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Phase Two Environmental Site Assessment Update

5546 Albion Road
Ottawa, Ontario

Prepared for:

MacEwen Petroleum Inc.
18 Adelaide Street
Maxville, Ontario
K0C 1T0

Attention: Mr. Lortie

LRL File No.: 01348

March 17, 2023 (Updated January 23, 2025)

EXECUTIVE SUMMARY

MacEwen Petroleum Inc. (MPI) has retained LRL Associates Ltd. (LRL) to complete a Phase Two Environmental Site Assessment (ESA) Update on the property located at 5546 Albion Road in Ottawa, Ontario (herein referred to as the 'Site'). The location of the Site is presented in in the included **Figure 1**. The assessment was conducted in the context of property redevelopment and corresponding Site Plan Application submission package with the City of Ottawa.

The purpose of a Phase Two ESA Update is to determine if recognized potential environmental concerns have negatively impacted soil and groundwater quality of the subject Site. Such an assessment provides information regarding the nature and extent of potential contamination to assist in making informed business decisions about the property. The potential environmental concerns (PECs) identified that requires investigation include: Petroleum handling and dispensing facility operations and associated equipment on the Site; Aggregate extraction facility located approximately 390 m northeast and 600 m east of the Site; and The historical industrial/commercial development previously occupying the property located immediately east of the Site. This report is intended to be an update to the previously prepared (March 2023) submission, and is to include the results of subsequent groundwater samples to confirm the conditions of the Site.

The Executive Summary for this Phase II ESA is as follows:

Executive Summary	
Summary of Phase II ESA Property ('Site')	The Phase II ESA is located at 5546 Albion Road in Ottawa, Ontario. The Site is irregular in shape with an area of approximately 10 965 m² (2.7 acres), and has been developed with a gas station since between the mid to late 1990's. The property is presently owned and operated by MacEwen Petroleum Inc.
Phase II ESA Investigation	The assessment was completed as per CSA Standards. Should a Record of Site Condition (RSC) be required, the due diligence report will need to be revised to meet the Requirements of O. Reg 153/04 as amended.
Geologic Conditions	Surficial soil deposit mapping indicates that the surficial geology is fine- to medium-grained sand, calcareous and commonly fossiliferous; nearshore sand generally occurs as a sheet or as bars or spits associates with glaciofluvial materials. Bedrock mapping indicates that the bedrock is described as the Oxford Formation: dolomite and limestone.

Hydrogeological Conditions	The investigation involved advancing ten (10) boreholes across the Site at strategic locations based on areas of PECs. Four (4) of the boreholes were completed as monitoring wells to assess hydrogeological conditions and facilitate groundwater sampling. The subsurface soil conditions encountered generally consist of fill to depths between 0.4 and 1.8 m below ground surface (bgs), sand to between 2.8 and 4.5 m bgs, and glacial till to a depth of 4.6 m bgs, where the boreholes were terminated. The overburden material was noted to saturated at depths between 1.5 and 2.1 m bgs. Groundwater depth measurements from the monitoring wells installed were between 1.77 and 1.98 m bgs. Based on these elevations the groundwater flow direction on the Site is towards the south-southwest.
Applicable Site Condition Standards	Regulatory requirements for assessing environmental conditions of a Site are established by Ontario Regulation 153/04 – Records of Site Conditions, Part XV.1 of the Environmental Protection Act (O. Reg. 153/04). Site condition standards are set out in the MECP's" Soil, Ground Water and Sediment Standards for Use Under Part IV.1 of the Environmental Protection Act", April 15, 2011, as amended. The applicable SCS used was the Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, commercial property use and coarse-textured soils.
Soil and Groundwater Quality	Contaminants of potential concern (COPCs), for the soil and groundwater on the Site, include Petroleum Hydrocarbon Compounds (PHCs), Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAH), metals, and inorganics. No olfactory or visual evidence of petroleum hydrocarbon impacts were observed in the soils collected from all boreholes, and the combustible soil vapour (CSV) concentrations measured in the soil samples collected ranged between <0.1 ppm and 0.7 ppm. VOC and PAH parameters analysed were not detected in any of the soil samples submitted for analysis. Select PHC and metals parameters analysed were detected, however levels were measured below applicable Table 2 SCS's. The general inorganic parameters analysed met the applicable standards with the exception to one (1) sample (BH22-4-SS1A) which exceeded the SCS for conductivity. Headspace VOC levels in the monitoring wells ranged between <0.1 ppm and 3.2 ppm during the initial August 2022 groundwater sampling event, and <0.1 ppm during the December 2024 subsequent groundwater sampling activities. VOC and PCB parameters were generally not detected in the groundwater samples submitted. Dichlorodifluoromethane was detected in both MW22-3 and MW22-4, with values of 14.5 and 21.6 µg/L, below the Table 2 SCS of 590 µg/L. Dichlorodifluoromethane is also referred to as Freon-12 and was historically used as a coolant gas in refrigerators and air conditioners. The Site does include refrigerators for beverage storage and ice sales, as well as including an air conditioning unit. No records of leaks or spills related to these units have been identified, therefore the source of the dichlorodifluoromethane detections is unclear. The levels are significantly less than applicable SCS, and therefore does not present a risk to occupants or visitors to the Site. PHC F3 and F4 were detected in select locations, however the levels were below the SCSs with a single exception to PHC F4 in MW22-1, which exceeded the SCS of 500 µg/L with a value of 807 µg/L.

	Select metal parameters were detected, however all levels are below the applicable SCS's with the exception of sodium in each of the four (4) samples collected, and Cobalt in MW22-3. Levels of sodium encountered across the Site in the respective groundwater monitoring wells. The detections of sodium, in addition to the previously detected elevated concentrations of chloride in the groundwater across the Site is most likely a result of seasonal road & parking / circulation area salting or de-icing efforts. Generally, the concentrations encountered in December 2024 samples collected are greater than those of August 2022. This supports the assumed seasonal trend of elevated sodium. Under Ontario Regulation 153/04 Section 49.1, sodium chloride in soil and groundwater can be excluded as an exceedance as it is used for de-icing purposes and is not considered to be a contaminate. Cobalt was reported above the 3.8 µg/L Table 2 SCS in sample MW22-3 with a value of 5.9 µg/L. Cobalt is associated with the manufacturing of pigments, paints and coatings or various chemical, rubber or adhesive production, rechargeable batteries and alloy productions. Different forms of cobalt can also be attributed to alternative sources, such as cobalt sulphate is used in cattle feed as a nutritional supplement. Cobalt is also found in the manufacturing of automobiles. To the best of our knowledge, no manufacturing facilities have operated on the Site therefore the source of the cobalt in MW22-3 could be attributed to a potential off-Site activity. Select PAH parameters were detected in the groundwater. Benzo[a]pyrene is associated with coal tar, tobacco smoke or grilled foods. It was reported to exceeded the SCS in MW22-3 with a value of 0.02 µg/L. Based on the records retrieved for the Site, the use of coal tar or gilling of foods did not occur on the Site.
Conclusions	The soil and groundwater across the Site generally meet the applicable SCS with the following exceptions: • Conductivity impacts to the surface soil in the southeast portion of the Site; and • Chloride impact in the groundwater across the Site; • PHC F4 in MW23-1; • Benzo[a]pyrene in MW22-3; and • Cobalt in MW22-3. The conductivity impacts in the soils are found to encompass an area of approximately 490 m² and are likely limited to the upper 2.0 m of overburden. The vertical, and horizontal extents of the impacted groundwater have not been established at this time. Under Ontario Regulation 153/04 Section 49.1, sodium chloride in soil and groundwater can be excluded as an exceedance as it is used for de-icing purposes and is not considered to be a contaminate. Although not confirmed through the corresponding intrusive investigation and associated sampling, it is anticipated that petroleum impacted are present within the existing underground storage tank installation nest extents and underlying the existing concrete apron and fuel dispensing pump. PHC F3 and PHC F4 are often associated with heavier petroleum-based products such as oils and lubricants. The Site does store small amounts of such products in the retail store, which are in sealed containers. It is unlikely that these detections are a result of these activities, but more likely the result of an isolated

	event such as an accidental release of such products from a motor vehicle in the vicinity of MW22-1, or the previously reported oil spill on the Site. PAH are most associated with the incomplete combustion of fuels within engines or coal, as well as wood is burning. To the best of our knowledge, there has not been any coal, or wood burning activities on the subject Site. Nor has there been an identified source on the Site of incomplete combustion of fuels which may have contributed to the detections of PAHs in the groundwater. It is possible that these detections may have originated from an off-Site source. Cobalt is associated with the manufacturing of pigments, paints and coatings or various chemical, rubber or adhesive production, rechargeable batteries and alloy productions. Different forms of cobalt can also be attributed to alternative sources, such as cobalt sulphate is used in cattle feed as a nutritional supplement. Cobalt is also found in the manufacturing of automobiles. To the best of our knowledge, no manufacturing facilities have operated on the Site therefore the source of the cobalt in MW22-3 could be attributed to a potential off-Site activity.
Recommendations	The findings presented herein, in this Phase Two ESA update report, may be relied upon by the client for the purposes of re-development, subject to the applicable conclusions and limitation outlined herein. At the time of re-development, impacted soil should be removed from the Site in general accordance with Technical Standards and Safety Authority's (TSSA) Environmental Management Protocol for Fuel Handling Sites in Ontario, August 2012 (formerly GA1/99), in addition to the following provincial regulations: • O. Reg. 406/19: On-Site and Excess Soil Management • O. Regulation 558/00: General -Waste Management; and • O. Reg. 153/04: Record of Site Condition. It is recommended that if groundwater monitoring wells are not required for future monitoring purposes, they should be decommissioned in accordance with O. Reg. 903. It is also recommended that the USTs to be installed be constructed of fibreglass so the elevated sodium salts in the groundwater and soil will not impact the integrity of the walls of the tanks.
Limitations	Findings contained in this report are based on data and information collected during the Phase Two ESA update of the subject property conducted by LRL Associates Ltd. Conclusions and recommendations are based solely on-site conditions encountered at the time of our fieldwork between July 28th and August 4th, 2022, December 17th and 19th, 2024, supplemented by historical information and data obtained as described in this report. No assurance is made regarding changes in conditions subsequent to the time of this investigation. If additional information is discovered or obtained, LRL Associates Ltd. should be requested to re-evaluate the conclusions presented in this report and to provide amendments as required. In evaluating the subject property, LRL Associates Ltd. has relied in good faith on information provided by individuals as noted in this report. We assume that the information provided is factual and accurate. We accept no responsibility for any deficiencies, misstatements or inaccuracies contained in this report as a result of omissions, misinterpretation or fraudulent acts of the persons contacted. Additional Limitations and Use of the Report are provided at the end of the subsequent report.

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1 INTRODUCTION

MacEwen Petroleum Inc. (MPI) has retained LRL Associates Ltd. (LRL) to complete a Phase Two Environmental Site Assessment (ESA) Update on the property located at 5546 Albion Road in Ottawa, Ontario (herein referred to as the 'Site'). The assessment was conducted in the context of property redevelopment, in support of a Site Plan Application package to the City of Ottawa. The property has been developed with a gasoline service station since at the least the mid to late 1990's. The assessment was completed as per Canadian Standards Association (CSA) Standards. Should a Record of Site Condition (RSC) be required, the due diligence report will need to be revised to meet the Requirements of O. Reg. 153/04 as amended.

1.1 Purpose

The purpose of a Phase Two ESA Update is to determine if recognized potential environmental concerns have negatively impacted soil and groundwater quality of the subject Site. Such an assessment provides information regarding the nature and extent of potential contamination to assist in making informed business decisions about the property.

The potential environmental concerns (PECs) identified that requires investigation include the following:

- Petroleum handling and dispensing facility operations and associated equipment on the Site;
- Aggregate extraction facility located approximately 390 m northeast and 600 m east of the Site; and,
- Historical industrial/commercial development previously occupying the property located immediately east of the Site.

Contaminants of concern, associated with the identified PECs are:

Contaminates	Parameters
Petroleum Hydrocarbon Compounds (PHCs)	PHC Fraction F1 through Fraction F4
Volatile Organic Compounds (VOCs)	Acetone; Benzene; Bromodichloromethane; Bromoform; Bromomethane; Carbon Tetrachloride; Chlorobenzene; Chloroform; Dibromochloromethane; Dichlorodifluoromethane; 1,2-Dichlorobenzene; 1,3-Dichlorobenzene; 1,4-Dichlorobenzene; 1,1-Dichloroethane; 1,2-Dichloroethane; 1,1-Dichloroethylene; cis-1,2-Dichloroethylene; trans-1,2-Dichloroethylene; 1,2-Dichloropropane; cis-1,3-Dichloropropylene; trans-1,3-Dichloropropylene; 1,3-Dichloropropene, total; Ethylbenzene; Ethylene dibromide (dibromoethane, 1,2-); Hexane; Methyl Ethyl Ketone (2-Butanone); Methyl Isobutyl Ketone; Methyl tert-butyl ether; Methylene Chloride; Styrene; 1,1,1,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethane; Tetrachloroethylene; Toluene; 1,1,1-Trichloroethane; 1,1,2-Trichloroethane; Trichloroethylene; Trichlorofluoromethane; Vinyl Chloride; m/p-Xylene; o-Xylene; and Xylenes, total
Polycyclic Aromatic Hydrocarbons (PAH)	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]anthracene; Benzo[a]pyrene; Benzo[b]fluoranthene; Benzo[g,h,i]perylene; Benzo[k]fluoranthene; Chrysene; Dibenzo[a,h]anthracene; Fluoranthene; Fluorene; Indeno[1,2,3-cd]pyrene; 1-Methylnaphthalene; 2-Methylnaphthalene; Methylnaphthalene (1&2); Naphthalene; Phenanthrene; Pyrene
Regulation 153/04 Metals (August 2022)	Antimony; Arsenic; Barium; Beryllium; Boron (available); Boron; Cadmium; Chromium VI; Chromium; Cobalt; Copper; Lead; Mercury; Molybdenum; Nickel; Selenium; Silver; Thallium; Uranium; Vanadium; Zinc
ICP Metals (December 2024)	Antimony; Arsenic; Barium; Beryllium; Boron (available); Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Molybdenum; Nickel; Selenium; Silver; Thallium; Uranium; Vanadium; Zinc
General Inorganics (August 2022)	Sodium Absorption Ration (SAR); Conductivity; Cyanide, free; and pH
General Inorganics (December 2024)	Sodium Absorption Ration (SAR); Conductivity; and pH

As noted in greater detail in later sections of this report, the contaminates of concern included in the December 2024 sampling and analysis reflect the findings of the initial August 2022 investigation and are slightly refined.

The initial Phase Two ESA was completed to establish the Site's subsurface geology and hydrogeological conditions. Soil and groundwater conditions will be evaluated with respect to the contaminants of concern in the context of the current regulations and guidelines applicable to contaminated sites. The Phase Two Update has been completed to confirm that the conditions of the Site are generally un-changed since the initial intrusive investigation by verifying the groundwater conditions. There have been no changes to the Site operations, nor have there been any reported spills, incidents or reported loss of product associated with the fuel-dispensing Site activities, therefore it is our professional opinion that soil conditions across the Site are likely comparable to those conditions encountered in 2022. Findings and conclusions presented in this report apply only to the recognized environmental conditions assessed.

2 SITE DESCRIPTION

The subject Site is located at 5546 Albion Road, in Ottawa, Ontario. It is located within a generally rural residential and commercial area of Ottawa, at the northwest corner of the intersection of Albion Road, and Mitch Owens Road. The location of the Site is presented in **Figure 1**. The property is legally described as Part of Lot 30, Concession 3 (Rideau Front), Geographic Township of Gloucester, City of Ottawa with Zoning - Rural Commercial 2 (RC2). It is understood that the proposed development will not require a zoning amendment or zoning change.

The Site is irregular shaped being generally rectangular with a portion of the southeastern extent being reduced. The Site is between approximately 85 and 110 m wide (east-west) by between 90 and 115 m deep (north-south) for an approximate surface area of 10 965 m² (2.7 acres). The dimensions of the Site, and general configuration, are presented in **Figure 2**.

For the purpose of this report, Albion Road will be inferred as running in a north-south direction.

2.1 Property Information

Parameters	Information
Location/ Address:	5546 Albion Road, Ottawa, Ontario The location of the Site is presented in **Figure 1**.
Property Identification Numbers (PIN):	5R-14863
Legal Description:	Part of Lot 30, Concession 3 (Rideau Front), Geographic Township of Gloucester, City of Ottawa.
Dimensions/Shape:	Irregular: Being between approximately 100 and 115 m wide (north-south) by between approximately 95 and 110 m deep. The general Site configuration is shown on the Site Plan in **Figure 2**.
Frontage:	Albion Road and Mitch Owens Road
Zoning:	Rural Commercial Zone (RC2)
Area:	Approximately 10,965 m^2 (2.7 acres)

2.2 Site Occupancy

Parameters	Information
Current use/ Occupancy:	Industrial Use: Retail Gasoline Service Station
Current use since:	At least the mid to late 1990's
Proposed Land Use:	Industrial Use: Retail Gasoline Service Station

2.3 Property Ownership

Parameters	Information
Current owner:	MacEwen Petroleum Inc.
Owner since:	At least the mid 1990's
Owner Contact:	Mr. Roch Lortie 18 Adelaide Street, Maxville, Ontario K0C 1T0 613-527-2100

2.4 Current and Proposed Land Use

The Site is presently developed and operated as a retail petroleum dispensing facility equipped with the following equipment:

- Six (6) gasoline dispensing pumps;
- One (1) diesel dispensing pump, and
- Five (5) underground storage tank located at the general southeastern portion of the Site.

No further details pertaining to the size, capacity or construction details of the storage tanks are available at this time. The fuel dispensing pumps are set over a concrete apron with an over-head canopy. A single-story convenience store is located at the approximate central portion of the Site with pavement structure associated with parking and circulation across the central and general eastern portions of the Site. The western and northern portions of the Site include manicured grass with trees and shrubbery.

The Site is serviced with a private sewage disposal system located at the northern portion of the property, and a supply well located at the east-central extent of the Site. It is anticipated that the existing features will be decommissioned and removed from the Site accordingly, and replaced as follows:

- 400 m² single-story convenience store at the central portion of the Site;
- Four (4) underground storage tank, including the following:
- 25 000 L capacity, fiberglass diesel fuel storage tank;
- 25 000 L capacity, fiberglass super grade gasoline storage tank; and
- Two (2) 65 000 L capacity, fiberglass regular grade gasoline storage tank.
- Six (6) fuel dispensing pumps; and
- New private sewage disposal system at the northwest portion of the Site.

3 APPLICABLE GUIDELINE CRITERIA

Regulatory requirements for assessing the environmental conditions of a site are established by Ontario Regulation 153/04 – Records of Site Conditions, Part XV.1 of the Environmental Protection Act (O. Reg. 153/04). The site condition standards are set out in the Ministry of Environment, Conservation and Parks' "*Soil, Ground Water and Sediment Standards for Use Under Part IV.1 of the Environmental Protection Act*", as amended. The applicable site condition standard used was the Table 2 Full Depth Generic Site Condition Standards (SCS) in a potable groundwater condition, commercial property use and coarse textured soils for the following reasons outlined in the table below.

Parameters	Information
Property Land Use	Industrial: Retail Gasoline Service Station
Potable or Non-Potable Groundwater Conditions	Potable Groundwater Conditions
Proximity to Surface Water	A ditch is identified 5 m west of the Site on the neighbouring land to the west, and an unevaluated wetland is located approximately 30 m or more from the Site boundaries, on the property to the west and north.
Areas of Natural Significance	The wooded lands located immediately west of the Site, and the neighbouring lands to the north, are identified to contain unevaluated wetlands according to provincial mapping systems (Ministry of Natural Resources and Forestry, Make a Map: Natural Heritage Areas). Initial pre-consultation discussions with the City of Ottawa, September 22, 2021, revealed that the Site is located within the wellhead capture zone for the neighbouring Albion Sun Vista communal supply well system. This communal well is located downgradient (south) of the subject Site, following Mitch Owens Road and is sourced by the shallow bedrock aquifer which is hydraulically connected to the sand/gravel/till overburden recharge zone.
Bedrock Details	Based on available well record data available through the Ontario Water Well Record (WWR) database, bedrock is generally encountered at depth between 6.1 and 19.2 m bgs within approximately 500 m of the Site. The WWR for the existing on-Site supply wells details bedrock encountered at a depth of 16.4 m bgs. Bedrock mapping indicates that the bedrock is described as the Oxford Formation: dolomite and limestone.
Direction of Groundwater Flow	The regional groundwater flow direction is likely to the northwest towards the Rideau River, located approximately 8.5 km to the west of the Site. Based on existing Site features, and topography, as discussed in further sections of this Phase Two ESA Update report, the overburden groundwater flow direction on the Site is revealed to be towards the south / southwest.
Grain Size Analysis	As part of a Geotechnical Investigation completed by LRL, in support of the proposed Site re-development, select soil samples were submitted for laboratory gradation analyses. Based on the analytical results, the native subsurface soils were identified to be fine- to medium-grained. A copy of the analytical results are inlcuded in **Appendix A**. Further details with regards to the sampling and analysis are available in the *Geotechnical Investigation, Proposed Site Redevelopment, 5546 Albion Road South, Ottawa, Ontario* report prepared by LRL, dated June 2022.
pH of Soil	Laboratory Analysis, discussed in greater detail below in Section 6.1.4, reported soil pH values of between 6.9 and 7.6 pH units from depths between 0.6 and 4.5 m bgs.

4 BACKGROUND INFORMATION

4.1 Physical Setting

The topography of the Site and neighbouring lands is generally flat. The subject Site and the neighbouring lands have a common topographic elevation of approximately 100 m above mean sea level (amsl) according to *The Atlas of Canada - Toporama*. More specifically, the Site has a slight slope to the south, towards Mitch Owens Road. Elevations along the southern extent of the Site range between 103.7 and 102.5 m amsl according to the Annis, O'Sullivan, Vollebekk Ltd. Topographic Survey plan, dated April 18, 2022, and included in **Appendix B**.

According to *The Atlas of Canada – Toporama*, the regional groundwater flow direction is to the northwest towards the Rideau River, located approximately 8.5 km to the west of the Site.

A surface ditch has been identified in the vicinity of the Site, on the neighbouring land to the west. According to the City of Ottawa's interactive mapping system, geo-Ottawa, it is defined as a ditch, extending approximately 5.0 m from the western Site boundary. The wooded lands located immediately west of the Site, and the neighbouring lands to the north, are identified to contain unevaluated wetlands according to provincial mapping systems (Ministry of Natural Resources and Forestry, Make a Map: Natural Heritage Areas). The identified unevaluated wetland is greater than 30 m from the Site property boundaries.

Based on a review of the Canada Radon, Radon Potential Map of Ontario, the Site is situated within a Relative Radon Hazard Zone 3 – Guarded.

4.2 Neighbouring Properties and Land Uses

According to the City of Ottawa's Zoning information, available through the City of Ottawa's on-line interactive mapping portal, geoOttawa, the neighbouring lands are zoned as follows:

- Rural Residential Zone (RR5) to the west and north;
- Rural Heavy Industrial Zone (RH1) followed by Mineral Extraction Zone (ME2) to the east of the Site following Albion Road; and
- Rural Commercial Zone (RC and RC3) to south and southeast of the Site, respectively; and Mobile Home Zone (RM3) to the southwest.

The neighbouring land uses generally include the following:

- The neighbouring land to the south includes Mitch Owens Road followed by wooded land and high-density residential developments, including the Albion Sun Vista mobile home community, between 160 m and 400 m from the southern property limit of the Site;
- East of the Site, following Albion Road, is un-developed grass land with the exception to the portion of the land in the vicinity to the Mitch Owen Road and Albion Road intersection which includes an asphalted structure across the ground surface;
- West of the site is wooded in addition to an unevaluated wetland, as identified by the City of Ottawa (Further details are provided in subsequent sections); and
- North of the subject Site is a residential subdivision development.

4.3 Previous Reports

The following reports were reviewed as part of this Phase Two Environmental Site Assessment Update. This Phase Two Environmental Site Assessment Update report is a direct update to the previously completed report dated March 2023, which is not summarised below, but rather amended herein.

4.3.1 Geotechnical Investigation, Proposed Site Redevelopment, 5546 Albion Road South, Ottawa, Ontario, June 2022

LRL was retained by MacEwen Petroleum Inc. to perform a geotechnical investigation for the proposed Site redevelopment, located at 5546 Albion Road Street South, Ottawa, Ontario. The purpose of the investigation was to identify the subsurface conditions across the Site and provide guidelines on the geotechnical engineering aspects of the design of the project, including construction considerations. It is understood that this investigation report was included in the remainder of the Site Plan Application requirements for the redevelopment of the Site.

The fieldwork for this investigation was carried out on May 25, 2022. A total of four (4) boreholes, labelled BH1 through BH4, were drilled onsite to get a general representative of the Site's soil condition. The boreholes were advanced using a truck mount CME 75 drill rig equipped with 200 mm diameter continuous flight hollow stem auger supplied. Sampling of the overburden materials encountered in the boreholes was carried out at regular depth intervals using a 50.8 mm diameter drive open conventional spoon sampler in conjunction with standard penetration testing (SPT) "N" values. The SPT were conducted following the method ASTM D1586 and the results of SPT, in terms of the number of blows per 0.3 m of split-spoon sampler penetration after first 0.15 m designated as "N" value.

The boreholes were advanced to a depth of 6.71 m bgs. The subsurface conditions encountered at the time of the borehole drilling generally included the following:

- Topsoil, with a thickness of 75 mm, was encountered in a borehole advanced at the general central portion of the Site, on the grassed landscaped area of the property. The remaining boreholes, advanced across the asphalted parking and circulation areas of the Site revealed the presence of consisting of 100 mm thickness of asphalt overlying granular material have a thickness of 300 – 400 mm.
- The pavement structure, and topsoil, was followed a fill material to depths ranging between 1.06 and 1.75 m bgs. The fill was generally be described as a mixture of brown sand and gravel.
- Underlying the fill was sand that extended to depths ranging between 2.97 and 6.71 m bgs. This material can be described as having trace silt, trace clay, greyish brown, and wet.
- Two (2) boreholes advanced to the north of the existing store encountered a thin layer of silt and clay under the sand layer, to depths of between 4.12 and 4.42 m bgs. This material can be described as having trace sand, grey, and wet.
- Glacial Till was encountered under the sand, or silt and clay materials which extended to a depth of 6.71 m bgs, where the boreholes were terminated. This material can be described as a mixture of silt-sand, some gravel sized stone, trace clay, grey, and wet

Groundwater was carefully monitored during this field investigation. During drilling, water was encountered at depths ranging between 2.9 and 3.3 m bgs. (i.e., these visual measurements and should not be confused as the measured water table).

Based on the conditions encountered at the time of the field investigation, and the results of the corresponding laboratory analysis, detailed geotechnical considerations with respect to the various aspects of the proposed construction are provided. For specific details related to these considerations, the formal report dated June 2022 should be consulted.

4.4 Media Investigation

The Phase Two ESA was initiated to investigate the potential for impact to the soil and groundwater on, within or under the Site. No sediment sampling was completed as part of this Phase Two ESA, as no surface water bodies are present on the Site at the time of the investigation. The Phase Two ESA Update included confirmatory sampling of the groundwater monitoring wells available on the Site to confirm the quality of groundwater with respect to contaminates of concern. It is anticipated that should Site conditions have changed, the conditions of the groundwater would be a viable indicator of such.

4.5 Scope of Investigation

LRL conducted this work in accordance with the standard Phase Two ESA procedures, which generally reflect the requirements of:

- Canadian Standards Association (CSA) Phase II Environmental Site Assessment, Z769-00 (R2018);
- Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, Ministry of the Environment, Conservation and Parks, March 2009; and
- O. Reg. 153/04, as amended.

This report will present the results of the ESA carried out between July 28th and August 4th, 2022, and December 17th and December 19th, 2024.

4.5.1 Soil Investigation

The subsurface soil investigation was initiated on July 28th and 29th, 2022, to confirm the possible impacts associated with the areas of potential environmental concern identified. The investigation was generally completed as such:

- The drilling contractor was Strata Drilling Group (Ottawa, Ontario) and worked under LRL field staff supervision;
- Ten (10) boreholes (BH22-1 through BH22-10) were advanced within the overburden to depths of 4.6 m below ground surface (bgs);
- A Geoprobe 7822DT, equipped with approximately 91 mm direct push probe casings, was used as part of the investigation;
- Soil samples were collected continuously using single-use plastic casing liners 1.5 m in length;
- Representative soil samples from each soil stratum encountered, or approximately every two (2) feet, were collected and transferred immediately into sealed laboratory supplied glass containers and polyethylene freezer bags;
- Samples were examined for soil type, colour, staining/discolouration and odours;
- Samples were logged, labelled and stored on-Site in a cooler chilled with ice to prevent evaporation of potential combustible soil vapours (CSV);

- Soil samples stored in bags were screened for CSV presence using a Mini Rae 3000 Photoionization Detector (PID);
- All field-screening devices such as the combustible gas detector, were calibrated prior to use, to ensure accuracy and reliability of readings;
- Thorough decontamination of all sampling equipment. Use of dedicated sampling equipment when possible;
- Duplicate samples were collected, of which one (1) for every ten (10) samples submitted for analysis were included in the analytical program;
- Thorough documentation of all field activities and sample handling practices including field notes, chain of custody forms, memos to files, etc.;
- Samples were submitted to a laboratory which is certified by the Canadian Association for Laboratory Accreditation (CALA); and
- Soil cuttings were collected and temporarily stored on Site in sealed containers awaiting future off-Site disposal at a licenced waste disposal facility by a competent contractor.

Details of the borehole drilling are provided in the borehole logs in **Appendix C**. Locations of the boreholes are presented in **Figure 2**.

4.5.2 Groundwater Investigation

The groundwater investigation was initiated between August 2nd and 4th, 2022, to intercept the overburden groundwater table, anticipated to be located within the upper 6.0 m of soil across the Site. Generally, the following activities were carried out to confirm the overburden groundwater conditions:

- Four (4) boreholes were completed as monitoring wells: BH22-1, BH22-2, BH22-3 and BH22-4 (herein referred to as MW22-1, MW22-2, MW22-3, and MW22-4) to facilitate the assessment of the Sites hydrogeological conditions and groundwater sampling;
- Monitoring wells were constructed within the 91 mm diameter boreholes with a 51 mm slotted PVC piezometer of 3.0 m in length;
- Newly installed wells were instrumented with dedicated LDPE tubing to facilitate well development, purging and sampling requirements;
- Prior to sampling, water levels were measured using an electronic water level meter and reduced to static elevations based on monitoring well survey data;
- Each well was developed by removing up to ten (10) well volumes or removing sufficient volume to create dry conditions a total of three (3) consecutive times. Purge water was observed for colour, sheens, or odour;
- Using a hand-held pH/EC/TDS parameter pen (Hanna Instruments), field parameters were collected during the well development process to demonstrate stable conditions have been meet;
- Using a dedicated bailer and LDPE tubing, groundwater was transferred into laboratory supplied water bottles. Samples were logged, labelled and stored on site in a cooler chilled with ice. Purge water was stored in a secure and appropriate drum awaiting off-Site disposal at an approved facility by a licenced contractor;
- One (1) duplicate sample, for every ten (10) samples collected was included in the sample submission, for the respective parameters related to the Site; and

- One (1) trip blank was included in the sampling program as part of LRLs QA/C procedures.

4.5.3 Subsequent Groundwater Investigation

LRL returned to the Site on December 17th and 19th, 2024, to confirm the conditions of the overburden groundwater table. Generally, the following activities were carried out to confirm the overburden groundwater conditions:

- The four (4) previously completed groundwater monitoring wells: MW22-1, MW22-2, MW22-3, and MW22-4 were incorporated into the subsequent groundwater sampling investigation;
- Prior to sampling, water levels were measured using an electronic water level meter and reduced to static elevations based on monitoring well survey data;
- Each well was developed by removing up to ten (10) well volumes or removing sufficient volume to create dry conditions a total of three (3) consecutive times using the dedicated LDPE tubing and foot valves. Purge water was observed for colour, sheens, or odour;
- Using a hand-held pH/EC/TDS parameter pen (Hanna Instruments), field parameters were collected during the well development process to demonstrate stable conditions have been meet; and
- Using a dedicated bailer and LDPE tubing, groundwater was transferred into laboratory supplied water bottles. Samples were logged, labelled and stored on site in a cooler chilled with ice.

4.6 Phase One Environmental Site Assessment Conceptual Model

A Phase One ESA was completed in support of the proposed re-development activities, and respective Site Plan Application process. The Phase One ESA was completed by LRL and is dated December 13, 2023. The PCAs identified on the Phase One Property, as well as those identified within the Phase One Study Area were recognised through the records review, interview, and Site reconnaissance. A total of eight (8) PCAs were identified. They are further summarized below as follows:

O. Reg 153/04 Schedule D PCA	Location of PCA	Description and Source Information	Contribution to an APEC
PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	The Site is operated as a gasoline service station equipped with five (5) underground storage tanks along the southeastern extent of the Site. Fuel is dispensing equipment is used on the Site, also located at the general southeastern portion of the property.	The PCA is located on the Site and is therefore automatically considered to contribute to an on-Site APEC.
PCA 30: Importation of Fill Materials of Unknown Quality	On-Site	At the time of the Site visit, there did appear to be intentional grading across the property, which further confirms the findings of buried fill across the Site, as	The PCA is located on the Site and is therefore automatically considered to contribute to an on-site APEC.

O. Reg 153/04 Schedule D PCA	Location of PCA	Description and Source Information	Contribution to an APEC
		presented it eh previously prepared Phase II ESA.	
PCA Other: Spill	On-Site	In 2007, approximately 300 L of gasoline was spilt to the parking lot, road and ditch at the Site. Groundwater and soil impacts were identified.	The PCA is located on the Site and is therefore automatically considered to contribute to an on-site APEC.
PCA Other: Spill	On-Site	In 2017, 25 L of gasoline and water was related to the ground.	The PCA is located on the Site and is therefore automatically considered to contribute to an on-site APEC.
PCA Other: Spill	On-Site	In 2020, approximately 27 L of oil was accidently released from a vacuum truck.	The PCA is located on the Site and is therefore automatically considered to contribute to an on-site APEC.
PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	5545 Albion Street, 30 m east of the Site following Albion Road (up-gradient).	Records retrieved through the EcologERIS search provider, revealed that a construction company operated at this property from at least the early 1990's (1992) through approximately 2018. The facility was equipped with both underground and above ground petroleum storage tanks.	The PCA is located east of the Site, up-gradient with respect to the groundwater flow direction, therefore represents an APEC across the general eastern portion of the Site.
PCA 52: Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	5457 Albion Road South, approximately 200 m north of the Site (up-gradient).	In the 2000 City Directories reviewed, the property is listed as: Albion Glass & Mirror; Carson's Auto Repair; Doval Automotive; and Ouimet Rick Transport. And in 2006-07, this property is listed as Planet Granite; Albion Glass & Mirror, Can's Auto; and Doval Automotive.	The PCA is located north of the Site, up-gradient with respect to the groundwater flow direction, therefore represents an APEC across the general eastern portion of the Site.
PCA Other: Spill	Albion Road, north of Regional Road 8- assumed immediately east of the Site (up-gradient).	In 1993, a private owner at the, spilt 45 L of gasoline to the ditch resulting from an automobile accident.	The PCA is located north of the Site, up-gradient with respect to the groundwater flow direction, therefore represents an APEC across the general eastern portion of the Site.

The contaminates of potential concern, related to the identified PCAs, are as follows:

Contaminates	Parameters
Petroleum Hydrocarbon Compounds (PHCs)	PHC Fraction F1 through Fraction F4
Volatile Organic Compounds (VOCs)	Acetone; Benzene; Bromodichloromethane; Bromoform; Bromomethane; Carbon Tetrachloride; Chlorobenzene; Chloroform; Dibromochloromethane; Dichlorodifluoromethane; 1,2-Dichlorobenzene; 1,3-Dichlorobenzene; 1,4-Dichlorobenzene; 1,1-Dichloroethane; 1,2-Dichloroethane; 1,1-Dichloroethylene; cis-1,2-Dichloroethylene; trans-1,2-Dichloroethylene; 1,2-Dichloropropane; cis-1,3-Dichloropropylene; trans-1,3-Dichloropropylene; 1,3-Dichloropropene, total; Ethylbenzene; Ethylene dibromide (dibromoethane, 1,2-); Hexane; Methyl Ethyl Ketone (2-Butanone); Methyl Isobutyl Ketone; Methyl tert-butyl ether; Methylene Chloride; Styrene; 1,1,1,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethane; Tetrachloroethylene; Toluene; 1,1,1-Trichloroethane; 1,1,2-Trichloroethane; Trichloroethylene; Trichlorofluoromethane; Vinyl Chloride; m/p-Xylene; o-Xylene; and Xylenes, total
Polycyclic Aromatic Hydrocarbons (PAH)	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]anthracene; Benzo[a]pyrene; Benzo[b]fluoranthene; Benzo[g,h,i]perylene; Benzo[k]fluoranthene; Chrysene; Dibenzo[a,h]anthracene; Fluoranthene; Fluorene; Indeno[1,2,3-cd]pyrene; 1-Methylnaphthalene; 2-Methylnaphthalene; Methylnaphthalene (1&2); Naphthalene; Phenanthrene; Pyrene
Regulation 153/04 Metals; and	Antimony; Arsenic; Barium; Beryllium; Boron (available); Boron; Cadmium; Chromium VI; Chromium; Cobalt; Copper; Lead; Mercury; Molybdenum; Nickel; Selenium; Silver; Thallium; Uranium; Vanadium; Zinc
General Inorganics	Sodium Absorption Ration (SAR); Conductivity; Cyanide, free; and pH

Underground utilities are present on the Site and are generally associated with the on-Site operations as a gasoline service station including buried hydro services for the fuel dispensing pumps, and piping. Storm services are also present throughout the property. These installations may influence the transportation and distribution of potential contaminates on the Site.

5 INVESTIGATION METHOD

5.1 General

5.1.1 Field Preparation

Location of all buried and overhead services were obtained by LRL prior to initiation of the subsurface investigation.

5.1.2 Intrusive Investigation

An intrusive investigation was carried out on July 28th and 29th, 2022. Ten (10) boreholes were advanced across the Site, four (4) of which were completed as monitoring wells (MW):

Borehole	Location	Rational
BH22-1, BH22-2	In the southeast portion of the Site.	To establish the potential soil or groundwater impacts associated with the petroleum handling and dispensing facility operations and associated equipment on the Site. More specifically the existing underground petroleum storage tanks.
BH22-3, BH22-4, BH 22-7	Surrounding the pump island.	To establish the potential soil or groundwater impacts associated with the petroleum handling and dispensing facility operations and associated equipment on the Site. More specifically, the existing fuel dispensing pumps.
BH22-1, BH22-9, BH22-10	Along the eastern perimeter of the Site.	To establish the potential soil or groundwater impacts associated with the historical industrial/commercial development previously occupying the property located immediately east.
BH22-1, BH22-9, BH22-10	Along the eastern perimeter of the Site.	To establish the potential soil or groundwater impacts associated with the aggregate extraction facility located approximately 390 m northeast and 600 m east of the Site.
BH22-5, BH22-6, BH22-8	Along the north and west portions of the Site	To establish the potential soil and groundwater impacts associated with the general site activities.

Borehole and monitoring well locations are presented in the included **Figure 2.**

5.2 Borehole Drilling

The intrusive investigation was conducted on July 28th and 29th, 2022 by LRL. The drilling contractor retained was Strata Drilling Group (Ottawa, Ontario) and worked under LRL field staff supervision. Ten (10) boreholes (BH22-1 through BH22-10) were advanced within the overburden to depths of 4.6 m below ground surface (bgs) using a Geoprobe 7822DT equipped with approximately 91 mm direct push probe casings. Soil samples were collected continuously using single-use plastic casing liners 1.5 m in length.

Details of the borehole drilling are provided in the borehole logs in **Appendix C**. Locations of the boreholes are presented in **Figure 2**.

5.2.1 Soil Sampling and Field Screening

Representative soil samples from each soil stratum encountered, or approximately every two (2) feet, were collected and transferred immediately into sealed laboratory supplied glass containers and polyethylene freezer bags. Samples were examined for soil type, colour, staining/discolouration and odours. Samples were logged, labelled and stored on-Site in a cooler

chilled with ice to prevent evaporation of potential combustible soil vapours (CSV). Soil samples stored in bags were screened for CSV presence using a Mini Rae 3000 Photoionization Detector (PID).

Measures taken to minimize cross contamination during the intrusive investigation are provided below in Section 5.6.

5.3 Monitoring Well Installation

Four (4) boreholes were completed as monitoring wells: BH22-1, BH22-2, BH22-3 and BH22-4 (herein referred to as MW22-1, MW22-2, MW22-3, and MW22-4).

Monitoring wells were constructed within the 91 mm diameter boreholes with a 51 mm slotted PVC piezometer. The top of the screen was extended to the ground surface using a solid riser pipe. Annular space around the slotted portion of the piezometer was backfilled with pre-washed and graded silica sand up to 300 mm above the top of the screen. A bentonite seal was placed above the sand pack and bentonite was used to fill the remainder of the hole to the surface. Monitoring wells were finished at the surface with a flush-mount aluminum casing.

Details of monitoring wells are provided in borehole logs in **Appendix C**.

5.3.1 Groundwater Monitoring and Sampling

Headspace vapour measurements for volatile organic compounds (VOC) were measured in each monitoring well immediately after removing the cap, prior to purging and sampling. VOC concentrations were measured by placing the combustible soil vapour nozzle at least 15 cm below the top of the casing and recording the peak VOC reading.

Newly installed wells were instrumented with dedicated LDPE tubing to facilitate well development, purging and sampling requirements. Prior to sampling, water levels were measured using an electronic water level meter and reduced to static elevations based on monitoring well survey data. Each well was developed by remaining up to ten (10) well volumes or removing sufficient volume to create dry conditions a total of three (3) consecutive times using dedicated LDPE tubing and foot valve. Purge water was observed for colour, sheens, or odour. Using a dedicated bailer and LDPE tubing, groundwater was transferred into laboratory supplied water bottles. Samples were logged, labelled and stored on site in a cooler chilled with ice.

Purge water was stored in a secure and appropriate drum awaiting off-Site disposal at an approved facility by a licenced contractor.

5.3.2 Subsequent Groundwater Sampling

As part of the Phase Two ESA Update, LRL returned to the Site on December 17th and 19th, 2024, to develop the available groundwater monitoring wells, and collect representative groundwater samples. This additional sampling was intended to confirm that the conditions of the Site have generally un-changed. As there have been no changes to the Site operations since the initial 2022 subsurface investigation, nor has there been any reported spills, incidents or loss of product reported, it is considered suitable to confirm the Site conditions through groundwater sampling and analysis.

Headspace vapour measurements for VOC were measured in each monitoring well immediately after removing the cap, prior to purging and sampling. VOC concentrations were measured by placing the combustible soil vapour nozzle at least 15 cm below the top of the casing and recording the peak VOC reading.

The previously installed dedicated LDPE tubing remained in each monitoring well, and was used to facilitate well development, purging and sampling requirements. Prior to sampling, water levels were measured using an electronic water level meter and reduced to static elevations based on monitoring well survey data. Each well was developed by remaining up to ten (10) well volumes or removing sufficient volume to create dry conditions a total of three (3) consecutive times using dedicated LDPE tubing and foot valve. Purge water was observed for colour, sheens, or odour. Using a dedicated bailer and LDPE tubing, groundwater was transferred into laboratory supplied water bottles. Samples were logged, labelled and stored on site in a cooler chilled with ice.

5.4 Elevation Surveying

Ground surface elevations and tops of all monitoring well risers were surveyed and referenced to a temporary benchmark, assigned an arbitrary elevation of 100.00 m. Subsequent measurements of water elevations were made in reference to top of well risers. This benchmark was established as the west side of the storm sewer grate along the east portion of the Site.

For the purposes of this assessment, geodetic elevations of the groundwater across the property are not considered a requirement. Should the water levels presented herein be considered for development purposes, reference to a known benchmark elevations should be assigned to the ground surface and groundwater levels included in **Table 1**.

5.5 Analytical Testing

Representative soil and groundwater samples collected during the investigation were submitted for laboratory analysis. The rationale for selection of the samples submitted for analysis was based on the results of the sample field screening (CSVs), visual/olfactory observations and/or proximity to the water table.

Samples were submitted to Paracel Laboratories Ltd., (Ottawa, Ontario) for the following contaminants of concern: VOC, PHC fractions F1 (C6 – C10), F2 (>C11 – C16), F3 (>C16 – C34) and F4 (>C34), PAH, metals, and general inorganics.

Laboratory Certificates of Analysis are included in **Appendix D**. All remaining samples not analyzed will be kept in storage for a period of one month following submission of this report at which time they shall be disposed of unless a written or verbal notice is received, stating otherwise.

5.6 QA/QC Protocols

Quality assurance/quality control (QA/QC) protocols were followed during the borehole drilling and sampling to ensure that representative samples were obtained. The protocols were generally performed in accordance with the following:

- Ontario Ministry of Environment, Conservation and Parks' (MECP) "*Guidance on* Sampling and Analytical Methods for Use at Contaminated Sites in Ontario", revised February 1997.
- Canadian Standards Association (CSA) Phase II Environmental Site Assessment, Z769-00 (R2018).

Field protocols that were employed include:

- All field-screening devices such as the combustible gas detector, were calibrated prior to use, to ensure accuracy and reliability of readings;

- Thorough decontamination of all sampling equipment. Use of dedicated sampling equipment when possible;
- Soil and groundwater samples collected were placed in laboratory supplied glass sample containers;
- Thorough documentation of all field activities and sample handling practices including field notes, chain of custody forms, memos to files, etc.; and
- Samples were submitted to a laboratory which is certified by the Canadian Association for Laboratory Accreditation (CALA).

Other QA/QC procedures conducted by LRL are outlined in the methodologies detailed below in Section 6.

6 REVIEW & EVALUATION

6.1 Soil Sampling

6.1.1 Geology

The subsurface soil conditions in the area investigated on the Site are summarized in the following table. Detailed borehole logs are presented in **Appendix C**.

Borehole Identification	Type	Geological Description	Depth Range (m bgs)	Soil Sample
BH22-1 (MW22-1)	Asphalt	100 mm	0.0 – 0.1	--
	Pavement Structure	Sand and gravel, dry.	0.1 – 0.3	SS1A
	Fill	Sand and gravel, traces of silty loam, dry.	0.3 – 0.8	SS1A, SS1B
	Sand	Medium to coarse-grained, grey, moist to saturated.	0.8 – 3.5	SS1C, SS2A, SS2B, SS3A
	Glacial Till	Silt-sand with gravel, grey, saturated.	3.5 – 4.6	SS3B, SS3C
BH22-2 (MW22-2)	Asphalt	100 mm	0.0 – 0.1	--
	Pavement Structure	Sand and gravel, dry.	0.1 – 0.4	SS1A
	Sand	Medium to coarse-grained, brown becoming grey, moist to saturated.	0.4 – 2.8	SS1A, SS1B, SS2A, SS2B
	Glacial Till	Silty sand with gravel, clayey, grey, saturated.	2.8 – 4.6	SS2C, SS3A, SS3B, SS3C
BH22-3 (MW22-3)	Asphalt	100 mm	0.0 – 0.1	--
	Pavement Structure	Sand and gravel, dry.	0.1 – 0.3	--
	Fill	Sand and gravel, dry.	0.3 – 1.5	SS1A
	Sand	Medium to coarse-grained, brown to grey, moist to saturated.	1.5 – 4.5	SS2A, SS2B, SS2C, SS3A, SS3B
	Glacial Till	Silt-sand with gravel, grey, saturated.	4.5 – 4.6	SS3C

BH22-4 (MW22-4)	Asphalt	100 mm	0.0 – 0.1	--
	Pavement Structure	Sand and gravel, dry.	0.1 – 0.4	SS1A
	Fill	Sand and gravel, dry.	0.4 – 1.2	SS1A, SS1B
	Sand	Medium to coarse-grained, brown to grey, moist to saturated.	1.2 – 3.5	SS1C, SS2A, SS2B, SS3A
	Glacial Till	Silty sand with gravel, clayey, grey, saturated.	3.5 – 4.6	SS3B, SS3C
BH22-5	Asphalt	100 mm	0.0 – 0.1	--
	Pavement Structure	Sand and gravel, dry.	0.1 – 0.3	SS1A
	Fill	Crushed stone and gravel, dry.	0.3 – 0.6	SS1A
	Sand	Medium to coarse-grained, silty, brown, moist to saturated.	0.6 – 3.6	SS1B, SS2A, SS2B, SS3A
	Glacial Till	Silty sand with gravel, grey.	3.5 – 4.6	SS3B, SS3C
BH22-6	Asphalt	100 mm	0.0 – 0.1	--
	Pavement Structure	Sand and gravel, dry.	0.1 – 0.3	--
	Fill	Medium-grained sand, and gravel, dry.	0.3 – 0.9	--
	Sand	Medium to coarse-grained, silty, brown becoming grey, moist to saturated.	0.6 – 3.5	SS1A, SS1B, SS2A, SS2B, SS3A
	Glacial Till	Silty sand with gravel, traces of clay, grey, saturated.	3.5 – 4.6	SS3B, SS3C
BH22-7	Asphalt	100 mm	0.0 – 0.1	--
	Pavement Structure	Sand and gravel, dry.	0.1 – 0.6	--
	Silt	Brown, dry.	0.6 – 1.0	SS1A
	Sand	Loamy, brown becoming grey, moist to saturated.	1.0 – 3.4	SS1B, SS2A, SS2B, SS2C, SS3A
	Glacial Till	Silty sand with gravel, traces of clay, grey, saturated.	3.4 – 4.6	SS3B, SS3C
BH22-8	Asphalt	100 mm	0.0 – 0.1	--
	Pavement Structure	Sand and gravel, dry.	0.1 – 0.3	--
	Fill	Medium-grained sand, and gravel, brown, dry.	0.3 – 1.8	SS1A, SS1B, SS2A
	Sand	Medium to coarse-grained, brown becoming grey, moist to saturated.	1.8 – 2.8	SS2B, SS2C
	Glacial Till	Silty sand with gravel, traces of clay, grey, saturated.	2.8 – 4.6	SS3A, SS3B, SS3C
BH22-9	Asphalt	100 mm	0.0 – 0.1	--
	Pavement Structure	Sand and gravel, dry.	0.1 – 0.3	SS1A
	Fill	Medium-grained sand, and gravel, brown, dry.	0.3 – 1.8	SS1A, SS1B

	Sand	Medium to coarse-grained, clayey, brown, saturated.	1.8 – 3.8	SS2A, SS2B, SS3A
	Clay	Silty, grey.	3.8 – 4.6	SS3B
BH22-10	Asphalt	100 mm	0.0 – 0.1	--
	Pavement Structure	Sand and gravel, dry.	0.1 – 0.3	--
	Fill	Medium-grained sand, silty, brown, dry.	0.3 – 1.3	SS1A
	Sand	Medium to coarse-grained, brown becoming grey, moist to saturated.	1.3 – 3.7	SS1B, SS2A, SS2B, SS2C, SS3A
	Glacial Till	Silty sand with gravel, traces of clay, grey, saturated.	3.7 – 4.6	SS3B

6.1.2 Soil: Field Screening

No olfactory or visual evidence of petroleum hydrocarbon impacts were observed in the soils collected from all boreholes. The CSV concentrations measured in the soil samples collected ranged between non-detect (<0.1 ppm) and 0.7 ppm.

CSV measurements are summarized in the borehole logs in **Appendix C**.

6.1.3 Soil Texture

As part of a Geotechnical Investigation completed by LRL, in support of the proposed Site re-development, select soil samples were submitted for laboratory gradation analyses. Based on the analytical results, the native subsurface soils were identified to be fine- to medium-grained. A copy of the analytical results is included in **Appendix A**.

Further details with regards to the sampling and analysis are available in the Geotechnical Investigation, Proposed Site Redevelopment, 5546 Albion Road South, Ottawa, Ontario report prepared by LRL, dated June 2022 and discussed in Section 0.

6.1.4 Soil Quality

The analytical results of the submitted soil samples and respective MECP standards are presented in **Table 2** and **Table 3**. The soil exceedances are presented in **Figure 3**. At least one (1) soil sample from each borehole was submitted for chemical analysis to determine the impacts of recognized APECs. The laboratory certificates of analysis for soil are included in **Appendix D**.

VOC and PAH parameters analysed were not detected in any of the soil samples submitted for analysis. PHC parameters analysed were detected in three (3) samples submitted as follows:

- BH22-1-SS1B (0.6 to 0.8 m bgs) had PHC F3 and PHC F4 detected with levels of 38 µg/g and 29 µg/g, below the SCSs of 1700 µg/g and 3 300 µg/g, respectively;
- BH22-4-SS1A (0.3 to 0.6 m bgs) had PHC F3, PHC F4 and PHC G4 detected with levels of 119 µg/g, 165 µg/g and 715 µg/g, below the SCSs of 1 700 µg/g, 3 300 µg/g and 3 300 µg/g, respectively; and
- BH22-5-SS2B (2.0 to 3.0 m bgs) had PHC F4 detected with a level of 23 µg/g, below the SCS of 3 300 µg/g.

Select metal parameters were detected in all soil samples submitted, however levels were measured below applicable Table 2 SCS's.

The general inorganic parameters analysed met the applicable standards with the exception of BH22-4-SS1A which exceeded for conductivity with a level of 1 430 uS/cm, above the SCS of 1 400 uS/cm. The conductivity impacts in the soils are found to encompass an area of approximately 490 m², as presented in **Figure 3**, and are likely limited to the upper 2.0 m of overburden. This is considered as sample BH22-4-SS2B, collected beneath the aforementioned sample at depths between 2.0 and 3.0 m bgs, was reported to have a conductivity value of 237 uS/cm, below the SCS of 1 400 uS/cm.

Although not confirmed through the corresponding intrusive investigation and associated sampling, it is anticipated that petroleum impacted are present within the existing underground storage tank installation nest extents and underlying the existing concrete apron and fuel dispensing pump. It is understood that the proposed re-development activities, to which this Phase II ESA is supporting, will involve the replacement of the existing petroleum installations, therefore possible impacted underlying soils in their vicinity will be confirmed at this time.

6.2 Groundwater Sampling

6.2.1 Groundwater Quality

The groundwater analytical results and respective MECP standards are summarized in **Table 4** and **Table 5**. The groundwater exceedances are presented in **Figure 4**. Laboratory certificates of analysis for the data can be found in **Appendix D**.

Select parameters which were not detected in the 2022 sampling program were excluded from the groundwater sampling program in December 2024. These parameters included those generally associated with the fill material across the Site (free cyanide, mercury and hexavalent chromium), which was previously confirmed to not present a concern to the on-Site groundwater conditions. Additionally, as chloride was confirmed to exceed the applicable site condition standards in each of the monitoring wells sampling in 2022 (summarized in detail below), and that chloride and sodium are closely associated, chloride analysis were excluded in 2024. It will be assumed that elevated chloride persists in all groundwater monitoring well locations on the Site.

6.2.2 Monitoring Well Development

As part of the Phase Two ESA, prior to the well development activities, the groundwater elevations from the recently installed groundwater monitoring wells were collected. The elevations were collected by carefully lowering the probe of an oil/water interface meter into the structure. The probe was used to confirm if the presence of Light Non-Aqueous Phase Liquids (LNAPLs) and Dense Non-Aqueous Phase Liquids (DNAPL) are present.

Once the groundwater level elevations were collected, each well was developed by remaining up to ten (10) well volumes or removing sufficient volume to create dry conditions a total of three (3) consecutive times using dedicated LDPE tubing and foot valve. Purge water was observed for colour, sheens, or odour. Using a dedicated bailer and LDPE tubing, groundwater was transferred into laboratory supplied water bottles. Samples were logged, labelled and stored on site in a cooler chilled with ice. The amount of water removed from each monitoring well was recorded, and is summarized as follows:

Monitoring Well	Ground Surface Elevation (m bgs)	Depth of water column (m bgs)	Required Purge Volume (L)	Date of Development	Volume Removed-Liquid Matrix (m)
MW22-1	100.17	98.39	58	August 2 - 4, 2022	57
MW22-2	99.94	98.15	57		57
MW22-3	100.20	98.22	53		53
MW22-4	100.21	98.43	58		62
MW22-1	100.17	98.73	49	December 17, 2024	50
MW22-2	99.94	98.70	65		39*
MW22-3	100.20	98.74	60		60
MW22-4	100.21	98.77	62		62

Note

* Purged the well until dry conditions were encountered three (3) times

6.2.3 Groundwater: Field Measurements

Headspace VOC levels on August 2, 2022, in MW22-1, MW22-2, MW22-3, and MW22-4 were 0.6 ppm, 3.2 ppm, <0.1 ppm, and 0.7 ppm, respectively, prior to development of the wells. During the sampling event, following well development, the levels were <0.1 ppm, 1.0 ppm, 0.1 ppm, and 0.4 ppm, respectively.

Headspace VOC levels on December 17, 2024, in MW22-1, MW22-2, MW22-3, and MW22-4 were <0.1 ppm, prior to development of the wells. At the time of the sampling on December 19th, 2024, the hand-held gas meter was malfunctioning, therefore, headspace VOC readings were not collected.

6.2.4 Groundwater Elevations & Flow Direction

Static groundwater elevations measured at each monitoring well, for both the August 2022 and December 2024 sampling events are summarized in **Table 1**. On August 2, 2022, groundwater depth measurements were between 1.77 and 1.98 m bgs, which corresponded to elevations between 98.15 and 98.43 m. The groundwater elevations and interpreted flow contours are shown in **Figure 5**. Based on these elevations the groundwater flow direction on the Site is towards the south-southwest. On December 17, 2024, groundwater depth measurements were between 1.24 and 1.46 m bgs, which corresponded to elevations between 98.70 and 98.77 m. The groundwater elevations and interpreted flow contours are shown in **Figure 6**. Based on these elevations the groundwater flow direction on the Site is towards the south.

For the purposes of this assessment, geodetic elevations of the groundwater across the property are not considered a requirement. Should the water levels presented herein be considered for development purposes, reference to a known benchmark elevations should be assigned to the ground surface and groundwater levels included in **Table 1**.

6.2.5 Groundwater Quality

6.2.5.1 August 2022

VOC and PAH parameters were not detected in the samples submitted. PHC parameters were not detected with the exception of PHC F3 and PHC F4 in MW22-1 with levels of 176 µg/L and 180 µg/L, respectively, below the SCSs of 500 µg/L.

Select metal parameters were detected, however all levels are below the applicable SCS's with the exception of sodium. Levels of sodium encountered across the Site in the respective groundwater monitoring wells are summarized as follows:

- Levels of sodium encountered in MW22-1 were reported as 708 000 µg/L, above the Table 2 SCS of 490 000 µg/L;
- Levels of sodium encountered in MW22-2 were reported as 702 000 µg/L, above the Table 2 SCS of 490 000 µg/L. Although the duplicate groundwater sample collected from MW22-2 was reported to have a sodium value of 307 000 µg/L, below the applicable SCS;
- Levels of sodium encountered in MW22-3 were reported as 531 000 µg/L, above the Table 2 SCS of 490 000 µg/L; and
- Levels of sodium encountered in MW22-4 were reported as 715 000 µg/L, above the Table 2 SCS of 490 000 µg/L.

Chloride exceeded the applicable Table 2 SCS of 790 µg/L in MW22-1 (1 500 µg/L), MW22-2 (1 350 µg/L and duplicate 1 360 µg/L), and MW22-3 (980 µg/L). Values encountered in MW22-4 were below the 790 µg/L SCS with a level of 465 µg/L.

6.2.5.2 December 2024

VOC parameters were generally not detected in the samples submitted, with the exception of Dichlorodifluoromethane in both MW22-3 and MW22-4, with values of 14.5 and 21.6 µg/L, below the Table 2 SCS of 590 µg/L. Dichlorodifluoromethane is also referred to as Freon-12 and was historically used as a coolant gas in refrigerators and air conditioners. The Site does include refrigerators for beverage storage and ice sales, as well as including an air conditioning unit. No records of leaks or spills related to these units have been identified, therefore the source of the dichlorodifluoromethane detections is unclear. The levels are significantly less than applicable SCS, and therefore does not present a risk to occupants or visitors to the Site.

Select PHC parameters were detected in the samples collected from MW22-1 and MW22-3. PHC F3 and PHC F4 were detected in MW22-1 with values of 337 and 807 µg/L, respectively. These concentrations are higher than those previously detected in August 2022. PHC F3 was reported below the Table 2 Site Condition Standard of 500 µg/L, and PHC F4 exceeded the Table 2 SCS of 500 µg/L. PHC parameters detected in MW22-3 were comparable to those of MW22-1, with concentrations of PHC F3 reported at 249 µg/L and PHC F4 reported at 105 µg/L. No additional PHC parameters were detected in MW22-1 and MW22-3. PHC parameters were not detected in the samples collected from MW22-2 and MW22-4.

PHC F3 and PHC F4 are often associated with heavier petroleum-based products such as oils and lubricants. The Site does store small amounts of such products in the retail store, which are

in sealed containers. It is unlikely that these detections are a result of these activities, but more likely the result of an isolated event such as an accidental release of such products from a motor vehicle in the vicinity of MW22-1. In 2020, there was a reported release of oil on the Site, as indicated above in Section 4.6, which could also be a potential source of these detections.

PAH parameters analysed were detected in the samples collected from each monitoring well. The results are summarised as follows:

- Fluoranthene was detected in the samples collected from MW22-1 and MW22-2 with concentrations of 0.02 µg/L, below the Table 2 SCS of 0.41 µg/L;
- Pyrene was detected in the sample collected from MW22-2 with a value of 0.03 µg/L, below the Table 2 SCS of 4.1 µg/L;
- MW22-3 was found to have detections of Benzo[a]pyrene, Fluoranthene and Pyrene with concentrations of 0.02, 0.09 and 0.12 µg/L, respectively. The concentration of Benzo[a]pyrene exceeded the Table 2 SCS of 0.01 µg/L, whereas Fluoranthene and Pyrene concentrations were within acceptable limits; and
- Fluoranthene was detected in sample MW22-4, as well as Pyrene, with concentrations of 0.03 and 0.04 µg/L, below the applicable Table 2 SCS of 0.41 and 4.1 µg/L, respectively.

PAH are most associated with the incomplete combustion of fuels within engines or coal, as well as wood is burning. To the best of our knowledge, there has not been any coal, or wood burning activities on the subject Site. Nor has there been an identified source on the Site of incomplete combustion of fuels which may have contributed to the detections of PAHs in the groundwater. It is possible that these detections may have originated from an off-Site source.

Select metal parameters were detected, however all levels are below the applicable SCS's with the exception of sodium in each of the four (4) samples collected, and Cobalt in MW22-3. Levels of sodium encountered across the Site in the respective groundwater monitoring wells are summarized as follows:

- Levels of sodium encountered in MW22-1 were reported as 341 000 µg/L, below the Table 2 SCS of 490 000 µg/L;
- Levels of sodium encountered in MW22-2 were reported as 2 220 000 µg/L, above the Table 2 SCS of 490 000 µg/L;
- Levels of sodium encountered in MW22-3 were reported as 1 280 000 µg/L, above the Table 2 SCS of 490 000 µg/L; and
- Levels of sodium encountered in MW22-4 were reported as 752 000 µg/L, above the Table 2 SCS of 490 000 µg/L.

The detections of sodium, in addition to the previously detected elevated concentrations of chloride in the groundwater across the Site is most likely a result of seasonal road & parking / circulation area salting or de-icing efforts. Generally, the concentrations encountered in December 2024 samples collected are greater than those of August 2022. This supports the assumed seasonal trend of elevated sodium.

As mentioned above, Cobalt was reported above the 3.8 µg/L Table 2 SCS in sample MW22-3 with a value of 5.9 µg/L. Cobalt is associated with the manufacturing of pigments, paints and coatings or various chemical, rubber or adhesive production, rechargeable batteries and alloy productions. Different forms of cobalt can also be attributed to alternative sources, such as cobalt sulphate is used in cattle feed as a nutritional supplement. Cobalt is also found in the manufacturing of automobiles. To the best of our knowledge, no manufacturing facilities have

operated on the Site therefore the source of the cobalt in MW22-3 could be attributed to a potential off-Site activity.

7 CONCLUSIONS & RECOMMENDATIONS

Based on our Site visit, results of soil and groundwater sampling and laboratory analytical programs, LRL offers the following conclusions regarding environmental conditions of the subject Site:

- The Phase II ESA subject Site is located at 5546 Albion Road in Ottawa, Ontario.
- The Site is irregular in shape with an area of approximately 10 965 m² (2.7 acres), and has been developed with a gas station since between the mid to late 1990's. The property is presently owned and operated by MacEwen Petroleum Inc.
- The assessment was completed as per CSA Standards in support of a Site redevelopment Site Plan Application to the City of Ottawa. Should a Record of Site Condition (RSC) be required, the due diligence report will need to be revised to meet the Requirements of O. Reg 153/04 as amended.
- Surficial soil deposit mapping indicates that the surficial geology is fine- to medium-grained sand, calcareous and commonly fossiliferous; nearshore sand generally occurs as a sheet or as bars or spits associates with glaciofluvial materials.
- Bedrock mapping indicates that the bedrock is described as the Oxford Formation: dolomite and limestone.
- The investigation involved advancing ten (10) boreholes across the Site at strategic locations based on PCAs. Four (4) of the boreholes were completed as monitoring wells to assess hydrogeological conditions and facilitate groundwater sampling. The boreholes were advanced in July 2022.
- The subsurface soil conditions encountered generally consist of fill to depths between 0.4 and 1.8 m below ground surface (bgs), sand to between 2.8 and 4.5 m bgs, and glacial till to a depth of 4.6 m bgs, where the boreholes were terminated. The overburden material was noted to saturated at depths between 1.5 and 2.1 m bgs.
- Groundwater monitoring well development and sampling was completed between August 2 and August 4, 2022. Groundwater depth measurements from the monitoring wells installed were between 1.77 and 1.98 m bgs. Based on these elevations the groundwater flow direction on the Site is towards the south-southwest.
- Regulatory requirements for assessing environmental conditions of a Site are established by Ontario Regulation 153/04 – Records of Site Conditions, Part XV.1 of the Environmental Protection Act (O. Reg. 153/04). Site condition standards are set out in the MECP's "Soil, Ground Water and Sediment Standards for Use Under Part IV.1 of the Environmental Protection Act", April 15, 2011, as amended. The applicable SCS used was the Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, commercial property use and coarse-textured soils.
- Contaminants of potential concern (COPCs), for the soil and groundwater on the Site, include Petroleum Hydrocarbon Compounds (PHCs), Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAH), metals, and inorganics.
- No olfactory or visual evidence of petroleum hydrocarbon impacts were observed in the soils collected from all boreholes, and the combustible soil vapour (CSV)

concentrations measured in the soil samples collected ranged between <0.1 ppm and 0.7 ppm. VOC and PAH parameters analysed were not detected in any of the soil samples submitted for analysis. Select PHC and metals parameters analysed were detected, however levels were measured below applicable Table 2 SCS's. The general inorganic parameters analysed met the applicable standards with the exception to one (1) sample (BH22-4-SS1A) which exceeded the SCS for conductivity.

- Headspace VOC levels in the monitoring wells ranged between <0.1 ppm and 3.2 ppm at the time of the well development on August 2, 2022. VOC, PAH, and PCB parameters were not detected in the groundwater samples collected on August 4, 2022, and submitted for laboratory analysis. PHC F3 and F4 were detected in select locations, however the levels were below the SCSs. PHC F3 and F4 are often not detected when using head space meters. Sodium and chloride exceeded the SCS across the subject Site in the samples collected.
- Based on the results of the intrusive investigation, and subsequent groundwater sampling completed between July 28 and August 4, 2022, the soil and groundwater across the Site generally meets the applicable SCS with the following exceptions:
    - Conductivity impacts to the surface soil in the southeast portion of the Site; and
    - Sodium and chloride impact in the groundwater across the Site.
- Additional groundwater monitoring well sampling was completed in December 2024 to confirm the conditions of the Site, with respect to a Phase Two Environmental Site Assessment Update to support the proposed Site re-development application with the City of Ottawa. The water levels collected on December 17, 2024, prior to the additional well development and sampling, ranged between 1.24 and 1.46 m below ground surface, which equates to elevations of between 98.70 and 98.77 m. Based on these elevations, the groundwater flow direction is inferred to be in a southerly direction.
- Each of the four (4) available groundwater monitoring wells located on the Site were developed on December 17, 2024, by removing up to ten well volumes, or until the installation achieved dry conditions three (3) times. Samples were collected on December 19, 2024, for parameters representative of contaminates of concern. It should be noted that as the initial sampling event in August 2022 did not return concentrations of Free Cyanide or PCBs, re-submission of these parameters was not deemed warranted. Chloride was noted to have a direct relationship with sodium concentrations therefore rather than including the analyses of chloride, SAR and Conductivity were included in the December 2024 sample analysis.
- The analytical results of the samples collected on December 19, 2024, revealed that VOC parameter, Dichlorodifluoromethane, was detected in both MW22-3 and MW22-4, with values of 14.5 and 21.6 µg/L, below the Table 2 Site Condition Standard of 590 µg/L. Select PHC parameters were detected in the samples collected from MW22-1 and MW22-3. PHC F3 and PHC F4 were detected in MW22-1 with values of 337 and 807 µg/L, respectively. PHC F3 was reported below the Table 2 Site Condition Standard of 500 µg/L, and PHC F4 exceeded the Table 2 Site Condition Standard of 500 µg/L. PHC parameters detected in MW22-3 were comparable to those of MW22-1, with concentrations of PHC F3 reported at 249 µg/L and PHC F4 reported at 105 µg/L.
- PAH parameters analysed were detected in the samples collected from each monitoring well. The results are summarised as follows:

  - Fluoranthene was detected in the samples collected from MW22-1 and MW22-2 with concentrations of 0.02 µg/L, below the Table 2 Site Condition Standard of 0.41 µg/L;
  - Pyrene was detected in the sample collected from MW22-2 with a value of 0.03 µg/L, below the Table 2 Site Condition Standard of 4.1 µg/L;
  - MW22-3 was found to have detections of Benzo[a]pyrene, Fluoranthene and Pyrene with concentrations of 0.02, 0.09 and 0.12 µg/L, respectively. The concentration of Benzo[a]pyrene exceeded the Table 2 Site Condition Standard of 0.01 µg/L, whereas Fluoranthene and Pyrene concentrations were within acceptable limits; and
  - Fluoranthene was detected in sample MW22-4, as well as Pyrene, with concentrations of 0.03 and 0.04 µg/L, below the applicable Table 2 Site Condition Standard of 0.41 and 4.1 µg/L, respectively.

- Select metal parameters were detected, however all levels are below the applicable SCS's with the exception of sodium in each of the four (4) samples collected, and Cobalt in MW22-3. Levels of sodium encountered across the Site in the respective groundwater monitoring wells are summarized as follows:
  - Levels of sodium encountered in MW22-1 were reported as 341 000 µg/L, below the Table 2 SCS of 490 000 µg/L;
  - Levels of sodium encountered in MW22-2 were reported as 2 220 000 µg/L, above the Table 2 SCS of 490 000 µg/L;
  - Levels of sodium encountered in MW22-3 were reported as 1 280 000 µg/L, above the Table 2 SCS of 490 000 µg/L; and
  - Levels of sodium encountered in MW22-4 were reported as 752 000 µg/L, above the Table 2 SCS of 490 000 µg/L.
- The detections of sodium, in addition to the previously detected elevated concentrations of chloride in the groundwater across the Site is most likely a result of seasonal road & parking / circulation area salting or de-icing efforts. Generally, the concentrations encountered in December 2024 samples collected are greater than those of August 2022. This supports the assumed seasonal trend of elevated sodium. Under Ontario Regulation 153/04 Section 49.1, sodium chloride in soil and groundwater can be excluded as an exceedance as it is used for de-icing purposes and is not considered to be a contaminate.
- As mentioned above, Cobalt was reported above the 3.8 µg/L Table 2 SCS in sample MW22-3 with a value of 5.9 µg/L. Cobalt is associated with the manufacturing of pigments, paints and coatings or various chemical, rubber or adhesive production, rechargeable batteries and alloy productions. Different forms of cobalt can also be attributed to alternative sources, such as cobalt sulphate is used in cattle feed as a nutritional supplement. Cobalt is also found in the manufacturing of automobiles. To the best of our knowledge, no manufacturing facilities have operated on the Site therefore the source of the cobalt in MW22-3 could be attributed to a potential off-Site activity.

- PAH are most associated with the incomplete combustion of fuels within engines or coal, as well as wood is burning. To the best of our knowledge, there has not been any coal, or wood burning activities on the subject Site. Nor has there been an identified source on the Site of incomplete combustion of fuels which may have contributed to the detections of PAHs in the groundwater. It is possible that these detections may have originated from an off-Site source.
- PHC F3 and PHC F4 are often associated with heavier petroleum-based products such as oils and lubricants. The Site does store small amounts of such products in the retail store, which are in sealed containers. It is unlikely that these detections are a result of these activities, but more likely the result of an isolated event such as an accidental release of such products from a motor vehicle in the vicinity of MW22-1, or the previously reported oil spill on the Site.
- PAH are most associated with the incomplete combustion of fuels within engines or coal, as well as wood is burning. To the best of our knowledge, there has not been any coal, or wood burning activities on the subject Site. Nor has there been an identified source on the Site of incomplete combustion of fuels which may have contributed to the detections of PAHs in the groundwater. It is possible that these detections may have originated from an off-Site source.
- The conductivity impacts in the soils are found to encompass an area of approximately 490 m² and are likely limited to the upper 2.0 m of overburden. The vertical, and horizontal extents of the impacted groundwater have not been established at this time. Under Ontario Regulation 153/04 Section 49.1, sodium chloride in soil and groundwater can be excluded as an exceedance as it is used for de-icing purposes and is not considered to be a contaminate.
- Groundwater impairment was encountered throughout the respective areas investigated, and included impacts suspected to have originated from seasonal road / parking & circulation salting or de-icing activities. Additional exceedances to PAH, metals and PHC parameters were encountered, although the extents and source have not been confirmed at this time.
- Although not confirmed through the corresponding intrusive investigation and associated sampling, it is anticipated that petroleum impacted are present within the existing underground storage tank installation nest extents and underlying the existing concrete apron and fuel dispensing pump.

Based on our observations during drilling activities, along with screening of samples and laboratory analysis, there is evidence of conductivity impacts to the surface soil in the southeast portion of the Site, and sodium and chloride impacts in the groundwater across the Site. Sodium, chloride and conductivity impacts encountered are likely a result of seasonal de-icing and snow removal activities on the Site, and potentially the neighbouring lands. These parameters are commonly in elevated concentrations in areas of parking and circulation throughout Ontario where road salts and de-icer are used to during winter months. Impacts associated with the identified Under Ontario Regulation 153/04 Section 49.1, sodium chloride in soil and groundwater can be excluded as an exceedance as it is used for de-icing purposes and is not considered to be a contaminate. PECs have not been identified at this time, limited to readily accessible locations on the property, included in the intrusive investigation.

The PAH, PHC and Metals (Cobalt) impacts encountered in the groundwater at the Site are suspected to have originated from an alternative off-Site source, as industry or activities which are commonly associated with parameters detected, are not known to have been present on the Site.

The findings presented herein, in this Phase Two ESA report update, may be relied upon by the client for the purposes of re-development, subject to the appliable conclusions and limitation outlined herein.

At the time of redevelopment, impacted soil should be removed from the Site in general accordance with Technical Standards and Safety Authority's (TSSA) Environmental Management Protocol for Fuel Handling Sites in Ontario, August 2012 (formerly GA1/99), in addition to the following provincial regulations:

- O. Reg. 406/19: On-Site and Excess Soil Management
- O. Regulation 558/00: General -Waste Management; and
- O. Reg. 153/04: Record of Site Condition.

It is recommended that if groundwater monitoring wells are not required for future monitoring purposes, they should be decommissioned in accordance with O. Reg. 903.

8 LIMITATIONS AND USE OF REPORT

Results of this Phase Two ESA Update should not be considered a warranty that the subject property is free from any and all contaminants from former and current practices, other than those noted in this report, nor that all compliance issues have been addressed.

Findings contained in this report are based on data and information collected during the Phase Two Update ESA of the subject property conducted by LRL Associates Ltd. Conclusions and recommendations are based solely on-site conditions encountered at the time of our fieldwork between July 28th and August 4th, 2022, and December 17th and 19th, 2024, supplemented by historical information and data obtained as described in this report. No assurance is made regarding changes in conditions subsequent to the time of this investigation. If additional information is discovered or obtained, LRL Associates Ltd. should be requested to re-evaluate the conclusions presented in this report and to provide amendments as required.

In evaluating the subject property, LRL Associates Ltd. has relied in good faith on information provided by individuals as noted in this report. We assume that the information provided is factual and accurate. We accept no responsibility for any deficiencies, misstatements or inaccuracies contained in this report as a result of omissions, misinterpretation or fraudulent acts of the persons contacted.

This report is intended for the sole use of MacEwen Petroleum Inc. and their authorized agents. LRL Associates Ltd. will not be responsible for any use of the information contained within this report by any third party.

In addition, LRL Associates Ltd. will not be responsible for the real or perceived decrease in the property value, its saleability or ability to gain financing, through the reporting of factual information.

Yours truly,
LRL Associates Ltd.

Jessica Arthurs
Environmental Engineering Manager

John (Gianni) Lametti, P. Eng. QPESA
Senior Environmental Engineer

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9 REFERENCES

Canadian Standards Association, Phase II Environmental Site Assessment CAN/CSA-Z769-00, March 2000 (R2013).

City of Ottawa Interactive Map accessed through: http://maps.ottawa.ca/geoottawa/

Ministry of Environment, Conservations and Parks, Ontario Regulation 153/04: Records of Site Condition – Part XV.1 of the Environmental Protection Act, as amended.

Ontario Ministry of the Environment, *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*, 1996.

Ontario Ministry of the Environment, *Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, April 15, 2011.

Ontario Regulation 903, made under the Water Resources Act of the Environmental Protection Act, *Wells*, R.R.O. 1990.

Ontario Well Records Map accessed through: https://www.ontario.ca/environment-and-energy/map-well-records

FIGURES

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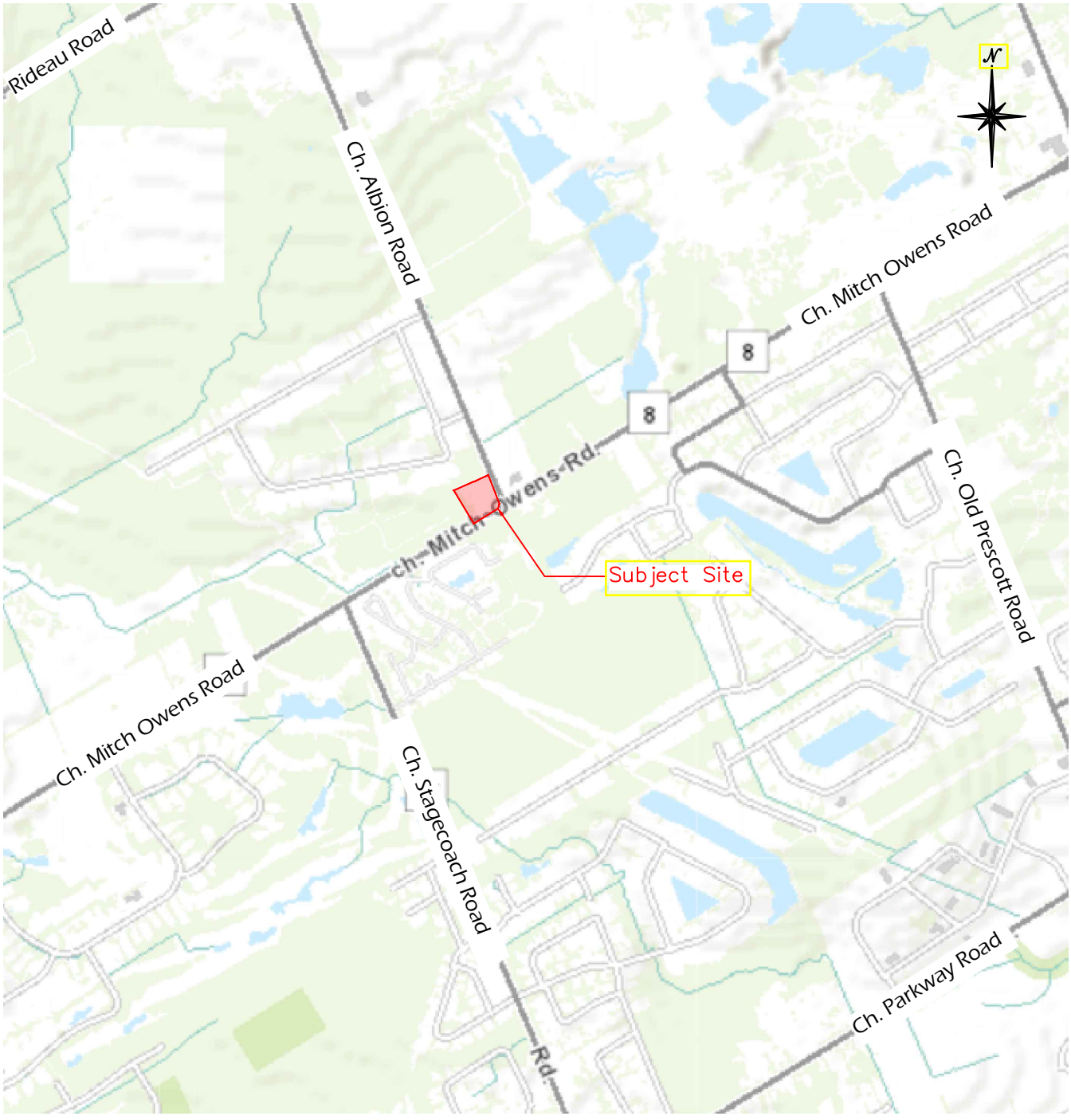
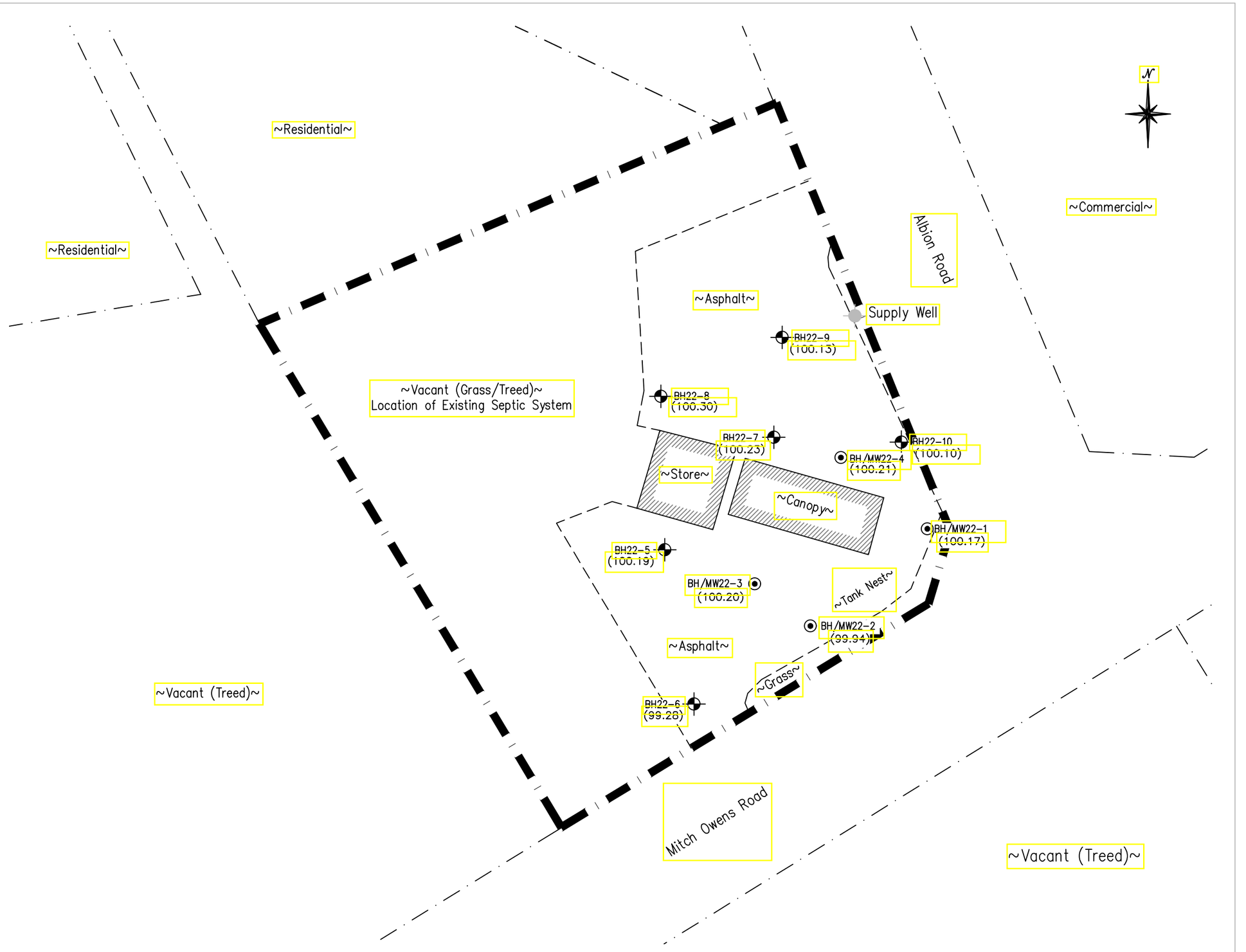
PROJECT
PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT UPDATE
5546 ALBION ROAD
OTTAWA, ONTARIO

DRAWING TITLE
SITE LOCATION
(NOT TO SCALE)
SOURCE: GeoOTTAWA

CLIENT	DATE	PROJECT	
MACEWEN PETROLEUM INC.	JANUARY 2025	01348	FIGURE 1





LEGEND

- Property Line
- Existing Structure
- Division Amongst Surface Material
- BH/MW22-99 — Monitoring Well
- BH22-99 — Borehole
- (99.99) — Ground Surface Elevation
- Supply Well

10m 0 10 20 30m

SCALE: 1:750

No.	REVISIONS	BY	DATE
02	REVISION	J.A.	03/01/2025
01	FINAL	J.A.	13/01/2023

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CLIENT

MACEWEN PETROLEUM INC.

DESIGNED BY:	DRAWN BY:	APPROVED BY:
--	J.A.	J.L.

PROJECT

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
UPDATE
5546 ALBION ROAD
OTTAWA, ONTARIO

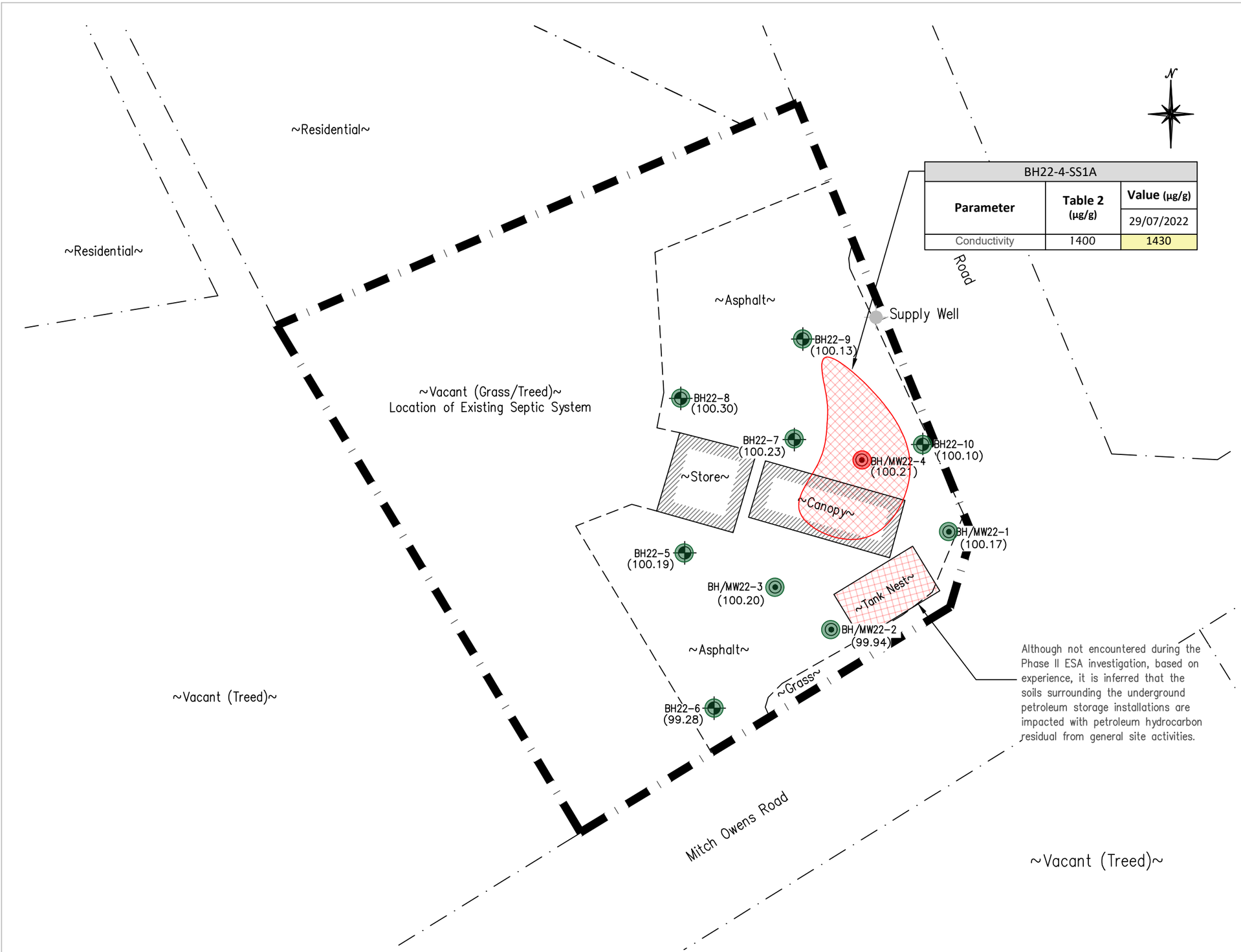
DRAWING TITLE

SITE PLAN - BOREHOLE & MONITORING WELL LOCATIONS

PROJECT NO.
01348

DATE
JANUARY 2025

FIGURE 2



BH22-4-SS1A		
Parameter	**Table 2 (µg/g)**	**Value (µg/g)**
		29/07/2022
Conductivity	1400	1430

LEGEND

- Property Line
- Existing Structure
- Division Amongst Surface Material
- BH/MW22-99 — Monitoring Well
- BH22-99 — Borehole
- (99.99) — Ground Surface Elevation
- Exceedance to the Applicable Standard
- Borehole – No Soil Exceedances to the Applicable Standard
- Borehole – With Soil Exceedances to the Applicable Standard
- Approximate/Inferred Extent of Impacted Soils
- Supply Well

10m 0 10 20 30m

SCALE: 1:750

No.	REVISIONS	BY	DATE
02	REVISION	J.A.	03/01/2025
01	FINAL	J.A.	13/01/2023

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PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
UPDATE
5546 ALBION ROAD
OTTAWA, ONTARIO

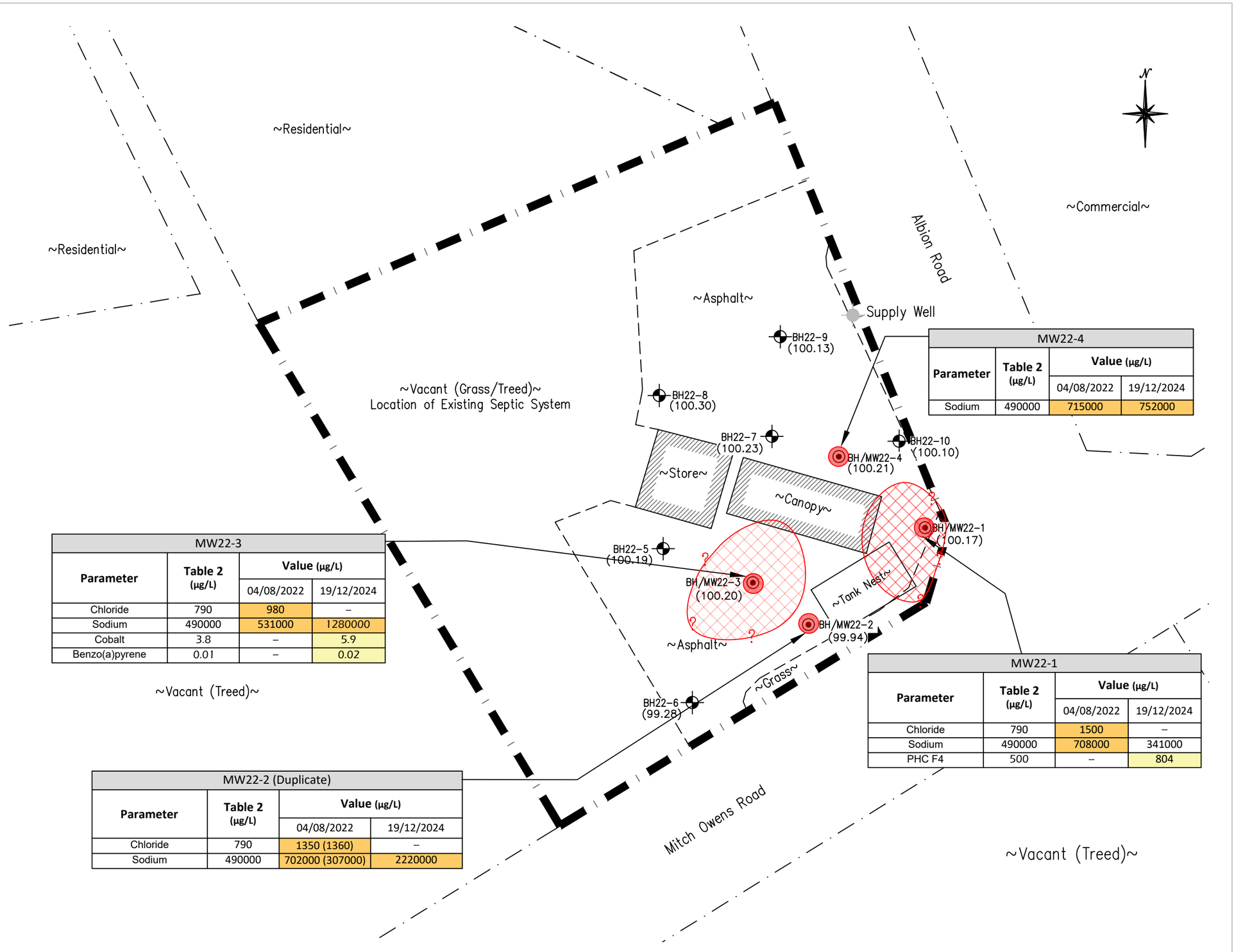
DRAWING TITLE

SOIL EXCEENDANCES

PROJECT NO.
01348

DATE
JANUARY 2025

FIGURE 3



MW22-4			
Parameter	Table 2 (µg/L)	Value (µg/L)	
		04/08/2022	19/12/2024
Sodium	490000	715000	752000

MW22-3			
Parameter	Table 2 (µg/L)	Value (µg/L)	
		04/08/2022	19/12/2024
Chloride	790	980	–
Sodium	490000	531000	1280000
Cobalt	3.8	–	5.9
Benzo(a)pyrene	0.01	–	0.02

MW22-1			
Parameter	Table 2 (µg/L)	Value (µg/L)	
		04/08/2022	19/12/2024
Chloride	790	1500	–
Sodium	490000	708000	341000
PHC F4	500	–	804

MW22-2 (Duplicate)			
Parameter	Table 2 (µg/L)	Value (µg/L)	
		04/08/2022	19/12/2024
Chloride	790	1350 (1360)	–
Sodium	490000	702000 (307000)	2220000

LEGEND

- Property Line
- Existing Structure
- Division Amongst Surface Material
- BH/MW22-99 — Monitoring Well
- BH22-99 — Borehole
- (99.99) — Ground Surface Elevation
- Monitoring Well – With Groundwater Exceedances to the Applicable Standard
- Approximate/Inferred Extent of Impacted Groundwater
- ? ? ? — Full Extents of Impacts Not Fully Delineated.
- Supply Well

Concentration Exceeds Table 2 SCS, although not considered a contaminate under O. Reg 153 /04, Section 49.1

Concentration Exceeds Table 2 SCS

10m 0 10 20 30m

SCALE: 1:750

No.	REVISIONS	BY	DATE
02	REVISION	J.A.	03/01/2025
01	FINAL	J.A.	13/01/2023

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--	J.A.	J.L.

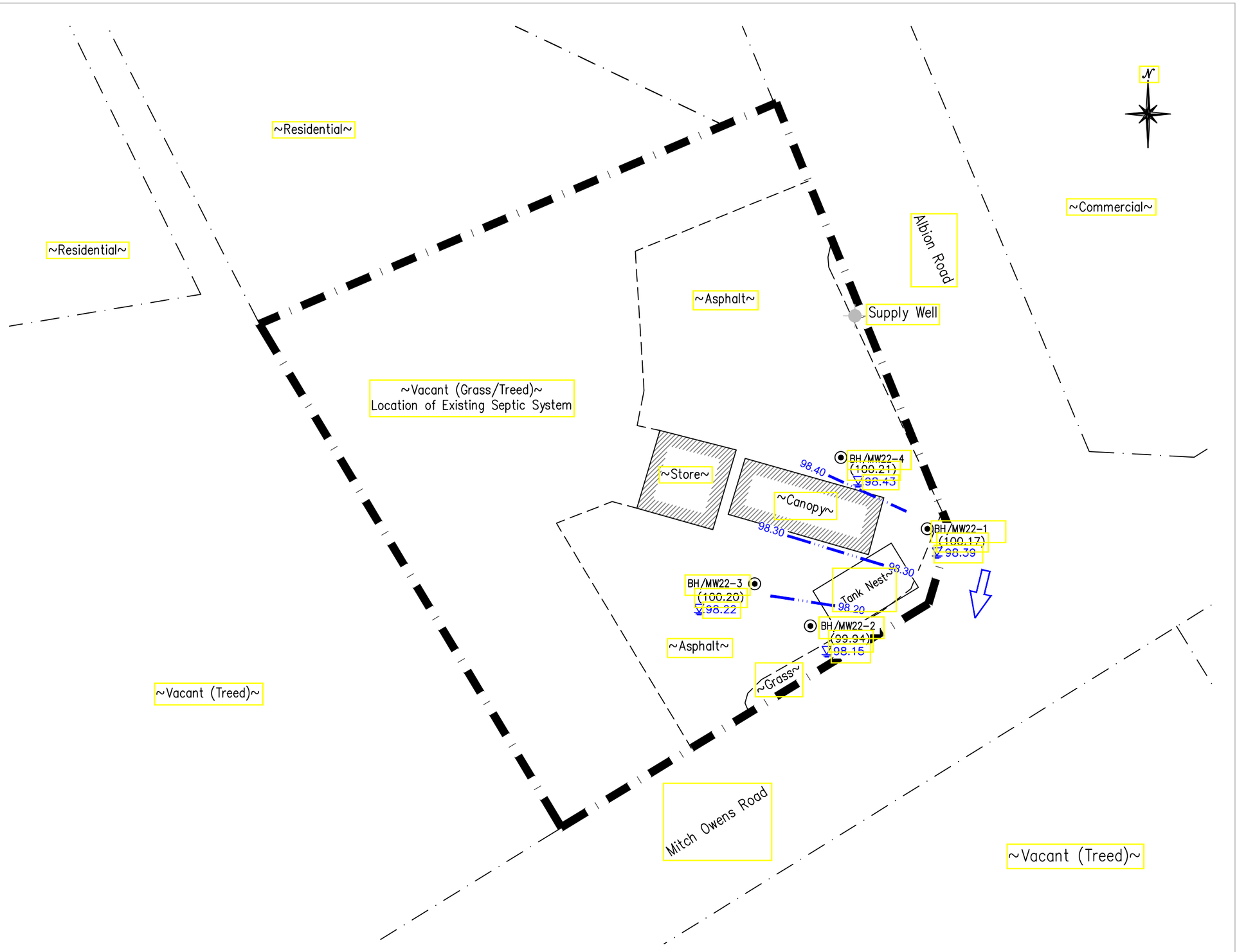
PROJECT
PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
UPDATE
5546 ALBION ROAD
OTTAWA, ONTARIO

DRAWING TITLE
GROUNDWATER EXCEEDANCES

PROJECT NO.
01348

DATE
JANUARY 2025

FIGURE 4



LEGEND

- Property Line
- Existing Structure
- Division Amongst Surface Material
- BH/MW22-99 — Monitoring Well
- BH22-99 — Borehole
- (99.99) — Ground Surface Elevation
- 99.99 — Groundwater Elevation
- Ground Contour
- Inferred Groundwater Flow Direction
- Supply Well

10m 0 10 20 30m

SCALE: 1:750

No.	REVISIONS	BY	DATE
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01	FINAL	J.A.	13/01/2023

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DESIGNED BY:	DRAWN BY:	APPROVED BY:
--	J.A.	J.L.

PROJECT

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
UPDATE
5546 ALBION ROAD
OTTAWA, ONTARIO

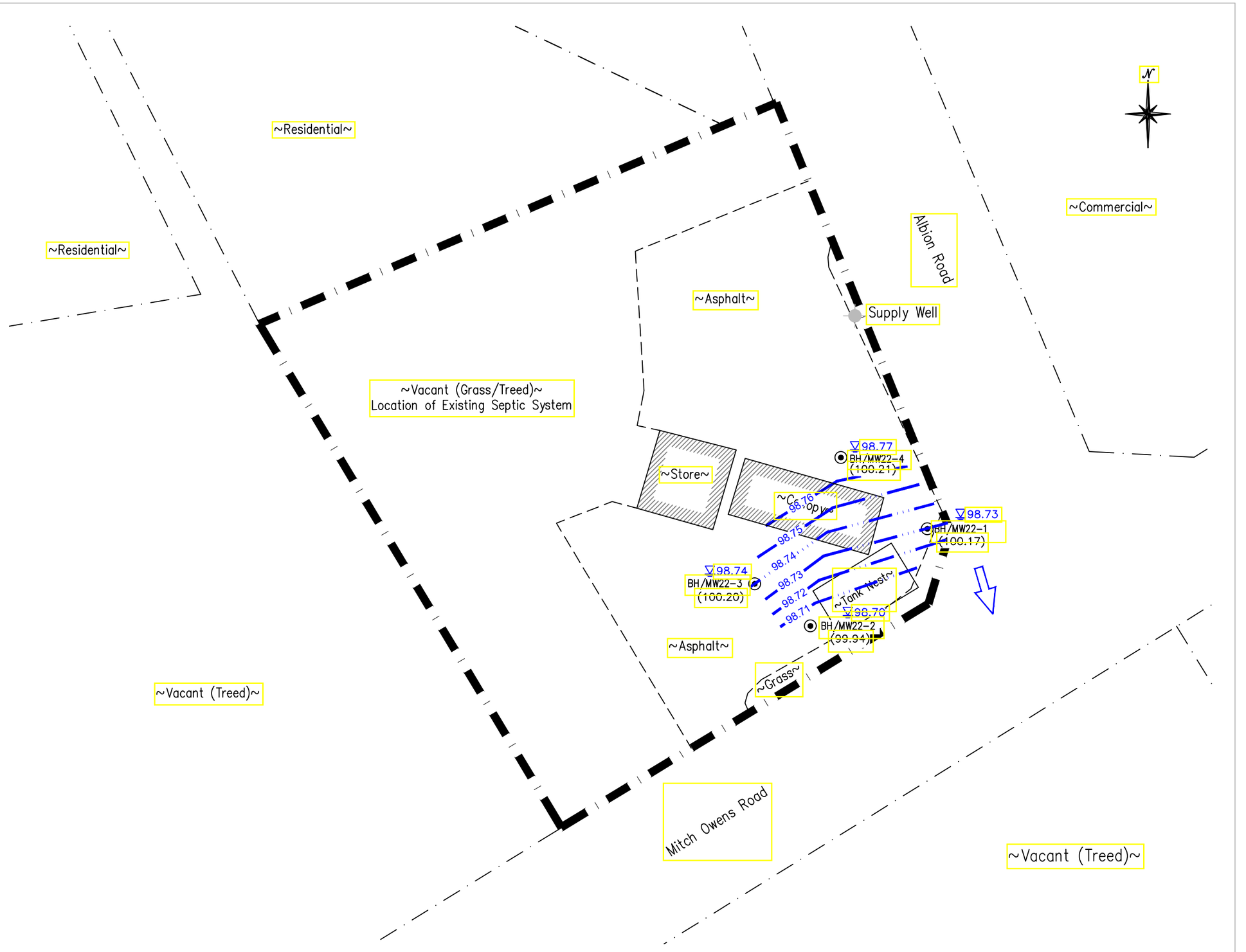
DRAWING TITLE

GROUNDWATER ELEVATIONS AND INTERPRETED GROUNDWATER FLOW DIRECTION - AUGUST 2, 2022

PROJECT NO.
01348

DATE
JANUARY 2025

FIGURE 5



LEGEND

- Property Line
- Existing Structure
- Division Amongst Surface Material
- BH/MW22-99 — Monitoring Well
- BH22-99 — Borehole
- (99.99) — Ground Surface Elevation
- 99.99 — Groundwater Elevation
- Ground Contour
- Inferred Groundwater Flow Direction
- Supply Well

10m 0 10 20 30m

SCALE: 1:750

No.	REVISIONS	BY	DATE
02	REVISION	J.A.	03/01/2025
01	FINAL	J.A.	13/01/2023

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CLIENT

MACEWEN PETROLEUM INC.

DESIGNED BY:	DRAWN BY:	APPROVED BY:
--	J.A.	J.L.

PROJECT

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
UPDATE
5546 ALBION ROAD
OTTAWA, ONTARIO

DRAWING TITLE

GROUNDWATER ELEVATIONS AND INTERPRETED GROUNDWATER FLOW DIRECTION - DECEMBER 17, 2024

PROJECT NO.
01348

DATE
JANUARY 2025

FIGURE 6

TABLES

Table 1
Summary of Ground Surface and Groundwater Elevations
Phase Two Environmental Site Assessment Update
5546 Albion Road, Ottawa, Ontario
LRL File: 01348

Monitoring Well	Ground Surface Elevation[1] (m)	Reference Elevation[2] (m)	August 2, 2022			December 17, 2024		
			Depth To Water Table (m)		Groundwater Elevation (m)	Depth To Water Table (m)		Groundwater Elevation (m)
			Reference Point	Ground Surface		Reference Point	Ground Surface	
MW22-1	100.17	100.06	1.67	1.77	98.39	1.33	1.43	98.73
MW22-2	99.94	99.86	1.71	1.79	98.15	1.16	1.24	98.70
MW22-3	100.20	100.13	1.91	1.98	98.22	1.39	1.46	98.74
MW22-4	100.21	100.10	1.67	1.78	98.43	1.33	1.44	98.77
BH22-5	100.19	--	--	--	--	--	--	--
BH22-6	99.28	--	--	--	--	--	--	--
BH22-7	100.23	--	--	--	--	--	--	--
BH22-8	100.30	--	--	--	--	--	--	--
BH22-9	100.13	--	--	--	--	--	--	--
BH22-10	100.10	--	--	--	--	--	--	--

NOTES

[1] Elevations measured from temporary benchmark established at the west side of the storm sewer grate along the east portion of the Site (100.00 m).

[2] Reference elevation is top of PVC riser.

Table 2
Summary of Soil VOC, PHC, and General Inorganics Analysis
Phase Two Environmental Site Assessment Update
5546 Albion Road, Ottawa, Ontario
LRL File: 01348

Parameter	Units	MDL	O. Reg. 153/04[1] Table 2[2] Commercial Property Use Coarse textured soil	Sample									
				BH22-1-SS1B	BH22-1-SS2B	*BH22-1-SS5A*	BH22-1-SS3C	BH22-2-SS2B	BH22-2-SS2C	BH22-3-SS2B	BH22-3-SS3B	BH22-4-SS1A	BH22-4-SS2B
Sample Date (d/m/y)			--	28-Jul-22	28-Jul-22		28-Jul-22	29-Jul-22	29-Jul-22	29-Jul-22	29-Jul-22	29-Jul-22	29-Jul-22
Depth below top of Ground	m		--	0.6 - 0.8	1.7 - 3.0		4.0 - 4.6	2.1 - 2.8	2.8 - 3.0	1.7 - 1.9	3.7 - 4.5	0.3 - 0.6	2.0 - 3.0
CSV Readings[3]	ppm	5	--	0.1	<0.1		<0.1	0.6	0.3	0.4	0.1	0.7	<0.1
Physical Characteristics													
% Solids	% by wt.	0.1	--	82.2	83.7	*83.6*	91.2	83.0	83.4	85.6	84.9	76.9	83.6
>0.075 mm	%	0.1	--	--	--	--	--	--	30.9	--	--	--	--
<0.075 mm	%	0.1	--	--	--	--	--	--	69.1	--	--	--	--
Texture	%	0.1	--	--	--	--	--	--	Med/Fine	--	--	--	--
General Inorganics													
SAR	N/A	0.01	12	0.29	2.13	*2.17*	1.17	3.42	--	--	1.56	2.83	2.09
Conductivity	uS/cm	5	1400	351	288	*300*	295	648	--	--	268	**1430**	237
Cyanide, free	ug/g dry	0.03	0.051	<0.03	<0.03	*<0.03*	<0.03	<0.03	--	--	<0.03	<0.03	<0.03
pH	pH Units	0.1	--	7.31	7.07	*7.05*	7.6	7.05	--	--	7.19	6.98	--
Volatiles													
Acetone	ug/g dry	0.50	16	<0.50	<0.50	*<0.50*	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50
Benzene	ug/g dry	0.02	0.32	<0.02	<0.02	*<0.02*	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	ug/g dry	0.05	1.5	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Bromoform	ug/g dry	0.05	0.61	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Bromomethane	ug/g dry	0.05	0.05	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g dry	0.05	0.21	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	ug/g dry	0.05	2.4	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Chloroform	ug/g dry	0.05	0.47	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	ug/g dry	0.05	2.3	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	ug/g dry	0.05	16	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g dry	0.05	1.2	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g dry	0.05	9.6	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g dry	0.05	0.2	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g dry	0.05	0.47	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	ug/g dry	0.05	0.05	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	ug/g dry	0.05	0.064	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	ug/g dry	0.05	1.9	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	ug/g dry	0.05	1.3	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	ug/g dry	0.05	0.16	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	ug/g dry	0.05	--	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	ug/g dry	0.05	--	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	ug/g dry	0.05	0.059	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	ug/g dry	0.05	1.1	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Ethylene dibromide (dibromoethane, 1,2-)	ug/g dry	0.05	0.05	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Hexane	ug/g dry	0.05	46	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	ug/g dry	0.50	70	<0.50	<0.50	*<0.50*	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	ug/g dry	0.50	31	<0.50	<0.50	*<0.50*	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	ug/g dry	0.05	1.6	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	ug/g dry	0.05	1.6	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Styrene	ug/g dry	0.05	34	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g dry	0.05	0.087	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g dry	0.05	0.05	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	ug/g dry	0.05	1.9	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Toluene	ug/g dry	0.05	6.4	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	ug/g dry	0.05	6.1	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	ug/g dry	0.05	0.05	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	ug/g dry	0.05	0.55	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g dry	0.05	4	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	ug/g dry	0.02	0.032	<0.02	<0.02	*<0.02*	<0.02	<0.02	--	<0.02	<0.02	<0.02	<0.02
m/p-Xylene	ug/g dry	0.05	--	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
o-Xylene	ug/g dry	0.05	--	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Xylenes, total	ug/g dry	0.05	26	<0.05	<0.05	*<0.05*	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Hydrocarbons													
F1 PHCs (C6-C10)	ug/g dry	7	55	<7	<7	*<7*	<7	<7	--	<7	<7	<7	<7
F2 PHCs (C10-C16)	ug/g dry	4	230	<4	<4	*<4*	<4	<4	--	<4	<4	<4	<4
F3 PHCs (C16-C34)	ug/g dry	8	1700	38	<8	*<8*	<8	<8	--	<8	<8	119	<8
F4 PHCs (C34-C50)	ug/g dry	6	3300	29	<6	*<6*	<6	<6	--	<6	<6	165	<6
F4G PHCs (gravimetric)	ug/g dry	50	3300	--	--	--	--	--	--	--	--	715	--

NOTES:
1 MECP's *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011*
2 Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, Commercial property use.
3 Combustible soil vapour concentrations measured with a MiniRAE 3000 PID
MDL Method Detection Limit
-- No Value/Not Analysed
PHC Petroleum Hydrocarbon
BOLD Above Table 2 Standard
Italics Duplicate sample of parent sample BH22-1-SS2B

Table 2 (Continued)
Summary of Soil VOC, PHC, and General Inorganics Analysis
Phase Two Environmental Site Assessment Update
5546 Albion Road, Ottawa, Ontario
LRL File: 01348

Parameter	Units	MDL	O. Reg. 153/04[1] Table 2[2] Commercial Property Use Coarse textured soil	Sample								
				BH22-5-SS2B	BH22-6-SS1A	BH22-6-SS2C	BH22-7-SS2C	*BH22-7-SS4C*	BH22-7-SS3A	BH22-8-SS2B	BH22-9-SS2A	BH22-10-SS2B
Sample Date (d/m/y)			--	29-Jul-22	29-Jul-22	29-Jul-22	29-Jul-22		29-Jul-22	29-Jul-22	29-Jul-22	29-Jul-22
Depth below top of Ground	m		--	2.0 - 3.0	1.1 - 1.2	2.7 - 3.0	2.5 - 3.0		3.0 - 3.4	1.8 - 2.1	1.8 - 2.9	1.8 - 2.4
CSV Readings[3]	ppm	5	--	<0.1	0.1	0.1	<0.1		<0.1	<0.1	<0.1	<0.1
Physical Characteristics												
% Solids	% by wt.	0.1	--	79.0	85.3	86.7	69.6	*82.9*	82.5	86.2	81.3	82.0
>0.075 mm	%	0.1	--	--	--	--	--	--	93.9	--	--	--
<0.075 mm	%	0.1	--	--	--	--	--	--	6.1	--	--	--
Texture	%	0.1	--	--	--	--	--	--	Coarse	--	--	--
General Inorganics												
SAR	N/A	0.01	12	2.21	--	2.80	--	--	--	1.66	--	2.94
Conductivity	uS/cm	5	1400	718	--	668	--	--	--	407	--	237
Cyanide, free	ug/g dry	0.03	0.051	<0.03	--	<0.03	--	--	--	<0.03	--	<0.03
pH	pH Units	0.1	--	6.86	-	--	--	--	--	7.16	--	7.32
Volatiles												
Acetone	ug/g dry	0.50	16	<0.50	<0.50	<0.50	<0.50	*<0.50*	--	<0.50	<0.50	<0.50
Benzene	ug/g dry	0.02	0.32	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	<0.02
Bromodichloromethane	ug/g dry	0.05	1.5	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Bromoform	ug/g dry	0.05	0.61	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Bromomethane	ug/g dry	0.05	0.05	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g dry	0.05	0.21	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Chlorobenzene	ug/g dry	0.05	2.4	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Chloroform	ug/g dry	0.05	0.47	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Dibromochloromethane	ug/g dry	0.05	2.3	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Dichlorodifluoromethane	ug/g dry	0.05	16	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g dry	0.05	1.2	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g dry	0.05	9.6	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g dry	0.05	0.2	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g dry	0.05	0.47	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
1,2-Dichloroethane	ug/g dry	0.05	0.05	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
1,1-Dichloroethylene	ug/g dry	0.05	0.064	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	ug/g dry	0.05	1.9	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	ug/g dry	0.05	1.3	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
1,2-Dichloropropane	ug/g dry	0.05	0.16	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	ug/g dry	0.05	--	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	ug/g dry	0.05	--	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	ug/g dry	0.05	0.059	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Ethylbenzene	ug/g dry	0.05	1.1	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Ethylene dibromide (dibromoethane, 1,2-)	ug/g dry	0.05	0.05	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Hexane	ug/g dry	0.05	46	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	ug/g dry	0.50	70	<0.50	<0.50	<0.50	<0.50	*<0.50*	--	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	ug/g dry	0.50	31	<0.50	<0.50	<0.50	<0.50	*<0.50*	--	<0.50	<0.50	<0.50
Methyl tert-butyl ether	ug/g dry	0.05	1.6	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Methylene Chloride	ug/g dry	0.05	1.6	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Styrene	ug/g dry	0.05	34	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g dry	0.05	0.087	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g dry	0.05	0.05	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Tetrachloroethylene	ug/g dry	0.05	1.9	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Toluene	ug/g dry	0.05	6.4	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	ug/g dry	0.05	6.1	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	ug/g dry	0.05	0.05	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Trichloroethylene	ug/g dry	0.05	0.55	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g dry	0.05	4	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Vinyl Chloride	ug/g dry	0.02	0.032	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	<0.02
m/p-Xylene	ug/g dry	0.05	--	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
o-Xylene	ug/g dry	0.05	--	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Xylenes, total	ug/g dry	0.05	26	<0.05	<0.05	<0.05	<0.05	*<0.05*	--	<0.05	<0.05	<0.05
Hydrocarbons												
F1 PHCs (C6-C10)	ug/g dry	7	55	<7	--	<7	<7	*<7*	--	<7	<7	<7
F2 PHCs (C10-C16)	ug/g dry	4	230	<4	--	<4	<4	*<4*	--	<4	<4	<4
F3 PHCs (C16-C34)	ug/g dry	8	1700	<8	--	<8	<8	*<8*	--	<8	<8	<8
F4 PHCs (C34-C50)	ug/g dry	6	3300	23	--	<6	<6	*<6*	--	<6	<6	<6
F4G PHCs (gravimetric)	ug/g dry	50	3300	--	--	--	--	--	--	--	--	--

NOTES:
1 MECP's *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011*
2 Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, Commercial property use.
3 Combustible soil vapour concentrations measured with a MiniRAE 3000 PID
MDL Method Detection Limit
-- No Value/Not Analysed
PHC Petroleum Hydrocarbon
Italics Duplicate sample of parent sample BH22-7-SS2C

Table 3 (Continued)
Summary of Soil PAH and Metals Analysis
Phase Two Environmental Site Assessment Update
5546 Albion Road, Ottawa, Ontario
LRL File: 01348

Parameter	Units	MDL	O. Reg. 153/04[1] Table 2[2] Commercial Property Use Coarse textured soil	Sample							
				BH22-5-SS2B	BH22-6-SS1A	BH22-6-SS2C	BH22-7-SS2C	*BH22-7-SS4C*	BH22-8-SS2B	BH22-9-SS2A	BH22-10-SS2B
Sample Date (d/m/y)			--	29-Jul-22	29-Jul-22	29-Jul-22	29-Jul-22		29-Jul-22	29-Jul-22	29-Jul-22
Polycyclic Aromatic Hydrocarbons											
Acenaphthene	ug/g dry	0.02	21	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Acenaphthylene	ug/g dry	0.02	0.15	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Anthracene	ug/g dry	0.02	0.67	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Benzo[a]anthracene	ug/g dry	0.02	0.96	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Benzo[a]pyrene	ug/g dry	0.02	0.3	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Benzo[b]fluoranthene	ug/g dry	0.02	0.96	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Benzo[g,h,i]perylene	ug/g dry	0.02	9.6	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Benzo[k]fluoranthene	ug/g dry	0.02	0.96	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Chrysene	ug/g dry	0.02	9.6	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Dibenzo[a,h]anthracene	ug/g dry	0.02	0.1	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Fluoranthene	ug/g dry	0.02	9.6	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Fluorene	ug/g dry	0.02	62	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Indeno[1,2,3-cd]pyrene	ug/g dry	0.02	0.76	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
1-Methylnaphthalene	ug/g dry	0.02	30	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
2-Methylnaphthalene	ug/g dry	0.02	30	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Methylnaphthalene (1&2)	ug/g dry	0.04	30	<0.04	<0.04	<0.04	<0.04	*<0.04*	--	<0.04	--
Naphthalene	ug/g dry	0.01	9.6	<0.01	<0.01	<0.01	<0.01	*<0.01*	--	<0.01	--
Phenanthrene	ug/g dry	0.02	12	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Pyrene	ug/g dry	0.02	96	<0.02	<0.02	<0.02	<0.02	*<0.02*	--	<0.02	--
Metals											
Antimony	ug/g dry	1.0	40	<1.0	<1.0	<1.0	<1.0	*<1.0*	<1.0	<1.0	<1.0
Arsenic	ug/g dry	1.0	18	4.8	6.1	3.9	5.2	*4.9*	5.7	4.4	3.2
Barium	ug/g dry	1.0	670	75.9	60.4	59.5	97.9	*97.5*	58.3	32.2	35.0
Beryllium	ug/g dry	0.5	8	0.5	<0.5	<0.5	<0.5	*<0.5*	0.6	<0.5	<0.5
Boron (available)	ug/g dry	0.5	2	<0.5	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5
Boron	ug/g dry	5.0	120	<5.0	6.2	<5.0	<5.0	*<5.0*	<5.0	<5.0	<5.0
Cadmium	ug/g dry	0.5	1.9	<0.5	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5
Chromium VI	ug/g dry	0.2	8	<0.2	<0.2	<0.2	<0.2	*<0.2*	<0.2	<0.2	0.3
Chromium	ug/g dry	5.0	160	16.9	16.8	13.6	22.4	*21.4*	16.3	11.7	12.4
Cobalt	ug/g dry	1.0	80	5.0	6.2	4.6	6.4	*6.7*	5.5	5.1	3.8
Copper	ug/g dry	5.0	230	7.4	31.0	10.4	14.0	*15.7*	<5.0	12.3	<5.0
Lead	ug/g dry	1.0	120	11.1	33.7	3.2	3.7	*4.0*	5.1	3.6	5.0
Mercury	ug/g dry	0.1	3.9	<0.1	<0.1	<0.1	<0.1	*<0.1*	<0.1	<0.1	<0.1
Molybdenum	ug/g dry	1.0	40	1.6	4.80	<1.0	<1.0	*<1.0*	<1.0	<1.0	<1.0
Nickel	ug/g dry	5.0	270	10.1	14.0	8.9	13.5	*14.0*	13.6	8.7	9.6
Selenium	ug/g dry	1.0	5.5	<1.0	<1.0	<1.0	<1.0	*<1.0*	<1.0	<1.0	<1.0
Silver	ug/g dry	0.3	40	<0.3	<0.3	<0.3	<0.3	*<0.3*	<0.3	<0.3	<0.3
Thallium	ug/g dry	1.0	3.3	<1.0	<1.0	<1.0	<1.0	*<1.0*	<1.0	<1.0	<1.0
Uranium	ug/g dry	1.0	33	<1.0	<1.0	<1.0	<1.0	*<1.0*	<1.0	<1.0	<1.0
Vanadium	ug/g dry	10.0	86	31.7	21.1	23.0	30.9	*28.4*	37.0	18.8	18.7
Zinc	ug/g dry	20.0	340	34.2	56.0	<20.0	32.3	*58.6*	20.1	<20.0	<20.0

NOTES:

[1] MECP's *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011*

[2] Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, Commercial property use.

[3] Combustible soil vapour concentrations measured with a MiniRAE 3000 PID

MDL Method Detection Limit

-- No Value/Not Analysed

Italics Duplicate sample of parent sample BH22-7-SS2C

Table 3
Summary of Soil PAH and Metals Analysis
Phase Two Environmental Site Assessment Update
5546 Albion Road, Ottawa, Ontario
LRL File: 01348

Parameter	Units	MDL	O. Reg. 153/04[1] Table 2[2] Commercial Property Use Coarse textured soil	Sample								
				BH22-1-SS1B	BH22-1-SS2B	*BH22-1-SS5A*	BH22-1-SS3C	BH22-2-SS2B	BH22-3-SS2B	BH22-3-SS3B	BH22-4-SS1A	BH22-4-SS2B
Sample Date (d/m/y)			--	28-Jul-22	28-Jul-22		28-Jul-22	29-Jul-22	29-Jul-22	29-Jul-22	29-Jul-22	29-Jul-22
Polycyclic Aromatic Hydrocarbons												
Acenaphthene	ug/g dry	0.02	21	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Acenaphthylene	ug/g dry	0.02	0.15	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Anthracene	ug/g dry	0.02	0.67	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Benzo[a]anthracene	ug/g dry	0.02	0.96	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Benzo[a]pyrene	ug/g dry	0.02	0.3	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Benzo[b]fluoranthene	ug/g dry	0.02	0.96	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Benzo[g,h,i]perylene	ug/g dry	0.02	9.6	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Benzo[k]fluoranthene	ug/g dry	0.02	0.96	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Chrysene	ug/g dry	0.02	9.6	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Dibenzo[a,h]anthracene	ug/g dry	0.02	0.1	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Fluoranthene	ug/g dry	0.02	9.6	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Fluorene	ug/g dry	0.02	62	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Indeno[1,2,3-cd]pyrene	ug/g dry	0.02	0.76	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
1-Methylnaphthalene	ug/g dry	0.02	30	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
2-Methylnaphthalene	ug/g dry	0.02	30	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Methylnaphthalene (1&2)	ug/g dry	0.04	30	<0.04	<0.04	*<0.04*	--	<0.04	<0.04	--	--	--
Naphthalene	ug/g dry	0.01	9.6	<0.01	<0.01	*<0.01*	--	<0.01	<0.01	--	--	--
Phenanthrene	ug/g dry	0.02	12	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Pyrene	ug/g dry	0.02	96	<0.02	<0.02	*<0.02*	--	<0.02	<0.02	--	--	--
Metals												
Antimony	ug/g dry	1.0	40	<1.0	<1.0	*<1.0*	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	ug/g dry	1.0	18	4.6	4.8	*5.5*	5.7	3.9	6.4	3.4	6.6	2.7
Barium	ug/g dry	1.0	670	127	24.3	*25.7*	68.6	46.4	73.0	15.2	118	23.1
Beryllium	ug/g dry	0.5	8	0.5	<0.5	*<0.5*	<0.5	<0.5	0.7	<0.5	<0.5	<0.5
Boron (available)	ug/g dry	0.5	2	0.7	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	1.2	<0.5
Boron	ug/g dry	5.0	120	6.8	<5.0	*<5.0*	6.0	<5.0	<5.0	<5.0	9.1	<5.0
Cadmium	ug/g dry	0.5	1.9	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	0.6	<0.5
Chromium VI	ug/g dry	0.2	8	<0.2	<0.2	*<0.2*	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	ug/g dry	5.0	160	30.3	9.6	*10.4*	14.0	14.4	19.0	7.9	21.9	8.1
Cobalt	ug/g dry	1.0	80	8.1	4.0	*4.3*	5.4	5.3	6.2	2.2	5.9	2.9
Copper	ug/g dry	5.0	230	20.3	17.5	*14.4*	14.5	15.1	6.4	<5.0	22.0	8.2
Lead	ug/g dry	1.0	120	57.4	3.3	*3.4*	6.3	4.5	5.6	1.8	68.1	2.7
Mercury	ug/g dry	0.1	3.9	0.1	<0.1	*<0.1*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/g dry	1.0	40	1.0	<1.0	*<1.0*	1.2	<1.0	1.30	<1.0	1.90	<1.0
Nickel	ug/g dry	5.0	270	17.4	7.5	*9.0*	10.6	11.2	11.1	<5.0	14.1	6.4
Selenium	ug/g dry	1.0	5.5	<1.0	<1.0	*<1.0*	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver	ug/g dry	0.3	40	<0.3	<0.3	*<0.3*	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Thallium	ug/g dry	1.0	3.3	<1.0	<1.0	*<1.0*	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium	ug/g dry	1.0	33	<1.0	<1.0	*<1.0*	<1.0	<1.0	<1.0	<1.0	1.70	<1.0
Vanadium	ug/g dry	10.0	86	35.8	16.2	*14.6*	23.7	19.0	44.5	17.9	42.6	11.2
Zinc	ug/g dry	20.0	340	289	<20.0	*<20.0*	23.8	23.8	21.5	<20.0	85.1	<20.0

NOTES:
[1] MECP's *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011*
[2] Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, Commercial property use.
[3] Combustible soil vapour concentrations measured with a MiniRAE 3000 PID
MDL Method Detection Limit
-- No Value/Not Analysed
Italics Duplicate sample of parent sample BH22-1-SS2B

Table 4
Summary of Groundwater VOC, PHC, and General Inorganics Analysis
Phase Two Environmental Site Assessment Update
5546 Albion Road, Ottawa, Ontario
LRL File: 01348

Parameter	Units	MDL	O. Reg. 153/04[1] Table 2[2] Commercial Property Use Coarse textured soil	Sample									
				MW22-1		MW22-2	*MW22-X*	MW22-2	MW22-3		MW22-4		Trip Blank
Sample Date (d/m/y)			--	04-Aug-22	19-Dec-24	04-Aug-22		19-Dec-24	04-Aug-22	19-Dec-24	04-Aug-22	19-Dec-24	04-Aug-22
Depth of groundwater below top of casing	m		--	1.67	1.33	1.71		1.16	1.91	1.39	1.67	1.33	--
Headspace VOC Readings[3]	ppm	0.1	--	0.6	<0.1	3.2		<0.1	<0.1	<0.1	0.7	<0.1	--
Evidence of free product?	--	--	[4]	No	No	No		No	No	No	No	No	--
General Inorganics													
Cyanide, free	ug/g dry	2		<2	--	<2	<2	--	<2	--	<2	--	--
pH	pH Units	0.1		7.6	7.2	7.4	*7.4*	7.2	7.4	6.8	7.4	7.1	--
SAR		0.01		--	5.78	--	--	33.3	--	17.4		13.8	
Conductivity	uS/cm	5		--	2550	--	--	13000	--	8460		6390	
Anions													
Chloride	mg/L	1	790	**1500**	--	**1350**	***1360***	--	**980**	--	465	--	--
Volatiles													
Acetone	ug/L	5.0	2700	<5.0	<5.0	<5.0	*<5.0*	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene	ug/L	0.5	5	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	ug/L	0.5	16	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	0.5	25	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromomethane	ug/L	0.5	0.89	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	ug/L	0.2	0.79	<0.2	<0.2	<0.2	*<0.2*	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	ug/L	0.5	30	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	ug/L	0.5	2.4	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	0.5	25	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	ug/L	1.0	590	<1.0	<1.0	<1.0	*<1.0*	<1.0	<1.0	14.5	<1.0	21.6	<1.0
1,2-Dichlorobenzene	ug/L	0.5	3	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	ug/L	0.5	59	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	ug/L	0.5	1	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	ug/L	0.5	5	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	ug/L	0.5	1.6	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	ug/L	0.5	1.6	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	ug/L	0.5	1.6	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	ug/L	0.5	1.6	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	0.5	5	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	ug/L	0.5	--	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	ug/L	0.5	--	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	ug/L	0.5	0.5	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	ug/L	0.5	2.4	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylene dibromide (dibromoethane, 1,2-)	ug/L	0.2	0.2	<0.2	<0.2	<0.2	*<0.2*	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexane	ug/L	1.0	51	<1.0	<1.0	<1.0	*<1.0*	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	ug/L	5.0	1800	<5.0	<5.0	<5.0	*<5.0*	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl Isobutyl Ketone	ug/L	5.0	640	<5.0	<5.0	<5.0	*<5.0*	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	ug/L	2.0	15	<2.0	<2.0	<2.0	*<2.0*	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	ug/L	5.0	50	<5.0	<5.0	<5.0	*<5.0*	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Styrene	ug/L	0.5	5.4	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	ug/L	0.5	1.1	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	ug/L	0.5	1	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	ug/L	0.5	1.6	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	ug/L	0.5	24	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	0.5	200	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	0.5	4.7	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	ug/L	0.5	1.6	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	ug/L	1.0	150	<1.0	<1.0	<1.0	*<1.0*	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	ug/L	0.5	0.5	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-Xylene	ug/L	0.5	--	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
o-Xylene	ug/L	0.5	--	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes, total	ug/L	0.5	300	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hydrocarbons													
F1 PHCs (C6-C10)	ug/L	25	750	<25	<25	<25	*<25*	<25	<25	<25	<25	<25	--
F2 PHCs (C10-C16)	ug/L	100	150	<100	<100	<100	*<100*	<100	<100	<100	<100	<100	--
F3 PHCs (C16-C34)	ug/L	100	500	176	337	<100	*<100*	<100	<100	249	<100	<100	--
F4 PHCs (C34-C50)	ug/L	100	500	180	**807**	<100	*<100*	<100	<100	105	<100	<100	--

NOTES:
1 MECP's *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011*
2 Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, Commercial property use.
3 Headspace values were measured with a MiniRAE 3000 PID
4 To meet the standard there must be no evidence of free product including film or sheen.
MDL Method Detection Limit
-- No Value/Not Analysed
PHC Petroleum Hydrocarbon
BOLD Above Table 2 Standard
Italics Duplicate sample of parent sample MW22-2, collected August 4 2022.

Table 5
Summary of Groundwater Metals, PAH, and PCB Analysis
Phase Two Environmental Site Assessment Update
5546 Albion Road, Ottawa, Ontario
LRL File: 01348

Parameter	Units	MDL	O. Reg. 153/04[1] Table 2[2] Commercial Property Use Coarse textured soil	Sample								
				MW22-1		MW22-2	*MW22-X*	MW22-2	MW22-3		MW22-4	
Sample Date (d/m/y)			--	04-Aug-22	19-Dec-24	04-Aug-22		19-Dec-24	04-Aug-22	19-Dec-24	04-Aug-22	19-Dec-24
PCBs												
PCBs, total	ug/L	0.05	3	--	--	--	--	--	--	--	<0.05	--
Polycyclic Aromatic Hydrocarbons												
Acenaphthene	ug/L	0.05	4.1	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
Acenaphthylene	ug/L	0.05	1	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
Anthracene	ug/L	0.01	2.4	--	<0.01	<0.01	--	<0.01	--	<0.01	--	<0.01
Benzo[a]anthracene	ug/L	0.01	1	--	<0.01	<0.01	--	<0.01	--	<0.01	--	<0.01
Benzo[a]pyrene	ug/L	0.01	0.01	--	<0.01	<0.01	--	<0.01	--	**0.02**	--	<0.01
Benzo[b]fluoranthene	ug/L	0.05	0.1	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
Benzo[g,h,i]perylene	ug/L	0.05	0.2	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
Benzo[k]fluoranthene	ug/L	0.05	0.1	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
Chrysene	ug/L	0.05	0.1	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
Dibenzo[a,h]anthracene	ug/L	0.05	0.2	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
Fluoranthene	ug/L	0.01	0.41	--	0.02	<0.01	--	0.02	--	0.09	--	0.03
Fluorene	ug/L	0.05	120	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
Indeno[1,2,3-cd]pyrene	ug/L	0.05	0.2	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
1-Methylnaphthalene	ug/L	0.05	3.2	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
2-Methylnaphthalene	ug/L	0.05	3.2	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
Methylnaphthalene (1&2)	ug/L	0.10	3.2	--	<0.10	<0.10	--	<0.10	--	<0.10	--	<0.10
Naphthalene	ug/L	0.05	11	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
Phenanthrene	ug/L	0.05	1	--	<0.05	<0.05	--	<0.05	--	<0.05	--	<0.05
Pyrene	ug/L	0.01	4.1	--	<0.01	<0.01	--	0.03	--	0.12	--	0.04
Metals												
Mercury	ug/L	0.1	0.29	<0.1	--	<0.1	*<0.1*	--	<0.1	--	<0.1	--
Antimony	ug/L	0.5	6	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5
Arsenic	ug/L	1	25	1	<1	8	*1*	<1	1	<1	9	<1
Barium	ug/L	1	1000	472	210	451	*314*	268	504	250	443	197
Beryllium	ug/L	0.5	4	<0.5	<0.5	<0.5	*<0.5*	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	ug/L	10	5000	28	16	47	*30*	20	30	16	46	13
Cadmium	ug/L	0.1	2.7	<0.1	<0.1	<0.1	*<0.1*	<0.1	<0.1	0.1	<0.1	<0.1
Chromium	ug/L	1	50	1	<1	<1	*<1*	<1	2.00	<1	<1	<1
Chromium (VI)	ug/L	10	25	<10	--	<10	*<10*	--	<10	--	<10	--
Cobalt	ug/L	0.5	3.8	1.3	<0.5	0.8	*<0.5*	1.8	1.0	**5.9**	0.8	0.7
Copper	ug/L	0.5	87	1.0	2.3	2.2	*2.0*	4.4	2.8	3.5	<0.5	2.9
Lead	ug/L	0.1	10	<0.1	<0.1	0.2	*0.1*	<0.1	0.2	<0.1	0.1	<0.1
Molybdenum	ug/L	0.5	70	10.3	4.9	11.6	*10.0*	5.0	9.8	3.8	11.9	10.4
Nickel	ug/L	1	100	2	<1	3	*1*	3	3	4	3	<1
Selenium	ug/L	1	10	<1	<1	<1	*<1*	<1	<1	<1	<1	<1
Silver	ug/L	0.1	1.5	<0.1	<0.1	<0.1	*<0.1*	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/L	200	490000	**708000**	341000	**702000**	*307000*	**2220000**	**531000**	**1280000**	**715000**	**752000**
Thallium	ug/L	0.1	2	<0.1	<0.1	<0.1	*<0.1*	<0.1	<0.1	<0.1	<0.1	<0.1
Uranium	ug/L	0.1	20	1.0	2.7	0.7	*0.1*	1.4	1.2	1.3	0.6	0.4
Vanadium	ug/L	0.5	6.2	1.5	0.8	1.2	*1.1*	<0.5	1.5	1.2	1.3	0.8
Zinc	ug/L	5	1100	<5	<5	<5	*<5*	16	<5	20	<5	<5

NOTES:
[1] MECP's *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011*
[2] Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, Commercial property use.
MDL Method Detection Limit
-- No Value/Not Analysed
BOLD Above Table 2 Standard
Italics Duplicate sample of parent sample MW22-2

APPENDIX A

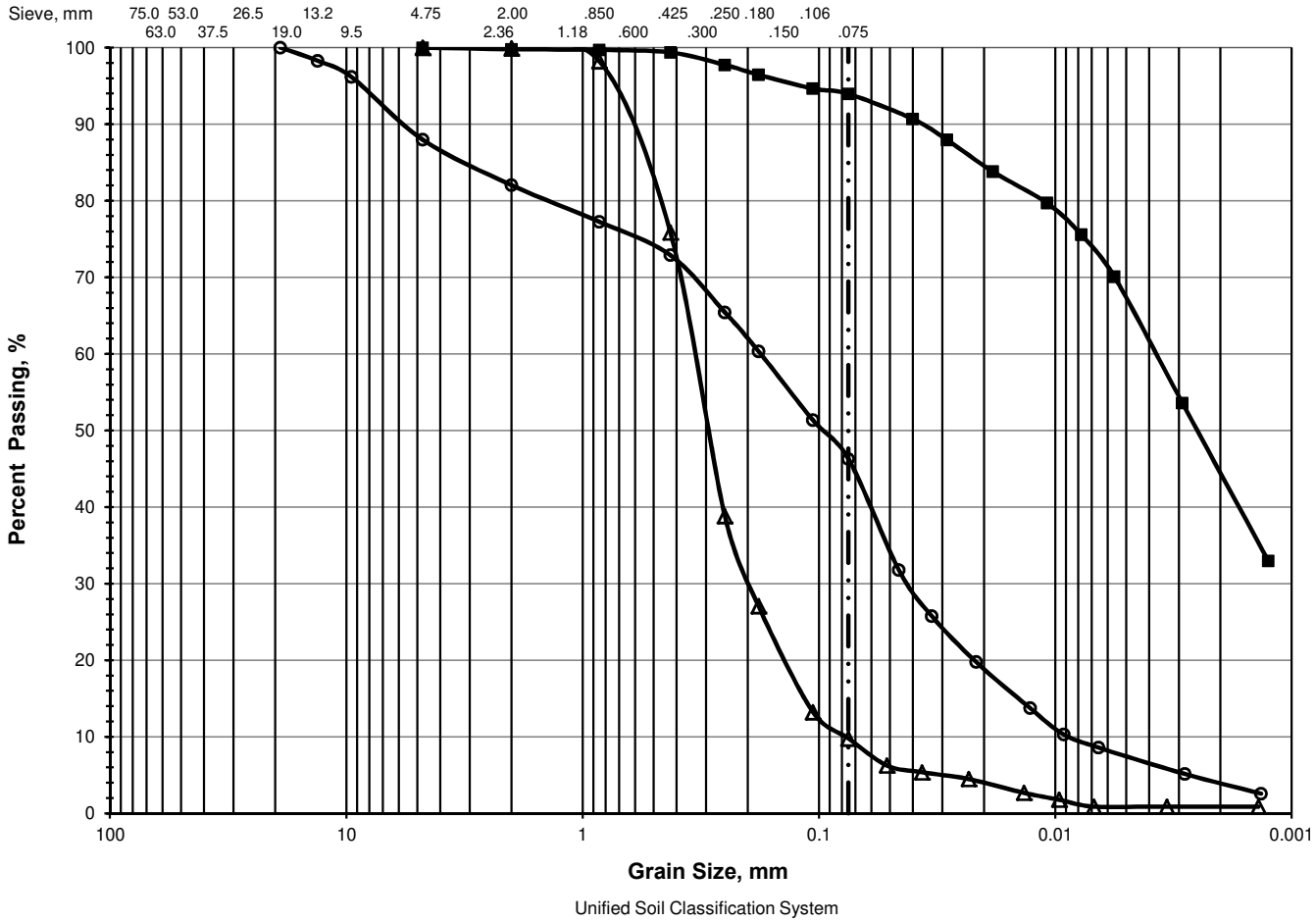
Gradation Laboratory Certificates of Analysis

LRL Associates Ltd.

PARTICLE SIZE ANALYSIS

ASTM D 422 / LS-702

Client:	MacEwewn Petroleum Inc.	**File No.:**	01348
Project:	Geotechnical Investigation	**Report No.:**	1
Location:	5546 Albion Road South, Gloucester, ON.	**Date:**	May 25, 2022



Unified Soil Classification System

	> 75 mm	% GRAVEL		% SAND			% FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
△	0.0	0.0	0.0	0.1	24.0	66.1	8.9	0.9
■	0.0	0.0	0.0	0.2	0.4	5.4	51.6	42.4
○	0.0	0.0	12.0	5.9	9.1	26.6	42.7	3.7

	Location	Sample	Depth, m	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
△	BH 1	SS-3	1.52 - 2.13	0.3500	0.3027	0.1975	0.1154	0.0769	1.4	4.6
■	BH 2	SS-5	3.05 - 3.66	0.0038	0.0026					
○	BH 3	SS-6	4.57 - 5.18	0.1772	0.0977	0.0421	0.0146	0.0087	1.1	20.4

APPENDIX B

Topographic Survey Plan

TOPOGRAPHICAL PLAN OF SURVEY

PART OF LOT 30
CONCESSION 3 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Revised to show catch basin invert elevation
August 8, 2022

Scale 1 : 250

10 7.5 5.0 2.5 0 5 10 Metres

Metric

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Land Titles Act and the regulations made under them.
2. The survey was completed on the 7th day of April, 2022.

April 18 2022 — E. H. Herweyer
Date — E. H. Herweyer, Ontario Land Surveyor

Notes & Legend

		Denotes
—□—	-	Survey Monument Planted
—■—	-	Survey Monument Found
SIB	-	Standard Iron Bar
SSIB	-	Short Standard Iron Bar
IB	-	Iron Bar
(WIT)	-	Witness
Meas.	-	Measured
(AOG)	-	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	-	Plan 4R-12754
(P2)	-	Registered Plan 4M-1275
(P3)	-	Plan 5R-14863
(P4)	-	Plan 4M-1482
	-	Deciduous Tree
	-	Coniferous Tree
MH-ST	-	Maintenance Hole (Storm Sewer)
MH-S	-	Maintenance Hole (Sanitary)
MH-T	-	Maintenance Hole (Traffic)
MH	-	Maintenance Hole
OHW	-	Overhead Wires
CB	-	Catch Basin
CB*	-	Catch Basin (Not Verified)
DI	-	Ditch Inlet
CSP	-	Corrugated Steel Pipe
TB	-	Unidentified Terminal Box
TSP	-	Traffic Signal Post
B	-	Bollard
S	-	Sign
HH	-	Handhole
UP	-	Utility Pole
AN	-	Anchor
LS	-	Light Standard
TOS	-	Top of Slope
BOS	-	Bottom of Slope
AC	-	Air Conditioner
Ø	-	Diameter
x 65.00	-	Location of Elevations
+ 65.00	-	Top of Concrete Curb Elevation
C/L	-	Centreline

Bearings are grid, derived from Can-Net 2016 Real Time Network GPS observations, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).
For bearing comparisons, a rotation of 1°04'10" counter-clockwise was applied to bearings on P1, P2, P3 & P4.

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum, derived from control monument No. 019680377 having an elevation of 113.994 metres.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-25414

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29 (3).

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
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Nepean, Ont. K2E 7S6
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Ontario Land Surveyors

Job No. 22680-22 P1 LSD C5 RF T F2 — F5

APPENDIX C

Borehole Logs

Borehole Log: BH/MW22-1

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 28, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)
0.0 / 0.0	Ground Surface	100.17 / 0.00							
0.0 – 0.3	**ASPHALT** 100 mm thick.	99.87 / 0.30			SS1A				<0.1
0.3 – 2.6	**PAVEMENT STRUCTURE** Sand and gravel, dry. **FILL** Sand and gravel to 0.5 m bgs, silty loam to 0.8 m bgs.	99.37 / 0.80			SSAB	NA	87	VOC, PHC, PAH, Metals O.Reg.153, General inorganics	0.1
2.6 – 5.9	**SAND** Medium- to coarse- grained, becoming, fossilierous, brown becoming grey with depth, oxidized at 1.7 m bgs, moist at 1.5 m bgs becoming saturated at 1.9 m bgs.				SS1C				<0.1
					SS2A				<0.1
					SS2B	NA	53	VOC, PHC, PAH, Metals O.Reg.153, General inorganics	<0.1
					SS3A				<0.1
11.5 – 13.8	**GLACIAL TILL** Grey silt-sand with gravel, saturated.	96.67 / 3.50			SS3B	NA	100		<0.1
					SS3C			VOC, PHC, Metals O.Reg.153, General inorganics	<0.1
15.1	End of Borehole	95.57 / 4.60							

Monitoring Well Details: Bentonite; 1.67 m bgs (August 02, 2022); Flushmount Aluminum Casing; 10' Screen; #3 Silica Sand

Easting: 0453388 | **Northing:** 5013088

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.17 m | **Top of Riser Elev.:** 100.06 m

Hole Diameter: 91 mm | **Monitoring Well Diameter:** 51 mm

NOTES

- Duplicate samples collected of SS2B (identified as SS5A).
- Groundwater sample collected on August 04, 2022 was submitted for laboratory analysis of VOC, PHC, PAH, Reg.153 Metals, General Inorganics.

Borehole Log: BH/MW22-2

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

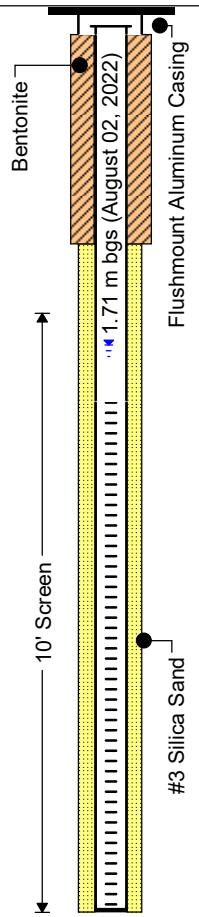
Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)
0.0 / 0.0	Ground Surface	99.94 / 0.00							
	ASPHALT								
	PAVEMENT STRUCTURE Sand and gravel, dry.	99.54 / 0.40							
	SAND Medium- to coarse-grained, becoming clayey at 1.3 m bgs, and with clayey silt at 1.5 to 2.1 m bgs, brown becoming grey with depth, moist at 1.5 m bgs becoming saturated at 2.1 m bgs.				SS1A	NA	50		<0.1
					SS1B				<0.1
					SS2A				<0.1
					SS2B	NA	63	VOC, PHC, PAH, Metals O.Reg.153, General inorganics	0.6
	GLACIAL TILL Silty sand with gravel, clayey, becoming more compact at 3.0 m bgs, saturated silt at 3.2 m bgs.	97.14 / 2.80			SS2C				0.3
					SS3A				<0.1
					SS3B	NA	100		<0.1
					SS3C				<0.1
	End of Borehole	95.34 / 4.60							

Monitoring Well Details



Easting: 0453364 | **Northing:** 5013069

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 99.94 m | **Top of Riser Elev.:** 99.86 m

Hole Diameter: 91 mm | **Monitoring Well Diameter:** 51 mm

NOTES

- Duplicate samples collected of SS2A (identified as SS4A).
- Groundwater sample collected on August 04, 2022 was submitted for laboratory analysis of VOC, PHC, PAH, Reg.153 Metals, General Inorganics.

Borehole Log: BH/MW22-3

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)
0.0 / 0.0	Ground Surface	100.20							
0.0	**ASPHALT**	0.00							
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry.	99.90 / 0.30							
3.0 / 1.0	**FILL** Sand and gravel, dry.				SS1A	NA	12		<0.1
5.0	**SAND** Medium- to coarse- grained, clayey 1.6 m bgs, brown becoming grey with depth, moist at 1.7 m bgs becoming saturated at 1.9 m bgs	98.70 / 1.50			SS2A				0.6
6.0					SS2B			VOC, PHC, PAH, Metals O.Reg.153.	0.4
7.0 / 2.0					SS2C	NA	52		<0.1
10.0 / 3.0					SS3A				<0.1
12.0					SS3B	NA	68	VOC, PHC, Metals O.Reg.153, General inorganics	0.1
15.0 / 4.5	**GLACIAL TILL** Grey silt with gravel, fossilierous.	95.70 / 4.50			SS3C				0.3
16.0 / 5.0	End of Borehole								

Monitoring Well Details

- Bentonite
- Flushmount Aluminum Casing
- 1.91 m bgs (August 02, 2022)
- 10' Screen
- #3 Silica Sand

Easting: 0453352 | **Northing:** 5013075

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.20 m | **Top of Riser Elev.:** 100.13 m

Hole Diameter: 91 mm | **Monitoring Well Diameter:** 51 mm

NOTES

- Duplicate samples collected of SS2C (identified as SS4C).
- Groundwater sample collected on August 04, 2022 was submitted for laboratory analysis of VOC, PHC, PAH, Reg.153 Metals, General Inorganics.

Borehole Log: BH/MW22-4

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

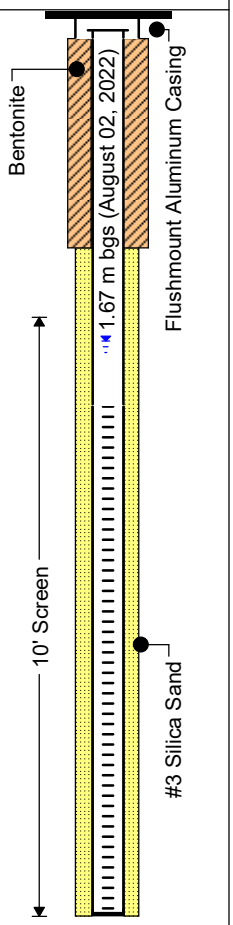
Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)
0.0 / 0.0	Ground Surface	100.21							
0.0	**ASPHALT**	0.00							
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry.	99.76 / 0.45			SS1A			VOC, PHC, Metals O.Reg.153, General	0.7
2.0	**FILL** Silty Loam, brown, dry.				SS1A / SS1B	NA	47		0.1
1.0		99.01 / 1.20			SS1C				<0.1
4.0	**SAND** Medium-grained, brown becoming grey with depth, oxidized at 1.5 m bgs, moist becoming saturated at 2.0 m bgs, fractured rock at 3.5 m bgs.				SS2A				<0.1
5.0									
2.0					SS1B / SS2B	NA	51	VOC, PHC, Metals O.Reg.153, General inorganics	<0.1
6.0									
7.0									
8.0									
9.0									
3.0					SS3A				<0.1
10.0									
11.0		96.71 / 3.50							
12.0	**GLACIAL TILL** Silty-sand, clayey with gravel at 4.0 m bgs, grey, saturated.				SS3B				<0.1
4.0					SS1C	NA	100		
13.0									
14.0					SS3C				<0.1
15.0		95.61 / 4.60							
16.0	End of Borehole								
5.0									
17.0									
18.0									
19.0									

Monitoring Well Details



Easting: 0453371 | **Northing:** 5013099

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.21 m | **Top of Riser Elev.:** 100.1 m

Hole Diameter: 91 mm | **Monitoring Well Diameter:** 51 mm

NOTES

- Duplicate samples collected of SS1B (identified as SS4A).
- Groundwater sample collected on August 04, 2022 was submitted for laboratory analysis of VOC, PHC, PAH, Reg.153 Metals, General Inorganics.

Borehole Log: BH22-5

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	100.20 / 0.00								
	ASPHALT									
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry.	99.90 / 0.30			SS1A				<0.1	
2.0	**FILL** Crushed stone and gravel , dry.	99.60 / 0.60			SS1A SS1B	NA	53		<0.1	
3.0 / 1.0	**SAND** Silty, with gravel at 0.8 to 1.0 m bgs and at 1.8 to 2.0, coarse-grained at 2.9 to 3.1 m bgs and becoming medium-grained with depth, brown, dry becoming saturated at 1.9 m bgs.									
4.0					SS2A				<0.1	
5.0										
6.0 / 2.0					SS1B SS2B	NA	58	VOC, PHC, PAH, Metals O.Reg.153, General inorganics	<0.1	
7.0										
8.0										
9.0										
10.0 / 3.0					SS3A				<0.1	
11.0		96.60 / 3.60								
12.0	**GLACIAL TILL** Clayey silty-sand, with gravel.				SS2A SS3B	NA	100		<0.1	
13.0 / 4.0										
14.0					SS3C				<0.1	
15.0		95.60 / 4.60								
	End of Borehole									
16.0 / 5.0										
17.0										
18.0										
19.0										

Easting: 0453338 | **Northing:** 5013084

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.19 m | **Top of Riser Elev.:** NA

Hole Diameter: 91 mm | **Monitoring Well Diameter:** NA

NOTES

- Duplicate samples collected of SS2B (identified as SS4B).
- NA : Not applicable

Borehole Log: BH22-6

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	99.28								
0.0	**ASPHALT**	0.00								
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry.	98.98 / 0.30								
2.0	**FILL** Medium-grained sand and gravel , dry.					NA	58		<0.1	
3.0 / 1.0		98.35 / 0.93								
4.0	**SAND** Silty sand, medium-grained, trace clayey silt between 2.5 and 2.7 m bgs, brown becoming grey with depth, moist becoming saturated at 1.2 m bgs.				SS1A			SS1A: VOC, PAH, Metals O.Reg.153.	0.1	
4.0					SS1B				<0.1	
5.0										
6.0					SS2A				<0.1	
7.0						NA	92			
8.0					SS2B				<0.1	
9.0					SS2C			SS2C: VOC, PHC, PAH, Metals O.Reg.153. pH, texture, General inorganics.	0.1	
10.0 / 3.0										
11.0					SS3A				<0.1	
12.0		95.73 / 3.55								
12.0	**GLACIAL TILL** Silt-sand, some gravel, trace clay, grey, saturated.				SS3B	NA	10		<0.1	
13.0 / 4.0										
14.0					SS3C				<0.1	
15.0		94.68 / 4.60								
15.0	End of Borehole									
16.0 / 5.0										
17.0										
18.0										
19.0										

Easting: 0453341 | **Northing:** 5013052

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 99.28 m | **Top of Riser Elev.:** NA

Hole Diameter: 91 mm | **Monitoring Well Diameter:** NA

NOTES

- Duplicate samples collected of SS2A (identified as SS4A).
- NA : Not applicable

Borehole Log: BH22-7

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	100.23								
0.0	**ASPHALT**	0.00								
1.0	**PAVEMENT STRUCTURE** Sand and gravel.									
2.0		99.63								
2.0	**SILT** **Brown, dry.**	0.60			SS1A	NA	56		<0.1	
3.0 / 1.0		99.23								
4.0	**SAND** Loamy sand at 1.5 m bgs to 1.7 m bgs, brown becoming grey with depth, moist becoming saturated at 1.8 m bgs.	1.00			SS2B				<0.1	
5.0					SS2A				<0.1	
6.0					SS2B					
7.0 / 2.0						NA	58		<0.1	
8.0										
9.0					SS2C			VOC, PHC, PAH, Metals O.Reg.153.	<0.1	
10.0 / 3.0										
11.0		96.83			SS3A				<0.1	
11.0	**GLACIAL TILL** Silt-sand, some gravel, trace clay, grey, saturated.	3.40			SS3B					
12.0						NA	100		<0.1	
13.0 / 4.0										
14.0					SS3C				<0.1	
15.0		95.63								
		4.60								
	End of Borehole									
16.0 / 5.0										
17.0										
18.0										
19.0										

Easting: 0453359 | **Northing:** 5013102

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.23 m | **Top of Riser Elev.:** NA

Hole Diameter: 91 mm | **Monitoring Well Diameter:** NA

NOTES

- Duplicate samples collected of SS2C (identified as SS4C).
- NA : Not applicable

Borehole Log: BH22-8

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	100.30								
	ASPHALT	0.00								
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry.	100.00 0.30								
2.0	**FILL** Sand, presence of gravel to 1.8 m bgs, brown, dry.				SS1A	NA	52		<0.1	
3.0 / 1.0					SS1B				0.1	
4.0					SS2A				<0.1	
5.0		98.50								
6.0	**SAND** Brown becoming grey with depth, moist becoming saturated at 2.1 m bgs.	1.80			SS2B			VOC, PHC, Metals O.Reg.153.	<0.1	
7.0 / 2.0					SS2C	NA	69			
8.0									<0.1	
9.0		97.42								
10.0 / 3.0	**GLACIAL TILL** Silt-sand, some gravel, trace clay, grey, saturated.	2.88			SS2D				0.1	
11.0					SS3A				<0.1	
12.0										
13.0 / 4.0					SS3B	NA	87		<0.1	
14.0										
15.0		95.70			SS3C				<0.1	
	End of Borehole	4.60								
16.0 / 5.0										
17.0										
18.0										
19.0										

Easting: 0453338 | **Northing:** 5013114

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.30 m | **Top of Riser Elev.:** NA

Hole Diameter: 91 mm | **Monitoring Well Diameter:** NA

NOTES

- Duplicate samples collected of SS2C (identified as SS4C).
- NA : Not applicable

Borehole Log: BH22-9

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	100.13								
	ASPHALT	0.00								
	PAVEMENT STRUCTURE Sand and gravel, dry.	99.83 / 0.30			SS1A					
3.0 / 1.0	**FILL** Gravel and sand, medium-grained sand at 1.1 m bgs to 1.5 m bgs, brown.				SS1A	NA	55		<0.1	
4.0					SS1B				<0.1	
6.0 / 2.0	**SAND** Medium-grained, clayey at 2.9 m bgs to 3.1 m bgs, brown, saturated.	98.33 / 1.80			SS2A	NA	67	VOC, PHC, PAH, Metals O.Reg.153.	<0.1	
10.0 / 3.0					SS2B				<0.1	
					SS3A				<0.1	
13.0 / 4.0	**CLAY** Grey, silty in basal portion.	96.33 / 3.80			SS3B	NA	92		<0.1	
15.0 / 5.0	End of Borehole	95.53 / 4.60								

Easting: 0453364 | **Northing:** 5013122

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.13 m | **Top of Riser Elev.:** NA

Hole Diameter: 91 mm | **Monitoring Well Diameter:** NA

NOTES

- Duplicate samples collected of SS2A (identified as SS4A).
- NA : Not applicable

Borehole Log: BH22-10

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	100.10								
	ASPHALT	0.00								
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry	99.80 / 0.30								
2.0	**FILL** Sand to 0.9 m bgs, silt to 1.3 m bgs, brown, dry.				SS1A	NA	60		<0.1	
3.0 / 1.0		98.80 / 1.30			SS1B				0.1	
4.0	**SAND** Medium -grained, brown becoming grey with depth, dry becoming saturated at 1.5 m bgs.				SS2A				<0.1	
5.0					SS2B			VOC, PHC, Metals O.Reg.153.	<0.1	
6.0 / 2.0					SS2C	NA	60		<0.1	
7.0										
8.0					SS3A				0.1	
9.0 / 3.0		96.40 / 3.70			SS3B	NA	100		<0.1	
10.0	**GLACIAL TILL** Silt-sand, with some gravel, trace clay, grey, saturated.									
11.0		95.50 / 4.60								
12.0 / 4.0	End of Borehole									
13.0										
14.0										
15.0										
16.0 / 5.0										
17.0										
18.0										
19.0										

Easting: 0453383 | **Northing:** 5013101

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.10 m | **Top of Riser Elev.:** NA

Hole Diameter: 91 mm | **Monitoring Well Diameter:** NA

NOTES

- NA : Not applicable

Symbols and Terms Used on Borehole and Test Pit Logs

1. Soil Description

The soil descriptions presented in this report are based on commonly accepted methods of classification and identification employed in geotechnical practice. Classification and identification of soil involves some judgement and LRL Associates Ltd. does not guarantee descriptions as exact, but infers accuracy to the extent that is common in current geotechnical practice. Boundaries between zones on the logs are often not distinct but transitional and were interpreted.

a. Proportion

The proportion of each constituent part, as defined by the grain size distribution, is denoted by the following terms:

Term	Proportions
"trace"	1% to 10%
"some"	10% to 20%
prefix (i.e. "sandy" silt)	20% to 35%
"and" (i.e. sand "and" gravel)	35% to 50%

b. Compactness and Consistency

The state of compactness of granular soils is defined on the basis of the Standard Penetration Number (N) as per ASTM D-1586. It corresponds to the number of blows required to drive 300 mm of the split spoon sampler using a metal drop hammer that has a weight of 62.5 kg and free fall distance of 760 mm. For a 600 mm long split spoon, the blow counts are recorded for every 150 mm. The "N" value is obtained by adding the number of blows from the 2nd and 3rd count. Technical refusal indicates a number of blows greater than 50.

The consistency of clayey or cohesive soils is based on the shear strength of the soil, as determined by field vane tests and by a visual and tactile assessment of the soil strength.

The state of compactness of granular soils is defined by the following terms:

State of Compactness Granular Soils	Standard Penetration Number "N"	Relative Density (%)
Very loose	0 – 4	<15
Loose	4 – 10	15 – 35
Compact	10 - 30	35 – 65
Dense	30 - 50	65 - 85
Very dense	> 50	> 85

The consistency of cohesive soils is defined by the following terms:

Consistency Cohesive Soils	Undrained Shear Strength (C_u) (kPa)	Standard Penetration Number "N"
Very soft	<12.5	<2
Soft	12.5 - 25	2 - 4
Firm	25 - 50	4 - 8
Stiff	50 - 100	8 - 15
Very stiff	100 - 200	15 - 30
Hard	>200	>30

c. Field Moisture Condition

Description (ASTM D2488)	Criteria
Dry	Absence of moisture, dusty, dry to touch.
Moist	Dump, but not visible water.
Wet	Visible, free water, usually soil is below water table.

2. Sample Data

a. Elevation depth

This is a reference to the geodesic elevation of the soil or to a benchmark of an arbitrary elevation at the location of the borehole or test pit. The depth of geological boundaries is measured from ground surface.

b. Type

Symbol	Type	Letter Code
	Auger	AU
	Split Spoon	SS
	Shelby Tube	ST
	Rock Core	RC

c. Sample Number

Each sample taken from the borehole is numbered in the field as shown in this column.

LETTER CODE (as above) – Sample Number.

d. Recovery (%)

For soil samples this is the percentage of the recovered sample obtained versus the length sampled. In the case of rock, the percentage is the length of rock core recovered compared to the length of the drill run.

3. Rock Description

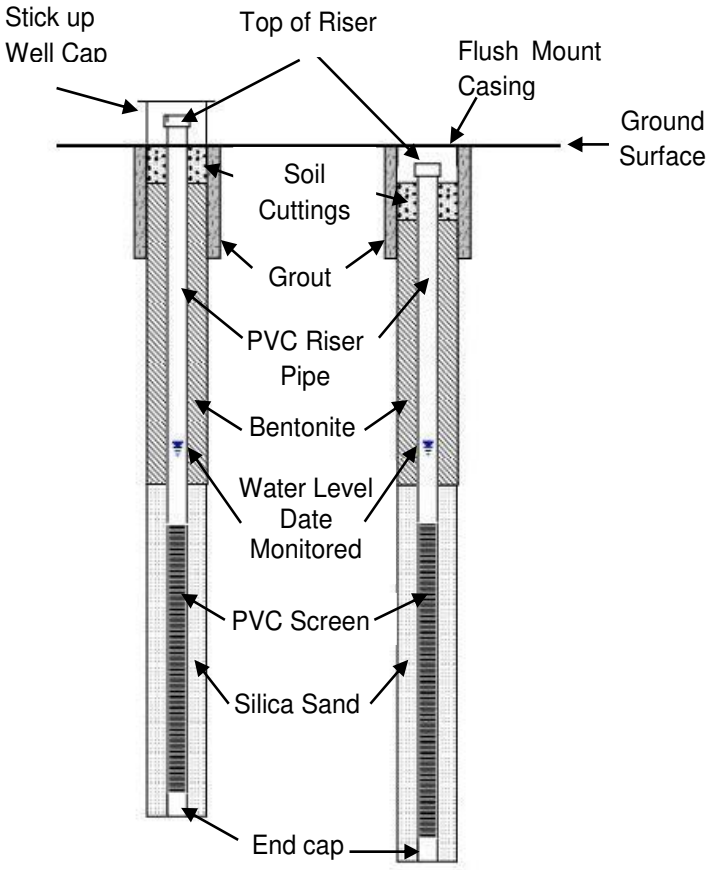
Rock Quality Designation (RQD) is a rough measure of the degree of jointing or fracture in a rock mas. The RQD is calculated as the cumulative length of rock pieces recovered having lengths of 100 mm or more divided by the length of coring. The qualitative description of the bedrock based on RQD is given below.

Rock Quality Designation (RQD) (%)	Description of Rock Quality
0 –25	Very poor
25 – 50	Poor
50 – 75	Fair
75 – 90	Good
90 – 100	Excellent

Strength classification of rock is presented below.

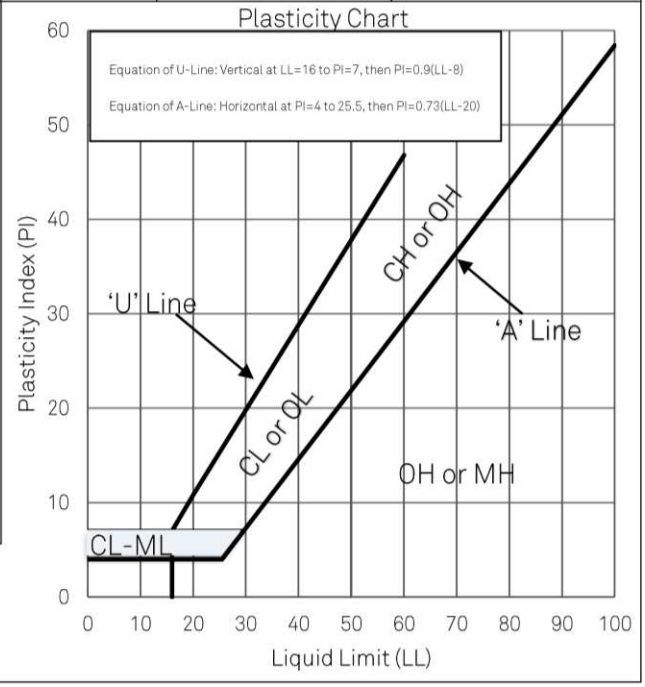
Strength Classification	Range of Unconfined Compressive Strength (MPa)
Extremely weak	< 1
Very weak	1 – 5
Weak	5 – 25
Medium strong	25 – 50
Strong	50 – 100
Very strong	100 – 250
Extremely strong	> 250

4. General Monitoring Well Data



5. Classification of Soils for Engineering Purposes (ASTM D2487)

(United Soil Classification System)

Major divisions			Group Symbol	Typical Names	Classification Criteria		
Coarse-grained soils More than 50% retained on No. 200 sieve* (>0.075 mm)	Gravels More than 50% of coarse fraction retained on No. 4 sieve(4.75 mm)	Clean gravels <5% fines	GW	Well-graded gravel	If 15% sand add "with sand" to group name.	Classification on basis of percentage of fines: Less than 5% pass No. 200 sieve - GW, GP, SW, SP More than 12% pass No. 200 sieve - GM, GC, SM, SC 5 to 12% pass No. 200 sieve - Borderline classifications, use of dual symbols	$C_u = \frac{D_{60}}{D_{10}} \geq 4$; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravel			Not meeting either Cu or Cc criteria for GW
		Gravels with >12% fines	GM	Silty gravel			Atterberg limits below "A" line or PI less than 4 → Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			GC	Clayey gravel			Atterberg limits on or above "A" line and PI > 7 → If fines are organic add "with orgnic fines" to group name
	Sands 50% or more of coarse fraction passes No. 4 sieve(<4.75 mm)	Clean sands <5% fines	SW	Well-graded sand	If 15% gravel add "with gravel to group name		$C_u = \frac{D_{60}}{D_{10}} \geq 6$; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sand			Not meeting either Cu or C ccriteria for SW
		Sands with >12% fines	SM	Silty sand			Atterberg limits below "A" line or PI less than 4 → Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			SC	Clayey sand			Atterberg limits on or above "A" line and PI > 7 → If fines are organic add "with orgnic fines" to group name
Fine-grained soils50% or more passes No. 200 sieve* (<0.075 mm)	Silts and Clays Liquid Limit <50%	Inorganic	ML	Silt	If 15 to 29% coarse-grained, add "with sand" or "with gravel" as appropriate. If > 30% coarse-grained, add "sandy" or "gravelly" as appropriate. Class as organic when oven dried liquid limit is < 75% of undried liquid limit.		
			CL	Lean Clay -low plasticity			
		Organic	OL	Organic clay or silt (Clay plots above 'A' Line)			
	Silts and Clays Liquid Limit >50%	Inorganic	MH	Elastic silt			
			CH	Fat Clay -high plasticity			
		Organic	OH	Organic clay or silt (Clay plots above 'A' Line)			
	Highly Organic Soils		PT	Peat, muck and other highly organic soils			

APPENDIX D

Certificates of Laboratory Analysis

PARACEL LABORATORIES LTD.

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Certificate of Analysis

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Genevieve Marcoux

Client PO:
Project: 01348
Custody: 123273, 123276

Report Date: 12-Aug-2022
Order Date: 4-Aug-2022

Order #: 2232359

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2232359-01	BH22-1-SS1B
2232359-02	BH22-1-SS2B
2232359-03	BH22-1-SS3C
2232359-04	BH22-1-SS5A
2232359-05	BH22-2-SS2B
2232359-06	BH22-3-SS2B
2232359-07	BH22-3-SS3B
2232359-08	BH22-4-SS1A
2232359-09	BH22-4-SS2B
2232359-10	BH22-5-SS2B
2232359-11	BH22-6-SS1A
2232359-12	BH22-6-SS2C
2232359-13	BH22-7-SS2C
2232359-14	BH22-8-SS2B
2232359-15	BH22-9-SS2A
2232359-16	BH22-10-SS2B
2232359-17	BH22-7-SS4C

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.8 - ICP-MS	10-Aug-22	10-Aug-22
Chromium, hexavalent - soil	MOE E3056 - Extraction, colourimetric	8-Aug-22	9-Aug-22
Conductivity	MOE E3138 - probe @25 °C, water ext	11-Aug-22	12-Aug-22
Cyanide, free	MOE E3015 - Auto Colour, water extraction	10-Aug-22	10-Aug-22
Mercury by CVAA	EPA 7471B - CVAA, digestion	10-Aug-22	10-Aug-22
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	10-Aug-22	10-Aug-22
PHC F1	CWS Tier 1 - P&T GC-FID	5-Aug-22	7-Aug-22
PHC F4G (gravimetric)	CWS Tier 1 - Extraction Gravimetric	10-Aug-22	10-Aug-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	8-Aug-22	9-Aug-22
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	10-Aug-22	10-Aug-22
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	8-Aug-22	10-Aug-22
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	5-Aug-22	7-Aug-22
SAR	Calculated	10-Aug-22	10-Aug-22
Solids, %	Gravimetric, calculation	9-Aug-22	10-Aug-22

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-1-SS1B	BH22-1-SS2B	BH22-1-SS3C	BH22-1-SS5A
	Sample Date:	28-Jul-22 12:00	28-Jul-22 12:00	28-Jul-22 12:00	28-Jul-22 12:00
	Sample ID:	2232359-01	2232359-02	2232359-03	2232359-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	82.2	83.7	91.2	83.6
General Inorganics					
SAR	0.01 N/A	0.29	2.13	1.17	2.17
Conductivity	5 uS/cm	351	288	295	300
Cyanide, free	0.03 ug/g dry	<0.03	<0.03	<0.03	<0.03
pH	0.05 pH Units	7.13	7.07	7.59	7.05
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	4.6	4.8	5.7	5.5
Barium	1.0 ug/g dry	127	24.3	68.6	25.7
Beryllium	0.5 ug/g dry	0.5	<0.5	<0.5	<0.5
Boron	5.0 ug/g dry	6.8	<5.0	6.0	<5.0
Boron, available	0.5 ug/g dry	0.7	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	5.0 ug/g dry	30.3	9.6	14.0	10.4
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	8.1	4.0	5.4	4.3
Copper	5.0 ug/g dry	20.3	17.5	14.5	14.4
Lead	1.0 ug/g dry	57.4	3.3	6.3	3.4
Mercury	0.1 ug/g dry	0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	1.0	<1.0	1.2	<1.0
Nickel	5.0 ug/g dry	17.4	7.5	10.6	9.0
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	10.0 ug/g dry	35.8	16.2	23.7	14.6
Zinc	20.0 ug/g dry	289	<20.0	23.8	<20.0
Volatiles					
Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-1-SS1B	BH22-1-SS2B	BH22-1-SS3C	BH22-1-SS5A
	Sample Date:	28-Jul-22 12:00	28-Jul-22 12:00	28-Jul-22 12:00	28-Jul-22 12:00
	Sample ID:	2232359-01	2232359-02	2232359-03	2232359-04
	MDL/Units	Soil	Soil	Soil	Soil
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylene dibromide (dibromoethane, 1,2-)	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-1-SS1B	BH22-1-SS2B	BH22-1-SS3C	BH22-1-SS5A
	Sample Date:	28-Jul-22 12:00	28-Jul-22 12:00	28-Jul-22 12:00	28-Jul-22 12:00
	Sample ID:	2232359-01	2232359-02	2232359-03	2232359-04
	MDL/Units	Soil	Soil	Soil	Soil
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
4-Bromofluorobenzene	Surrogate	102%	101%	99.7%	103%
Dibromofluoromethane	Surrogate	95.0%	94.0%	91.1%	93.7%
Toluene-d8	Surrogate	113%	112%	109%	112%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	38	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	29	<6	<6	<6
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Anthracene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Benzo [a] anthracene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Benzo [a] pyrene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Chrysene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Fluoranthene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Fluorene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	-	<0.04
Naphthalene	0.01 ug/g dry	<0.01	<0.01	-	<0.01
Phenanthrene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Pyrene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
2-Fluorobiphenyl	Surrogate	69.0%	70.3%	-	59.2%
Terphenyl-d14	Surrogate	75.3%	78.6%	-	73.1%

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-2-SS2B	BH22-3-SS2B	BH22-3-SS3B	BH22-4-SS1A
	Sample Date:	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00
	Sample ID:	2232359-05	2232359-06	2232359-07	2232359-08
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	83.0	85.6	84.9	76.9
General Inorganics					
SAR	0.01 N/A	3.42	-	1.56	2.83
Conductivity	5 uS/cm	648	-	268	1430
Cyanide, free	0.03 ug/g dry	<0.03	-	<0.03	<0.03
pH	0.05 pH Units	6.77	-	7.19	6.98
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	3.9	6.4	3.4	6.6
Barium	1.0 ug/g dry	46.4	73.0	15.2	118
Beryllium	0.5 ug/g dry	<0.5	0.7	<0.5	<0.5
Boron	5.0 ug/g dry	<5.0	<5.0	<5.0	9.1
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	1.2
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	0.6
Chromium	5.0 ug/g dry	14.4	19.0	7.9	21.9
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	5.3	6.2	2.2	5.9
Copper	5.0 ug/g dry	15.1	6.4	<5.0	22.0
Lead	1.0 ug/g dry	4.5	5.6	1.8	68.1
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	1.3	<1.0	1.9
Nickel	5.0 ug/g dry	11.2	11.1	<5.0	14.1
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	1.7
Vanadium	10.0 ug/g dry	19.0	44.5	17.9	42.6
Zinc	20.0 ug/g dry	23.8	21.5	<20.0	85.1
Volatiles					
Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-2-SS2B	BH22-3-SS2B	BH22-3-SS3B	BH22-4-SS1A
	Sample Date:	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00
	Sample ID:	2232359-05	2232359-06	2232359-07	2232359-08
	MDL/Units	Soil	Soil	Soil	Soil
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylene dibromide (dibromoethane, 1	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-2-SS2B	BH22-3-SS2B	BH22-3-SS3B	BH22-4-SS1A
	Sample Date:	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00
	Sample ID:	2232359-05	2232359-06	2232359-07	2232359-08
	MDL/Units	Soil	Soil	Soil	Soil
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
4-Bromofluorobenzene	Surrogate	102%	100%	101%	103%
Dibromofluoromethane	Surrogate	94.8%	92.9%	93.5%	93.6%
Toluene-d8	Surrogate	113%	110%	111%	112%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	119
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	165 [1]
F4G PHCs (gravimetric)	50 ug/g dry	-	-	-	715
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	<0.02	-	-
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	-	-
Anthracene	0.02 ug/g dry	<0.02	<0.02	-	-
Benzo [a] anthracene	0.02 ug/g dry	<0.02	<0.02	-	-
Benzo [a] pyrene	0.02 ug/g dry	<0.02	<0.02	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	<0.02	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	<0.02	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	<0.02	-	-
Chrysene	0.02 ug/g dry	<0.02	<0.02	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	-	-
Fluoranthene	0.02 ug/g dry	<0.02	<0.02	-	-
Fluorene	0.02 ug/g dry	<0.02	<0.02	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	<0.02	-	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	-	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	-	-
Naphthalene	0.01 ug/g dry	<0.01	<0.01	-	-
Phenanthrene	0.02 ug/g dry	<0.02	<0.02	-	-
Pyrene	0.02 ug/g dry	<0.02	<0.02	-	-
2-Fluorobiphenyl	Surrogate	66.8%	77.3%	-	-
Terphenyl-d14	Surrogate	82.2%	86.7%	-	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-4-SS2B	BH22-5-SS2B	BH22-6-SS1A	BH22-6-SS2C
	Sample Date:	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00
	Sample ID:	2232359-09	2232359-10	2232359-11	2232359-12
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	83.6	79.0	85.3	86.7
General Inorganics					
SAR	0.01 N/A	2.09	2.21	-	2.80
Conductivity	5 uS/cm	237	718	-	668
Cyanide, free	0.03 ug/g dry	<0.03	<0.03	-	<0.03
pH	0.05 pH Units	-	6.86	-	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	2.7	4.8	6.1	3.9
Barium	1.0 ug/g dry	23.1	75.9	60.4	59.5
Beryllium	0.5 ug/g dry	<0.5	0.5	<0.5	<0.5
Boron	5.0 ug/g dry	<5.0	<5.0	6.2	<5.0
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	5.0 ug/g dry	8.1	16.9	16.8	13.6
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	2.9	5.0	6.2	4.6
Copper	5.0 ug/g dry	8.2	7.4	31.0	10.4
Lead	1.0 ug/g dry	2.7	11.1	33.7	3.2
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	1.6	4.8	<1.0
Nickel	5.0 ug/g dry	6.4	10.1	14.0	8.9
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	10.0 ug/g dry	11.2	31.7	21.1	23.0
Zinc	20.0 ug/g dry	<20.0	34.2	56.0	<20.0
Volatiles					
Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-4-SS2B	BH22-5-SS2B	BH22-6-SS1A	BH22-6-SS2C
	Sample Date:	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00
	Sample ID:	2232359-09	2232359-10	2232359-11	2232359-12
	MDL/Units	Soil	Soil	Soil	Soil
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylene dibromide (dibromoethane, 1	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

Certificate of Analysis

Report Date: 12-Aug-2022

Client: LRL Associates Ltd.

Order Date: 4-Aug-2022

Client PO:

Project Description: 01348

	Client ID:	BH22-4-SS2B	BH22-5-SS2B	BH22-6-SS1A	BH22-6-SS2C
	Sample Date:	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00	29-Jul-22 09:00
	Sample ID:	2232359-09	2232359-10	2232359-11	2232359-12
	MDL/Units	Soil	Soil	Soil	Soil
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
4-Bromofluorobenzene	Surrogate	101%	106%	101%	100%
Dibromofluoromethane	Surrogate	94.1%	97.6%	93.0%	91.3%
Toluene-d8	Surrogate	112%	116%	112%	110%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	-	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	-	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	-	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	23	-	<6
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Anthracene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Benzo [a] anthracene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Benzo [a] pyrene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Benzo [b] fluoranthene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Benzo [g,h,i] perylene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Fluoranthene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Fluorene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
1-Methylnaphthalene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	-	<0.04	<0.04	<0.04
Naphthalene	0.01 ug/g dry	-	<0.01	<0.01	<0.01
Phenanthrene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Pyrene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
2-Fluorobiphenyl	Surrogate	-	62.1%	65.6%	66.8%
Terphenyl-d14	Surrogate	-	71.8%	70.0%	67.7%

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-7-SS2C	BH22-8-SS2B	BH22-9-SS2A	BH22-10-SS2B
	Sample Date:	29-Jul-22 12:00	29-Jul-22 12:00	29-Jul-22 12:00	29-Jul-22 12:00
	Sample ID:	2232359-13	2232359-14	2232359-15	2232359-16
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	69.6	86.2	81.3	82.0
General Inorganics					
SAR	0.01 N/A	-	1.66	-	2.94
Conductivity	5 uS/cm	-	407	-	237
Cyanide, free	0.03 ug/g dry	-	<0.03	-	<0.03
pH	0.05 pH Units	-	7.16	-	7.32
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	5.2	5.7	4.4	3.2
Barium	1.0 ug/g dry	97.9	58.3	32.2	35.0
Beryllium	0.5 ug/g dry	<0.5	0.6	<0.5	<0.5
Boron	5.0 ug/g dry	<5.0	<5.0	<5.0	<5.0
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	5.0 ug/g dry	22.4	16.3	11.7	12.4
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	0.3
Cobalt	1.0 ug/g dry	6.4	5.5	5.1	3.8
Copper	5.0 ug/g dry	14.0	<5.0	12.3	<5.0
Lead	1.0 ug/g dry	3.7	5.1	3.6	5.0
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	5.0 ug/g dry	13.5	13.6	8.7	9.6
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	10.0 ug/g dry	30.9	37.0	18.8	18.7
Zinc	20.0 ug/g dry	32.3	20.1	<20.0	<20.0
Volatiles					
Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-7-SS2C	BH22-8-SS2B	BH22-9-SS2A	BH22-10-SS2B
	Sample Date:	29-Jul-22 12:00	29-Jul-22 12:00	29-Jul-22 12:00	29-Jul-22 12:00
	Sample ID:	2232359-13	2232359-14	2232359-15	2232359-16
	MDL/Units	Soil	Soil	Soil	Soil
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylene dibromide (dibromoethane, 1	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

Certificate of Analysis

Report Date: 12-Aug-2022

Client: **LRL Associates Ltd.**

Order Date: 4-Aug-2022

Client PO:

Project Description: 01348

	Client ID:	BH22-7-SS2C	BH22-8-SS2B	BH22-9-SS2A	BH22-10-SS2B
	Sample Date:	29-Jul-22 12:00	29-Jul-22 12:00	29-Jul-22 12:00	29-Jul-22 12:00
	Sample ID:	2232359-13	2232359-14	2232359-15	2232359-16
	MDL/Units	Soil	Soil	Soil	Soil
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
4-Bromofluorobenzene	Surrogate	109%	95.6%	104%	105%
Dibromofluoromethane	Surrogate	100%	102%	107%	107%
Toluene-d8	Surrogate	120%	80.4%	86.4%	86.0%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	-	<0.02	-
Acenaphthylene	0.02 ug/g dry	<0.02	-	<0.02	-
Anthracene	0.02 ug/g dry	<0.02	-	<0.02	-
Benzo [a] anthracene	0.02 ug/g dry	<0.02	-	<0.02	-
Benzo [a] pyrene	0.02 ug/g dry	<0.02	-	<0.02	-
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	-	<0.02	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	-	<0.02	-
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	-	<0.02	-
Chrysene	0.02 ug/g dry	<0.02	-	<0.02	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	-	<0.02	-
Fluoranthene	0.02 ug/g dry	<0.02	-	<0.02	-
Fluorene	0.02 ug/g dry	<0.02	-	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	-	<0.02	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	-	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	-	<0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	-	<0.04	-
Naphthalene	0.01 ug/g dry	<0.01	-	<0.01	-
Phenanthrene	0.02 ug/g dry	<0.02	-	<0.02	-
Pyrene	0.02 ug/g dry	<0.02	-	<0.02	-
2-Fluorobiphenyl	Surrogate	66.9%	-	73.2%	-
Terphenyl-d14	Surrogate	77.7%	-	82.3%	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-7-SS4C	-	-	-
	Sample Date:	29-Jul-22 12:00	-	-	-
	Sample ID:	2232359-17	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	82.9	-	-	-
Metals					
Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	4.8	-	-	-
Barium	1.0 ug/g dry	97.5	-	-	-
Beryllium	0.5 ug/g dry	<0.5	-	-	-
Boron	5.0 ug/g dry	<5.0	-	-	-
Boron, available	0.5 ug/g dry	<0.5	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	5.0 ug/g dry	21.4	-	-	-
Chromium (VI)	0.2 ug/g dry	<0.2	-	-	-
Cobalt	1.0 ug/g dry	6.7	-	-	-
Copper	5.0 ug/g dry	15.7	-	-	-
Lead	1.0 ug/g dry	4.0	-	-	-
Mercury	0.1 ug/g dry	<0.1	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	5.0 ug/g dry	14.0	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	10.0 ug/g dry	28.4	-	-	-
Zinc	20.0 ug/g dry	58.6	-	-	-
Volatiles					
Acetone	0.50 ug/g dry	<0.50	-	-	-
Benzene	0.02 ug/g dry	<0.02	-	-	-
Bromodichloromethane	0.05 ug/g dry	<0.05	-	-	-
Bromoform	0.05 ug/g dry	<0.05	-	-	-
Bromomethane	0.05 ug/g dry	<0.05	-	-	-
Carbon Tetrachloride	0.05 ug/g dry	<0.05	-	-	-
Chlorobenzene	0.05 ug/g dry	<0.05	-	-	-
Chloroform	0.05 ug/g dry	<0.05	-	-	-
Dibromochloromethane	0.05 ug/g dry	<0.05	-	-	-
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	-	-	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-7-SS4C	-	-	-
	Sample Date:	29-Jul-22 12:00	-	-	-
	Sample ID:	2232359-17	-	-	-
	MDL/Units	Soil	-	-	-
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,1-Dichloroethane	0.05 ug/g dry	<0.05	-	-	-
1,2-Dichloroethane	0.05 ug/g dry	<0.05	-	-	-
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	-
1,2-Dichloropropane	0.05 ug/g dry	<0.05	-	-	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	-
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Ethylene dibromide (dibromoethane, 1	0.05 ug/g dry	<0.05	-	-	-
Hexane	0.05 ug/g dry	<0.05	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	-	-	-
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	-	-	-
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	-	-	-
Methylene Chloride	0.05 ug/g dry	<0.05	-	-	-
Styrene	0.05 ug/g dry	<0.05	-	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	-
Tetrachloroethylene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	-	-	-
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	-	-	-
Trichloroethylene	0.05 ug/g dry	<0.05	-	-	-
Trichlorofluoromethane	0.05 ug/g dry	<0.05	-	-	-
Vinyl chloride	0.02 ug/g dry	<0.02	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
4-Bromofluorobenzene	Surrogate	101%	-	-	-
Dibromofluoromethane	Surrogate	107%	-	-	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	BH22-7-SS4C	-	-	-
	Sample Date:	29-Jul-22 12:00	-	-	-
	Sample ID:	2232359-17	-	-	-
	MDL/Units	Soil	-	-	-
Toluene-d8	Surrogate	82.3%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	-	-	-
Acenaphthylene	0.02 ug/g dry	<0.02	-	-	-
Anthracene	0.02 ug/g dry	<0.02	-	-	-
Benzo [a] anthracene	0.02 ug/g dry	<0.02	-	-	-
Benzo [a] pyrene	0.02 ug/g dry	<0.02	-	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	-	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	-	-	-
Chrysene	0.02 ug/g dry	<0.02	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	-	-	-
Fluoranthene	0.02 ug/g dry	<0.02	-	-	-
Fluorene	0.02 ug/g dry	<0.02	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	-	-	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	-	-	-
Naphthalene	0.01 ug/g dry	<0.01	-	-	-
Phenanthrene	0.02 ug/g dry	<0.02	-	-	-
Pyrene	0.02 ug/g dry	<0.02	-	-	-
2-Fluorobiphenyl	Surrogate	66.8%	-	-	-
Terphenyl-d14	Surrogate	76.6%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Conductivity	ND	5	uS/cm						
Cyanide, free	ND	0.03	ug/g						
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
F4G PHCs (gravimetric)	ND	50	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	*1.41*		*ug/g*		*106*	*50-140*			
Surrogate: Terphenyl-d14	*1.51*		*ug/g*		*113*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Ethylene dibromide (dibromoethane, 1,2	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: 4-Bromofluorobenzene	*7.36*		*ug/g*		*92.0*	*50-140*			
Surrogate: Dibromofluoromethane	*6.16*		*ug/g*		*77.0*	*50-140*			
Surrogate: Toluene-d8	*8.21*		*ug/g*		*103*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
SAR	8.31	0.01	N/A	8.20			1.4	30	
Conductivity	793	5	uS/cm	791			0.3	5	
Cyanide, free	ND	0.03	ug/g	ND			NC	35	
pH	7.09	0.05	pH Units	7.06			0.4	2.3	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	56	8	ug/g	38			NC	30	
F4 PHCs (C34-C50)	48	6	ug/g	29			NC	30	
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	5.1	1.0	ug/g	4.6			9.7	30	
Barium	139	1.0	ug/g	127			9.0	30	
Beryllium	0.6	0.5	ug/g	0.5			9.8	30	
Boron, available	0.73	0.5	ug/g	0.75			2.3	35	
Boron	7.2	5.0	ug/g	6.8			6.1	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium (VI)	ND	0.2	ug/g	ND			NC	35	
Chromium	33.3	5.0	ug/g	30.3			9.5	30	
Cobalt	9.0	1.0	ug/g	8.1			9.7	30	
Copper	21.6	5.0	ug/g	20.3			6.5	30	
Lead	61.6	1.0	ug/g	57.4			7.2	30	
Mercury	0.122	0.1	ug/g	0.106			14.9	30	
Molybdenum	1.3	1.0	ug/g	1.0			22.6	30	
Nickel	18.5	5.0	ug/g	17.4			6.1	30	
Selenium	ND	1.0	ug/g	ND			NC	30	
Silver	ND	0.3	ug/g	ND			NC	30	
Thallium	ND	1.0	ug/g	ND			NC	30	
Uranium	ND	1.0	ug/g	ND			NC	30	
Vanadium	39.9	10.0	ug/g	35.8			10.6	30	
Zinc	314	20.0	ug/g	289			8.4	30	
Physical Characteristics									
% Solids	83.9	0.1	% by Wt.	83.7			0.2	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	ND	0.02	ug/g	ND			NC	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*0.983*		*ug/g*		*61.8*	*50-140*			
Surrogate: Terphenyl-d14	*1.16*		*ug/g*		*72.8*	*50-140*			
Volatiles									

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	ND	0.50	ug/g	ND			NC	50	
Benzene	ND	0.02	ug/g	ND			NC	50	
Bromodichloromethane	ND	0.05	ug/g	ND			NC	50	
Bromoform	ND	0.05	ug/g	ND			NC	50	
Bromomethane	ND	0.05	ug/g	ND			NC	50	
Carbon Tetrachloride	ND	0.05	ug/g	ND			NC	50	
Chlorobenzene	ND	0.05	ug/g	ND			NC	50	
Chloroform	ND	0.05	ug/g	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,4-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g	ND			NC	50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2	ND	0.05	ug/g	ND			NC	50	
Hexane	ND	0.05	ug/g	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g	ND			NC	50	
Styrene	ND	0.05	ug/g	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
1,1,1-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g	ND			NC	50	
Trichlorofluoromethane	ND	0.05	ug/g	ND			NC	50	
Vinyl chloride	ND	0.02	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: 4-Bromofluorobenzene	*8.51*		*ug/g*		*96.5*	*50-140*			
Surrogate: Dibromofluoromethane	*9.03*		*ug/g*		*102*	*50-140*			
Surrogate: Toluene-d8	*9.45*		*ug/g*		*107*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Cyanide, free	0.134	0.03	ug/g	ND	38.1	50-150			QM-05
Hydrocarbons									
F1 PHCs (C6-C10)	191	7	ug/g	ND	95.6	80-120			
F2 PHCs (C10-C16)	81	4	ug/g	ND	83.3	60-140			
F3 PHCs (C16-C34)	270	8	ug/g	38	97.2	60-140			
F4 PHCs (C34-C50)	190	6	ug/g	29	107	60-140			
F4G PHCs (gravimetric)	840	50	ug/g	ND	84.0	80-120			
Metals									
Arsenic	50.4	1.0	ug/g	1.8	97.1	70-130			
Barium	105	1.0	ug/g	50.7	109	70-130			
Beryllium	46.8	0.5	ug/g	ND	93.2	70-130			
Boron, available	5.20	0.5	ug/g	0.71	89.6	70-122			
Boron	50.0	5.0	ug/g	ND	94.7	70-130			
Cadmium	49.1	0.5	ug/g	ND	97.8	70-130			
Chromium (VI)	0.1	0.2	ug/g	ND	62.5	70-130			QM-05
Chromium	61.7	5.0	ug/g	12.1	99.1	70-130			
Cobalt	50.9	1.0	ug/g	3.2	95.3	70-130			
Copper	55.8	5.0	ug/g	8.1	95.4	70-130			
Lead	74.1	1.0	ug/g	22.9	102	70-130			
Mercury	1.58	0.1	ug/g	0.106	98.1	70-130			
Molybdenum	46.1	1.0	ug/g	ND	91.3	70-130			
Nickel	54.8	5.0	ug/g	7.0	95.7	70-130			
Selenium	46.0	1.0	ug/g	ND	91.7	70-130			
Silver	45.4	0.3	ug/g	ND	90.8	70-130			
Thallium	50.1	1.0	ug/g	ND	100	70-130			
Uranium	54.4	1.0	ug/g	ND	108	70-130			
Vanadium	63.1	10.0	ug/g	14.3	97.6	70-130			
Zinc	175	20.0	ug/g	116	119	70-130			
Semi-Volatiles									
Acenaphthene	0.124	0.02	ug/g	ND	62.3	50-140			
Acenaphthylene	0.110	0.02	ug/g	ND	55.2	50-140			
Anthracene	0.137	0.02	ug/g	ND	69.0	50-140			
Benzo [a] anthracene	0.139	0.02	ug/g	ND	69.8	50-140			
Benzo [a] pyrene	0.116	0.02	ug/g	ND	58.1	50-140			
Benzo [b] fluoranthene	0.215	0.02	ug/g	ND	108	50-140			
Benzo [g,h,i] perylene	0.140	0.02	ug/g	ND	70.6	50-140			
Benzo [k] fluoranthene	0.207	0.02	ug/g	ND	104	50-140			
Chrysene	0.132	0.02	ug/g	ND	66.4	50-140			
Dibenzo [a,h] anthracene	0.158	0.02	ug/g	ND	79.3	50-140			
Fluoranthene	0.138	0.02	ug/g	ND	69.2	50-140			
Fluorene	0.110	0.02	ug/g	ND	55.4	50-140			
Indeno [1,2,3-cd] pyrene	0.160	0.02	ug/g	ND	80.4	50-140			
1-Methylnaphthalene	0.137	0.02	ug/g	ND	68.9	50-140			
2-Methylnaphthalene	0.150	0.02	ug/g	ND	75.6	50-140			
Naphthalene	0.151	0.01	ug/g	ND	75.8	50-140			
Phenanthrene	0.124	0.02	ug/g	ND	62.3	50-140			
Pyrene	0.133	0.02	ug/g	ND	67.1	50-140			
Surrogate: 2-Fluorobiphenyl	*1.20*		*ug/g*		*75.4*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Surrogate: Terphenyl-d14	*1.23*		*ug/g*		*77.4*	*50-140*			
Volatiles									
Acetone	9.30	0.50	ug/g	ND	93.0	50-140			
Benzene	4.40	0.02	ug/g	ND	110	60-130			
Bromodichloromethane	4.61	0.05	ug/g	ND	115	60-130			
Bromoform	4.98	0.05	ug/g	ND	125	60-130			
Bromomethane	4.38	0.05	ug/g	ND	110	50-140			
Carbon Tetrachloride	4.86	0.05	ug/g	ND	121	60-130			
Chlorobenzene	4.30	0.05	ug/g	ND	108	60-130			
Chloroform	3.46	0.05	ug/g	ND	86.5	60-130			
Dibromochloromethane	3.92	0.05	ug/g	ND	98.0	60-130			
Dichlorodifluoromethane	4.31	0.05	ug/g	ND	108	50-140			
1,2-Dichlorobenzene	4.46	0.05	ug/g	ND	111	60-130			
1,3-Dichlorobenzene	3.96	0.05	ug/g	ND	98.9	60-130			
1,4-Dichlorobenzene	4.03	0.05	ug/g	ND	101	60-130			
1,1-Dichloroethane	4.44	0.05	ug/g	ND	111	60-130			
1,2-Dichloroethane	4.29	0.05	ug/g	ND	107	60-130			
1,1-Dichloroethylene	4.41	0.05	ug/g	ND	110	60-130			
cis-1,2-Dichloroethylene	3.80	0.05	ug/g	ND	95.0	60-130			
trans-1,2-Dichloroethylene	4.22	0.05	ug/g	ND	106	60-130			
1,2-Dichloropropane	4.48	0.05	ug/g	ND	112	60-130			
cis-1,3-Dichloropropylene	3.18	0.05	ug/g	ND	79.5	60-130			
trans-1,3-Dichloropropylene	4.87	0.05	ug/g	ND	122	60-130			
Ethylbenzene	4.15	0.05	ug/g	ND	104	60-130			
Ethylene dibromide (dibromoethane, 1,2-	4.76	0.05	ug/g	ND	119	60-130			
Hexane	4.64	0.05	ug/g	ND	116	60-130			
Methyl Ethyl Ketone (2-Butanone)	9.80	0.50	ug/g	ND	98.0	50-140			
Methyl Isobutyl Ketone	13.5	0.50	ug/g	ND	135	50-140			
Methyl tert-butyl ether	13.0	0.05	ug/g	ND	130	50-140			
Methylene Chloride	4.32	0.05	ug/g	ND	108	60-130			
Styrene	3.80	0.05	ug/g	ND	95.1	60-130			
1,1,1,2-Tetrachloroethane	4.12	0.05	ug/g	ND	103	60-130			
1,1,2,2-Tetrachloroethane	4.05	0.05	ug/g	ND	101	60-130			
Tetrachloroethylene	3.92	0.05	ug/g	ND	98.0	60-130			
Toluene	4.66	0.05	ug/g	ND	117	60-130			
1,1,1-Trichloroethane	4.04	0.05	ug/g	ND	101	60-130			
1,1,2-Trichloroethane	4.86	0.05	ug/g	ND	121	60-130			
Trichloroethylene	4.43	0.05	ug/g	ND	111	60-130			
Trichlorofluoromethane	3.81	0.05	ug/g	ND	95.1	50-140			
Vinyl chloride	3.93	0.02	ug/g	ND	98.1	50-140			
m,p-Xylenes	8.24	0.05	ug/g	ND	103	60-130			
o-Xylene	4.27	0.05	ug/g	ND	107	60-130			
Surrogate: 4-Bromofluorobenzene	*7.40*		*ug/g*		*92.5*	*50-140*			
Surrogate: Dibromofluoromethane	*6.29*		*ug/g*		*78.6*	*50-140*			
Surrogate: Toluene-d8	*7.99*		*ug/g*		*99.9*	*50-140*			

Qualifier Notes:

Sample Qualifiers :

1 : GC-FID signal did not return to baseline by C50

QC Qualifiers :

QM-05 The spike recovery was outside acceptance limits for the matrix spike due to matrix interference.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.

Paracel ID: 2232359

PARACEL LABORATORIES LTD.

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
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e: paracel@paracellabs.com

Chain of Custody
(Lab Use Only)
№ 123273

Page 1 of 2

Client Name: LRL Associates Ltd.	Project Reference: 01348	**Turnaround Time:**	
Contact Name: Geneviève Marcoux	Quote #	☐ 1 Day	☐ 3 Day
Address: 5430 Canotek Rd Ottawa ON K1J 9G2	PO #	☐ 2 Day	☒ Regular
Telephone: 613 842-3434	Email Address: gmarcoux@lrl.ca	Date Required:	

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 2 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 2232359

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals Reg 153	Hg	CrVI	B (HWS)	pH	Texture	General Inorganics				
1	BH22-1-SS1B	S		2	July 29/22	PM	X	X	X	X						X	X			
2	BH22-1-SS2B						X	X	X	X						X	X			
3	BH22-1-SS3C						X	X		X						X	X			
4	BH22-1-SS5A						X	X	X	X						X	X			
5	BH22-2-SS2B				July 29/22	AM	X	X	X	X						X	X			
6	BH22-3-SS2B						X	X	X	X										
7	BH22-3-SS3B						X	X		X						X	X			
8	BH22-4-SS1A						X	X		X						X	X			
9	BH22-4-SS2B						X	X		X				X	X	X	X			
10	BH22-5-SS2B						X	X	X	X						X	X			

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab: Jennee Perm / Bhrmdi	Verified By:
Relinquished By (Print): Geneviève Marcoux	Date/Time:	Date/Time: Aug 04, 2022 12.45	Date/Time: Aug 4/22 16:32
Date/Time: August 4, 2022	Temperature: °C	Temperature: 19.7 °C	pH Verified [ ] By: N/A

Paracel ID: 2232359

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Ottawa, Ontario K1G 4J8
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e: paracel@paracellabs.com

Chain of Custody (Lab Use Only)
Nº 123276

Client Name:	LRL Associates Ltd.	Project Reference:	01348
Contact Name:	Genevieve Marcoux	Quote #	
Address:	5430 Canotek Rd Ottawa ON K1J9G2	PO #	
Telephone:	613 842-3434	Email Address:	gmarcoux@lrl.ca

Turnaround Time: ☐ 1 Day ☐ 3 Day ☐ 2 Day ☒ Regular
Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 2 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 2232359

Required Analyses

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	pH	Texture	General Inorganics				
1	BH22-6-SS1A	S		2	July 29/22	AM		X	X	X										
2	BH22-6-SS2C	↓		↓	↓	AM	X	X	X	X				X	X	X				
3	BH22-7-SS2C	↓		↓	↓	PM	X	X	X	X										
4	BH22-8-SS2B	↓		↓	↓	↓	X	X		X						X				
5	BH22-9-SS2A	↓		↓	↓	↓	X	X	X	X										
6	BH22-10-SS2B	↓		↓	↓	↓	X	X		X						X				
7	BH22-7-SS4C	↓		↓	↓	↓	X	X	X	X										
8																				
9																				
10																				

Comments:

Method of Delivery: Drop BOX

Relinquished By (Sign): [signature]	Received by Driver/Depot:	Received at Lab: Sumegparn Dhmai	Verified By: [signature]
Relinquished By (Print): Genevieve Marcoux	Date/Time:	Date/Time: Aug 04, 2022 12.45	Date/Time: Aug 4/22 16:34
Date/Time: August 4, 2022	Temperature: °C	Temperature: 11.1 °C	pH Verified [ ] By: N/A

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Certificate of Analysis

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Genevieve Marcoux

Client PO:
Project: 01348
Custody: 138040

Report Date: 16-Aug-2022
Order Date: 4-Aug-2022

Order #: 2232371

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2232371-01	MW22-1
2232371-02	MW22-2
2232371-03	MW22-3
2232371-04	MW22-4
2232371-05	MW22-X
2232371-06	Trip Blank

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 16-Aug-2022

Client: LRL Associates Ltd.

Order Date: 4-Aug-2022

Client PO:

Project Description: 01348

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC	10-Aug-22	10-Aug-22
Chromium, hexavalent - water	MOE E3056 - colourimetric	8-Aug-22	8-Aug-22
Cyanide, free	MOE E3015 - Auto Colour	11-Aug-22	11-Aug-22
Mercury by CVAA	EPA 245.2 - Cold Vapour AA	9-Aug-22	9-Aug-22
Metals, ICP-MS	EPA 200.8 - ICP-MS	11-Aug-22	11-Aug-22
PCBs, total	EPA 608 - GC-ECD	10-Aug-22	10-Aug-22
pH	EPA 150.1 - pH probe @25 °C	8-Aug-22	8-Aug-22
PHC F1	CWS Tier 1 - P&T GC-FID	9-Aug-22	9-Aug-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	8-Aug-22	8-Aug-22
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	15-Aug-22	15-Aug-22
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	9-Aug-22	9-Aug-22

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 16-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	MW22-1	MW22-2	MW22-3	MW22-4
	Sample Date:	04-Aug-22 12:00	04-Aug-22 12:00	04-Aug-22 12:00	04-Aug-22 12:00
	Sample ID:	2232371-01	2232371-02	2232371-03	2232371-04
	MDL/Units	Water	Water	Water	Water
General Inorganics					
Cyanide, free	2 ug/L	<2	<2	<2	<2
pH	0.1 pH Units	7.6	7.4	7.4	7.4
Anions					
Chloride	1.0 mg/L	1500	1350	980	465
Metals					
Mercury	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Antimony	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Arsenic	1 ug/L	1	8	1	9
Barium	1 ug/L	472	451	504	443
Beryllium	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Boron	10 ug/L	28	47	30	46
Cadmium	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Chromium	1 ug/L	<1	<1	2	<1
Chromium (VI)	10 ug/L	<10	<10	<10	<10
Cobalt	0.5 ug/L	1.3	0.8	1.0	0.8
Copper	0.5 ug/L	1.0	2.2	2.8	<0.5
Lead	0.1 ug/L	<0.1	0.2	0.2	0.1
Molybdenum	0.5 ug/L	10.3	11.6	9.8	11.9
Nickel	1 ug/L	2	3	3	3
Selenium	1 ug/L	<1	<1	<1	<1
Silver	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Sodium	200 ug/L	708000	702000	531000	715000
Thallium	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Uranium	0.1 ug/L	1.0	0.7	1.2	0.6
Vanadium	0.5 ug/L	1.5	1.2	1.5	1.3
Zinc	5 ug/L	<5	<5	<5	<5
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 16-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	MW22-1	MW22-2	MW22-3	MW22-4
	Sample Date:	04-Aug-22 12:00	04-Aug-22 12:00	04-Aug-22 12:00	04-Aug-22 12:00
	Sample ID:	2232371-01	2232371-02	2232371-03	2232371-04
	MDL/Units	Water	Water	Water	Water
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylene dibromide (dibromoethane, 1,2-)	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
4-Bromofluorobenzene	Surrogate	94.5%	93.2%	95.1%	95.5%
Dibromofluoromethane	Surrogate	81.8%	98.5%	98.6%	99.3%

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 16-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	MW22-1	MW22-2	MW22-3	MW22-4
	Sample Date:	04-Aug-22 12:00	04-Aug-22 12:00	04-Aug-22 12:00	04-Aug-22 12:00
	Sample ID:	2232371-01	2232371-02	2232371-03	2232371-04
	MDL/Units	Water	Water	Water	Water
Toluene-d8	Surrogate	100%	100%	100%	100%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100
Semi-Volatiles					
Acenaphthene	0.05 ug/L	-	<0.05	-	-
Acenaphthylene	0.05 ug/L	-	<0.05	-	-
Anthracene	0.01 ug/L	-	<0.01	-	-
Benzo [a] anthracene	0.01 ug/L	-	<0.01	-	-
Benzo [a] pyrene	0.01 ug/L	-	<0.01	-	-
Benzo [b] fluoranthene	0.05 ug/L	-	<0.05	-	-
Benzo [g,h,i] perylene	0.05 ug/L	-	<0.05	-	-
Benzo [k] fluoranthene	0.05 ug/L	-	<0.05	-	-
Chrysene	0.05 ug/L	-	<0.05	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	-	<0.05	-	-
Fluoranthene	0.01 ug/L	-	<0.01	-	-
Fluorene	0.05 ug/L	-	<0.05	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	-	<0.05	-	-
1-Methylnaphthalene	0.05 ug/L	-	<0.05	-	-
2-Methylnaphthalene	0.05 ug/L	-	<0.05	-	-
Methylnaphthalene (1&2)	0.10 ug/L	-	<0.10	-	-
Naphthalene	0.05 ug/L	-	<0.05	-	-
Phenanthrene	0.05 ug/L	-	<0.05	-	-
Pyrene	0.01 ug/L	-	<0.01	-	-
2-Fluorobiphenyl	Surrogate	-	118%	-	-
Terphenyl-d14	Surrogate	-	120%	-	-
PCBs					
PCBs, total	0.05 ug/L	-	-	-	<0.05
Decachlorobiphenyl	Surrogate	-	-	-	94.4%

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 16-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	MW22-X	Trip Blank	-	-
	Sample Date:	04-Aug-22 12:00	04-Aug-22 12:00	-	-
	Sample ID:	2232371-05	2232371-06	-	-
	MDL/Units	Water	Water	-	-
General Inorganics					
Cyanide, free	2 ug/L	<2	-	-	-
pH	0.1 pH Units	7.4	-	-	-
Anions					
Chloride	1.0 mg/L	1360	-	-	-
Metals					
Mercury	0.1 ug/L	<0.1	-	-	-
Antimony	0.5 ug/L	<0.5	-	-	-
Arsenic	1 ug/L	1	-	-	-
Barium	1 ug/L	314	-	-	-
Beryllium	0.5 ug/L	<0.5	-	-	-
Boron	10 ug/L	30	-	-	-
Cadmium	0.1 ug/L	<0.1	-	-	-
Chromium	1 ug/L	<1	-	-	-
Chromium (VI)	10 ug/L	<10	-	-	-
Cobalt	0.5 ug/L	<0.5	-	-	-
Copper	0.5 ug/L	2.0	-	-	-
Lead	0.1 ug/L	0.1	-	-	-
Molybdenum	0.5 ug/L	10.0	-	-	-
Nickel	1 ug/L	1	-	-	-
Selenium	1 ug/L	<1	-	-	-
Silver	0.1 ug/L	<0.1	-	-	-
Sodium	200 ug/L	307000	-	-	-
Thallium	0.1 ug/L	<0.1	-	-	-
Uranium	0.1 ug/L	0.1	-	-	-
Vanadium	0.5 ug/L	1.1	-	-	-
Zinc	5 ug/L	<5	-	-	-
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	-	-
Benzene	0.5 ug/L	<0.5	<0.5	-	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	-	-
Bromoform	0.5 ug/L	<0.5	<0.5	-	-
Bromomethane	0.5 ug/L	<0.5	<0.5	-	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	-	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	-	-
Chloroform	0.5 ug/L	<0.5	<0.5	-	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 16-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	MW22-X	Trip Blank	-	-
	Sample Date:	04-Aug-22 12:00	04-Aug-22 12:00	-	-
	Sample ID:	2232371-05	2232371-06	-	-
	MDL/Units	Water	Water	-	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	-	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	-	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	-	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	-	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	-	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	-	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	-	-
Ethylene dibromide (dibromoethane, 1	0.2 ug/L	<0.2	<0.2	-	-
Hexane	1.0 ug/L	<1.0	<1.0	-	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	-	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	-	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	-	-
Methylene Chloride	5.0 ug/L	<5.0	<5.0	-	-
Styrene	0.5 ug/L	<0.5	<0.5	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	-	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	-	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	-	-
Toluene	0.5 ug/L	<0.5	<0.5	-	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	-	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	-	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	-	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	-	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	-	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	-	-
o-Xylene	0.5 ug/L	<0.5	<0.5	-	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	-	-
4-Bromofluorobenzene	Surrogate	95.4%	94.8%	-	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 16-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

Client ID:		MW22-X	Trip Blank	-	-
Sample Date:		04-Aug-22 12:00	04-Aug-22 12:00	-	-
Sample ID:		2232371-05	2232371-06	-	-
	MDL/Units	Water	Water	-	-
Dibromofluoromethane	Surrogate	101%	96.9%	-	-
Toluene-d8	Surrogate	100%	100%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	-	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	-	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	-	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	1.0	mg/L						
General Inorganics									
Cyanide, free	ND	2	ug/L						
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Metals									
Mercury	ND	0.1	ug/L						
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
PCBs									
PCBs, total	ND	0.05	ug/L						
Surrogate: Decachlorobiphenyl	*0.370*		*ug/L*		*74.0*	*60-140*			
Semi-Volatiles									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	*23.0*		*ug/L*		*115*	*50-140*			
Surrogate: Terphenyl-d14	*22.4*		*ug/L*		*112*	*50-140*			
Volatiles									

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroform	ND	0.5	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Ethylene dibromide (dibromoethane, 1,2	ND	0.2	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
Vinyl chloride	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: 4-Bromofluorobenzene	*75.6*		*ug/L*		*94.4*	*50-140*			
Surrogate: Dibromofluoromethane	*81.0*		*ug/L*		*101*	*50-140*			
Surrogate: Toluene-d8	*81.0*		*ug/L*		*101*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	1.0	mg/L	271			NC	10	
General Inorganics									
Cyanide, free	ND	2	ug/L	ND			NC	20	
pH	7.1	0.1	pH Units	7.1			0.0	3.3	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Metals									
Mercury	ND	0.1	ug/L	ND			NC	20	
Antimony	1.16	0.5	ug/L	ND			NC	20	
Arsenic	1.3	1	ug/L	1.4			0.4	20	
Barium	480	1	ug/L	472			1.7	20	
Beryllium	ND	0.5	ug/L	ND			NC	20	
Boron	220	10	ug/L	231			4.8	20	
Cadmium	ND	0.1	ug/L	ND			NC	20	
Chromium (VI)	ND	10	ug/L	ND			NC	20	
Chromium	ND	1	ug/L	ND			NC	20	
Cobalt	1.25	0.5	ug/L	1.32			5.6	20	
Copper	0.97	0.5	ug/L	1.03			6.1	20	
Lead	0.13	0.1	ug/L	ND			NC	20	
Molybdenum	10.5	0.5	ug/L	10.3			2.1	20	
Nickel	1.7	1	ug/L	1.8			6.3	20	
Selenium	ND	1	ug/L	ND			NC	20	
Silver	ND	0.1	ug/L	ND			NC	20	
Sodium	691000	200	ug/L	708000			2.4	20	
Thallium	ND	0.1	ug/L	ND			NC	20	
Uranium	1.0	0.1	ug/L	1.0			7.8	20	
Vanadium	1.41	0.5	ug/L	1.50			6.1	20	
Zinc	5	5	ug/L	ND			NC	20	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	ND	0.5	ug/L	ND			NC	30	
Bromoform	ND	0.5	ug/L	ND			NC	30	
Bromomethane	ND	0.5	ug/L	ND			NC	30	
Carbon Tetrachloride	ND	0.2	ug/L	ND			NC	30	
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroform	2.09	0.5	ug/L	2.12			1.4	30	
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Ethylene dibromide (dibromoethane, 1,2-	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND			NC	30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND			NC	30	

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 16-Aug-2022

Order Date: 4-Aug-2022

Project Description: 01348

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	
Styrene	ND	0.5	ug/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
Tetrachloroethylene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
Trichloroethylene	ND	0.5	ug/L	ND			NC	30	
Trichlorofluoromethane	ND	1.0	ug/L	ND			NC	30	
Vinyl chloride	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*76.0*		*ug/L*		*95.0*	*50-140*			
Surrogate: Dibromofluoromethane	*76.7*		*ug/L*		*95.8*	*50-140*			
Surrogate: Toluene-d8	*80.6*		*ug/L*		*101*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	14.6	1.0	mg/L	4.46	102	77-123			
General Inorganics									
Cyanide, free	51.0	2	ug/L	ND	102	61-139			
Hydrocarbons									
F1 PHCs (C6-C10)	2000	25	ug/L	ND	100	68-117			
F2 PHCs (C10-C16)	1380	100	ug/L	ND	86.4	60-140			
F3 PHCs (C16-C34)	3770	100	ug/L	ND	96.3	60-140			
F4 PHCs (C34-C50)	2530	100	ug/L	ND	102	60-140			
Metals									
Mercury	3.03	0.1	ug/L	ND	101	70-130			
Arsenic	53.7	1	ug/L	1.4	105	80-120			
Barium	121	1	ug/L	70.7	99.9	80-120			
Beryllium	47.1	0.5	ug/L	ND	94.2	80-120			
Boron	68	10	ug/L	28	80.5	80-120			
Cadmium	42.0	0.1	ug/L	ND	84.1	80-120			
Chromium (VI)	176	10	ug/L	ND	88.0	70-130			
Chromium	59.4	1	ug/L	ND	118	80-120			
Cobalt	55.4	0.5	ug/L	1.32	108	80-120			
Copper	46.2	0.5	ug/L	1.03	90.4	80-120			
Lead	41.8	0.1	ug/L	0.12	83.3	80-120			
Molybdenum	59.1	0.5	ug/L	10.3	97.7	80-120			
Nickel	51.6	1	ug/L	1.8	99.5	80-120			
Selenium	46.1	1	ug/L	ND	91.5	80-120			
Silver	42.5	0.1	ug/L	ND	84.9	80-120			
Thallium	45.3	0.1	ug/L	ND	90.5	80-120			
Uranium	47.2	0.1	ug/L	1.0	92.5	80-120			
Vanadium	59.7	0.5	ug/L	0.93	118	80-120			
Zinc	42	5	ug/L	ND	80.5	80-120			
PCBs									
PCBs, total	0.762	0.05	ug/L	ND	76.2	65-135			
Surrogate: Decachlorobiphenyl	*0.435*		*ug/L*		*87.0*	*60-140*			
Semi-Volatiles									
Acenaphthene	4.45	0.05	ug/L	ND	89.1	50-140			
Acenaphthylene	3.74	0.05	ug/L	ND	74.7	50-140			
Anthracene	4.10	0.01	ug/L	ND	82.0	50-140			
Benzo [a] anthracene	4.28	0.01	ug/L	ND	85.5	50-140			
Benzo [a] pyrene	4.64	0.01	ug/L	ND	92.8	50-140			
Benzo [b] fluoranthene	5.58	0.05	ug/L	ND	112	50-140			
Benzo [g,h,i] perylene	4.58	0.05	ug/L	ND	91.5	50-140			
Benzo [k] fluoranthene	5.29	0.05	ug/L	ND	106	50-140			
Chrysene	4.08	0.05	ug/L	ND	81.6	50-140			
Dibenzo [a,h] anthracene	5.43	0.05	ug/L	ND	109	50-140			
Fluoranthene	4.62	0.01	ug/L	ND	92.3	50-140			
Fluorene	3.75	0.05	ug/L	ND	75.0	50-140			
Indeno [1,2,3-cd] pyrene	5.34	0.05	ug/L	ND	107	50-140			
1-Methylnaphthalene	4.27	0.05	ug/L	ND	85.4	50-140			
2-Methylnaphthalene	4.59	0.05	ug/L	ND	91.8	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Naphthalene	4.04	0.05	ug/L	ND	80.8	50-140			
Phenanthrene	3.69	0.05	ug/L	ND	73.9	50-140			
Pyrene	4.43	0.01	ug/L	ND	88.6	50-140			
Surrogate: 2-Fluorobiphenyl	*22.5*		*ug/L*		*112*	*50-140*			
Surrogate: Terphenyl-d14	*24.9*		*ug/L*		*124*	*50-140*			
Volatiles									
Acetone	104	5.0	ug/L	ND	104	50-140			
Benzene	37.0	0.5	ug/L	ND	92.4	60-130			
Bromodichloromethane	38.6	0.5	ug/L	ND	96.6	60-130			
Bromoform	36.1	0.5	ug/L	ND	90.4	60-130			
Bromomethane	31.3	0.5	ug/L	ND	78.2	50-140			
Carbon Tetrachloride	34.6	0.2	ug/L	ND	86.6	60-130			
Chlorobenzene	39.3	0.5	ug/L	ND	98.3	60-130			
Chloroform	40.2	0.5	ug/L	ND	100	60-130			
Dibromochloromethane	41.4	0.5	ug/L	ND	104	60-130			
Dichlorodifluoromethane	43.0	1.0	ug/L	ND	108	50-140			
1,2-Dichlorobenzene	43.8	0.5	ug/L	ND	109	60-130			
1,3-Dichlorobenzene	40.2	0.5	ug/L	ND	101	60-130			
1,4-Dichlorobenzene	40.6	0.5	ug/L	ND	102	60-130			
1,1-Dichloroethane	31.0	0.5	ug/L	ND	77.6	60-130			
1,2-Dichloroethane	40.3	0.5	ug/L	ND	101	60-130			
1,1-Dichloroethylene	32.8	0.5	ug/L	ND	82.1	60-130			
cis-1,2-Dichloroethylene	30.4	0.5	ug/L	ND	76.0	60-130			
trans-1,2-Dichloroethylene	31.3	0.5	ug/L	ND	78.3	60-130			
1,2-Dichloropropane	36.2	0.5	ug/L	ND	90.5	60-130			
cis-1,3-Dichloropropylene	44.5	0.5	ug/L	ND	111	60-130			
trans-1,3-Dichloropropylene	42.8	0.5	ug/L	ND	107	60-130			
Ethylbenzene	38.0	0.5	ug/L	ND	95.0	60-130			
Ethylene dibromide (dibromoethane, 1,2	44.4	0.2	ug/L	ND	111	60-130			
Hexane	41.6	1.0	ug/L	ND	104	60-130			
Methyl Ethyl Ketone (2-Butanone)	99.6	5.0	ug/L	ND	99.6	50-140			
Methyl Isobutyl Ketone	97.5	5.0	ug/L	ND	97.5	50-140			
Methyl tert-butyl ether	76.5	2.0	ug/L	ND	76.5	50-140			
Methylene Chloride	31.5	5.0	ug/L	ND	78.8	60-130			
Styrene	38.1	0.5	ug/L	ND	95.2	60-130			
1,1,1,2-Tetrachloroethane	42.2	0.5	ug/L	ND	106	60-130			
1,1,2,2-Tetrachloroethane	40.7	0.5	ug/L	ND	102	60-130			
Tetrachloroethylene	39.3	0.5	ug/L	ND	98.2	60-130			
Toluene	38.9	0.5	ug/L	ND	97.3	60-130			
1,1,1-Trichloroethane	29.2	0.5	ug/L	ND	72.9	60-130			
1,1,2-Trichloroethane	37.3	0.5	ug/L	ND	93.2	60-130			
Trichloroethylene	38.7	0.5	ug/L	ND	96.6	60-130			
Trichlorofluoromethane	31.8	1.0	ug/L	ND	79.4	60-130			
Vinyl chloride	38.0	0.5	ug/L	ND	95.1	50-140			
m,p-Xylenes	76.6	0.5	ug/L	ND	95.7	60-130			
o-Xylene	38.6	0.5	ug/L	ND	96.4	60-130			
Surrogate: 4-Bromofluorobenzene	*74.8*		*ug/L*		*93.6*	*50-140*			
Surrogate: Dibromofluoromethane	*83.2*		*ug/L*		*104*	*50-140*			
Surrogate: Toluene-d8	*78.0*		*ug/L*		*97.4*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Sample - Not submitted in the correct container - Cyanide sample decanted from unpreserved plastic bottle and preserved at the lab.

Applies to samples: MW22-1, MW22-2, MW22-3, MW22-4, MW22-X

Sample preserved upon receipt at the lab.

Cyanide

Applies to samples: MW22-1, MW22-2, MW22-3, MW22-4, MW22-X

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.

PARACEL LABORATORIES LTD.

Paracel ID: 2232371

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2232371	№ 138040

Client Name: LRL Associates Ltd.	Project Ref: 0348	Page 1 of 1
Contact Name: Geneviève Marcoux	Quote #:	Turnaround Time
Address: 5430 Canotek Rd Ottawa, ON	PO #:	☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular
Telephone: 613 842-3434 ext. 234	E-mail: gmarcoux@lrl.ca	Date Required:

☒ REG 153/04 ☐ REG 406/19	Other Regulation
☐ Table 1 ☐ Res/Park ☐ Med/Fine	☐ REG 558 ☐ PWQO
☒ Table 2 ☐ Ind/Comm ☐ Coarse	☐ CCME ☐ MISA
☐ Table 3 ☐ Agri/Other	☐ SU - Sani ☐ SU - Storm
☐ Table ___	Mun:
For RSC: ☐ Yes ☒ No	☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals Reg153	Hg	CrVI	B (HWS)					
1	MW22-1	GW		8	Aug 4/22	PM	X	X	X	X								
2	MW22-2						X	X	X	X								
3	MW22-3						X	X	X	X								
4	MW22-4						X	X	X	X								
5	MW22-X						X	X	X	X								
6	Trip Blank	-		2	Aug 04, 2022			X										
7																		
8																		
9																		
10																		

Comments: Metals have been field filtered. Decant if applicable.
*will email with additional parameters.

Method of Delivery: Walk-in

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Geneviève Marcoux	Date/Time:	Date/Time: Aug 04,22 14:16	Date/Time: Aug 4/22 17:50
Date/Time: Aug 4/22 2:15pm	Temperature: °C	Temperature: 18.9 °C	pH Verified: ☐ By:

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1-800-749-1947
www.paracellabs.com

Certificate of Analysis

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Genevieve Marcoux

Client PO:
Project: 01348
Custody: 123274

Report Date: 12-Aug-2022
Order Date: 8-Aug-2022

Order #: 2233149

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2233149-01	BH22-2-SS2C
2233149-02	BH22-7-SS3A

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 8-Aug-2022

Project Description: 01348

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	12-Aug-22	12-Aug-22
Solids, %	Gravimetric, calculation	12-Aug-22	12-Aug-22
Texture - Coarse Med/Fine	Based on ASTM D2487	11-Aug-22	12-Aug-22

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 8-Aug-2022

Project Description: 01348

	Client ID:	BH22-2-SS2C	BH22-7-SS3A	-	-
	Sample Date:	29-Jul-22 09:00	29-Jul-22 12:00	-	-
	Sample ID:	2233149-01	2233149-02	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	83.4	82.5	-	-
>75 um	0.1 %	30.9	93.9	-	-
<75 um	0.1 %	69.1	6.1	-	-
Texture	0.1 %	Med/Fine	Coarse	-	-
General Inorganics					
pH	0.05 pH Units	7.72	7.19	-	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 8-Aug-2022

Project Description: 01348

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Physical Characteristics									
% Solids	96.6	0.1	% by Wt.	96.5			0.1	25	

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 12-Aug-2022

Order Date: 8-Aug-2022

Project Description: 01348

Qualifier Notes:

Sample Qualifiers :

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

PARACEL LABORATORIES

Paracel ID: 2233149

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com

Chain of Custody
(Lab Use Only)
№ 123274

Page 1 of 1

Client Name: LRL Associates Ltd.	Project Reference: 01348
Contact Name: Geneviève Marcoux	Quote #
Address: 5430 Canotek Rd Ottawa ON K1J 9G2	PO #
Telephone: 613 842-3434 ext. 234	Email Address: gmarcoux@lrl.ca

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 2 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 2233149

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	Texture	pH
1	BH22-2-SS2C	S		2	July 29/22	AM								X	X
2	BH22-7-SS3A	S		2	↓	PM								X	X
3															
4															
5															
6															
7															
8															
9															
10															

Required Analyses

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab: James Parn Bhimsi	Verified By:
Relinquished By (Print): Geneviève Marcoux	Date/Time:	Date/Time: Aug 08, 2022 05:32	Date/Time: Aug 9 2022 9:05
Date/Time: Aug 3/2022	Temperature: °C	Temperature: 11.8 °C	pH Verified [ ] By:

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Certificate of Analysis

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Genevieve Marcoux

Client PO:
Project: 01348
Custody: 123273,123276

Report Date: 8-Sep-2022
Order Date: 4-Aug-2022

Order #: 2236344

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2236344-01	TCLP-Composite

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 08-Sep-2022

Order Date: 4-Aug-2022

Project Description: 01348

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Ignitability	based on EPA 1030	6-Sep-22	6-Sep-22
PHC F1	CWS Tier 1 - P&T GC-FID	1-Sep-22	2-Sep-22
PHC F4G (gravimetric)	CWS Tier 1 - Extraction Gravimetric	7-Sep-22	8-Sep-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	2-Sep-22	8-Sep-22
REG 558 - Cyanide	TCLP MOE E3015- Auto Colour	6-Sep-22	6-Sep-22
REG 558 - Fluoride	TCLP EPA 340.2 - ISE	6-Sep-22	6-Sep-22
REG 558 - Mercury by CVAA	TCLP EPA 7470A, CVAA	6-Sep-22	6-Sep-22
REG 558 - Metals, ICP-MS	TCLP EPA 6020 - Digestion - ICP-MS	6-Sep-22	6-Sep-22
REG 558 - NO3/NO2	TCLP EPA 300.1 - IC	8-Sep-22	8-Sep-22
REG 558 - PAHs	TCLP EPA 625 - GC-MS	7-Sep-22	7-Sep-22
REG 558 - PCBs	TCLP EPA 608 - GC-ECD	7-Sep-22	7-Sep-22
REG 558 - VOCs	TCLP ZHE EPA 624 - P&T GC-MS	6-Sep-22	7-Sep-22
Solids, %	Gravimetric, calculation	6-Sep-22	7-Sep-22

Certificate of Analysis

Client: **LRL Associates Ltd.**

Client PO:

Report Date: 08-Sep-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	TCLP-Composite	-	-	-
	Sample Date:	28-Jul-22 09:00	-	-	-
	Sample ID:	2236344-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
Ignitability	N/A	Negative [2]	-	-	-
% Solids	0.1 % by Wt.	84.5	-	-	-
EPA 1311 - TCLP Leachate Inorganics					
Fluoride	0.05 mg/L	0.11	-	-	-
Nitrate as N	1 mg/L	<1	-	-	-
Nitrite as N	1 mg/L	<1	-	-	-
Cyanide, free	0.02 mg/L	<0.02	-	-	-
EPA 1311 - TCLP Leachate Metals					
Arsenic	0.05 mg/L	<0.05	-	-	-
Barium	0.05 mg/L	0.60	-	-	-
Boron	0.05 mg/L	<0.05	-	-	-
Cadmium	0.01 mg/L	<0.01	-	-	-
Chromium	0.05 mg/L	<0.05	-	-	-
Lead	0.05 mg/L	<0.05	-	-	-
Mercury	0.005 mg/L	<0.005	-	-	-
Selenium	0.05 mg/L	<0.05	-	-	-
Silver	0.05 mg/L	<0.05	-	-	-
Uranium	0.05 mg/L	<0.05	-	-	-
EPA 1311 - TCLP Leachate Volatiles					
Benzene	0.005 mg/L	<0.005	-	-	-
Carbon Tetrachloride	0.005 mg/L	<0.005	-	-	-
Chlorobenzene	0.004 mg/L	<0.004	-	-	-
Chloroform	0.006 mg/L	<0.006	-	-	-
1,2-Dichlorobenzene	0.004 mg/L	<0.004	-	-	-
1,4-Dichlorobenzene	0.004 mg/L	<0.004	-	-	-
1,2-Dichloroethane	0.005 mg/L	<0.005	-	-	-
1,1-Dichloroethylene	0.006 mg/L	<0.006	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.30 mg/L	<0.30	-	-	-
Methylene Chloride	0.04 mg/L	<0.04	-	-	-
Tetrachloroethylene	0.005 mg/L	<0.005	-	-	-
Trichloroethylene	0.004 mg/L	<0.004	-	-	-
Vinyl chloride	0.005 mg/L	<0.005	-	-	-
4-Bromofluorobenzene	Surrogate	93.8%	-	-	-
Dibromofluoromethane	Surrogate	93.0%	-	-	-
Toluene-d8	Surrogate	108%	-	-	-
EPA 1311 - TCLP Leachate Organics					

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 08-Sep-2022

Order Date: 4-Aug-2022

Project Description: 01348

	Client ID:	TCLP-Composite	-	-	-
	Sample Date:	28-Jul-22 09:00	-	-	-
	Sample ID:	2236344-01	-	-	-
	MDL/Units	Soil	-	-	-
Benzo [a] pyrene	0.0001 mg/L	<0.0001	-	-	-
Terphenyl-d14	Surrogate	110%	-	-	-
PCBs, total	0.003 mg/L	<0.003	-	-	-
Decachlorobiphenyl	Surrogate	93.7%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7 [3]	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4 [1]	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8 [1]	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6 [1]	-	-	-
F4G PHCs (gravimetric)	50 ug/g dry	<50	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Fluoride	ND	0.05	mg/L						
Nitrate as N	ND	1	mg/L						
Nitrite as N	ND	1	mg/L						
Cyanide, free	ND	0.02	mg/L						
EPA 1311 - TCLP Leachate Metals									
Arsenic	ND	0.05	mg/L						
Barium	ND	0.05	mg/L						
Boron	ND	0.05	mg/L						
Cadmium	ND	0.01	mg/L						
Chromium	ND	0.05	mg/L						
Lead	ND	0.05	mg/L						
Mercury	ND	0.005	mg/L						
Selenium	ND	0.05	mg/L						
Silver	ND	0.05	mg/L						
Uranium	ND	0.05	mg/L						
EPA 1311 - TCLP Leachate Organics									
Benzo [a] pyrene	ND	0.0001	mg/L						
Surrogate: Terphenyl-d14	*0.22*		*mg/L*		*111*	*37-156*			
PCBs, total	ND	0.003	mg/L						
Surrogate: Decachlorobiphenyl	*0.0075*		*mg/L*		*75.0*	*62-138*			
EPA 1311 - TCLP Leachate Volatiles									
Benzene	ND	0.005	mg/L						
Carbon Tetrachloride	ND	0.005	mg/L						
Chlorobenzene	ND	0.004	mg/L						
Chloroform	ND	0.006	mg/L						
1,2-Dichlorobenzene	ND	0.004	mg/L						
1,4-Dichlorobenzene	ND	0.004	mg/L						
1,2-Dichloroethane	ND	0.005	mg/L						
1,1-Dichloroethylene	ND	0.006	mg/L						
Methyl Ethyl Ketone (2-Butanone)	ND	0.30	mg/L						
Methylene Chloride	ND	0.04	mg/L						
Tetrachloroethylene	ND	0.005	mg/L						
Trichloroethylene	ND	0.004	mg/L						
Vinyl chloride	ND	0.005	mg/L						
Surrogate: 4-Bromofluorobenzene	*0.573*		*mg/L*		*83.3*	*83-134*			
Surrogate: Dibromofluoromethane	*0.662*		*mg/L*		*96.3*	*78-124*			
Surrogate: Toluene-d8	*0.744*		*mg/L*		*108*	*76-118*			
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
F4G PHCs (gravimetric)	ND	50	ug/g						

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Fluoride	0.18	0.05	mg/L	0.18			1.1	20	
Nitrate as N	ND	1	mg/L	ND			NC	20	
Nitrite as N	ND	1	mg/L	ND			NC	20	
Cyanide, free	ND	0.02	mg/L	ND			NC	20	
EPA 1311 - TCLP Leachate Metals									
Arsenic	ND	0.05	mg/L	ND			NC	29	
Barium	0.865	0.05	mg/L	1.13			26.6	34	
Boron	ND	0.05	mg/L	ND			NC	33	
Cadmium	ND	0.01	mg/L	ND			NC	33	
Chromium	ND	0.05	mg/L	ND			NC	32	
Lead	ND	0.05	mg/L	ND			NC	32	
Mercury	ND	0.005	mg/L	ND			NC	30	
Selenium	ND	0.05	mg/L	ND			NC	28	
Silver	ND	0.05	mg/L	ND			NC	28	
Uranium	ND	0.05	mg/L	ND			NC	27	
EPA 1311 - TCLP Leachate Organics									
Benzo [a] pyrene	ND	0.0001	mg/L	ND			NC	50	
Surrogate: Terphenyl-d14	*0.22*		*mg/L*		*112*	*37-156*			
PCBs, total	ND	0.003	mg/L	ND			NC	30	
Surrogate: Decachlorobiphenyl	*0.0085*		*mg/L*		*84.7*	*62-138*			
EPA 1311 - TCLP Leachate Volatiles									
Benzene	ND	0.005	mg/L	ND			NC	25	
Carbon Tetrachloride	ND	0.005	mg/L	ND			NC	25	
Chlorobenzene	ND	0.004	mg/L	ND			NC	25	
Chloroform	ND	0.006	mg/L	ND			NC	25	
1,2-Dichlorobenzene	ND	0.004	mg/L	ND			NC	25	
1,4-Dichlorobenzene	ND	0.004	mg/L	ND			NC	25	
1,2-Dichloroethane	ND	0.005	mg/L	ND			NC	25	
1,1-Dichloroethylene	ND	0.006	mg/L	ND			NC	25	
Methyl Ethyl Ketone (2-Butanone)	ND	0.30	mg/L	ND			NC	25	
Methylene Chloride	ND	0.04	mg/L	ND			NC	25	
Tetrachloroethylene	ND	0.005	mg/L	ND			NC	25	
Trichloroethylene	ND	0.004	mg/L	ND			NC	25	
Vinyl chloride	ND	0.005	mg/L	ND			NC	25	
Surrogate: 4-Bromofluorobenzene	*0.657*		*mg/L*		*95.5*	*83-134*			
Surrogate: Dibromofluoromethane	*0.663*		*mg/L*		*96.4*	*78-124*			
Surrogate: Toluene-d8	*0.749*		*mg/L*		*109*	*76-118*			
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g	ND			NC	30	
Physical Characteristics									
% Solids	96.5	0.1	% by Wt.	96.2			0.4	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Fluoride	0.81	0.05	mg/L	0.18	126	70-130			
Nitrate as N	10	1	mg/L	ND	102	70-130			
Nitrite as N	11	1	mg/L	ND	107	80-120			
Cyanide, free	0.048	0.02	mg/L	ND	95.8	52-148			
EPA 1311 - TCLP Leachate Metals									
Arsenic	52.4	0.05	mg/L	0.168	105	83-119			
Barium	155	0.05	mg/L	113	83.8	80-120			
Boron	48.7	0.05	mg/L	4.15	89.2	71-128			
Cadmium	48.1	0.01	mg/L	0.064	96.2	78-119			
Chromium	55.3	0.05	mg/L	0.071	110	80-124			
Lead	50.0	0.05	mg/L	0.113	99.7	77-126			
Mercury	0.0281	0.005	mg/L	ND	93.8	70-130			
Selenium	43.5	0.05	mg/L	0.382	86.3	75-125			
Silver	48.0	0.05	mg/L	ND	95.9	70-128			
Uranium	52.1	0.05	mg/L	0.115	104	70-131			
EPA 1311 - TCLP Leachate Organics									
Benzo [a] pyrene	0.0437	0.0001	mg/L	ND	87.3	39-123			
Surrogate: Terphenyl-d14	*0.23*		*mg/L*		*117*	*37-156*			
PCBs, total	0.030	0.003	mg/L	ND	74.3	86-145			
Surrogate: Decachlorobiphenyl	*0.0090*		*mg/L*		*89.9*	*62-138*			
EPA 1311 - TCLP Leachate Volatiles									
Benzene	0.275	0.005	mg/L	ND	79.9	55-141			
Carbon Tetrachloride	0.273	0.005	mg/L	ND	79.3	49-149			
Chlorobenzene	0.346	0.004	mg/L	ND	101	64-137			
Chloroform	0.284	0.006	mg/L	ND	82.6	58-138			
1,2-Dichlorobenzene	0.325	0.004	mg/L	ND	94.5	60-150			
1,4-Dichlorobenzene	0.308	0.004	mg/L	ND	89.5	63-132			
1,2-Dichloroethane	0.306	0.005	mg/L	ND	89.0	50-140			
1,1-Dichloroethylene	0.356	0.006	mg/L	ND	103	43-153			
Methyl Ethyl Ketone (2-Butanone)	0.734	0.30	mg/L	ND	85.3	26-153			
Methylene Chloride	0.313	0.04	mg/L	ND	90.9	58-149			
Tetrachloroethylene	0.380	0.005	mg/L	ND	110	51-145			
Trichloroethylene	0.311	0.004	mg/L	ND	90.6	52-135			
Vinyl chloride	0.357	0.005	mg/L	ND	104	31-159			
Surrogate: 4-Bromofluorobenzene	*0.627*		*mg/L*		*91.2*	*83-134*			
Surrogate: Dibromofluoromethane	*0.617*		*mg/L*		*89.6*	*78-124*			
Surrogate: Toluene-d8	*0.624*		*mg/L*		*90.7*	*76-118*			
Hydrocarbons									
F1 PHCs (C6-C10)	228	7	ug/g	ND	114	80-120			
F2 PHCs (C10-C16)	98	4	ug/g	ND	108	60-140			
F3 PHCs (C16-C34)	247	8	ug/g	ND	111	60-140			
F4 PHCs (C34-C50)	151	6	ug/g	ND	107	60-140			
F4G PHCs (gravimetric)	900	50	ug/g	ND	90.0	80-120			

Qualifier Notes:

Login Qualifiers :

Sample - One or more parameter received past hold time - Ignitability, PHCs, cyanide, Fluoride, mercury, NO3, NO2, PAH, PCB, VOCs.

Applies to samples: TCLP-Composite

Sample was composited at the lab

Applies to samples: TCLP-Composite

Sample Qualifiers :

1 : Holding time had been exceeded upon receipt of the sample at the laboratory or prior to the analysis being requested.

2 : This analysis was conducted after the accepted holding time had been exceeded.

3 : This sample is a standard and hold time exceedance is based on the analysis hold time and when the standard was prepared.

Sample Data Revisions

None

Work Order Revisions / Comments:

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.

Paracel ID: 2236344

PARACEL LABORATORIES LTD.

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300-2319 St. Laurent Blvd.
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Chain of Custody
(Lab Use Only)
№ 123273

Page 1 of 2

Client Name: LRL Associates Ltd.	Project Reference: 01348
Contact Name: Genevieve Marcoux	Quote #
Address: 5430 Canotek Rd Ottawa ON K1J 9G2	PO #
Telephone: 613 842-3434	Email Address: gmarcoux@lrl.ca

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 2 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 2232359 TCLP 2236344

Required Analyses

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals Regs	Hg	CrVI	B (HWS)	pH	Texture	General Inorganics				
1	BH22-1-SS1B	S		2	July 28/22	PM	X	X	X	X						X				
2	BH22-1-SS2B	↓		↓	↓	↓	X	X	X	X						X				
3	BH22-1-SS3C						X	X		X						X				
4	BH22-1-SS5A						X	X	X	X						X				
5	BH22-2-SS2B				July 29/22	AM	X	X	X	X						X				
6	BH22-3-SS2B				↓	↓	X	X	X	X										
7	BH22-3-SS3B						X	X		X						X				
8	BH22-4-SS1A						X	X		X						X				
9	BH22-4-SS2B						X	X		X				X	X	X				
10	BH22-5-SS2B	↓		↓	↓	↓	X	X	X	X						X				

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign): G.M.	Received by Driver/Depot:	Received at Lab: Shree Parm Bhimdi	Verified By: Melissa
Relinquished By (Print): Genevieve Marcoux	Date/Time:	Date/Time: Aug 04, 2022 12.45	Date/Time: Aug 4/22 14:32
Date/Time: August 4, 2022	Temperature: °C	Temperature: 19.7 °C	pH Verified [ ] By: NA

Sep 1 2022 1430

Paracel ID: 2236344

PARACEL LABORATORIES LTD.

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Chain of Custody
(Lab Use Only)
№ 123276

Page 2 of 2

Client Name: LRL Associates Ltd.	Project Reference: 01348
Contact Name: Geneviève Marcoux	Quote #
Address: 5430 Canotek Rd Ottawa ON K1J9G2	PO #
Telephone: 613 842-3434	Email Address: gmarcoux@lrl.ca

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 2 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 2232359 / 2236344 (LLP)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals	Hg	CrVI	B (HWS)	pH	Texture	General Inorganics				
1	BH22-6-SS1A	S		2	July 29/22	AM		X	X	X										
2	BH22-6-SS2C					AM	X	X	X	X				X	X	X				
3	BH22-7-SS2C					PM	X	X	X	X										
4	BH22-8-SS2B						X	X		X						X				
5	BH22-9-SS2A						X	X	X	X										
6	BH22-10-SS2B						X	X		X						X				
7	BH22-7-SS4C						X	X	X	X										
8																				
9																				
10																				

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab: Jumeepoom Bhmai	Verified By:
Relinquished By (Print): Geneviève Marcoux	Date/Time:	Date/Time: Aug 04, 2022 12:45	Date/Time: Aug 4/22 16:34
Date/Time: Agust 4, 2022	Temperature: °C	Temperature: 12.1 °C	pH Verified: N/A

Chain of Custody (Env) - Rev 0.7 Feb. 2016

Sep 1 2022 1430

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Certificate of Analysis

LRL Associates Ltd.
5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Jessica Arthurs

Client PO:
Project: 01348
Custody: 76480

Report Date: 2-Jan-2025
Order Date: 19-Dec-2024

Order #: 2451417

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2451417-01	MW22-1
2451417-02	MW22-2
2451417-03	MW22-3
2451417-04	MW22-4

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Conductivity	EPA 9050A- probe @25 °C	20-Dec-24	20-Dec-24
Metals, ICP-MS	EPA 200.8 - ICP-MS	20-Dec-24	23-Dec-24
pH	EPA 150.1 - pH probe @25 °C	20-Dec-24	20-Dec-24
PHC F1	CWS Tier 1 - P&T GC-FID	20-Dec-24	20-Dec-24
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	21-Dec-24	23-Dec-24
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	30-Dec-24	30-Dec-24
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	20-Dec-24	20-Dec-24
SAR	Calculated	24-Dec-24	24-Dec-24

PARACEL LABORATORIES LTD.

Order #: 2451417

Certificate of Analysis

Report Date: 02-Jan-2025

Client: **LRL Associates Ltd.**

Order Date: 19-Dec-2024

Client PO:

Project Description: 01348

	Client ID:	MW22-1	MW22-2	MW22-3	MW22-4	-	-
	Sample Date:	19-Dec-24 13:40	19-Dec-24 14:05	19-Dec-24 14:20	19-Dec-24 13:20		
	Sample ID:	2451417-01	2451417-02	2451417-03	2451417-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
General Inorganics							
SAR	0.01	5.78	33.3	17.4	13.8	-	-
Conductivity	5 uS/cm	2550	13000	8460	6390	-	-
pH	0.1 pH Units	7.2	7.2	6.8	7.1	-	-
Metals							
Antimony	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Arsenic	1 ug/L	<1	<1	<1	<1	-	-
Barium	1 ug/L	210	268	250	197	-	-
Beryllium	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Boron	10 ug/L	16	20	16	13	-	-
Cadmium	0.1 ug/L	<0.1	<0.1	0.1	<0.1	-	-
Chromium	1 ug/L	<1	<1	<1	<1	-	-
Cobalt	0.5 ug/L	<0.5	1.8	5.9	0.7	-	-
Copper	0.5 ug/L	2.3	4.4	3.5	2.9	-	-
Lead	0.1 ug/L	<0.1	<0.1	<0.1	<0.1	-	-
Molybdenum	0.5 ug/L	4.9	5.0	3.8	10.4	-	-
Nickel	1 ug/L	<1	3	4	<1	-	-
Selenium	1 ug/L	<1	<1	<1	<1	-	-
Silver	0.1 ug/L	<0.1	<0.1	<0.1	<0.1	-	-
Sodium	200 ug/L	341000	2220000	1280000	752000	-	-
Thallium	0.1 ug/L	<0.1	<0.1	<0.1	<0.1	-	-
Uranium	0.1 ug/L	2.7	1.4	1.3	0.4	-	-
Vanadium	0.5 ug/L	0.8	<0.5	1.2	0.8	-	-
Zinc	5 ug/L	<5	16	20	<5	-	-
Volatiles							
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0	-	-

	Client ID:	MW22-1	MW22-2	MW22-3	MW22-4	-	-
	Sample Date:	19-Dec-24 13:40	19-Dec-24 14:05	19-Dec-24 14:20	19-Dec-24 13:20		
	Sample ID:	2451417-01	2451417-02	2451417-03	2451417-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Volatiles							
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	-	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	14.5	21.6	-	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Ethylene dibromide (dibromoethane,	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	-	-
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0	-	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0	-	-

	Client ID:	MW22-1	MW22-2	MW22-3	MW22-4	-	-
	Sample Date:	19-Dec-24 13:40	19-Dec-24 14:05	19-Dec-24 14:20	19-Dec-24 13:20		
	Sample ID:	2451417-01	2451417-02	2451417-03	2451417-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Volatiles							
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0	-	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0	-	-
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0	-	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0	-	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Toluene-d8	Surrogate	110%	113%	113%	110%	-	-
Dibromofluoromethane	Surrogate	101%	103%	102%	101%	-	-
4-Bromofluorobenzene	Surrogate	117%	110%	111%	119%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100	-	-
F3 PHCs (C16-C34)	100 ug/L	337	<100	249	<100	-	-
F4 PHCs (C34-C50)	100 ug/L	807	<100	105	<100	-	-
Semi-Volatiles							

	Client ID:	MW22-1	MW22-2	MW22-3	MW22-4	-	-
	Sample Date:	19-Dec-24 13:40	19-Dec-24 14:05	19-Dec-24 14:20	19-Dec-24 13:20		
	Sample ID:	2451417-01	2451417-02	2451417-03	2451417-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Semi-Volatiles							
Acenaphthene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
Acenaphthylene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
Anthracene	0.01 ug/L	<0.01	<0.01	<0.01	<0.01	-	-
Benzo [a] anthracene	0.01 ug/L	<0.01	<0.01	<0.01	<0.01	-	-
Benzo [a] pyrene	0.01 ug/L	<0.01	<0.01	0.02	<0.01	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
Chrysene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
Fluoranthene	0.01 ug/L	0.02	0.02	0.09	0.03	-	-
Fluorene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	<0.10	<0.10	<0.10	-	-
Naphthalene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
Phenanthrene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	-	-
Pyrene	0.01 ug/L	<0.01	0.03	0.12	0.04	-	-
2-Fluorobiphenyl	Surrogate	85.3%	80.9%	77.6%	81.3%	-	-
Terphenyl-d14	Surrogate	80.7%	79.2%	74.7%	77.4%	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics								
Conductivity	ND	5	uS/cm					
Hydrocarbons								
F1 PHCs (C6-C10)	ND	25	ug/L					
F2 PHCs (C10-C16)	ND	100	ug/L					
F3 PHCs (C16-C34)	ND	100	ug/L					
F4 PHCs (C34-C50)	ND	100	ug/L					
Metals								
Antimony	ND	0.5	ug/L					
Arsenic	ND	1	ug/L					
Barium	ND	1	ug/L					
Beryllium	ND	0.5	ug/L					
Boron	ND	10	ug/L					
Cadmium	ND	0.1	ug/L					
Chromium	ND	1	ug/L					
Cobalt	ND	0.5	ug/L					
Copper	ND	0.5	ug/L					
Lead	ND	0.1	ug/L					
Molybdenum	ND	0.5	ug/L					
Nickel	ND	1	ug/L					
Selenium	ND	1	ug/L					
Silver	ND	0.1	ug/L					
Sodium	ND	200	ug/L					
Thallium	ND	0.1	ug/L					
Uranium	ND	0.1	ug/L					
Vanadium	ND	0.5	ug/L					
Zinc	ND	5	ug/L					
Semi-Volatiles								
Acenaphthene	ND	0.05	ug/L					
Acenaphthylene	ND	0.05	ug/L					
Anthracene	ND	0.01	ug/L					
Benzo [a] anthracene	ND	0.01	ug/L					
Benzo [a] pyrene	ND	0.01	ug/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [b] fluoranthene	ND	0.05	ug/L					
Benzo [g,h,i] perylene	ND	0.05	ug/L					
Benzo [k] fluoranthene	ND	0.05	ug/L					
Chrysene	ND	0.05	ug/L					
Dibenzo [a,h] anthracene	ND	0.05	ug/L					
Fluoranthene	ND	0.01	ug/L					
Fluorene	ND	0.05	ug/L					
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L					
1-Methylnaphthalene	ND	0.05	ug/L					
2-Methylnaphthalene	ND	0.05	ug/L					
Methylnaphthalene (1&2)	ND	0.10	ug/L					
Naphthalene	ND	0.05	ug/L					
Phenanthrene	ND	0.05	ug/L					
Pyrene	ND	0.01	ug/L					
Surrogate: 2-Fluorobiphenyl	*15.9*		*%*	*79.6*	*50-140*			
Surrogate: Terphenyl-d14	*17.0*		*%*	*85.1*	*50-140*			
Volatiles								
Acetone	ND	5.0	ug/L					
Benzene	ND	0.5	ug/L					
Bromodichloromethane	ND	0.5	ug/L					
Bromoform	ND	0.5	ug/L					
Bromomethane	ND	0.5	ug/L					
Carbon Tetrachloride	ND	0.2	ug/L					
Chlorobenzene	ND	0.5	ug/L					
Chloroform	ND	0.5	ug/L					
Dibromochloromethane	ND	0.5	ug/L					
Dichlorodifluoromethane	ND	1.0	ug/L					
1,2-Dichlorobenzene	ND	0.5	ug/L					
1,3-Dichlorobenzene	ND	0.5	ug/L					
1,4-Dichlorobenzene	ND	0.5	ug/L					
1,1-Dichloroethane	ND	0.5	ug/L					
1,2-Dichloroethane	ND	0.5	ug/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1-Dichloroethylene	ND	0.5	ug/L					
cis-1,2-Dichloroethylene	ND	0.5	ug/L					
trans-1,2-Dichloroethylene	ND	0.5	ug/L					
1,2-Dichloropropane	ND	0.5	ug/L					
cis-1,3-Dichloropropylene	ND	0.5	ug/L					
trans-1,3-Dichloropropylene	ND	0.5	ug/L					
1,3-Dichloropropene, total	ND	0.5	ug/L					
Ethylbenzene	ND	0.5	ug/L					
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.2	ug/L					
Hexane	ND	1.0	ug/L					
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L					
Methyl Isobutyl Ketone	ND	5.0	ug/L					
Methyl tert-butyl ether	ND	2.0	ug/L					
Methylene Chloride	ND	5.0	ug/L					
Styrene	ND	0.5	ug/L					
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L					
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L					
Tetrachloroethylene	ND	0.5	ug/L					
Toluene	ND	0.5	ug/L					
1,1,1-Trichloroethane	ND	0.5	ug/L					
1,1,2-Trichloroethane	ND	0.5	ug/L					
Trichloroethylene	ND	0.5	ug/L					
Trichlorofluoromethane	ND	1.0	ug/L					
Vinyl chloride	ND	0.5	ug/L					
m,p-Xylenes	ND	0.5	ug/L					
o-Xylene	ND	0.5	ug/L					
Xylenes, total	ND	0.5	ug/L					
Surrogate: 4-Bromofluorobenzene	*87.6*		*%*	*110*	*50-140*			
Surrogate: Dibromofluoromethane	*83.0*		*%*	*104*	*50-140*			
Surrogate: Toluene-d8	*91.0*		*%*	*114*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Conductivity	320	5	uS/cm	331			3.4	5	
pH	7.8	0.1	pH Units	7.8			0.3	3.3	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Metals									
Antimony	ND	0.5	ug/L	ND			NC	20	
Arsenic	ND	1	ug/L	ND			NC	20	
Barium	50.1	1	ug/L	49.7			0.7	20	
Beryllium	ND	0.5	ug/L	ND			NC	20	
Boron	106	10	ug/L	102			3.9	20	
Cadmium	ND	0.1	ug/L	ND			NC	20	
Chromium	ND	1	ug/L	ND			NC	20	
Cobalt	1.17	0.5	ug/L	1.21			3.7	20	
Copper	ND	0.5	ug/L	ND			NC	20	
Lead	ND	0.1	ug/L	ND			NC	20	
Molybdenum	5.63	0.5	ug/L	5.55			1.4	20	
Nickel	6.3	1	ug/L	6.5			2.3	20	
Selenium	ND	1	ug/L	ND			NC	20	
Silver	0.88	0.1	ug/L	0.20			NC	20	
Sodium	1190000	200	ug/L	1440000			18.7	20	
Thallium	ND	0.1	ug/L	ND			NC	20	
Uranium	1.0	0.1	ug/L	1.0			3.4	20	
Vanadium	ND	0.5	ug/L	ND			NC	20	
Zinc	ND	5	ug/L	ND			NC	20	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	ND	0.5	ug/L	ND			NC	30	
Bromoform	ND	0.5	ug/L	ND			NC	30	
Bromomethane	ND	0.5	ug/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Carbon Tetrachloride	ND	0.2	ug/L	ND			NC	30	
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroform	ND	0.5	ug/L	ND			NC	30	
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	24.1	1.0	ug/L	21.6			10.8	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND			NC	30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND			NC	30	
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	
Styrene	ND	0.5	ug/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
Tetrachloroethylene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
Trichloroethylene	ND	0.5	ug/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Trichlorofluoromethane	ND	1.0	ug/L	ND			NC	30	
Vinyl chloride	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*94.1*		*%*		*118*	*50-140*			
Surrogate: Dibromofluoromethane	*77.6*		*%*		*97.0*	*50-140*			
Surrogate: Toluene-d8	*90.4*		*%*		*113*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1760	25	ug/L	ND	88.0	85-115			
F2 PHCs (C10-C16)	1480	100	ug/L	ND	92.3	60-140			
F3 PHCs (C16-C34)	3640	100	ug/L	ND	93.0	60-140			
F4 PHCs (C34-C50)	2610	100	ug/L	ND	105	60-140			
Metals									
Arsenic	45.1	1	ug/L	ND	90.2	80-120			
Barium	49.6	1	ug/L	ND	99.2	80-120			
Beryllium	48.2	0.5	ug/L	ND	96.3	80-120			
Boron	48	10	ug/L	ND	96.6	80-120			
Cadmium	47.6	0.1	ug/L	ND	95.2	80-120			
Chromium	46.2	1	ug/L	ND	92.4	80-120			
Cobalt	45.8	0.5	ug/L	ND	91.7	80-120			
Copper	46.1	0.5	ug/L	ND	92.2	80-120			
Lead	43.7	0.1	ug/L	ND	87.4	80-120			
Molybdenum	41.8	0.5	ug/L	ND	83.6	80-120			
Nickel	46.2	1	ug/L	ND	92.5	80-120			
Selenium	43.0	1	ug/L	ND	86.1	80-120			
Silver	48.4	0.1	ug/L	ND	96.9	80-120			
Sodium	9450	200	ug/L	ND	94.5	80-120			
Thallium	45.3	0.1	ug/L	ND	90.6	80-120			
Uranium	44.0	0.1	ug/L	ND	88.1	80-120			
Vanadium	44.7	0.5	ug/L	ND	89.4	80-120			
Zinc	45	5	ug/L	ND	91.0	80-120			
Semi-Volatiles									
Acenaphthene	5.28	0.05	ug/L	ND	106	50-140			
Acenaphthylene	5.57	0.05	ug/L	ND	111	50-140			
Anthracene	5.28	0.01	ug/L	ND	106	50-140			
Benzo [a] anthracene	5.12	0.01	ug/L	ND	102	50-140			
Benzo [a] pyrene	5.80	0.01	ug/L	ND	116	50-140			
Benzo [b] fluoranthene	6.50	0.05	ug/L	ND	130	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [g,h,i] perylene	6.95	0.05	ug/L	ND	139	50-140			
Benzo [k] fluoranthene	6.86	0.05	ug/L	ND	137	50-140			
Chrysene	5.62	0.05	ug/L	ND	112	50-140			
Dibenzo [a,h] anthracene	6.95	0.05	ug/L	ND	139	50-140			
Fluoranthene	6.36	0.01	ug/L	ND	127	50-140			
Fluorene	5.60	0.05	ug/L	ND	112	50-140			
Indeno [1,2,3-cd] pyrene	6.14	0.05	ug/L	ND	123	50-140			
1-Methylnaphthalene	5.04	0.05	ug/L	ND	101	50-140			
2-Methylnaphthalene	5.40	0.05	ug/L	ND	108	50-140			
Naphthalene	5.58	0.05	ug/L	ND	112	50-140			
Phenanthrene	5.83	0.05	ug/L	ND	117	50-140			
Pyrene	5.85	0.01	ug/L	ND	117	50-140			
Surrogate: 2-Fluorobiphenyl	*18.2*		*%*		*90.8*	*50-140*			
Surrogate: Terphenyl-d14	*19.4*		*%*		*96.9*	*50-140*			
Volatiles									
Acetone	87.8	5.0	ug/L	ND	87.8	50-140			
Benzene	46.9	0.5	ug/L	ND	117	60-130			
Bromodichloromethane	45.5	0.5	ug/L	ND	114	60-130			
Bromoform	41.1	0.5	ug/L	ND	103	60-130			
Bromomethane	45.2	0.5	ug/L	ND	113	50-140			
Carbon Tetrachloride	45.7	0.2	ug/L	ND	114	60-130			
Chlorobenzene	46.2	0.5	ug/L	ND	115	60-130			
Chloroform	44.5	0.5	ug/L	ND	111	60-130			
Dibromochloromethane	43.3	0.5	ug/L	ND	108	60-130			
Dichlorodifluoromethane	42.0	1.0	ug/L	ND	105	50-140			
1,2-Dichlorobenzene	44.7	0.5	ug/L	ND	112	60-130			
1,3-Dichlorobenzene	44.6	0.5	ug/L	ND	112	60-130			
1,4-Dichlorobenzene	45.2	0.5	ug/L	ND	113	60-130			
1,1-Dichloroethane	46.9	0.5	ug/L	ND	117	60-130			
1,2-Dichloroethane	44.7	0.5	ug/L	ND	112	60-130			
1,1-Dichloroethylene	47.2	0.5	ug/L	ND	118	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
cis-1,2-Dichloroethylene	43.4	0.5	ug/L	ND	109	60-130			
trans-1,2-Dichloroethylene	40.2	0.5	ug/L	ND	100	60-130			
1,2-Dichloropropane	44.4	0.5	ug/L	ND	111	60-130			
cis-1,3-Dichloropropylene	42.8	0.5	ug/L	ND	107	60-130			
trans-1,3-Dichloropropylene	42.2	0.5	ug/L	ND	106	60-130			
Ethylbenzene	44.7	0.5	ug/L	ND	112	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	43.2	0.2	ug/L	ND	108	60-130			
Hexane	42.8	1.0	ug/L	ND	107	60-130			
Methyl Ethyl Ketone (2-Butanone)	97.1	5.0	ug/L	ND	97.1	50-140			
Methyl Isobutyl Ketone	111	5.0	ug/L	ND	111	50-140			
Methyl tert-butyl ether	108	2.0	ug/L	ND	108	50-140			
Methylene Chloride	46.0	5.0	ug/L	ND	115	60-130			
Styrene	41.4	0.5	ug/L	ND	103	60-130			
1,1,1,2-Tetrachloroethane	43.9	0.5	ug/L	ND	110	60-130			
1,1,2,2-Tetrachloroethane	45.2	0.5	ug/L	ND	113	60-130			
Tetrachloroethylene	46.4	0.5	ug/L	ND	116	60-130			
Toluene	45.8	0.5	ug/L	ND	114	60-130			
1,1,1-Trichloroethane	43.9	0.5	ug/L	ND	110	60-130			
1,1,2-Trichloroethane	46.8	0.5	ug/L	ND	117	60-130			
Trichloroethylene	43.5	0.5	ug/L	ND	109	60-130			
Trichlorofluoromethane	46.4	1.0	ug/L	ND	116	60-130			
Vinyl chloride	43.3	0.5	ug/L	ND	108	50-140			
m,p-Xylenes	89.3	0.5	ug/L	ND	112	60-130			
o-Xylene	45.2	0.5	ug/L	ND	113	60-130			
Surrogate: 4-Bromofluorobenzene	*80.6*		*%*		*101*	*50-140*			
Surrogate: Dibromofluoromethane	*80.6*		*%*		*101*	*50-140*			
Surrogate: Toluene-d8	*80.9*		*%*		*101*	*50-140*			

Certificate of Analysis

Report Date: 02-Jan-2025

Client: **LRL Associates Ltd.**

Order Date: 19-Dec-2024

Client PO:

Project Description: 01348

Qualifier Notes:

QC Qualifiers:

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.

PARAC LABORATORIES

Paracel ID: 2451417

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...K1G 4J8
...7
...cellabs.com

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2451417	№ 76480

Client Name: LRL Engineering	Project Ref: 01348	Page __ of __
Contact Name: Jessica Arthurs	Quote #:	Turnaround Time
Address: 5430 Canotek Road Ottawa, on K1J 9G2	PO #:	☐ 1 day ☐ 3 day ☐ 2 day ☐ Regular
Telephone: 613 842 3434 / 613 978 0658	E-mail: Jarthurs@lrl.ca	Date Required:

☑ REG 153/04 ☐ REG 406/19	Other Regulation
☐ Table 1 ☐ Agri/Other ☐ Med/Fine	☐ REG 558 ☐ PWQO
☒ Table 2 ☐ Res/Park ☒ Coarse	☐ CCME ☐ MISA
☐ Table 3 ☒ Ind/Comm	☐ SU - Sani ☐ SU - Storm
☐ Table ___	Mun:
For RSC: ☐ Yes ☒ No	☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Field Filtered	Sample Taken: Date	Sample Taken: Time	Required Analysis: PHC F1 - F4	VOC	PAH	ICP Metals	* General Inorganics
1	MW22-1	GW		6	Y	Dec 19, 2024	13:40	X	X	X	X	X
2	MW22-2	↓		↓	↓	↓	14:05	↓	↓	↓	↓	↓
3	MW22-3						14:20					
4	MW22-4						13:20					
5												
6												
7												
8												
9												
10												

Comments:
* SAR, Conductivity, PH

Method of Delivery: Walk-in

Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Jessica Arthurs	Date/Time:	Date/Time: 2-Dec/12/19 3:25pm	Date/Time: Dec 20 8:47
Date/Time: Dec 19, 2024 3:27	Temperature: °C	Temperature: 9.8 °C	pH Verified: ☒ By: SS