PATERSON GROUP

Phase II – Environmental Site Assessment

2655 Queensview Drive
Ottawa, Ontario

Prepared for: Westrich Management Ltd.

Report: PE7051-2
Date: July 2, 2025

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EXECUTIVE SUMMARY

Assessment

A Phase II ESA was carried out for the property addressed 2655 Queensview Drive, in the City of 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 Property.

The subsurface investigation was conducted on May 14 and 15, 2025, in conjunction with geotechnical investigation and involved the advancement of four (4) boreholes on the Phase II Property. The boreholes were advanced and cored into the bedrock to maximum depth of 9.09m below ground surface (bgs). Three boreholes (BH2-25, BH3-25 and BH4-25) were instrumented with monitoring wells.

The soil stratigraphy generally consists of topsoil or asphalt overlying fill material, underlain by native glacial till and/or silty sand. The native soil or fill was underlain by a shale bedrock layer, which was subsequently underlain by limestone bedrock. No visual or olfactory evidence of contamination was observed in the collected soil samples, and the vapour readings obtained are not considered indicative of volatile contamination. Groundwater was encountered within the overburden or deeper within the bedrock, at depths ranging from approximately 1.44 to 4.13m below the existing ground surface.

Soil

A total of 6 soil samples (including one duplicate) were submitted for analysis of metals (including As, Sb, Se), PAHs, BTEX, PHCs (F1-F4), PCBs and/or pH. All parameters for soil samples analysed comply with the MECP Table 3 Residential Standards.

Groundwater

Six groundwater samples (including two duplicate) from monitoring wells installed in BH2-25, BH3-25 and BH4-25 were submitted for laboratory analysis of BTEX, PHCs (F1-F4), VOCs, PCBs and/or PAHs.

All VOCs, BTEX, PAH and PCB parameters in the groundwater samples analyzed comply with the MECP Table 3 Non-Potable Groundwater Standards.

All PHC parameters complied with the MECP Table 3 Non-Potable Groundwater Standards, with the exception of PHC Fractions F3 and F4 in a duplicate groundwater sample (DUP-May27) collected from BH3-25. It is important to note that the original sample (BH3-25-GW1) reported all PHC parameters as non-detect. As a result, the F_3 and F_4 concentrations were considered to be anomalous.

A second round of groundwater sampling was conducted on June 13, 2025. Samples BH3-25-GW2 and its duplicate (DUP-June13) were collected and submitted for laboratory analysis of PHC Fractions F2 through F4. All tested parameters were reported as non-detect in both the original and duplicate samples.

Based on these results, it is our interpretation that the exceedances of PHC F3 and F4 reported in DUP-May27 may have been the result of sediment interference in the groundwater sample, which potentially contributed to the false detection of PHCs. Considering the non-detect results from BH3-25-GW1, BH3-25-GW2, and DUP-June13, the exceedances identified in DUP-May27 are not considered representative of actual groundwater conditions at the Phase I Property.

Therefore, groundwater at the Phase I Property is considered to be in compliance with MECP Table 3 Non-Potable Groundwater Standards for PHC parameters, along with all other tested parameters.

Recommendations

Soil

All clean soil that requires removal from the Phase II Property for construction purposes must be handled in accordance with Ontario Regulation 406/19: On-Site and Excess Soil Management. Further information regarding O. Reg 406/19 can be provided upon request.

Groundwater

It is recommended the monitoring wells be maintained for future sampling purposes. The monitoring wells will be registered with the MECP under Ontario Regulation 903 (Ontario Water Resources Act). At such a time that the monitoring wells are no longer required, they must be decommissioned in accordance with O.Reg. 903.

1.0 INTRODUCTION

At the request of Westrich Management Ltd., Paterson Group (Paterson) carried out a Phase II Environmental Site Assessment for the property addressed 2655 Queensview Drive, in the City of Ottawa, Ontario. The purpose of this Phase II-ESA was to address areas of potential environmental concern identified in Phase I ESA conducted by Paterson Group in May 2025.

1.1 Site Description

Address:	2655 Queensview Drive, Ottawa, Ontario
Legal Description:	Part of Lot 307, Registered Plan 372212, City of Ottawa.
Property Identification Number:	03957-0513
Location:	The Phase II Property is located on the north side of Queensview Drive, approximately 320m east of the intersection of Pinecrest Road and Queensview Drive, in the City of Ottawa, Ontario. Refer to Figure 1 - Key Plan in the Figures section following the text.
Latitude and Longitude:	45° 21’ 13.26" N, 75° 47' 12.35" W

Site Description:

Configuration:	Rectangular
Site Area:	0.92 ha (approximate)

1.2 Property Ownership

The Phase II Property is currently owned by Westrich Management Ltd. Paterson was engaged to complete the Phase II-ESA by Mr. Ian O’Donnell with Westrich Management Ltd. Mr. Ian O’Donnell can be reached by mail at 10309 102 Avenue NW, Edmonton, AB, T5J 0L1.

1.3 Current and Proposed Future Uses

The Phase II Property is currently occupied by a single storey commercial building and associated parking and landscaped areas. It is our understanding that the Phase II Property will be redeveloped with 2 six-storey residential buildings with multiple levels of underground parking.

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
- Residential land use

Section 35 of O.Reg. 153/04 applies to the Phase II Property as the Phase II Property and neighbouring properties are all serviced by municipal water. No potable water wells are considered to be present within the Phase I ESA Study Area.

Section 41 of O.Reg. 153/04 does not apply to the Phase II 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 Property as the Phase II Property is not a Shallow Soil property.

Coarse-grained soil standards were chosen as a conservative approach based on the observed site conditions. Grain size analysis was not completed. The intended use of the Phase II Property is residential; therefore, the Residential Standards have been selected for the purpose of this Phase II ESA.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

The Phase II Property is on the north side of Queensview Drive, approximately 320m east of the intersection of Pinecrest Road and Queensview Drive, in the City of Ottawa, Ontario. The Phase II Property is located in an urban area surrounded by residential and commercial developments. The Phase II Property is currently occupied by a commercial building situated in the central-western portion. The remainder of the site consists of landscaped areas and at-grade parking. The building and landscaped sections are situated at a slightly higher elevation compared to Queensview Drive. The regional topography in the general area of the Phase I Property slopes down to the northeast. Site drainage consists of a combination of sheet flow to the catch basins in parking areas and surficial infiltration in grassed/vegetated areas. The Phase II Property is situated in a municipally serviced area.

2.2 Past Investigations

The following reports were reviewed prior to conducting this assessment:

- ‘Phase I Environmental Site Assessment, 2655 Queensview Drive, Ottawa, Ontario,” prepared for Westrich Management Ltd., by Pinchin Ltd., and dated April 17, 2024.

Based on the review of available historical information, no environmental concerns were identified in connection with the past uses of the Phase I Property or the surrounding properties. At the time of the visit, the Phase I Property was occupied by a commercial building operating as a fitness centre. No environmental concerns were noted during the site reconnaissance.

The assessment concluded that there were no identified conditions likely to result in potential subsurface impacts at the Phase I Property, and therefore, a Phase II ESA was not recommended.

Given the approximate construction date of the building (circa 1980), it was recommended that a Designated Substance Survey (DSS) be completed prior to any demolition or renovation activities.

- ‘Phase I - Environmental Site Assessment, 2655 Queensview Drive, Ottawa, Ontario,” prepared by Paterson Group Inc. (Paterson), dated June 2025.

The Phase I ESA was completed in general accordance with the Ontario Regulation (O.Reg.) 153/04, as amended. Based on the available historical information, the Phase I Property was initially developed with the existing commercial building circa 1980. The building was operated as the Ottawa Athletic Club until 1999 and was subsequently occupied by GoodLife Fitness as a gym facility. No environmental concerns were identified with the historical use of the Phase I Property. The potential presence of fill material of unknown quality was considered a PCA which resulted in an APEC on the Phase I property.

Based on the available historical information, adjacent and surrounding properties within the Phase I Study Area have been developed primarily for commercial and residential purposes. Former electronic equipment manufacturing operations were identified at 2650 and 2680 Queensview Drive, located approximately 20m southeast and southwest of the Phase I property, respectively. Both identified off-site PCAs were considered to represent APECs on the Phase I property.

Following the historical research, a site visit was conducted. The Phase I Property is occupied by a commercial building utilized as a gym. A pad-mounted transformer was observed on the Phase I property, located to the north of the subject building. The presence and use of this transformer was considered a PCA which represents an APEC on the Phase I property.

Based on the June 2025 Phase I ESA conducted by Paterson for the Phase II property, on-site and off-site potentially contaminating activities (PCAs) were considered to result in five (5) areas of potential environmental concern (APECs) on the Phase I and Phase II Property, as presented in the table below.

Areas of Potential Environmental Concern					
Area of Potential Environmental Concern	**Location of Area of Potential Environmental Concern with respect to Phase I Property**	**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 Existing Pad Mounted Transformer	North portion of the Phase I Property	*“Item 55 – Transformer Manufacturing, Processing and Use”*	On-site	BTEX PHCs (F_1-F_4) PCBs	Soil Groundwater

Areas of Potential Environmental Concern					
Area of Potential Environmental Concern	**Location of Area of Potential Environmental Concern with respect to Phase I Property**	**Potentially Contaminating Activity**	**Location of PCA (on-site or off-site)**	**Contaminants of Potential Concern**	**Media Potentially Impacted (Groundwater, Soil, and/or Sediment)**
APEC 2 Fill Material of Unknown Quality	Throughout the Phase I Property, except beneath the building	*"Item 30: Importation of Fill Material of Unknown Quality"*	On-site	PHCs (F_1-F_4) PAHs Metals	Soil
APEC 3[1] Application of Road Salt	Throughout parking areas on the Phase I Property	*"Item NA: Application of road salt for the safety of vehicular or pedestrian traffic under conditions of snow or ice"*	On-site	Electrical Conductivity (EC) Sodium Adsorption Ratio (SAR)	Soil
APEC 4 Former Electric Component Manufacturer	Southeastern portion of the Phase I Property	*"Item 19: Electronic and Computer Equipment Manufacturing"*	Off-site	BTEX PHCs (F_1-F_4) VOCs	Soil Groundwater
APEC 5 Former Electric Component Manufacturer	Southwestern portion of the Phase I Property	*"Item 19: Electronic and Computer Equipment Manufacturing"*	Off-site	BTEX PHCs (F_1-F_4) VOCs	Soil Groundwater

Note:
1 – In accordance with Section 49.1 of Ontario Regulation 153/04, standards are deemed to be met if an applicable site condition standard is exceeded at a property solely because the qualified person has determined, based on a phase two environmental site assessment, that a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both.

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The Phase II ESA, carried out in conjunction with a Geotechnical Investigation, included a drilling program carried out on May 14 and 15, 2025. The program consisted of drilling four boreholes (BH1-25 to BH4-25) to a maximum depth of 9.09m below ground surface (bgs). Three boreholes (BH2-25, BH3-25 and BH4-25) were instrumented with monitoring wells. These boreholes were placed to address APECs identified during the Phase I ESA.

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 these media is based on the Contaminants of Potential Concern identified during the Phase I ESA.

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

- ❑ Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)
- ❑ Petroleum Hydrocarbons (PHCs)
- ❑ Metals (including arsenic (As), antimony (Sb), selenium (Se))
- ❑ Polycyclic Aromatic Hydrocarbons (PAHs)
- ❑ Volatile Organic Compounds (VOCs)
- ❑ Polychlorinated Biphenyls (PCBs)

In accordance with Section 49.1 of O.Reg.153/04, as amended, electrical conductivity (EC) and sodium adsorption ratio (SAR) are not considered to be CPCs.

3.3 Phase I Conceptual Site Model

Geological and Hydrogeological Setting

The Geological Survey of Canada website on the Urban Geology of the National Capital Area was consulted as part of this assessment. Based on the information from NRCAN, bedrock in the area of the site consists of shale of the Rockliffe Formation. Based on the maps, the surficial geology consists of till with an overburden thickness ranging from 3 to 5m.

The topographic maps indicate that the elevation of the Phase I Property is approximately 70m above sea level. The regional topography in the general area of the Phase I Property slopes down to the northeast.

Existing Buildings and Structures

A commercial building is present on the Phase I Property. The commercial building was constructed circa 1980 and is currently heated with a natural gas system and electric baseboard heaters. The subject building is constructed with a concrete foundation and is finished on the exterior with brick and has a flat tar and gravel roof.

The Site Building features a split-level layout, with the eastern portion including a partial basement and upper main floor, while the western portion consists of a single-level slab-on-grade. The Site Building is currently occupied by GoodLife Fitness, operating as a gym.

Water Bodies and Areas of Natural and Scientific Interest

No areas of natural and scientific interest (ANSI) were identified on or within 250m of the Phase I Property. No water bodies are present on the Phase I Property. The nearest body of water is the Ottawa River, approximately 1.5km northwest of the Phase I Property.

Drinking Water Wells

There are no domestic wells within the Phase I Study Area. Based on the level of development and the presence of municipal water services in the area, no drinking water wells are expected to be currently used in the Phase I Study Area.

Neighbouring Land Use

Neighbouring land use in the Phase I Study Area consists of commercial, institutional and residential. Current land use and PCAs identified in the Phase I Study Area are presented on Drawing PE7051-2 – Surrounding Land Use Plan.

Potentially Contaminating Activities and Areas of Potential Environmental Concern

As per Table 1 in Section 2.2 of this report, PCAs identified on the Phase II property include existing pad mounted transformer, fill material of unknown quality and use of de-icing salt for safety purposes. Off-site PCAs resulting in APECs on the Phase I Property include former electrical component manufacturers at 2650 and 2680 Queensview Drive.

All APECs are outlined on Drawing PE7051-1 – Site Plan.

Assessment of Uncertainty and/or Absence of Information

The information available for review as part of the preparation of this Phase I-ESA is considered to be sufficient to conclude that there are on-site PCAs and former off-site PCAs that have resulted in APECs on the Phase I Property. Additional off-site PCAs identified within the Phase I Study Area are not considered to represent APECs on the Phase I Property based on their separation distance and/or cross-gradient orientation with respect to the Phase I Property.

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

The borehole locations were constrained by the presence of underground services at the Phase II Property. No other physical impediments or denial of access were encountered during the Phase II ESA.

4.0 INVESTIGATION METHOD

4.1 Subsurface Investigation

The subsurface investigation was conducted on May 14 and 15, 2025, in conjunction with geotechnical investigation and involved the advancement of four (4) boreholes on the Phase II Property. The boreholes were advanced and cored into the bedrock to maximum depth of 9.09m below ground surface (bgs). Three boreholes (BH2-25, BH3-25 and BH4-25) were instrumented with monitoring wells.

The boreholes were drilled with a low clearance 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 PE7051-3- Test Hole Location Plan.

4.2 Soil Sampling

A total of 16 soil samples were obtained from the boreholes by means of grab sampling from auger flights/auger samples and split spoon sampling. Split spoon samples were taken at approximate 0.76m intervals. Rock core samples were collected with the use of coring equipment. The depths at which split spoon, auger flight and rock core samples were obtained from the test holes are shown as “**SS**”, “**AU**” and “**RC**” respectively on the Soil Profile and Test Data Sheets provided in Appendix 2.

The soil stratigraphy generally consists of topsoil or asphalt overlying fill material, underlain by native glacial till and/or silty sand. The fill material primarily consists of brown silty sand with gravel/crushed stone, or brown silty clay with some gravel, extending to depths of approximately 1.07 to 2.44m bgs. Native soils were underlain by limestone bedrock.

Borehole locations are shown on Drawing PE7051-3 – Test Hole Location Plan.

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 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 measured vapour readings ranged from 0.1 to 0.5 ppm. These vapour readings are not considered to be indicative of potentially volatile contamination. Vapour readings are noted on the Soil Profile and Test Data Sheets in Appendix 1.

4.4 Groundwater Monitoring Well Installation

Three groundwater monitoring wells (BH2-25, BH3-25 and BH4-25) were installed on the Phase II Property as part of the subsurface investigation.

The monitoring wells consisted of 32 mm Schedule 40 threaded PVC risers and screens. The monitoring well construction details are listed in Table 1: Test Hole Summary Details and in the Soil Profile and Test Data Sheets, appended to this report.

4.5 Field Measurement of Water Quality Parameters

The first round of groundwater sampling was conducted on May 27, 2025, involving sampling from three monitoring wells installed as part of the subsurface investigation. Water quality parameters were measured in the field using a multi-parameter analyzer. Parameters measured in the field included temperature, pH, and electrical conductivity. A second round of sampling was carried out on June 13, 2025, for BH3-25.

Field parameters were measured after each well volume purged. Wells were purged prior to sampling until at least three well volumes had been removed, the field parameters were relatively stable, or the well was dry. Stabilized field parameter values are summarized in Table 2: Stabilized Water Quality Parameters, appended to this report.

4.6 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.

4.7 Analytical Testing

Based on the guidelines outlined in the Sampling and Analysis Plan appended to this report, the soil and groundwater samples were submitted for analysis of the parameters listed in Table 3: Soil Testing Summary and Table 4: Groundwater Testing Summary, appended to this report.

The submitted soil samples were selected for analysis based on vapour screening and field observations to assess APECs and associated CPCs identified in the Phase I ESA.

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.

4.8 Residue Management

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

4.9 Elevation Surveying

The ground surface elevations at each test hole location were surveyed by Paterson personnel with a high-precisions GPS unit.

4.10 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

The soil stratigraphy generally consists of topsoil or asphalt overlying fill material, underlain by native glacial till and/or silty sand. The fill material primarily comprises brown silty sand with gravel and crushed stone, or brown silty clay with some gravel, extending to depths of approximately 1.07 to 2.44m bgs.

Native brown silty sand and/or glacial till was encountered beneath the fill material in boreholes BH1-25, BH2-25, and BH3-25. In BH4-25, the fill material extended directly to the bedrock. The glacial till was composed of silty sand with gravel, cobbles, boulders, and trace amounts of clay. Shale fragments were observed within the glacial till layer in BH1-25.

The native soil or fill was underlain by a shale bedrock layer, which was subsequently underlain by limestone bedrock.

No visual or olfactory evidence of contamination was observed in the collected soil samples.

Site geology details are provided in the Soil Profile and Test Data Sheets provided in Appendix 1.

5.2 Groundwater Elevations, Flow Direction, and Hydraulic Gradient

Groundwater levels were measured during the groundwater sampling events on May 27, 2025, and June 13, 2025, using an electronic water level meter. Groundwater levels were recorded from three monitoring wells installed as part of the current investigation (BH2-25, BH3-25 and BH4-25). Groundwater levels are summarized in Table 5: Groundwater Levels, appended to this report.

Based on the groundwater elevations measured during the May 27, 2025, sampling event, the groundwater at the Phase II ESA Property was encountered in the overburden, or deeper within the bedrock, at depths ranging from approximately 1.44 to 4.13m below the existing ground surface.

Based on the groundwater elevations measured during the May 27, 2025, sampling event, groundwater contour mapping was completed. Groundwater contours are shown on Drawing PE7051-3 – Test Hole Location Plan. Based on the contour mapping, groundwater flow at the Phase II Property is in a southeast direction. It should be noted that groundwater levels are expected to fluctuate throughout the year with seasonal variations.

A horizontal hydraulic gradient of approximately 0.03 m/m was calculated.

5.3 Fine-Coarse Soil Texture

Grain size analysis was not completed as part of this investigation. Coarse grained soil standards were chosen as a conservative approach.

5.4 Soil: Field Screening

Field screening of the soil samples collected during drilling resulted in vapour readings ranging from 0.1 to 0.5 ppm. No visual or olfactory indications of contaminants, or visual indications of deleterious fill material were identified in the soil samples.

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

Based on the findings of the field screening in combination with sample depth and location, a total of 6 soil samples (including one duplicate) were submitted for analysis of metals (including As, Sb, Se), PAHs, BTEX, PHCs (F1-F4), PCBs, and/or pH. The results of the analytical testing completed on the Phase II Property are presented in Table 6: Soil Analytical Results, appended to this report. The laboratory Certificates of Analysis are also provided in the Appendix.

<u>Metals (including As, Sb, Se)</u>

All metal parameters analyzed meet the MECP Table 3 Residential Standards. The analytical results for metals (including As, Sb, Se) tested in soil are shown on Drawing PE7051-4– Analytical Testing Plan – Soil.

PCBs

All PCB parameters analyzed meet the MECP Table 3 Residential Standards. The analytical results for PCBs tested in soil are shown on Drawing PE7051-4–Analytical Testing Plan – Soil.

BTEX

All BTEX parameters analyzed meet the MECP Table 3 Residential Standards. The analytical results for BTEX tested in soil are shown on Drawing PE7051-4–Analytical Testing Plan – Soil.

PHCs (F_1-F_4)

All PHC parameters analyzed meet the MECP Table 3 Residential Standards. The analytical results for PHCs tested in soil are shown on Drawing PE7051-4–Analytical Testing Plan – Soil.

PAHs

All PAH parameters analyzed meet the MECP Table 3 Residential Standards. The analytical results for PAHs tested in soil are shown on Drawing PE7051-4–Analytical Testing Plan – Soil.

pH

Two soil samples were analyzed for pH, yielding results of 7.41 and 7.80. These values fall within the acceptable pH range for both surface soil (5.0–9.0) and subsurface soil (5.0–11.0).

Maximum Soil Parameter Concentrations

The maximum concentrations of the parameters identified in the soil samples analyzed on the Phase II Property are presented in Table 6A: Maximum Concentrations - Soil, appended to this report.

5.6 Groundwater Quality

Six groundwater samples (including two duplicates) from monitoring wells installed in BH2-25, BH3-25 and BH4-25 were submitted for laboratory analysis of BTEX, PHCs (F1-F4), VOCs, PCBs and/or PAHs.

The results of all the analytical testing completed on the Phase II Property are presented in Table 7: Groundwater Analytical Results, appended to this report. The laboratory Certificates of Analysis are also provided in the Appendix.

VOCs

All VOC parameters comply with the MECP Table 3 Non-Potable Groundwater Standards. The analytical results for VOCs tested in groundwater are shown on Drawing PE7051-5 – Analytical Testing Plan – Groundwater.

BTEX

All BTEX parameters were non-detect in the groundwater samples analyzed as part of this Phase II-ESA and comply with the MECP Table 3 Non-Potable Groundwater Standards. The analytical results for BTEX tested in groundwater are shown on Drawing PE7051-5 – Analytical Testing Plan – Groundwater.

PHCs (F_1-F_4)

All PHC parameters complied with the MECP Table 3 Non-Potable Groundwater Standards, with the exception of PHC Fractions F3 and F4 in a duplicate groundwater sample (DUP-May27) collected from BH3-25. It is important to note that the original sample (BH3-25-GW1) reported all PHC parameters as non-detect. As a result, the F_3 and F_4 concentrations were considered to be anomalous.

A second round of groundwater sampling was conducted on June 13, 2025. Samples BH3-25-GW2 and its duplicate (DUP-June13) were collected and submitted for laboratory analysis of PHC Fractions F2 through F4. All tested parameters were reported as non-detect in both the original and duplicate samples.

Based on these results, it is our interpretation that the exceedances of PHC F3 and F4 reported in DUP-May27 may have been the result of sediment interference in the groundwater sample, which potentially contributed to the false detection of PHCs.

Considering the non-detect results from BH3-25-GW1, BH3-25-GW2, and DUP-June13, the exceedances identified in DUP-May27 are not considered representative of actual groundwater conditions at the Phase I Property.

Therefore, groundwater at the Phase I Property is considered to be in compliance with MECP Table 3 Non-Potable Groundwater Standards for PHC parameters. The analytical results for PHC tested in groundwater are shown on Drawing PE7051-5 – Analytical Testing Plan – Groundwater.

PAHs

All PAH parameters were non-detect in the groundwater samples analyzed as part of this Phase II-ESA and comply with the MECP Table 3 Non-Potable Groundwater Standards. The analytical results for PAH tested in groundwater are shown on Drawing PE7051-5 – Analytical Testing Plan – Groundwater.

PCBs

All PCB parameters were non-detect in the groundwater sample analyzed as part of this Phase II-ESA and comply with the MECP Table 3 Non-Potable Groundwater Standards. The analytical results for PCBs tested in groundwater are shown on Drawing PE7051-5 – Analytical Testing Plan – Groundwater.

Maximum Groundwater Parameter Concentrations

The maximum concentrations of the parameters identified in the groundwater samples analyzed on the Phase II Property are presented in Table 7A: Maximum Concentrations - Groundwater, appended to this report.

5.7 Quality Assurance and Quality Control Results

All samples submitted as part of the May and June 2025 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.

A duplicate soil sample of BH4-25-SS2 (DUP 1) was submitted for analysis of metals, PHCs (F_1-F_4), BTEX, and PAHs. A duplicate groundwater sample of BH3-25-GW1 (DUP-May27) was submitted for analysis of VOCs, BTEX and PHCs (F_1-F_4). A second duplicate groundwater sample of BH3-25-GW2 (DUP-June13) was submitted for analysis of PHCs (F_2-F_4). 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 the analytical test results.

The RPD calculations for BH4-25-SS2 and its respective duplicate sample are provided in Table 8A: QA/QC Calculations -Relative Percent Different, appended to this report. The RPD calculations for BH3-25-GW1 and its respective duplicate sample are provided in Table 8B: QA/QC Calculations -Relative Percent Different, appended to this report. All non-detect parameters in the original and/or the duplicate samples are not included in the tables.

All of the analyzed concentrations in BH3-25-GW2 and its duplicate sample, were not detected above the laboratory method detection limit; as such these results are not tabulated.

Typically, RPD values below 20% indicate satisfactory quality. The relative percent difference (RPD) results calculated for soil parameters identified in sample BH4-25-SS2, and its duplicate, fell outside of the acceptable range of 20%. Despite the exceeded RPD values calculated for the soil sample and the corresponding duplicate, it should be noted that the concentrations of the parameters were well within the applicable MECP Table 3 Residential Standards in both samples. As a result, it is our opinion that the decision-making usefulness of the samples is not considered to be impaired, and thus the quality of the collected field data is sufficient to meet the overall objectives of this assessment.

The relative percent difference (RPD) results calculated for groundwater parameters identified in sample BH3-25-GW1, and its duplicate, fell outside of the acceptable range of 20%. As discussed in the groundwater quality section, the elevated concentrations of PHC fractions F3 and F4 in DUP-May27 are suspected to be the result of sediment interference in the sample. Given that the original sample BH3-25-GW1 and subsequent samples collected during the second sampling event (BH3-25-GW2 and DUP-June13) reported non-detectable concentrations for the same PHC parameters, the exceedances observed in DUP-May27 are not considered representative of actual groundwater conditions at the Phase I Property.

The quality of the field data collected during the Phase II ESA is considered to be sufficient to meet the overall objectives of the 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 Phase II property, five (5) PCAs were considered to result in APECs on the Phase II Property. The identified APECs on the Phase II Property are presented in the table below.

Areas of Potential Environmental Concern

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern with respect to Phase I Property	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 Existing Pad Mounted Transformer	North portion of the Phase I Property	*"Item 55 – Transformer Manufacturing, Processing and Use"*	On-site	BTEX PHCs (F_1-F_4) PCBs	Soil Groundwater
APEC 2 Fill Material of Unknown Quality	Throughout the Phase I Property, except beneath the building	*"Item 30: Importation of Fill Material of Unknown Quality"*	On-site	PHCs (F_1-F_4) PAHs Metals	Soil
APEC 3[1] Application of Road Salt	Throughout parking areas on the Phase I Property	*"Item NA: Application of road salt for the safety of vehicular or pedestrian traffic under conditions of snow or ice"*	On-site	Electrical Conductivity (EC) Sodium Adsorption Ratio (SAR)	Soil
APEC 4 Former Electric Component Manufacturer	Southeastern portion of the Phase I Property	*"Item 19: Electronic and Computer Equipment Manufacturing"*	Off-site	BTEX PHCs (F_1-F_4) VOCs	Soil Groundwater
APEC 5 Former Electric Component Manufacturer	Southwestern portion of the Phase I Property	*"Item 19: Electronic and Computer Equipment Manufacturing"*	Off-site	BTEX PHCs (F_1-F_4) VOCs	Soil Groundwater

Note:
1 – In accordance with Section 49.1 of Ontario Regulation 153/04, standards are deemed to be met if an applicable site condition standard is exceeded at a property solely because the qualified person has determined, based on a phase two environmental site assessment, that a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both.

The remaining off-site PCAs identified are not considered to result in APECs on the Phase II Property, due to their separation distances and/or cross/down-gradient orientations with respect to the Phase II Property.

According to Section 49.1 of O.Reg. 153/04, if an applicable site condition standard is exceeded at a property solely because of the following reason, the applicable site condition standard is deemed not to be exceeded for the purpose of Part XV.1 of the Act: “The qualified person has determined, based on a phase one environmental site assessment or a phase two environmental site assessment, that a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both.”

In accordance with Section 49.1 of O.Reg. 153/04, any EC and SAR concentrations on the Phase II Property that exceed the MECP Table 3 Standards for a residential/institutional land use are deemed not to be exceeded for the purpose of Part XV.1 of the Act. This exemption is being relied on for APEC 2.

All APECs are outlined on Drawing PE7051-1 – Site Plan, while all PCAs identified within the Phase I Study Area are presented on Drawing PE7051-2 – Surrounding Land Use Plan in the figures section of this report, following the text.

Contaminants of Potential Concern

The following CPCs are identified with respect to the Phase II Property:

- Metals (including arsenic (As), antimony (Sb), selenium (Se)) (Soil);
- Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) (Soil and/or Groundwater);
- Petroleum Hydrocarbons (PHCs) (Soil and/or Groundwater);
- Polychlorinated Biphenyls (PCBs) (Soil and/or Groundwater);
- Polycyclic Aromatic Hydrocarbons (PAHs) (Soil and/or Groundwater); and
- Volatile Organic Compounds (VOCs) (Soil and/or Groundwater)

In accordance with Section 49.1 of O.Reg.153/04, as amended, electrical conductivity (EC) and sodium adsorption ratio (SAR) are not considered to be CPCs.

Subsurface Structures and Utilities

Underground service locates were completed prior to the subsurface investigation. Underground utilities on the Phase II Property include storm, sanitary, water, electricity and natural gas. Additionally, manhole and catch basins are present on the Phase II Property. No private wells or septic systems are present on the Phase II Property or within 250m of the Phase II property. No other utilities or subsurface structures are present on the Phase II Property.

Physical Setting

Site Stratigraphy

The stratigraphy of the Phase II Property generally consists of:

❒ **Topsoil** was identified at ground surface in BH4-25 and extended to a maximum depth of 0.08 mbgs.

❒ **Asphalt** was identified at ground surface in BH1-25, BH2-25 and BH3-25 and extended to a maximum depth of 0.05 mbgs.

❒ **Fill material** consisting of brown silty sand with gravel/crushed stone, or brown silty clay with some gravel; extending to a maximum depth of approximately 2.44 mbgs in BH4-25. No visual or olfactory indications of contaminants, or visual indications of deleterious fill material were identified in the soil samples.

❒ **Native silty sand** with trace clay was identified beneath the fill material at BH3-25. The silty sand extended to depths of approximately 2.44m below grade.

❒ **Glacial till** consisting of silty sand with clay, gravel and cobbles, was identified beneath the fill layer or native silty sand layer. Glacial till extended to depths ranging from 1.47 to 4.47m below grade.

❒ **Shale bedrock** was encountered beneath the glacial till in BH1-25 and BH2-25, and directly beneath the fill material in BH4-25, at depths ranging from approximately 1.47 to 3.66 metres below grade.

❒ **Limestone bedrock** was encountered beneath the glacial till and/or shale bedrock in the boreholes at depths ranging from approximately 2.90 to 4.47 metres below grade.

Site geology details are provided in the Soil Profile and Test Data Sheets provided in Appendix 1.

Hydrogeological Characteristics

The groundwater at the Phase II ESA Property was encountered at depths ranging from approximately 1.44 to 4.13m below the existing ground surface.

Based on the groundwater elevations measured during the May 27, 2025, sampling event, groundwater contour mapping was completed. Groundwater contours are shown on Drawing PE7051-3 – Test Hole Location Plan. Based on the contour mapping, groundwater flow at the Phase II Property is in a southeast direction. It should be noted that groundwater levels are expected to fluctuate throughout the year with seasonal variations.

A horizontal hydraulic gradient of approximately 0.03 m/m was calculated.

Approximate Depth to Bedrock

Based on the results of the Phase II ESA investigation, the approximate depth to bedrock at the Phase II property varies from 1.47 to 4.47mbgs.

Approximate Depth to Water Table

Depth to water table at the Phase II property varies between approximately 1.44 to 4.13m below existing grade.

Sections 41 and 43.1 of the Regulation

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

Section 43.1 of the Regulation does not apply to the Phase II Property in that the property is not a Shallow Soil property.

Fill Placement

Fill material generally consisting of brown silty sand with gravel/crushed stone, or brown silty clay with some gravel was identified in each borehole on the Phase II Property, ranging from 0.03 to 2.44m below ground surface.

Existing Buildings and Structures

A commercial building is present on the Phase II Property. The commercial building was constructed circa 1980 and is currently heated with a natural gas system and electric baseboard heaters. The subject building is constructed with a concrete foundation and is finished on the exterior with brick and has a flat tar and gravel roof.

The Site Building features a split-level layout, with the eastern portion including a partial basement and upper main floor, while the western portion consists of a single-level slab-on-grade. The Site Building is currently occupied by GoodLife Fitness, operating as a gym.

Proposed Buildings and Other Structures

The Phase II Property will be redeveloped with 2 six-storey residential buildings with multiple levels of underground parking.

Environmental Condition

Areas Where Contaminants are Present

Based on the findings of the Phase II ESA, no impacted soil was identified on the Phase II Property.

Based on the findings of the Phase II ESA, no impacted groundwater was identified on the Phase II Property.

6.0 CONCLUSIONS

Assessment

A Phase II ESA was carried out for the property addressed 2655 Queensview Drive, in the City of 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 Property.

The subsurface investigation was conducted on May 14 and 15, 2025, in conjunction with geotechnical investigation and involved the advancement of four (4) boreholes on the Phase II Property. The boreholes were advanced and cored into the bedrock to maximum depth of 9.09m below ground surface (bgs). Three boreholes (BH2-25, BH3-25 and BH4-25) were instrumented with monitoring wells.

The soil stratigraphy generally consists of topsoil or asphalt overlying fill material, underlain by native glacial till and/or silty sand. The native soil or fill was underlain by a shale bedrock layer, which was subsequently underlain by limestone bedrock. No visual or olfactory evidence of contamination was observed in the collected soil samples, and the vapour readings obtained are not considered indicative of volatile contamination. Groundwater was encountered within the overburden or deeper within the bedrock, at depths ranging from approximately 1.44 to 4.13m below the existing ground surface.

<u>Soil</u>

A total of 6 soil samples (including one duplicate) were submitted for analysis of metals (including As, Sb, Se), PAHs, BTEX, PHCs (F1-F4), PCBs and/or pH. All parameters for soil samples analysed comply with the MECP Table 3 Residential Standards.

<u>Groundwater</u>

Six groundwater samples (including two duplicate) from monitoring wells installed in BH2-25, BH3-25 and BH4-25 were submitted for laboratory analysis of BTEX, PHCs (F1-F4), VOCs, PCBs and/or PAHs.

All VOCs, BTEX, PAH and PCB parameters in the groundwater samples analyzed comply with the MECP Table 3 Non-Potable Groundwater Standards.

All PHC parameters complied with the MECP Table 3 Non-Potable Groundwater Standards, with the exception of PHC Fractions F3 and F4 in a duplicate groundwater sample (DUP-May27) collected from BH3-25. It is important to note that the original sample (BH3-25-GW1) reported all PHC parameters as non-detect. As a result, the F_3 and F_4 concentrations were considered to be anomalous.

A second round of groundwater sampling was conducted on June 13, 2025. Samples BH3-25-GW2 and its duplicate (DUP-June13) were collected and submitted for laboratory analysis of PHC Fractions F2 through F4. All tested parameters were reported as non-detect in both the original and duplicate samples.

Based on these results, it is our interpretation that the exceedances of PHC F3 and F4 reported in DUP-May27 may have been the result of sediment interference in the groundwater sample, which potentially contributed to the false detection of PHCs. Considering the non-detect results from BH3-25-GW1, BH3-25-GW2, and DUP-June13, the exceedances identified in DUP-May27 are not considered representative of actual groundwater conditions at the Phase I Property.

Therefore, groundwater at the Phase I Property is considered to be in compliance with MECP Table 3 Non-Potable Groundwater Standards for PHC parameters, along with all other tested parameters.

Recommendations

Soil

All clean soil that requires removal from the Phase II Property for construction purposes must be handled in accordance with Ontario Regulation 406/19: On-Site and Excess Soil Management. Further information regarding O. Reg 406/19 can be provided upon request.

Groundwater

It is recommended the monitoring wells be maintained for future sampling purposes. The monitoring wells will be registered with the MECP under Ontario Regulation 903 (Ontario Water Resources Act). At such a time that the monitoring wells are no longer required, they must be decommissioned in accordance with O.Reg. 903.

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. 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 Phase II property 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 Westrich Management Ltd. Notification from Westrich Management Ltd. and Paterson Group will be required to release this report to any other party.

Paterson Group Inc.

Kuldeep Panchal, M. Eng.

Mark D'Arcy, P.Eng., Q.P.ESA

Report Distribution:

- Westrich Management Ltd.
- Paterson Group

FIGURES

FIGURE 1 – KEY PLAN

DRAWING PE7051-1 – SITE PLAN

DRAWING PE7051-2 – SURROUNDING LAND USE PLAN

DRAWING PE7051-3 – TEST HOLE LOCATION PLAN

DRAWING PE7051-4 – ANALYTICAL TESTING PLAN – SOIL

DRAWING PE7051-5 – ANALYTICAL TESTING PLAN - GROUNDWATER

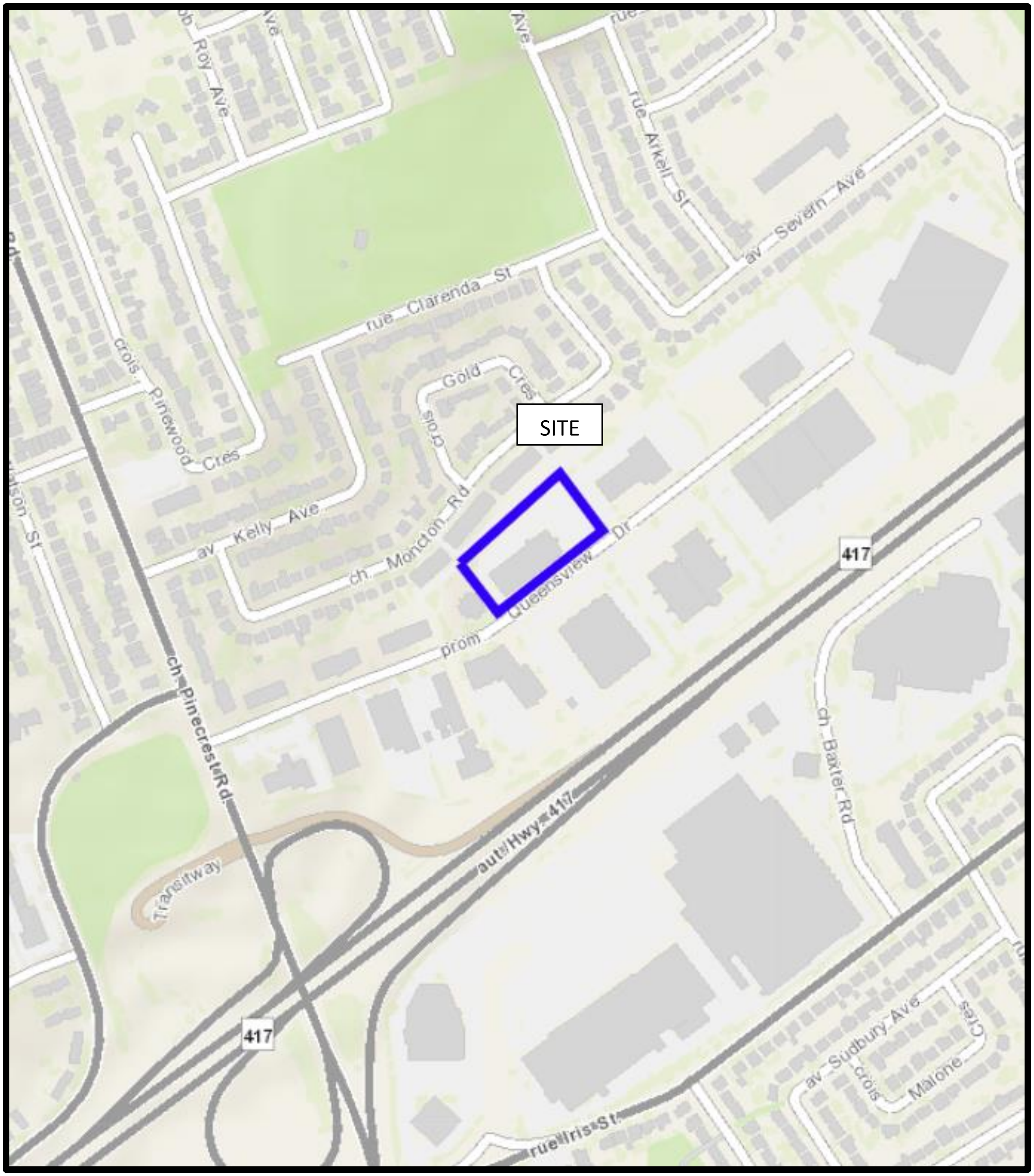
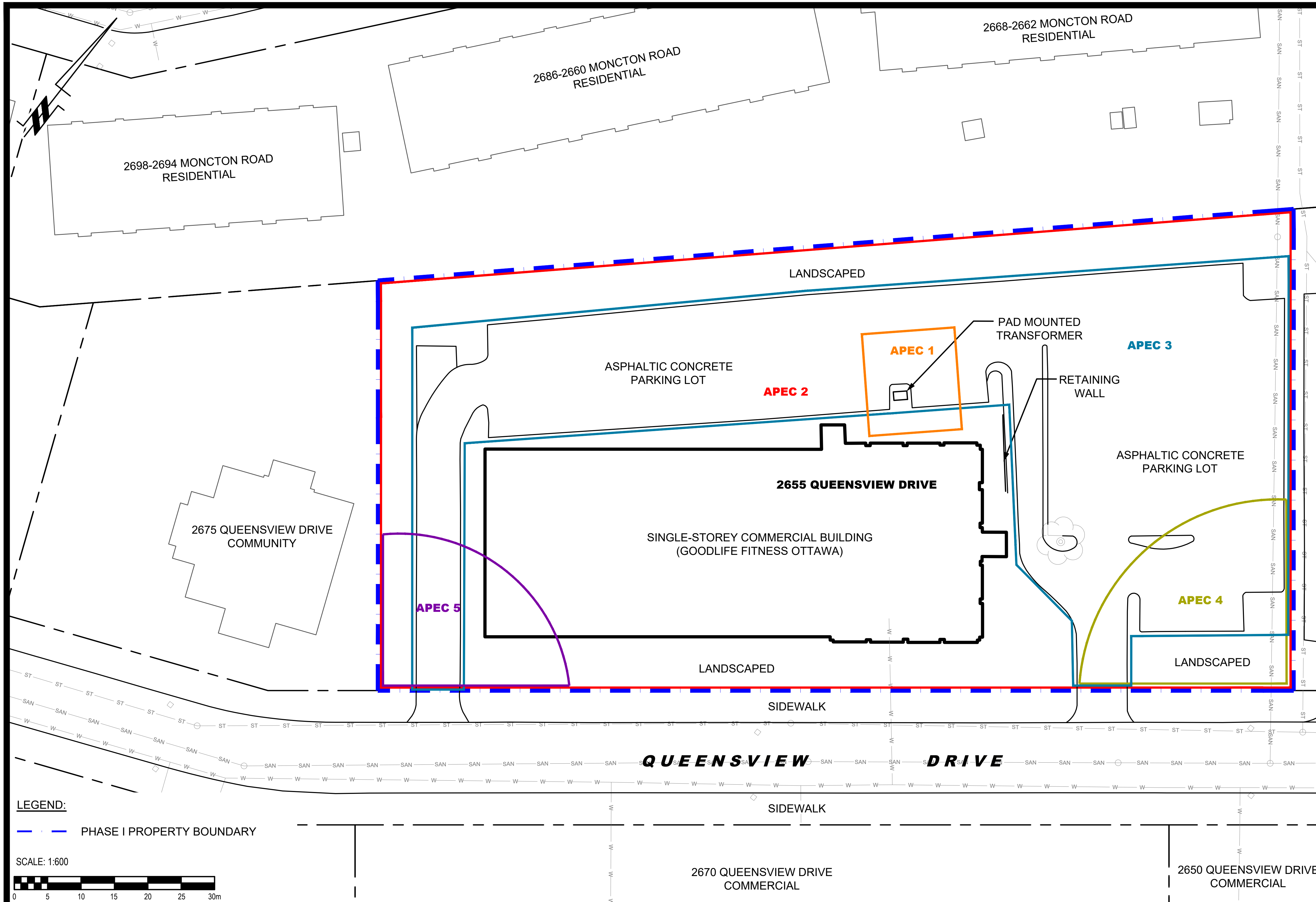


FIGURE 1

KEY PLAN

PATERSON GROUP



AREAS OR POTENTIAL ENVIRONMENTAL CONCERN :

ID #	PCA ID	DESCRIPTION
1	55	PAD MOUNTED TRANSFORMER
2	30	FILL MATERIAL OF UNKNOWN QUALITY
3	N/A	APPLICATION OF ROAD SALT
4	19	FORMER ELECTRONIC EQUIPMENT COMPONENT MANUFACTURER
5	19	FORMER ELECTRONIC EQUIPMENT COMPONENT MANUFACTURER

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

NO.	REVISIONS	DATE	INITIAL

WESTRICH MANAGEMENT LTD.

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
2655 QUEENSVIEW DRIVE

OTTAWA, ONTARIO

Title:

SITE PLAN

Scale: 1:600	Date: 05/2025
Drawn by: YA	Report No.: PE7051-1
Checked by: KMP	Dwg. No.: PE7051-1
Approved by: MSD	Revision No.:

11x17

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LEGEND:

PHASE I PROPERTY BOUNDARY

SCALE: 1:3000

0 25 50 75 100 125 150 200m

POTENTIALLY CONTAMINATING ACTIVITIES :

ID #	PCA ID	DESCRIPTION
1	55	PAD MOUNTED TRANSFORMER
2	30	FILL MATERIAL OF UNKNOWN QUALITY
3	N/A	APPLICATION OF ROAD SALT
4	19	FORMER ELECTRONIC EQUIPMENT COMPONENT MANUFACTURER
5	19	FORMER ELECTRONIC EQUIPMENT COMPONENT MANUFACTURER
6	28, 52	EXISTING CONTRACTOR'S EQUIPMENT STORAGE YARD
7	46	FORMER RAILWAY LINE AND EXISTING TRANSITWAY
8	N/A	FORMER DIESEL SPILL

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OTTAWA, ON
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NO.	REVISIONS	DATE	INITIAL

WESTRICH MANAGEMENT LTD.

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
2655 QUEENSVIEW DRIVE

OTTAWA, ONTARIO

Title:

SURROUNDING LAND USE PLAN

Scale: 1:3000	Date: 05/2025
Drawn by: YA	Report No.: PE7051-1
Checked by: KMP	Dwg. No.: PE7051-2
Approved by: MSD	Revision No.:

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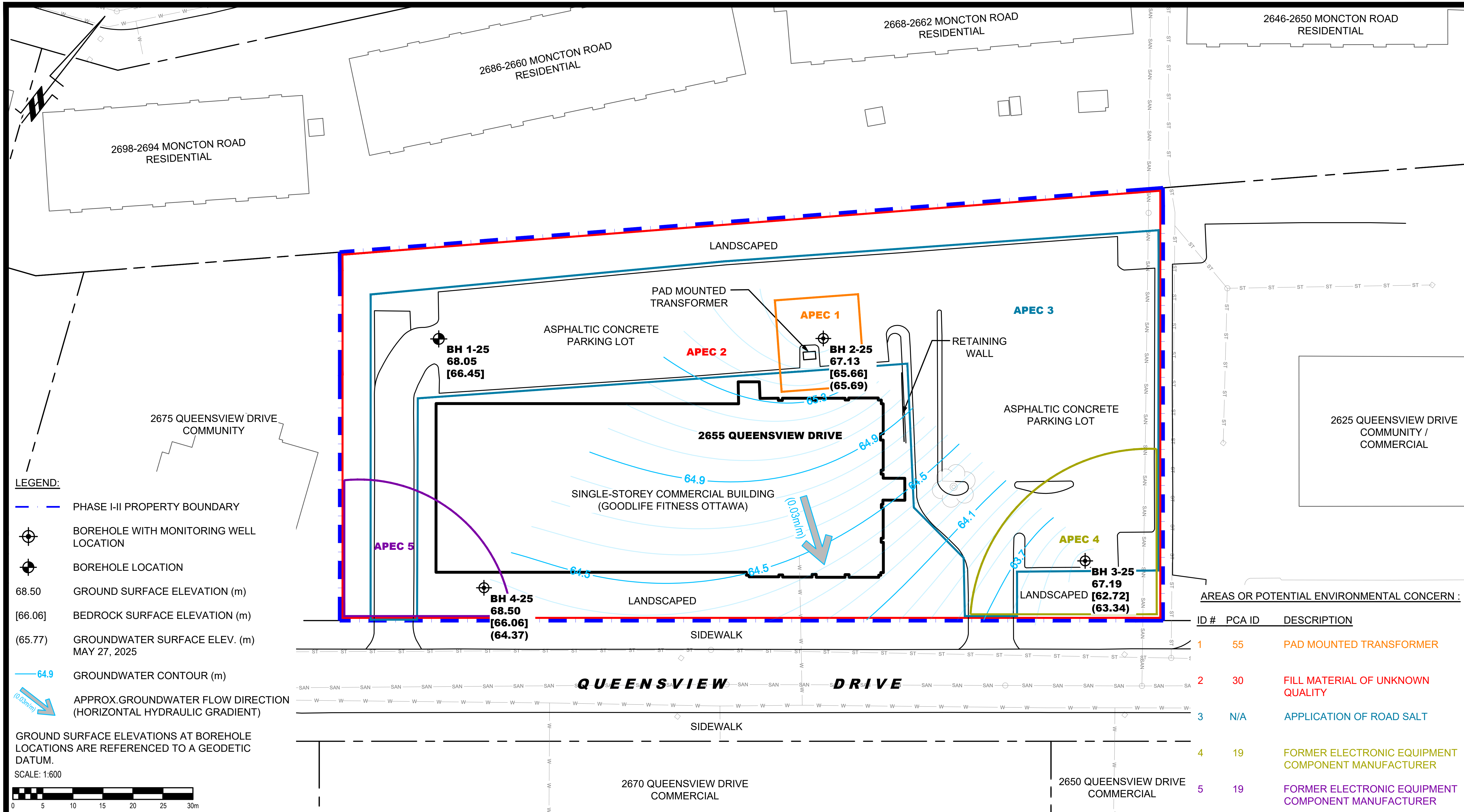

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NO.	REVISIONS	DATE	INITIAL

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PHASE II - ENVIRONMENTAL SITE ASSESSMENT
2655 QUEENSVIEW DRIVE

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:600	Date: 06/2025
Drawn by: GK	Report No.: PE7051-2
Checked by: KMP	Dwg. No.: PE7051-3
Approved by: MSD	Revision No.:

11x17

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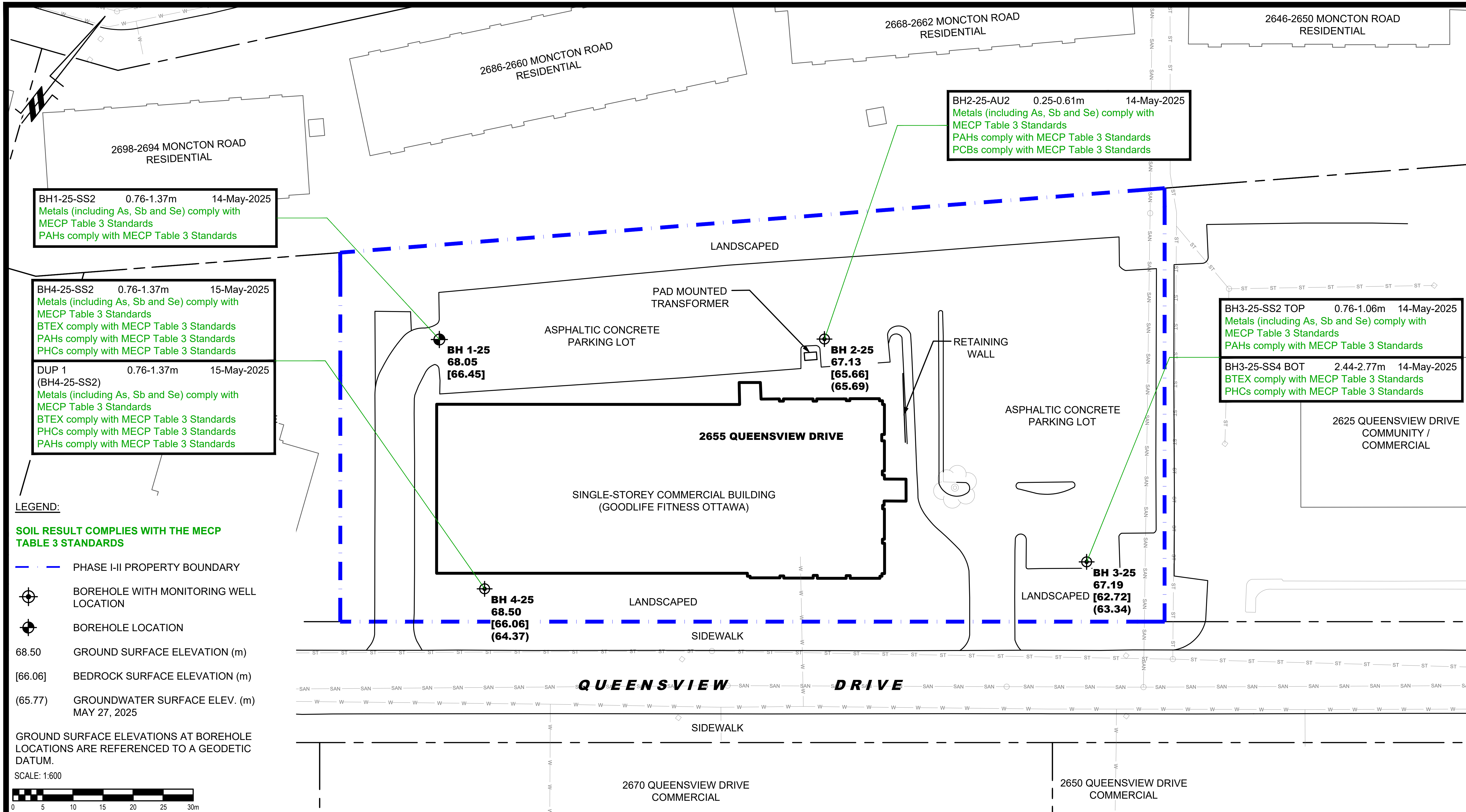

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PHASE II - ENVIRONMENTAL SITE ASSESSMENT
2655 QUEENSVIEW DRIVE

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - SOIL

Scale: 1:600	Date: 06/2025
Drawn by: GK	Report No.: PE7051-2
Checked by: KMP	Dwg. No.: PE7051-4
Approved by: MSD	Revision No.:

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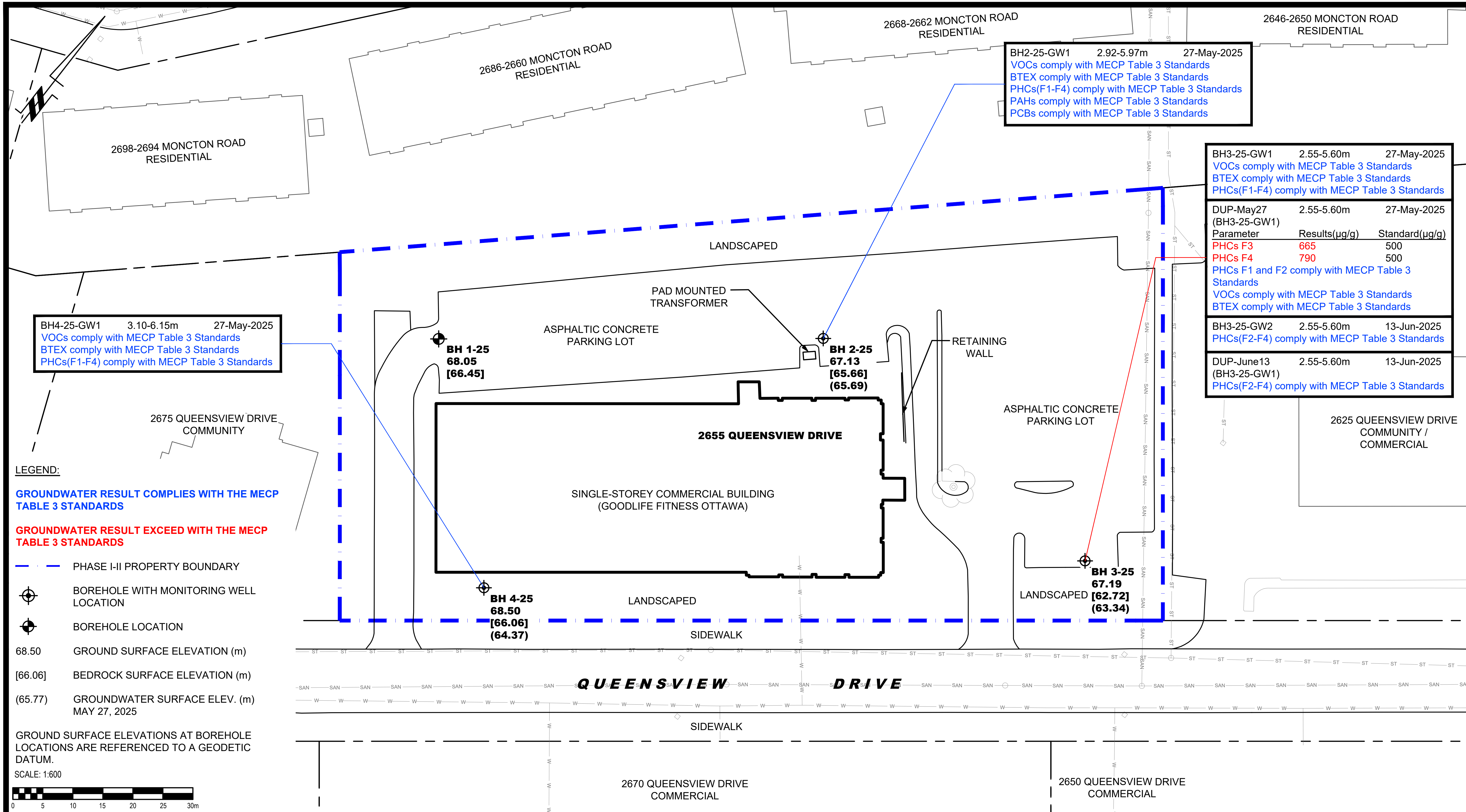

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PHASE II - ENVIRONMENTAL SITE ASSESSMENT
2655 QUEENSVIEW DRIVE

OTTAWA, ONTARIO

Title:
ANALYTICAL TESTING PLAN - GROUNDWATER

Scale: 1:600	Date: 06/2025
Drawn by: GK	Report No.: PE7051-2
Checked by: KMP	Dwg. No.: PE7051-5
Approved by: MSD	Revision No.:

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APPENDIX 1

SAMPLING AND ANALYSIS PLAN

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

ANALYTICAL TEST RESULTS TABLES

LABORATORY CERTIFICATES OF ANALYSIS

Sampling and Analysis Plan

2655 Queensview Drive
Ottawa, Ontario

Prepared for: Westrich Management Ltd.

Report: PE7051-SAP
Date: May 7, 2025

TABLE OF CONTENTS

1.0 SAMPLING PROGRAM

Paterson Group Inc. (Paterson) was commissioned by Westrich Management Ltd. to conduct a Phase II – Environmental Site Assessment (Phase II ESA) at 2655 Queensview Drive, 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
BH1-25	Placed on the north-western portion of the Phase II Property to assess for potential soil impacts resulting from the identified APEC1 and for horizontal and/or vertical delineation purposes.	Collect samples till practical auger refusal. Rock core samples were collected for Geotechnical purposes.
BH2-25	Placed on the central-northern portion of the Phase II Property to assess for potential soil and/or groundwater impacts resulting from the identified APEC1 and APEC2 and for horizontal and/or vertical delineation purposes.	Drill to intercept water table for monitoring well installation in bedrock.
BH3-25	Placed on the south-eastern portion of the Phase II Property to assess for potential soil and/or groundwater impacts resulting from the identified APEC2 and APEC4 and for horizontal and/or vertical delineation purposes.	Drill to intercept water table for monitoring well installation in bedrock.
BH4-25	Placed on the south-western portion of the Phase II Property to assess for potential soil and/or groundwater impacts resulting from the identified APEC2 and APEC5 and for horizontal and/or vertical delineation purposes.	Drill to intercept water table for monitoring well installation in bedrock.

Borehole and test pit locations are shown on Drawing PE7051-3 – 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 three boreholes (BH2-25, BH3-25 and BH4-25) 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.

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment

2655 Queensview Drive, Ottawa, ON

PATERSON GROUP

COORD. SYS.: MTM ZONE 9 **EASTING:** 360628.40 **NORTHING:** 5023965.82 **ELEVATION:** 68.05

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: May 14, 2025

FILE NO. : PE7051

HOLE NO. : BH 1-25

SAMPLE DESCRIPTION	DEPTH (m)	SAMPLE TYPE AND NO.	RECOVERY (%)	N OR RQD	ANALYTICAL TESTS	PID (ppm)
GROUND SURFACE						
ASPHALT 0.05m [68.00m]		AU 1				0.5
FILL: Brown silty sand with gravel, crushed stone, trace clay and topsoil 1.45m [66.60m]		SS 2	33	5-5-5-8 10	Metals / PAHs	0.3
GLACIAL TILL: Very dense, brown silty sand, with gravel and cobbles, some shale fragments 1.60m [66.45m]		SS 3	100	50-/-/-/ 50/0.08		0.3
BEDROCK: Very poor quality shale 2.90m [65.15m]		RC 1	100	RQD 7		
BEDROCK: Excellent quality limestone bedrock		RC 2	100	RQD 95		
		RC 3	100	RQD 90		
		RC 4	100	RQD 95		
9.04m [59.01m]		RC 5	100	RQD 95		
End of Borehole						

Depth (m): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Elevation (m): 68, 67, 66, 65, 64, 63, 62, 61, 60, 59, 58, 57

■ GASTECH (ppm) □ GASTECH (% LEL): 50, 100, 150, 200

▲ PID (ppm) △ PID (% LEL): 20, 40, 60, 80

STRATA PLOT | PIEZOMETER CONSTRUCTION

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment

2655 Queensview Drive, Ottawa, ON

PATERSON GROUP

COORD. SYS.: MTM ZONE 9 **EASTING:** 360678.88 **NORTHING:** 5024005.27 **ELEVATION:** 67.13

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: May 14, 2025

FILE NO. : PE7051

HOLE NO. : BH 2-25

SAMPLE DESCRIPTION (GROUND SURFACE)	DEPTH (m)	SAMPLE TYPE AND NO.	RECOVERY (%)	N OR RQD	ANALYTICAL TESTS	PID (ppm)	ELEVATION (m)
ASPHALT 0.03m [67.10m]		AU 1				0.2	67
FILL: Brown silty sand with gravel, crushed stone, trace clay 0.25m [66.88m]		AU 2			Metals / PAHs / PCBs /pH	0.2	
FILL: Brown silty clay, some gravel 1.07m [66.06m]	1	SS 3	58	1-3-2-5 5		0.2	66
GLACIAL TILL: Compact, grey silty sand with clay and gravel, cobbles 1.47m [65.66m]	2						65
BEDROCK: Fair quality shale - 30 mm mud seams at 3.0 m depth 3.10m [64.03m]	2–3	RC 1	90	RQD 51			64
BEDROCK: Good to excellent quality limestone bedrock	3–4	RC 2	100	RQD 100			63
	5	RC 3	100	RQD 92			62
	6–7	RC 4	100	RQD 86			61, 60
9.07m [58.06m]	8–9	RC 5	100	RQD 100			59, 58
End of Borehole (GWL at 1.44 m depth - May 27, 2025)	10–12						57, 56

Graph legend: GASTECH (ppm) ■; GASTECH (% LEL) □; scale 50, 100, 150, 200. PID (ppm) ▲; PID (% LEL) △; scale 20, 40, 60, 80.

MONITORING WELL CONSTRUCTION: 1.44 m 2025-05-27; 2.92m; 5.97m

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment

2655 Queensview Drive, Ottawa, ON

COORD. SYS.: MTM ZONE 9 **EASTING:** 360736.08 **NORTHING:** 5024002.86 **ELEVATION:** 67.19

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: May 14, 2025

FILE NO. : PE7051

HOLE NO. : BH 3-25

SAMPLE DESCRIPTION	DEPTH (m) / [ELEV. (m)]
GROUND SURFACE	
ASPHALT	0.05m [67.14m]
FILL: Brown silty sand with gravel and crushed stone	1.14m [66.05m]
Compact, brown **SILTY SAND** trace clay - Grey by 2.2 m depth	2.44m [64.75m]
GLACIAL TILL: Very dense, grey silty sand with gravel, cobbles and boulders	2.90m [64.29m]
Dense, brown **SAND**, trace silt and gravel	3.73m [63.46m]
GLACIAL TILL: Very dense, grey silty sand with gravel, cobbles and boulders	4.47m [62.72m]
BEDROCK: Excellent quality limestone bedrock - Vertical fracture from 8.4 m to 8.6 m depth	9.04m [58.15m]
End of Borehole (GWL at 3.85 m depth - May 27, 2025)	

SAMPLE TYPE AND NO.	RECOVERY (%)	N OR RQD	ANALYTICAL TESTS	PID (ppm)
AU 1				0.1
SS 2	67	2-5-4-5 9	Metals / PAHs	0.2
SS 3	58	4-3-5-5 8		0.1
SS 4	47	1-4-24-50 28/0.03	BTEX / PHCs / pH	0.2
SS 5	58	8-16-20-14 36		0.1
SS 6	58	17-26-20-28 46		0.2
RC 1	100	RQD 93		
RC 2	100	RQD 92		
RC 3	100	RQD 98		

STRATA PLOT

DEPTH (m): 1 2 3 4 5 6 7 8 9 10 11 12

■ GASTECH (ppm) □ GASTECH (% LEL): 50 100 150 200

▲ PID (ppm) △ PID (% LEL): 20 40 60 80

MONITORING WELL CONSTRUCTION: 2.55m; 3.85 m 2025-05-27; 5.60m

ELEVATION (m): 67 66 65 64 63 62 61 60 59 58 57 56

SOIL PROFILE AND TEST DATA

PATERSON GROUP

Phase II - Environmental Site Assessment

2655 Queensview Drive, Ottawa, ON

COORD. SYS.: MTM ZONE 9 **EASTING:** 360659.84 **NORTHING:** 5023937.73 **ELEVATION:** 68.50

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: May 15, 2025

FILE NO. : PE7051

HOLE NO. : BH 4-25

SAMPLE DESCRIPTION	DEPTH (m)	TYPE AND NO.	RECOVERY (%)	N OR RQD	ANALYTICAL TESTS	PID (ppm)	ELEVATION (m)
GROUND SURFACE							68.50
TOPSOIL: with organics — 0.08m [68.42m]		AU 1				0.2	68
FILL: Compact, brown silty sand, trace organics, gravel and topsoil	1	SS 2	79	3-3-7-6 10	Metals / BTEX / PHCs / PAHs	0.5	67
	2	SS 3	58	3-4-4-5 8		0.5	66
2.44m [66.06m]		SS 4		50-/-/-/ 50/0.08			
BEDROCK: Very poor quality shale	3	RC 1		RQD 15			65
- 30 mm mud seams at 3.6 m depth — 3.66m [64.84m]							
BEDROCK: Good to excellent quality limestone bedrock	4	RC 2	37	RQD 71			64
	5–6	RC 3		RQD 81			63
	7	RC 4	34	RQD 98			61
9.09m [59.41m]	8–9	RC 5		RQD 97			60
End of Borehole							
(GWL at 4.13 m depth - May 27, 2025)							

Legend: ■ GASTECH (ppm) □ GASTECH (% LEL) — 50, 100, 150, 200; ▲ PID (ppm) △ PID (% LEL) — 20, 40, 60, 80

MONITORING WELL CONSTRUCTION: 3.10m; 4.13 m 2025-05-27; 6.15m

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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

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 = $(D30)^2 / (D10 \times D60)$
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

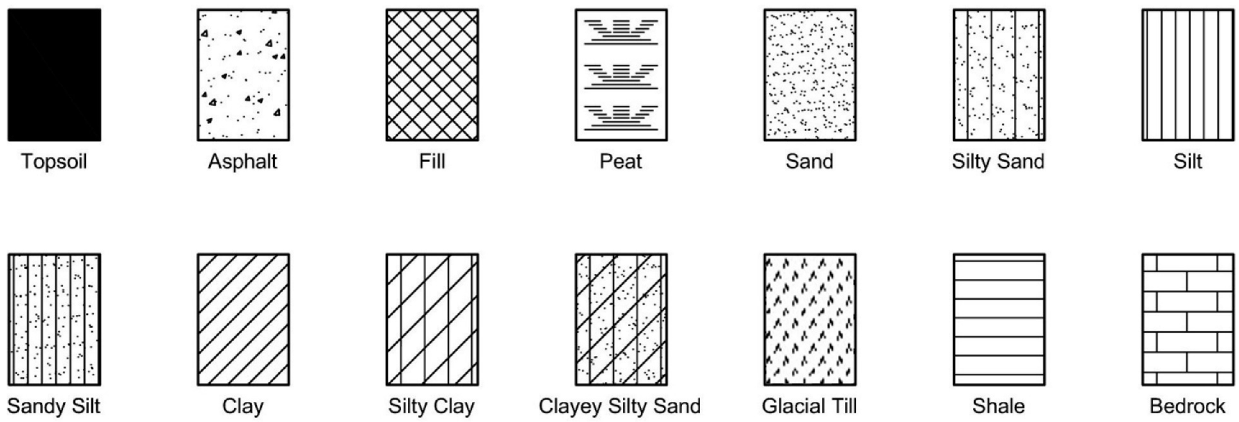
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void 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.

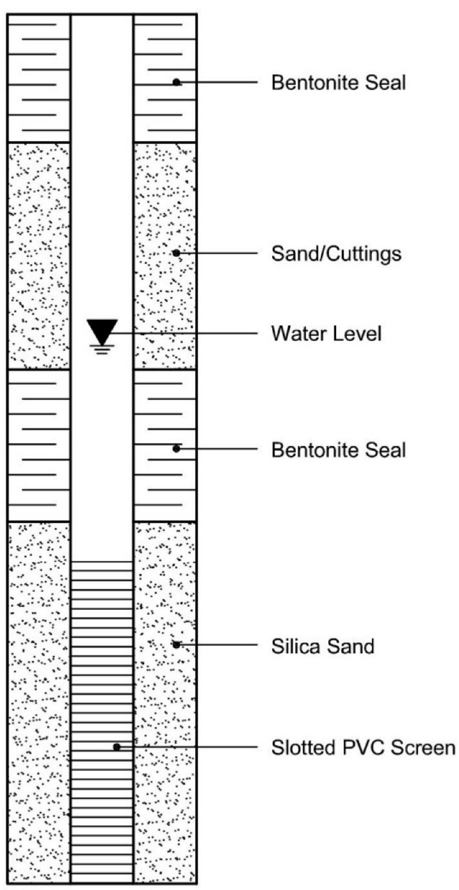
SYMBOLS AND TERMS (continued)

STRATA PLOT



MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION

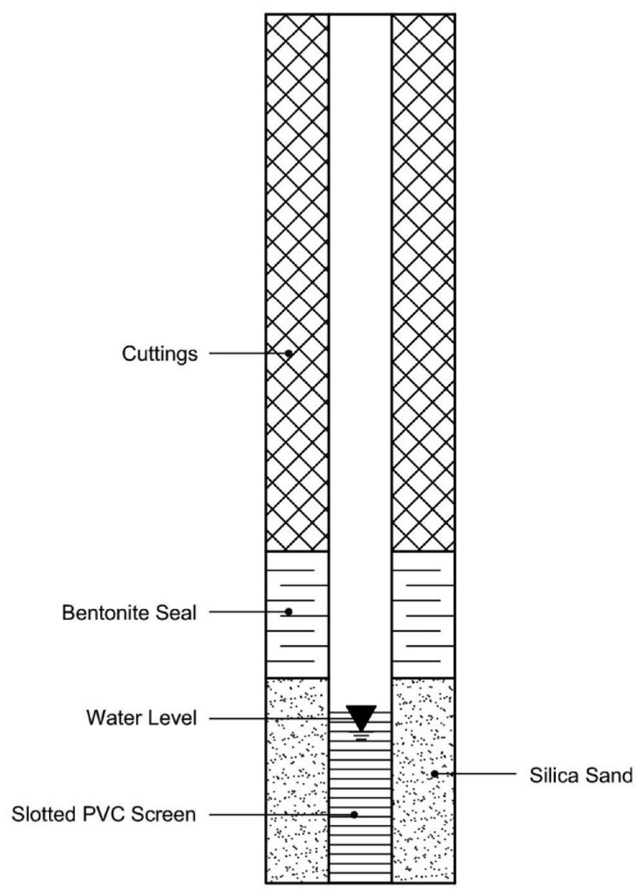


Table 1: Test Hole Summary Details

Test Hole ID	Date of Construction	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
BH1-25	14-May-2025	-	68.05	9.04	59.01	-	-	-	-
BH2-25	14-May-2025	32	67.13	9.07	58.06	3.05	2.92 - 5.97	64.21 - 61.16	Limestone Bedrock
BH3-25	14-May-2025	32	67.19	9.04	58.15	3.05	2.55 - 5.60	64.64 - 61.59	Overburden & Bedrock
BH4-25	15-May-2025	32	68.50	9.09	59.41	3.05	3.10 - 6.15	65.40 - 62.35	Limestone Bedrock

Table 2: Stabilized Water Quality Parameters

Test Hole ID	Temperature (˚C)	Conductivity (µS)	pH	Date of Measurement
BH2-25	11.9	3999	7.0	27-May-2025
BH3-25	13.2	3999	7.1	27-May-2025
BH4-25	14.2	3494	7.1	27-May-2025
BH3-25	16.6	6330	7.1	13-Jun-2025

Table 3: Soil Testing Summary

Sample ID and Laboratory ID	Sample Depth (mbgs)	Sampling Date	Rationale	PID Vapour Reading (ppm)	Parameter Groups Analyzed					
					Metals	BTEX	PHCs	PAHs	PCBs	pH
BH1-25-SS2 2520472-01	0.76 - 1.37	14-May-2025	Assessment of APECs and/or preliminary delineation purposes	0.3	✓			✓		
BH2-25-AU2 2520472-02	0.25 - 0.61	14-May-2025	Assessment of APECs and/or preliminary delineation purposes	0.2	✓			✓	✓	✓
BH3-25-SS2 TOP 2520472-03	0.76 - 1.06	14-May-2025	Assessment of APECs and/or preliminary delineation purposes	0.2	✓			✓		
BH3-25-SS4 BOT 2520472-04	2.44 - 2.77	14-May-2025	Assessment of APECs and/or preliminary delineation purposes	0.1		✓	✓			✓
BH4-25-SS2 2520472-05	0.76 - 1.37	15-May-2025	Assessment of APECs and/or preliminary delineation purposes	0.5	✓	✓	✓	✓		
DUP 1 2520472-06	0.76 - 1.37	15-May-2025	Duplicate sample for QA/QC purposes	0.5	✓	✓	✓	✓		

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Table 4: Groundwater Testing Summary

Sample ID and Laboratory ID	Sample Depth (mbgs)	Sampling Date	Rationale	Parameter Groups Analyzed				
				PHCs	BTEX	VOCs	PAHs	PCBs
BH2-25-GW1 2522250-02	2.92 - 5.97	27-May-2025	Assessment of APECS and/or preliminary delineation purposes	✓	✓	✓	✓	✓
BH3-25-GW1 2522250-03	2.55 - 5.60	27-May-2025	Assessment of APECS and/or preliminary delineation purposes	✓	✓	✓		
DUP-May27 2522250-04	2.55 - 5.60	27-May-2025	Duplicate sample for QA/QC purposes	✓	✓	✓		
BH4-25-GW1 2522250-01	3.10 - 6.15	27-May-2025	Assessment of APECS and/or preliminary delineation purposes	✓	✓	✓		
BH3-25-GW2 2524488-01	2.55 - 5.60	13-Jun-2025	Assessment of APECS and/or preliminary delineation purposes	✓				
DUP-June 13 2524488-02	2.55 - 5.60	13-Jun-2025	Duplicate sample for QA/QC purposes	✓				

Table 5: Groundwater Levels

Test Hole ID	Ground Surface Elevation (masl)	Water Level Depth (mbgs)	Water Level Elevation (masl)	Date of Measurement
BH2-25	67.13	1.44	65.69	27-May-2025
BH3-25	67.19	3.85	63.34	27-May-2025
BH4-25	68.50	4.13	64.37	27-May-2025
BH2-25	67.13	1.46	65.67	13-Jun-2025
BH3-25	67.19	3.70	63.49	13-Jun-2025
BH4-25	68.50	4.14	64.36	13-Jun-2025

Table 6: Soil Analytical Test Results

Parameter	Units	MDL	Regulation	BH1-25-SS2 2520472-01	BH2-25-AU2 2520472-02	BH3-25-SS2 TOP 2520472-03	BH3-25-SS4 BOT 2520472-04	BH4-25-SS2 2520472-05	DUP 1 2520472-06
Sample Depth (m)			Reg 153/04 - Table 3 Residential, coarse	0.76 - 1.37	0.25 - 0.61	0.76 - 1.06	2.44 - 2.77	0.76 - 1.37	0.76 - 1.37
Sample Date				14-May-2025	14-May-2025	14-May-2025	14-May-2025	15-May-2025	15-May-2025
Physical Characteristics									
% Solids	% by Wt.	0.1		81.3	86.1	88.6	92.6	87.7	87.2
General Inorganics									
pH	N/A	0.05	5-9 (surf); 5-11 (subsurf)	-	7.41	-	7.8	-	-
Metals									
Antimony	ug/g dry	1.0	7.5	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)	ND (1.0)
Arsenic	ug/g dry	1.0	18	4.4	2.2	2.1	-	2.1	1.7
Barium	ug/g dry	1.0	390	241	101	72.5	-	70	43.1
Beryllium	ug/g dry	0.5	4.0	0.8	0.5	ND (0.5)	-	ND (0.5)	ND (0.5)
Boron	ug/g dry	5.0	120	19.7	5	6.1	-	ND (5.0)	ND (5.0)
Cadmium	ug/g dry	0.5	1.2	ND (0.5)	ND (0.5)	ND (0.5)	-	ND (0.5)	ND (0.5)
Chromium	ug/g dry	5.0	160	38	33.7	18.9	-	17.9	12.1
Cobalt	ug/g dry	1.0	22	16.1	9.3	6.5	-	6.5	4.7
Copper	ug/g dry	5.0	140	25.1	17.7	15.7	-	15.4	9.5
Lead	ug/g dry	1.0	120	18.5	4.6	9.2	-	4.3	2.9
Molybdenum	ug/g dry	1.0	6.9	1.2	ND (1.0)	ND (1.0)	-	ND (1.0)	ND (1.0)
Nickel	ug/g dry	5.0	100	28.7	18.7	12.4	-	11.7	8
Selenium	ug/g dry	1.0	2.4	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)	ND (1.0)
Silver	ug/g dry	0.3	20	ND (0.3)	ND (0.3)	ND (0.3)	-	ND (0.3)	ND (0.3)
Thallium	ug/g dry	1.0	1.0	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)	ND (1.0)
Uranium	ug/g dry	1.0	23	1.4	ND (1.0)	ND (1.0)	-	ND (1.0)	ND (1.0)
Vanadium	ug/g dry	10.0	86	37.3	45.9	27.9	-	28.3	22.4
Zinc	ug/g dry	20.0	340	59.2	38.2	25.1	-	24.6	ND (20.0)
BTEX									
Benzene	ug/g dry	0.02	0.21	-	-	-	ND (0.02)	ND (0.02)	ND (0.02)
Ethylbenzene	ug/g dry	0.05	2.0	-	-	-	ND (0.05)	ND (0.05)	ND (0.05)
Toluene	ug/g dry	0.05	2.3	-	-	-	ND (0.05)	ND (0.05)	ND (0.05)
m/p-Xylene	ug/g dry	0.05	3.1	-	-	-	ND (0.05)	ND (0.05)	ND (0.05)
o-Xylene	ug/g dry	0.05	3.1	-	-	-	ND (0.05)	ND (0.05)	ND (0.05)
Xylenes, total	ug/g dry	0.05	3.1	-	-	-	ND (0.05)	ND (0.05)	ND (0.05)
Hydrocarbons									
F1 PHCs (C6-C10)	ug/g dry	7	55	-	-	-	ND (7)	ND (7)	ND (7)
F2 PHCs (C10-C16)	ug/g dry	4	98	-	-	-	ND (4)	ND (4)	ND (4)
F3 PHCs (C16-C34)	ug/g dry	8	300	-	-	-	ND (8)	ND (8)	ND (8)
F4 PHCs (C34-C50)	ug/g dry	6	2800	-	-	-	ND (6)	ND (6)	ND (6)
Semi-Volatiles									
Acenaphthene	ug/g dry	0.02	7.9	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Acenaphthylene	ug/g dry	0.02	0.15	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Anthracene	ug/g dry	0.02	0.67	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Benzo[a]anthracene	ug/g dry	0.02	0.5	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Benzo[a]pyrene	ug/g dry	0.02	0.3	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Benzo[b]fluoranthene	ug/g dry	0.02	0.78	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Benzo[g,h,i]perylene	ug/g dry	0.02	6.6	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Benzo[k]fluoranthene	ug/g dry	0.02	0.78	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Chrysene	ug/g dry	0.02	7.0	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Dibenzo[a,h]anthracene	ug/g dry	0.02	0.1	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Fluoranthene	ug/g dry	0.02	0.69	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Fluorene	ug/g dry	0.02	62	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Indeno [1,2,3-cd] pyrene	ug/g dry	0.02	0.38	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
1-Methylnaphthalene	ug/g dry	0.02	0.99	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
2-Methylnaphthalene	ug/g dry	0.02	0.99	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Methylnaphthalene (1&2)	ug/g dry	0.04	0.99	ND (0.04)	ND (0.04)	ND (0.04)	-	ND (0.04)	ND (0.04)
Naphthalene	ug/g dry	0.01	0.6	ND (0.01)	ND (0.01)	ND (0.01)	-	ND (0.01)	ND (0.01)
Phenanthrene	ug/g dry	0.02	6.2	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
Pyrene	ug/g dry	0.02	78	ND (0.02)	ND (0.02)	ND (0.02)	-	ND (0.02)	ND (0.02)
PCBs									
PCBs, total	ug/g dry	0.05	0.35	-	ND (0.05)	-	-	-	-

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

Table 6A: Maximum Concentrations
Soil

Parameter	Sample ID / Depth (m)	Units	Reg 153/04 - Table 3 Residential, coarse Standards	Concentration
pH	BH3-25-SS4 BOT 2520472-04 - 2.44 - 2.77	N/A	5-9 (surf); 5-11 (subsurf)	7.8
Arsenic	BH1-25-SS2 2520472-01 - 0.76 - 1.37	ug/g dry	18	4.4
Barium	BH1-25-SS2 2520472-01 - 0.76 - 1.37	ug/g dry	390	241
Beryllium	BH1-25-SS2 2520472-01 - 0.76 - 1.37	ug/g dry	4.0	0.8
Boron	BH1-25-SS2 2520472-01 - 0.76 - 1.37	ug/g dry	120	19.7
Chromium	BH1-25-SS2 2520472-01 - 0.76 - 1.37	ug/g dry	160	38
Cobalt	BH1-25-SS2 2520472-01 - 0.76 - 1.37	ug/g dry	22	16.1
Copper	BH1-25-SS2 2520472-01 - 0.76 - 1.37	ug/g dry	140	25.1
Lead	BH1-25-SS2 2520472-01 - 0.76 - 1.37	ug/g dry	120	18.5
Molybdenum	BH1-25-SS2 2520472-01 - 0.76 - 1.37	ug/g dry	6.9	1.2
Nickel	BH1-25-SS2 2520472-01 - 0.76 - 1.37	ug/g dry	100	28.7
Uranium	BH1-25-SS2 2520472-01 - 0.76 - 1.37	ug/g dry	23	1.4
Vanadium	BH2-25-AU2 2520472-02 - 0.25 - 0.61	ug/g dry	86	45.9
Zinc	BH1-25-SS2 2520472-01 - 0.76 - 1.37	ug/g dry	340	59.2
All remaining parameters analysed were reported non-detect in all samples.				

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Table 7: Groundwater Analytical Test Results

Parameter	Units	MDL	Regulation	BH2-25-GW1 2522250-02	BH3-25-GW1 2522250-03	DUP-May27 2522250-04	BH4-25-GW1 2522250-01	BH3-25-GW2 2524488-01	DUP-June 13 2524488-02
Sample Depth (m)			Reg 153/04 - Table 3 Non-Potable Groundwater, coarse	2.92 - 5.97	2.55 - 5.60	2.55 - 5.60	3.10 - 6.15	2.55 - 5.60	2.55 - 5.60
Sample Date				27-May-2025	27-May-2025	27-May-2025	27-May-2025	13-Jun-2025	13-Jun-2025
Volatiles									
Acetone	ug/L	5.0	130000	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)	-	-
Bromodichloromethane	ug/L	0.5	85000	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)	-	-
Bromomethane	ug/L	0.5	5.6	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)	-	-
Chlorobenzene	ug/L	0.5	630	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	-	-
Chloroform	ug/L	0.5	2.4	ND (0.5)	0.6	0.6	ND (0.5)	-	-
Dibromochloromethane	ug/L	0.5	82000	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)	-	-
1,2-Dichlorobenzene	ug/L	0.5	4600	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)	-	-
1,4-Dichlorobenzene	ug/L	0.5	8.0	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)	-	-
1,2-Dichloroethane	ug/L	0.5	1.6	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)	-	-
cis-1,2-Dichloroethylene	ug/L	0.5	1.6	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)	-	-
1,2-Dichloropropane	ug/L	0.5	16	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)	-	-
trans-1,3-Dichloropropylene	ug/L	0.5	5.2	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)	-	-
Ethylbenzene	ug/L	0.5	2300	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	-	-
Ethylene dibromide (dibromoethane, 1,	ug/L	0.2	0.25	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)	-	-
Methyl Ethyl Ketone (2-Butanone)	ug/L	5.0	470000	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)	-	-
Methyl tert-butyl ether	ug/L	2.0	190	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)	-	-
Styrene	ug/L	0.5	1300	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)	-	-
1,1,2,2-Tetrachloroethane	ug/L	0.5	3.2	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)	-	-
Toluene	ug/L	0.5	18000	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)	-	-
1,1,2-Trichloroethane	ug/L	0.5	4.7	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)	-	-
Trichlorofluoromethane	ug/L	1.0	2500	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)	-	-
m/p-Xylene	ug/L	0.5	4200	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)	-	-
Xylenes, total	ug/L	0.5	4200	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	-	-
BTEX									
Benzene	ug/L	0.5	44	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)	-	-
Toluene	ug/L	0.5	18000	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)	-	-
o-Xylene	ug/L	0.5	4200	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)	-	-
Hydrocarbons									
F1 PHCs (C6-C10)	ug/L	25	750	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)	ND (100)
F3 PHCs (C16-C34)	ug/L	100	500	ND (100)	ND (100)	665	ND (100)	ND (100)	ND (100)
F4 PHCs (C34-C50)	ug/L	100	500	ND (100)	ND (100)	790	ND (100)	ND (100)	ND (100)
Semi-Volatiles									
Acenaphthene	ug/L	0.05	600	ND (0.05)	-	-	-	-	-
Acenaphthylene	ug/L	0.05	1.8	ND (0.05)	-	-	-	-	-
Anthracene	ug/L	0.01	2.4	ND (0.01)	-	-	-	-	-
Benzo[a]anthracene	ug/L	0.01	4.7	ND (0.01)	-	-	-	-	-
Benzo[a]pyrene	ug/L	0.01	0.81	ND (0.01)	-	-	-	-	-
Benzo[b]fluoranthene	ug/L	0.05	0.75	ND (0.05)	-	-	-	-	-
Benzo[g,h,i]perylene	ug/L	0.05	0.2	ND (0.05)	-	-	-	-	-
Benzo[k]fluoranthene	ug/L	0.05	0.4	ND (0.05)	-	-	-	-	-
Chrysene	ug/L	0.05	1.0	ND (0.05)	-	-	-	-	-
Dibenzo[a,h]anthracene	ug/L	0.05	0.52	ND (0.05)	-	-	-	-	-
Fluoranthene	ug/L	0.01	130	ND (0.01)	-	-	-	-	-
Fluorene	ug/L	0.05	400	ND (0.05)	-	-	-	-	-
Indeno [1,2,3-cd] pyrene	ug/L	0.05	0.2	ND (0.05)	-	-	-	-	-
1-Methylnaphthalene	ug/L	0.05	1800	ND (0.05)	-	-	-	-	-
2-Methylnaphthalene	ug/L	0.05	1800	ND (0.05)	-	-	-	-	-
Methylnaphthalene (1&2)	ug/L	0.10	1800	ND (0.10)	-	-	-	-	-
Naphthalene	ug/L	0.05	1400	ND (0.05)	-	-	-	-	-
Phenanthrene	ug/L	0.05	580	ND (0.05)	-	-	-	-	-
Pyrene	ug/L	0.01	68	ND (0.01)	-	-	-	-	-
PCBs									
PCBs, total	ug/L	0.05	7.8	ND (0.05)	-	-	-	-	-

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
N/A	Parameter not analysed
NV	No value given for indicated parameter

Table 7A: Maximum Concentrations Groundwater

Parameter	Sample ID / Screen Interval (m)	Units	Reg 153/04 - Table 3 Non-Potable Groundwater, coarse Standards	Concentration
Chloroform	BH3-25-GW1 2522250-03 - 2.55 - 5.60	ug/L	2.4	0.6
F3 PHCs (C16-C34)	DUP-May27 2522250-04 - 2.55 - 5.60	ug/L	500	665
F4 PHCs (C34-C50)	DUP-May27 2522250-04 - 2.55 - 5.60	ug/L	500	790
All remaining parameters analysed were reported non-detect in all samples.				

Table 8A: QA/QC Calculations
Relative Percent Difference

Parameter	MDL	BH4-25-SS2 2520472-05	DUP 1 2520472-06	RPD (%)	QA/QC Result
Arsenic	1.0	2.1	1.7	21.1%	Outside the acceptable range
Barium	1.0	70	43.1	47.6%	Outside the acceptable range
Chromium	5.0	17.9	12.1	38.7%	Outside the acceptable range
Cobalt	1.0	6.5	4.7	32.1%	Outside the acceptable range
Copper	5.0	15.4	9.5	47.4%	Outside the acceptable range
Lead	1.0	4.3	2.9	38.9%	Outside the acceptable range
Nickel	5.0	11.7	8	37.6%	Outside the acceptable range
Vanadium	10.0	28.3	22.4	23.3%	Outside the acceptable range
Zinc	20.0	24.6	ND (20.0)	20.6%	Outside the acceptable range

Table 8B: QA/QC Calculations
Relative Percent Difference

Parameter	MDL	BH3-25-GW1 2522250-03	DUP-May27 2522250-04	RPD (%)	QA/QC Result
Chloroform	0.5	0.6	0.6	0.0%	Within the acceptable range
F3 PHCs (C16-C34)	100	ND (100)	665	147.7%	Outside the acceptable range
F4 PHCs (C34-C50)	100	ND (100)	790	155.1%	Outside the acceptable range

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Certificate of Analysis

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

Client PO: 63124
Project: PE7051
Custody:

Report Date: 21-May-2025
Order Date: 15-May-2025

Order #: 2520472

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

Paracel ID	**Client ID**
2520472-01	BH1-25-SS2
2520472-02	BH2-25-AU2
2520472-03	BH3-25-SS2 TOP
2520472-04	BH3-25-SS4 BOT
2520472-05	BH4-25-SS2
2520472-06	DUP 1

Approved By:

Mark Foto, M.Sc.
Laboratory Director

Certificate of Analysis

Report Date: 21-May-2025

Client: Paterson Group Consulting Engineers (Ottawa)

Order Date: 15-May-2025

Client PO: 63124

Project Description: PE7051

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	20-May-25	20-May-25
PCBs, total	SW846 8082A - GC-ECD	16-May-25	16-May-25
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	20-May-25	20-May-25
PHC F1	CWS Tier 1 - P&T GC-FID	20-May-25	20-May-25
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	17-May-25	20-May-25
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	20-May-25	20-May-25
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	16-May-25	16-May-25
Solids, %	CWS Tier 1 - Gravimetric	16-May-25	20-May-25

	Client ID:	BH1-25-SS2	BH2-25-AU2	BH3-25-SS2 TOP	BH3-25-SS4 BOT	-	-
	Sample Date:	14-May-25 09:00	14-May-25 09:00	14-May-25 09:00	14-May-25 09:00		
	Sample ID:	2520472-01	2520472-02	2520472-03	2520472-04		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	81.3	86.1	88.6	92.6	-	-
General Inorganics							
pH	0.05 pH Units	-	7.41	-	7.80	-	-
Metals							
Antimony	1.0 ug/g	<1.0	<1.0	<1.0	-	-	-
Arsenic	1.0 ug/g	4.4	2.2	2.1	-	-	-
Barium	1.0 ug/g	241	101	72.5	-	-	-
Beryllium	0.5 ug/g	0.8	0.5	<0.5	-	-	-
Boron	5.0 ug/g	19.7	5.0	6.1	-	-	-
Cadmium	0.5 ug/g	<0.5	<0.5	<0.5	-	-	-
Chromium	5.0 ug/g	38.0	33.7	18.9	-	-	-
Cobalt	1.0 ug/g	16.1	9.3	6.5	-	-	-
Copper	5.0 ug/g	25.1	17.7	15.7	-	-	-
Lead	1.0 ug/g	18.5	4.6	9.2	-	-	-
Molybdenum	1.0 ug/g	1.2	<1.0	<1.0	-	-	-
Nickel	5.0 ug/g	28.7	18.7	12.4	-	-	-
Selenium	1.0 ug/g	<1.0	<1.0	<1.0	-	-	-
Silver	0.3 ug/g	<0.3	<0.3	<0.3	-	-	-
Thallium	1.0 ug/g	<1.0	<1.0	<1.0	-	-	-
Uranium	1.0 ug/g	1.4	<1.0	<1.0	-	-	-
Vanadium	10.0 ug/g	37.3	45.9	27.9	-	-	-
Zinc	20.0 ug/g	59.2	38.2	25.1	-	-	-
Volatiles							
Benzene	0.02 ug/g	-	-	-	<0.02	-	-
Ethylbenzene	0.05 ug/g	-	-	-	<0.05	-	-

PARACEL LABORATORIES LTD.

Order #: 2520472

Certificate of Analysis

Report Date: 21-May-2025

Client: Paterson Group Consulting Engineers (Ottawa)

Order Date: 15-May-2025

Client PO: 63124

Project Description: PE7051

	MDL/Units						
Client ID:		BH1-25-SS2	BH2-25-AU2	BH3-25-SS2 TOP	BH3-25-SS4 BOT	-	-
Sample Date:		14-May-25 09:00	14-May-25 09:00	14-May-25 09:00	14-May-25 09:00		
Sample ID:		2520472-01	2520472-02	2520472-03	2520472-04		
Matrix:		Soil	Soil	Soil	Soil		
Volatiles							
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	-	-	-	123%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	-	-	-	<7	-	-
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	<0.02	-	-	-
Acenaphthylene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Anthracene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Benzo [a] anthracene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Benzo [a] pyrene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Benzo [b] fluoranthene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Benzo [k] fluoranthene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Chrysene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Fluoranthene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Fluorene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
1-Methylnaphthalene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-

PARACEL LABORATORIES LTD.

Order #: 2520472

Certificate of Analysis

Report Date: 21-May-2025

Client: Paterson Group Consulting Engineers (Ottawa)

Order Date: 15-May-2025

Client PO: 63124

Project Description: PE7051

	Client ID:	BH1-25-SS2	BH2-25-AU2	BH3-25-SS2 TOP	BH3-25-SS4 BOT	-	-
	Sample Date:	14-May-25 09:00	14-May-25 09:00	14-May-25 09:00	14-May-25 09:00		
	Sample ID:	2520472-01	2520472-02	2520472-03	2520472-04		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Semi-Volatiles							
2-Methylnaphthalene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g	<0.04	<0.04	<0.04	-	-	-
Naphthalene	0.01 ug/g	<0.01	<0.01	<0.01	-	-	-
Phenanthrene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Pyrene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
2-Fluorobiphenyl	Surrogate	79.2%	75.2%	74.4%	-	-	-
Terphenyl-d14	Surrogate	73.3%	70.6%	71.6%	-	-	-
PCBs							
PCBs, total	0.05 ug/g	-	<0.05	-	-	-	-
Decachlorobiphenyl	Surrogate	-	140%	-	-	-	-

Certificate of Analysis

Report Date: 21-May-2025

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

Order Date: 15-May-2025

Client PO: 63124

Project Description: PE7051

	Client ID:	BH4-25-SS2	DUP 1			-	-
	Sample Date:	15-May-25 09:00	15-May-25 09:00				
	Sample ID:	2520472-05	2520472-06				
	Matrix:	Soil	Soil				
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	87.7	87.2	-	-	-	-
Metals							
Antimony	1.0 ug/g	<1.0	<1.0	-	-	-	-
Arsenic	1.0 ug/g	2.1	1.7	-	-	-	-
Barium	1.0 ug/g	70.0	43.1	-	-	-	-
Beryllium	0.5 ug/g	<0.5	<0.5	-	-	-	-
Boron	5.0 ug/g	<5.0	<5.0	-	-	-	-
Cadmium	0.5 ug/g	<0.5	<0.5	-	-	-	-
Chromium	5.0 ug/g	17.9	12.1	-	-	-	-
Cobalt	1.0 ug/g	6.5	4.7	-	-	-	-
Copper	5.0 ug/g	15.4	9.5	-	-	-	-
Lead	1.0 ug/g	4.3	2.9	-	-	-	-
Molybdenum	1.0 ug/g	<1.0	<1.0	-	-	-	-
Nickel	5.0 ug/g	11.7	8.0	-	-	-	-
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	28.3	22.4	-	-	-	-
Zinc	20.0 ug/g	24.6	<20.0	-	-	-	-
Volatiles							
Benzene	0.02 ug/g	<0.02	<0.02	-	-	-	-
Ethylbenzene	0.05 ug/g	<0.05	<0.05	-	-	-	-
Toluene	0.05 ug/g	<0.05	<0.05	-	-	-	-
m,p-Xylenes	0.05 ug/g	<0.05	<0.05	-	-	-	-

Client ID:		BH4-25-SS2	DUP 1				
Sample Date:		15-May-25 09:00	15-May-25 09:00			-	-
Sample ID:		2520472-05	2520472-06				
Matrix:		Soil	Soil				
	MDL/Units						
Volatiles							
o-Xylene	0.05 ug/g	<0.05	<0.05	-	-	-	-
Xylenes, total	0.05 ug/g	<0.05	<0.05	-	-	-	-
Toluene-d8	Surrogate	129%	128%	-	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	<7	-	-	-	-
F2 PHCs (C10-C16)	4 ug/g	<4	<4	-	-	-	-
F3 PHCs (C16-C34)	8 ug/g	<8	<8	-	-	-	-
F4 PHCs (C34-C50)	6 ug/g	<6	<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	-	-	-	-
2-Methylnaphthalene	0.02 ug/g	<0.02	<0.02	-	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g	<0.04	<0.04	-	-	-	-

	Client ID:	BH4-25-SS2	DUP 1			-	-
	Sample Date:	15-May-25 09:00	15-May-25 09:00				
	Sample ID:	2520472-05	2520472-06				
	Matrix:	Soil	Soil				
	MDL/Units						
Semi-Volatiles							
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	69.3%	85.6%	-	-	-	-
Terphenyl-d14	Surrogate	63.7%	74.9%	-	-	-	-

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					
PCBs								
PCBs, total	ND	0.05	ug/g					
Surrogate: Decachlorobiphenyl	*0.0680*		*%*	*136*	*60-140*			
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					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [b] fluoranthene	ND	0.02	ug/g					
Benzo [g,h,i] perylene	ND	0.02	ug/g					
Benzo [k] fluoranthene	ND	0.02	ug/g					
Chrysene	ND	0.02	ug/g					
Dibenzo [a,h] anthracene	ND	0.02	ug/g					
Fluoranthene	ND	0.02	ug/g					
Fluorene	ND	0.02	ug/g					
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g					
1-Methylnaphthalene	ND	0.02	ug/g					
2-Methylnaphthalene	ND	0.02	ug/g					
Methylnaphthalene (1&2)	ND	0.04	ug/g					
Naphthalene	ND	0.01	ug/g					
Phenanthrene	ND	0.02	ug/g					
Pyrene	ND	0.02	ug/g					
Surrogate: 2-Fluorobiphenyl	*0.778*		*%*	*58.3*	*50-140*			
Surrogate: Terphenyl-d14	*0.720*		*%*	*54.0*	*50-140*			
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	*9.70*		*%*	*121*	*50-140*			

Certificate of Analysis

Report Date: 21-May-2025

Client: Paterson Group Consulting Engineers (Ottawa)

Order Date: 15-May-2025

Client PO: 63124

Project Description: PE7051

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
pH	7.36	0.05	pH Units	7.41			0.7	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)	ND	8	ug/g	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g	ND			NC	30	
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	3.3	1.0	ug/g	2.7			19.9	30	
Barium	38.2	1.0	ug/g	29.3			26.5	30	
Beryllium	ND	0.5	ug/g	ND			NC	30	
Boron	8.0	5.0	ug/g	5.5			NC	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium	16.2	5.0	ug/g	12.9			22.6	30	
Cobalt	5.1	1.0	ug/g	4.3			18.0	30	
Copper	15.9	5.0	ug/g	13.3			17.8	30	
Lead	9.6	1.0	ug/g	7.8			21.3	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	11.8	5.0	ug/g	9.7			19.5	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	21.9	10.0	ug/g	18.7			15.7	30	
Zinc	47.6	20.0	ug/g	39.5			18.6	30	
PCBs									
PCBs, total	ND	0.05	ug/g	ND			NC	40	
Surrogate: Decachlorobiphenyl	*0.0867*		*%*		*140*	*60-140*			
Physical Characteristics									
% Solids	87.1	0.1	% by Wt.	87.7			0.7	25	

Certificate of Analysis

Report Date: 21-May-2025

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

Order Date: 15-May-2025

Client PO: 63124

Project Description: PE7051

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	ND	0.02	ug/g	ND			NC	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*1.00*		*%*		*61.9*	*50-140*			
Surrogate: Terphenyl-d14	*0.937*		*%*		*57.7*	*50-140*			
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	*10.6*		*%*		*122*	*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)	162	7	ug/g	ND	94.3	85-115			
F2 PHCs (C10-C16)	64	4	ug/g	ND	75.7	60-140			
F3 PHCs (C16-C34)	169	8	ug/g	ND	82.3	60-140			
F4 PHCs (C34-C50)	109	6	ug/g	ND	83.5	60-140			
Metals									
Antimony	45.8	1.0	ug/g	ND	91.5	70-130			
Arsenic	53.1	1.0	ug/g	1.1	104	70-130			
Barium	69.8	1.0	ug/g	11.7	116	70-130			
Beryllium	53.6	0.5	ug/g	ND	107	70-130			
Boron	53.5	5.0	ug/g	ND	103	70-130			
Cadmium	46.9	0.5	ug/g	ND	93.7	70-130			
Chromium	62.7	5.0	ug/g	5.2	115	70-130			
Cobalt	57.4	1.0	ug/g	1.7	111	70-130			
Copper	57.7	5.0	ug/g	5.3	105	70-130			
Lead	51.2	1.0	ug/g	3.1	96.2	70-130			
Molybdenum	53.0	1.0	ug/g	ND	106	70-130			
Nickel	56.6	5.0	ug/g	ND	105	70-130			
Selenium	53.8	1.0	ug/g	ND	107	70-130			
Silver	44.5	0.3	ug/g	ND	88.9	70-130			
Thallium	48.9	1.0	ug/g	ND	97.8	70-130			
Uranium	50.9	1.0	ug/g	ND	101	70-130			
Vanadium	64.9	10.0	ug/g	ND	115	70-130			
Zinc	67.3	20.0	ug/g	ND	103	70-130			
PCBs									
PCBs, total	0.493	0.05	ug/g	ND	123	60-140			
Surrogate: Decachlorobiphenyl	*0.0690*		*%*		*138*	*60-140*			
Semi-Volatiles									
Acenaphthene	0.138	0.02	ug/g	ND	67.9	50-140			
Acenaphthylene	0.142	0.02	ug/g	ND	70.2	50-140			
Anthracene	0.145	0.02	ug/g	ND	71.3	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [a] anthracene	0.148	0.02	ug/g	ND	73.1	50-140			
Benzo [a] pyrene	0.149	0.02	ug/g	ND	73.6	50-140			
Benzo [b] fluoranthene	0.161	0.02	ug/g	ND	79.5	50-140			
Benzo [g,h,i] perylene	0.157	0.02	ug/g	ND	77.6	50-140			
Benzo [k] fluoranthene	0.150	0.02	ug/g	ND	73.7	50-140			
Chrysene	0.152	0.02	ug/g	ND	75.1	50-140			
Dibenzo [a,h] anthracene	0.167	0.02	ug/g	ND	82.3	50-140			
Fluoranthene	0.168	0.02	ug/g	ND	82.7	50-140			
Fluorene	0.145	0.02	ug/g	ND	71.5	50-140			
Indeno [1,2,3-cd] pyrene	0.161	0.02	ug/g	ND	79.3	50-140			
1-Methylnaphthalene	0.133	0.02	ug/g	ND	65.4	50-140			
2-Methylnaphthalene	0.134	0.02	ug/g	ND	66.0	50-140			
Naphthalene	0.111	0.01	ug/g	ND	54.7	50-140			
Phenanthrene	0.161	0.02	ug/g	ND	79.4	50-140			
Pyrene	0.163	0.02	ug/g	ND	80.4	50-140			
Surrogate: 2-Fluorobiphenyl	*0.957*		*%*		*59.0*	*50-140*			
Surrogate: Terphenyl-d14	*1.15*		*%*		*70.9*	*50-140*			
Volatiles									
Benzene	3.18	0.02	ug/g	ND	79.5	60-130			
Ethylbenzene	4.89	0.05	ug/g	ND	122	60-130			
Toluene	5.05	0.05	ug/g	ND	126	60-130			
m,p-Xylenes	9.62	0.05	ug/g	ND	120	60-130			
o-Xylene	4.88	0.05	ug/g	ND	122	60-130			
Surrogate: Toluene-d8	*9.52*		*%*		*119*	*50-140*			

Qualifier Notes:

QC Qualifiers:

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

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 ID: 2520472

PARACEL LABORATORIES LTD.

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2520472	

Client Name: Paterson	Project Ref: PE7051	Page 1 of 1	
Contact Name: Kuldeep Panchal	Quote #:	Turnaround Time	
Address: 9 Auriga Dr Ottawa ON K2E 7T9	PO #: 63124	☐ 1 day	☐ 3 day
	E-mail: mdarcy@patersongroup.ca kpanchal@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)	PH	PCBs			
1	BH1-25-SS2	S		3	05/14/2025				✓	✓								
2	BH2-25-AU2	↓		2	↓				✓	✓				✓	✓			
3	BH3-25-SS2 TOP	↓		↓	↓				✓	✓								
4	BH3-25-SS4 BOT	↓		↓	↓		✓							✓				
5	BH4-25-SS2	↓		↓	05/15/2025		✓		✓	✓								
6	DUP1	↓		↓	↓		✓		✓	✓								
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign): [signature]	Received at Depot:	Received at Lab: SD	Verified By: SD
Relinquished By (Print): Kuldeep Panchal	Date/Time:	Date/Time: May 15 2025 4:21pm	Date/Time: May 16, 2025 9:25am
Date/Time: 05/15/2025	Temperature: °C	Temperature: 12.6	pH Verified: ☐ By:

300 - 2319 St. Laurent Blvd
Ottawa, ON, K1G 4J8
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

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

Report Date: 2-Jun-2025
Order Date: 27-May-2025

Client PO: 63191
Project: PE7051
Custody:

Order #: 2522250

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

Paracel ID	Client ID
2522250-01	BH4-25-GW1
2522250-02	BH2-25-GW1
2522250-03	BH3-25-GW1
2522250-04	DUP-May27

Approved By: Mark Foto

Mark Foto, M.Sc.

Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PCBs, total	EPA 608 - GC-ECD	27-May-25	28-May-25
PHC F1	CWS Tier 1 - P&T GC-FID	29-May-25	29-May-25
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	29-May-25	30-May-25
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	28-May-25	29-May-25
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	29-May-25	29-May-25

Client ID:		BH4-25-GW1	BH2-25-GW1	BH3-25-GW1	DUP-May27	-	-
Sample Date:		27-May-25 09:00	27-May-25 09:00	27-May-25 09:00	27-May-25 09:00		
Sample ID:		2522250-01	2522250-02	2522250-03	2522250-04		
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	0.6	0.6	-	-
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: 02-Jun-2025

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

Order Date: 27-May-2025

Client PO: 63191

Project Description: PE7051

	Client ID:	BH4-25-GW1	BH2-25-GW1	BH3-25-GW1	DUP-May27	-	-
	Sample Date:	27-May-25 09:00	27-May-25 09:00	27-May-25 09:00	27-May-25 09:00	-	-
	Sample ID:	2522250-01	2522250-02	2522250-03	2522250-04	-	-
	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	-	-
Dibromofluoromethane	Surrogate	125%	130%	122%	126%	-	-
Toluene-d8	Surrogate	97.0%	101%	101%	101%	-	-
4-Bromofluorobenzene	Surrogate	111%	110%	110%	110%	-	-
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	665	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	790	-	-

PARACEL LABORATORIES LTD.

Certificate of Analysis

Order #: 2522250

Report Date: 02-Jun-2025

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

Order Date: 27-May-2025

Client PO: 63191

Project Description: PE7051

	Client ID:	BH4-25-GW1	BH2-25-GW1	BH3-25-GW1	DUP-May27	-	-
	Sample Date:	27-May-25 09:00	27-May-25 09:00	27-May-25 09:00	27-May-25 09:00		
	Sample ID:	2522250-01	2522250-02	2522250-03	2522250-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Semi-Volatiles							
Acenaphthene	0.05 ug/L	-	<0.05	-	-	-	-
Acenaphthylene	0.05 ug/L	-	<0.05	-	-	-	-
Anthracene	0.01 ug/L	-	<0.01	-	-	-	-
Benzo [a] anthracene	0.01 ug/L	-	<0.01	-	-	-	-
Benzo [a] pyrene	0.01 ug/L	-	<0.01	-	-	-	-
Benzo [b] fluoranthene	0.05 ug/L	-	<0.05	-	-	-	-
Benzo [g,h,i] perylene	0.05 ug/L	-	<0.05	-	-	-	-
Benzo [k] fluoranthene	0.05 ug/L	-	<0.05	-	-	-	-
Chrysene	0.05 ug/L	-	<0.05	-	-	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	-	<0.05	-	-	-	-
Fluoranthene	0.01 ug/L	-	<0.01	-	-	-	-
Fluorene	0.05 ug/L	-	<0.05	-	-	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	-	<0.05	-	-	-	-
1-Methylnaphthalene	0.05 ug/L	-	<0.05	-	-	-	-
2-Methylnaphthalene	0.05 ug/L	-	<0.05	-	-	-	-
Methylnaphthalene (1&2)	0.10 ug/L	-	<0.10	-	-	-	-
Naphthalene	0.05 ug/L	-	<0.05	-	-	-	-
Phenanthrene	0.05 ug/L	-	<0.05	-	-	-	-
Pyrene	0.01 ug/L	-	<0.01	-	-	-	-
2-Fluorobiphenyl	Surrogate	-	70.6%	-	-	-	-
Terphenyl-d14	Surrogate	-	79.5%	-	-	-	-
PCBs							
PCBs, total	0.05 ug/L	-	<0.05	-	-	-	-
Decachlorobiphenyl	Surrogate	-	84.8%	-	-	-	-

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					
PCBs								
PCBs, total	ND	0.05	ug/L					
Surrogate: Decachlorobiphenyl	*0.226*		*%*	*90.4*	*60-140*			
Semi-Volatiles								
Acenaphthene	ND	0.05	ug/L					
Acenaphthylene	ND	0.05	ug/L					
Anthracene	ND	0.01	ug/L					
Benzo [a] anthracene	ND	0.01	ug/L					
Benzo [a] pyrene	ND	0.01	ug/L					
Benzo [b] fluoranthene	ND	0.05	ug/L					
Benzo [g,h,i] perylene	ND	0.05	ug/L					
Benzo [k] fluoranthene	ND	0.05	ug/L					
Chrysene	ND	0.05	ug/L					
Dibenzo [a,h] anthracene	ND	0.05	ug/L					
Fluoranthene	ND	0.01	ug/L					
Fluorene	ND	0.05	ug/L					
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L					
1-Methylnaphthalene	ND	0.05	ug/L					
2-Methylnaphthalene	ND	0.05	ug/L					
Methylnaphthalene (1&2)	ND	0.10	ug/L					
Naphthalene	ND	0.05	ug/L					
Phenanthrene	ND	0.05	ug/L					
Pyrene	ND	0.01	ug/L					
Surrogate: 2-Fluorobiphenyl	*14.3*		*%*	*71.4*	*50-140*			
Surrogate: Terphenyl-d14	*16.3*		*%*	*81.5*	*50-140*			
Volatiles								
Acetone	ND	5.0	ug/L					

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

Client PO: 63191

Project Description: PE7051

Method Quality Control: Blank

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

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*90.8*		*%*	*114*	*50-140*			
Surrogate: Dibromofluoromethane	*96.6*		*%*	*121*	*50-140*			
Surrogate: Toluene-d8	*80.8*		*%*	*101*	*50-140*			

PARACEL
LABORATORIES LTD.

Order #: 2522250

Certificate of Analysis

Report Date: 02-Jun-2025

Client: Paterson Group Consulting Engineers (Ottawa)

Order Date: 27-May-2025

Client PO: 63191

Project Description: PE7051

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	3.05	0.5	ug/L	4.01			27.2	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	3.49	0.5	ug/L	4.28			20.3	30	
Dibromochloromethane	2.19	0.5	ug/L	2.55			15.2	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	*88.5*		*%*		*111*	*50-140*			
Surrogate: Dibromofluoromethane	*96.0*		*%*		*120*	*50-140*			
Surrogate: Toluene-d8	*80.8*		*%*		*101*	*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)	1800	25	ug/L	ND	105	85-115			
F2 PHCs (C10-C16)	2010	100	ug/L	ND	125	60-140			
F3 PHCs (C16-C34)	4960	100	ug/L	ND	127	60-140			
F4 PHCs (C34-C50)	2730	100	ug/L	ND	110	60-140			
PCBs									
PCBs, total	0.967	0.05	ug/L	ND	96.7	65-135			
Surrogate: Decachlorobiphenyl	*0.241*		*%*		*96.3*	*60-140*			
Semi-Volatiles									
Acenaphthene	3.71	0.05	ug/L	ND	74.2	50-140			
Acenaphthylene	3.74	0.05	ug/L	ND	74.8	50-140			
Anthracene	4.21	0.01	ug/L	ND	84.2	50-140			
Benzo [a] anthracene	3.95	0.01	ug/L	ND	78.9	50-140			
Benzo [a] pyrene	3.83	0.01	ug/L	ND	76.7	50-140			
Benzo [b] fluoranthene	3.88	0.05	ug/L	ND	77.6	50-140			
Benzo [g,h,i] perylene	4.05	0.05	ug/L	ND	80.9	50-140			
Benzo [k] fluoranthene	3.85	0.05	ug/L	ND	77.0	50-140			
Chrysene	3.91	0.05	ug/L	ND	78.3	50-140			
Dibenzo [a,h] anthracene	4.29	0.05	ug/L	ND	85.8	50-140			
Fluoranthene	4.06	0.01	ug/L	ND	81.3	50-140			
Fluorene	3.78	0.05	ug/L	ND	75.6	50-140			
Indeno [1,2,3-cd] pyrene	4.14	0.05	ug/L	ND	82.7	50-140			
1-Methylnaphthalene	4.29	0.05	ug/L	ND	85.8	50-140			
2-Methylnaphthalene	4.00	0.05	ug/L	ND	80.0	50-140			
Naphthalene	3.70	0.05	ug/L	ND	74.0	50-140			
Phenanthrene	3.97	0.05	ug/L	ND	79.3	50-140			
Pyrene	4.02	0.01	ug/L	ND	80.4	50-140			
Surrogate: 2-Fluorobiphenyl	*16.1*		*%*		*80.6*	*50-140*			
Surrogate: Terphenyl-d14	*15.6*		*%*		*78.0*	*50-140*			
Volatiles									
Acetone	83.4	5.0	ug/L	ND	83.4	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzene	38.4	0.5	ug/L	ND	96.1	60-130			
Bromodichloromethane	49.2	0.5	ug/L	ND	123	60-130			
Bromoform	41.3	0.5	ug/L	ND	103	60-130			
Bromomethane	24.2	0.5	ug/L	ND	60.4	50-140			
Carbon Tetrachloride	49.8	0.2	ug/L	ND	124	60-130			
Chlorobenzene	38.1	0.5	ug/L	ND	95.2	60-130			
Chloroform	43.4	0.5	ug/L	ND	109	60-130			
Dibromochloromethane	46.2	0.5	ug/L	ND	115	60-130			
Dichlorodifluoromethane	30.2	1.0	ug/L	ND	75.6	50-140			
1,2-Dichlorobenzene	39.0	0.5	ug/L	ND	97.4	60-130			
1,3-Dichlorobenzene	39.7	0.5	ug/L	ND	99.2	60-130			
1,4-Dichlorobenzene	38.0	0.5	ug/L	ND	94.9	60-130			
1,1-Dichloroethane	45.3	0.5	ug/L	ND	113	60-130			
1,2-Dichloroethane	35.8	0.5	ug/L	ND	89.6	60-130			
1,1-Dichloroethylene	46.0	0.5	ug/L	ND	115	60-130			
cis-1,2-Dichloroethylene	49.6	0.5	ug/L	ND	124	60-130			
trans-1,2-Dichloroethylene	50.3	0.5	ug/L	ND	126	60-130			
1,2-Dichloropropane	41.6	0.5	ug/L	ND	104	60-130			
cis-1,3-Dichloropropylene	50.5	0.5	ug/L	ND	126	60-130			
trans-1,3-Dichloropropylene	49.6	0.5	ug/L	ND	124	60-130			
Ethylbenzene	35.4	0.5	ug/L	ND	88.6	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	51.0	0.2	ug/L	ND	127	60-130			
Hexane	45.0	1.0	ug/L	ND	112	60-130			
Methyl Ethyl Ketone (2-Butanone)	105	5.0	ug/L	ND	105	50-140			
Methyl Isobutyl Ketone	96.4	5.0	ug/L	ND	96.4	50-140			
Methyl tert-butyl ether	104	2.0	ug/L	ND	104	50-140			
Methylene Chloride	46.2	5.0	ug/L	ND	116	60-130			
Styrene	41.6	0.5	ug/L	ND	104	60-130			
1,1,1,2-Tetrachloroethane	49.0	0.5	ug/L	ND	122	60-130			
1,1,2,2-Tetrachloroethane	45.5	0.5	ug/L	ND	114	60-130			
Tetrachloroethylene	40.1	0.5	ug/L	ND	100	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Toluene	39.4	0.5	ug/L	ND	98.5	60-130			
1,1,1-Trichloroethane	49.4	0.5	ug/L	ND	124	60-130			
1,1,2-Trichloroethane	42.8	0.5	ug/L	ND	107	60-130			
Trichloroethylene	43.2	0.5	ug/L	ND	108	60-130			
Trichlorofluoromethane	47.5	1.0	ug/L	ND	119	60-130			
Vinyl chloride	35.8	0.5	ug/L	ND	89.4	50-140			
m,p-Xylenes	74.4	0.5	ug/L	ND	93.0	60-130			
o-Xylene	36.7	0.5	ug/L	ND	91.8	60-130			
Surrogate: 4-Bromofluorobenzene	*85.5*		*%*		*107*	*50-140*			
Surrogate: Dibromofluoromethane	*105*		*%*		*131*	*50-140*			
Surrogate: Toluene-d8	*80.5*		*%*		*101*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Container and COC sample IDs don't match. Report includes container IDs as directed by client. -

Applies to Samples: BH4-25-GW1

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: 2522250

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Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2522250	

Client Name: Paterson Group	Project Ref: PE7051		Page 1 of 1
Contact Name: Kuldeep Panchal	Quote #:		**Turnaround Time**
Address:	PO #: 63191		☐ 1 day ☐ 3 day
	E-mail: Kpanchal@patersongroup.ca		☐ 2 day ☒ Regular
Telephone:			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)	PCBs				
1	BH1-25-GW1	GW			May 27/25	am	X	X										
2	BH2-25-GW1	↓			↓	↓	X	X	X					X				
3	BH3-25-GW1	↓			↓	↓	X	X										
4	DUP-May 27	↓			↓	↓	X	X										
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign): DLatts	Received at Depot:	Received at Lab: LTJ	Verified By: May 27 1614
Relinquished By (Print): Derek Lathin	Date/Time:	Date/Time: 27/05/25 15:48	Date/Time:
Date/Time: May 27 2025	Temperature: °C	Temperature: 19.9°C	pH Verified: ☐ By:

Chain of Custody (Env).xlsx

Revision 5.0

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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: 63332
Project: PE7051
Custody:

Report Date: 19-Jun-2025
Order Date: 13-Jun-2025

Order #: 2524488

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

Paracel ID	Client ID
2524488-01	BH3-25-GW2
2524488-02	DUP-June 13

Approved By: A. Tirca

Adriana Tirca, B.Eng (Chem)

Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	14-Jun-25	17-Jun-25

PARACEL LABORATORIES LTD.

Order #: 2524488

Certificate of Analysis

Report Date: 19-Jun-2025

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

Order Date: 13-Jun-2025

Client PO: 63332

Project Description: PE7051

	Client ID:	BH3-25-GW2	DUP-June 13	-	-	-	-
	Sample Date:	13-Jun-25 09:00	13-Jun-25 09:00	-	-		
	Sample ID:	2524488-01	2524488-02	-	-		
	Matrix:	Ground Water	Ground Water	-	-		
	MDL/Units						
Hydrocarbons							
F2 PHCs (C10-C16)	100 ug/L	<100	<100	-	-	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	-	-	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons								
F2 PHCs (C10-C16)	ND	100	ug/L					
F3 PHCs (C16-C34)	ND	100	ug/L					
F4 PHCs (C34-C50)	ND	100	ug/L					

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	1770	100	ug/L	ND	111	60-140			
F3 PHCs (C16-C34)	4440	100	ug/L	ND	113	60-140			
F4 PHCs (C34-C50)	2330	100	ug/L	ND	93.9	60-140			

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:

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- F2 to F3 ranges corrected for appropriate PAHs where available.
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- 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: 2524488

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2524488	

Client Name: Paterson	Project Ref: PE7051		Page 1 of 1
Contact Name: Mark D'Arcy	Quote #:		**Turnaround Time**
Address: 9 Auriga Drive	PO #: 63332		☐ 1 day ☐ 3 day
	E-mail: mdarcy@patersongroup.ca kpanchal@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)	PHC (F2-F4)				
1	BH3-25-GW2	GW		1	06/13/2025									✓				
2	DUP-June13	↓		↓	↓									✓				
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign): KPanchal	Received By Driver/Depot:	Received at Lab: LTJ	Verified By: SO
Relinquished By (Print): Kuldeep Panchal	Date/Time:	Date/Time: 13/06/25; 15:40	Date/Time: Jun 13 2025 4:23pm
Date/Time: 06/13/2025	Temperature: °C	Temperature: 17.9°C	pH Verified: ☐ By: