0.4	Aug 15, 2024		Soil	X24-Au0066316				X		X	X
7	BH302 0.3-0.4 bg	Aug 15, 2024		Soil	X24-Au0066317	X						
8	BH302 1.1-1.2	Aug 15, 2024		Soil	X24-Au0066318				X		X	X
9	BH302 1.1-1.2 bg	Aug 15, 2024		Soil	X24-Au0066319	X						
10	BH302 2.1-2.2 bg	Aug 15, 2024		Soil	X24-Au0066320		X					

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Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Regional Geotechnical Solutions
Address: 44 Bent Street
Wingham
NSW 2429

Project Name: AQUATIC FACILITY
Project ID: RGS21005.6

Order No.:
Report #: 1132108
Phone: (02) 65535641
Fax:

Received: Aug 26, 2024 10:30 AM
Due: Sep 2, 2024
Priority: 5 Day
Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
11	BH303 0.3-0.4	Aug 15, 2024		Soil	X24-Au0066321				X		X	X
12	BH303 0.3-0.4 bg	Aug 15, 2024		Soil	X24-Au0066322	X						
13	BH303 1-1.1 bg	Aug 15, 2024		Soil	X24-Au0066323		X					
14	BH304 0.2-0.3	Aug 15, 2024		Soil	X24-Au0066324				X		X	X
15	BH304 0.2-0.3 bg	Aug 15, 2024		Soil	X24-Au0066325	X						
16	BH304 0.8-0.9	Aug 15, 2024		Soil	X24-Au0066326				X		X	X
17	BH304 0.8-0.9 bg	Aug 15, 2024		Soil	X24-Au0066327	X						
18	BH305 0.-0.2	Aug 15, 2024		Soil	X24-Au0066328				X		X	X
19	BH305 0.-0.2 bg	Aug 15, 2024		Soil	X24-Au0066329	X						
20	BH305 1-1.1	Aug 15, 2024		Soil	X24-Au0066330				X		X	X
21	BH305 1-1.1 bg	Aug 15, 2024		Soil	X24-Au0066331	X						
22	BH306 0.1-0.2	Aug 15, 2024		Soil	X24-Au0066332				X		X	X
23	BH306 0.1-0.2	Aug 15, 2024		Soil	X24-Au0066333		X					

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Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

Eurofins ARL Pty Ltd
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Site# 2370

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Eurofins Environment Testing NZ Ltd
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Auckland	Auckland (Focus)	Christchurch	Tauranga
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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Regional Geotechnical Solutions
Address: 44 Bent Street
Wingham
NSW 2429

Project Name: AQUATIC FACILITY
Project ID: RGS21005.6

Order No.:
Report #: 1132108
Phone: (02) 65535641
Fax:

Received: Aug 26, 2024 10:30 AM
Due: Sep 2, 2024
Priority: 5 Day
Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
23	BH306 0.1-0.2 bg	Aug 15, 2024		Soil	X24-Au0066333							
24	BH306 0.4-0.5	Aug 15, 2024		Soil	X24-Au0066334				X		X	X
25	BH306 0.4-0.5 bg	Aug 15, 2024		Soil	X24-Au0066335	X						
26	BH307 0.1-0.2	Aug 15, 2024		Soil	X24-Au0066336				X		X	X
27	BH307 0.1-0.2 bg	Aug 15, 2024		Soil	X24-Au0066337	X						
28	BH307 0.4-0.5 bg	Aug 15, 2024		Soil	X24-Au0066338	X						
29	BH308 0.3-0.4	Aug 15, 2024		Soil	X24-Au0066339				X		X	X
30	BH308 0.3-0.4 bg	Aug 15, 2024		Soil	X24-Au0066340	X						
31	BH308 0.6-0.7	Aug 15, 2024		Soil	X24-Au0066341				X		X	X
32	BH308 0.6-0.7 bg	Aug 15, 2024		Soil	X24-Au0066342	X						
33	BH309 0.2-0.3	Aug 15, 2024		Soil	X24-Au0066343				X		X	X
34	BH309 0.2-0.3 bg	Aug 15, 2024		Soil	X24-Au0066344	X						

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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
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Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
35	BH309 0.6-0.7	Aug 15, 2024		Soil	X24-Au0066345				X		X	X
36	BH309 0.6-0.7 bg	Aug 15, 2024		Soil	X24-Au0066346	X						
37	BH309 1.4-1.5 bg	Aug 15, 2024		Soil	X24-Au0066347		X					
38	BH310 0.3-0.4	Aug 15, 2024		Soil	X24-Au0066348				X		X	X
39	BH310 0.3-0.4 bg	Aug 15, 2024		Soil	X24-Au0066349	X						
40	BH310 0.9-1.0	Aug 15, 2024		Soil	X24-Au0066350				X		X	X
41	BH310 0.9-1.0 bg	Aug 15, 2024		Soil	X24-Au0066351	X						
42	BH311 0.3-0.4	Aug 15, 2024		Soil	X24-Au0066352				X		X	X
43	BH311 0.3-0.4 bg	Aug 15, 2024		Soil	X24-Au0066353	X						
44	BH311 0.8-0.9	Aug 15, 2024		Soil	X24-Au0066354				X		X	X
45	BH311 0.8-0.9 bg	Aug 15, 2024		Soil	X24-Au0066355	X						
46	BH311 1.2-13 bg	Aug 15, 2024		Soil	X24-Au0066356	X						

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Fax:

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Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
47	BH311 2.2-2.3 bg	Aug 15, 2024		Soil	X24-Au0066357		X					
48	BH312 0.2-0.3	Aug 15, 2024		Soil	X24-Au0066358				X		X	X
49	BH312 0.2-0.3 bg	Aug 15, 2024		Soil	X24-Au0066359	X						
50	BH312 0.8-0.9	Aug 15, 2024		Soil	X24-Au0066360				X		X	X
51	BH312 0.8-0.9 bg	Aug 15, 2024		Soil	X24-Au0066361	X						
52	BH312 1.4-1.5 bg	Aug 15, 2024		Soil	X24-Au0066362	X						
53	BH313 0.5-0.6	Aug 15, 2024		Soil	X24-Au0066363				X		X	X
54	BH313 0.5-0.6 bg	Aug 15, 2024		Soil	X24-Au0066364	X						
55	BH313 1.4-1.5 bg	Aug 15, 2024		Soil	X24-Au0066365	X						
56	BH314 0.1-0.2	Aug 15, 2024		Soil	X24-Au0066366				X		X	X
57	BH314 0.1-0.2 bg	Aug 15, 2024		Soil	X24-Au0066367	X						
58	BH314 0.7-0.8	Aug 15, 2024		Soil	X24-Au0066368				X		X	X

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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

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NSW 2429

Project Name: AQUATIC FACILITY
Project ID: RGS21005.6

Order No.:
Report #: 1132108
Phone: (02) 65535641
Fax:

Received: Aug 26, 2024 10:30 AM
Due: Sep 2, 2024
Priority: 5 Day
Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
59	BH314 0.7-0.8 bg	Aug 15, 2024		Soil	X24-Au0066369	X						
60	BH314 1.2-1.3 bg	Aug 15, 2024		Soil	X24-Au0066370		X					
61	BH315 0.5-0.6	Aug 15, 2024		Soil	X24-Au0066371				X		X	X
62	BH315 0.5-0.6 bg	Aug 15, 2024		Soil	X24-Au0066372	X						
63	BH315 1.5-1.6	Aug 15, 2024		Soil	X24-Au0066373				X		X	X
64	BH315 1.5-1.6 bg	Aug 15, 2024		Soil	X24-Au0066374		X					
65	BH316 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066375				X		X	X
66	BH316 0.3-0.4 bg	Aug 16, 2024		Soil	X24-Au0066376	X						
67	BH316 1.3-1.4 Bg	Aug 16, 2024		Soil	X24-Au0066377	X						
68	BH317 0.2-0.3	Aug 16, 2024		Soil	X24-Au0066378				X		X	X
69	BH317 0.2-0.3 bg	Aug 16, 2024		Soil	X24-Au0066379	X						
70	BH317 0.6-0.7	Aug 16, 2024		Soil	X24-Au0066380				X		X	X

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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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Sample Detail						Asbestos - AS4964	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
71	BH317 0.6-0.7 bg	Aug 16, 2024		Soil	X24-Au0066381	X						
72	BH317 1-1 bg	Aug 16, 2024		Soil	X24-Au0066382		X					
73	BH318 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066383				X		X	X
74	BH318 0.3-0.4 bg	Aug 16, 2024		Soil	X24-Au0066384	X						
75	BH318 1.2-1.3 bg	Aug 16, 2024		Soil	X24-Au0066385		X					
76	BH319 0.2-0.3	Aug 16, 2024		Soil	X24-Au0066386				X		X	X
77	BH319 0.2-0.3 bg	Aug 16, 2024		Soil	X24-Au0066387	X						
78	BH319 0.7-0.8	Aug 16, 2024		Soil	X24-Au0066388				X		X	X
79	BH319 0.7-0.8 bg	Aug 16, 2024		Soil	X24-Au0066389		X					
80	BH320 0.4-0.5	Aug 16, 2024		Soil	X24-Au0066390				X		X	X
81	BH320 0.4-0.5 bg	Aug 16, 2024		Soil	X24-Au0066391	X						
82	BH320 1-1.1 bg	Aug 16, 2024		Soil	X24-Au0066392	X						

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
83	BH321 0.1-0.2	Aug 16, 2024		Soil	X24-Au0066393				X		X	X
84	BH321 0.1-0.2 bg	Aug 16, 2024		Soil	X24-Au0066394	X						
85	BH321 0.5-0.6 bg	Aug 16, 2024		Soil	X24-Au0066395	X						
86	BH321 1.2-1.3	Aug 16, 2024		Soil	X24-Au0066396				X		X	X
87	BH321 1.2-1.3 bg	Aug 16, 2024		Soil	X24-Au0066397		X					
88	BH322 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066398				X		X	X
89	BH322 0.3-0.4 bg	Aug 16, 2024		Soil	X24-Au0066399	X						
90	BH322 1.5-1.6 bg	Aug 16, 2024		Soil	X24-Au0066400	X						
91	BH323 0.2-0.25	Aug 16, 2024		Soil	X24-Au0066401				X		X	X
92	BH323 0.2-0.25 bg	Aug 16, 2024		Soil	X24-Au0066402	X						
93	BH323 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066403				X		X	X
94	BH323 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066404	X						

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
	bg											
95	BH324 0.7-0.8	Aug 16, 2024		Soil	X24-Au0066405				X		X	X
96	BH324 0.7-0.8 bg	Aug 16, 2024		Soil	X24-Au0066406	X						
97	BH325 0.5-0.6	Aug 16, 2024		Soil	X24-Au0066407				X		X	X
98	BH325 0.5-0.6 bg	Aug 16, 2024		Soil	X24-Au0066408	X						
99	BH325 2-2.1	Aug 16, 2024		Soil	X24-Au0066409				X		X	X
100	BH325 2-2.1 bg	Aug 16, 2024		Soil	X24-Au0066410	X						
101	BH326 0.2-0.3	Aug 16, 2024		Soil	X24-Au0066411				X		X	X
102	BH326 0.2-0.3 bg	Aug 16, 2024		Soil	X24-Au0066412	X						
103	BH326 0.9-1	Aug 16, 2024		Soil	X24-Au0066413				X		X	X
104	BH326 0.9-1 bg	Aug 16, 2024		Soil	X24-Au0066414	X						
105	BH326 2.5-2.6 bg	Aug 16, 2024		Soil	X24-Au0066415		X					
106	BH327 0.6-0.7	Aug 16, 2024		Soil	X24-Au0066416				X		X	X

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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Regional Geotechnical Solutions
Address: 44 Bent Street
Wingham
NSW 2429

Project Name: AQUATIC FACILITY
Project ID: RGS21005.6

Order No.:
Report #: 1132108
Phone: (02) 65535641
Fax:

Received: Aug 26, 2024 10:30 AM
Due: Sep 2, 2024
Priority: 5 Day
Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED*	HOLD*	Polychlorinated Biphenyls	Metals M8	Moisture Set	Eurofins Suite B9
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
107	BH327 0.6-0.7 bg	Aug 16, 2024		Soil	X24-Au0066417	X						
108	BH327 1.2-1.3	Aug 16, 2024		Soil	X24-Au0066418				X		X	X
109	BH327 1.2-1.3 bg	Aug 16, 2024		Soil	X24-Au0066419	X						
110	BH327 2.8-2.9 bg	Aug 16, 2024		Soil	X24-Au0066420	X						
111	TP1 0-0.1	Aug 16, 2024		Soil	X24-Au0066421				X		X	X
112	TP1 0.5-0.6	Aug 16, 2024		Soil	X24-Au0066422				X		X	X
113	TP1 0.9-1.0	Aug 16, 2024		Soil	X24-Au0066423		X					
114	TP1 1.5 bg	Aug 16, 2024		Soil	X24-Au0066424	X						
115	TP2 0.1-0.1	Aug 16, 2024		Soil	X24-Au0066425				X		X	X
116	TP2 0.2-0.3	Aug 16, 2024		Soil	X24-Au0066426				X		X	X
117	TP3 0-0.1	Aug 16, 2024		Soil	X24-Au0066427				X		X	X
118	TP3 0.4-0.5	Aug 16, 2024		Soil	X24-Au0066428				X		X	X
119	TP4 0-0.1	Aug 16, 2024		Soil	X24-Au0066429				X		X	X
120	TP6 0-0.1	Aug 16, 2024		Soil	X24-Au0066430				X		X	X
121	TP6 0.4-0.5	Aug 16, 2024		Soil	X24-Au0066431				X		X	X

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
122	TP6 0.9-1 bg	Aug 16, 2024		Soil	X24-Au0066432	X						
123	TP7 0.5-0.6	Aug 16, 2024		Soil	X24-Au0066433				X		X	X
124	TP8 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066434				X		X	X
125	TP8 0.7-0.9 bg	Aug 16, 2024		Soil	X24-Au0066435	X						
126	TP8 0.9-1.2 bg	Aug 16, 2024		Soil	X24-Au0066436	X						
127	TP9 0.2-0.3	Aug 16, 2024		Soil	X24-Au0066437				X		X	X
128	TP9 0.7-0.8	Aug 16, 2024		Soil	X24-Au0066438				X		X	X
129	TP10 0.3-0.4	Aug 16, 2024		Soil	X24-Au0066439				X		X	X
130	TP10 1.5-1.8 bg	Aug 16, 2024		Soil	X24-Au0066440	X						
131	TP10 1.8-2 bg	Aug 16, 2024		Soil	X24-Au0066441	X						
132	D1 0-0.1	Aug 16, 2024		Soil	X24-Au0066442					X	X	
133	D2	Aug 16, 2024		Soil	X24-Au0066443					X	X	
134	D3	Aug 16, 2024		Soil	X24-Au0066444					X	X	
135	D4	Aug 16, 2024		Soil	X24-Au0066445					X	X	
136	D5	Aug 16, 2024		Soil	X24-Au0066446					X	X	
137	D6	Aug 16, 2024		Soil	X24-Au0066447					X	X	

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
138	TP5 0-0.1	Aug 15, 2024		Soil	X24-Au0066668			X				
139	TP5 0.5-0.6	Aug 15, 2024		Soil	X24-Au0066669			X				
140	TP7 1-1.1	Aug 15, 2024		Soil	X24-Au0066670			X				
141	TP10 1-1.2	Aug 15, 2024		Soil	X24-Au0066671			X				
Test Counts						57	14	4	60	6	66	60

Internal Quality Control Review and Glossary

General

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

Holding Times

Please refer to the '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 before sample receipt deadlines as stated on the SRA.

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

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

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

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - 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.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

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%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as 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 are not data from your samples.
3. 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.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. 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							
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-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	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-HCH (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	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	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							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	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-HCH (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	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	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							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
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							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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							
Metals M8							
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	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	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	
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							
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-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	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-HCH (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	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	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							
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-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	

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Environment Testing

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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-HCH (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	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Metals M8							
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	
Method Blank							
Metals M8							
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	
Method Blank							
Metals M8							
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							
Polychlorinated Biphenyls							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aroclor-1016	%	75			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4.4'-DDD	%	94			70-130	Pass	
4.4'-DDE	%	84			70-130	Pass	
4.4'-DDT	%	126			70-130	Pass	
a-HCH	%	71			70-130	Pass	
Aldrin	%	84			70-130	Pass	
b-HCH	%	87			70-130	Pass	
d-HCH	%	88			70-130	Pass	
Dieldrin	%	84			70-130	Pass	
Endosulfan I	%	81			70-130	Pass	
Endosulfan II	%	88			70-130	Pass	
Endosulfan sulphate	%	91			70-130	Pass	
Endrin	%	112			70-130	Pass	
Endrin aldehyde	%	99			70-130	Pass	
g-HCH (Lindane)	%	86			70-130	Pass	
Heptachlor	%	82			70-130	Pass	
Hexachlorobenzene	%	70			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	78			70-130	Pass	
Acenaphthylene	%	77			70-130	Pass	
Anthracene	%	73			70-130	Pass	
Benzo(a)pyrene	%	71			70-130	Pass	
Benzo(g.h.i)perylene	%	71			70-130	Pass	
Chrysene	%	82			70-130	Pass	
Dibenz(a.h)anthracene	%	70			70-130	Pass	
Fluoranthene	%	72			70-130	Pass	
Fluorene	%	76			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	76			70-130	Pass	
Naphthalene	%	78			70-130	Pass	
Pyrene	%	71			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	77			70-130	Pass	
4.4'-DDD	%	73			70-130	Pass	
4.4'-DDE	%	78			70-130	Pass	
4.4'-DDT	%	83			70-130	Pass	
a-HCH	%	77			70-130	Pass	
Aldrin	%	75			70-130	Pass	
b-HCH	%	73			70-130	Pass	
d-HCH	%	70			70-130	Pass	
Dieldrin	%	76			70-130	Pass	
Endosulfan I	%	79			70-130	Pass	
Endosulfan II	%	77			70-130	Pass	
Endosulfan sulphate	%	76			70-130	Pass	
Endrin	%	74			70-130	Pass	
Endrin aldehyde	%	73			70-130	Pass	
Endrin ketone	%	84			70-130	Pass	
g-HCH (Lindane)	%	75			70-130	Pass	
Heptachlor	%	74			70-130	Pass	
Heptachlor epoxide	%	75			70-130	Pass	
Hexachlorobenzene	%	78			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	79			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	84			70-130	Pass	
Toluene	%	87			70-130	Pass	
Ethylbenzene	%	94			70-130	Pass	
m&p-Xylenes	%	76			70-130	Pass	
o-Xylene	%	93			70-130	Pass	
Xylenes - Total*	%	81			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	92			70-130	Pass	
TRH C6-C10	%	78			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	%	101			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	102			70-130	Pass	
LCS - % Recovery							
Metals M8							
Arsenic	%	86			80-120	Pass	
Cadmium	%	84			80-120	Pass	
Chromium	%	88			80-120	Pass	
Copper	%	86			80-120	Pass	
Lead	%	87			80-120	Pass	
Mercury	%	86			80-120	Pass	
Nickel	%	87			80-120	Pass	
Zinc	%	86			80-120	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	125			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	97			70-130	Pass	
Toluene	%	126			70-130	Pass	
Ethylbenzene	%	110			70-130	Pass	
m&p-Xylenes	%	96			70-130	Pass	
o-Xylene	%	112			70-130	Pass	
Xylenes - Total*	%	101			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	104			70-130	Pass	
TRH C6-C10	%	126			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	77			70-130	Pass	
Acenaphthylene	%	77			70-130	Pass	
Anthracene	%	80			70-130	Pass	
Benzo(g.h.i)perylene	%	71			70-130	Pass	
Benzo(k)fluoranthene	%	83			70-130	Pass	
Chrysene	%	77			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fluoranthene	%	73			70-130	Pass	
Fluorene	%	75			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	71			70-130	Pass	
Naphthalene	%	78			70-130	Pass	
Pyrene	%	71			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	75			70-130	Pass	
4.4'-DDE	%	77			70-130	Pass	
4.4'-DDT	%	88			70-130	Pass	
a-HCH	%	76			70-130	Pass	
Aldrin	%	72			70-130	Pass	
b-HCH	%	73			70-130	Pass	
d-HCH	%	72			70-130	Pass	
Dieldrin	%	78			70-130	Pass	
Endosulfan I	%	79			70-130	Pass	
Endosulfan II	%	76			70-130	Pass	
Endosulfan sulphate	%	77			70-130	Pass	
Endrin	%	82			70-130	Pass	
Endrin aldehyde	%	74			70-130	Pass	
Endrin ketone	%	84			70-130	Pass	
g-HCH (Lindane)	%	77			70-130	Pass	
Heptachlor	%	74			70-130	Pass	
Heptachlor epoxide	%	73			70-130	Pass	
Hexachlorobenzene	%	76			70-130	Pass	
Methoxychlor	%	74			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	82			70-130	Pass	
Acenaphthylene	%	83			70-130	Pass	
Anthracene	%	82			70-130	Pass	
Benz(a)anthracene	%	71			70-130	Pass	
Benzo(a)pyrene	%	80			70-130	Pass	
Benzo(b&j)fluoranthene	%	78			70-130	Pass	
Benzo(k)fluoranthene	%	79			70-130	Pass	
Chrysene	%	93			70-130	Pass	
Fluoranthene	%	80			70-130	Pass	
Fluorene	%	83			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	70			70-130	Pass	
Naphthalene	%	84			70-130	Pass	
Phenanthrene	%	75			70-130	Pass	
Pyrene	%	81			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	96			70-130	Pass	
4.4'-DDD	%	77			70-130	Pass	
4.4'-DDE	%	82			70-130	Pass	
4.4'-DDT	%	73			70-130	Pass	
a-HCH	%	88			70-130	Pass	
Aldrin	%	79			70-130	Pass	
b-HCH	%	83			70-130	Pass	
d-HCH	%	91			70-130	Pass	
Dieldrin	%	92			70-130	Pass	
Endosulfan I	%	86			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan II	%	84			70-130	Pass	
Endosulfan sulphate	%	83			70-130	Pass	
Endrin	%	82			70-130	Pass	
Endrin ketone	%	83			70-130	Pass	
g-HCH (Lindane)	%	90			70-130	Pass	
Heptachlor	%	83			70-130	Pass	
Heptachlor epoxide	%	89			70-130	Pass	
Hexachlorobenzene	%	92			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	77			70-130	Pass	
LCS - % Recovery							
Metals M8							
Arsenic	%	99			80-120	Pass	
Cadmium	%	98			80-120	Pass	
Chromium	%	105			80-120	Pass	
Copper	%	103			80-120	Pass	
Lead	%	102			80-120	Pass	
Mercury	%	105			80-120	Pass	
Nickel	%	104			80-120	Pass	
Zinc	%	103			80-120	Pass	
LCS - % Recovery							
Metals M8							
Arsenic	%	103			80-120	Pass	
Cadmium	%	106			80-120	Pass	
Chromium	%	106			80-120	Pass	
Copper	%	108			80-120	Pass	
Lead	%	109			80-120	Pass	
Mercury	%	117			80-120	Pass	
Nickel	%	106			80-120	Pass	
Zinc	%	106			80-120	Pass	
LCS - % Recovery							
Metals M8							
Arsenic	%	97			80-120	Pass	
Cadmium	%	101			80-120	Pass	
Chromium	%	100			80-120	Pass	
Copper	%	100			80-120	Pass	
Lead	%	100			80-120	Pass	
Mercury	%	108			80-120	Pass	
Nickel	%	100			80-120	Pass	
Zinc	%	99			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S24-Au0065744	NCP	%	97			70-130	Pass	
4.4'-DDD	S24-Au0065744	NCP	%	80			70-130	Pass	
4.4'-DDE	S24-Au0065744	NCP	%	119			70-130	Pass	
4.4'-DDT	S24-Au0065744	NCP	%	80			70-130	Pass	
a-HCH	S24-Au0065744	NCP	%	101			70-130	Pass	
Aldrin	S24-Au0065744	NCP	%	86			70-130	Pass	
b-HCH	S24-Au0065744	NCP	%	98			70-130	Pass	
d-HCH	S24-Au0065744	NCP	%	99			70-130	Pass	
Dieldrin	S24-Au0065744	NCP	%	92			70-130	Pass	
Endosulfan I	S24-Au0065744	NCP	%	84			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan II	S24-Se0002542	NCP	%	98			70-130	Pass	
Endosulfan sulphate	S24-Au0065744	NCP	%	109			70-130	Pass	
Endrin	S24-Se0002542	NCP	%	126			70-130	Pass	
Endrin ketone	S24-Au0065744	NCP	%	119			70-130	Pass	
g-HCH (Lindane)	S24-Au0065744	NCP	%	109			70-130	Pass	
Heptachlor	S24-Au0065744	NCP	%	92			70-130	Pass	
Heptachlor epoxide	S24-Au0065744	NCP	%	111			70-130	Pass	
Hexachlorobenzene	S24-Au0065744	NCP	%	111			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S24-Au0065744	NCP	%	71			70-130	Pass	
Aroclor-1260	S24-Au0065744	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Endrin aldehyde	R24-Au0067466	NCP	%	128			70-130	Pass	
Methoxychlor	R24-Au0067466	NCP	%	85			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	X24-Au0066316	CP	%	84			75-125	Pass	
Cadmium	X24-Au0066316	CP	%	94			75-125	Pass	
Copper	X24-Au0066316	CP	%	94			75-125	Pass	
Lead	X24-Au0066316	CP	%	98			75-125	Pass	
Mercury	X24-Au0066316	CP	%	100			75-125	Pass	
Zinc	X24-Au0066316	CP	%	89			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S24-Au0054737	NCP	%	100			70-130	Pass	
Acenaphthylene	S24-Au0054737	NCP	%	103			70-130	Pass	
Anthracene	S24-Au0054737	NCP	%	88			70-130	Pass	
Benz(a)anthracene	S24-Au0054737	NCP	%	75			70-130	Pass	
Benzo(a)pyrene	S24-Au0054737	NCP	%	88			70-130	Pass	
Benzo(b&j)fluoranthene	S24-Au0080576	NCP	%	220			70-130	Fail	Q08
Benzo(g.h.i)perylene	S24-Au0054737	NCP	%	92			70-130	Pass	
Benzo(k)fluoranthene	S24-Au0054737	NCP	%	105			70-130	Pass	
Chrysene	S24-Au0054737	NCP	%	106			70-130	Pass	
Dibenz(a.h)anthracene	S24-Au0054737	NCP	%	89			70-130	Pass	
Fluoranthene	S24-Au0054737	NCP	%	96			70-130	Pass	
Fluorene	S24-Au0054737	NCP	%	97			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S24-Au0054737	NCP	%	94			70-130	Pass	
Naphthalene	S24-Au0054737	NCP	%	101			70-130	Pass	
Phenanthrene	S24-Au0054737	NCP	%	82			70-130	Pass	
Pyrene	S24-Au0054737	NCP	%	90			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	X24-Au0066354	CP	%	83			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	X24-Au0066354	CP	%	94			70-130	Pass	
Toluene	X24-Au0066354	CP	%	86			70-130	Pass	
Ethylbenzene	X24-Au0066354	CP	%	87			70-130	Pass	
m&p-Xylenes	X24-Au0066354	CP	%	97			70-130	Pass	
o-Xylene	X24-Au0066354	CP	%	96			70-130	Pass	
Xylenes - Total*	X24-Au0066354	CP	%	97			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	X24-Au0066354	CP	%	80			70-130	Pass	
TRH C6-C10	X24-Au0066354	CP	%	84			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	X24-Au0066360	CP	%	83			70-130	Pass	
TRH C10-C14	X24-Au0066360	CP	%	90			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	X24-Au0066360	CP	%	87			70-130	Pass	
Toluene	X24-Au0066360	CP	%	77			70-130	Pass	
Ethylbenzene	X24-Au0066360	CP	%	88			70-130	Pass	
m&p-Xylenes	X24-Au0066360	CP	%	82			70-130	Pass	
o-Xylene	X24-Au0066360	CP	%	84			70-130	Pass	
Xylenes - Total*	X24-Au0066360	CP	%	83			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	X24-Au0066360	CP	%	89			70-130	Pass	
TRH C6-C10	X24-Au0066360	CP	%	79			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	X24-Au0066360	CP	%	87			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	X24-Au0066363	CP	%	85			75-125	Pass	
Cadmium	X24-Au0066363	CP	%	91			75-125	Pass	
Copper	X24-Au0066363	CP	%	98			75-125	Pass	
Lead	X24-Au0066363	CP	%	92			75-125	Pass	
Mercury	X24-Au0066363	CP	%	102			75-125	Pass	
Nickel	X24-Au0066363	CP	%	98			75-125	Pass	
Zinc	X24-Au0066363	CP	%	90			75-125	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	X24-Au0066368	CP	%	90			75-125	Pass	
Cadmium	X24-Au0066368	CP	%	97			75-125	Pass	
Copper	X24-Au0066368	CP	%	105			75-125	Pass	
Lead	X24-Au0066368	CP	%	99			75-125	Pass	
Mercury	X24-Au0066368	CP	%	105			75-125	Pass	
Zinc	X24-Au0066368	CP	%	97			75-125	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	X24-Au0066378	CP	%	98			75-125	Pass	
Cadmium	X24-Au0066378	CP	%	101			75-125	Pass	
Chromium	X24-Au0066378	CP	%	100			75-125	Pass	
Copper	X24-Au0066378	CP	%	104			75-125	Pass	
Lead	X24-Au0066378	CP	%	105			75-125	Pass	
Mercury	X24-Au0066378	CP	%	111			75-125	Pass	
Nickel	X24-Au0066378	CP	%	102			75-125	Pass	
Zinc	X24-Au0066378	CP	%	104			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	X24-Au0066411	CP	%	109			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	X24-Au0066411	CP	%	112			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	X24-Au0066313	CP	mg/kg	12	9.2	28	30%	Pass	
Chromium	X24-Au0066313	CP	mg/kg	32	27	16	30%	Pass	
Copper	X24-Au0066313	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	X24-Au0066313	CP	mg/kg	11	9.6	13	30%	Pass	
Mercury	X24-Au0066313	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	X24-Au0066313	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	X24-Au0066313	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	X24-Au0066316	CP	%	21	20	8.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	X24-Au0066321	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	X24-Au0066321	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	X24-Au0066321	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	X24-Au0066321	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-HCH	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Heptachlor epoxide	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	X24-Au0066321	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	X24-Au0066321	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	X24-Au0066321	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	X24-Au0066321	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	X24-Au0066321	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	X24-Au0066321	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	X24-Au0066321	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	X24-Au0066321	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	X24-Au0066321	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	X24-Au0066321	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	X24-Au0066321	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	X24-Au0066321	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	X24-Au0066321	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	X24-Au0066330	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	X24-Au0066330	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	X24-Au0066330	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	X24-Au0066330	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	X24-Au0066330	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	X24-Au0066330	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	X24-Au0066330	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	X24-Au0066330	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	X24-Au0066330	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	X24-Au0066336	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	X24-Au0066336	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	X24-Au0066336	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Naphthalene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	X24-Au0066336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	X24-Au0066336	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Aroclor-1221	X24-Au0066336	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Aroclor-1232	X24-Au0066336	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Aroclor-1242	X24-Au0066336	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Aroclor-1248	X24-Au0066336	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Aroclor-1254	X24-Au0066336	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Aroclor-1260	X24-Au0066336	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Total PCB*	X24-Au0066336	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	X24-Au0066336	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	X24-Au0066336	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	X24-Au0066336	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	X24-Au0066339	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	X24-Au0066339	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	X24-Au0066339	CP	mg/kg	96	100	4.0	30%	Pass	
Copper	X24-Au0066339	CP	mg/kg	6.8	5.9	14	30%	Pass	
Lead	X24-Au0066339	CP	mg/kg	18	13	34	30%	Fail	Q15
Mercury	X24-Au0066339	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	X24-Au0066339	CP	mg/kg	15	15	4.0	30%	Pass	
Zinc	X24-Au0066339	CP	mg/kg	6.2	6.4	3.0	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	X24-Au0066339	CP	%	16	18	12	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	X24-Au0066348	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	X24-Au0066348	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	X24-Au0066348	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	X24-Au0066348	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	X24-Au0066348	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	X24-Au0066348	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	X24-Au0066358	CP	mg/kg	4.5	4.5	2.0	30%	Pass	
Cadmium	X24-Au0066358	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	X24-Au0066358	CP	mg/kg	170	140	20	30%	Pass	
Copper	X24-Au0066358	CP	mg/kg	18	18	2.0	30%	Pass	
Lead	X24-Au0066358	CP	mg/kg	27	28	4.0	30%	Pass	
Mercury	X24-Au0066358	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	X24-Au0066358	CP	mg/kg	49	49	<1	30%	Pass	
Zinc	X24-Au0066358	CP	mg/kg	37	38	4.0	30%	Pass	

Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	X24-Au0066360	CP	mg/kg	9.9	4.3	79	30%	Fail	Q15
Cadmium	X24-Au0066360	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Copper	X24-Au0066360	CP	mg/kg	25	25	3.0	30%	Pass	
Lead	X24-Au0066360	CP	mg/kg	22	18	20	30%	Pass	
Mercury	X24-Au0066360	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	X24-Au0066360	CP	mg/kg	180	160	14	30%	Pass	
Zinc	X24-Au0066360	CP	mg/kg	21	22	5.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	X24-Au0066380	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	X24-Au0066380	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	X24-Au0066380	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	X24-Au0066380	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	X24-Au0066380	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	X24-Au0066380	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	X24-Au0066380	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	X24-Au0066380	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	X24-Au0066380	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	X24-Au0066386	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	X24-Au0066386	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	X24-Au0066386	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	X24-Au0066386	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	X24-Au0066386	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	X24-Au0066386	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	X24-Au0066386	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Indeno(1.2.3-cd)pyrene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	X24-Au0066386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-HCH	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	X24-Au0066386	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	X24-Au0066386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	X24-Au0066386	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	X24-Au0066386	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	X24-Au0066386	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	X24-Au0066388	CP	mg/kg	2.2	< 2	16	30%	Pass	
Cadmium	X24-Au0066388	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	X24-Au0066388	CP	mg/kg	140	130	10	30%	Pass	
Copper	X24-Au0066388	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	X24-Au0066388	CP	mg/kg	6.4	5.4	17	30%	Pass	
Mercury	X24-Au0066388	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	X24-Au0066388	CP	mg/kg	28	27	6.0	30%	Pass	
Zinc	X24-Au0066388	CP	mg/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	X24-Au0066390	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	X24-Au0066390	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	X24-Au0066390	CP	mg/kg	170	180	5.0	30%	Pass	
Copper	X24-Au0066390	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	X24-Au0066390	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	X24-Au0066390	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	X24-Au0066390	CP	mg/kg	150	160	10	30%	Pass	
Zinc	X24-Au0066390	CP	mg/kg	6.2	6.1	2.0	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	X24-Au0066390	CP	%	15	15	4.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	X24-Au0066405	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	X24-Au0066405	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	X24-Au0066405	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	X24-Au0066405	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	X24-Au0066405	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	X24-Au0066405	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	X24-Au0066405	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	X24-Au0066405	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	X24-Au0066405	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	X24-Au0066409	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	X24-Au0066409	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	X24-Au0066409	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	X24-Au0066409	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	X24-Au0066409	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	X24-Au0066409	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	X24-Au0066409	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Chrysene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	X24-Au0066409	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-HCH	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	X24-Au0066409	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	X24-Au0066409	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	X24-Au0066409	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	X24-Au0066409	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	X24-Au0066409	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	X24-Au0066411	CP	mg/kg	8.6	6.5	28	30%	Pass	
Cadmium	X24-Au0066411	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	X24-Au0066411	CP	mg/kg	220	230	5.0	30%	Pass	
Copper	X24-Au0066411	CP	mg/kg	17	23	31	30%	Fail	Q15
Lead	X24-Au0066411	CP	mg/kg	23	21	8.0	30%	Pass	
Mercury	X24-Au0066411	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	X24-Au0066411	CP	mg/kg	16	20	20	30%	Pass	
Zinc	X24-Au0066411	CP	mg/kg	26	28	5.0	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	X24-Au0066427	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	X24-Au0066427	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	X24-Au0066427	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	X24-Au0066427	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	X24-Au0066427	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	X24-Au0066427	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	X24-Au0066427	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	X24-Au0066427	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	X24-Au0066427	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	X24-Au0066429	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	X24-Au0066429	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	X24-Au0066429	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	X24-Au0066429	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	X24-Au0066429	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	X24-Au0066429	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	X24-Au0066429	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	X24-Au0066429	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	X24-Au0066429	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	X24-Au0066430	CP	mg/kg	2.8	2.7	2.0	30%	Pass	
Chromium	X24-Au0066430	CP	mg/kg	90	97	7.0	30%	Pass	
Copper	X24-Au0066430	CP	mg/kg	19	17	11	30%	Pass	
Lead	X24-Au0066430	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	X24-Au0066430	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	X24-Au0066430	CP	mg/kg	44	47	6.0	30%	Pass	
Zinc	X24-Au0066430	CP	mg/kg	10	8.1	25	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	X24-Au0066431	CP	%	25	25	2.0	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	X24-Au0066446	CP	%	23	24	5.0	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 Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Andrew Black	Analytical Services Manager
Chamath JHM Annakkage	Senior Analyst-Asbestos
Fang Yee Tan	Senior Analyst-Metal
Mickael Ros	Senior Analyst-Metal
Raymond Siu	Senior Analyst-Volatile
Roopesh Rangarajan	Senior Analyst-Organic
Roopesh Rangarajan	Senior Analyst-Sample Properties
Roopesh Rangarajan	Senior Analyst-Volatile

Glenn Jackson
Managing Director

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.

Regional Geotechnical Solutions
44 Bent Street
Wingham
NSW 2429

Attention: **Grant Colliar**

Report **1140748-L**
Project name ADDITIONAL: AQUATIC FACILITY
Project ID RGS21005.6
Received Date Sep 18, 2024

Client Sample ID			**TP1 0.5-0.6m**	**TP327 1.2-1.3m**
Sample Matrix			**US Leachate**	**US Leachate**
Eurofins Sample No.			**S24-Se0048178**	**S24-Se0048179**
Date Sampled			**Aug 15, 2024**	**Aug 15, 2024**
Test/Reference	LOR	Unit		
Heavy Metals				
Chromium	0.05	mg/L	-	< 0.05
Nickel	0.01	mg/L	< 0.01	-
USA Leaching Procedure				
Leachate Fluid*[C01]		comment	1.0	1.0
pH (initial)	0.1	pH Units	7.8	5.7
pH (off)*	0.1	pH Units	5.1	5.1
pH (USA HCl addition)*	0.1	pH Units	1.2	1.2

Sample History

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

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
Heavy Metals	Sydney	Sep 19, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
USA Leaching Procedure	Sydney	Sep 19, 2024	14 Days
- Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes			

eurofins

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Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Regional Geotechnical Solutions
Address: 44 Bent Street
Wingham
NSW 2429

Project Name: ADDITIONAL: AQUATIC FACILITY
Project ID: RGS21005.6

Order No.:
Report #: 1140748
Phone: (02) 65535641
Fax:

Received: Sep 18, 2024 4:59 PM
Due: Sep 20, 2024
Priority: 1 Day
Contact Name: Grant Colliar

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Chromium	Nickel	USA Leaching Procedure
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	TP1 0.5-0.6m	Aug 15, 2024		US Leachate	S24-Se0048178		X	X
2	TP327 1.2-1.3m	Aug 15, 2024		US Leachate	S24-Se0048179	X		X
Test Counts						1	1	2

Internal Quality Control Review and Glossary

General

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

Holding Times

Please refer to the '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 before sample receipt deadlines as stated on the SRA.

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

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

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

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - 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.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

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%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as 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 are not data from your samples.
3. 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.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. 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									
Heavy Metals									
Chromium			mg/L	< 0.05			0.05	Pass	
Nickel			mg/L	< 0.01			0.01	Pass	
LCS - % Recovery									
Heavy Metals									
Chromium			%	94			80-120	Pass	
Nickel			%	89			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Heavy Metals				Result 1					
Nickel	S24-Se0049636	NCP	%	96			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Chromium	S24-Se0049636	NCP	%	98			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Chromium	S24-Se0048178	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S24-Se0048178	CP	mg/L	< 0.01	< 0.01	<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
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other

Authorised by:

Andrew Black	Analytical Services Manager
Mickael Ros	Senior Analyst-Metal
Roopesh Rangarajan	Senior Analyst-Sample Properties

Glenn Jackson
Managing Director

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.

Comparison of Contamination Analysis Results with Adopted Investigation Levels (Results in mg/kg)

National Environment Protection (Assessment of Site Contamination) Measure (NEPM 2013)

REGIONAL GEOTECHNICAL SOLUTIONS

Client:	CO-OP Studio
Job No.	RGS21005.6
Project:	Proposed Aquatic Facility
Location:	Gordon Street, Port Macquarie

SAMPLE	DEPTH (m)	Material	Asbestos Presence	TOTAL RECOVERABLE HYDROCARBONS					PAH		DDT+DDE	Aldrin	PCB	BTEX		Heavy Metals							
				C6-C10	C10-C16	C16-C34	C34-C40	TOTAL	Total	b-a-p (TEQ)	Pesticides	Pesticides		Sum	Napthalene	As	Cd	Cr (Total)#	Cu	Pb	Ni	Zn	Hg
BH301	0.1-0.2	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	5.2	<0.4	85	6.9	11	28	16	<0.1
BH301	0.5-0.6	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	12	<0.4	32	<5	11	<5	<5	<0.1
BH302	0.3-0.4	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2.9	<0.4	300	7.2	12	70	17	<0.1
BH302	1.1-1.2	Residual	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	3.2	<0.4	200	5.7	<5	16	<5	<0.1
BH303	0.3-0.4	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	4	<0.4	340	<5	6.3	31	<5	<0.1
BH304	0.2-0.3	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	110	8.3	40	29	23	<0.1
BH304	0.8-0.9	Residual	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	170	<5	7.4	28	<5	<0.1
BH305	0.1-0.2	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2.2	<0.4	120	7.2	13	23	22	<0.1
BH305	1-1.1	Residual	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	3.9	<0.4	220	8.5	5.5	9.7	<5	<0.1
BH306	0.1-0.2	Topsoil/Fill	--	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2	<0.4	120	5.2	13	19	16	<0.1
BH306	0.4-0.5	Residual	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	4.9	<0.4	290	12	9.8	11	<5	<0.1
BH307	0.1-0.2	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2.2	<0.4	75	11	13	14	26	<0.1
BH307	0.4 - 0.5	Residual	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH308	0.3-0.4	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	96	6.8	18	15	6.2	<0.1
BH308	0.6-0.7	Alluvial	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2.5	<0.4	83	15	6.8	67	19	0.2
BH309	0.2-0.3	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	58	<5	6.6	13	8.2	<0.1
BH309	0.6-0.7	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	69	<5	<5	12	<5	<0.1
BH310	0.3-0.4	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2.7	<0.4	180	8.2	10	46	8.7	<0.1
BH310	0.9-1	Residual	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	77	<5	<5	20	<5	<0.1
BH311	0.3-0.4	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	12	<0.4	160	17	16	23	25	<0.1
BH311	0.8-0.9	Alluvial	No	<10	86	1000	360	1446	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	120	6	<5	80	7.3	<0.1
BH311	0.8 - 0.9	Alluvial	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH311	1.2 - 1.3	Alluvial	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH312	0.2-0.3	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	4.5	<0.4	170	18	27	49	37	<0.1
BH312	0.8-0.9	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	9.9	<0.4	790	25	22	<0.1	180	<0.1
BH312	1.4 - 1.5	Alluvial	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH313	0.5-0.6	Alluvial	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	70	5.4	<5	13	5	<0.1
BH313	1.4-1.5	Residual	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH314	0.1-0.2	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	5.1	<0.4	190	12	11	20	12	<0.1
BH314	0.7-0.8	Fill	No	<10	53	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	60	5.3	5.7	31	8	<0.1
BH315	0.5-0.6	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2.4	<0.4	59	10	10	21	15	<0.1
BH315	1.5-1.6	Residual	--	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	8.8	<0.4	200	49	5.6	200	51	<0.1
BH316	0.3-0.4	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	7.6	<0.4	150	25	5.4	200	11	<0.1
BH316	1.3 - 1.4	Residual	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH317	0.2-0.3	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	22	<5	5	9.8	15	<0.1
BH317	0.6-0.7	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	12	<0.4	140	17	7.5	70	17	<0.1
BH318	0.3-0.4	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	6.1	<0.4	150	17	110	24	82	<0.1
BH319	0.2-0.3	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2.2	<0.4	87	11	12	15	22	<0.1
BH319	0.7-0.8	Residual		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2.2	<0.4	140	<5	6.4	28	<5	<0.1
BH320	0.4-0.5	Alluvial	No	<10	<50	100	<100	100	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	170	<5	<5	150	6.2	<0.1
BH320	1 - 1.1	Residual	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH321	0.1-0.2	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	48	<0.4	220	33	16	35	22	<0.1
BH321	0.5-0.6	Fill	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH321	1.2-1.3	Fill		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	75	<5	5.2	21	<5	<0.1
BH322	0.3-0.4	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	36	<0.4	250	24	11	34	7.4	<0.1
BH322	1.5 -1.6	Residual	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH323	0.2-0.25	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	170	<5	<5	30	<5	<0.1
BH323	0.3-0.4	Residual	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	3.2	<0.4	260	<5	6.1	29	<5	<0.1
BH324	0.7-0.8	Residual	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2.7	<0.4	150	<5	<5	12	<5	<0.1
BH325	0.5-0.6	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	5.4	<0.4	220	7.4	7.9	27	15	<0.1
BH325	2-2.1	Residual	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2	<0.4	110	130	5.2	450	190	<0.1
BH326	0.2-0.3	Topsoil/Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	8.6	<0.4	220	17	23	16	26	<0.1
BH326	0.9-1.0	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	10	<0.4	870	11	12	55	8.9	<0.1
BH327	0.6-0.7	Fill	No	<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	7.8	<0.4	390	10	13	74	36	<0.1
BH327	1.2-1.3	Fill	No	<10	120	<100	<100	120	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	17	<0.4	1200	39	15	69	16	<0.1
BH327	2.8 - 2.9	Alluvial	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP1	0-0.1	Topsoil/Fill		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	3.4	<0.4	450	11	29	69	61	<0.1
TP1	0.5-0.6	Fill		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	7.2	<0.4	1300	23	26	190	35	<0.1
TP1	1-1.5	Topsoil/Fill	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP2	0.1-0.2	Topsoil/Fill		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2.4	<0.4	140	9.1	17	35	34	<0.1
TP2	0.2-0.3	Fill		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	3	<0.4	220	<5	8.8	26	<5	<0.1
TP3	0-0.1	Topsoil/Fill		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	99	6.7	15	27	34	<0.1
TP3	0.4-0.5	Fill		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	92	<5	7.7	19	16	<0.1
TP4	0-0.1	Topsoil/Fill		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	120	8.9	12	40	27	<0.1
TP6	0-0.1	Topsoil/Fill		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2.8	<0.4	90	16	<5	44	10	<0.1
TP6	0.4-0.5	Fill		<10	<50	110	<100	110	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	7.4	<0.4	250	88	5.4	81	41	<0.1
TP6	0.9 -1.1	Alluvial	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP7	0.5-0.6	Topsoil/Fill		<10	<50	110	<100	110	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	7.7	<0.4	400	25	19	150	42	<0.1
TP8	0.3-0.4	Fill		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	2.6	<0.4	220	6.1	6.8	51	7.1	<0.1
TP8	0.7 -0.9	Alluvial	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP8	0.9 -1	Alluvial	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP9	0.2-0.3	Fill		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	3.7	<0.4	310	<5	7.9	42	7.3	<0.1
TP9	0.7-0.8	Alluvial		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	130	<5	<5	29	7.2	<0.1
TP10	0.3-0.4	Fill		<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	8.8	<0.4	62	5.7	8.1	8.8	6.1	<0.1
TP10	1.5-1.8	Tospoil	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP10	1.8 -2.0	Alluvial	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D1	TP3(0-0.1)			<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	110	<5	12	20	15	<0.1
D2	BH302(1.1-1.2)			<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	3.6	<0.4	190	9	<5	11	<5	<0.1
D3	BH306(0.1-0.2)			<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	3	<0.4	150	8.5	16	27	23	<0.1
D4	BH312(0.8-0.9)			<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	11	<0.4	470	25	21	110	18	<0.1
D5	BH319(0.2-0.3)			<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	<2	<0.4	49	7.6	8.5	9.8	17	<0.1
D6	BH327(1.2-1.3)			<10	<50	<100	<100	<50	<0.5	0.6	<0.05	<0.05	<0.1	<0.2	<1	7.4	<0.4	530	14	8	43	12	<0.1
D1 RPD																--	--	-11%	--	22%	30%	78%	--
D2 RPD																--	--	-63%	-29%	--	84%	--	--
D3 RPD																-40%	--	-22%	-48%	-21%	-35%	-36%	--
D4 RPD																-11%	--	51%	0%	5%	--	164%	--
D5 RPD																--	--	177%	107%	89%	--	165%	--
D6 RPD																79%	--	77%	94%	61%	46%	29%	--
CRITERIA (NEPM 2013)																							
Health Investigation Level (HIL):*				*NL*	*NL*	*NL*	*NL*	*NL*	*300*	*3*	*400*	*10*	*1*			*300*	*90*	*300*	*17000*	*600*	*1200*	*30000*	*80*
*Health Screening Level (HSL)***																							
*Ecological Screening Level (ESL)****				*180*	*120*	*300*	*2800*																
Ecological Investigation Level (EIL)@															*170*	*100*		*780*	*35*	*1100*	*30*	*140*	

CRITERIA:

* Health Based Investigation Levels for Recreational Use (NEPM 2013)

** Health Screening Level (F2) for residential land use and fine grained soil (clay), 0 - 1m depth

*** Ecological Screening Level for recreational land use

@ Ecological Investigation Level - aged (>2 years) for recreational landuse

Total Chromium (CRIII + CRVI)

REGIONAL GEOTECHNICAL SOLUTIONS

Summary Table - Comparison of Contamination Analysis Results With Waste Classification Threshold Limits (Results in mg/kg)

Client: Port Macquarie Hastings Council
Job No. RGS21005.6
Project: Proposed Aquatic Club
Location: Gordon Street, Port Macquarie

SAMPLE	MATERIAL	DEPTH (m)	TOTAL PETROLEUM HYDROCARBONS					PAH	PCBs (Total)	OC/OP Pesticides	HEAVY METALS									
			C6-C9	C10-C14	C15-C28	C29-C36	TOTAL				Arsenic	TCLP	Chromium*	TCLP	Nickel	TCLP	Lead	TCLP	Mercury	TCLP
TP1	FILL/TOPSOIL	0.5 - 0.6	----	----	----	----	----	----	----	----	----	----	<0.05	----	----	----	----	----	----	----
BH327	FILL	1.2 - 1.3	----	----	----	----	----	----	----	----	----	----	----	----	<0.02	----	----	----	----	----
THRESHOLD LIMITS																				
GENERAL SOLID WASTE	*CT1*										*100*		*100*		*40*		*100*		*4*	
	SCC1		*650*				*10000*	*200*	*<50*	*250*	*500*		*1900*		*1050*		*1500*		*50*	
	TCLP1										*5*		*5*		*2*		*5*		*0.2*	
RESTRICTED SOLID WASTE	*CT2*										*400*		*80*		*160*		*400*		*16*	
	SCC2		*2600*				*40000*	*800*	*<50*	*1000*	*2000*		*400*		*4200*		*6000*		*200*	
	TCLP2										*20*		*4*		*8*		*20*		*0.8*	

NOTES

CT	Contaminant Threshold (without TCLP)
SCC	Specific Contaminant Concentrations (used with TCLP)
TCLP	Toxicity Characteristics Leaching Procedure (used with SCC)
Shaded	Exceeds General Solid Waste Threshold = Restricted Solid Waste
BOLD and Shaded	Exceeds Restricted Solid Waste Threshold = Hazardous Waste

* Chromium CRVI

CRITERIA:

Waste Classification - Classifying Waste, Part 1 (*NSW EPA 2014*)

Appendix C

Letter from Dr David Tully CEnvP SC

Contaminated Land Solutions

22 September 2024

Ref: CLS0268.L02.1

Regional Geotechnical Solutions Pty Ltd
1/12 Jindalee Road
Port Macquarie
NSW 2444

For the attention of Grant Collier

Dear Grant,

RE: Review of Stage 2 Site Contamination Assessment Report – Proposed Development Aquatic Facility, Gordon Street, Port Macquarie

I, Dr David Tully of Contaminated Land Solutions Pty Ltd, am a Certified Environmental Practitioner Site Contamination Specialist (General Certified Environmental Practitioner certification no. 1138 and Site Contamination Specialist certification no. SC40084).

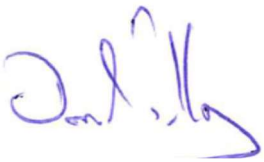
I confirm I have reviewed the Regional Geotechnical Solutions report entitled "Stage 2 Site Contamination Assessment Report – *Proposed Development Aquatic Facility, Gordon Street, Port Macquarie*" (Ref: RGS21005.6.1-AG), dated 20 September 2024 and a copy of which I have retained.

I can confirm that on the basis of the information contained within the report, I support the conclusions and recommendations provided therein.

Should the client, regulator or local authority have any queries regarding the report review, I can be contacted by e-mail via david.tully@contaminatedlandsolutions.com.au. Specific queries regarding the content of the report should be addressed to Grant Collier at Regional Geotechnical Solutions.

For and on behalf of

Contaminated Land Solutions Pty Ltd



Dr David Tully CEnvP SC
Director
Contaminated Land Solutions Pty Ltd

Contaminated Land Solutions Pty Ltd
10 Heath Road
Crafers West SA 5152
0410 012 292
david.tully@contaminatedlandsolutions.com.au

Co.Op Studio

Geotechnical Assessment

Proposed Aquatic Facility

Gordon Street, Port Macquarie

Report No. RGS21005.6-AH

13 September 2024

REGIONAL GEOTECHNICAL SOLUTIONS

REGIONAL GEOTECHNICAL SOLUTIONS

Manning-Great Lakes
Port Macquarie
Coffs Harbour

RGS21005.6-AH

13 September 2024

Co.Op Studio
35 Richards Avenue
SURREY HILLS NSW 2010

Attention: David Huntley

Dear David,

RE: Proposed Aquatic Facility – Gordon Street, Port Macquarie
Geotechnical Assessment

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken a geotechnical assessment for the proposed Aquatic Facility at Gordon Street, Port Macquarie.

The assessment found that an Acid Sulfate Soils Management Plan will be required for excavations within the alluvial soils. The Acid Sulfate Soils Management Plan is presented in Appendix C.

If you have any questions regarding this project, please contact the undersigned.

For and on behalf of **Regional Geotechnical Solutions Pty Ltd**

Prepared by

Grant Colliar

Senior Engineering Geologist

Reviewed by

Andrew Hills

Associate Environmental Engineer

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Figures

Appendices

1 INTRODUCTION

Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken a geotechnical assessment for the proposed Aquatic Facility at Gordon Street, Port Macquarie

The project involves the development of a new aquatic facility located at Macquarie Park, Port Macquarie complete with an indoor aquatic hall including water play area, health fitness and wellness building, building entrance and amenities, change rooms and kiosk and an outdoor aquatic area including an eight lane 50m pool with spectator seating.

The purpose of the assessment was to provide comments and recommendations on the following:

- A geotechnical model of the sites that includes the depth of the soil profiles;
- The presence of Acid Sulfate Soils;
- The requirement for an Acid Sulfate Soil Management Plan; and
- Presence of groundwater.

The work was commissioned by David Huntley on behalf of Co.Op Studio and was undertaken in accordance with proposal number RGS21005.6-AF dated 20 August 2024.

2 METHODOLOGY

Field work for the assessment was undertaken on 19 October 2023 and was based on the supplied drawing titled "GENERAL ARRANGEMENT PLAN". Fieldwork was undertaken on 17 July 2024 and included:

- Observation of site features and surrounding features relevant to the geotechnical conditions of the site;
- Ten (10) boreholes drilled using a 4WD mounted drilling rig using augering methods to depths ranging from 1.3m to 3m, logged and sampled by a geotechnical engineer. The boreholes were undertaken in conjunction with a Stage 2 Contamination assessment; and
- Collection of samples for subsequent laboratory testing.

Engineering logs of the boreholes presented in Appendix A. Investigation locations are shown on the attached Figure 1 and were obtained by measurements to prominent site features. Coordinates of investigation locations were recorded using a hand held GPS and the coordinates are shown on the engineering logs.

3 LABORATORY TESTING

Samples retrieved during field work were returned to NATA accredited laboratories for testing which included the following;

- Acid Sulfate Soil (ASS) screening; and
- Detailed Chromium Reducible Sulphur (CRS) analysis for Potential ASS.

The laboratory test results are summarised in Section 5. Laboratory test result sheets are presented in Appendix B.

4 SITE CONDITIONS

4.1 Surface Conditions

The site is approximately 2.5ha in area and is located within the Macquarie Park. The site comprises grassed playing fields with surface elevations ranging from approximately RL 3m in the south west to RL 5m in the north east.

The site is situated at the toe of a south facing ridge slope and grades down to the south towards Wrights Creek. It appears to have been a low-lying landscape that has been historically modified by site filling works.

A satellite image that shows the location of the site and the site setting is reproduced in Plate 1.

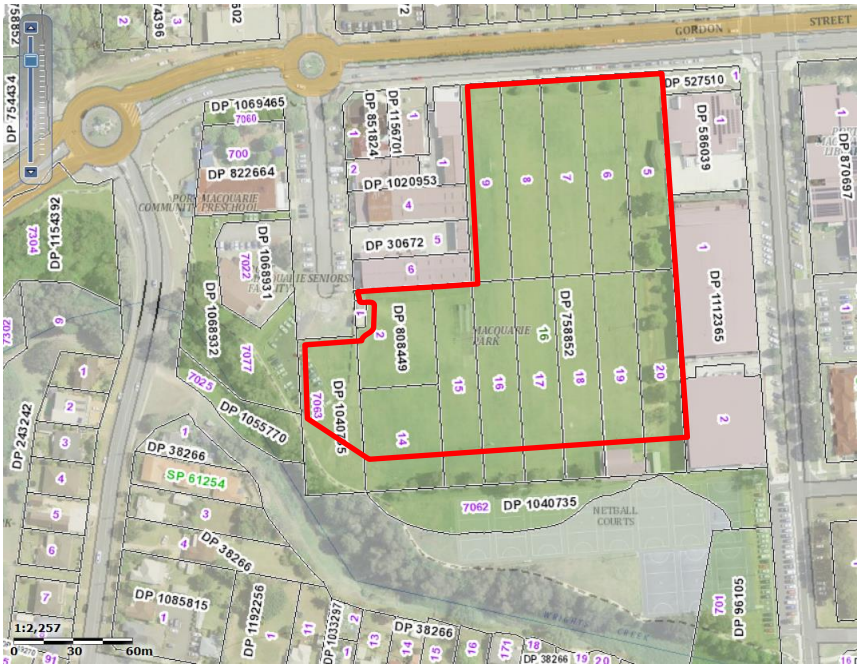


Plate 1: *Satellite image dated 2012 obtained from the NSW Government 'Six Maps' website that illustrates the site location and setting at Macquarie Park. The approximate area of assessment is outlined in red. The northern half of the site is proposed for pools and structures and the southern half for car parking.*

Drainage of the site would be via a combination of overland flow and surface infiltration.

Selected images from the investigation are presented below.

Looking south across open grassed area located in southwest corner of the site.

Looking south across playing fields. Site has been modified by filling works to create a near level surface.

4.2 Subsurface Conditions

The site is situated in an area of gently undulating topography that is underlain by deeply weathered geological units of the Port Macquarie Block which includes slate, chert, basalt, serpentinite and dolerite.

Reference to the Port Macquarie Quaternary Geology Sheet indicates there are Quaternary alluvial valley fill deposits present in the south west of the site that may comprise alluvial clays, silts, sand or gravel.

Reference to historical aerial photographs provided by Council indicate that in 1942 and 1959 there was an alluvial drainage line located near the northern site boundary. By 1975 the north of the site had been modified by filling works including the filling of the alluvial drainage line near the northern site boundary. In 1981 and also in 1990, site filling works are visible in the south, south west corner and near the western boundary where the Munster Street car park is now present.

The materials encountered during the investigation are summarised in Table 1 and 2. Further details are presented on the attached engineering logs.

Table 1: Summary of Geotechnical Units

Unit	Material	Material Description
UNIT 1	FILL/TOPSOIL	Silty sandy CLAY, high plasticity, dark brown, trace grass roots
UNIT 2	FILL CLAY	Sandy gravelly CLAY to Silty sandy CLAY, medium to high plasticity, red/brown/grey/orange gravel is fine to medium.
UNIT 3	TOPSOIL	Silty sandy CLAY, high plasticity, brown/dark grey

Unit	Material	Material Description
UNIT 4	ALLUVIAL	Silty CLAY to Silty Sandy CLAY, medium to high plasticity, dark grey/pale brown/grey
UNIT 5	RESIDUAL	Sandy CLAY, medium plasticity, red/brown/orange

Table 2: Summary of Subsurface Materials

Test Location	Depth to Base of Material Layer (m)					
	Unit 1- Fill/Topsoil	Unit 2 – Fill Clay	Unit 3 - Topsoil	Unit 4 - Alluvial	Unit 5 - Residual	Water Inflow
BH301	0.2	2.0	--	≥2.0	--	1.4m
BH302	0.6	1.9	--	≥2.0	--	--
BH303	0.2	1.2	--	≥1.3	--	--
BH306	0.2	--	--	--	≥1.5	--
BH309	0.4	0.8	--	--	≥1.6	--
BH311	0.25	0.75	--	≥3.0	--	0.9m
BH319	0.3	--	--	1.1	≥1.5	--
BH321	0.2	1.1	--	≥1.9	--	--
BH324	0.2	--	--	1.4	≥1.7	--
BH326	0.3	1.8	--	≥3.0	--	--
BH3B*	0.2	2.0	--	≥3.1	--	--

Notes * Test location from previous geotechnical investigation, refer to report RGS21005.6-AD_Rev1

Groundwater inflows were observed within the boreholes at the levels shown in Table 2. It should be noted that fluctuations in groundwater levels can occur as a result of seasonal variations, temperature, rainfall, and other similar factors, the influence of which may not have been apparent at the time of the assessment.

5 ACID SULFATE SOILS

Reference to the Port Macquarie ASS Risk Map (DLWC, 2000) indicates there is a low probability of ASS between 1m and 3m below the ground surface in an alluvial plain located near the southern boundary of the site as shown in Plate 3. There is no known occurrence of ASS in the remainder of the site, however, it is noted that the ASS in the area appears to be associated with alluvial depressions that have been subsequently filled which is not shown on the mapping.

	
Approximate location of the site is shown in red as indicated by Six Maps image.	*Extract from the Port Macquarie ASS Risk Map (DLWC, 2000) indicates there is a low probability of ASS between 1m and 3m below the ground surface in an alluvial plain located near the southern boundary. Approximate location of the site is shown in blue.*

ASS produce sulphuric acid when exposed to oxygen due to the presence of iron sulphides in the form of pyrite within the soil matrix. These soils form when iron-rich sediments are deposited in saltwater or brackish water environments. Prior to oxidation, these pyritic soils are referred to as Potential ASS. ASS that have produced acid as a result of oxidation are referred to as Actual ASS. They typically occur in natural, low-lying coastal depositional environments below approximately 5m AHD. In the field ASS are generally identified as saline sediments such as alluvial or estuarine soils or bottom sediments in creeks and estuaries.

In environments such as that which exists at the site, the pyrite and resultant acidity (if any) would exist within the fine-grained fraction of the sediment profile.

Ten samples obtained from the boreholes were screened for the presence of actual or potential ASS using methods 23Af and 22Bf of the ASSMAC Acid Sulfate Soils Manual. The test results are attached. The results indicated:

- The samples revealed pHf values of 4.94 to 7.63 in distilled water. In this test, pH <4 can be an indicator of Actual ASS; and
- The samples revealed pHFOX values of 3.73 to 7.51 in hydrogen peroxide. Values of less than 3 can be an indicator of Potential ASS.

To provide a more comprehensive assessment, five samples were submitted for CRS analysis, to differentiate between potential organic or inorganic sources of sulfur. A summary of the test results is presented in Table 3.

Table 3: Summary of ASS CRS Test Results

Borehole	Depth (m)	Texture	Acid Trail (mol H+/tonne)		Sulfur Trail (% S Oxidisable)		Net Acidity (mol H+/tonne)	Liming Rate (kg / Tonne)
			TAA	Action Criteria	Scr	Action Criteria		
BH302	2.1 – 2.2	Fine	22	62	0.008	0.1	27	2
BH306	1.2 – 1.3	Fine	5	62	<0.005	0.1	5	0
BH311	2.2 - 2.3	Fine	17	62	<0.005	0.1	17	1
BH319	0.7 – 0.8	Fine	26	62	<0.005	0.1	29	2
BH324	1 – 1.2	Fine	9	62	<0.005	0.1	9	1
BH3B*	2.0 – 2.5	Fine	9	62	**0.229**	0.1	**152**	11

Note: The adopted action criteria assume that <1000tonnes of soil is to be disturbed. If >1000tonnes of material is to be disturbed, action criteria of 18 mol H+/tonne or 0.03% Sulfur would apply.
* Test result from previous geotechnical investigation, refer to report RGS21005.6-AD_Rev1

A review of the above results indicates the following:

- Each of the samples recorded Titratable Actual Acidity (TAA) that did not exceeded the adopted action criteria indicating the absence of actual acidity;
- Oxidisable sulfur concentrations exceeded the adopted action criteria in sample BH3B 2.0 – 2.5m;
- Net acidity exceeded the adopted action criteria in the same sample as outlined above indicating the presence of Potential ASS (PASS).

Based on the CRS test results presented above, the alluvial soils encountered within the proposed development excavations are considered to be PASS and as such an ASS Management Plan (ASSMP) will be required where excavation of these soils is proposed.

An ASSMP has been prepared and is presented in Appendix C. The ASSMP is based on lime treatment of the soils excavated from below existing ground level and assumes a liming rate calculated on the basis of less than 1,000 tonnes of excavated soil, adopting the following:

- Mean Net Acid Generating Potential of 39 molH+/tonne for the six samples indicating the presence of Potential ASS in Table 3, with a Standard Deviation of 50.9 mol H+/tonne;
- Ag lime for neutralisation is to have a neutralising value (NV) of at least 90%; and
- A Factor of Safety of 1.5 for incomplete mixing.

6 LIMITATIONS

This report comprises the results of an investigation carried out for a specific purpose and client as defined in the document. The report should not be used by other parties or for purposes or projects other than those assumed and stated within the report, as it may not contain adequate or appropriate information for applications other than those assumed or advised at the time of its

preparation. The contents of the report are for the sole use of the client and no responsibility or liability will be accepted to any third party. The report should not be reproduced either in part or in full, without the express permission of Regional Geotechnical Solutions Pty Ltd.

Geotechnical site investigation is based on data collection, judgment, experience, and opinion. By its nature, it is less exact than other engineering disciplines. The findings presented in this report and used as the basis for the recommendations presented herein were obtained using normal, industry accepted geotechnical design practises and standards. To our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

The recommended depth and properties of any soil, rock, groundwater, or other material referred to in this report is an engineering estimate based on the information available at the time of its writing. The estimate is influenced and limited by the fieldwork method and testing carried out in the site investigation, and other relevant information as has been made available. In cases where information has been provided to Regional Geotechnical Solutions for the purposes of preparing this report it has been assumed that the information is accurate and appropriate for such use. No responsibility is accepted by Regional Geotechnical Solutions for inaccuracies within any data supplied by others.

If site conditions encountered during construction vary significantly from those discussed in this report, Regional Geotechnical Solutions Pty Ltd should be contacted for further advice.

This report alone should not be used by contractors as the basis for preparation of tender documents or project estimates. Contractors using this report as a basis for preparation of tender documents should avail themselves of all relevant background information regarding the site before deciding on selection of construction materials and equipment.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

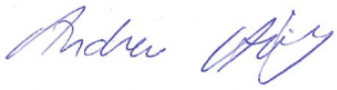
For and on behalf of **Regional Geotechnical Solutions Pty Ltd**

Prepared by

Grant Colliar

Senior Engineering Geologist

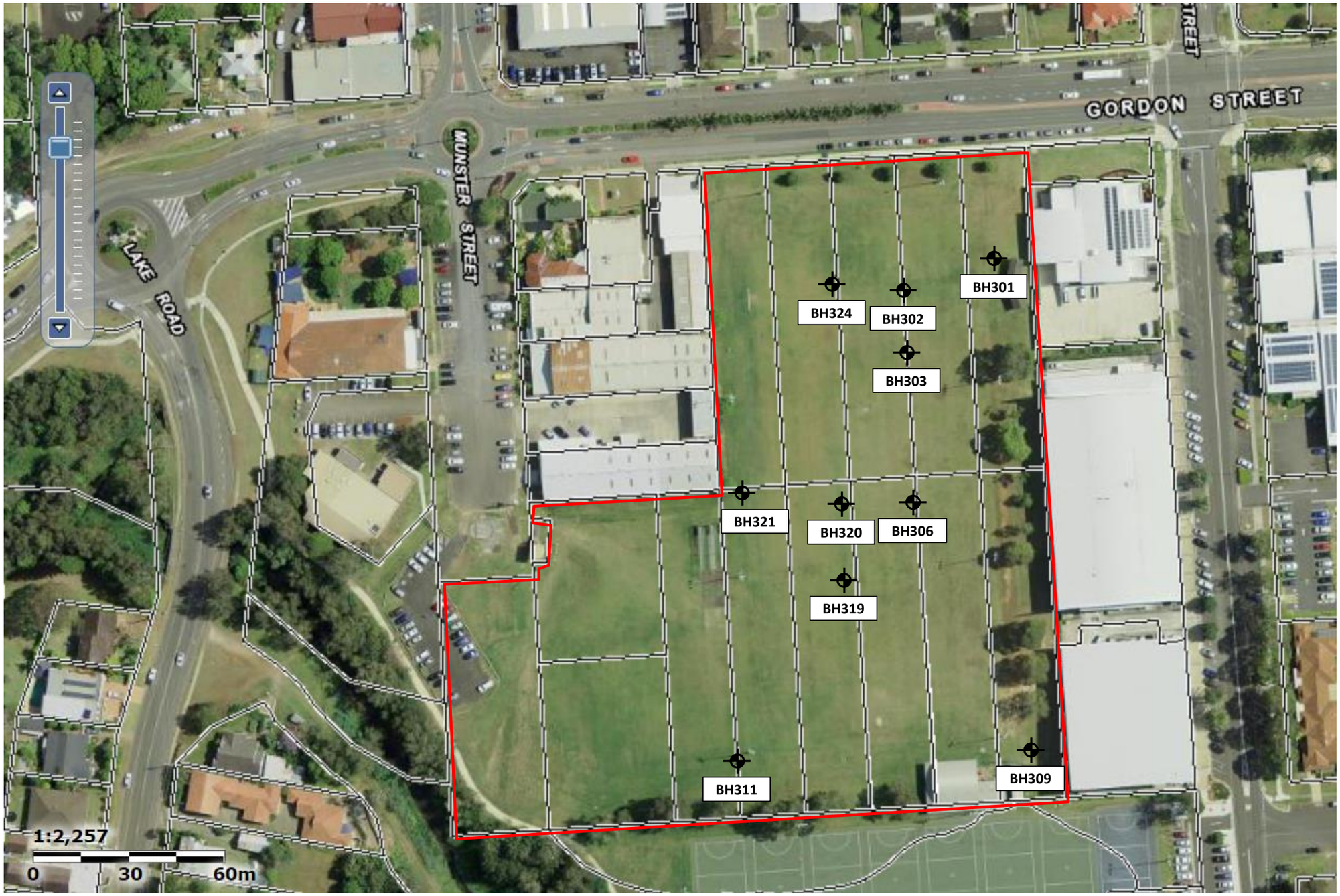
Reviewed by



Andrew Hills

Associate Environmental Engineer

Figures



Based on SixViewer 2012 satellite image

Legend

Borehole Location

REGIONAL GEOTECHNICAL SOLUTIONS	**Client:**	CO-OP STUDIO	Job No.	RGS21005.6
	Project:	PROPOSED AQUATIC CENTRE MACQUARIE PARK, GORDON STREET, PORT MACQUARIE	Drawn By:	HM
			Scale:	NTS
			Date:	12-Sep-24
	Title:	INVESTIGATION LOCATION PLAN	Figure No.	**1**

Appendix A

Results of Field Investigations

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH301

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491842 m
NORTHING: 6522356 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
AD/T		0.10m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.	M < w_P	F			TOPSOIL/ FILL
							0.20m					
						CL	**Sandy Gravelly CLAY:** Medium plasticity, orange brown, sand, fine to coarse grained, gravel, fine to medium grained, angular to subrounded.		St	HP HP	180 180	FILL
							0.40m					
		0.50m ES		0.5		CI	**Silty Sandy CLAY:** Medium plasticity, white mottled red, sand, fine to coarse grained.		VSt	HP HP HP	300 250 250	FILL
				1.0			1.00m					
	15/8/2024					CI	**Silty Sandy CLAY:** High plasticity, red, sand, fine to medium grained.	M > w_P	St	HP HP HP	110 180 110	FILL
				1.5								
				2.0			2.00m					
		2.10m				CH	**Silty Sandy CLAY:** High plasticity, dark grey, sand, fine to medium grained.		S	HP HP HP	30 30 40	ALLUVIUM
		ASS 2.20m		2.5			2.50m					
							Hole Terminated at 2.50 m					
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH302

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491821 m
NORTHING: 6522346 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
AD/T	Not Encountered	0.30m ES		0.5		SC	**TOPSOIL:** Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.	M < w_P	Fr			TOPSOIL/ FILL
							0.60m					
						Cl	**Silty Sandy CLAY:** Pale brown, sand, fine to coarse grained.		VSt			FILL
							0.90m					
		1.10m ES		1.0		CL	**Sandy Gravelly CLAY:** Medium plasticity, red, sand, fine to coarse grained, gravel, fine to medium grained, subangular to subrounded.			HP	190	FILL
										HP	220	
				1.5						HP	240	
							1.90m					
		2.10m		2.0		CL	**Silty Sandy CLAY:** Bluish pale grey, sand, fine to medium grained.			HP	300	ALLUVIAL
		ASS 2.20m								HP	300	
				2.5						HP	280	
				3.0			3.00m					
							Hole Terminated at 3.00 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH303

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491822 m
NORTHING: 6522331 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.30m ES		0.5		SC	**FILL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.20m		F			FILL/TOPSOIL
						CL	**FILL CLAY:** Medium plasticity, red. 0.70m					FILL CLAY
		1.10m		1.0		CL	**FILL CLAY:** Medium plasticity, orange brown. 1.20m		St			RESIDUAL
		ASS 1.20m				CL	1.30m **Sandy Gravelly CLAY:** Reddish brown, low plasticity, sand, fine to coarse grained, gravel, fine grained, subangular to subrounded.		St			ALLUVIAL
				1.5			Hole Terminated at 1.30 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH306

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491822 m
NORTHING: 6522291 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
AD/T	Not Encountered	0.10m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL
							0.20m					
		0.40m ES		0.5		CL	**Sandy CLAY:** Medium plasticity, reddish brown, sand, fine to coarse grained, traces of gravel, fine to medium grained, subangular to subrounded.		St	HP HP HP	260 280 280	RESIDUAL
				1.0			1.00m					
		1.20m				CL	**Sandy CLAY:** Medium plasticity, orange brown, sand, fine to coarse grained, traces of gravel, fine to medium grained, angular to subangular.		St	HP HP HP	340 320 380	RESIDUAL
		ASS 1.30m					1.30m					
				1.5		CL	**Sandy Gravelly CLAY:**Low plasticity, grey and brown, sand, fine to coarse grained, gravel, fine to medium grained, subangular to subrounded.		St			EXTREMELY WEATHERED
							1.50m					
							Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH309

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491859 m
NORTHING: 6522208 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.20m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.		F			TOPSOIL
							0.40m			HP	10	
		0.60m ES		0.5		OL	**Silty Sandy CLAY:** High plasticity, pale brown, sand, fine to medium grained.		S	HP	10	FILL
							0.80m			HP	10	
										HP	310	
						CL	**Sandy Gravelly CLAY:** Medium plasticity, orangish brown, sand, fine to medium grained, subangular to subrounded.		St	HP	290	RESIDUAL
				1.0						HP	300	
							1.30m			HP	450	
						CL	**Sandy CLAY:** Medium plasticity, brown, sand, fine to coarse grained, traces of gravel, fine to medium grained, subangular to rounded.		St	HP	420	RESIDUAL
				1.5						HP	410	
							1.60m					
							Hole Terminated at 1.60 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH311

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 15/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491766 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522203 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	15/8/2024	0.30m ES		0.5		SC	**TOPSOIL:** Silty Sandy CLAY, medium plasticity, dark brown, sand, fine to medium grained. 0.25m		F			TOPSOIL
							Sandy Gravelly CLAY: Reddish brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded. 0.50m		F	HP HP HP	80 90 70	FILL
							Sandy CLAY: High plasticity, dark brown, sand, fine to medium grained. 0.75m		S	HP HP HP	20 30 40	FILL
		0.90m ES		1.0			**Sandy Gravelly CLAY:** High plasticity, pale brown, sand, fine to medium grained. 0.90m		S	HP HP	40 50	ALLUVIUM
							Sandy Gravelly CLAY: Medium plasticity, orange brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded. 2.00m		F	HP HP HP	250 260 250	
		2.20m ASS 2.30m		2.5			**Sandy Gravelly CLAY:** Low plasticity, sand, fine to medium grained, sand, fine to medium grained. 3.00m		St			
				3.0			Hole Terminated at 3.00 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH319

CLIENT:	Co-Op Studio	**PAGE:**	1 of 1
PROJECT NAME:	Aquatic Facility	**JOB NO:**	RGS21005.6
SITE LOCATION:	Gordon Street, Port Macquarie	**LOGGED BY:**	HM
TEST LOCATION:	Refer to Figure	**DATE:**	16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig **EASTING:** 491801 m **SURFACE RL:**

BOREHOLE DIAMETER: 50 mm **INCLINATION:** 90° **NORTHING:** 6522266 m **DATUM:** AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.20m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.30m	M < w_P	Fr			TOPSOIL
						CH	**Silty Sandy CLAY:** Medium plasticity, greyish brown, gravel, fine to medium grained. 0.50m		St	HP	150	ALLUVIUM
				0.5						HP	120	
						CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained.			HP	110	RESIDUAL
		0.70m							VSt	HP	250	
		ASS 0.80m								HP	240	
				1.0						HP	250	
							1.10m					
						CL	**Sandy CLAY:** Low plasticity, reddish brown, sand, fine to medium grained.			HP	350	RESIDUAL
										HP	320	
				1.5			1.50m			HP	310	
							Hole Terminated at 1.50 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		**UCS (kPa)**
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density		
	V	Very Loose — Density Index <15%
	L	Loose — Density Index 15 - 35%
	MD	Medium Dense — Density Index 35 - 65%
	D	Dense — Density Index 65 - 85%
	VD	Very Dense — Density Index 85 - 100%

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH321

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491767 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522273 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.10m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.20m	M < w_P	Fr			TOPSOIL/ FILL
						CL	**Sandy CLAY:** Medium plasticity, reddish brown, sand, fine to coarse grained. 0.90m		VSt	HP	350	FILL
				0.5						HP	340	
										HP	360	
				1.0		CH	**Silty Sandy CLAY:** High plasticity, dark grey, sand, fine to coarse grained. 1.10m		S	HP	30	FILL
										HP	30	
		1.20m				OH	**Silty Sandy CLAY:** High plasticity, pale grey, sand, fine to medium grained. 1.40m		F	HP	80	ALLUVIUM
		ASS 1.30m								HP	80	
										HP	80	
				1.5		CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained. 1.90m		St	HP	40	
										HP	200	
										HP	180	
										HP	190	
				2.0			Hole Terminated at 1.90 m					
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH324

CLIENT: Co-Op Studio
PAGE: 1 of 1
PROJECT NAME: Aquatic Facility
JOB NO: RGS21005.6
SITE LOCATION: Gordon Street, Port Macquarie
LOGGED BY: HM
TEST LOCATION: Refer to Figure
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
EASTING: 491799 m
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
NORTHING: 6522358 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
AD/T	Not Encountered					SC	**FILL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained.	M < w_P	Fr			FILL/TOPSOIL
							0.20m			HP	160	
						CL	**FILL:** Sandy CLAY, medium plasticity, orangish brown, sand, fine to medium grained.		St	HP	180	FILL
				0.5						HP	160	
							0.60m			HP	480	
		0.70m ES				CL	**FILL:** Sandy Clay, low plasticity, reddish brown, sand, fine to medium grained, traces of gravel, fine to medium grained, subangular to rounded.		VSt	HP	400	ALLUVIAL
		1.00m		1.0						HP	380	
		ASS 1.20m					1.40m			HP	250	
				1.5		CL	**Sandy Gravelly CLAY:** Medium plasticity, orangish brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded.			HP	270	RESIDUAL
							1.70m			HP	270	
							Hole Terminated at 1.70 m					
				2.0								
				2.5								
				3.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH326

CLIENT: Co-Op Studio
PROJECT NAME: Aquatic Facility
SITE LOCATION: Gordon Street, Port Macquarie
TEST LOCATION: Refer to Figure

PAGE: 1 of 1
JOB NO: RGS21005.6
LOGGED BY: HM
DATE: 16/8/24

DRILL TYPE: RGS Ute Mounted Drill Rig
BOREHOLE DIAMETER: 50 mm
INCLINATION: 90°
EASTING: 491762 m
NORTHING: 6522376 m
SURFACE RL:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.20m ES				SC	**TOPSOIL:** Silty Sandy CLAY, high plasticity, dark brown, sand, fine to medium grained. 0.30m	M < w_P	F			TOPSOIL
				0.5		CL	**Sandy CLAY:** Low plasticity, pale grey, sand, fine to medium grained, traces of gravel, fine to medium grained, subangular to subrounded. 0.60m		VSt	HP HP HP	330 330 320	FILL
		0.90m ES		1.0		CL	**Sandy Gravelly CLAY:** Medium plasticity, orange brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded. 1.30m			HP HP HP	300 300 280	FILL
				1.5		CL	**Sandy Gravelly CLAY:** Medium plasticity, reddish brown, sand, fine to medium grained, gravel, fine to medium grained, subangular to subrounded. 1.80m			HP HP HP	250 280 230	FILL
				2.0		CH	**Silty Sandy CLAY:** High plasticity, dark grey, sand, fine to medium grained. 2.40m	M > w_P	S	HP HP HP	10 10 20	ALLUVIUM
		2.50m ASS 2.60m		2.5		CL	**Sandy CLAY:** Medium plasticity, yellow brown, sand, fine to medium grained.		St	HP HP HP	110 120 110	
				3.0			3.00m					
							Hole Terminated at 3.00 m Install to 2.7m, slotted 0.7, plain 2.0					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Appendix B

Laboratory Test Result Sheets

RESULTS OF ACID SULFATE SOIL ANALYSIS

1 sample supplied by Regional Geotechnical Solutions Pty Ltd on 11/05/2021. Lab Job No. K6769 (previously K4980/1)
Analysis requested by Tim Morris. Your Job: RGS21005.6.

44 Bent Street WINGHAM NSW 2429

Sample Identification	EAL Lab Code	Texture	Moisture Content		Potential Sulfidic Acidity (Chromium Reducible Sulfur - CRS)		pH$_{KCl}$	Actual Acidity (Titratable Actual Acidity - TAA)	Retained Acidity		Non-treated soil: Acid Neutralising Capacity (ANC_{BT})		Non-treated soil: Net Acidity	Non-treated soil: Lime Calculation
			(% moisture of total wet weight)	(g moisture / g of oven dry soil)	(% S_{cr})	(mol H^+/t)		(mol H^+/t)	(%S_{NAS})	(mol H^+/t)	(% $CaCO_3$)	(mol H^+/t)	(mol H^+/t)	(kg $CaCO_3$/t DW)
Method Info.		**	**		*(In-house method S20)*		*(In-house method 16b)*		**		*(In-house method S14)*		**	**
BH3B 2-2.5	*K6769/1*	Fine	40.9	0.69	0.229	143	6.29	9	..	..	..	..	152	11

NOTES:

1. All analysis is reported on a dry weight (DW) basis, unless wet weight (WW) is specified.
2. Samples are dried and ground immediately upon arrival (unless supplied dried and ground).
3. Analytical procedures are sourced from Sullivan L, Ward N, Toppler N and Lancaster G. 2018. National acid sulfate soils guidance: national acid sulfate soils identification and laboratory methods manual, Department of Agriculture and Water Resources, Canberra, ACT. CC BY 4.0.
4. The Acid Base Accounting Equation, where Acid Neutralising Capacity has not been corroborated by other data, is **Net Acidity = Potential Acidity + Actual Acidity + Retained Acidity** (Eq. 3.2; Sullivan et al. 2018 - full reference above).
5. The Acid Base Accounting Equation for post-limed soil materials is **Net Acidity = Potential Acidity + Actual Acidity + Retained Acidity - (post treatment Acid Neutralising Capacity - initial Acid Neutralising Capacity)** (Eq. 3.3; Sullivan et al. 2018 - full reference above).
   While the Acid Neutralising Capacity of a soil material may not be included in the Net Acidity calculation (Note 4), it must be measured to give an Initial Acid Neutralising Capacity if verification testing is planned post-liming.
   The Inital Acid Neutralising Capacity must be provided by the client to enable EAL to produce Verification Net Acidity and Liming calculations for post-limed soil materials.
6. The Acid Base Accounting Equation, where Acid Neutralising Capacity has been corroborated by other data, is Net Acidity = Potential Acidity + Actual Acidity + Retained Acidity - Acid Neutralising Capacity (Eq. 3.1; Sullivan et al. 2018 - full reference above).
7. The lime calculation includes a Safety Factor of 1.5 as a safety margin for acid neutralisation (Sullivan et al. 2018). This is only applied to positive values. An increased Safety Factor may be required in some cases.
8. Retained Acidity is required when the pH$_{KCl}$ < 4.5 or where jarosite has been visually observed.
9. A negative Net Acidity result indicates an excess acid neutralising capacity.
10. If insufficient mixing occurs during intial sampling, or during post-liming, or both: the Potential Sulfidic Acidity may be greater in the post-limed sample than in the intial sample; the post-liming Acid Neutralising Capacity may be lower in the post-limed sample than in the intial sample.
11. **An acid sulfate soil management plan is triggered by Net Acidity results greater than the texture dependent criterion: coarse texture ≥ 0.03% S or 18 mol H^+/t; medium texture ≥ 0.06% S or 36 mol H^+/t; fine texture ≥ 0.1% S or 62 mol H^+/t)** (Table 1.1; Sullivan et al. 2018 - full reference above)
12. For projects that disturb > 1000 t of soil material, the coarse trigger of ≥ 0.03% S or ≥ 18 mol H^+/t must be applied in accordance with Sullivan et al. (2018) (full reference above).
13. Acid sulfate soil texture triggers can be related to NCST (2009) textures: coarse and peats = sands to loamy sands; medium = clayey sand to light clays; fine = light medium to heavy clays (Sullivan et al. 2018 - full reference above).
14. Bulk density is required to convert liming rates to soil volume based results. Field bulk density rings can be submitted to EAL for bulk density determination.
15. A negative Net Acidity result indicates an excess acid neutralising capacity.
16. '..' is reported where a test is either not requested or not required. Where pH$_{KCl}$ is < 4.5 or > 6.5, zero is reported for S_{NAS} and ANC in Net Acidity calculations, respectively.
17. Results refer to samples as received at the laboratory. This report is not to be reproduced except in full.
18. ** NATA accreditation does not cover the performance of this service.
19. Analysis conducted between sample arrival date and reporting date.
20. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
21. Results relate to the samples tested.
22. This report was issued on 14/05/2021. It provides additional analysis for the sample submitted as K4980/1.

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checked: .....
Graham Lancaster
Laboratory Manager

RESULTS OF ACID SULFATE SOIL ANALYSIS

10 samples supplied by Regional Geotechnical Solutions Pty Ltd on 26/08/2024. Lab Job No. R8066.
Analysis requested by Henry Fitzpatrick Morgan. Your Job: RGS21005.6.

Unit 14 COFFS HARBOUR NSW 2450

Sample Identification	EAL Lab Code	Texture	Moisture Content		pH_F and pH_{FOX}				Potential Sulfidic Acidity (Chromium Reducible Sulfur - CRS)		pH_{KCl}	Actual Acidity (Titratable Actual Acidity - TAA)	Retained Acidity		Non-treated soil: Acid Neutralising Capacity (ANC_{BT})		Non-treated soil: Net Acidity	Non-treated soil: Lime Calculation
			(% moisture of total wet weight)	(g moisture / g of oven dry soil)	pH_F	pH_{FOX}	pH change	Reaction	(% S_{cr})	(mol H^+/t)		(mol H^+/t)	(%S_{NAS})	(mol H^+/t)	(% $CaCO_3$)	(mol H^+/t)	(mol H^+/t)	(kg $CaCO_3$/t DW)
Method Info.		**	**		*(In-house method S21)*				*(In-house method S20)*		*(In-house method 16b)*		**		*(In-house method S14)*		**	**
BH301, 2.1-2.2	*R8066/1*	Fine	27.6	0.38	5.35	4.24	-1.11	Extreme	..	..	..	..	..	..	..	..	..	..
BH302, 2.1-2.2	*R8066/2*	Fine	22.5	0.29	5.15	4.27	-0.88	Medium	0.008	5	5.46	22	..	..	..	..	27	2
BH303, 1-1.1	*R8066/3*	Fine	19.1	0.24	5.25	4.04	-1.21	Medium	..	..	..	..	..	..	..	..	..	..
BH306, 1.2-1.3	*R8066/4*	Fine	23.9	0.31	6.93	5.16	-1.77	Medium	<0.005	0	6.44	5	..	..	..	..	5	0
BH309, 1.4-1.5	*R8066/5*	Fine	17.1	0.21	4.94	3.73	-1.21	Medium	..	..	..	..	..	..	..	..	..	..
BH311, 2.2-2.3	*R8066/6*	Fine	43.4	0.77	7.63	7.51	-0.12	Volcanic	<0.005	0	5.80	17	..	..	..	..	17	1
BH319, 0.7-0.8	*R8066/7*	Fine	20.6	0.26	5.21	3.93	-1.28	Low	0.005	3	5.47	26	..	..	..	..	29	2
BH321, 1.2-1.3	*R8066/8*	Fine	14.3	0.17	5.17	3.86	-1.31	Low	..	..	..	..	..	..	..	..	..	..
BH324, 1-1.2	*R8066/9*	Fine	16.0	0.19	6.03	4.66	-1.37	Medium	<0.005	0	6.01	9	..	..	..	..	9	1
BH326, 2.5-2.6	*R8066/10*	Fine	19.3	0.24	6.37	3.92	-2.45	Low	..	..	..	..	..	..	..	..	..	..

NOTES:

1. All analysis is reported on a dry weight (DW) basis, unless wet weight (WW) is specified.
2. Samples are dried and ground immediately upon arrival (unless supplied dried and ground).
3. Analytical procedures are sourced from Sullivan L, Ward N, Toppler N and Lancaster G. 2018. National acid sulfate soils guidance: national acid sulfate soils identification and laboratory methods manual, Department of Agriculture and Water Resources, Canberra, ACT. CC BY 4.0.
4. The Acid Base Accounting Equation, where Acid Neutralising Capacity has not been corroborated by other data, is Net Acidity = Potential Acidity + Actual Acidity + Retained Acidity (Eq. 3.2; Sullivan et al. 2018 - full reference above).
5. The Acid Base Accounting Equation for post-limed soil materials is Net Acidity = Potential Acidity + Actual Acidity + Retained Acidity - (post treatment Acid Neutralising Capacity - initial Acid Neutralising Capacity) (Eq. 3.3; Sullivan et al. 2018 - full reference above).
   While the Acid Neutralising Capacity of a soil material may not be included in the Net Acidity calculation (Note 4), it must be measured to give an Initial Acid Neutralising Capacity if verification testing is planned post-liming.
   The Inital Acid Neutralising Capacity must be provided by the client to enable EAL to produce Verification Net Acidity and Liming calculations for post-limed soil materials.
6. The Acid Base Accounting Equation, where Acid Neutralising Capacity has been corroborated by other data, is Net Acidity = Potential Acidity + Actual Acidity + Retained Acidity - Acid Neutralising Capacity (Eq. 3.1; Sullivan et al. 2018 - full reference above).
7. The lime calculation includes a Safety Factor of 1.5 as a safety margin for acid neutralisation (Sullivan et al. 2018). This is only applied to positive values. An increased Safety Factor may be required in some cases.
8. Retained Acidity is required when the pHKCl < 4.5 or where jarosite has been visually observed.
9. A negative Net Acidity result indicates an excess acid neutralising capacity.
10. If insufficient mixing occurs during intial sampling, or during post-liming, or both: the Potential Sulfidic Acidity may be greater in the post-limed sample than in the intial sample; the post-liming Acid Neutralising Capacity may be lower in the post-limed sample than in the intial sample.
11. **An acid sulfate soil management plan is triggered by Net Acidity results greater than the texture dependent criterion: coarse texture ⩾ 0.03% S or 18 mol H+/t; medium texture ⩾ 0.06% S or 36 mol H+/t; fine texture ⩾ 0.1% S or 62 mol H+/t) (Table 1.1; Sullivan et al. 2018**
12. For projects that disturb > 1000 t of soil material, the coarse trigger of ≥ 0.03% S or ≥ 18 mol H+/t must be applied in accordance with Sullivan et al. (2018) (full reference above).
13. Acid sulfate soil texture triggers can be related to NCST (2009) textures: coarse and peats = sands to loamy sands; medium = clayey sand to light clays; fine = light medium to heavy clays (Sullivan et al. 2018 - full reference above).
14. Bulk density is required to convert liming rates to soil volume based results. Field bulk density rings can be submitted to EAL for bulk density determination.
15. A negative Net Acidity result indicates an excess acid neutralising capacity.
16. '..' is reported where a test is either not requested or not required. Where pHKCl is < 4.5 or > 6.5, zero is reported for SNAS and ANC in Net Acidity calculations, respectively.
17. Results refer to samples as received at the laboratory. This report is not to be reproduced except in full.
18. ** NATA accreditation does not cover the performance of this service.
19. Analysis conducted between sample arrival date and reporting date.
20. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer SCU.edu.au/eal/t&cs or on request).
21. Results relate to the samples tested.
22. This report was issued on 5/09/2024.

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checked: .....
Graham Lancaster
Laboratory Manager

Appendix C

Acid Sulfate Soils Management Plan

ACID SULFATE SOIL MANAGEMENT PLAN

1 INTRODUCTION

The Acid Sulfate Soil Management Plan (ASSMP) outlined below shall be adopted for works associated with the excavation of alluvial soils for the proposed Aquatic Facility at Gordon Street, Port Macquarie where >1,000T of soil is to be disturbed.

This ASSMP is aimed at remediating or controlling the generation of sulphuric acidity during the excavation of Potential Acid Sulfate Soils (PASS). It is to be applied to all alluvial soils excavated for the development.

Attention is drawn to the fact that verification testing of the treated ASS generally takes between 5 and 10 working days and therefore time should be allowed in the earthworks management plan for the site for this process to occur.

The soil sampling program should be undertaken in accordance with NSW Acid Sulfate Soils Management Advisory Committee (1998) '*Acid Sulfate Soils Assessment Guidelines*' (ASSMAC).

The ASSMP has been prepared in accordance with the ASSMAC (1998) guidelines.

2 RESPONSIBILITIES

The project superintendent is responsible for implementing the ASS management protocols detailed within this ASSMP. Only a suitably experienced ASS consultant may vary the procedures detailed herein.

The superintendent shall:

- Obtain a survey of existing ground levels and develop a model of the site that allows identification of areas where excavations will exceed 1m depth below the existing levels;
- Ensure that the procedures outlined in this management plan shall be applied to all soils excavated below existing ground level;
- Record a daily log showing the volume of material that has been excavated and treated;
- Ensure that verification testing is undertaken by an independent monitoring consultant on a regular basis prior to removal or re-use of treated soils.

The requirements of the ASSMP are in addition to, but do not override any other standard procedures such as safety considerations. Where conflict results, or may result from, the implementation of the ASS management plan as against other performance criteria, the project superintendent shall obtain directives from the project manager or the ASS consultant as appropriate.

3 NEUTRALISING MATERIALS

Fine Agricultural Lime (aglime) will be used for lining of processing or stockpile areas and for blending within excavated materials. Dolomitic aglime, or magnesium blend aglime, should not be used. The aglime shall have:

- At least 85% by weight passing 1mm, and 100% passing 2.5mm. In general a finer grind is better; and

- Aglime shall have a Neutralising Value (NV) of 90% or better (i.e. NV>90).

4 MANAGEMENT AND PROCESSING OF ASS

4.1 Treatment Area

All alluvial soils excavated shall be placed in a prepared treatment area on site at an approved location. To prevent runoff to other areas of the site the treatment area shall be ringed by a bund wall that has a height of at least 0.5m that comprises soils that are not ASS or are treated ASS. The treatment area should be of sufficient size to treat the excavated materials at the proposed excavation rate and to store material for the period required to undertake the verification testing.

For alluvial materials excavated the base of the treatment area and bund wall batter shall be limed at a rate of $11kg_{lime}/tonne_{soil}$.

4.2 Treatment

The ASS shall be placed in the treatment area and spread in layers of not more than 300mm thick with lime being applied across the treatment area at a rate of $11kg_{lime}/tonne_{soil}$.

4.3 Verification Testing

Verification testing shall be undertaken by an independent ASS consultant. The number of samples to be tested shall be based on the volume of the stockpile or treated soil within the treatment area as outlined in Table C1.

Table C1. Number of verification samples required based on treated soil/stockpile volume

Volume (m^3)	Number of samples
<250	2
251 - 500	3
501 – 1,000	4
>1,000	4 plus one per additional $500m^3$

The samples shall be submitted for testing by the Chromium Reducible Sulfur suite and the Verification Net Acidity compared to ASSMAC Action Criteria. The Verification Net Acidity shall be determined from the test results as outlined below:

> *Verification net acidity = Potential Sulfidic Acidity + Actual Acidity + Retained Acidity – (Post treatment Acid Neutralising Capacity – Initial Acid Neutralising Capacity)*

If testing indicates verification net acidity values that exceed ASSMAC Action Criteria in the processed sand, reprocess (potentially requiring variation in the processing methodology) and re-sample to verify that acceptable values have been obtained.

All records applicable to acid sulfate testing and treatment shall be collated to substantiate treatment.

4.4 Water Quality Monitoring

Surface waters and groundwater collected in the treatment area or excavations shall be tested for pH on a daily basis during the works. If the recorded pH of any sample is less than 6, it shall be immediately retested. If the pH is again below 6, the pH shall be adjusted by the application of hydrated lime until it is in the range 6 to 8.

Where the pH is less than 4.0, the ASS Consultant shall be engaged within 6 hours to review the site practices and monitoring results and to recommend remedial measures.

Complete records of all monitoring results shall be maintained by the Contractor.

4.5 Post Treatment

Once the ASS materials have been treated in accordance with this ASSMP, the materials may be reused on site, or disposed of at a licensed waste landfill. In accordance with a directive from the EPA, unless a specific order, exemption, or approval is granted from the EPA the treated material may not be reused on another site.