PATERSON GROUP

Phase II Environmental Site Assessment

1547 Lagan Way

Ottawa, Ontario

Prepared for R.J.L Terra Plus Inc.

Report: PE6555-2

August 15, 2024

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EXECUTIVE SUMMARY

Assessment

A Phase II ESA was conducted for the property addressed 1547 Lagan Way, in Ottawa, Ontario. The purpose of the Phase II ESA was to address potentially contaminating activities (PCAs) that were identified during the Phase I ESA and considered to result in areas of potential environmental concern (APECs) on the Phase II ESA Property.

The Phase II ESA subsurface investigation, which was conducted in conjunction with a geotechnical investigation, consisted of drilling thirteen boreholes across the Phase II Property. Four of the boreholes were constructed with groundwater monitoring wells. The general soil profile encountered during the field program consisted of fill material, followed by glacial till. Native silty sand and clay was encountered in BH6-24 and BH7-24. Shale bedrock was encountered in BH10-24 at a depth of 2.73 mbgs.

A total of eleven samples (plus one duplicate) were submitted for laboratory analysis of either, benzene, toluene, ethylbenzene, xylenes (BTEX), petroleum hydrocarbons (PHCs, F1-F4), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and metals (including As, Sb and Se). Based on the analytical test results, all soil results were observed to comply with the MECP Table 3 Commercial Standards.

Groundwater samples from monitoring wells installed in BH1-24 through BH3-24 and BH10-24 were submitted for laboratory analysis of PHCs (F1-F4) and VOCs. All groundwater results were observed to comply with the MECP Table 3 Non-Potable Standards.

Recommendations

Based on the analytical test results, the soil and groundwater beneath the Phase II Property complies the selected MECP Table 3 Standards. As such, it is our opinion that no further investigative work is required at this time.

Soil

During the course of future site re-development, any excess soil that has to be removed for construction purposes will have to be assessed against the excess soil regulation O.Reg. 406/19 standards, to determine appropriate disposal requirements. Based on the soil test results, the majority of the on-site soils comply with Table 2.1 RPI of O.Reg. 406/19, for off-site disposal, with the exception of PHC Fractions 1 and 2 in BH10-24 and BH1-24, respectively. This soil can be reused on-site. Additional excess soil testing

will likely be required at the time of future site excavation activities, depending upon the volume of excess soil generated from the future redevelopment.

Groundwater

It is recommended that monitoring wells installed on the Phase II Property be maintained for future monitoring. The monitoring wells must be decommissioned in accordance with O.Reg. 903 once they are no longer required.

1.0 INTRODUCTION

At the request of R.J.L Terra Plus Inc., Paterson Group (Paterson) conducted a Phase II Environmental Site Assessment at 1547 Lagan Way (the Phase II ESA Property), in the City of Ottawa, Ontario. The purpose of this Phase II ESA has been to address areas of potential environmental concern (APECs) identified on the Phase II ESA Property, during the Phase I ESA conducted by Paterson in July 2024.

1.1 Site Description

Address:	1547 Lagan Way, Ottawa, Ontario.
Legal Description:	Part of Lot 27, Concession 2 (Ottawa Front), Township of Gloucester, in the City of Ottawa.
Location:	The site is situated on the east side of Lagan Way, approximately 50m south of the intersection of Belfast Road and Lagan Way, in the City of Ottawa, Ontario. For the purposes of this report, Lagan Way runs in a north-south orientation. Refer to Figure 1 – Key Plan, for the site location context.
Latitude and Longitude:	45° 24’ 41.86" N, 75° 37' 41.63" W

Site Description:

Configuration:	Irregular
Area:	1.66 hectares (ha) (approximately)
Zoning:	IL – Light Industrial Zone.

1.2 Property Ownership

Paterson was engaged to conduct this Phase I-ESA by Mr. Winston Moore, who can be reached at 4955 chemin St. Francois, Saint-Laurent, Quebec H4S 1P3.

1.3 Current and Proposed Future Uses

The Phase II ESA Property is currently occupied by a commercial office, mechanic’s garage and associated construction equipment storage yard.

It is our understanding that the Phase II ESA Property will be redeveloped with a newer commercial office building and associated maintenance area along Lagan Way, with the remainder of the site landscaped and paved. Based on the property remaining in use as a commercial property, a record of site condition (RSC) will not be required as per O.Reg 154/03.

1.4 Applicable Site Condition Standard

The site condition standards for the property were obtained from Table 3 of the document entitled "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", prepared by the Ontario Ministry of Environment, Conservation and Parks (MECP), April 2011. The MECP selected Table 3 Standards are based on the following considerations:

- ❒ Coarse-grained soil conditions
- ❒ Full depth generic site conditions
- ❒ Non-potable groundwater conditions
- ❒ Commercial land use

Section 35 of O.Reg. 153/04 does apply to the Phase II ESA Property in that the property does not rely upon potable groundwater.

Section 41 of O.Reg. 153/04 does not apply to the Phase II ESA Property, as the property is not within 30m of an environmentally sensitive area.

Section 43.1 of O.Reg. 153/04 does not apply to the Phase II ESA Property in that the property is not a Shallow Soil property.

The intended use of the Phase II ESA Property is a new commercial office and maintenance area; therefore, the Commercial Standards have been selected for the purpose of this Phase II ESA.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

The Phase II ESA Property is located on the eastern side of Lagan Way, approximately 50m south of the Belfast Road and Lagan Way intersection, in the City of Ottawa, Ontario. The site is situated in a light industrial zone.

The Phase II ESA Property is occupied by a commercial office and associated maintenance area, with the remainder occupied by a construction equipment storage yard, that is partially paved along the north side, with the remainder a

gravel lot. Site drainage consists primarily of infiltration within the gravel storage yard lot, as well as through surface run-off towards catchbasins within the paved portion of the storage yard and ditches present along Lagan Way.

The site topography is relatively flat, while the regional topography appears to slope down slightly towards the northeast, in the general direction of Green's Creek.

2.2 Past Investigations

Paterson completed a Phase I ESA in July 2024 for the Phase II ESA Property. Based on the findings of the Phase I ESA, eight (8) potentially contaminating activities (PCAs) were determined to result in areas of potential environmental concern (APECs) on the Phase II ESA Property:

- APEC 1: Resulting from the presence of an equipment maintenance garage on-site (PCA 52).
- APEC 2A: Resulting from the presence of an aboveground furnace oil storage tank on-site (PCA 28).
- APEC 2B: Resulting from the presence of two aboveground fuel storage tanks on-site (PCA 28).
- APEC 2C: Resulting from the presence of an aboveground waste oil storage tank (PCA 28).
- APEC 3: Resulting from the former presence of a building materials yard operation on-site (PCA Other).
- APEC 4: Resulting from the former presence of an off-site service garage at 1038 Belfast Road (PCA 52).
- APEC 5: Resulting from the presence of the current off-site automotive service garage at 1550 Lagan Way (PCA 52).
- APEC 6: Resulting from the former presence of off-site underground storage tanks (PCA 28).
- APEC 7: Resulting from the former presence of an off-site rug cleaning operation (PCA 37).
- APEC 8: Resulting from the presence of fill material of unknown quality (PCA 30).

The rationale for identifying the above APECs is based on a review of fire insurance plans, aerial photographs, field observations, and personal interviews. A Phase II ESA was recommended to address the aforementioned APECs.

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The subsurface investigation was conducted in conjunction with a Geotechnical Investigation from June 5, 2024 through June 6, 2024. The field program consisted of drilling thirteen (13) boreholes to address the APECs identified on the Phase II ESA Property and to provide coverage for geotechnical considerations. Four (4) of the boreholes (BH1-24 through BH3-24 and BH10-24) were completed with monitoring well installations. Boreholes were drilled to a maximum depth of 3.9m below the ground surface (mbgs).

3.2 Media Investigated

During the subsurface investigation, soil samples and groundwater samples were obtained and submitted for laboratory analysis. The rationale for sampling and analyzing this media is based on the Contaminants of Potential Concern identified in the Phase I ESA.

Contaminants of potential concern on the Phase II ESA Property include benzene, toluene, ethylbenzene and xylenes (BTEX), petroleum hydrocarbons (PHCs, F1-F4), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and metals (including arsenic, antimony and selenium). These CPCs may be present in the soil and/or groundwater beneath the Phase II ESA Property.

3.3 Phase I Conceptual Site Model

Geological and Hydrogeological Setting

Based on the available mapping information, the bedrock beneath the Phase I Property generally consists of shale of the Carlsbad Formation. The surficial geology consists largely of glacial till plains, with a drift thickness ranging from approximately 3m to 5m.

Water Bodies and Areas of Natural and Scientific Interest

No water bodies or areas of natural and scientific interest are present on the Phase I Property or within the Phase I Study Area. The nearest named water body with respect to the Phase I Property is Green's Creek, located approximately 1.5km to the east.

Drinking Water Wells

Based on the availability of municipal water services, no drinking water wells are expected to remain in use within the Phase I Study Area.

Existing Buildings and Structures

The Phase I Property is currently occupied by a commercial/light industrial operation, with an office and maintenance garage along the northern portion of the property.

Current and Future Property Use

The Phase I Property is currently used for commercial/light industrial purposes.

It is our understanding that the Phase I Property is to be redeveloped with an office and maintenance garage along the western property limits. Since the land use will remain as commercial/light industrial, a record of site condition (RSC) will not be required to be filed with the MECP.

Neighbouring Land Use

The surrounding lands within the Phase I Study Area consist of a mix of commercial office/retail and light industrial properties. Current land use is depicted on Drawing PE6555-2 – Surrounding Land Use Plan, in the Figures section of this report.

Potentially Contaminating Activities and Areas of Potential Environmental Concern

As per Section 7.1 of the Phase I ESA, eight (8) PCAs and the resultant APECs are summarized in the table below, along with their respective locations and contaminants of potential concern (CPCs).

Areas of Potential Environmental Concern					
Area of Potential Environmental Concern	**Location of Area of Potential Environmental Concern**	**Potentially Contaminating Activity**	**Location of PCA (on-site or off-site)**	**Contaminants of Potential Concern**	**Media Potentially Impacted (Groundwater, Soil, and/or Sediment)**
APEC 1 Resulting from presence of an equipment maintenance garage on-site	Northern portion of the Phase I ESA Property	PCA 52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	On-site	PHCs BTEX	Soil and Groundwater
APEC 2A Resulting from presence of an aboveground furnace oil storage tank on-site	Northern portion of the Phase I ESA Property	PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	PHCs BTEX	Soil
APEC 2B Resulting from presence of two aboveground fuel storage tanks on-site	Northwestern portion of the Phase I ESA Property	PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	PHCs BTEX	Soil and Groundwater
APEC 2C Resulting from the presence of an aboveground waste oil storage tank	Eastern portion of the Phase I ESA Property	PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	PHCs BTEX	Soil and Groundwater
APEC 3 Resulting from the former presence of a building materials yard operation on-site	Southern portion of the Phase I ESA Property	PCA N/A – Sand and Aggregate Yard	On-site	PHCs BTEX Metals	Soil

Areas of Potential Environmental Concern - Continued

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern	Potentially Contaminating Activity	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil, and/or Sediment)
APEC 4 Resulting from the former presence of an off-site service garage at 1038 Belfast Road	Northwestern portion of the Phase I ESA Property	PCA 52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	Off-site	PHCs BTEX	Soil
APEC 5 Resulting from the presence of the current automotive service garage at 1550 Lagan Way	Northwestern portion of the Phase I ESA Property	PCA 52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	Off-site	PHCs BTEX	Soil and Groundwater
APEC 6 Resulting from the presence of off-site underground storage tanks (USTs)	Western portion of the Phase I ESA Property	PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks	Off-site	PHCs BTEX	Soil and Groundwater

Areas of Potential Environmental Concern - Continued

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern	Potentially Contaminating Activity	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil, and/or Sediment)
APEC 7 Resulting from the former presence of a rug cleaning operation at 1568 Michael Street	Eastern portion of the Phase I ESA Property	PCA 37 – Operation of Dry Cleaning Equipment (where chemicals are used)	Off-site	VOCs	Groundwater
APEC 8 Resulting from the presence of fill material of unknown quality	Southern portion of the Phase I ESA Property	PCA 30 – Importation of Fill Material of Unknown Quality	On-site	Metals PAHs	Soil

Several other PCAs were identified with respect to off-site properties situated within the Phase I Study Area. Based on their separation distances, and their hydraulically cross-gradient orientation with respect to the groundwater flow to the north, these PCAs are not considered to pose environmental concerns to the Phase I Property.

Contaminants of Potential Concern

As per the Table of Areas of Potential Environmental Concern, CPCs in the soil/groundwater beneath the Phase I Property include the following:

- ❑ Petroleum Hydrocarbons, Fractions 1 – 4 (PHCs F1-F4);
- ❑ Benzene, Toluene, Ethylbezene, and Xylenes (BTEX);
- ❑ Volatile Organic Compounds (VOCs);
- ❑ Polycyclic Aromatic Hydrocarbons (PAHs);
- ❑ Metals (including As, Sb and Se).

These CPCs have the potential to be present in the soil matrix and/or groundwater situated beneath the Phase I Property.

Assessment of Uncertainty and/or Absence of Information

The information available for review as part of the preparation of the Phase I-ESA is considered to be sufficient to conclude that there are on- and off-site PCAs that have resulted in APECs on the Phase I ESA Property.

A variety of independent sources were consulted as part of this assessment, and as such, the conclusions of this report are not affected by uncertainty which may be present with respect to the individual sources.

3.4 Deviations from Sampling and Analysis Plan

The Sampling and Analysis Plan for this project is included in Appendix 1 of this report. No deviations from the sampling and analysis plan were identified during the Phase II ESA.

3.5 Impediments

No physical impediments were encountered during the Phase II ESA field program, with exception of on-site buildings and underground utilities.

4.0 INVESTIGATION METHOD

4.1 Subsurface Investigation

The subsurface investigation conducted for this Phase II ESA consisted of drilling thirteen (13) boreholes (BH1-24 through BH13-24) across the Phase II ESA Property. The boreholes were drilled to a maximum depth of 3.9m below ground surface (bgs) to intercept groundwater.

The boreholes were placed to address the aforementioned APECs identified in the 2024 Phase I ESA, as well as, for geotechnical purposes.

The boreholes were drilled using a truck mounted drill rig operated by George Downing Estate Drilling of Hawkesbury, Ontario, under full-time supervision of Paterson personnel. The borehole locations are indicated on the attached Drawing PE6555-3 - Test Hole Location Plan.

4.2 Soil Sampling

A total of 57 soil samples were obtained from the boreholes by means of grab sampling, sampling from auger flights and split spoon sampling. Split spoon samples were taken at approximate 0.76 m intervals. The depths at which grab samples, augur samples and split spoon were obtained from the boreholes are shown as "**G**", "**AU**" and "**SS**" respectively on the Soil Profile and Test Data Sheets.

The borehole profiles generally consist of fill material consisting of a mix of silty sand and clay, with gravel and crushed stone, underlain by glacial till (silty sand to sandy silt, with gravel and cobbles) followed by shale bedrock.

Specific details of the soil profile at each test hole location are presented on the Soil Profile and Test Data Sheets provided in Appendix 1.

4.3 Field Screening Measurements

Soil samples recovered at the time of sampling were placed immediately into airtight plastic bags with nominal headspace. All lumps of soil inside the bags were broken by hand, and the soil was allowed to come to room temperature prior to conducting the vapour survey. Allowing the samples to stabilize to room temperature ensures consistency of readings between samples.

To measure the soil vapours, the analyser probe is inserted into the nominal headspace above the soil sample. A photo ionization detector (PID) was used to measure the volatile organic vapour concentrations. The sample is agitated/manipulated gently as the measurement is taken. The peak reading registered within the first 15 seconds is recorded as the vapour measurement.

The PID readings were found to range from 0.2 to 4.5 ppm in the soil samples obtained. These results do not indicate the potential for significant contamination from volatile contaminants. Vapour readings are noted on the Soil Profile and Test Data Sheets in Appendix 1. The results of the vapour survey are presented on the Soil Profile and Test Data sheets.

4.4 Groundwater Monitoring Well Installation

Four (4) groundwater monitoring wells were installed on the Phase II ESA Property as part of the subsurface investigation. The monitoring wells were constructed using 50 mm diameter, Schedule 40 threaded PVC risers and

screens. Monitoring well construction details are listed in Table 1: Test Hole Summary Details in Appendix 2 and are also presented on the Soil Profile and Test Data Sheets, appended to this report.

4.5 Groundwater Sampling

Groundwater sampling protocols were followed using the MECP document entitled “Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario”, dated May 1996. Groundwater samples were obtained from each monitoring well, using dedicated sampling equipment. Standing water was purged from each well prior to sampling. Samples were stored in coolers to reduce analyte volatilization during transportation. Details of our standard operating procedure for groundwater sampling are provided in the Sampling and Analysis Plan in Appendix 1.

4.6 Analytical Testing

Based on the guidelines outlined in the Sampling and Analysis Plan, soil samples were submitted for analysis of the parameters listed in Table 2: Soil Testing Summary, in Appendix 2.

Based on the guidelines outlined in the Sampling and Analysis Plan, groundwater samples were submitted for analysis of the parameters listed in Table 3: Groundwater Testing Summary, in Appendix 2.

Paracel Laboratories (Paracel), of Ottawa, Ontario, performed the laboratory analysis on the samples submitted for analytical testing. Paracel is a member of the Standards Council of Canada/Canadian Association for Laboratory Accreditation (SCC/CALA). Paracel is accredited and certified by SCC/CALA for specific tests registered with the association.

4.7 Residue Management

All soil cuttings, purge water and fluids from equipment cleaning were retained on-site.

4.8 Elevation Surveying

The ground surface elevations at each borehole location were surveyed using a GPS device by Paterson personnel and referenced to a geodetic datum.

4.9 Quality Assurance and Quality Control Measures

A summary of quality assurance and quality control (QA/QC) measures, including sampling containers, preservation, labelling, handling, and custody, equipment cleaning procedures, and field quality control measurements is provided in the Sampling and Analysis Plan in Appendix 1.

5.0 REVIEW AND EVALUATION

5.1 Geology

Stratigraphy at the Phase II Property generally consists of the following:

- **Asphaltic Concrete** was identified at ground surface in BH2-24, BH4-24, BH10-24 and BH13-24, and extended to a maximum depth of 0.10 mbgs.
- **Fill Material** generally consisting of a mix of silty sand and clay, with gravel and crushed stone extended to a maximum depth of 2.36 mbgs. Groundwater was encountered in this layer in BH1-24, BH2-24 and BH10-24.
- **Native Silty Sand/Clay** was encountered in BH6-24 and BH7-24, and extended to a maximum depth of 2.21 mbgs. Groundwater was not encountered in this layer.
- **Glacial Till** consisting of silty sand to sandy silt with gravel, cobbles and boulders was encountered in all boreholes, and extended to a maximum depth of 3.89 mbgs. Groundwater was encountered in this layer in BH3-24.
- **Shale Bedrock** was encountered in BH10-24 at a depth of 2.74 mbgs.

The stratigraphy of the Phase II ESA Property, from ground to surface to the deepest aquifer or aquitard investigated, is provided in the Soil Profile and Test Data Sheets, in Appendix 1.

5.2 Groundwater Elevations, Flow Direction, and Hydraulic Gradient

Groundwater levels were measured during the groundwater sampling events on June 13, 2024 using an electronic water level meter. Groundwater levels were recorded from the monitoring wells installed in BH1-24 to BH3-24 and BH10-24. The groundwater levels are summarized in Table 4: Groundwater Levels, in Appendix 2.

The groundwater at the Phase II ESA Property was encountered within the overburden throughout all boreholes at depths ranging from approximately 0.64m to 1.28m below the existing ground surface.

Using the groundwater elevations recorded during the June 13, 2024 sampling event, groundwater contour mapping was completed as part of this assessment. Groundwater contours are shown on Drawing PE6555-3 – Test Hole Location Plan. Based on the contour mapping, groundwater flow at the subject site is in a westerly direction. A horizontal hydraulic gradient of approximately 0.012m/m was calculated.

It should be noted that groundwater levels are expected to fluctuate throughout the year with seasonal variations.

5.3 Fine-Coarse Soil Texture

Grain size analysis was not completed as part of this investigation. Coarse grained soil standards were chosen based on the nature of the recovered soil samples.

5.4 Soil: Field Screening

Field screening of the soil samples collected during drilling resulted in vapour readings ranging from 0.2 to 4.5ppm. The field screening results of each individual soil sample are provided on the Soil Profile and Test Data Sheets appended to this report.

5.5 Soil Quality

A total of eleven soil samples (plus one duplicate) were submitted for laboratory analysis of either, BTEX, PHCs (F1-F4), VOCs, PAHs and/or metals. The results of the analytical testing are presented in Table 5: Soil Analytical Test Results, as well as on the laboratory certificates of analysis, appended to this report.

BTEX and PHCs (F1-F4)

No detectable BTEX parameters were identified in any of the soil samples analyzed. All detected PHC concentrations comply with the MECP Table 3 Commercial Standards. The analytical results for the tested soil are shown on Drawing PE6555-4 – Analytical Testing Plan – Soil.

VOCs

No detectable VOC parameters were identified in any of the soil samples analyzed. The analytical results for the tested soil are shown on Drawing PE6555-4 – Analytical Testing Plan – Soil.

PAHs

All detected PAH parameter concentrations comply with the MECP Table 3 Commercial Standards. The analytical results for the tested soil are shown on Drawing PE6555-4 – Analytical Testing Plan – Soil.

Metals

All detected metal parameter concentrations comply with the MECP Table 3 Commercial Standards. The analytical results for the tested soil are shown on Drawing PE6555-4 – Analytical Testing Plan – Soil.

pH

All analytical results were found to be within the pH range of 5.0 and 9.0 and are therefore within the acceptable range for both surface and subsurface soils.

Maximum Soil Parameter Concentrations

The maximum concentration of each parameter identified in soil samples analyzed on the Phase II Property are presented in Table 5A: Maximum Concentrations – Soil, appended to this report.

5.6 Groundwater Quality

Four groundwater samples (plus one duplicate) were recovered from the monitoring wells installed in boreholes BH1-24 through BH3-24 and BH10-24 on June 13, 2024 and submitted for laboratory analysis of PHCs (F1-F4) and VOCs.

The results of the analytical testing are presented in Table 6: Groundwater Analytical Test Results, as well as on the laboratory certificates of analysis, appended to this report.

PHCs (F1-F4)

No detectable PHC concentrations were identified in any of the groundwater samples analyzed. The analytical results for the tested groundwater are shown on Drawing PE6555-5 – Analytical Testing Plan – Groundwater.

VOCs

No detectable VOC concentrations were identified in any of the groundwater samples analyzed. The analytical results for the tested groundwater are shown on Drawing PE6555-5 – Analytical Testing Plan – Groundwater.

5.7 Quality Assurance and Quality Control Results

All samples submitted as part of the June 2024 sampling events were handled in accordance with the Analytical Protocol with respect to preservation method, storage requirement, and container type. As per Subsection 47(3) of O.Reg. 153/04, as amended, under the Environmental Protection Act, a Certificate of Analysis has been received for each sample submitted for analysis and all Certificates of Analysis are appended to this report.

As per the Sampling and Analysis Plan, a duplicate soil sample was obtained from BH2-24-SS3 and submitted for laboratory analysis of BTEX and PHCs (F1-F4). A duplicate groundwater sample was also obtained from BH2-24-GW1 and submitted for laboratory analysis of PHCs (F1-F4) and VOCs. The duplicates were collected with the intent of calculating the relative percent difference (RPD) between duplicate sample values, as a way of assessing the quality of analytical test results. The RPD calculations for the soil and groundwater samples are provided in Table 7: QA/QC Calculations.

All of the RPD results are within the acceptable range. Based on the analytical laboratory results, it is our opinion that the overall quality of the field data collected during this Phase II-ESA is considered to be sufficient to meet the overall objectives of this assessment.

5.8 Phase II Conceptual Site Model

The following section has been prepared in accordance with the requirements of O.Reg. 153/04, as amended by the Environmental Protection Act. Conclusions and recommendations are discussed in a subsequent section.

Site Description

Potentially Contaminating Activity and Areas of Potential Environmental Concern

Based on the results of the Phase I ESA completed for the subject property, four on-site PCAs and four off-site PCAs were identified, which represent APECs on the Phase II Property. The APECs on the Phase II Property are as follows:

- APEC 1: Resulting from the presence of an equipment maintenance garage on-site (PCA 52).
- APEC 2A: Resulting from the presence of an aboveground furnace oil storage tank on-site (PCA 28).
- APEC 2B: Resulting from the presence of two aboveground fuel storage tanks on-site (PCA 28).
- APEC 2C: Resulting from the presence of an aboveground waste oil storage tank (PCA 28).
- APEC 3: Resulting from the former presence of a building materials yard operation on-site (PCA Other).
- APEC 4: Resulting from the former presence of an off-site service garage at 1038 Belfast Road (PCA 52).
- APEC 5: Resulting from the presence of the current off-site automotive service garage at 1550 Lagan Way (PCA 52).
- APEC 6: Resulting from the former presence of off-site underground storage tanks (PCA 28).
- APEC 7: Resulting from the former presence of an off-site rug cleaning operation (PCA 37).
- APEC 8: Resulting from the presence of fill material of unknown quality (PCA 30).

Several other PCAs were identified with respect to off-site properties situated within the Phase I Study Area. The remaining off-site PCAs identified are not considered to have resulted in APECs on the Phase II Property, based on their separation distances, and their hydraulically down- or cross-gradient orientations with respect to the Phase II Property.

Contaminants of Potential Concern

The contaminants of potential concern for the soil and/or groundwater on the Phase II Property include the following:

- Petroleum Hydrocarbons, Fractions 1 – 4 (PHCs F1-F4);
- Benzene, Toluene, Ethylbezene, and Xylenes (BTEX);
- Volatile Organic Compounds (VOCs);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Metals (including As, Sb and Se).

Subsurface Structures and Utilities

The Phase II ESA Property is situated in a municipally serviced area. Underground utilities and/or structures include gas, water and sewer services on the northwestern portion of the Phase II ESA Property. Several catchbasins were observed on the property in the northwestern portion of the Phase II ESA Property.

No other subsurface structures were identified on the Phase II Property.

Based on the findings of the Phase II ESA, underground utilities are not expected to have affected contaminant distribution and transport.

Physical Setting

Site Stratigraphy

Stratigraphy at the Phase II Property generally consists of the following:

- **Asphaltic Concrete** was identified at ground surface in BH2-24, BH4-24, BH10-24 and BH13-24, and extended to a maximum depth of 0.10 mbgs.
- **Fill Material** generally consisting of a mix of silty sand and clay, with gravel and crushed stone extended to a maximum depth of 2.36 mbgs. Groundwater was encountered in this layer in BH1-24, BH2-24 and BH10-24.
- **Native Silty Sand/Clay** was encountered in BH6-24 and BH7-24, and extended to a maximum depth of 2.21 mbgs. Groundwater was not encountered in this layer.

- **Glacial Till** consisting of silty sand to sandy silt with gravel, cobbles and boulders was encountered in all boreholes, and extended to a maximum depth of 3.89 mbgs. Groundwater was encountered in this layer in BH3-24.
- **Shale Bedrock** was encountered in BH10-24 at a depth of 2.74 mbgs.

The stratigraphy of the Phase II ESA Property, from ground to surface to the deepest aquifer or aquitard investigated, is provided in the Soil Profile and Test Data Sheets, appended to this report.

Hydrogeological Characteristics

Groundwater was encountered within the overburden in BH1-24 through BH3-24 and BH10-24 at depths ranging from approximately 0.64 m to 1.28 m below existing ground surface.

It should be noted that groundwater levels are expected to fluctuate throughout the year with seasonal variations. Groundwater contours are shown on Drawing PE6555-3 – Test Hole Location Plan.

Approximate Depth to Bedrock

Shale bedrock was encountered during the drilling program in BH10-24 at a depth of approximately 2.73 mbgs.

Approximate Depth to Water Table

The depth to the water table at the subject site varies between approximately 0.64 m to 1.28 m below existing grade.

Sections 41 and 43.1 of the Regulation

Section 41 of the Regulation does not apply to the Phase II ESA Property, in that the subject property is not within 30m of an environmentally sensitive area.

Section 43.1 of the Regulation does not apply to the Phase II ESA Property as bedrock is located more than 2m below ground surface.

Fill Placement

Fill material consisting of a mix of silty sand and clay, with gravel and crushed stone was identified in all of the boreholes, which extended to depths of 0.84 to 2.36 mbgs.

Existing Buildings and Structures

The northern portion of the Phase I Property is occupied by a two-storey office and maintenance building. Built sometime prior to 1965, the building is constructed with a poured concrete slab-on-grade foundation and is finished on the exterior with concrete blocks and bricks, in addition to a modified bitumen roof. An addition to the garage was completed circa 1976 and subsequently extended in the early 2000s with the addition of the new garage bays. The building is currently heated via a combination of electric baseboards and oil-fired furnace for the offices, and by natural gas heaters in the garage.

No other buildings or permanent structures are present on the Phase I Property.

Proposed Buildings and Other Structures

It is our understanding that the Phase II Property is to be redeveloped with an office and maintenance garage along the western property limits.

Areas of Natural Scientific Interest Water Bodies

No water bodies or areas of natural and scientific interest are present on the Phase I Property or within the Phase I Study Area. The nearest named water body with respect to the Phase I Property is Green's Creek, located approximately 1.5km to the east.

Environmental Condition

Areas Where Contaminants are Present

Based on the analytical results for soil and groundwater, there are no contaminants present on or beneath the Phase II ESA Property.

Types of Contaminants

Based on the analytical results for soil and groundwater, there are no contaminants on or beneath the Phase II ESA Property.

Contaminated Media

Based on the analytical results for soil and groundwater, there is no contaminated media on the Phase II ESA Property.

What Is Known About Areas Where Contaminants Are Present

No soil or groundwater contamination was identified on the Phase II ESA Property.

Distribution and Migration of Contaminants

Based on the findings of the Phase II ESA, no contaminant concentrations exceeding MECP Table 3 Commercial Standards were identified within the soil or groundwater on the Phase II Property.

Discharge of Contaminants

Based on the findings of this Phase II ESA, no contaminants have been discharged on the Phase II Property.

Climatic and Meteorological Conditions

In general, climatic and meteorological conditions have the potential to affect contaminant distribution. Two ways by which climatic and meteorological conditions may affect contaminant distribution include the downward leaching of contaminants by means of the infiltration of precipitation, and the migration of contaminants via groundwater levels and/or flow, which may fluctuate seasonally.

Based on the findings of this Phase II ESA, climatic and meteorological conditions are not considered to have affected contaminant distribution on the Phase II Property.

Potential for Vapour Intrusion

Based on the findings of this Phase II ESA, there is no potential for vapour intrusion on the Phase II Property.

6.0 CONCLUSIONS

Assessment

A Phase II ESA was conducted for the property addressed 1547 Lagan Way, in Ottawa, Ontario. The purpose of the Phase II ESA was to address potentially contaminating activities (PCAs) that were identified during the Phase I ESA and considered to result in areas of potential environmental concern (APECs) on the Phase II ESA Property.

The Phase II ESA subsurface investigation, which was conducted in conjunction with a geotechnical investigation, consisted of drilling thirteen boreholes across the Phase II Property. Four of the boreholes were constructed with groundwater monitoring wells. The general soil profile encountered during the field program consisted of fill material, followed by glacial till. Native silty sand and clay was encountered in BH6-24 and BH7-24. Shale bedrock was encountered in BH10-24 at a depth of 2.73 mbgs.

A total of eleven samples (plus one duplicate) were submitted for laboratory analysis of either, benzene, toluene, ethylbenzene, xylenes (BTEX), petroleum hydrocarbons (PHCs, F1-F4), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and metals (including As, Sb and Se). Based on the analytical test results, all soil results were observed to comply with the MECP Table 3 Commercial Standards.

Groundwater samples from monitoring wells installed in BH1-24 through BH3-24 and BH10-24 were submitted for laboratory analysis of PHCs (F1-F4) and VOCs. All groundwater results were observed to comply with the MECP Table 3 Non-Potable Standards.

Recommendations

Based on the analytical test results, the soil and groundwater beneath the Phase II Property complies the selected MECP Table 3 Standards. As such, it is our opinion that no further investigative work is required at this time.

Soil

During the course of future site re-development, any excess soil that has to be removed for construction purposes will have to be assessed against the excess soil regulation O.Reg. 406/19 standards, to determine appropriate disposal requirements. Based on the soil test results, the majority of the on-site soils

comply with Table 2.1 RPI of O.Reg. 406/19, for off-site disposal, with the exception of PHC Fractions 1 and 2 in BH10-24 and BH1-24, respectively. This soil can be reused on-site. Additional excess soil testing will likely be required at the time of future site excavation activities, depending upon the volume of excess soil generated from the future redevelopment.

Groundwater

It is recommended that monitoring wells installed on the Phase II Property be maintained for future monitoring. The monitoring wells must be decommissioned in accordance with O.Reg. 903 once they are no longer required.

7.0 STATEMENT OF LIMITATIONS

This Phase II - Environmental Site Assessment report has been prepared under the supervision of a Qualified Person, in general accordance with O.Reg. 153/04, as amended, and meets the requirements of CSA Z769-00 (reaffirmed 2016). The conclusions presented herein are based on information gathered from a limited sampling and testing program. The test results represent conditions at specific test locations at the time of the field program.

The client should be aware that any information pertaining to soils and all test hole logs are furnished as a matter of general information only and test hole descriptions or logs are not to be interpreted as descriptive of conditions at locations other than those of the test holes themselves.

Should any conditions be encountered at the subject site and/or historical information that differ from our findings, we request that we be notified immediately in order to allow for a reassessment.

This report was prepared for the sole use of R.J.L Terra Plus Inc. Notification from R.J.L Terra Plus Inc. and Paterson Group will be required to release this report to any other party.

Paterson Group Inc.

Joshua Dempsey, B.Sc.

Mark D'Arcy, P.Eng., QP_{ESA}

Report Distribution:

- R.J.L Terra Plus Inc.
- Paterson Group Inc.

FIGURES

FIGURE 1 – KEY PLAN

DRAWING PE6555-1 – SITE PLAN

DRAWING PE6555-2 – SURROUNDING LAND USE PLAN

DRAWING PE6555-3 – TEST HOLE LOCATION PLAN & GROUNDWATER CONTOUR PLAN

DRAWING PE6555-4 – ANALYTICAL TESTING PLAN – SOIL

DRAWING PE6555-5 – ANALYTICAL TESTING PLAN – GROUNDWATER

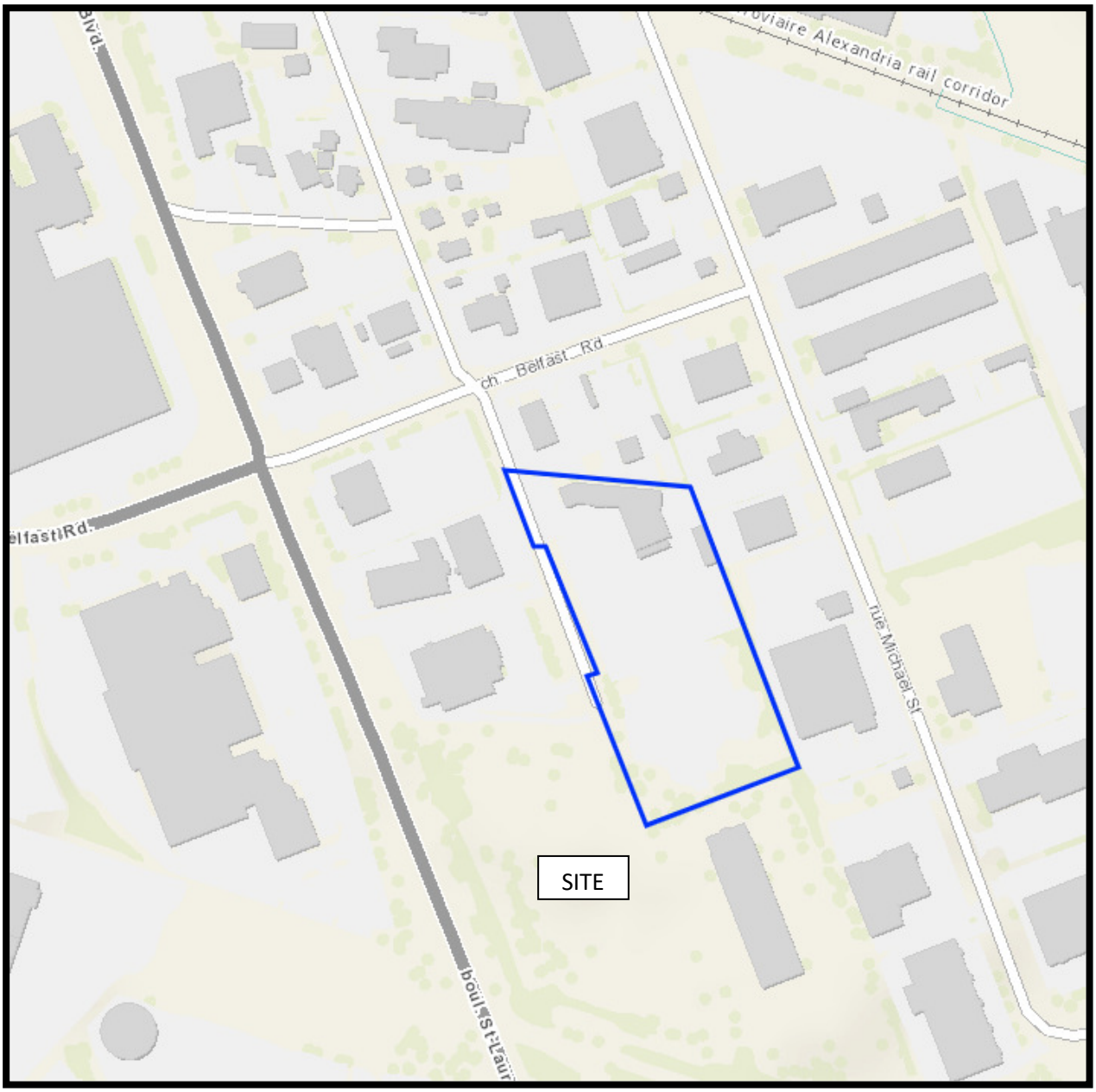
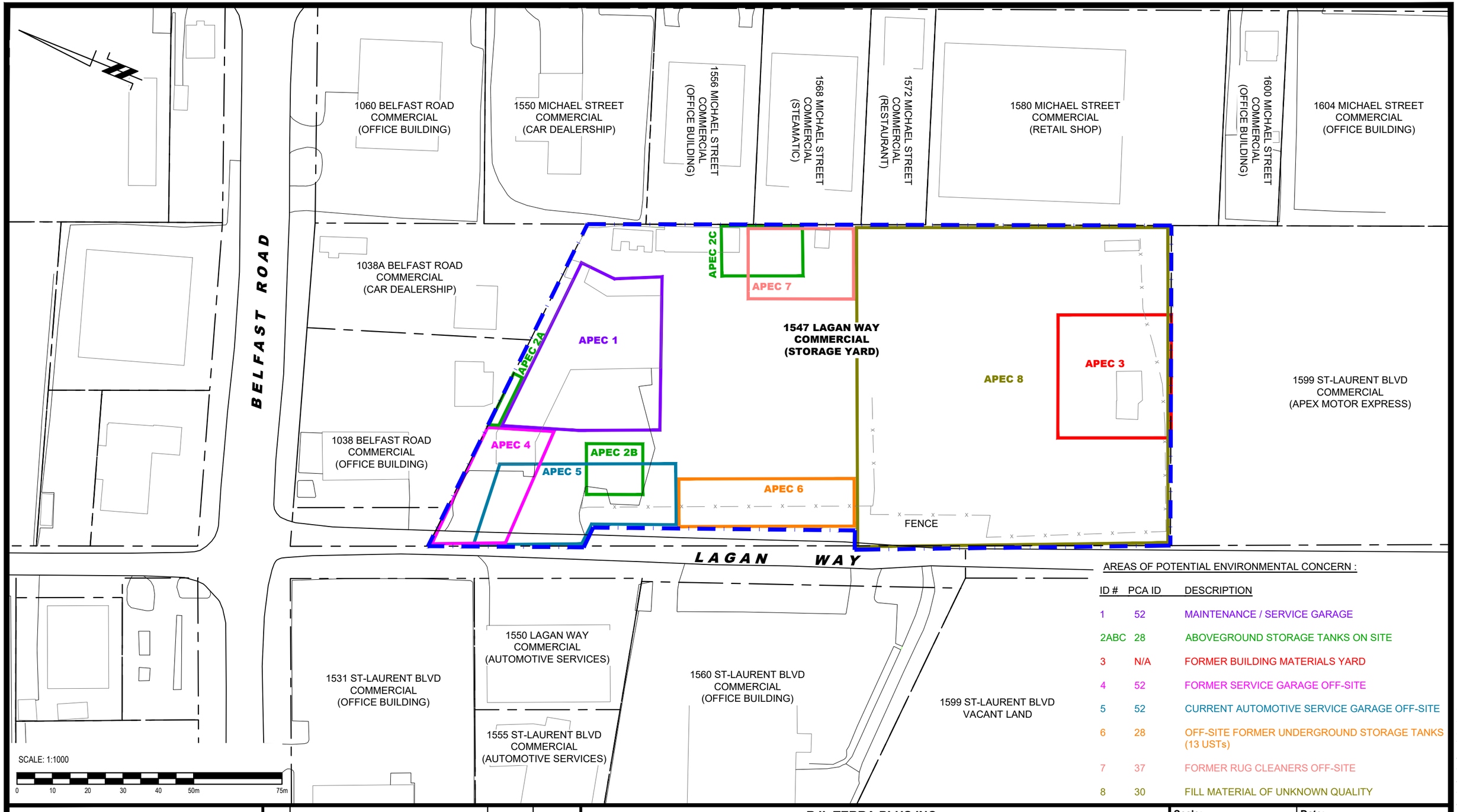


FIGURE 1

KEY PLAN

PATERSON GROUP



AREAS OF POTENTIAL ENVIRONMENTAL CONCERN :

ID #	PCA ID	DESCRIPTION
1	52	MAINTENANCE / SERVICE GARAGE
2ABC	28	ABOVEGROUND STORAGE TANKS ON SITE
3	N/A	FORMER BUILDING MATERIALS YARD
4	52	FORMER SERVICE GARAGE OFF-SITE
5	52	CURRENT AUTOMOTIVE SERVICE GARAGE OFF-SITE
6	28	OFF-SITE FORMER UNDERGROUND STORAGE TANKS (13 USTs)
7	37	FORMER RUG CLEANERS OFF-SITE
8	30	FILL MATERIAL OF UNKNOWN QUALITY

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

RJL TERRA PLUS INC.

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
1547 LAGAN WAY

OTTAWA, ONTARIO

Title:

SITE PLAN

Scale: 1:1000	Date: 07/2024
Drawn by: GK	Report No.: PE6555-1
Checked by: JD	Dwg. No.: PE6555-1
Approved by: MSD	Revision No.:

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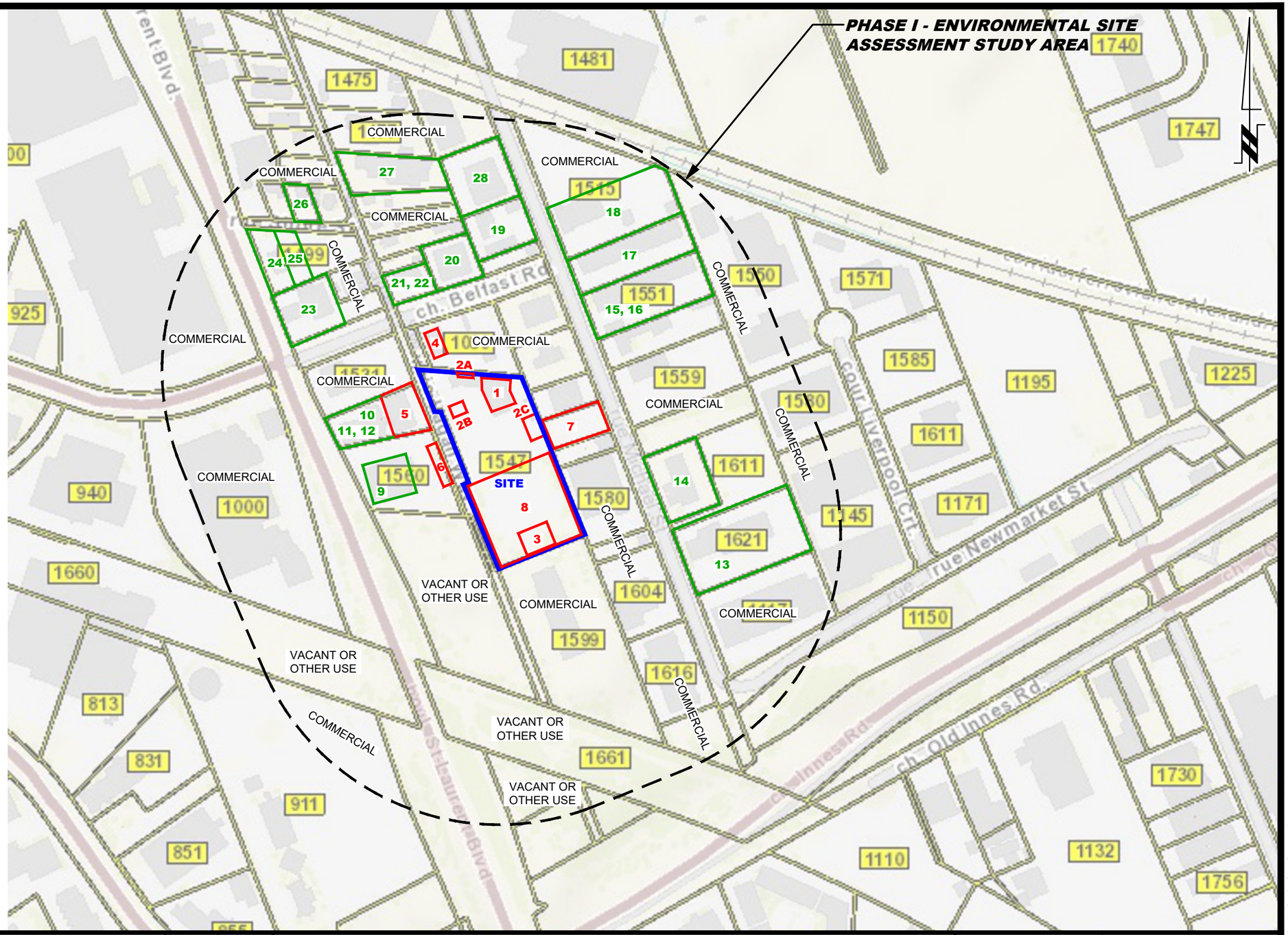
11x17

POTENTIALLY CONTAMINATING ACTIVITIES :

ID #	PCA ID	DESCRIPTION
1	52	SERVICE/MAINTENANCE GARAGE
2A,B,C	28	ABOVEGROUND STORAGE TANKS
3.	N/A	FORMER BUILDING MATERIALS YARD
4.	52	FORMER SERVICE GARAGE
5.	52	CURRENT AUTOMOTIVE SERVICE GARAGE
6.	28	FORMER UNDERGROUND STORAGE TANKS
7.	37	FORMER RUG CLEANERS
8	30	FILL MATERIAL OF UNKNOWN QUALITY
9.	52	FORMER AUTOMOTIVE SERVICE GARAGES
10.	52	FORMER AUTOMOTIVE SERVICE GARAGE
11.	34	FORMER ALUMINUM MANUFACTURING
12.	10	CURRENT COMMERCIAL AUTO BODY SHOP
13.	52	AUTOMOTIVE PARTS SUPPLIES WAREHOUSE
14.	N/A	FORMER METAL PRODUCTS WAREHOUSE
15.	52	CURRENT AUTOMOTIVE SERVICE GARAGE
16.	34	FORMER IRON AND WELDING WORKS
17.	52	CURRENT AUTOMOTIVE SERVICE GARAGE
18.	52, 28	CURRENT AUTOMOTIVE SERVICE GARAGE AND ABOVEGROUND STORAGE TANKS (ASTS)
19.	52	CURRENT AUTOMOTIVE SERVICE GARAGE
20.	52	CURRENT AUTOMOTIVE SERVICE GARAGES
21.	N/A	FORMER CONTRACTOR STORAGE YARD
22.	52	CURRENT AUTOMOTIVE SERVICE GARAGE
23.	52, 28	CURRENT RETAIL FUEL OUTLET AND AUTOMOTIVE SERVICE GARAGE
24.	52	FORMER RETAIL FUEL OUTLET
25.	28	FORMER FUEL OIL DEPOT
26.	52	CURRENT AUTOMOTIVE SERVICE GARAGE
27.	52	CURRENT AUTOMOTIVE SERVICE GARAGE
28.	52	CURRENT AUTOMOTIVE SERVICE GARAGES

SCALE: 1:4000

0 50 100 150 200 250m



NO.	REVISIONS	DATE	INITIAL

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9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
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RJL TERRA PLUS INC.

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
1547 LAGAN WAY

OTTAWA, ONTARIO

Title:

SURROUNDING LAND USE PLAN

Scale: 1:4000	Date: 07/2024
Drawn by: GK	Report No.: PE6555-1
Checked by: JD	Dwg. No.: PE6555-2
Approved by: MSD	Revision No.:

11x17

p:\autocad drawings\environmental\pe65xx\pe6555\pe6555-2 surrounding land use plan.dwg

1060 BELFAST ROAD COMMERCIAL (OFFICE BUILDING)

1550 MICHAEL STREET COMMERCIAL (CAR DEALERSHIP)

1556 MICHAEL STREET COMMERCIAL (OFFICE BUILDING)

1568 MICHAEL STREET COMMERCIAL (STEAMATIC)

1572 MICHAEL STREET COMMERCIAL (RESTAURANT)

1580 MICHAEL STREET COMMERCIAL (RETAIL SHOP)

1600 MICHAEL STREET COMMERCIAL (OFFICE BUILDING)

1604 MICHAEL STREET COMMERCIAL (OFFICE BUILDING)

BELFAST ROAD

1038A BELFAST ROAD COMMERCIAL (CAR DEALERSHIP)

1038 BELFAST ROAD COMMERCIAL (OFFICE BUILDING)

APEC 2C

BH 3-24
69.05
(68.09)

APEC 7

1547 LAGAN WAY COMMERCIAL (STORAGE YARD)

APEC 1

APEC 2A

BH 12-24
68.72

BH 5-24
69.66

BH 13-24
69.51

APEC 3

APEC 8

1599 ST-LAURENT BLVD COMMERCIAL (APEX MOTOR EXPRESS)

G1

BH 2-24
68.28
(67.64)

(0.012m/m)

BH 11-24
68.74

BH 8-24
69.38

BH 6-24
69.54

APEC 4

APEC 2B

BH 9-24
68.26

APEC 5

BH 4-24
68.35

BH 10-24
68.40
[65.65]
(67.12)

APEC 6

BH 1-24
68.60
(67.39)

BH 7-24
69.18

FENCE

LAGAN WAY

1550 LAGAN WAY COMMERCIAL (AUTOMOTIVE SERVICES)

1531 ST-LAURENT BLVD COMMERCIAL (OFFICE BUILDING)

1560 ST-LAURENT BLVD COMMERCIAL (OFFICE BUILDING)

1599 ST-LAURENT BLVD VACANT LAND

1555 ST-LAURENT BLVD COMMERCIAL (AUTOMOTIVE SERVICES)

LEGEND:

- PHASE I & II PROPERTY BOUNDARY
- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- X G1 — SOIL SAMPLE LOCATION
- 68.40 — GROUND SURFACE ELEVATION (m)
- [65.65] — BEDROCK SURFACE ELEVATION (m)
- (58.47) — GROUNDWATER SURFACE ELEV. (m) (JUNE 13, 2024)
- 67.5 — GROUNDWATER CONTOUR (m)
- (0.012m/m) — APPROX.GROUNDWATER FLOW DIRECTION (HORIZONTAL HYDRAULIC GRADIENT)

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:1000

0 10 20 30 40 50m 75m

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN :

ID #	PCA ID	DESCRIPTION
1	52	MAINTENANCE / SERVICE GARAGE
2ABC	28	ABOVEGROUND STORAGE TANKS ON SITE
3	N/A	FORMER BUILDING MATERIALS YARD
4	52	FORMER SERVICE GARAGE OFF-SITE
5	52	CURRENT AUTOMOTIVE SERVICE GARAGE OFF-SITE
6	28	OFF-SITE FORMER UNDERGROUND STORAGE TANKS (13 USTs)
7	37	FORMER RUG CLEANERS OFF-SITE
8	30	FILL MATERIAL OF UNKNOWN QUALITY

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

RJL TERRA PLUS INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1547 LAGAN WAY

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:1000	Date: 07/2024
Drawn by: GK	Report No.: PE6555-2
Checked by: JD	Dwg. No.: PE6555-3
Approved by: MSD	Revision No.:

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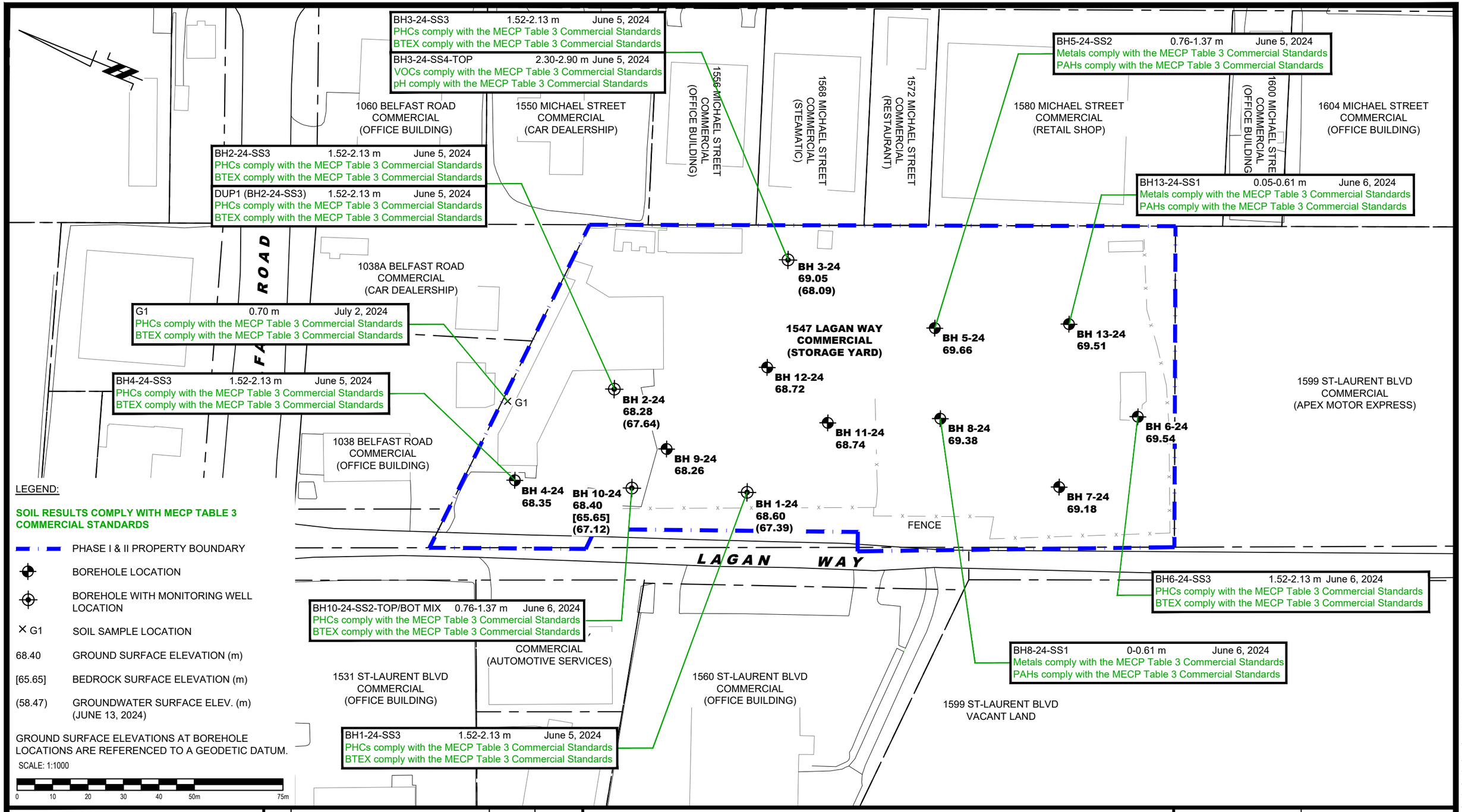
11x17



LEGEND:

SOIL RESULTS COMPLY WITH MECP TABLE 3 COMMERCIAL STANDARDS

- PHASE I & II PROPERTY BOUNDARY
- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- × G1 SOIL SAMPLE LOCATION
- 68.40 GROUND SURFACE ELEVATION (m)
- [65.65] BEDROCK SURFACE ELEVATION (m)
- (58.47) GROUNDWATER SURFACE ELEV. (m) (JUNE 13, 2024)

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:1000

0 10 20 30 40 50m 75m

PATERSON GROUP
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OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

RJL TERRA PLUS INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1547 LAGAN WAY

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN (SOIL)

Scale: 1:1000	Date: 07/2024
Drawn by: GK	Report No.: PE6555-2
Checked by: JD	Dwg. No.: PE6555-4
Approved by: MSD	Revision No.:

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11x17

BH3-24-GW1 2.11-3.63 m June 13, 2024
PHCs comply with the MECP Table 3 Non-Potable Standards
VOCs comply with the MECP Table 3 Non-Potable Standards

BH2-24-GW1 1.78-2.39 m June 13, 2024
PHCs comply with the MECP Table 3 Non-Potable Standards
VOCs comply with the MECP Table 3 Non-Potable Standards

DUP (BH2-24-GW1) 1.78-2.39 m June 13, 2024
PHCs comply with the MECP Table 3 Non-Potable Standards
VOCs comply with the MECP Table 3 Non-Potable Standards

1060 BELFAST ROAD
COMMERCIAL
(OFFICE BUILDING)

1550 MICHAEL STREET
COMMERCIAL
(CAR DEALERSHIP)

1556 MICHAEL STREET
COMMERCIAL
(OFFICE BUILDING)

1568 MICHAEL STREET
COMMERCIAL
(STEAMATIC)

1572 MICHAEL STREET
COMMERCIAL
(RESTAURANT)

1580 MICHAEL STREET
COMMERCIAL
(RETAIL SHOP)

1600 MICHAEL STREET
COMMERCIAL
(OFFICE BUILDING)

1604 MICHAEL STREET
COMMERCIAL
(OFFICE BUILDING)

BELFAST ROAD

1038A BELFAST ROAD
COMMERCIAL
(CAR DEALERSHIP)

1038 BELFAST ROAD
COMMERCIAL
(OFFICE BUILDING)

BH 3-24
69.05
(68.09)

1547 LAGAN WAY
COMMERCIAL
(STORAGE YARD)

BH 5-24
69.66

BH 13-24
69.51

BH 12-24
68.72

BH 2-24
68.28
(67.64)

G1

BH 11-24
68.74

BH 8-24
69.38

BH 6-24
69.54

1599 ST-LAURENT BLVD
COMMERCIAL
(APEX MOTOR EXPRESS)

BH 9-24
68.26

BH 4-24
68.35

BH 10-24
68.40
[65.65]
(67.12)

BH 1-24
68.60
(67.39)

BH 7-24
69.18

FENCE

LAGAN WAY

BH10-24-GW1 1.38-2.90 m June 13, 2024
PHCs comply with the MECP Table 3 Non-Potable Standards
VOCs comply with the MECP Table 3 Non-Potable Standards

COMMERCIAL
(AUTOMOTIVE SERVICES)

1531 ST-LAURENT BLVD
COMMERCIAL
(OFFICE BUILDING)

1560 ST-LAURENT BLVD
COMMERCIAL
(OFFICE BUILDING)

1599 ST-LAURENT BLVD
VACANT LAND

1555 ST-LAURENT BLVD
COMMERCIAL
(AUTOMOTIVE SERVICES)

BH1-24-GW1 1.40-2.92 m June 13, 2024
PHCs comply with the MECP Table 3 Non-Potable Standards
VOCs comply with the MECP Table 3 Non-Potable Standards

LEGEND:

GROUNDWATER RESULTS COMPLY WITH MECP TABLE 3 NON-POTABLE STANDARDS

- PHASE I & II PROPERTY BOUNDARY
- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- × G1 SOIL SAMPLE LOCATION
- 68.40 GROUND SURFACE ELEVATION (m)
- [65.65] BEDROCK SURFACE ELEVATION (m)
- (58.47) GROUNDWATER SURFACE ELEV. (m) (JUNE 13, 2024)

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:1000

0 10 20 30 40 50m 75m

PATERSON GROUP
9 AURIGA DRIVE
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K2E 7T9
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NO.	REVISIONS	DATE	INITIAL

RJL TERRA PLUS INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1547 LAGAN WAY

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN (GROUNDWATER)

Scale: 1:1000	Date: 07/2024
Drawn by: GK	Report No.: PE6555-2
Checked by: JD	Dwg. No.: PE6555-5
Approved by: MSD	Revision No.:

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11x17

APPENDIX 1

SAMPLING AND ANALYSIS PLAN

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

LABORATORY CERTIFICATES OF ANALYSIS

PATERSON GROUP

Sampling and Analysis Plan

1547 Lagan Way
Ottawa, Ontario

Prepared for R.J.L Terra Plus Inc.

Report: PE6555-SAP
Date: June 3, 2024

TABLE OF CONTENTS

1.0 SAMPLING PROGRAM

Paterson Group Inc. (Paterson) was commissioned by R.J.L Terra Plus Inc., to conduct a Phase II – Environmental Site Assessment (Phase II ESA) at 1547 Lagan Way, in the City of Ottawa, Ontario.

Based on the findings of the Phase I ESA, the following subsurface investigation program was developed. It should be noted that the Phase II ESA was carried out in conjunction with a geotechnical investigation.

Borehole	Location & Rationale	Proposed Depth & Rationale
BH1-24	Placed on the central west portion of the Phase II Property to assess for potential soil and groundwater impacts resulting from the identified APECs and for horizontal and/or vertical delineation purposes.	5-7 m; Drill to intercept water table for monitoring well installation. Core bedrock if there is no evidence of water in the overburden.
BH2-24	Placed on the northern portion of the Phase II Property to assess for potential soil and groundwater impacts resulting from the identified APECs and for horizontal and/or vertical delineation purposes.	4-5 m; Drill to intercept water table for monitoring well installation. Core bedrock if there is no evidence of water in the overburden.
BH3-24	Placed on the central east portion of the Phase II Property to assess for potential soil and groundwater impacts resulting from the identified APECs and for horizontal and/or vertical delineation purposes.	4-5 m; Drill to intercept water table for monitoring well installation. Core bedrock if there is no evidence of water in the overburden.
BH4-24	Placed on the northwestern portion of the Phase II Property to assess for potential impacts resulting from the identified APECs and for horizontal and/or vertical delineation purposes.	4-5 m; For geotechnical and coverage purposes.
BH5-24	Placed on the southern portion of the Phase II Property to assess for potential soil impacts resulting from the identified APECs and for horizontal and/or vertical delineation purposes.	4-5 m; For geotechnical and coverage purposes.
BH6-24	Placed on the southern portion of the Phase II Property to assess for potential soil impacts resulting from the identified APECs and for horizontal and/or vertical delineation purposes.	5-7 m; For geotechnical and coverage purposes.
BH7-24	Placed on the southwestern portion of the Phase II Property to assess for potential soil impacts resulting from the identified APECs and for horizontal and/or vertical delineation purposes.	5-7 m; For geotechnical and coverage purposes.
BH8-24	Placed on the southern portion of the Phase II Property to assess for potential soil impacts resulting from the identified APECs and for horizontal and/or vertical delineation purposes.	5-7 m; For geotechnical and coverage purposes.
BH9-24	Placed on the northern portion of the Phase II Property for general coverage purposes.	5-7 m; For geotechnical and coverage purposes.
BH10-24	Placed on the northwestern portion of the Phase II Property to assess for potential soil and groundwater impacts resulting from the identified APECs and for horizontal and/or vertical delineation purposes.	5-7 m; Drill to intercept water table for monitoring well installation. Core bedrock if there is no evidence of water in the overburden.

Borehole	Location & Rationale	Proposed Depth & Rationale
BH11-24	Placed on central portion of the Phase II Property for general coverage purposes.	5-7 m; For geotechnical and coverage purposes.
BH12-24	Placed on central portion of the Phase II Property for general coverage purposes.	4-5 m; For geotechnical and coverage purposes.
BH13-24	Placed on southeastern portion of the Phase II Property to assess for potential soil impacts resulting from the identified APECs and for horizontal and/or vertical delineation purposes.	4-5 m; For geotechnical and coverage purposes.

Borehole locations are shown on Drawing PE6555-3 – Test Hole Location Plan, appended to the main report.

At each borehole, split-spoon samples of the overburden soils will be obtained at 0.76 m (2'6") intervals until practical refusal to augering. All soil samples will be retained, and samples will be selected for submission following a preliminary screening analysis.

Following the borehole drilling, groundwater monitoring wells will be installed in all boreholes for the collection of groundwater samples.

2.0 ANALYTICAL TESTING PROGRAM

The analytical testing program for soil at the subject site is based on the following general considerations:

- ❒ At least one sample from each borehole should be submitted, in order to delineate the horizontal extent of contamination across the site.
- ❒ At least one sample from each stratigraphic unit should be submitted, in order to delineate the vertical extent of contamination at the site.
- ❒ In boreholes where there is visual or olfactory evidence of contamination, or where organic vapour meter or photoionization detector readings indicate the presence of contamination, the 'worst-case' sample from each borehole should be submitted for comparison with MECP site condition standards.
- ❒ In boreholes with evidence of contamination as described above, a sample should be submitted from the stratigraphic unit below the 'worst-case' sample to determine whether the contaminant(s) have migrated downward.
- ❒ Parameters analyzed should be consistent with the Contaminants of Potential Concern identified in the Phase I ESA.

The analytical testing program for groundwater at the subject site is based on the following general considerations:

- ❒ Groundwater monitoring wells should be installed in all boreholes with visual or olfactory evidence of soil contamination, in stratigraphic units where soil contamination was encountered, where those stratigraphic units are at or below the water table (i.e. a water sample can be obtained).
- ❒ Groundwater monitoring well screens should straddle the water table at sites where the contaminants of concern are suspected to be LNAPLs.
- ❒ At least one groundwater monitoring well should be installed in a stratigraphic unit below the suspected contamination, where said stratigraphic unit is water-bearing.
- ❒ Parameters analyzed should be consistent with the Contaminants of Concern identified in the Phase I ESA and with the contaminants identified in the soil samples.

3.0 STANDARD OPERATING PROCEDURES

3.1 Environmental Drilling Procedure

Purpose

The purpose of environmental boreholes is to identify and/or delineate contamination within the soil and/or to install groundwater monitoring wells in order to identify contamination within the groundwater.

Equipment

The following is a list of equipment that is in addition to regular drilling equipment stated in the geotechnical drilling SOP:

- ❒ Glass soil sample jars
- ❒ two buckets
- ❒ cleaning brush (toilet brush works well)
- ❒ dish detergent
- ❒ methyl hydrate
- ❒ water (if not available on site - water jugs available in trailer)
- ❒ latex or nitrile gloves (depending on suspected contaminant)
- ❒ RKI Eagle organic vapour meter or MiniRae photoionization detector (depending on contamination suspected)

Determining Borehole Locations

If conditions on site are not as suspected, and planned borehole locations cannot be drilled, **call the office to discuss**. Alternative borehole locations will be determined in conversation with the field technician and supervising engineer.

After drilling is completed a plan with the borehole locations must be provided. Distances and orientations of boreholes with respect to site features (buildings, roadways, etc.) must be provided. Distances should be measured using a measuring tape or wheel rather than paced off. Ground surface elevations at each borehole should be surveyed relative to a geodetic benchmark, if one is available, or a temporary site benchmark which can be tied in at a later date if necessary.

Drilling Procedure

The actual drilling procedure for environmental boreholes is the same as geotechnical boreholes (see SOP for drilling and sampling) with a few exceptions as follows:

- ❒ Continuous split spoon samples (every 0.6 m or 2') or semi-continuous (every 0.76 m or 2'6") are required.
- ❒ Make sure samples are well sealed in plastic bags with no holes prior to screening and are kept cool but unfrozen.
- ❒ If sampling for VOCs, BTEX, or PHCs F_1, a soil core from each soil sample, which may be analyzed, must be taken and placed in the laboratory-provided methanol vial.
- ❒ Note all and any odours or discolouration of samples.
- ❒ Split spoon samplers must be washed between samples.
- ❒ If obvious contamination is encountered, continue sampling until vertical extent of contamination is delineated.
- ❒ As a general rule, environmental boreholes should be deep enough to intercept the groundwater table (unless this is impossible/impractical - call project manager to discuss).
- ❒ If at all possible, soil samples should be submitted to a preliminary screening procedure on site, either using a RKI Eagle, PID, etc. depending on type of suspected contamination.

Spoon Washing Procedure

All sampling equipment (spilt spoons, etc.) must be washed between samples in order to prevent cross contamination of soil samples.

- ❒ Obtain two buckets of water (preferably hot if available)
- ❒ Add a small amount of dish soap to one bucket
- ❒ Scrub spoons with brush in soapy water, inside and out, including tip
- ❒ Rinse in clean water
- ❒ Apply a small amount of methyl hydrate to the inside of the spoon. (A spray bottle or water bottle with a small hole in the cap works well)
- ❒ Allow to dry (takes seconds)
- ❒ Rinse with distilled water, a spray bottle works well.

The methyl hydrate eliminates any soap residue that may be on the spoon and is especially important when dealing with suspected VOCs.

Screening Procedure

The RKI Eagle is used to screen most soil samples, particularly where petroleum hydrocarbon contamination is suspected. The MiniRae is used when VOCs are suspected, however it also can be useful for detecting petroleum. These tools are for screening purposes only and cannot be used in place of laboratory testing. Vapour results obtained from the RKI Eagle and the PID are relative and must be interpreted.

Screening equipment should be calibrated on an approximately monthly basis, more frequently if heavily used.

- ❒ Samples should be brought to room temperature; this is specifically important in colder weather. Soil must not be frozen.
- ❒ Turn instrument on and allow to come to zero - calibrate if necessary
- ❒ If using RKI Eagle, ensure instrument is in methane elimination mode unless otherwise directed.
- ❒ Ensure measurement units are ppm (parts per million) initially. RKI Eagle will automatically switch to %LEL (lower explosive limit) if higher concentrations are encountered.
- ❒ Break up large lumps of soil in the sample bag, taking care not to puncture bag.
- ❒ Insert probe into soil bag, creating a seal with your hand around the opening.
- ❒ Gently manipulate soil in bag while observing instrument readings.
- ❒ Record the highest value obtained in the first 15 to 25 seconds
- ❒ Make sure to indicate scale (ppm or LEL); also note which instrument was used (RKI Eagle 1 or 2, or MiniRae).
- ❒ Jar samples and refrigerate as per Sampling and Analysis Plan.

3.2 Monitoring Well Installation Procedure

Equipment

- ❒ 5’ x 2” threaded sections of Schedule 40 PVC slotted well screen (5’ x 1 ¼” if installing in cored hole in bedrock)
- ❒ 5’ x 2” threaded sections of Schedule 40 PVC riser pipe (5’ x 1 ¼” if installing in cored hole in bedrock)
- ❒ Threaded end-cap
- ❒ Slip-cap or J-plug
- ❒ Asphalt cold patch or concrete
- ❒ Silica Sand
- ❒ Bentonite chips (Holeplug)
- ❒ Steel flushmount casing

Procedure

- ❒ Drill borehole to required depth, using drilling and sampling procedures described above.
- ❒ If borehole is deeper than required monitoring well, backfill with bentonite chips to required depth. This should only be done on wells where contamination is not suspected, in order to prevent downward migration of contamination.
- ❒ Only one monitoring well should be installed per borehole.
- ❒ Monitoring wells should not be screened across more than one stratigraphic unit to prevent potential migration of contaminants between units.
- ❒ Where LNAPLs are the suspected contaminants of concern, monitoring wells should be screened straddling the water table in order to capture any free product floating on top of the water table.
- ❒ Thread the end cap onto a section of screen. Thread second section of screen if required. Thread risers onto screen. Lower into borehole to required depth. Ensure slip-cap or J-plug is inserted to prevent backfill materials entering well.
- ❒ As drillers remove augers, backfill borehole annulus with silica sand until the level of sand is approximately 0.3 m above the top of the screen.
- ❒ Backfill with holeplug until at least 0.3 m of holeplug is present above the top of the silica sand.
- ❒ Backfill remainder of borehole with holeplug or with auger cuttings (if contamination is not suspected).
- ❒ Install flushmount casing. Seal space between flushmount and borehole annulus with concrete, cold patch, or holeplug to match surrounding ground surface.

3.3 Monitoring Well Sampling Procedure

Equipment

- ❒ Water level metre or interface probe on hydrocarbon/LNAPL sites
- ❒ Spray bottles containing water and methanol to clean water level tape or interface probe
- ❒ Peristaltic pump
- ❒ Polyethylene tubing for peristaltic pump
- ❒ Flexible tubing for peristaltic pump
- ❒ Latex or nitrile gloves (depending on suspected contaminant)
- ❒ Allen keys and/or 9/16" socket wrench to remove well caps
- ❒ Graduated bucket with volume measurements
- ❒ pH/Temperature/Conductivity combo pen
- ❒ Laboratory-supplied sample bottles

Sampling Procedure

- ❒ Locate well and use socket wrench or Allan key to open metal flush mount protector cap. Remove plastic well cap.
- ❒ Measure water level, with respect to existing ground surface, using water level meter or interface probe. If using interface probe on suspected NAPL site, measure the thickness of free product.
- ❒ Measure total depth of well.
- ❒ Clean water level tape or interface probe using methanol and water. Change gloves between wells.
- ❒ Calculate volume of standing water within well and record.
- ❒ Insert polyethylene tubing into well and attach to peristaltic pump. Turn on peristaltic pump and purge into graduated bucket. Purge at least three well volumes of water from the well. Measure and record field chemistry. Continue to purge, measuring field chemistry after every well volume purged, until appearance or field chemistry stabilizes.
- ❒ Note appearance of purge water, including colour, opacity (clear, cloudy, silty), sheen, presence of LNAPL, and odour. Note any other unusual features (particulate matter, effervescence (bubbling) of dissolved gas, etc.).
- ❒ Fill required sample bottles. If sampling for metals, attach 75-micron filter to discharge tube and filter metals sample. If sampling for VOCs, use low flow rate to ensure continuous stream of non-turbulent flow into sample bottles. Ensure no headspace is present in VOC vials.
- ❒ Replace well cap and flushmount casing cap.

4.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

The QA/QC program for this Phase II-ESA is as follows:

- ❒ All non-dedicated sampling equipment (split spoons) will be decontaminated according to the SOPs listed above.
- ❒ All groundwater sampling equipment is dedicated (polyethylene and flexible peristaltic tubing is replaced for each well).
- ❒ Where groundwater samples are to be analyzed for VOCs, one laboratory-provided trip blank will be submitted for analysis with every laboratory submission.
- ❒ Approximately one (1) field duplicate will be submitted for every ten (10) samples submitted for laboratory analysis. A minimum of one (1) field duplicate per project will be submitted. Field duplicates will be submitted for soil and groundwater samples.
- ❒ Where combo pens are used to measure field chemistry, they will be calibrated on an approximately monthly basis, according to frequency of use.

5.0 DATA QUALITY OBJECTIVES

The purpose of setting data quality objectives (DQOs) is to ensure that the level of uncertainty in data collected during the Phase II ESA is low enough that decision-making is not affected, and that the overall objectives of the investigation are met.

The quality of data is assessed by comparing field duplicates with original samples. If the relative percent difference (RPD) between the duplicate and the sample is within 20%, the data are considered to be of sufficient quality so as not to affect decision-making. The RPD is calculated as follows:

$$RPD = \left| \frac{x_1 - x_2}{(x_1 + x_2)/2} \right| \times 100\%$$

Where x_1 is the concentration of a given parameter in an original sample and x_2 is the concentration of that same parameter in the field duplicate sample.

For the purpose of calculating the RPD, it is desirable to select field duplicates from samples for which parameters are present in concentrations above laboratory detection limits, i.e. samples which are expected to be contaminated. If parameters are below laboratory detection limits for selected samples or duplicates, the RPD may be calculated using a concentration equal to one half the laboratory detection limit.

It is also important to consider data quality in the overall context of the project. For example, if the DQOs are not met for a given sample, yet the concentrations of contaminants in both the sample and the duplicate exceed the MOE site remediation standards by a large margin, the decision-making usefulness of the sample may not be considered to be impaired. The proximity of other samples which meet the DQOs must also be considered in developing the Phase II Conceptual Site Model; often there are enough data available to produce a reliable Phase II Conceptual Site Model even if DQOs are not met for certain individual samples.

These considerations are discussed in the body of the report.

6.0 PHYSICAL IMPEDIMENTS TO SAMPLING & ANALYSIS PLAN

Physical impediments to the Sampling and Analysis plan may include:

- ❒ The location of underground utilities
- ❒ Poor recovery of split-spoon soil samples
- ❒ Insufficient groundwater volume for groundwater samples
- ❒ Breakage of sampling containers following sampling or while in transit to the laboratory
- ❒ Elevated detection limits due to matrix interference (generally related to soil colour or presence of organic material)
- ❒ Elevated detection limits due to high concentrations of certain parameters, necessitating dilution of samples in laboratory
- ❒ Drill rig breakdowns
- ❒ Winter conditions
- ❒ Other site-specific impediments

Site-specific impediments to the Sampling and Analysis plan are discussed in the body of the Phase II-ESA report.

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9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

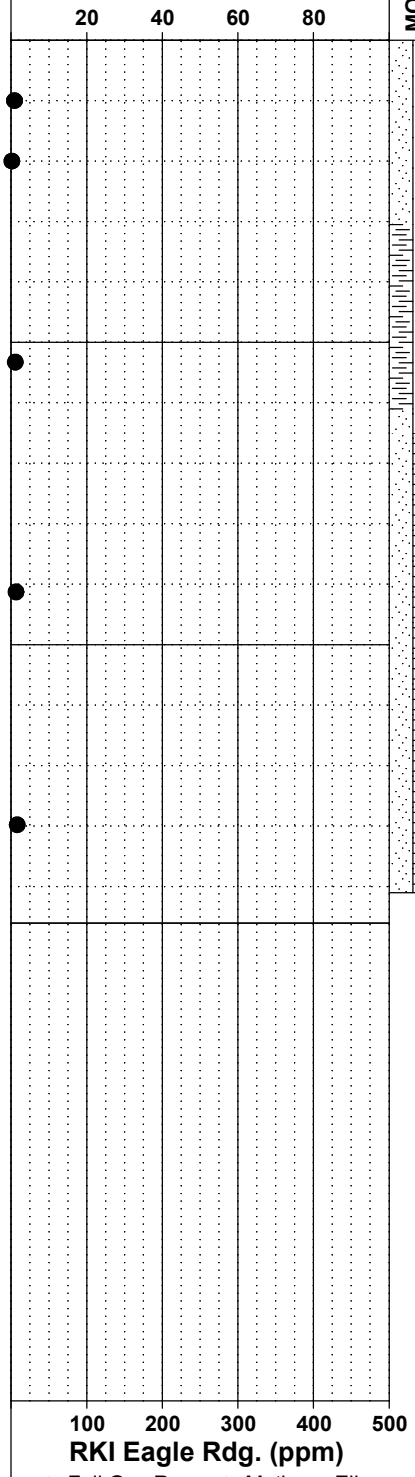
Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373046.654 **NORTHING:** 5030499.942 **ELEVATION:** 68.60
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 5, 2024

FILE NO. PE6555
HOLE NO. BH 1-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	68.60
FILL: Compact brown silty sand with gravel and crushed stone							
- Some clay by 0.3 m depth		SS	1	75	19		
0.46							
FILL: Compact brown silty sand						1	67.60
		SS	2	58	17		
1.45							
FILL: Stiff brown to grey silty clay with sand and gravel, trace topsoil							
		SS	3	54	7		
2.13						2	66.60
GLACIAL TILL: Dense grey silty sand to sandy silt with gravel, occasional cobbles and boulders							
		SS	4	67	38		
2.92							
End of Borehole							
Practical refusal on inferred bedrock or boulder at 2.92 m depth							
(GWL at 1.21 m depth - June 13, 2024)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ **Lower Explosive Limit %**



MONITORING WELL CONSTRUCTION

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SOIL PROFILE AND TEST DATA

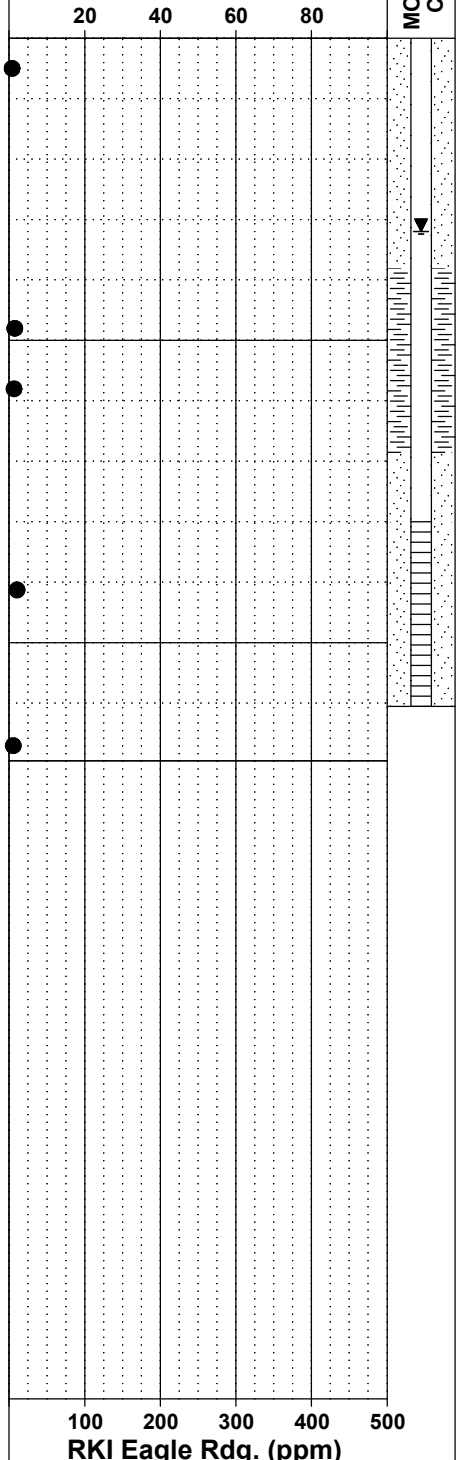
Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373059.576 **NORTHING:** 5030545.607 **ELEVATION:** 68.28
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 5, 2024

FILE NO. PE6555
HOLE NO. BH 2-24

SAMPLE DESCRIPTION		STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE								
ASPHALT	0.08		AU	1			0	68.28
FILL: Compact brown silty sand with gravel	0.13							
	0.25							
FILL: Concrete	0.30							
FILL: Compact brown silty sand with gravel								
FILL: Stiff silty clay with crushed stone	0.84							
GLACIAL TILL: Compact to dense brown silty sand to sandy silt with gravel, occasional cobbles and boulders			SS	2	79	14	1	67.28
			SS	3	100	32	2	66.28
	2.39		SS	4	100	+50		
End of Borehole								
Practical refusal on inferred bedrock or boulder at 2.39 m depth								
(GWL at 0.64 m depth - June 13, 2024)								

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ **Lower Explosive Limit %**



MONITORING WELL CONSTRUCTION

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SOIL PROFILE AND TEST DATA

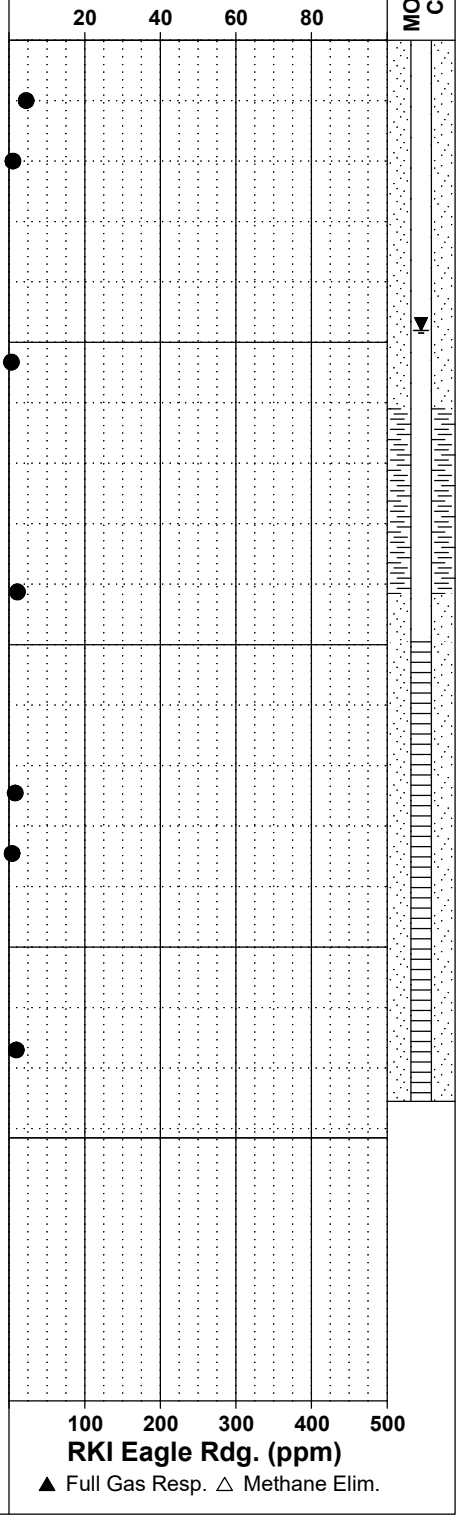
Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373111.774 **NORTHING:** 5030513.887 **ELEVATION:** 69.05
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 5, 2024

FILE NO. PE6555
HOLE NO. BH 3-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.05
FILL: Compact brown silty sand with crushed stone and gravel		SS	1	100	24		
0.46							
FILL: Compact brown silty sand, some gravel, trace clay and topsoil							
0.69							
GLACIAL TILL: Dense brown silty sand to sandy silt with gravel, occasional cobbles		SS	2	71	35	1	68.05
- Grey by 2.4 m depth							
- Rock fragments at 2.9 m depth		SS	3	54	+50	2	67.05
		SS	4	67	25		
						3	66.05
		SS	5	65	+50		
3.63							
End of Borehole							
Practical refusal on inferred bedrock or boulder @ 3.63 m depth							
(GWL at 0.96 m depth - June 13, 2024)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ **Lower Explosive Limit %**



MONITORING WELL CONSTRUCTION

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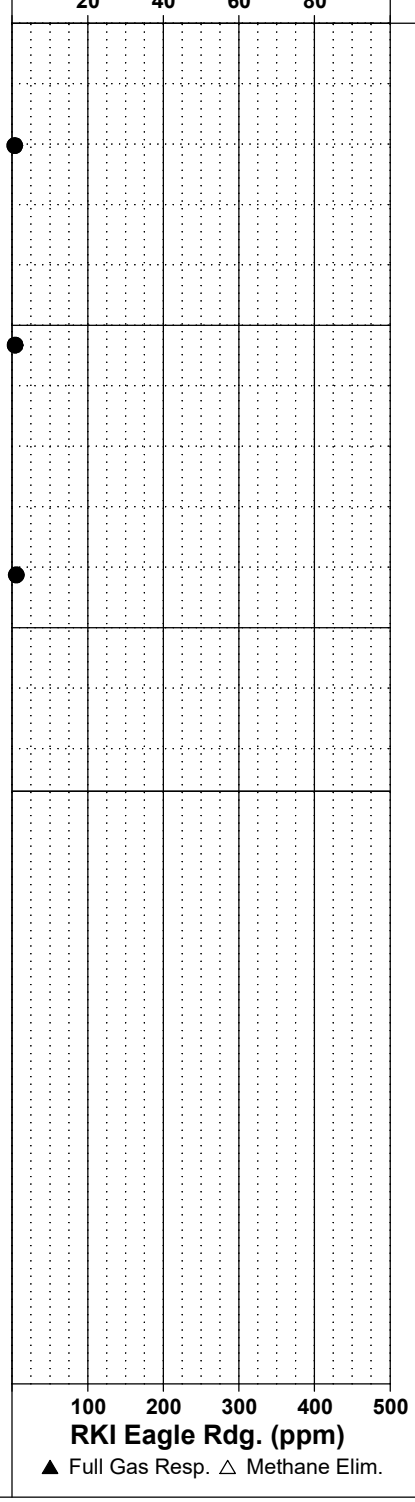
SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373025.193 **NORTHING:** 5030561.928 **ELEVATION:** 68.35
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 5, 2024

FILE NO. PE6555
HOLE NO. BH 4-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	PIEZOMETER CONSTRUCTION
GROUND SURFACE									
ASPHALT 0.10						0	68.35		
FILL: Loose brown silty sand with gravel and crushed stone, trace clay		SS	1	29	8				
1.07						1	67.35		
FILL: Stiff brown silty clay with sand, trace gravel		SS	2	25	6				
1.45									
GLACIAL TILL: Compact to dense brown silty sand to sandy silt with gravel, occasional cobbles and boulders		SS	3	54	13	2	66.35		
		SS	4	0	+50				
2.54									
End of Borehole									
Practical refusal on inferred bedrock or boulder at 2.54 m depth									



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SOIL PROFILE AND TEST DATA

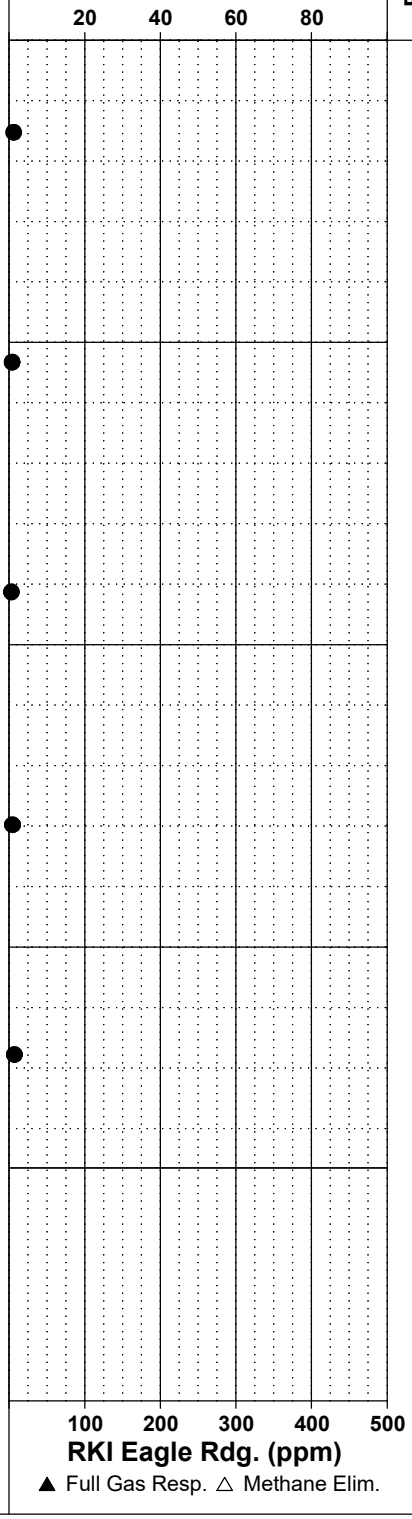
Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373109.492 **NORTHING:** 5030468.295 **ELEVATION:** 69.66
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 5, 2024

FILE NO. PE6555
HOLE NO. BH 5-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.66
FILL: Compact brown silty sand with gravel and crushed stone, trace clay		SS	1	71	19		
0.69							
FILL: Compact brown silty sand to sandy silt		SS	2	79	13	1	68.66
1.68							
GLACIAL TILL: Compact to dense grey silty sand to sandy silt with gravel, occasional cobbles and boulders		SS	3	8	17	2	67.66
		SS	4	50	28	3	66.66
		SS	5	67	40		
3.73							
End of Borehole Practical refusal on inferred bedrock or boulder at 3.73 m depth							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %



PIEZOMETER CONSTRUCTION

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SOIL PROFILE AND TEST DATA

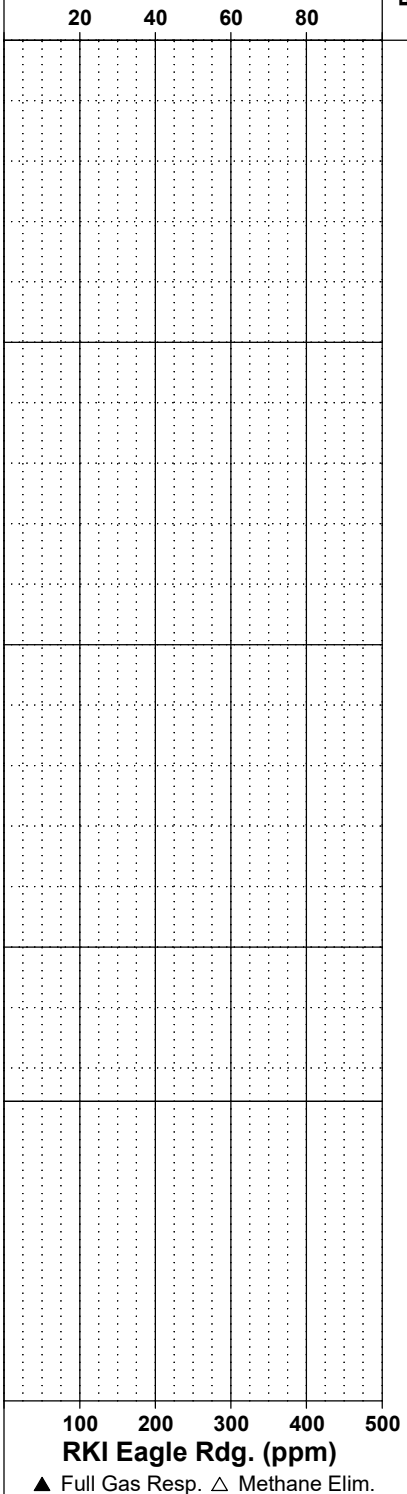
Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373107.832 **NORTHING:** 5030405.825 **ELEVATION:** 69.54
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 6, 2024

FILE NO. PE6555
HOLE NO. BH 6-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.54
FILL: Very dense brown silty sand with crushed stone and gravel		SS	1	46	50		
0.69							
FILL: Brown clayey silt, trace topsoil and organics							
1.07		SS	2	67	16	1	68.54
Stiff brown **CLAYEY SILT** (Possible fill)							
1.45							
SILTY SAND, trace gravel (Possible fill)		SS	3	38	8	2	67.54
2.13							
GLACIAL TILL: Very stiff dark grey to black silty clay, some sand and gravel (Possible fill)		SS	4	46	9		
3.05						3	66.54
GLACIAL TILL: Compact to dense grey silty sand to sandy silt with gravel, occasional cobbles and boulders		SS	5	39	+50		
3.51							
End of Borehole Practical refusal on inferred bedrock or boulder at 3.51 m depth							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ **Lower Explosive Limit %**



▲ Full Gas Resp. △ Methane Elim.

PIEZOMETER CONSTRUCTION

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373081.109 **NORTHING:** 5030418.932 **ELEVATION:** 69.18
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 6, 2024

FILE NO. PE6555
HOLE NO. BH 7-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	PIEZOMETER CONSTRUCTION
GROUND SURFACE						0	69.18		
FILL: Compact brown silty sand with gravel and crushed stone		SS	1	25	26				
0.84									
FILL: Brown to grey clayey silt, trace topsoil									
1.07		SS	2	75	12	1	68.18		
Very stiff brown to grey **CLAYEY SILT**, trace sand (Possible fill)									
1.45									
Firm **CLAYEY SILT**, trace sand (Possible fill)		SS	3	71	3	2	67.18		
2.21									
GLACIAL TILL: Very stiff dark grey to black silty clay with sand, some gravel (Possible fill)		SS	4	33	7				
2.74									
GLACIAL TILL: Compact grey silty sand to sandy silt with gravel, occasional cobbles and boulders		SS	5	33	26	3	66.18		
3.76									
End of Borehole Practical refusal on inferred bedrock or boulder @ 3.76 m depth									

Photo Ionization Detector: ○ Lower Explosive Limit % — 20 40 60 80
RKI Eagle Rdg. (ppm): 100 200 300 400 500
▲ Full Gas Resp. △ Methane Elim.

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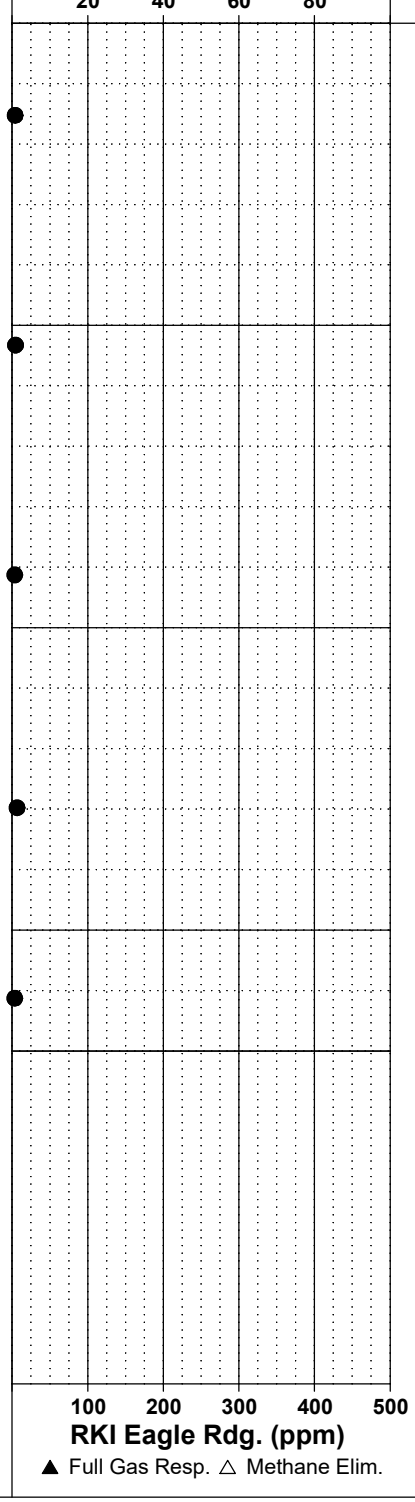
SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373086.406 **NORTHING:** 5030457.24 **ELEVATION:** 69.38
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 6, 2024

FILE NO. PE6555
HOLE NO. BH 8-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.38
FILL: Dense brown silty sand with crushed stone, gravel and bricks		SS	1	67	34		
0.84						1	68.38
FILL: Compact to dense silty sand to sandy silt, trace gravel		SS	2	79	13		
		SS	3	25	45	2	67.38
2.36							
GLACIAL TILL: Dense grey silty sand to sandy silt with gravel, trace clay, occasional cobbles and boulders		SS	4	25	22		
		SS	5	50	+50	3	66.38
3.40							
End of Borehole Practical refusal on inferred bedrock or boulder at 3.40 m depth							



PIEZOMETER CONSTRUCTION

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SOIL PROFILE AND TEST DATA

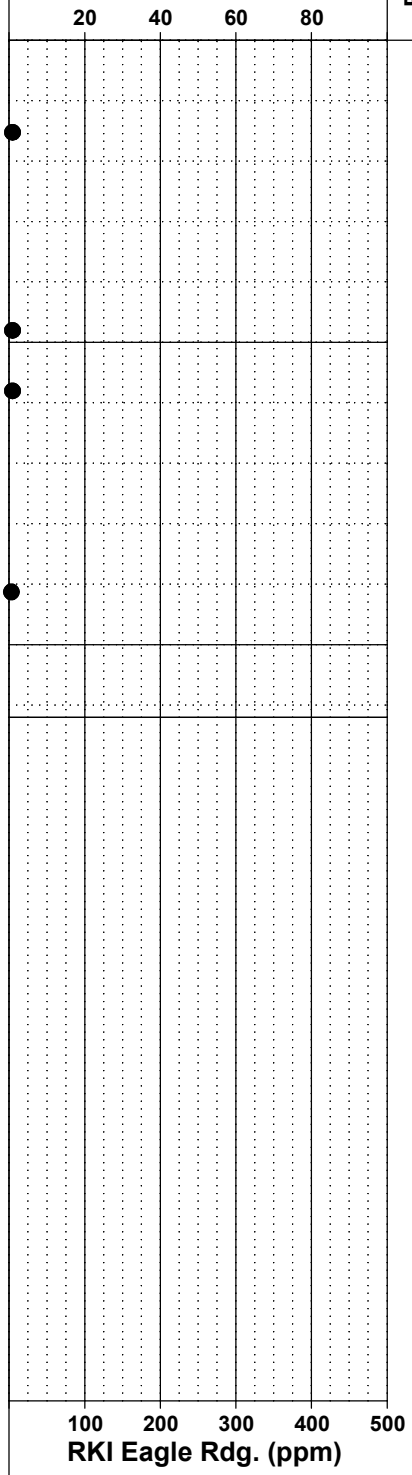
Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373049.465 **NORTHING:** 5030525.575 **ELEVATION:** 68.26
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 6, 2024

FILE NO. PE6555
HOLE NO. BH 9-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	PIEZOMETER CONSTRUCTION
GROUND SURFACE								
FILL: Very dense brown silty sand with gravel		SS	1	25	+50	0	68.26	
0.84								
FILL: Compact brown silty sand		SS	2	75	16	1	67.26	
1.14								
FILL: Compact brown sandy silt to silty sand, trace topsoil and gravel								
1.45								
GLACIAL TILL: Compact brown silty sand to sandy silt with gravel, trace clay, occasional cobbles and boulders		SS	3	100	23	2	66.26	
1.68								
GLACIAL TILL: Compact to dense grey silty sand to sandy silt with gravel, occasional cobbles and boulders								
2.24								
End of Borehole								
Practical refusal on inferred bedrock or boulder at 2.24 m depth								

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ **Lower Explosive Limit %**



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SOIL PROFILE AND TEST DATA

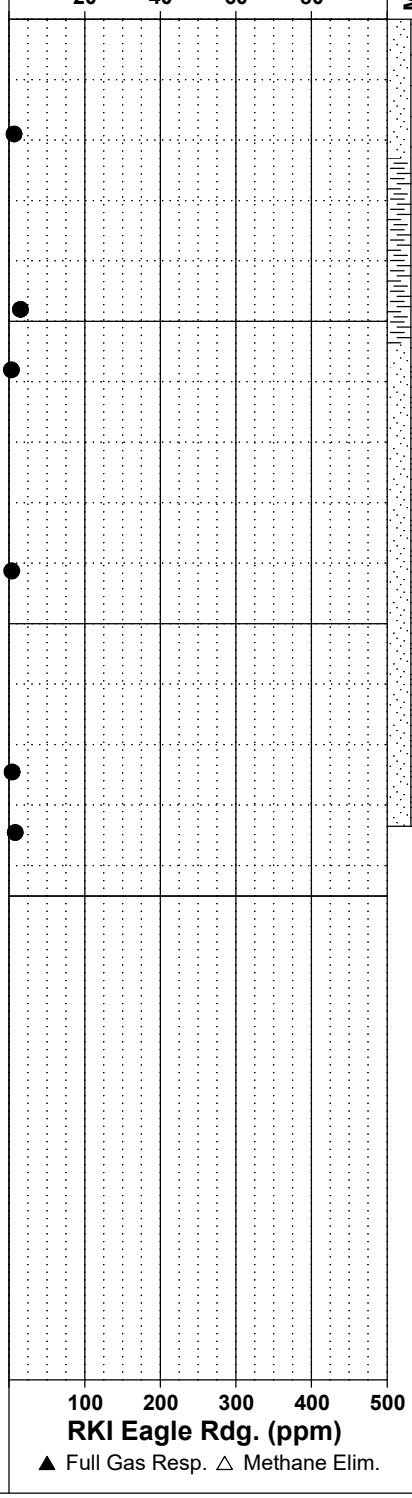
Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373035.565 **NORTHING:** 5030530.524 **ELEVATION:** 68.40
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 6, 2024

FILE NO. PE6555
HOLE NO. BH10-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	68.40
ASPHALT 0.08							
FILL: Dense brown silty sand with gravel and crushed stone		SS	1	42	41		
1.07						1	67.40
FILL: Loose brown sandy silt to silty sand with some clay		SS	2	83	9		
1.45							
FILL: Loose brown silty sand to sandy silt with topsoil, trace gravel and clay							
1.83		SS	3	54	11		
GLACIAL TILL: Compact brown silty sand to sandy silt with gravel, occasional cobbles and boulders						2	66.40
2.21							
GLACIAL TILL: Compact grey silty sand to sandy silt with gravel, occasional cobbles and boulders		SS	4	50	+50		
2.74							
BEDROCK 2.90							
End of Borehole							
(GWL at 1.28 m depth - June 13, 2024)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ **Lower Explosive Limit %**



MONITORING WELL CONSTRUCTION

patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

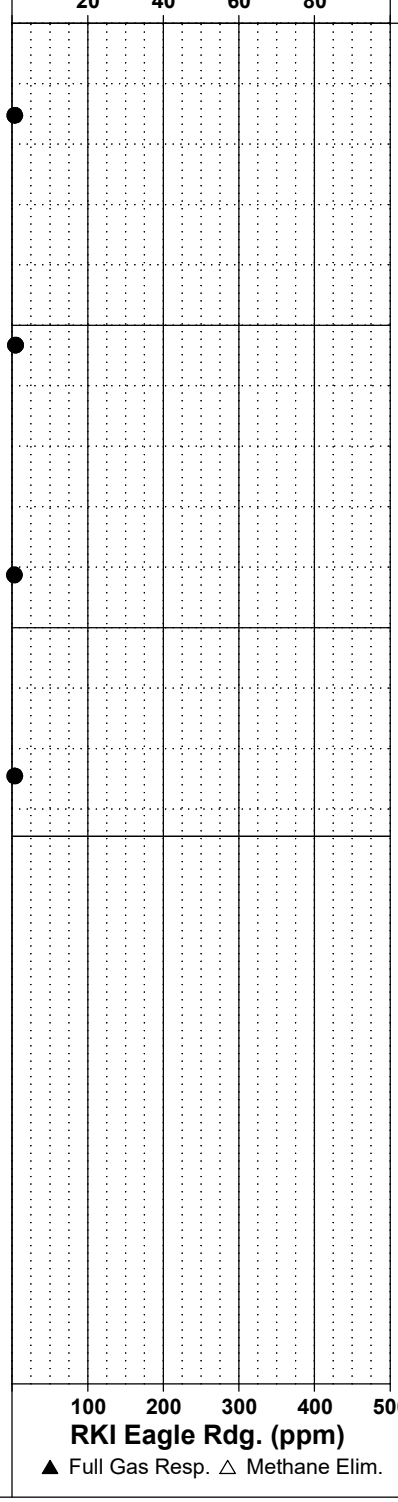
SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373073.38 **NORTHING:** 5030486.243 **ELEVATION:** 68.74
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 6, 2024

FILE NO. PE6555
HOLE NO. BH11-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	PIEZOMETER CONSTRUCTION
GROUND SURFACE						0	68.74		
FILL: Very dense brown silty sand with crushed stone, gravel and concrete		SS	1	33	+50				
0.84									
FILL: Compact brown silty sand		SS	2	63	21	1	67.74		
1.45									
FILL: Dark grey to black silty clay with sand, some gravel and topsoil									
1.88		SS	3	50	10				
GLACIAL TILL: Compact to dense grey silty sand to sandy silt with gravel, occasional cobbles and boulders						2	66.74		
		SS	4	19	+50				
2.69									
End of Borehole									
Practical refusal on inferred bedrock or boulder at 2.69 m depth									



patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

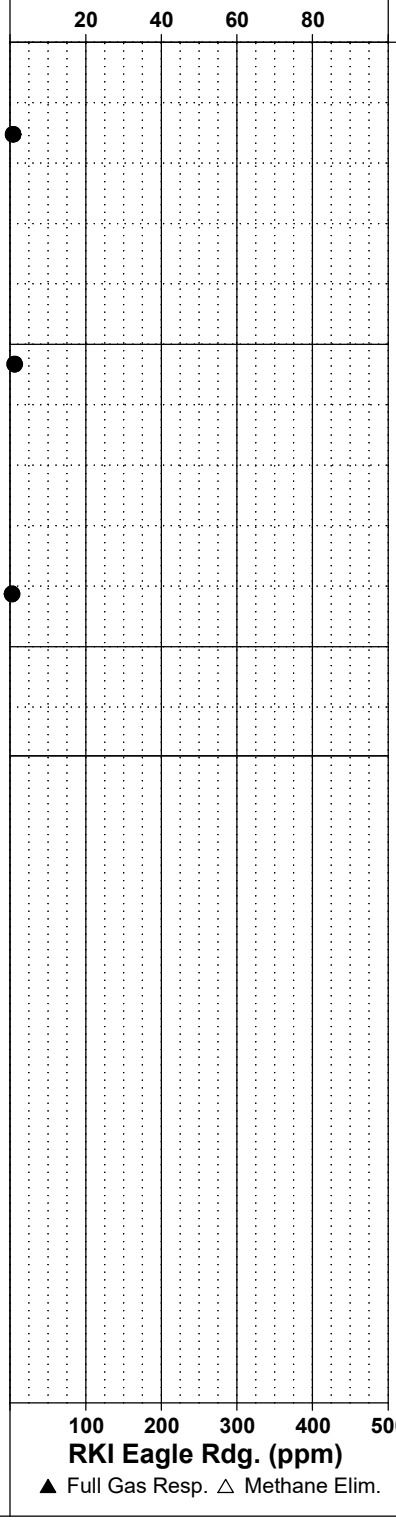
Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373081.452 **NORTHING:** 5030507.931 **ELEVATION:** 68.72
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 6, 2024

FILE NO. PE6555
HOLE NO. BH12-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	68.72
FILL: Very dense brown silty sand with crushed stone and gravel		SS	1	33	+50		
0.69							
FILL: Rock fragments, with gravel, some sand		SS	2	29	23	1	67.72
1.22							
GLACIAL TILL: Very dense brown silty sand to sandy silt with gravel, occasional cobbles and boulders		SS	3	100	+50	2	66.72
2.36							
End of Borehole Practical refusal on inferred bedrock or boulder at 2.36 m depth							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %



▲ Full Gas Resp. △ Methane Elim.

PIEZOMETER CONSTRUCTION

patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

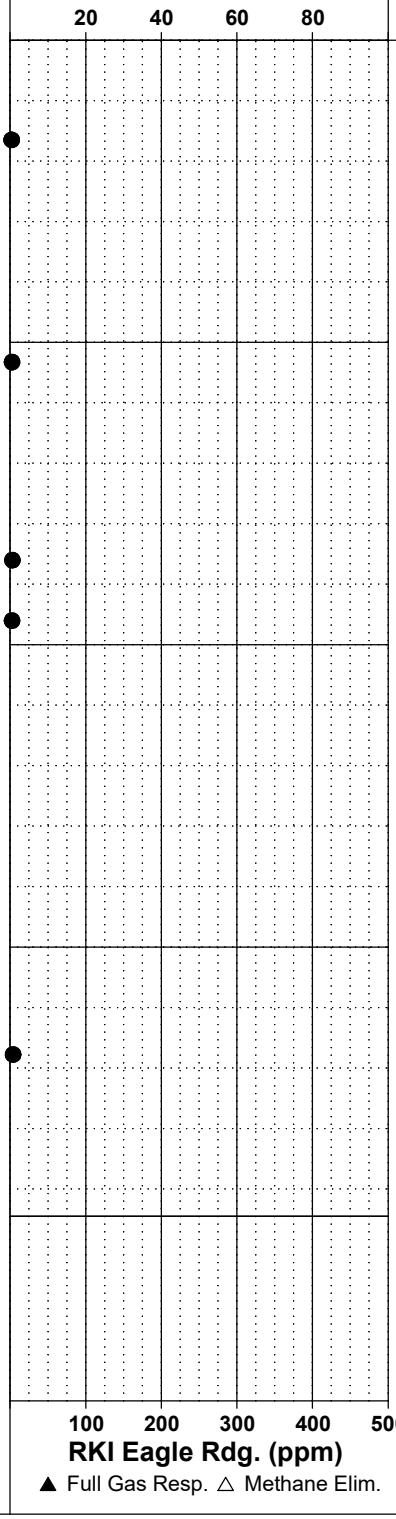
Phase II - Environmental Site Assessment
Prop. Commercial Development - 1547 Lagan Way
Ottawa, Ontario

EASTING: 373124.76 **NORTHING:** 5030433.631 **ELEVATION:** 69.51
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Power Auger **DATE:** June 6, 2024

FILE NO. PE6555
HOLE NO. BH13-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.51
ASPHALT 0.05							
FILL: Dense brown silty sand with gravel, crushed stone and bricks		SS	1	58	33		
0.84							
FILL: Compact brown silty sand to sandy silt		SS	2	71	14	1	68.51
1.83		SS	3	38	7		
FILL: Stiff brown silty clay with gravel, sand and some topsoil							
2.13						2	67.51
GLACIAL TILL: Very dense brown silty sand to sandy silt with gravel, occasional cobbles and boulders							
2.59		SS	4		35		
GLACIAL TILL: Very dense grey silty sand to sandy silt with gravel, occasional cobbles and boulders						3	66.51
		SS	5	83	29		
3.89							
End of Borehole Practical refusal on inferred bedrock or boulder at 3.89 m depth							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %



PIEZOMETER CONSTRUCTION

SYMBOLS AND TERMS

SOIL DESCRIPTION

Behavioural properties, such as structure and strength, take precedence over particle gradation in describing soils. Terminology describing soil structure are as follows:

Desiccated	-	having visible signs of weathering by oxidation of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure.
Varved	-	composed of regular alternating layers of silt and clay.
Stratified	-	composed of alternating layers of different soil types, e.g. silt and sand or silt and clay.
Well-Graded	-	Having wide range in grain sizes and substantial amounts of all intermediate particle sizes (see Grain Size Distribution).
Uniformly-Graded	-	Predominantly of one grain size (see Grain Size Distribution).

The standard terminology to describe the relative strength of cohesionless soils is the compactness condition, usually inferred from the results of the Standard Penetration Test (SPT) 'N' value. The SPT N value is the number of blows of a 63.5 kg hammer, falling 760 mm, required to drive a 51 mm O.D. split spoon sampler 300 mm into the soil after an initial penetration of 150 mm. An SPT N value of "P" denotes that the split-spoon sampler was pushed 300 mm into the soil without the use of a falling hammer.

Compactness Condition	'N' Value	Relative Density %
Very Loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe the strength of cohesive soils is the consistency, which is based on the undisturbed undrained shear strength as measured by the in situ or laboratory shear vane tests, unconfined compression tests, or occasionally by the Standard Penetration Test (SPT). Note that the typical correlations of undrained shear strength to SPT N value (tabulated below) tend to underestimate the consistency for sensitive silty clays, so Paterson reviews the applicable split spoon samples in the laboratory to provide a more representative consistency value based on tactile examination.

Consistency	Undrained Shear Strength (kPa)	'N' Value
Very Soft	<12	<2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

Cohesive soils can also be classified according to their "sensitivity". The sensitivity, S_t, is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil. The classes of sensitivity may be defined as follows:

Low Sensitivity:	$S_t < 2$
Medium Sensitivity:	$2 < S_t < 4$
Sensitive:	$4 < S_t < 8$
Extra Sensitive:	$8 < S_t < 16$
Quick Clay:	$S_t > 16$

ROCK DESCRIPTION

The structural description of the bedrock mass is based on the Rock Quality Designation (RQD).

The RQD classification is based on a modified core recovery percentage in which all pieces of sound core over 100 mm long are counted as recovery. The smaller pieces are considered to be a result of closely-spaced discontinuities (resulting from shearing, jointing, faulting, or weathering) in the rock mass and are not counted. RQD is ideally determined from NQ or larger size core. However, it can be used on smaller core sizes, such as BQ, if the bulk of the fractures caused by drilling stresses (called "mechanical breaks") are easily distinguishable from the normal in situ fractures.

RQD %	**ROCK QUALITY**
90-100	Excellent, intact, very sound
75-90	Good, massive, moderately jointed or sound
50-75	Fair, blocky and seamy, fractured
25-50	Poor, shattered and very seamy or blocky, severely fractured
0-25	Very poor, crushed, very severely fractured

SAMPLE TYPES

SS	-	Split spoon sample (obtained in conjunction with the performing of the Standard Penetration Test (SPT))
TW	-	Thin wall tube or Shelby tube, generally recovered using a piston sampler
G	-	"Grab" sample from test pit or surface materials
AU	-	Auger sample or bulk sample
WS	-	Wash sample
RC	-	Rock core sample (Core bit size BQ, NQ, HQ, etc.). Rock core samples are obtained with the use of standard diamond drilling bits.

SYMBOLS AND TERMS (continued)

PLASTICITY LIMITS AND GRAIN SIZE DISTRIBUTION

WC%	-	Natural water content or water content of sample, %
LL	-	Liquid Limit, % (water content above which soil behaves as a liquid)
PL	-	Plastic Limit, % (water content above which soil behaves plastically)
PI	-	Plasticity Index, % (difference between LL and PL)
Dxx	-	Grain size at which xx% of the soil, by weight, is of finer grain sizes These grain size descriptions are not used below 0.075 mm grain size
D10	-	Grain size at which 10% of the soil is finer (effective grain size)
D60	-	Grain size at which 60% of the soil is finer
Cc	-	Concavity coefficient = $(D30)^2$ / (D10 x D60)
Cu	-	Uniformity coefficient = D60 / D10

Cc and Cu are used to assess the grading of sands and gravels:
Well-graded gravels have: $1 < Cc < 3$ and $Cu > 4$
Well-graded sands have: $1 < Cc < 3$ and $Cu > 6$
Sands and gravels not meeting the above requirements are poorly-graded or uniformly-graded.
Cc and Cu are not applicable for the description of soils with more than 10% silt and clay
(more than 10% finer than 0.075 mm or the #200 sieve)

CONSOLIDATION TEST

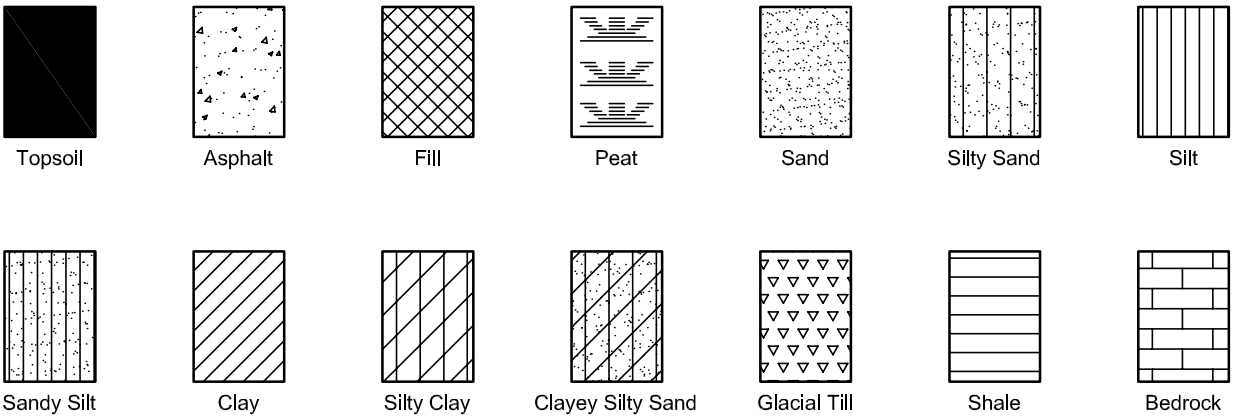
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void Ratio		Initial sample void ratio = volume of voids / volume of solids
Wo	-	Initial water content (at start of consolidation test)

PERMEABILITY TEST

k	-	Coefficient of permeability or hydraulic conductivity is a measure of the ability of water to flow through the sample. The value of k is measured at a specified unit weight for (remoulded) cohesionless soil samples, because its value will vary with the unit weight or density of the sample during the test.

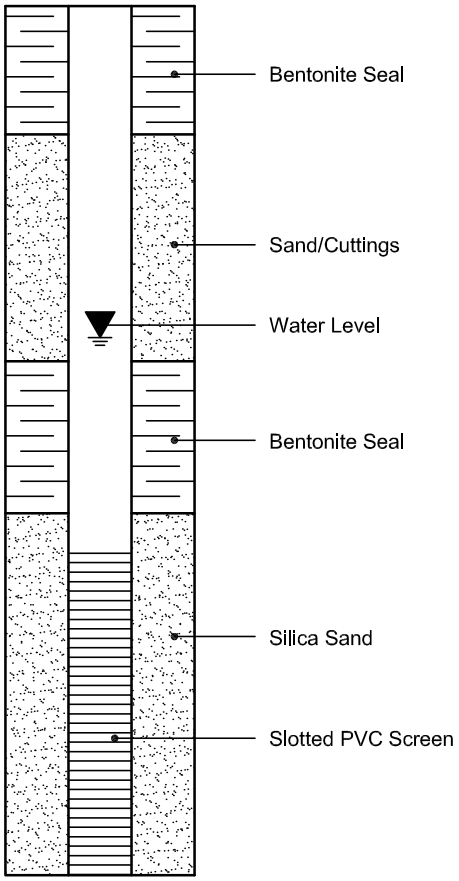
SYMBOLS AND TERMS (continued)

STRATA PLOT

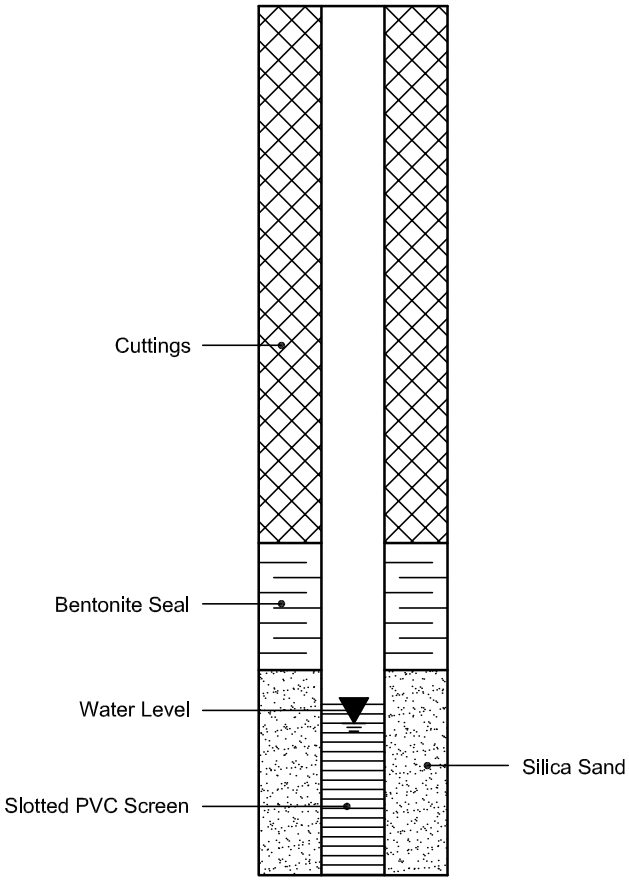


MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION



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Certificate of Analysis

Paterson Group Consulting Engineers (Ottawa)
9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Mark D'Arcy

Client PO: 60385
Project: PE6555
Custody:

Report Date: 13-Jun-2024
Order Date: 7-Jun-2024

Order #: 2423575

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

Paracel ID	Client ID
2423575-01	BH1-24-SS3
2423575-02	BH2-24-SS3
2423575-03	BH3-24-SS3
2423575-04	BH3-24-SS4-TOP
2423575-05	BH4-24-SS3
2423575-06	BH5-24-SS2
2423575-08	DUP1
2423575-09	BH6-24-SS3
2423575-10	BH8-24-SS1
2423575-11	BH10-24-SS2-TOP/BOT MIX
2423575-12	BH13-24-SS1

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	11-Jun-24	11-Jun-24
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	13-Jun-24	13-Jun-24
PHC F1	CWS Tier 1 - P&T GC-FID	11-Jun-24	11-Jun-24
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	11-Jun-24	13-Jun-24
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	11-Jun-24	12-Jun-24
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	11-Jun-24	13-Jun-24
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	11-Jun-24	11-Jun-24
Solids, %	CWS Tier 1 - Gravimetric	11-Jun-24	12-Jun-24

Certificate of Analysis

Report Date: 13-Jun-2024

Client: **Paterson Group Consulting Engineers (Ottawa)**

Order Date: 7-Jun-2024

Client PO: **60385**

Project Description: PE6555

	Client ID:	BH1-24-SS3	BH2-24-SS3	BH3-24-SS3	BH3-24-SS4-TOP	-	-
	Sample Date:	05-Jun-24 09:00	05-Jun-24 09:00	05-Jun-24 09:00	05-Jun-24 09:00		
	Sample ID:	2423575-01	2423575-02	2423575-03	2423575-04		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	91.3	89.7	88.5	91.0	-	-
General Inorganics							
pH	0.05 pH Units	-	-	-	7.29	-	-
Volatiles							
Acetone	0.50 ug/g	-	-	-	<0.50	-	-
Benzene	0.02 ug/g	-	-	-	<0.02	-	-
Bromodichloromethane	0.05 ug/g	-	-	-	<0.05	-	-
Bromoform	0.05 ug/g	-	-	-	<0.05	-	-
Bromomethane	0.05 ug/g	-	-	-	<0.05	-	-
Carbon Tetrachloride	0.05 ug/g	-	-	-	<0.05	-	-
Chlorobenzene	0.05 ug/g	-	-	-	<0.05	-	-
Chloroform	0.05 ug/g	-	-	-	<0.05	-	-
Dibromochloromethane	0.05 ug/g	-	-	-	<0.05	-	-
Dichlorodifluoromethane	0.05 ug/g	-	-	-	<0.05	-	-
1,2-Dichlorobenzene	0.05 ug/g	-	-	-	<0.05	-	-
1,3-Dichlorobenzene	0.05 ug/g	-	-	-	<0.05	-	-
1,4-Dichlorobenzene	0.05 ug/g	-	-	-	<0.05	-	-
1,1-Dichloroethane	0.05 ug/g	-	-	-	<0.05	-	-
1,2-Dichloroethane	0.05 ug/g	-	-	-	<0.05	-	-
1,1-Dichloroethylene	0.05 ug/g	-	-	-	<0.05	-	-
cis-1,2-Dichloroethylene	0.05 ug/g	-	-	-	<0.05	-	-
trans-1,2-Dichloroethylene	0.05 ug/g	-	-	-	<0.05	-	-
1,2-Dichloropropane	0.05 ug/g	-	-	-	<0.05	-	-
cis-1,3-Dichloropropylene	0.05 ug/g	-	-	-	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g	-	-	-	<0.05	-	-

	Client ID:	BH1-24-SS3	BH2-24-SS3	BH3-24-SS3	BH3-24-SS4-TOP	-	-
	Sample Date:	05-Jun-24 09:00	05-Jun-24 09:00	05-Jun-24 09:00	05-Jun-24 09:00		
	Sample ID:	2423575-01	2423575-02	2423575-03	2423575-04		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
1,3-Dichloropropene, total	0.05 ug/g	-	-	-	<0.05	-	-
Ethylbenzene	0.05 ug/g	-	-	-	<0.05	-	-
Ethylene dibromide (dibromoethane,	0.05 ug/g	-	-	-	<0.05	-	-
Hexane	0.05 ug/g	-	-	-	<0.05	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g	-	-	-	<0.50	-	-
Methyl Isobutyl Ketone	0.50 ug/g	-	-	-	<0.50	-	-
Methyl tert-butyl ether	0.05 ug/g	-	-	-	<0.05	-	-
Methylene Chloride	0.05 ug/g	-	-	-	<0.05	-	-
Styrene	0.05 ug/g	-	-	-	<0.05	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g	-	-	-	<0.05	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g	-	-	-	<0.05	-	-
Tetrachloroethylene	0.05 ug/g	-	-	-	<0.05	-	-
Toluene	0.05 ug/g	-	-	-	<0.05	-	-
1,1,1-Trichloroethane	0.05 ug/g	-	-	-	<0.05	-	-
1,1,2-Trichloroethane	0.05 ug/g	-	-	-	<0.05	-	-
Trichloroethylene	0.05 ug/g	-	-	-	<0.05	-	-
Trichlorofluoromethane	0.05 ug/g	-	-	-	<0.05	-	-
Vinyl chloride	0.02 ug/g	-	-	-	<0.02	-	-
m,p-Xylenes	0.05 ug/g	-	-	-	<0.05	-	-
o-Xylene	0.05 ug/g	-	-	-	<0.05	-	-
Xylenes, total	0.05 ug/g	-	-	-	<0.05	-	-
Dibromofluoromethane	Surrogate	-	-	-	88.2%	-	-
4-Bromofluorobenzene	Surrogate	-	-	-	96.7%	-	-
Toluene-d8	Surrogate	-	-	-	113%	-	-
Benzene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-

	Client ID:	BH1-24-SS3	BH2-24-SS3	BH3-24-SS3	BH3-24-SS4-TOP	-	-
	Sample Date:	05-Jun-24 09:00	05-Jun-24 09:00	05-Jun-24 09:00	05-Jun-24 09:00		
	Sample ID:	2423575-01	2423575-02	2423575-03	2423575-04		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Ethylbenzene	0.05 ug/g	<0.05	<0.05	<0.05	-	-	-
Toluene	0.05 ug/g	<0.05	<0.05	<0.05	-	-	-
m,p-Xylenes	0.05 ug/g	<0.05	<0.05	<0.05	-	-	-
o-Xylene	0.05 ug/g	<0.05	<0.05	<0.05	-	-	-
Xylenes, total	0.05 ug/g	<0.05	<0.05	<0.05	-	-	-
Toluene-d8	Surrogate	114%	111%	113%	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	<7	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g	33	<4	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g	41	<8	15	-	-	-
F4 PHCs (C34-C50)	6 ug/g	7	<6	20	-	-	-

	Client ID:	BH4-24-SS3	BH5-24-SS2	DUP1	BH6-24-SS3	-	-
	Sample Date:	05-Jun-24 09:00	05-Jun-24 09:00	05-Jun-24 09:00	06-Jun-24 09:00		
	Sample ID:	2423575-05	2423575-06	2423575-08	2423575-09		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	88.6	83.3	90.8	81.4	-	-
Metals							
Antimony	1.0 ug/g	-	<1.0	-	-	-	-
Arsenic	1.0 ug/g	-	1.8	-	-	-	-
Barium	1.0 ug/g	-	46.6	-	-	-	-
Beryllium	0.5 ug/g	-	<0.5	-	-	-	-
Boron	5.0 ug/g	-	<5.0	-	-	-	-
Cadmium	0.5 ug/g	-	<0.5	-	-	-	-
Chromium	5.0 ug/g	-	18.9	-	-	-	-
Cobalt	1.0 ug/g	-	4.6	-	-	-	-
Copper	5.0 ug/g	-	6.6	-	-	-	-
Lead	1.0 ug/g	-	2.8	-	-	-	-
Molybdenum	1.0 ug/g	-	<1.0	-	-	-	-
Nickel	5.0 ug/g	-	9.6	-	-	-	-
Selenium	1.0 ug/g	-	<1.0	-	-	-	-
Silver	0.3 ug/g	-	<0.3	-	-	-	-
Thallium	1.0 ug/g	-	<1.0	-	-	-	-
Uranium	1.0 ug/g	-	<1.0	-	-	-	-
Vanadium	10.0 ug/g	-	28.3	-	-	-	-
Zinc	20.0 ug/g	-	<20.0	-	-	-	-
Volatiles							
Benzene	0.02 ug/g	<0.02	-	<0.02	<0.02	-	-
Ethylbenzene	0.05 ug/g	<0.05	-	<0.05	<0.05	-	-
Toluene	0.05 ug/g	<0.05	-	<0.05	<0.05	-	-
m,p-Xylenes	0.05 ug/g	<0.05	-	<0.05	<0.05	-	-

Certificate of Analysis

Report Date: 13-Jun-2024

Client: **Paterson Group Consulting Engineers (Ottawa)**

Order Date: 7-Jun-2024

Client PO: **60385**

Project Description: **PE6555**

	Client ID:	BH4-24-SS3	BH5-24-SS2	DUP1	BH6-24-SS3	-	-
	Sample Date:	05-Jun-24 09:00	05-Jun-24 09:00	05-Jun-24 09:00	06-Jun-24 09:00		
	Sample ID:	2423575-05	2423575-06	2423575-08	2423575-09		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
o-Xylene	0.05 ug/g	<0.05	-	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g	<0.05	-	<0.05	<0.05	-	-
Toluene-d8	Surrogate	116%	-	115%	121%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	-	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g	<4	-	<4	<4	-	-
F3 PHCs (C16-C34)	8 ug/g	<8	-	<8	<8	-	-
F4 PHCs (C34-C50)	6 ug/g	<6	-	<6	<6	-	-
Semi-Volatiles							
Acenaphthene	0.02 ug/g	-	<0.02	-	-	-	-
Acenaphthylene	0.02 ug/g	-	<0.02	-	-	-	-
Anthracene	0.02 ug/g	-	<0.02	-	-	-	-
Benzo [a] anthracene	0.02 ug/g	-	<0.02	-	-	-	-
Benzo [a] pyrene	0.02 ug/g	-	<0.02	-	-	-	-
Benzo [b] fluoranthene	0.02 ug/g	-	<0.02	-	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g	-	<0.02	-	-	-	-
Benzo [k] fluoranthene	0.02 ug/g	-	<0.02	-	-	-	-
Chrysene	0.02 ug/g	-	<0.02	-	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g	-	<0.02	-	-	-	-
Fluoranthene	0.02 ug/g	-	<0.02	-	-	-	-
Fluorene	0.02 ug/g	-	<0.02	-	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g	-	<0.02	-	-	-	-
1-Methylnaphthalene	0.02 ug/g	-	<0.02	-	-	-	-
2-Methylnaphthalene	0.02 ug/g	-	<0.02	-	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g	-	<0.04	-	-	-	-

	Client ID:	BH4-24-SS3	BH5-24-SS2	DUP1	BH6-24-SS3	-	-
	Sample Date:	05-Jun-24 09:00	05-Jun-24 09:00	05-Jun-24 09:00	06-Jun-24 09:00		
	Sample ID:	2423575-05	2423575-06	2423575-08	2423575-09		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Semi-Volatiles							
Naphthalene	0.01 ug/g	-	<0.01	-	-	-	-
Phenanthrene	0.02 ug/g	-	<0.02	-	-	-	-
Pyrene	0.02 ug/g	-	<0.02	-	-	-	-
2-Fluorobiphenyl	Surrogate	-	70.4%	-	-	-	-
Terphenyl-d14	Surrogate	-	76.7%	-	-	-	-

Certificate of Analysis

Report Date: 13-Jun-2024

Client: **Paterson Group Consulting Engineers (Ottawa)**

Order Date: 7-Jun-2024

Client PO: **60385**

Project Description: **PE6555**

	Client ID:	BH8-24-SS1	BH10-24-SS2-TOP/BOT MIX	BH13-24-SS1		-	-
	Sample Date:	06-Jun-24 09:00	06-Jun-24 09:00	06-Jun-24 09:00			
	Sample ID:	2423575-10	2423575-11	2423575-12			
	Matrix:	Soil	Soil	Soil			
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	88.4	81.7	91.5	-	-	-
Metals							
Antimony	1.0 ug/g	<1.0	-	<1.0	-	-	-
Arsenic	1.0 ug/g	3.9	-	3.7	-	-	-
Barium	1.0 ug/g	67.2	-	43.7	-	-	-
Beryllium	0.5 ug/g	<0.5	-	<0.5	-	-	-
Boron	5.0 ug/g	5.7	-	<5.0	-	-	-
Cadmium	0.5 ug/g	<0.5	-	<0.5	-	-	-
Chromium	5.0 ug/g	15.9	-	12.0	-	-	-
Cobalt	1.0 ug/g	4.8	-	4.3	-	-	-
Copper	5.0 ug/g	10.1	-	7.8	-	-	-
Lead	1.0 ug/g	17.6	-	27.5	-	-	-
Molybdenum	1.0 ug/g	1.6	-	1.9	-	-	-
Nickel	5.0 ug/g	11.6	-	10.3	-	-	-
Selenium	1.0 ug/g	<1.0	-	<1.0	-	-	-
Silver	0.3 ug/g	<0.3	-	<0.3	-	-	-
Thallium	1.0 ug/g	<1.0	-	<1.0	-	-	-
Uranium	1.0 ug/g	<1.0	-	<1.0	-	-	-
Vanadium	10.0 ug/g	20.9	-	18.2	-	-	-
Zinc	20.0 ug/g	27.5	-	<20.0	-	-	-
Volatiles							
Benzene	0.02 ug/g	-	<0.02	-	-	-	-
Ethylbenzene	0.05 ug/g	-	<0.05	-	-	-	-
Toluene	0.05 ug/g	-	<0.05	-	-	-	-

Certificate of Analysis

Report Date: 13-Jun-2024

Client: **Paterson Group Consulting Engineers (Ottawa)**

Order Date: 7-Jun-2024

Client PO: **60385**

Project Description: **PE6555**

	Client ID:	BH8-24-SS1	BH10-24-SS2-TOP/BOT MIX	BH13-24-SS1		-	-
	Sample Date:	06-Jun-24 09:00	06-Jun-24 09:00	06-Jun-24 09:00			
	Sample ID:	2423575-10	2423575-11	2423575-12			
	Matrix:	Soil	Soil	Soil			
	MDL/Units						
Volatiles							
m,p-Xylenes	0.05 ug/g	-	<0.05	-	-	-	-
o-Xylene	0.05 ug/g	-	<0.05	-	-	-	-
Xylenes, total	0.05 ug/g	-	<0.05	-	-	-	-
Toluene-d8	Surrogate	-	118%	-	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	-	43	-	-	-	-
F2 PHCs (C10-C16)	4 ug/g	-	<4	-	-	-	-
F3 PHCs (C16-C34)	8 ug/g	-	<8	-	-	-	-
F4 PHCs (C34-C50)	6 ug/g	-	<6	-	-	-	-
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Acenaphthylene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Anthracene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Benzo [a] anthracene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Benzo [a] pyrene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Benzo [b] fluoranthene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Benzo [k] fluoranthene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Chrysene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Fluoranthene	0.02 ug/g	0.02	-	<0.02	-	-	-
Fluorene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	-	<0.02	-	-	-
1-Methylnaphthalene	0.02 ug/g	<0.02	-	<0.02	-	-	-

	Client ID:	BH8-24-SS1	BH10-24-SS2-TOP/BOT MIX	BH13-24-SS1		-	-
	Sample Date:	06-Jun-24 09:00	06-Jun-24 09:00	06-Jun-24 09:00			
	Sample ID:	2423575-10	2423575-11	2423575-12			
	Matrix:	Soil	Soil	Soil			
	MDL/Units						
Semi-Volatiles							
2-Methylnaphthalene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g	<0.04	-	<0.04	-	-	-
Naphthalene	0.01 ug/g	<0.01	-	<0.01	-	-	-
Phenanthrene	0.02 ug/g	<0.02	-	<0.02	-	-	-
Pyrene	0.02 ug/g	0.02	-	<0.02	-	-	-
2-Fluorobiphenyl	Surrogate	76.0%	-	67.9%	-	-	-
Terphenyl-d14	Surrogate	85.9%	-	72.3%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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					
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	ND	5.0	ug/g					
Cadmium	ND	0.5	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					
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					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*0.787*		*%*	*59.0*	*50-140*			
Surrogate: Terphenyl-d14	*0.847*		*%*	*63.5*	*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					
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					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*7.35*		*%*	*91.9*	*50-140*			
Surrogate: Dibromofluoromethane	*6.57*		*%*	*82.1*	*50-140*			
Surrogate: Toluene-d8	*9.27*		*%*	*116*	*50-140*			
Benzene	ND	0.02	ug/g					
Ethylbenzene	ND	0.05	ug/g					
Toluene	ND	0.05	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Xylenes, total	ND	0.05	ug/g					
Surrogate: Toluene-d8	*9.27*		*%*	*116*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
pH	6.86	0.05	pH Units	6.80			0.9	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)	20	8	ug/g	15			29.8	30	
F4 PHCs (C34-C50)	23	6	ug/g	20			12.4	30	
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	2.1	1.0	ug/g	2.4			11.3	30	
Barium	156	1.0	ug/g	173			10.3	30	
Beryllium	0.6	0.5	ug/g	0.6			1.0	30	
Boron	ND	5.0	ug/g	ND			NC	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium	64.0	5.0	ug/g	72.3			12.1	30	
Cobalt	11.7	1.0	ug/g	13.1			11.5	30	
Copper	18.6	5.0	ug/g	20.5			10.1	30	
Lead	10.4	1.0	ug/g	11.0			5.6	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	30.0	5.0	ug/g	33.0			9.4	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	57.8	10.0	ug/g	62.9			8.5	30	
Zinc	67.4	20.0	ug/g	73.7			8.9	30	
Physical Characteristics									
% Solids	84.2	0.1	% by Wt.	83.8			0.4	25	
Semi-Volatiles									
Acenaphthene	ND	0.40	ug/g	ND			NC	40	
Acenaphthylene	ND	0.40	ug/g	ND			NC	40	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anthracene	1.08	0.40	ug/g	0.828			26.1	40	
Benzo [a] anthracene	4.06	0.40	ug/g	3.76			7.8	40	
Benzo [a] pyrene	3.73	0.40	ug/g	3.62			3.1	40	
Benzo [b] fluoranthene	5.59	0.40	ug/g	5.55			0.6	40	
Benzo [g,h,i] perylene	2.89	0.40	ug/g	2.85			1.4	40	
Benzo [k] fluoranthene	3.39	0.40	ug/g	2.74			21.2	40	
Chrysene	5.42	0.40	ug/g	5.77			6.2	40	
Dibenzo [a,h] anthracene	0.639	0.40	ug/g	ND			NC	40	
Fluoranthene	15.0	0.40	ug/g	15.0			0.5	40	
Fluorene	ND	0.40	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	2.39	0.40	ug/g	2.39			0.0	40	
1-Methylnaphthalene	ND	0.40	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.40	ug/g	ND			NC	40	
Naphthalene	ND	0.20	ug/g	ND			NC	40	
Phenanthrene	5.35	0.40	ug/g	5.60			4.7	40	
Pyrene	11.8	0.40	ug/g	11.3			3.7	40	
Surrogate: 2-Fluorobiphenyl	*1.54*		*%*		*67.8*	*50-140*			
Surrogate: Terphenyl-d14	*1.95*		*%*		*85.8*	*50-140*			
Volatiles									
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	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*7.99*		*%*		*93.9*	*50-140*			
Surrogate: Dibromofluoromethane	*7.42*		*%*		*87.1*	*50-140*			
Surrogate: Toluene-d8	*9.47*		*%*		*111*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzene	ND	0.02	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	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: Toluene-d8	*9.47*		*%*		*111*	*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)	189	7	ug/g	ND	94.4	85-115			
F2 PHCs (C10-C16)	72	4	ug/g	ND	79.3	60-140			
F3 PHCs (C16-C34)	204	8	ug/g	15	85.1	60-140			
F4 PHCs (C34-C50)	142	6	ug/g	20	87.0	60-140			
Metals									
Arsenic	51.4	1.0	ug/g	1.0	101	70-130			
Barium	119	1.0	ug/g	69.2	99.2	70-130			
Beryllium	49.9	0.5	ug/g	ND	99.2	70-130			
Boron	48.5	5.0	ug/g	ND	94.4	70-130			
Cadmium	47.4	0.5	ug/g	ND	94.6	70-130			
Chromium	81.2	5.0	ug/g	28.9	105	70-130			
Cobalt	56.3	1.0	ug/g	5.3	102	70-130			
Copper	55.6	5.0	ug/g	8.2	94.8	70-130			
Lead	54.0	1.0	ug/g	4.4	99.3	70-130			
Molybdenum	50.0	1.0	ug/g	ND	99.5	70-130			
Nickel	62.4	5.0	ug/g	13.2	98.4	70-130			
Selenium	47.5	1.0	ug/g	ND	94.9	70-130			
Silver	45.4	0.3	ug/g	ND	90.7	70-130			
Thallium	46.6	1.0	ug/g	ND	93.0	70-130			
Uranium	52.6	1.0	ug/g	ND	105	70-130			
Vanadium	78.7	10.0	ug/g	25.2	107	70-130			
Zinc	77.0	20.0	ug/g	29.5	95.1	70-130			
Semi-Volatiles									
Acenaphthene	0.125	0.02	ug/g	ND	74.7	50-140			
Acenaphthylene	0.144	0.02	ug/g	ND	86.5	50-140			
Anthracene	0.137	0.02	ug/g	ND	82.0	50-140			
Benzo [a] anthracene	0.116	0.02	ug/g	ND	69.4	50-140			
Benzo [a] pyrene	0.108	0.02	ug/g	ND	64.6	50-140			
Benzo [b] fluoranthene	0.118	0.02	ug/g	ND	70.7	50-140			
Benzo [g,h,i] perylene	0.106	0.02	ug/g	ND	63.3	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [k] fluoranthene	0.136	0.02	ug/g	ND	81.8	50-140			
Chrysene	0.112	0.02	ug/g	ND	67.4	50-140			
Dibenzo [a,h] anthracene	0.109	0.02	ug/g	ND	65.4	50-140			
Fluoranthene	0.143	0.02	ug/g	ND	85.6	50-140			
Fluorene	0.117	0.02	ug/g	ND	70.5	50-140			
Indeno [1,2,3-cd] pyrene	0.120	0.02	ug/g	ND	72.3	50-140			
1-Methylnaphthalene	0.096	0.02	ug/g	ND	57.8	50-140			
2-Methylnaphthalene	0.104	0.02	ug/g	ND	62.4	50-140			
Naphthalene	0.120	0.01	ug/g	ND	72.1	50-140			
Phenanthrene	0.124	0.02	ug/g	ND	74.6	50-140			
Pyrene	0.145	0.02	ug/g	ND	87.0	50-140			
Surrogate: 2-Fluorobiphenyl	*0.888*		*%*		*66.6*	*50-140*			
Surrogate: Terphenyl-d14	*1.02*		*%*		*76.3*	*50-140*			
Volatiles									
Acetone	9.08	0.50	ug/g	ND	90.8	50-140			
Benzene	4.12	0.02	ug/g	ND	103	60-130			
Bromodichloromethane	2.94	0.05	ug/g	ND	73.6	60-130			
Bromoform	3.01	0.05	ug/g	ND	75.2	60-130			
Bromomethane	3.25	0.05	ug/g	ND	81.2	50-140			
Carbon Tetrachloride	4.90	0.05	ug/g	ND	122	60-130			
Chlorobenzene	3.31	0.05	ug/g	ND	82.9	60-130			
Chloroform	2.70	0.05	ug/g	ND	67.6	60-130			
Dibromochloromethane	3.33	0.05	ug/g	ND	83.4	60-130			
Dichlorodifluoromethane	2.77	0.05	ug/g	ND	69.2	50-140			
1,2-Dichlorobenzene	2.95	0.05	ug/g	ND	73.6	60-130			
1,3-Dichlorobenzene	2.96	0.05	ug/g	ND	74.0	60-130			
1,4-Dichlorobenzene	2.88	0.05	ug/g	ND	71.9	60-130			
1,1-Dichloroethane	3.12	0.05	ug/g	ND	78.1	60-130			
1,2-Dichloroethane	3.11	0.05	ug/g	ND	77.7	60-130			
1,1-Dichloroethylene	2.78	0.05	ug/g	ND	69.4	60-130			
cis-1,2-Dichloroethylene	3.01	0.05	ug/g	ND	75.2	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
trans-1,2-Dichloroethylene	2.85	0.05	ug/g	ND	71.3	60-130			
1,2-Dichloropropane	3.54	0.05	ug/g	ND	88.5	60-130			
cis-1,3-Dichloropropylene	2.64	0.05	ug/g	ND	66.1	60-130			
trans-1,3-Dichloropropylene	2.96	0.05	ug/g	ND	74.0	60-130			
Ethylbenzene	3.65	0.05	ug/g	ND	91.3	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	2.63	0.05	ug/g	ND	65.8	60-130			
Hexane	4.62	0.05	ug/g	ND	116	60-130			
Methyl Ethyl Ketone (2-Butanone)	8.17	0.50	ug/g	ND	81.7	50-140			
Methyl Isobutyl Ketone	8.51	0.50	ug/g	ND	85.1	50-140			
Methyl tert-butyl ether	11.2	0.05	ug/g	ND	112	50-140			
Methylene Chloride	3.40	0.05	ug/g	ND	84.9	60-130			
Styrene	3.06	0.05	ug/g	ND	76.5	60-130			
1,1,1,2-Tetrachloroethane	2.71	0.05	ug/g	ND	67.8	60-130			
1,1,2,2-Tetrachloroethane	2.78	0.05	ug/g	ND	69.6	60-130			
Tetrachloroethylene	2.94	0.05	ug/g	ND	73.5	60-130			
Toluene	3.76	0.05	ug/g	ND	94.0	60-130			
1,1,1-Trichloroethane	2.64	0.05	ug/g	ND	66.0	60-130			
1,1,2-Trichloroethane	3.54	0.05	ug/g	ND	88.6	60-130			
Trichloroethylene	3.01	0.05	ug/g	ND	75.1	60-130			
Trichlorofluoromethane	3.50	0.05	ug/g	ND	87.5	50-140			
Vinyl chloride	3.08	0.02	ug/g	ND	77.1	50-140			
m,p-Xylenes	6.49	0.05	ug/g	ND	81.1	60-130			
o-Xylene	3.30	0.05	ug/g	ND	82.4	60-130			
Surrogate: 4-Bromofluorobenzene	*7.35*		*%*		*91.9*	*50-140*			
Surrogate: Dibromofluoromethane	*6.28*		*%*		*78.5*	*50-140*			
Surrogate: Toluene-d8	*8.08*		*%*		*101*	*50-140*			
Benzene	4.12	0.02	ug/g	ND	103	60-130			
Ethylbenzene	3.65	0.05	ug/g	ND	91.3	60-130			
Toluene	3.76	0.05	ug/g	ND	94.0	60-130			
m,p-Xylenes	6.49	0.05	ug/g	ND	81.1	60-130			
o-Xylene	3.30	0.05	ug/g	ND	82.4	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Surrogate: Toluene-d8	*8.08*		*%*		*101*	*50-140*			

Qualifier Notes:

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 unlesss otherwise noted.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

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: 2423575

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2423575	

Client Name: Paterson
Contact Name: Mark D'Arcy
Address: 9 Auriga Drive, Nepean, ON
Telephone: (613) 226-7381

Project Ref: PE6555
Quote #:
PO #: 60385
E-mail: mdarcy@patersongroup.ca
cderidder@patersongroup.ca

Page 1 of 2

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

☒ REG 153/04 ☐ REG 406/19

Other Regulation: ☐ REG 558 ☐ PWQO ☐ CCME ☐ MISA ☐ SU - Sani ☐ SU - Storm ☐ Other:

~~Table~~ ☐ Res/Park ☐ Med/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ Table
Mun:
For RSC: ☐ Yes ☐ No

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

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs (F1 to F4) + BTEX	VOCs	pH	Metals by ICP	PAHs
1	BH1-24-SS3	S	\	2	Jun 05/24	\	✓				
2	BH2-24-SS3	S	\	2		\	✓				
3	BH3-24-SS3	S	\	2		\	✓				
4	BH3-24-SS4-TOP	S	\	2		\		✓	✓		
5	BH4-24-SS3	S	\	2		\	✓				
6	BH5-24-SS2	S	\	2		\				✓	✓
7	BH3-24-SS1-TOP	S	\	3		\	SET ON HOLD				
8	DUP1	S	\	2		\	✓				
9	BH6-24-SS3	S	\	3	Jun 06/24	\	✓				
10	BH8-24-SS1	S	\	3		\				✓	✓

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign): Carson de Ridder	Received at Depot:	Received at Lab:	Verified By: SS
Relinquished By (Print): Carson de Ridder	Date/Time:	Date/Time: Jun 7 2024 16:10	Date/Time: 7 Jun 24 1651
Date/Time: Jun 07/2024	Temperature: °C	Temperature: 14.0	pH Verified: ☐ NA By:

Chain of Custody (Blank).xlsx Revision 5.0

PARACEL LABORATORIES LTD. | T F F

Paracel ID: 2423575

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2423575	

Client Name: Paterson	Project Ref: PE 6555	Page 2 of 2
Contact Name: Mark D'arcy	Quote #:	Turnaround Time
Address: 9 Auriga Drive, Nepean, ON	PO #: 60385	☐ 1 day ☐ 3 day
	E-mail: mdarcy@patersongroup.ca cderidder@patersongroup.ca	☐ 2 day ☒ Regular
Telephone:		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	Required Analysis: PHCs (F1 to F4) + BTEX	VOCs	pH	Metals by ICP	PAHs
1	BH10-24-SS2-TOP/BOT MIX	S	\	3	Jun 06/24	\	✓				
2	BH13-24-SS1	S	\	3	↓	\				✓	✓
3											
4											
5											
6											
7											
8											
9											
10											

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign): Carson de Ridder	Received at Depot:	Received at Lab:	Verified By: SS
Relinquished By (Print): Carson de Ridder	Date/Time:	Date/Time: Jun 7 2024 1610	Date/Time: 7 Jun 24 1651
Date/Time: Jun 07/2024	Temperature: °C	Temperature: 14.0	pH Verified: ☒ NA By:

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Certificate of Analysis

Paterson Group Consulting Engineers (Ottawa)
9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Joshua Dempsey

Client PO: 60577
Project: PE6555
Custody:

Report Date: 5-Jul-2024
Order Date: 2-Jul-2024

Order #: 2427082

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

Paracel ID	Client ID
2427082-01	G1

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	4-Jul-24	4-Jul-24
PHC F1	CWS Tier 1 - P&T GC-FID	4-Jul-24	4-Jul-24
PHC F4G (gravimetric)	CWS Tier 1 - Extraction Gravimetric	4-Jul-24	5-Jul-24
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	3-Jul-24	4-Jul-24
Solids, %	CWS Tier 1 - Gravimetric	3-Jul-24	4-Jul-24

	Client ID:	G1	-	-	-		
	Sample Date:	02-Jul-24 09:00	-	-	-	-	-
	Sample ID:	2427082-01	-	-	-		
	Matrix:	Soil	-	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	83.0	-	-	-	-	-
Volatiles							
Benzene	0.02 ug/g	<0.02	-	-	-	-	-
Ethylbenzene	0.05 ug/g	<0.05	-	-	-	-	-
Toluene	0.05 ug/g	<0.05	-	-	-	-	-
m,p-Xylenes	0.05 ug/g	<0.05	-	-	-	-	-
o-Xylene	0.05 ug/g	<0.05	-	-	-	-	-
Xylenes, total	0.05 ug/g	<0.05	-	-	-	-	-
Toluene-d8	Surrogate	124%	-	-	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	-	-	-	-	-
F2 PHCs (C10-C16)	4 ug/g	<4	-	-	-	-	-
F3 PHCs (C16-C34)	8 ug/g	70	-	-	-	-	-
F4 PHCs (C34-C50)	6 ug/g	134 [1]	-	-	-	-	-
F4G PHCs (gravimetric)	50 ug/g	590	-	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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					
Volatiles								
Benzene	ND	0.02	ug/g					
Ethylbenzene	ND	0.05	ug/g					
Toluene	ND	0.05	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: Toluene-d8	*9.05*		*%*	*113*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	52	7	ug/g	45			15.5	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	42	8	ug/g	70			49.5	30	QR-04
F4 PHCs (C34-C50)	49	6	ug/g	134			92.3	30	QR-04
Physical Characteristics									
% Solids	94.0	0.1	% by Wt.	93.7			0.3	25	
Volatiles									
Benzene	ND	0.02	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	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: Toluene-d8	*9.12*		*%*		*114*	*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)	178	7	ug/g	ND	104	85-115			
F2 PHCs (C10-C16)	92	4	ug/g	ND	115	80-120			
F3 PHCs (C16-C34)	187	8	ug/g	ND	95.3	80-120			
F4 PHCs (C34-C50)	123	6	ug/g	ND	99.3	80-120			
F4G PHCs (gravimetric)	890	50	ug/g	ND	89.0	80-120			
Volatiles									
Benzene	3.88	0.02	ug/g	ND	96.9	60-130			
Ethylbenzene	4.32	0.05	ug/g	ND	108	60-130			
Toluene	4.17	0.05	ug/g	ND	104	60-130			
m,p-Xylenes	8.62	0.05	ug/g	ND	108	60-130			
o-Xylene	4.24	0.05	ug/g	ND	106	60-130			
Surrogate: Toluene-d8	*8.10*		*%*		*101*	*50-140*			

Qualifier Notes:

Sample Qualifiers :

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

Applies to Samples: G1

QC Qualifiers:

QR-04 Duplicate results exceeds RPD limits due to non-homogeneous matrix.

Sample Data Revisions:

None

Certificate of Analysis

Report Date: 05-Jul-2024

Client: **Paterson Group Consulting Engineers (Ottawa)**

Order Date: 2-Jul-2024

Client PO: 60577

Project Description: PE6555

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 unlesss otherwise noted.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

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: 2427082

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2427082	

Client Name: Paterson Group	Project Ref: PE6555	Page 1 of 1
Contact Name: Joshua Dempsey	Quote #:	**Turnaround Time**
Address: 9 Auriga Drive, Ottawa, ON K2E 7T9	PO #: 60577	☐ 1 day ☐ 3 day
	E-mail: jdempsey@patersongroup.ca	☐ 2 day ☒ Regular
Telephone: 613-226-7381		Date Required:

☒ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Res/Park ☐ Med/Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table ___
For RSC: ☐ Yes ☐ No

Other Regulation

☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun: ___
☐ Other:

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

Required Analysis

	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)	Lead				
1	G1	S		2	July 2/2024		✓											
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign):	Received at Depot:	Received at Lab: SO	Verified By: SO
Relinquished By (Print): Joshua Dempsey	Date/Time:	Date/Time: July 2, 2024 3:35p	Date/Time: July 2, 2024 3:51p
Date/Time: July 2, 2024	Temperature: °C	Temperature: 14.1	pH Verified: ☐ By:

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Certificate of Analysis

Paterson Group Consulting Engineers (Ottawa)
9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Mark D'Arcy

Client PO: 60439
Project: PE6555
Custody:

Report Date: 19-Jun-2024
Order Date: 14-Jun-2024

Order #: 2425031

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

Paracel ID	Client ID
2425031-01	BH1-24-GW1
2425031-02	BH2-24-GW1
2425031-03	BH3-24-GW1
2425031-04	BH10-24-GW1
2425031-05	DUP

Approved By:

Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHC F1	CWS Tier 1 - P&T GC-FID	18-Jun-24	18-Jun-24
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	18-Jun-24	18-Jun-24
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	18-Jun-24	18-Jun-24

Certificate of Analysis

Report Date: 19-Jun-2024

Client: **Paterson Group Consulting Engineers (Ottawa)**

Order Date: 14-Jun-2024

Client PO: **60439**

Project Description: PE6555

	Client ID:	BH1-24-GW1	BH2-24-GW1	BH3-24-GW1	BH10-24-GW1	-	-
	Sample Date:	13-Jun-24 09:00	13-Jun-24 09:00	13-Jun-24 09:00	13-Jun-24 09:00		
	Sample ID:	2425031-01	2425031-02	2425031-03	2425031-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
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	-	-
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,	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	-	-

Certificate of Analysis

Report Date: 19-Jun-2024

Client: **Paterson Group Consulting Engineers (Ottawa)**

Order Date: 14-Jun-2024

Client PO: **60439**

Project Description: **PE6555**

	Client ID:	BH1-24-GW1	BH2-24-GW1	BH3-24-GW1	BH10-24-GW1	-	-
	Sample Date:	13-Jun-24 09:00	13-Jun-24 09:00	13-Jun-24 09:00	13-Jun-24 09:00		
	Sample ID:	2425031-01	2425031-02	2425031-03	2425031-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Volatiles							
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	-	-
Toluene-d8	Surrogate	115%	114%	114%	114%	-	-
Dibromofluoromethane	Surrogate	98.8%	97.6%	98.9%	95.7%	-	-
4-Bromofluorobenzene	Surrogate	137%	138%	134%	120%	-	-
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	-	-

	Client ID:	DUP				-	-
	Sample Date:	13-Jun-24 09:00					
	Sample ID:	2425031-05					
	Matrix:	Ground Water					
	MDL/Units						
Volatiles							
Acetone	5.0 ug/L	<5.0	-	-	-	-	-
Benzene	0.5 ug/L	<0.5	-	-	-	-	-
Bromodichloromethane	0.5 ug/L	<0.5	-	-	-	-	-
Bromoform	0.5 ug/L	<0.5	-	-	-	-	-
Bromomethane	0.5 ug/L	<0.5	-	-	-	-	-
Carbon Tetrachloride	0.2 ug/L	<0.2	-	-	-	-	-
Chlorobenzene	0.5 ug/L	<0.5	-	-	-	-	-
Chloroform	0.5 ug/L	<0.5	-	-	-	-	-
Dibromochloromethane	0.5 ug/L	<0.5	-	-	-	-	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	-	-	-	-	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-	-	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-	-	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-	-	-
1,1-Dichloroethane	0.5 ug/L	<0.5	-	-	-	-	-
1,2-Dichloroethane	0.5 ug/L	<0.5	-	-	-	-	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	-	-	-	-	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	-	-	-	-	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	-	-	-	-	-
1,2-Dichloropropane	0.5 ug/L	<0.5	-	-	-	-	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	-	-	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	-	-	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	-	-	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	-	-	-	-	-
Ethylene dibromide (dibromoethane,	0.2 ug/L	<0.2	-	-	-	-	-
Hexane	1.0 ug/L	<1.0	-	-	-	-	-

	Client ID:	DUP				-	-
	Sample Date:	13-Jun-24 09:00					
	Sample ID:	2425031-05					
	Matrix:	Ground Water					
	MDL/Units						
Volatiles							
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	-	-	-	-	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	-	-	-	-	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	-	-	-	-	-
Methylene Chloride	5.0 ug/L	<5.0	-	-	-	-	-
Styrene	0.5 ug/L	<0.5	-	-	-	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	-	-	-	-	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	-	-	-	-	-
Tetrachloroethylene	0.5 ug/L	<0.5	-	-	-	-	-
Toluene	0.5 ug/L	<0.5	-	-	-	-	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	-	-	-	-	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	-	-	-	-	-
Trichloroethylene	0.5 ug/L	<0.5	-	-	-	-	-
Trichlorofluoromethane	1.0 ug/L	<1.0	-	-	-	-	-
Vinyl chloride	0.5 ug/L	<0.5	-	-	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	-	-	-	-	-
o-Xylene	0.5 ug/L	<0.5	-	-	-	-	-
Xylenes, total	0.5 ug/L	<0.5	-	-	-	-	-
4-Bromofluorobenzene	Surrogate	123%	-	-	-	-	-
Toluene-d8	Surrogate	116%	-	-	-	-	-
Dibromofluoromethane	Surrogate	96.6%	-	-	-	-	-
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	%REC	%REC Limit	RPD	RPD Limit	Notes
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					
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					
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					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*93.8*		*%*	*117*	*50-140*			
Surrogate: Dibromofluoromethane	*75.0*		*%*	*93.8*	*50-140*			
Surrogate: Toluene-d8	*90.8*		*%*	*113*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
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	ND	0.5	ug/L	ND			NC	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	
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*94.7*		*%*		*118*	*50-140*			
Surrogate: Dibromofluoromethane	*76.0*		*%*		*95.1*	*50-140*			
Surrogate: Toluene-d8	*91.3*		*%*		*114*	*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)	1830	25	ug/L	ND	106	85-115			
F2 PHCs (C10-C16)	1670	100	ug/L	ND	104	60-140			
F3 PHCs (C16-C34)	4270	100	ug/L	ND	109	60-140			
F4 PHCs (C34-C50)	2300	100	ug/L	ND	92.7	60-140			
Volatiles									
Acetone	113	5.0	ug/L	ND	113	50-140			
Benzene	47.0	0.5	ug/L	ND	117	60-130			
Bromodichloromethane	48.7	0.5	ug/L	ND	122	60-130			
Bromoform	41.2	0.5	ug/L	ND	103	60-130			
Bromomethane	44.9	0.5	ug/L	ND	112	50-140			
Carbon Tetrachloride	44.1	0.2	ug/L	ND	110	60-130			
Chlorobenzene	40.2	0.5	ug/L	ND	100	60-130			
Chloroform	49.9	0.5	ug/L	ND	125	60-130			
Dibromochloromethane	41.6	0.5	ug/L	ND	104	60-130			
Dichlorodifluoromethane	48.5	1.0	ug/L	ND	121	50-140			
1,2-Dichlorobenzene	40.6	0.5	ug/L	ND	102	60-130			
1,3-Dichlorobenzene	40.2	0.5	ug/L	ND	100	60-130			
1,4-Dichlorobenzene	38.8	0.5	ug/L	ND	97.0	60-130			
1,1-Dichloroethane	42.6	0.5	ug/L	ND	106	60-130			
1,2-Dichloroethane	41.9	0.5	ug/L	ND	105	60-130			
1,1-Dichloroethylene	34.8	0.5	ug/L	ND	87.0	60-130			
cis-1,2-Dichloroethylene	41.5	0.5	ug/L	ND	104	60-130			
trans-1,2-Dichloroethylene	43.7	0.5	ug/L	ND	109	60-130			
1,2-Dichloropropane	44.4	0.5	ug/L	ND	111	60-130			
cis-1,3-Dichloropropylene	42.0	0.5	ug/L	ND	105	60-130			
trans-1,3-Dichloropropylene	42.5	0.5	ug/L	ND	106	60-130			
Ethylbenzene	37.4	0.5	ug/L	ND	93.6	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	40.2	0.2	ug/L	ND	100	60-130			
Hexane	41.9	1.0	ug/L	ND	105	60-130			
Methyl Ethyl Ketone (2-Butanone)	101	5.0	ug/L	ND	101	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Methyl Isobutyl Ketone	88.1	5.0	ug/L	ND	88.1	50-140			
Methyl tert-butyl ether	95.5	2.0	ug/L	ND	95.5	50-140			
Methylene Chloride	41.4	5.0	ug/L	ND	104	60-130			
Styrene	34.3	0.5	ug/L	ND	85.8	60-130			
1,1,1,2-Tetrachloroethane	40.8	0.5	ug/L	ND	102	60-130			
1,1,2,2-Tetrachloroethane	39.7	0.5	ug/L	ND	99.4	60-130			
Tetrachloroethylene	42.0	0.5	ug/L	ND	105	60-130			
Toluene	39.3	0.5	ug/L	ND	98.2	60-130			
1,1,1-Trichloroethane	38.6	0.5	ug/L	ND	96.5	60-130			
1,1,2-Trichloroethane	43.6	0.5	ug/L	ND	109	60-130			
Trichloroethylene	48.3	0.5	ug/L	ND	121	60-130			
Trichlorofluoromethane	41.2	1.0	ug/L	ND	103	60-130			
Vinyl chloride	29.3	0.5	ug/L	ND	73.3	50-140			
m,p-Xylenes	72.8	0.5	ug/L	ND	91.0	60-130			
o-Xylene	36.7	0.5	ug/L	ND	91.8	60-130			
Surrogate: 4-Bromofluorobenzene	*85.9*		*%*		*107*	*50-140*			
Surrogate: Dibromofluoromethane	*86.3*		*%*		*108*	*50-140*			
Surrogate: Toluene-d8	*80.3*		*%*		*100*	*50-140*			

Qualifier Notes:

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: 2425031

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2425031	

Client Name: Paterson	Project Ref: PE6555	Page 1 of 1
Contact Name: Mark D'Arcy	Quote #:	Turnaround Time
Address: 9 Auriga Drive	PO #: 60439	☐ 1 day ☐ 3 day
	E-mail: mdarcy@patersongroup.ca	☐ 2 day ☑ Regular
Telephone: 613-226-7381	kpanchal@patersongroup.ca	Date Required:

☐ REG 153/04 ☑ REG 406/19

☐ Table 1 ☐ Res/Park ☐ Med/Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☐ Yes ☐ No

Other Regulation: ☐ REG 558 ☐ PWQO ☐ CCME ☐ MISA ☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

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

Required Analysis: ~~BTEX/F1-F4~~, PHCs F1-F4, VOCs

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	~~BTEX/F1-F4~~	PHCs F1-F4	VOCs
1	BH1-24-GW1	GW		3	06/13/2024			✓	✓
2	BH2-24-GW1	↓		↓	↓			↓	↓
3	BH3-24-GW1								
4	BH10-24-GW1								
5	DUP	↓		↓	↓			↓	↓
6									
7									
8									
9									
10									

Comments:

Method of Delivery:

Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Kuldeep Panchal	Date/Time:	Date/Time: June 14th 16:55	Date/Time: June 17, 2024 11:35am
Date/Time: 06/14/2024	Temperature: °C	Temperature: 17.3	pH Verified: ☐ By:

Chain of Custody (Blank).xlsx Revision 5.0

APPENDIX 2

TEST HOLE SUMMARY

SOIL TESTING SUMMARY

GROUNDWATER TESTING SUMMARY

GROUNDWATER LEVELS

SOIL ANALYTICAL TEST RESULTS

MAXIMUM CONCENTRATIONS – SOIL

GROUNDWATER ANALYTICAL TEST RESULTS

QA/QC CALCULATIONS

Test Hole ID	Date of Construction (dd-mm-yy)	Well Diameter (mm)	Ground Surface Elevation (masl)	Test Hole Depth (m)	Test Hole Bottom Elevation (masl)	Well Screen Length (m)	Well Screen Interval (mbgs)	Well Screen Interval (masl)	Geologic Media Intercepted by Well Screen
BH1-24	5-Jun-2024	50	68.60	2.92	65.681	1.52	1.4 - 2.92	67.201 - 65.681	Glacial Till
BH2-24	5-Jun-2024	50	68.28	2.39	65.891	0.61	1.78 - 2.39	66.501 - 65.891	Glacial Till
BH3-24	5-Jun-2024	50	69.05	3.63	65.42	1.52	2.11 - 3.63	66.94 - 65.42	Glacial Till
BH4-24	5-Jun-2024	-	68.35	2.54	65.812		-	-	-
BH5-24	5-Jun-2024	-	69.66	3.73	65.927		-	-	-
BH6-24	6-Jun-2024	-	69.54	3.51	66.027		-	-	-
BH7-24	6-Jun-2024	-	69.18	3.76	65.423		-	-	-
BH8-24	6-Jun-2024	-	69.38	3.40	65.978		-	-	-
BH9-24	6-Jun-2024	-	68.26	2.24	66.019		-	-	-
BH10-24	6-Jun-2024	50	68.40	2.90	65.495	1.52	1.38 - 2.9	67.015 - 65.495	Glacial Till
BH11-24	6-Jun-2024	-	68.74	2.69	66.046		-	-	-
BH12-24	6-Jun-2024	-	68.72	2.36	66.357		-	-	-
BH13-24	6-Jun-2024	-	69.81	3.89	65.92		-	-	-

Sample ID and Laboratory ID	Sample Depth (mbgs)	Sampling Date (dd-mm-yy)	Rationale	PID Vapour Reading (ppm)	Parameter Groups Analyzed				
					PHCs	BTEX	VOCs	PAHs	Metals
BH1-24-SS3 2423575-01	1.52-2.13m	5-Jun-2024	Assess potential impacts in the soil resulting from the former off-site USTs on the adjacent property to the west.	1.3	✓	✓			
BH2-24-SS3 2423575-02	1.52-2.13m	5-Jun-2024	Assess potential impacts in the soil resulting from the presence of the on-site maintenance operations.	2.1	✓	✓			
BH3-24-SS3 2423575-03	1.52-2.13m	5-Jun-2024	Assess potential impacts in the soil resulting from the presence of an on-site aboveground waste oil storage tank.	2.2	✓	✓			
BH3-24-SS4-TOP 2423575-04	2.30-2.90m	5-Jun-2024	Assess potential impacts in the soil resulting from the presence of an on-site aboveground waste oil storage tank .	1.6			✓		
BH4-24-SS3 2423575-05	1.52-2.13m	5-Jun-2024	Assess potential impacts in the soil resulting from the neighbouring automotive service garage to the west and former presence of a service garage to the north.	1.1	✓	✓			
BH5-24-SS2 2423575-06	0.76-1.37m	5-Jun-2024	Assess the quality of the fill material.	0.8				✓	✓
DUP1 2423575-08	1.52-2.13m	5-Jun-2024	Duplicate soil sample (BH2-24-SS3) for QA/QC purposes.	2.1	✓	✓			
BH6-24-SS3 2423575-09	1.52-2.13m	6-Jun-2024	Assess potential impacts in the soil resulting from the former building materials operation.	-	✓	✓			
BH8-24-SS1 2423575-10	0-0.61m	6-Jun-2024	Assess the quality of the fill material.	0.8				✓	✓
BH10-24-SS2-TOP/BOT MIX 2423575-11	0.76-1.37m	6-Jun-2024	Assess potential impacts in the soil resulting from the presence of USTs on-site and neighbouring automotive service garage to the west.	3	✓	✓			
BH13-24-SS1 2423575-12	0.05-0.61m	6-Jun-2024	Assess potential impacts in the soil resulting from the former building materials operation and assess the quality of the fill material.	0.4				✓	✓
G1 2427082-01	0.70m	2-Jul-2024	Assess potential impacts in the soil resulting from the presence of an aboveground furnace oil storage tank on-site.	-	✓	✓			

Sample ID and Laboratory ID	Sample Depth (mbgs)	Sampling Date (dd-mm-yy)	Rationale	Parameter Groups Analyzed	
				PHCs	VOCs
BH1-24-GW1 2425031-01	1.4 - 2.92	13-Jun-2024	To assess potential groundwater impacts from the former off-site USTs on the adjacent property to the west.	✓	✓
BH2-24-GW1 2425031-02	1.78 - 2.39	13-Jun-2024	To assess potential groundwater impacts from the on-site maintenance operations.	✓	✓
BH3-24-GW1 2425031-03	2.11 - 3.63	13-Jun-2024	To assess potential groundwater impacts from the on-site aboveground waste oil tank and former off-site dry cleaning operations on the neighbouring property to the east.	✓	✓
BH10-24-GW1 2425031-04	1.38 - 2.9	13-Jun-2024	To assess potential groundwater impacts from the on-site aboveground fuel storage tanks and off-site automotive service garage to the west.	✓	✓
DUP 2425031-05	1.78 - 2.39	13-Jun-2024	Duplicate groundwater sample (BH2-24-GW1) for QA/QC purposes.	✓	✓

Test Hole ID	Ground Surface Elevation (masl)	Water Level Depth (m)	Water Level Elevation (masl)	Date of Measurement (dd-mm-yyyy)
BH1-24	68.60	1.21	67.39	13-Jun-2024
BH2-24	68.28	0.64	67.64	13-Jun-2024
BH3-24	69.05	0.96	68.09	13-Jun-2024
BH10-24	68.40	1.28	67.12	13-Jun-2024

Parameter	Units	MDL	Regulation	Sample PE6555											
				BH1-24-SS3 2423575-01	BH2-24-SS3 2423575-02	BH3-24-SS3 2423575-03	BH3-24-SS4-TOP 2423575-04	BH4-24-SS3 2423575-05	BH5-24-SS2 2423575-06	DUP1 2423575-08	BH6-24-SS3 2423575-09	BH8-24-SS1 2423575-10	BH10-24-SS2-TOP/BOT MIX 2423575-11	BH13-24-SS1 2423575-12	G1 2427082-01
Sample Depth (m)			Reg 153/04-Table 3 Industrial, coarse	1.52-2.13m	1.52-2.13m	1.52-2.13m	2.30-2.90m	1.52-2.13m	0.76-1.37m	1.52-2.13m	1.52-2.13m	0-0.61m	0.76-1.37m	0.05-0.61m	0.70m
Sample Date				5-Jun-2024	5-Jun-2024	5-Jun-2024	5-Jun-2024	5-Jun-2024	5-Jun-2024	5-Jun-2024	6-Jun-2024	6-Jun-2024	6-Jun-2024	6-Jun-2024	2-Jul-2024
Phsical Characteristics															
% Solids	% by Wt.	0.1		91.3	89.7	88.5	91	88.6	83.3	90.8	81.4	88.4	81.7	91.5	83
General Inorganics															
pH	pH Units	0.05	NV	N/A	N/A	N/A	7.29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metals															
Antimony	ug/g dry	1.0	40	N/A	N/A	N/A	N/A	N/A	ND (1.0)	N/A	N/A	ND (1.0)	N/A	ND (1.0)	N/A
Arsenic	ug/g dry	1.0	18	N/A	N/A	N/A	N/A	N/A	1.8	N/A	N/A	3.9	N/A	3.7	N/A
Barium	ug/g dry	1.0	670	N/A	N/A	N/A	N/A	N/A	46.6	N/A	N/A	67.2	N/A	43.7	N/A
Beryllium	ug/g dry	0.5	8.0	N/A	N/A	N/A	N/A	N/A	ND (0.5)	N/A	N/A	ND (0.5)	N/A	ND (0.5)	N/A
Boron	ug/g dry	0.5	120	N/A	N/A	N/A	N/A	N/A	ND (5.0)	N/A	N/A	5.7	N/A	ND (5.0)	N/A
Cadmium	ug/g dry	0.5	1.9	N/A	N/A	N/A	N/A	N/A	ND (0.5)	N/A	N/A	ND (0.5)	N/A	ND (0.5)	N/A
Chromium	ug/g dry	5	160	N/A	N/A	N/A	N/A	N/A	18.9	N/A	N/A	15.9	N/A	12	N/A
Cobalt	ug/g dry	1	80	N/A	N/A	N/A	N/A	N/A	4.6	N/A	N/A	4.8	N/A	4.3	N/A
Copper	ug/g dry	5	230	N/A	N/A	N/A	N/A	N/A	6.6	N/A	N/A	10.1	N/A	7.8	N/A
Lead	ug/g dry	1	120	N/A	N/A	N/A	N/A	N/A	2.8	N/A	N/A	17.6	N/A	27.5	N/A
Molybdenum	ug/g dry	1	40	N/A	N/A	N/A	N/A	N/A	ND (1.0)	N/A	N/A	1.6	N/A	1.9	N/A
Nickel	ug/g dry	5	270	N/A	N/A	N/A	N/A	N/A	9.6	N/A	N/A	11.6	N/A	10.3	N/A
Selenium	ug/g dry	1	5.5	N/A	N/A	N/A	N/A	N/A	ND (1.0)	N/A	N/A	ND (1.0)	N/A	ND (1.0)	N/A
Silver	ug/g dry	0.3	40	N/A	N/A	N/A	N/A	N/A	ND (0.3)	N/A	N/A	ND (0.3)	N/A	ND (0.3)	N/A
Thallium	ug/g dry	1	3.3	N/A	N/A	N/A	N/A	N/A	ND (1.0)	N/A	N/A	ND (1.0)	N/A	ND (1.0)	N/A
Uranium	ug/g dry	1	33	N/A	N/A	N/A	N/A	N/A	ND (1.0)	N/A	N/A	ND (1.0)	N/A	ND (1.0)	N/A
Vanadium	ug/g dry	1	86	N/A	N/A	N/A	N/A	N/A	28.3	N/A	N/A	20.9	N/A	18.2	N/A
Zinc	ug/g dry	10	340	N/A	N/A	N/A	N/A	N/A	ND (20.0)	N/A	N/A	27.5	N/A	ND (20.0)	N/A
Volatiles															
Acetone	ug/g dry	0.5	16	N/A	N/A	N/A	ND (0.50)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	ug/g dry	0.02	0.32	N/A	N/A	N/A	ND (0.02)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bromodichloromethane	ug/g dry	0.05	18	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bromoform	ug/g dry	0.05	0.61	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bromomethane	ug/g dry	0.05	0.05	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	ug/g dry	0.05	0.21	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorobenzene	ug/g dry	0.05	2.4	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chloroform	ug/g dry	0.05	0.47	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dibromochloromethane	ug/g dry	0.05	13	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dichlorodifluoromethane	ug/g dry	0.2	16	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichlorobenzene	ug/g dry	0.05	6.8	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dichlorobenzene	ug/g dry	0.05	9.6	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	ug/g dry	0.05	0.2	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1-Dichloroethane	ug/g dry	0.05	17	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichloroethane	ug/g dry	0.05	0.05	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1-Dichloroethylene	ug/g dry	0.05	0.064	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethylene	ug/g dry	0.05	55	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
trans-1,2-Dichloroethylene	ug/g dry	0.05	1.3	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichloropropane	ug/g dry	0.05	0.16	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
cis-1,3-Dichloropropylene	ug/g dry	0.05	0.18	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
trans-1,3-Dichloropropylene	ug/g dry	0.05	0.18	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dichloropropene, total	ug/g dry	0.05	0.18	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ethylbenzene	ug/g dry	0.05	9.5	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ethylene dibromide (dibromoethane, 1	ug/g dry	0.05	0.05	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hexane	ug/g dry	0.05	46	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methyl Ethyl Ketone (2-Butanone)	ug/g dry	0.05	70	N/A	N/A	N/A	ND (0.50)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methyl Isobutyl Ketone	ug/g dry	0.05	31	N/A	N/A	N/A	ND (0.50)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methyl tert-butyl ether	ug/g dry	0.05	11	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methylene Chloride	ug/g dry	0.5	1.6	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Styrene	ug/g dry	2	34	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1,1,2-Tetrachloroethane	ug/g dry	0.5	0.087	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1,2,2-Tetrachloroethane	ug/g dry	0.05	0.05	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tetrachloroethylene	ug/g dry	0.05	4.5	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	ug/g dry	0.05	68	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1,1-Trichloroethane	ug/g dry	0.05	6.1	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1,2-Trichloroethane	ug/g dry	0.05	0.05	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trichloroethylene	ug/g dry	0.05	0.91	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trichlorofluoromethane	ug/g dry	0.05	4.0	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	ug/g dry	0.05	0.032	N/A	N/A	N/A	ND (0.02)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
m/p-Xylene	ug/g dry	0.05	26	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
o-Xylene	ug/g dry	0.05	26	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Xylenes, total	ug/g dry	0.05	26	N/A	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BTEX															
Benzene	ug/g dry	0.02	0.32	ND (0.02)	ND (0.02)	ND (0.02)	N/A	ND (0.02)	N/A	ND (0.02)	ND (0.02)	N/A	ND (0.02)	N/A	ND (0.02)
Ethylbenzene	ug/g dry	0.05	9.5	ND (0.05)	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Toluene	ug/g dry	0.05	68	ND (0.05)	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
m/p-Xylene	ug/g dry	0.05	26	ND (0.05)	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
o-Xylene	ug/g dry	0.05	26	ND (0.05)	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Xylenes, total	ug/g dry	0.05	26	ND (0.05)	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	ND (0.05)
Hydrocarbons															
F1 PHCs (C6-C10)	ug/g dry	7	55	ND (7)	ND (7)	ND (7)	N/A	ND (7)	N/A	ND (7)	ND (7)	N/A	43	N/A	ND (7)
F2 PHCs (C10-C16)	ug/g dry	4	230	33	ND (4)	ND (4)	N/A	ND (4)	N/A	ND (4)	ND (4)	N/A	ND (4)	N/A	ND (4)
F3 PHCs (C16-C34)	ug/g dry	8	1700	41	ND (8)	15	N/A	ND (8)	N/A	ND (8)	ND (8)	N/A	ND (8)	N/A	70
F4 PHCs (C34-C50)	ug/g dry	6	3300	7	ND (6)	20	N/A	ND (6)	N/A	ND (6)	ND (6)	N/A	ND (6)	N/A	134
F4G PHCs (gravimetric)	ug/g dry		3300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	590
Semi-Volatiles															
Acenaphthene	ug/g dry	0.02	96	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Acenaphthylene	ug/g dry	0.02	0.15	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Anthracene	ug/g dry	0.02	0.67	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Benzo[a]anthracene	ug/g dry	0.02	0.96	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Benzo[a]pyrene	ug/g dry	0.02	0.3	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Benzo[b]fluoranthene	ug/g dry	0.02	0.96	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Benzo[g,h,i]perylene	ug/g dry	0.02	9.6	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Benzo[k]fluoranthene	ug/g dry	0.02	0.96	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Chrysene	ug/g dry	0.02	9.6	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Dibenzo[a,h]anthracene	ug/g dry	0.02	0.1	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Fluoranthene	ug/g dry	0.02	9.6	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	0.02	N/A	ND (0.02)	N/A
Fluorene	ug/g dry	0.02	62	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Indeno [1,2,3-cd] pyrene	ug/g dry	0.02	0.76	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
1-Methylnaphthalene	ug/g dry	0.02	76	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
2-Methylnaphthalene	ug/g dry	0.02	76	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Methylnaphthalene (1&2)	ug/g dry	0.04	76	N/A	N/A	N/A	N/A	N/A	ND (0.04)	N/A	N/A	ND (0.04)	N/A	ND (0.04)	N/A
Naphthalene	ug/g dry	0.01	9.6	N/A	N/A	N/A	N/A	N/A	ND (0.01)	N/A	N/A	ND (0.01)	N/A	ND (0.01)	N/A
Phenanthrene	ug/g dry	0.02	12	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	ND (0.02)	N/A	ND (0.02)	N/A
Pyrene	ug/g dry	0.02	96	N/A	N/A	N/A	N/A	N/A	ND (0.02)	N/A	N/A	0.02	N/A	ND (0.02)	N/A

2.00	Result exceeds Reg 153/04-Table 3 Industrial, coarse Standards
ND (0.2)	MDL exceeds Reg 153/04-Table 3 Industrial, coarse Standards
ND (0.2)	No concentrations identified above the MDL
NA	Parameter not analysed
NV	No value given for indicated parameter

Parameter	Sample ID / Depth (m)	Units	Reg 153/04-Table 3 Industrial, coarse Standards	Concentration
pH	BH3-24-SS4-TOP 2423575-04 - 2.30-2.90m	pH Units	NV	7.29
Arsenic	BH8-24-SS1 2423575-10 - 0-0.61m	ug/g dry	18	3.9
Barium	BH8-24-SS1 2423575-10 - 0-0.61m	ug/g dry	670	67.2
Boron	BH8-24-SS1 2423575-10 - 0-0.61m	ug/g dry	120	5.7
Chromium	BH5-24-SS2 2423575-06 - 0.76-1.37m	ug/g dry	160	18.9
Cobalt	BH8-24-SS1 2423575-10 - 0-0.61m	ug/g dry	80	4.8
Copper	BH8-24-SS1 2423575-10 - 0-0.61m	ug/g dry	230	10.1
Lead	BH13-24-SS1 2423575-12 - 0.05-0.61m	ug/g dry	120	27.5
Molybdenum	BH13-24-SS1 2423575-12 - 0.05-0.61m	ug/g dry	40	1.9
Nickel	BH8-24-SS1 2423575-10 - 0-0.61m	ug/g dry	270	11.6
Vanadium	BH5-24-SS2 2423575-06 - 0.76-1.37m	ug/g dry	86	28.3
Zinc	BH8-24-SS1 2423575-10 - 0-0.61m	ug/g dry	340	27.5
F1 PHCs (C6-C10)	BH10-24-SS2-TOP/BOT MIX 2423575-11 - 0.76	ug/g dry	55	43
F2 PHCs (C10-C16)	BH1-24-SS3 2423575-01 - 1.52-2.13m	ug/g dry	230	33
F3 PHCs (C16-C34)	G1 2427082-01 - 0.70m	ug/g dry	1700	70
F4 PHCs (C34-C50)	G1 2427082-01 - 0.70m	ug/g dry	3300	134
F4G PHCs (gravimetric)	G1 2427082-01 - 0.70m	ug/g dry	3300	590
Fluoranthene	BH8-24-SS1 2423575-10 - 0-0.61m	ug/g dry	9.6	0.02
Pyrene	BH8-24-SS1 2423575-10 - 0-0.61m	ug/g dry	96	0.02
All remaining parameters analysed were reported non-detect in all samples.				

Parameter	Units	MDL	Regulation	Sample PE6555				
				BH1-24-GW1 2425031-01	BH2-24-GW1 2425031-02	BH3-24-GW1 2425031-03	BH10-24-GW1 2425031-04	DUP 2425031-05
Sample Depth (m)			Reg 153/04-Table 3 Non-Potable Groundwater, coarse	1.4 - 2.92	1.78 - 2.39	2.11 - 3.63	1.38 - 2.9	1.78 - 2.39
Sample Date				13-Jun-2024	13-Jun-2024	13-Jun-2024	13-Jun-2024	13-Jun-2024
Volatiles								
Acetone	ug/L	5.0	130000	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Benzene	ug/L	0.5	44	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Bromodichloromethane	ug/L	0.5	85000	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Bromoform	ug/L	0.5	380	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Bromomethane	ug/L	0.5	5.6	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Carbon Tetrachloride	ug/L	0.2	0.79	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Chlorobenzene	ug/L	0.5	630	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Chloroform	ug/L	0.5	2.4	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Dibromochloromethane	ug/L	0.5	82000	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Dichlorodifluoromethane	ug/L	1.0	4400	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichlorobenzene	ug/L	0.5	4600	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,3-Dichlorobenzene	ug/L	0.5	9600	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,4-Dichlorobenzene	ug/L	0.5	8.0	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1-Dichloroethane	ug/L	0.5	320	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,2-Dichloroethane	ug/L	0.5	1.6	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1-Dichloroethylene	ug/L	0.5	1.6	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
cis-1,2-Dichloroethylene	ug/L	0.5	1.6	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
trans-1,2-Dichloroethylene	ug/L	0.5	1.6	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,2-Dichloropropane	ug/L	0.5	16	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
cis-1,3-Dichloropropylene	ug/L	0.5	5.2	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
trans-1,3-Dichloropropylene	ug/L	0.5	5.2	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,3-Dichloropropene, total	ug/L	0.5	5.2	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Ethylbenzene	ug/L	0.5	2300	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Ethylene dibromide (dibromoethane,	ug/L	0.2	0.25	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Hexane	ug/L	1.0	51	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Methyl Ethyl Ketone (2-Butanone)	ug/L	5.0	470000	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Methyl Isobutyl Ketone	ug/L	5.0	140000	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Methyl tert-butyl ether	ug/L	2.0	190	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Methylene Chloride	ug/L	5.0	610	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Styrene	ug/L	0.5	1300	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1,1,2-Tetrachloroethane	ug/L	0.5	3.3	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1,2,2-Tetrachloroethane	ug/L	0.5	3.2	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Tetrachloroethylene	ug/L	0.5	1.6	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Toluene	ug/L	0.5	18000	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1,1-Trichloroethane	ug/L	0.5	640	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1,2-Trichloroethane	ug/L	0.5	4.7	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Trichloroethylene	ug/L	0.5	1.6	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Trichlorofluoromethane	ug/L	1.0	2500	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Vinyl Chloride	ug/L	0.5	0.5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
m/p-Xylene	ug/L	0.5	4200	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
o-Xylene	ug/L	0.5	4200	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Xylenes, total	ug/L	0.5	4200	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Hydrocarbons								
F1 PHCs (C6-C10)	ug/L	25	750	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)
F2 PHCs (C10-C16)	ug/L	100	150	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
F3 PHCs (C16-C34)	ug/L	100	500	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
F4 PHCs (C34-C50)	ug/L	100	500	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)

2.00 Result exceeds Reg 153/04-Table 3 Non-Potable Groundwater, coarse Standards
ND (0.2) MDL exceeds Reg 153/04-Table 3 Non-Potable Groundwater, coarse Standards
ND (0.2) No concentrations identified above the MDL
NA Parameter not analysed
NV No value given for indicated parameter

Parameter	MDL	BH3-24-SS3 2423575-03	DUP1 2423575-08	RPD (%)	QA/QC Result
BTEX					
Benzene	0.002	ND (0.002)	ND (0.002)	0.0%	Within the acceptable range
Ethylbenzene	0.002	ND (0.002)	ND (0.002)	0.0%	Within the acceptable range
Toluene	0.002	ND (0.002)	ND (0.002)	0.0%	Within the acceptable range
m/p-Xylene	0.002	ND (0.002)	ND (0.002)	0.0%	Within the acceptable range
o-Xylene	0.002	ND (0.002)	ND (0.002)	0.0%	Within the acceptable range
Xylenes, total	0.002	ND (0.002)	ND (0.002)	0.0%	Within the acceptable range
Hydrocarbons					
F1 PHCs (C6-C10)	7	ND (7)	ND (7)	0.0%	Within the acceptable range
F2 PHCs (C10-C16)	4	ND (4)	ND (4)	0.0%	Within the acceptable range
F3 PHCs (C16-C34)	8	ND (8)	ND (8)	0.0%	Within the acceptable range
F4 PHCs (C34-C50)	6	ND (6)	ND (6)	0.0%	Within the acceptable range

Parameter	MDL	BH2-24-GW1 2425031-02	DUP 2425031-05	RPD (%)	QA/QC Result
Volatiles					
Acetone	5.0	ND (5.0)	ND (5.0)	0.0%	Within the acceptable range
Benzene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Bromodichloromethane	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Bromoform	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Bromomethane	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Carbon Tetrachloride	0.2	ND (0.2)	ND (0.2)	0.0%	Within the acceptable range
Chlorobenzene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Chloroform	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Dibromochloromethane	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Dichlorodifluoromethane	1.0	ND (1.0)	ND (1.0)	0.0%	Within the acceptable range
1,2-Dichlorobenzene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
1,3-Dichlorobenzene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
1,4-Dichlorobenzene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
1,1-Dichloroethane	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
1,2-Dichloroethane	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
1,1-Dichloroethylene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
cis-1,2-Dichloroethylene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
trans-1,2-Dichloroethylene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
1,2-Dichloropropane	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
cis-1,3-Dichloropropylene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
trans-1,3-Dichloropropylene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
1,3-Dichloropropene, total	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Ethylbenzene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Ethylene dibromide (dibromoethane, 1,2-)	0.2	ND (0.2)	ND (0.2)	0.0%	Within the acceptable range
Hexane	1.0	ND (1.0)	ND (1.0)	0.0%	Within the acceptable range
Methyl Ethyl Ketone (2-Butanone)	5.0	ND (5.0)	ND (5.0)	0.0%	Within the acceptable range
Methyl Isobutyl Ketone	5.0	ND (5.0)	ND (5.0)	0.0%	Within the acceptable range
Methyl tert-butyl ether	2.0	ND (2.0)	ND (2.0)	0.0%	Within the acceptable range
Methylene Chloride	5.0	ND (5.0)	ND (5.0)	0.0%	Within the acceptable range
Styrene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
1,1,1,2-Tetrachloroethane	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
1,1,2,2-Tetrachloroethane	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Tetrachloroethylene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Toluene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
1,1,1-Trichloroethane	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
1,1,2-Trichloroethane	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Trichloroethylene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Trichlorofluoromethane	1.0	ND (1.0)	ND (1.0)	0.0%	Within the acceptable range
Vinyl Chloride	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
m/p-Xylene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
o-Xylene	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Xylenes, total	0.5	ND (0.5)	ND (0.5)	0.0%	Within the acceptable range
Hydrocarbons					
F1 PHCs (C6-C10)	25	ND (25)	ND (25)	0.0%	Within the acceptable range
F2 PHCs (C10-C16)	100.0	ND (100)	ND (100)	0.0%	Within the acceptable range
F3 PHCs (C16-C34)	100	ND (100)	ND (100)	0.0%	Within the acceptable range
F4 PHCs (C34-C50)	100.0	ND (100)	ND (100)	0.0%	Within the acceptable range