PATERSON GROUP

Phase II – Environmental Site Assessment

1994 Scott Street
Ottawa, Ontario

Prepared for Park River Properties

Report: PE6402-2
Date: March 20, 2024

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EXECUTIVE SUMMARY

Assessment

Paterson Group was retained by Park River Properties to conduct a Phase II – Environmental Site Assessment (Phase II ESA) for the properties addressed 1994 Scott Street, and 317, 321, 323, 327, 333, 335 Tweedsmuir Avenue, 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 were considered to result in areas of potential environmental concern (APECs) on the Phase II Property.

The field program was carried out in February of 2024 and consisted of drilling 5 boreholes across the Phase II Property, to address the aforementioned APECs. All boreholes were completed with groundwater monitoring well installations to access the groundwater table.

Generally, the subsurface profile at the test hole locations consists of engineered fill or granular fill below a layer of asphaltic concrete, over shallow bedrock.

Five soil samples (plus one duplicate) were submitted for laboratory analysis of BTEX, PHCs (F1-F4), PAHs, metals (including As, Sb, Se, Hg and/or CrVI) and/or pH. Based on the analytical test results, all soil samples complied with the selected MECP Table 7 Residential Standards, with the exception of PHC F3 and F4 exceedances identified in the fill material at BH2-24 and BH9-24, as well as a lead exceedance in BH7-24. All remaining parameter concentrations analysed in the soil samples (some PAH undetermined) comply with the MECP Table 7 Residential Standards.

Five groundwater samples (plus one duplicate) were submitted for laboratory analysis of PHCs (F1-F4), VOCs, and/or PAHs. All detected VOC parameter concentrations in the groundwater samples analysed comply with the MECP Table 7 Standards, with the exception of chloroform in Sample BH5-24-GW1. It is our opinion that this exceedance is due to the use of municipal water during the coring of the bedrock. All remaining parameter concentrations analysed in the groundwater samples comply with the MECP Table 7 Standards.

Recommendations

<u>Soil</u>

Based on the findings of the Phase II ESA, PHC and metal impacted fill was identified within the northern (1994 Scott Street) and northeastern portion of the subject site (317 Tweedsmuir Avenue), requiring some remedial work. It is our understanding that the subject site is to be redeveloped for residential purposes in the future. It is our

recommendation that an environmental site remediation program be completed in conjunction with site redevelopment activities. This will require the segregation of clean soil from impacted soils, the latter of which will require disposal at an approved waste disposal facility.

Prior to off-site disposal at a licensed landfill, a leachate analysis of a representative sample of contaminated soil must be conducted in accordance with O.Reg. 347/558.

It is recommended that Paterson personnel be present on-site during remedial activities to direct the excavation and segregation of impacted soil, as well as to conduct confirmatory sampling as required.

Groundwater

If the groundwater monitoring wells are not going to be used in the future, then they must be decommissioned according to Ontario Regulation Reg. 903 (Ontario Water Resources Act), however, it is our recommendation that the wells remain on-site for future monitoring purposes. The monitoring wells will be registered with the MECP under this regulation. Further information can be provided upon request in this regard.

It is our recommendation that wells be retested in the future, to confirm the compliance of chloroform within the groundwater.

1.0 INTRODUCTION

At the request of Park River Properties, Paterson Group (Paterson) conducted a Phase II-Environmental Site Assessment (Phase II-ESA), for the properties addressed 1994 Scott Street; and 317, 321, 323, 327, 333, 335 Tweedsmuir Avenue, in the City of Ottawa, Ontario (herein referred to as the Phase II Property). The purpose of this Phase II-ESA has been to address areas of potential environmental concern (APECs) identified on the Phase II Property, during the Phase I-ESA completed by Paterson in 2024.

1.1 Site Description

Address:	1994 Scott Street, Ottawa, Ontario. 317, 321, 323, 327, 333, 335 Tweedsmuir Avenue, Ottawa, Ontario.
Location:	The Phase I Property is situated on the south side of Scott Street, between Athlone Avenue and Tweedsmuir Avenue, in the City of Ottawa, Ontario. The Phase II Property is comprised of a smaller portion of the property associated with Scott Street and the eastern portion of Tweedsmuir Avenue. For the purposes of this report, Scott Street runs in an east-west orientation. Refer to Drawing PE6402-3 – Test Hole Location Plan, appended to this report.
Latitude and Longitude:	45 º 23’ 44.29’’ N, 75 º 45’ 05.38’’ W

Site Description:

Configuration:	Irregular
Site Area:	0.2 hectares (approximately).
Zoning:	TM [102] – Traditional Mainstreet Zone R4UB – Residential Fourth Density Zone.

1.2 Property Ownership

Paterson was engaged to conduct this Phase II ESA by Mr. Kevin McMahon of Park River Properties, who can be reached at 206-900 Boulevard de la Carriere, Gatineau, Quebec, J8Y 6T5.

1.3 Current and Proposed Future Uses

The Phase II Property is currently occupied by a commercial office building on the property addressed 1994 Scott Street, a two-storey residential dwelling at 317 Tweedsmuir Avenue, a two-storey residential dwelling at 321 Tweedsmuir Avenue, a two-storey residential dwelling at 323 Tweedsmuir Avenue, a two-storey residential dwelling at 327 Tweedsmuir Avenue, a two-storey residential dwelling at 333 Tweedsmuir Avenue, and a one-storey residential dwelling at 335 Tweedsmuir Avenue.

It is our understanding that the property is proposed to be redeveloped with a 40-storey residential apartment building at 1994 Scott Street and a 36-storey residential apartment building along the eastern side of Tweedsmuir Avenue.

1.4 Applicable Site Condition Standard

The soil and groundwater standards for the subject site were obtained from Table 7 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 and Climate Change (MECP), April 15, 2011. The MECP standards are based on the following considerations:

- ❑ Coarse-grained soil conditions
- ❑ Shallow bedrock conditions
- ❑ Non-Potable groundwater conditions
- ❑ Residential land use

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

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

Section 43.1 of O.Reg. 153/04 does apply to the Phase II ESA Property in that the property is a shallow soil property.

The residential standards were selected based on the proposed future use of the subject site. Coarse-grained soil standards were chosen as a conservative approach. Grain size analysis was not completed.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

The Phase II Property is comprised of a smaller portion of the Phase I Property, associated with Scott Street and the eastern portion of Tweedsmuir Avenue, in the City of Ottawa, Ontario. Refer to Drawing PE6402-3 – Test Hole Location Plan, appended to this report. According to the City of Ottawa website, the Phase II Property is situated in a traditional mainstreet zone and residential fourth density zone, with surrounding properties consisting of commercial and residential use.

The Phase II Property is currently occupied by a commercial office building along Scott Street and six residential dwellings along the eastern portion of Tweedsmuir Avenue.

The site topography is relatively flat, while the regional topography appears to decrease slightly to the north, towards the Ottawa River. The Phase II Property is relatively at grade with surrounding roadways. Water drainage on the Phase II Property occurs primarily via infiltration in landscaped areas, with limited sheet flow drainage from the asphaltic concrete driveways and parking lots to nearby catch basins along Scott Street and Tweedsmuir Avenue.

2.2 Past Investigations

The following report was reviewed prior to conducting this assessment:

- ‘Phase I Environmental Site Assessment, 1994 Scott Street – Ottawa, Ontario’, prepared by Paterson Group, dated March 8, 2024.

Based on the findings of the Phase I - ESA, three off-site PCAs and one on-site PCA were considered to result in APECs on the Phase II Property. The identified APECs are as follows:

- APEC 1: Former Retail Fuel Outlet (formerly 1976 Scott Street, currently part of 320 McRae Avenue)
- APEC 2: Former Automotive Service Garage (320 McRae Avenue)
- APEC 3: Former Underground Fuel Storage Tanks (formerly 309 Athlone Avenue, currently 2000 Scott Street)
- APEC 4: Fill of Unknown Quality (1994 Scott Street)

As a result of the identified APECs, Paterson recommended the completion of a Phase II-ESA to assess the environmental condition of the soil and groundwater on the Phase II Property.

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The subsurface investigation was conducted between February 7, 2024 to February 13, 2024.

The field program was completed in conjunction with a geotechnical investigation which consisted of drilling nine boreholes, five of which were instrumented with groundwater monitoring wells for the Phase II ESA. Borehole locations were selected to address the APECs identified in the Phase I-ESA taking into consideration logistical constraints. The boreholes were drilled to a maximum depth of approximately 7.7m below the ground surface (mbgs).

3.2 Media Investigated

During the subsurface investigation, soil samples and groundwater samples were obtained and submitted for laboratory analysis. The rationale for sampling and analyzing these media is based on the Contaminants of Potential Concern identified during the Phase I-ESA and the identification of fill during the drilling program.

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);
- ❒ Volatile Organic Compounds (VOCs);
- ❒ Metals (including hydride-forming compounds – arsenic (As), antimony (Sb) and selenium (Se), mercury (Hg), and chromium VI (CrVI));
- ❒ Polycyclic Aromatic Hydrocarbons (PAHs).

3.3 Phase I Conceptual Site Model

Geological mapping information for the Phase II Property was obtained from The Geological Survey of Canada – Urban Geology of the National Capital Area and reviewed as part of this assessment. Based on the available mapping information, the bedrock beneath the Phase I Property is reported to consist of interbedded limestone and dolomite of the Gull River Formation, while the surficial geology

reportedly consists of till, with a drift thickness ranging from approximately 2 m to 10 m in thickness.

Buildings and Structures

The Phase II property is currently occupied by a one-storey office building along Scott Street, and six residential dwellings along the eastern half of Tweedsmuir Avenue.

Subsurface Structures and Utilities

The Phase II Property is situated in an area that is serviced by the municipality. Underground utility services on the subject land include water, sanitary and gas services.

Water Bodies and Areas of Natural Significance

No areas of natural significance or water bodies were identified on the Phase II Property. The nearest water body with respect to the Phase II Property is the Ottawa River located approximately 800 m to the northwest of the Phase II Property.

Drinking Water Wells

No drinking water wells were noted on the Phase II Property at the time of the previously completed Phase I ESA and no drinking water wells are expected to be present.

Monitoring Well Records

No monitoring wells were observed on the Phase II Property at the time of the Phase I ESA.

Neighbouring Land Use

Neighbouring land use within the Phase I Study Area consists of mostly residential properties, with the exception of commercial properties along Scott Street, McRae Avenue and Richmond Road.

Potentially Contaminating Activities (PCAs) and Areas of Potential Environmental Concern (APECs)

Based on the findings of the Phase I ESA (including the fill identified during the drilling program), the following PCAs (as listed in Column A, Table 2 of O.Reg.153/04) were considered to result in areas of potential environmental concern (APECs) on the Phase II Property.

Table 1 – Potentially Contaminating Activities and 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 Former Retail Fuel Outlet *(formerly 1976 Scott Street, currently 320 McRae Avenue)*	Northern Portion of the Phase I ESA Property (1994 Scott Street)	"Item 28 – Gasoline and Associated Products Storage in Tanks"	Off-site	BTEX PHCs (F_1-F_4) VOCs	Groundwater
APEC 2 Former Automotive Service Garage *(320 McRae Avenue)*	Eastern portion of the Phase I ESA Property (Tweedsmuir Avenue properties)	"Item 52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems"	Off-site	BTEX PHCs (F_1-F_4) VOCs Metals	Soil Groundwater
APEC 3 Former Underground Fuel Storage Tanks *(formerly 309 Athlone Avenue, currently 2000 Scott Street)*	Northern portion of the Phase I ESA Property (1994 Scott Street)	"Item 28 – Gasoline and Associated Products Storage in Tanks"	Off-site	BTEX PHCs (F_1-F_4) VOCs	Groundwater
APEC 4[1] Fill Material of Unknown Quality	Northern portion of the Phase I ESA Property (1994 Scott Street)	"Item 30 – Importation of Fill Material of Unknown Quality"	On-site	Metals[1] Hg CrVI PAHs	Soil

Notes:

1. Fill material was identified during the field investigation across the northern portion of the Phase II Property.

Contaminants of Potential Concern

The contaminants of potential concern (CPCs) associated with the aforementioned APECs are considered to be:

- ❒ Benzene, Toluene, Ethylbenzene, Xylenes (BTEX);
- ❒ Petroleum Hydrocarbons (PHCs);
- ❒ Volatile Organic Compounds (VOCs);
- ❒ Metals (including hydride-forming compounds – arsenic (As), antimony (Sb) and selenium (Se), mercury (Hg), and chromium VI (CrVI));
- ❒ Polycyclic Aromatic Hydrocarbons (PAHs).

Assessment of Uncertainty and/or Absence of Information

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

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

3.4 Deviations from Sampling and Analysis Plan

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

3.5 Impediments

Physical impediments encountered during the Phase II-ESA field program included underground utilities and building structures.

4.0 INVESTIGATION METHOD

4.1 Subsurface Investigation

The subsurface investigation was conducted between February 7, 2024 and February 13, 2024.

Five boreholes were drilled to a maximum depth of 7.7m and instrumented with groundwater monitoring wells. The boreholes were strategically placed to address APECs identified in the Phase I ESA completed by Paterson.

The boreholes were drilled with a truck-mounted drill rig and 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 PE6402-3 – Test Hole Location Plan.

4.2 Soil Sampling

A total of 8 soil samples were obtained from the five boreholes by means of grab sampling from auger flights/auger samples and split spoon sampling. Split spoon samples were taken at approximate 0.76 m intervals. The depths at which split spoon, auger flight and rock core samples were obtained from the boreholes are shown as "**SS**" "**AU**" and "**RC**" respectively on the Soil Profile and Test Data Sheets.

The borehole profiles generally consist of a layer of fill comprised of silty sand, with gravel, crushed stone and trace amounts of clay, underlain by till. Bedrock was encountered in all test holes and ranged between 0.69 and 1.22 mbgs.

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 photoionization detector (PID) was used to measure the volatile organic vapour concentrations.

The sample is agitated/manipulated gently as the measurement is taken. The peak reading registered within the first 15 seconds is recorded as the vapour measurement.

The maximum vapour reading measured during the screening process was 32.1 ppm. These results were not considered to be indicative of potential significant contamination from volatile compounds. Vapour readings are noted on the Soil Profile and Test Data Sheets in Appendix 1.

4.4 Groundwater Monitoring Well Installation

Five monitoring wells were installed on the Phase II Property. The monitoring wells consisted of 32-mm Schedule 40 threaded PVC risers and screens. Monitoring well construction details are listed in Table 2 and are also presented on the Soil Profile and Test Data Sheets provided in Appendix 1.

Borehole locations and elevations were surveyed geodetically by Paterson personnel using GPS equipment.

TABLE 2 - Monitoring Well Construction Details

Well ID	Ground Surface Elevation	Total Depth (m BGS)	Screened Interval (m BGS)	Sand Pack (m BGS)	Bentonite Seal (m BGS)	Casing Type
BH2-24	64.25	7.54	3.00-7.54	4.88-7.54	0-4.88	Flushmount
BH5-24	64.98	7.70	3.00-7.70	4.27-7.70	0-4.27	Flushmount
BH6-24	63.40	7.70	3.00-7.70	4.27-7.70	0-4.27	Flushmount
BH7-24	63.41	7.67	3.00-7.67	4.27-7.67	0-4.27	Flushmount
BH9-25	63.19	7.59	3.00-7.59	3.86-7.67	0-3.86	Flushmount

4.5 Groundwater Sampling

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

4.6 Analytical Testing

Based on the guidelines outlined in the Sampling and Analysis Plan appended to this report, the following soil and groundwater samples were submitted for the analyzed parameters presented in Tables 3 and 4, respectively.

TABLE 3 – Analyzed Parameters for Submitted Soil Samples

Sample ID	Sample Depth & Stratigraphic Unit	Parameter							Rationale
		Metals	Hg	CrVI	BTEX	PHCs F_1-F_4	PAHs	pH	
BH2-24-AU1	0.05-0.61 m Silty Sand (Engineered Fill)	X			X	X			Assess potential soil impacts resulting from the former off-site automotive service garage.
BH5-24-SS2	0.76-1.22 m Silty Sand (Fill Material)				X	X		X	Assess potential soil impacts resulting from the former off-site automotive service garage.
BH6-24-SS2	0.76-1.22 m Silty Sand (Fill)	X	X	X	X	X	X	X	Assess potential soil impacts resulting from the former presence of off-site USTs
BH7-24-SS2	0.76-1.17 m Crushed Stone (Fill)	X	X	X	X	X	X		Assess potential soil impacts resulting from the former off-site retail fuel outlet and former USTs
BH9-24-AU1	0.05-0.61 m Silty Clay (Native)	X	X	X	X	X	X	X	Assess potential soil impacts resulting from the former off-site retail fuel outlet.
DUP-1-24 (BH9-24-AU1)	0.05-0.61 m Silty Sand (Fill)	X	X	X	X	X	X		Duplicate soil sample (BH9-24-AU1) for QA/QC purposes.

TABLE 4 - Testing Parameters for Submitted Groundwater Samples

Sample ID	Screened Interval	Parameter			Rationale
		PHCs F_1-F_4	VOCs	PAHs	
BH2-24-GW1	3.00-7.54 m Bedrock	X	X		Assess potential groundwater impacts resulting from the former off-site automotive service garage.
BH5-24-GW1	3.00-7.70 m Bedrock	X	X		Assess potential groundwater impacts resulting from the former off-site automotive service garage.
BH6-24-GW1	3.00-7.70 m Bedrock	X	X	X	Assess potential groundwater impacts resulting from the former presence of off-site USTs.
BH7-24-GW1	3.00-7.67 m Bedrock	X	X	X	Assess potential groundwater impacts resulting from the former off-site retail fuel outlet and presence of off-site USTs.
BH9-24-GW1	3.00-7.59 m Bedrock	X	X	X	Assess potential groundwater impacts resulting from the former off-site retail fuel outlet.
DUP-GW1 (BH9-24-GW1)	3.00-7.59 m Bedrock		X		Duplicate groundwater sample (BH9-24-GW1) for QA/QC purposes.

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

4.7 Residue Management

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

4.8 Elevation Surveying

The ground surface elevations at each borehole location were surveyed by Paterson personnel using a high-precision GPS unit.

4.9 Quality Assurance and Quality Control Measures

All soil and groundwater samples were handled in accordance with the Analytical Protocol with respect to holding time, preservation method, storage requirement, and container type.

As per Subsection 47(3) of O.Reg. 153/04 as amended, a Certificate of Analysis has been received for each sample submitted for analysis and all Certificates of Analysis are appended to this report.

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 borehole profiles generally consist of a layer of fill comprised of silty sand, with gravel, crushed stone and trace amounts of clay. The fill material was occasionally underlain by till. The till comprised of silty sand and gravel. Bedrock was encountered during the subsurface investigation and ranged from 0.61 to 1.65 mbgs.

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 event on February 21, 2024, using an electronic water level meter. Groundwater levels were recorded from the monitoring wells installed in BH2-24, BH5-24, BH6-24, BH7-24 and BH9-24. Groundwater levels are summarized below in Table 5.

TABLE 5 - Groundwater Level Measurements

Borehole Location	Ground Surface Elevation (m)	Water Level Depth (m below grade)	Water Level Elevation (m ASL)	Date of Measurement
BH2-24	64.25	6.99	57.26	February 21, 2024
BH5-24	64.98	5.57	59.41	February 21, 2024
BH6-24	63.40	4.56	58.84	February 21, 2024
BH7-24	63.41	4.43	58.98	February 21, 2024
BH9-24	63.19	4.55	58.64	February 21, 2024

Based on the groundwater elevations measured during the sampling event, groundwater contour mapping was completed. Groundwater contours are shown on Drawing PE6402-3 – Test Hole Location Plan. Based on the contour mapping, groundwater flow at the subject site is in a northeasterly direction, with a horizontal hydraulic gradient of approximately 0.03 m/m.

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

5.3 Fine-Coarse Soil Texture

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

5.4 Soil: Field Screening

Field screening of the soil samples collected during drilling resulted in vapour readings ranging from 0 to 32.1 ppm. The PID readings are not considered to be indicative of contamination from volatile substances. 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, five soil samples, including one duplicate sample, were submitted for analysis of PHCs (F1-F4), BTEX, metals (including Hg and CrVI) and PAHs. The results of the analytical testing completed on the Phase II Property are presented in Table 1 in Appendix 1. The laboratory Certificates of Analysis are also provided in Appendix 1.

Metals

All metal parameters comply with the selected MECP Table 7 Standards, with the exception of a lead exceedance (181 ug/g vs. 120 ug/g) in Sample BH7-24-SS2 from the fill layer. The locations of samples tested for metals in the soil are shown on Drawing PE6402-4 – Analytical Testing Plan – Soil – Metals.

PAHs

All PAH parameters comply with the selected Table 7 Standards in all samples analysed, with the possible exception of acenaphthylene (ND (0.40) ug/g vs. 0.15 ug/g), benzo[a]pyrene (ND (0.40) ug/g vs. 0.3 ug/g), fluoranthene (ND (0.40) ug/g vs. 0.1 ug/g) and indeno[1,2,3-cd]pyrene (ND (0.40) ug/g vs. 0.38 ug/g) in Samples BH9-24-AU1 and its duplicate sample (DUP-1-24). For these particular parameters, the laboratory method detection limits (MDLs) were elevated above the Table 7 Standards, therefore, a comparison to the standards could not be

made. The locations of samples tested for PAHs in the soil are shown on Drawing PE6402-5 – Analytical Testing Plan – Soil – PAHs.

PHCs (F_1-F_4)

The PHC parameters comply with the selected Table 7 Standards in all samples analysed, with the exception of exceedances of PHCs Fraction 3 in Samples BH2-24-AU1 (785 ug/g vs. 300 ug/g), BH9-24-AU1 (1,070 ug/g vs. 300 ug/g) and DUP-1-24 (946 ug/g vs. 300 ug/g), as well as PHCs Fraction 4 in Samples BH9-24-AU1 (3,940 ug/g vs. 2,800 ug/g) and DUP-1-24 (4,330 ug/g vs. 2,800 ug/g). The locations of samples tested for PHCs in the soil are shown on Drawing PE6402-6 – Analytical Testing Plan – Soil – PHCs.

BTEX

No BTEX parameters were identified in any of the samples analysed. The location of samples tested for BTEX in the soil are shown on Drawing PE6402-7 – Analytical Testing Plan – Soil – BTEX and pH.

The maximum parameter concentrations identified within the soil samples collected during the current assessment are listed below in Table 6.

TABLE 6: Maximum Concentrations – Soil

Parameter	Maximum Concentration (µg/g)	Soil Sample	Depth Interval (m BGS)
Arsenic	5.3	BH7-24-SS2	0.76-1.17
Barium	276	BH7-24-SS2	0.76-1.17
Beryllium	0.6	BH7-24-SS2	0.76-1.17
Boron	16.9	BH7-24-SS2	0.76-1.17
Cadmium	0.6	BH7-24-SS2	0.76-1.17
Chromium	24.1	BH7-24-SS2	0.76-1.17
Cobalt	7.4	BH7-24-SS2	0.76-1.17
Copper	33.2	BH7-24-SS2	0.76-1.17
Lead	**181**	BH7-24-SS2	0.76-1.17
Molybdenum	1.4	BH7-24-SS2	0.76-1.17
Nickel	16	BH7-24-SS2	0.76-1.17
Vanadium	50.5	BH9-24-AU1	0.05-0.61
Zinc	201	BH7-24-SS2	0.76-1.17
Xylenes	0.07	BH2-24-AU1	0.05-0.61
PHCs F3	**1070**	BH9-24-AU1	0.05-0.61
PHCs F4	**4330**	DUP-1-24	0.05-0.61
PHCs F4 (gravimetric)	**5090**	BH9-24-AU1	0.05-0.61
Acenaphthene	ND (0.40)	BH9-24-AU1	0.05-0.61
Acenaphthylene	**ND (0.40)**	BH9-24-AU1	0.05-0.61
Anthracene	ND (0.40)	BH9-24-AU1	0.05-0.61
Benzo[a]anthracene	ND (0.40)	BH9-24-AU1	0.05-0.61

Notes:
- **Bold and Underlined** – Results exceed the selected MECP standard

TABLE 6: Maximum Concentrations – Soil – Continued			
Parameter	**Maximum Concentration (µg/g)**	**Soil Sample**	**Depth Interval (m BGS)**
Benzo[a]pyrene	**ND (0.40)**	BH9-24-AU1	0.05-0.61
Benzo[b]fluoranthene	ND (0.40)	BH9-24-AU1	0.05-0.61
Benzo[g,h,i]perylene	ND (0.40)	BH9-24-AU1	0.05-0.61
Benzo[k]fluoranthene	ND (0.40)	BH9-24-AU1	0.05-0.61
Chrysene	ND (0.40)	BH9-24-AU1	0.05-0.61
Dibenzo[a,h]anthracene	**ND (0.40)**	BH9-24-AU1	0.05-0.61
Fluoranthene	ND (0.40)	BH9-24-AU1	0.05-0.61
Fluorene	ND (0.40)	BH9-24-AU1	0.05-0.61
Indeno[1,2,3-cd]pyrene	**ND (0.40)**	BH9-24-AU1	0.05-0.61
Methylnapthalene (1&2)	ND (0.80)	BH9-24-AU1	0.05-0.61
Naphthalene	ND (0.20)	BH9-24-AU1	0.05-0.61
Phenanthrene	ND (0.40)	BH9-24-AU1	0.05-0.61
Pyrene	ND (0.40)	BH9-24-AU1	0.05-0.61

Notes:
- **Bold and Underlined** – Results exceed the selected MECP standard

All other parameter results were non-detect.

5.6 Groundwater Quality

Five groundwater samples, including one duplicate sample, from monitoring wells installed in BH2-2, BH5-24, BH6-24, BH7-24 and BH9-24, were submitted for laboratory analysis of VOCs, PHCs and/or PAHs.

The results of the analytical testing are presented in Table 2 in Appendix 1. The laboratory Certificates of Analysis are provided in Appendix 1.

VOCs

All detected VOC parameter concentrations in the groundwater samples analysed comply with the selected MECP Table 7 Standards, with the exception of chloroform identified in Sample BH5-24-GW1. It is our opinion that this exceedance is due to the use of municipal water during the coring of the bedrock. Chloroform levels are anticipated to diminish over time. As such, the results comply with the selected MECP Table 7 Standards. The analytical results for VOCs tested in groundwater are shown on Drawing PE6402-8 – Analytical Testing Plan – Groundwater.

PHCs (F_1-F_4)

No PHC parameters were identified in the groundwater samples analysed. As such, the results comply with the selected MECP Table 7 Standards. The analytical results for PHCs tested in groundwater are shown on Drawing PE6402-8 – Analytical Testing Plan – Groundwater.

PAHs

Detected PAH parameter concentrations in the groundwater samples analysed comply with the selected MECP Table 7 Standards. The analytical results for PHAs tested in groundwater are shown on Drawing PE6402-8 – Analytical Testing Plan – Groundwater.

TABLE 7: Maximum Concentrations – Groundwater

Parameter	Maximum Concentration (µg/g)	Soil Sample	Screened Interval (m BGS)
Chloroform	**9.7**[1]	BH5-24-GW1	4.60-7.70
Ethylbenzene	1.8	BH6-24-GW1	4.60-7.70
Xylenes	0.9	BH5-24-GW1	4.60-7.70
Acenaphthene	0.38	BH6-24-GW1	4.60-7.70
Fluorene	0.31	BH6-24-GW1	4.60-7.70
Methylnapthalene (1&2)	4.20	BH6-24-GW1	4.60-7.70
Phenanthrene	0.13	BH6-24-GW1	4.60-7.70

Notes:
- **Bold and Underlined** – Results exceed the selected MECP standard
1. Chloroform is expected to be related to the municipal drinking water which was utilized during the drilling program. These concentrations will dissipate and are not considered an environmental concern.

All other parameter results were non-detect.

5.7 Quality Assurance and Quality Control Results

All samples submitted as part of the subsurface investigation 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.

One duplicate soil sample was collected from BH9-24-AU1 (DUP-1-24) and was submitted for BTEX, PHCs, PAHs and metals.

The RPD Calculations for BH9-24-AU1 and its duplicate sample (DUP-1-24) are provided in Table 8.

Table 8 – QA/QC Calculations – Soil					
Parameter	**MDL (ug/g)**	**BH9-24-AU1**	**DUP-1-24**	**RPD (%)**	**QA/QC Result**
Arsenic	1.0	1.9	2.0	5.1	Meets Target
Barium	1.0	80.1	81.4	1.6	Meets Target
Boron	5.0	7.2	5.3	30.4	Does Not Meet Target
Chromium	5.0	12.3	10.8	13.0	Meets Target
Cobalt	1.0	4.3	4.2	2.4	Meets Target
Copper	5.0	11.8	11.8	0	Meets Target
Lead	1.0	28.4	28.8	1.4	Meets Target
Nickel	5.0	13.3	13.4	0.8	Meets Target
Vanadium	10.0	50.5	43.9	14.0	Meets Target
Zinc	20.0	31.9	31.2	2.2	Meets Target
PHCs F3	8.0	1070	946	12.3	Meets Target
PHCs F4	6.0	3940	4330	9.4	Meets Target

Notes:
- MDL – Method Detection Limit

The remaining parameter concentrations were not detected in either or both the original sample and duplicate, therefore, the RPD values cannot be calculated.

Typically, RPD values below 20% are considered to be of satisfactory quality. The relative percent difference (RPD) results calculated for one soil parameter (boron) fell outside of the acceptable range of 20%.

Despite the exceeded RPD values calculated for the soil sample BH9-24-AU1 and its corresponding duplicate, it should be noted that the concentration of the parameter was well within the applicable MECP Table 7 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 considered to be sufficient to meet the overall objectives of this assessment.

One duplicate groundwater sample was collected from BH6-24-GW1 (DUP-GW1) and was submitted for VOCs.

The RPD calculations for the original groundwater and duplicate sample are provided in Table 9.

Table 9 – QA/QC Calculations – Groundwater					
Parameter	**MDL (ug/L)**	**BH6-24-GW1**	**DUP-GW1**	**RPD (%)**	**QA/QC Result**
Chloroform	1.0	1.1	0.9	20.0	Meets Target
Ethylbenzene	1.0	1.8	1.6	11.8	Meets Target

Notes:
- MDL – Method Detection Limit

The duplicates were collected with the intent of calculating RPD between duplicate sample values, as a way of assessing the quality of the analytical test results.

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 previously completed Phase I ESA, four PCAs were considered to result in APECs on the Phase II Property. The identified APECs on the Phase II Property are as follows:

- APEC 1: Former Retail Fuel Outlet (PCA#28) – 1976 Scott St
- APEC 2: Former Automotive Service Garage (PCA#52) – 320 McRae Ave
- APEC 3: Former Underground Storage Tanks (PCA#52) – 309 Athlone Ave
- APEC 4: Fill Material of Unknown Quality (PCA#30) – 1994 Scott St

Fill material was identified during the field investigation program on 1994 Scott Street.

Contaminants of Potential Concern

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

- Benzene, Toluene, Ethylbenzene, Xylenes (BTEX);
- Petroleum Hydrocarbons (PHCs);
- Volatile Organic Compounds (VOCs);

- ❒ Metals (including hydride-forming compounds – arsenic (As), antimony (Sb) and selenium (Se), mercury (Hg), and chromium VI (CrVI));
- ❒ Polycyclic Aromatic Hydrocarbons (PAHs).

Subsurface Structures and Utilities

The Phase II Property is situated in an area serviced by the municipality. Underground utility services on the Phase II Property include water, sanitary and gas services.

Physical Setting

Site Stratigraphy

Groundwater was encountered at a depth ranging between 4.43 to 6.99 mbgs.

Site geology details are summarized below.

- ❒ Asphaltic concrete, extending to a depth of 0.05 m below existing ground surface.
- ❒ Engineered fill identified under Tweedsmuir Avenue driveways, extending to depths of approximately 0.69 m below the existing ground surface.
- ❒ Fill material consisting of brown silty sand gravel and crushed stone, and trace amounts of clay, extending to depths of approximately 1.17 m below the existing ground surface.
- ❒ Till was encountered at a depth of approximately 0.69 m below the existing ground surface in BH5-24 and BH6-24.
- ❒ Limestone bedrock was encountered at depths ranging from approximately 0.69 to 1.22 m below the existing ground surface.

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

Hydrogeological Characteristics

Groundwater was encountered within the bedrock at depths ranging from 4.43 to 6.99 m. Based on the groundwater monitoring event, groundwater is interpreted to flow to the north beneath the Phase II Property.

Approximate Depth to Bedrock

Bedrock was encountered in all test holes and ranged between 0.69 and 1.22 mbgs.

Approximate Depth to Water Table

The depth to the water table at the Phase II Property varies between approximately 4.43 to 6.99 m below existing grade.

Sections 41 and 43.1 of the Regulation

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

Section 43.1 of O.Reg. 153/04 does apply to the Phase II ESA Property in that the property is a shallow soil property.

Fill Placement

Fill material consisting of brown silty sand with gravel was identified in BH6-24, BH7-24 and BH9-24. No deleterious material was identified in the fill material. The fill material of unknown quality identified on the 1994 Scott Street part of the Phase II Property was considered to represent an APEC.

Engineered fill was identified under the Tweedsmuir Avenue driveways, which is not considered to represent an APEC on the Phase II Property.

Existing Buildings and Structures

The Phase II Property is occupied by a one-storey commercial office on the southwest corner of the intersection of Scott Street and Tweedsmuir Avenue, and six residential dwellings on the eastern side of Tweedsmuir Avenue.

Proposed Buildings and Other Structures

The proposed site development for the Phase II Property will consist of a 40-storey residential apartment building at 1994 Scott Street and a 36-storey residential apartment building along the eastern side of Tweedsmuir Avenue.

Environmental Condition

Areas Where Contaminants are Present

Based on the findings of this Phase II ESA, PHC and metals impacted soil is present in the north and northeast corners of the subject property.

Types of Contaminants

Based on the analytical findings of this Phase II ESA, the fill material in the immediate vicinity of BH2-24, BH7-24 and BH9-24 exceeds the MECP Table 7 Residential Standards for Metal (lead) and PHC parameters (PHC F3 and PHC F4).

Contaminated Media

Based on the analytical findings of this Phase II ESA, the fill material in the immediate vicinity of BH2-24, BH7-24 and BH9-24 exceeds the MECP Table 7 Residential Standards for Metal (lead) and PHC parameters (PHC F3 and PHC F4).

What Is Known About Areas Where Contaminants Are Present

Based on the findings of the Phase I and Phase II ESA, PHCs and metal concentrations identified in the fill material on the property are considered to be a result of importation of poor-quality fill material used for grading purposes.

Distribution and Migration of Contaminants

Based on the findings of this Phase II ESA, the fill material identified in the vicinity of BH7-24 and BH9-24 (northern portion of the Phase II Property) and BH2-24 (northeastern portion of the Phase II Property) exceed the MECP Table 7 Residential Standards for PHCs and metals parameters (PHC F3, PHC F4, and lead). The identified lead impact is considered to be limited in extent and is isolated to the fill material in the vicinity of BH7-24.

It should also be noted that the impacted fill material was not located within the water table, further limiting the potential for distribution/migration. The identified impact is not considered to have had the potential to migrate into other areas of the Phase II Property or off-site.

Discharge of Contaminants

Based on the findings of the Phase II ESA, discharge of contaminants is not considered to have occurred on the Phase II Property.

Climatic and Meteorological Conditions

In general, climatic, and meteorological conditions have the potential to affect contaminant distribution. Two ways by which climatic and meteorological conditions may affect contaminant distribution include the downward leaching of

contaminants by means of the infiltration of precipitation, and the migration of contaminants via groundwater levels and/or flow, which may fluctuate seasonally.

Based on the analytical results of the groundwater, contaminant distribution is not considered to have occurred on the Phase II ESA Property.

Potential for Vapour Intrusion

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

6.0 CONCLUSIONS

Assessment

Paterson Group was retained by Park River Properties to conduct a Phase II – Environmental Site Assessment (Phase II ESA) for the properties addressed 1994 Scott Street, and 317, 321, 323, 327, 333, 335 Tweedsmuir Avenue, 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 were considered to result in areas of potential environmental concern (APECs) on the Phase II Property.

The field program was carried out in February of 2024 and consisted of drilling 5 boreholes across the Phase II Property, to address the aforementioned APECs. All boreholes were completed with groundwater monitoring well installations to access the groundwater table.

Generally, the subsurface profile at the test hole locations consists of engineered fill or granular fill below a layer of asphaltic concrete, over shallow bedrock.

Five soil samples (plus one duplicate) were submitted for laboratory analysis of BTEX, PHCs (F1-F4), PAHs, metals (including As, Sb, Se, Hg and/or CrVI) and/or pH. Based on the analytical test results, all soil samples complied with the selected MECP Table 7 Residential Standards, with the exception of PHC F3 and F4 exceedances identified in the fill material at BH2-24 and BH9-24, as well as a lead exceedance in BH7-24. All remaining parameter concentrations analysed in the soil samples (some PAH undetermined) comply with the MECP Table 7 Residential Standards.

Five groundwater samples (plus one duplicate) were submitted for laboratory analysis of PHCs (F1-F4), VOCs, and/or PAHs. All detected VOC parameter concentrations in the groundwater samples analysed comply with the MECP Table 7 Standards, with the exception of chloroform in Sample BH5-24-GW1. It is our opinion that this exceedance is due to the use of municipal water during the coring of the bedrock. All remaining parameter concentrations analysed in the groundwater samples comply with the MECP Table 7 Standards.

Recommendations

Soil

Based on the findings of the Phase II ESA, PHC and metal impacted fill was identified within the northern (1994 Scott Street) and northeastern portion of the

subject site (317 Tweedsmuir Avenue), requiring some remedial work. It is our understanding that the subject site is to be redeveloped for residential purposes in the future. It is our recommendation that an environmental site remediation program be completed in conjunction with site redevelopment activities. This will require the segregation of clean soil from impacted soils, the latter of which will require disposal at an approved waste disposal facility.

Prior to off-site disposal at a licensed landfill, a leachate analysis of a representative sample of contaminated soil must be conducted in accordance with O.Reg. 347/558.

It is recommended that Paterson personnel be present on-site during remedial activities to direct the excavation and segregation of impacted soil, as well as to conduct confirmatory sampling as required.

Groundwater

If the groundwater monitoring wells are not going to be used in the future, then they must be decommissioned according to Ontario Regulation Reg. 903 (Ontario Water Resources Act), however, it is our recommendation that the wells remain on-site for future monitoring purposes. The monitoring wells will be registered with the MECP under this regulation. Further information can be provided upon request in this regard.

It is our recommendation that wells be retested in the future, to confirm the compliance of chloroform within the groundwater.

7.0 STATEMENT OF LIMITATIONS

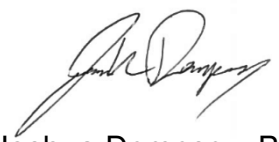
This Phase II - Environmental Site Assessment report has been prepared under the supervision of a Qualified Person, in general accordance with O. Reg 153/04. The conclusions presented herein are based on information gathered from a limited sampling and testing program. The test results represent conditions 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 subject site and/or historical information that differ from our findings, we request that we be notified immediately in order to allow for a reassessment.

This report was prepared for the sole use of Park River Properties. Notification from Park River Properties and Paterson Group will be required to release this report to any other party.

Paterson Group Inc.



Joshua Dempsey, B.Sc.

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

Report Distribution:

- ❒ Park River Properties
- ❒ Paterson Group

FIGURES

FIGURE 1 – KEY PLAN

DRAWING PE6402-1 – SITE PLAN

DRAWING PE6402-2 – SURROUNDING LAND USE PLAN

DRAWING PE6402-3 – TEST HOLE LOCATION PLAN

DRAWING PE6402-4 – ANALYTICAL TESTING PLAN – SOIL – Metals, Hg, CrVI

Drawing PE6402-4A – CROSS SECTION A-A' – SOIL – Metals, Hg, CrVI

Drawing PE6402-4B – CROSS SECTION B-B' – SOIL – Metals, Hg, CrVI

Drawing PE6402-5 – ANALYTICAL TESTING PLAN – SOIL – PAHs

Drawing PE6402-5A – CROSS SECTION A-A' – SOIL – PAHs

Drawing PE6402-5B – CROSS SECTION B-B' – SOIL – PAHs

Drawing PE6402-6 – ANALYTICAL TESTING PLAN – SOIL – PHCs

Drawing PE6402-6A – CROSS SECTION A-A' – SOIL – PHCs

Drawing PE6402-6B – CROSS SECTION B-B' – SOIL – PHCs

Drawing PE6402-7 – ANALYTICAL TESTING PLAN – SOIL – BTEX and pH

Drawing PE6402-7A – CROSS SECTION A-A' – SOIL – BTEX and pH

Drawing PE6402-7B – CROSS SECTION B-B' – SOIL – BTEX and pH

Drawing PE6402-8 – ANALYTICAL TESTING PLAN – GROUNDWATER – VOCs

Drawing PE6402-8A – CROSS SECTION A-A' – GROUNDWATER – VOCs

Drawing PE6402-8B – CROSS SECTION B-B' – GROUNDWATER – VOCs

Drawing PE6402-9 – ANALYTICAL TESTING PLAN – GROUNDWATER – PHCs & PAHs

Drawing PE6402-9A – CROSS SECTION A-A' – GROUNDWATER – PHCs & PAHs

Drawing PE6402-9B – CROSS SECTION B-B' – GROUNDWATER – PHCs & PAHs

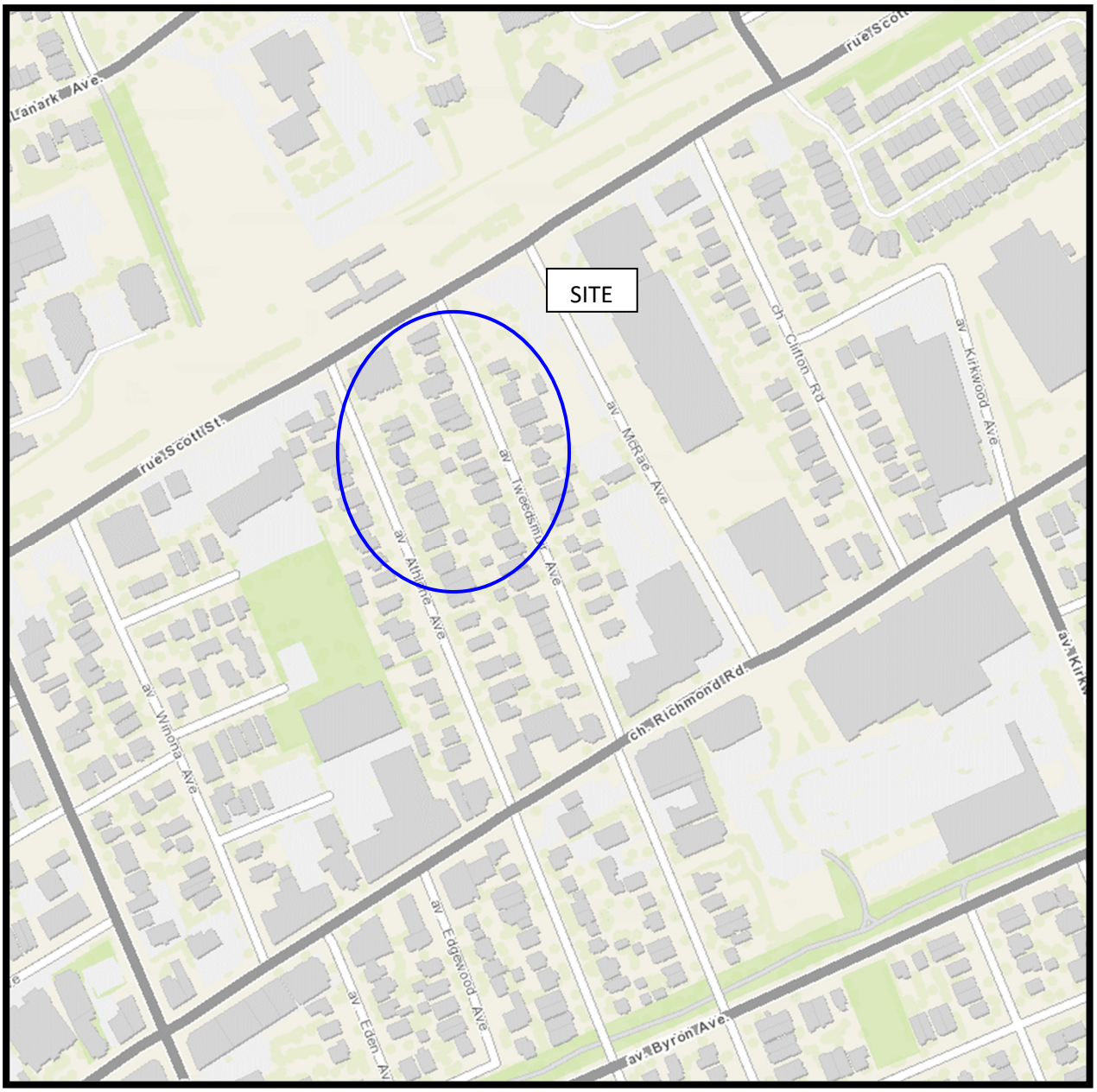
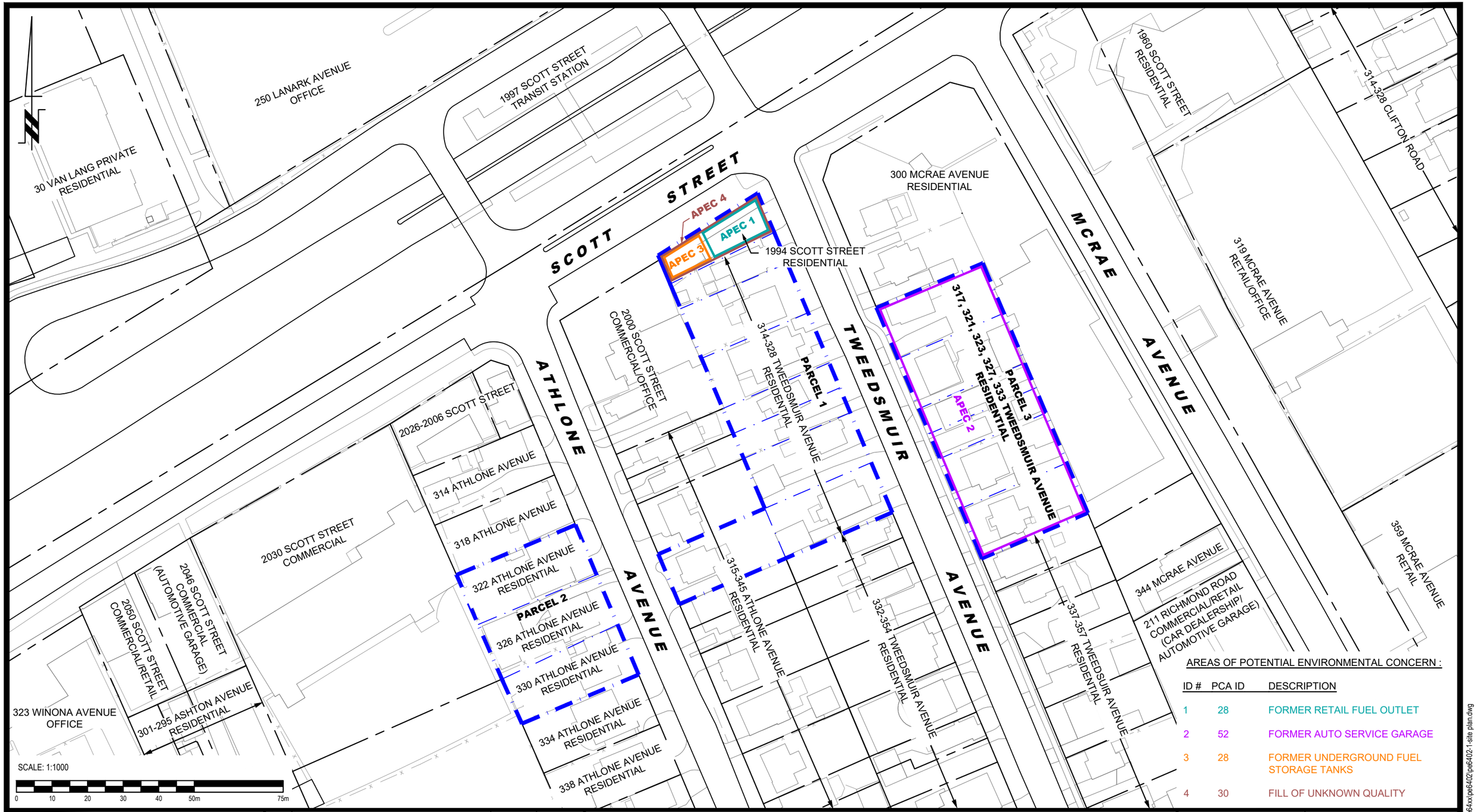


FIGURE 1

KEY PLAN



AREAS OF POTENTIAL ENVIRONMENTAL CONCERN :

ID #	PCA ID	DESCRIPTION
1	28	FORMER RETAIL FUEL OUTLET
2	52	FORMER AUTO SERVICE GARAGE
3	28	FORMER UNDERGROUND FUEL STORAGE TANKS
4	30	FILL OF UNKNOWN QUALITY

PATERSON GROUP
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TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:

SITE PLAN

Scale: 1:1000	Date: 02/2024
Drawn by: ZS	Report No.: PE6402-1
Checked by: JD	Dwg. No.: PE6402-1
Approved by: MSD	Revision No.:

11x17

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PHASE I - ENVIRONMENTAL SITE ASSESSMENT STUDY AREA

POTENTIALLY CONTAMINATING ACTIVITIES :

ID #	ADDRESS	DESCRIPTION
1	1976 SCOTT ST	FORMER RETAIL FUEL OUTLET
2	320 MCRAE AVE	FORMER AUTO SERVICE GARAGE
3	309 ATHLONE AVE	FORMER UNDERGROUND FUEL STORAGE TANKS
4	1994 SCOTT ST	FILL OF UNKNOWN QUALITY
5	1960 SCOTT ST	FORMER AUTO SERVICE GARAGE AND DEALERSHIP
6	319 MCRAE AVE	FORMER COAL AND LUMBER STORAGE YARD
7	1950 SCOTT ST	FORMER COAL AND LUMBER STORAGE YARD
8	305 CLIFTON RD	TRANSFORMER SUBSTATION
9	351 MCRAE AVE	FORMER AUTO SERVICE GARAGE
10	201 RICHMOND RD	FORMER AUTO SERVICE GARAGE
11	N/A	FORMER LANDFILL (UR-19)
12	225 RICHMOND RD	AUTO SERVICE GARAGE AND DEALERSHIP
13	236 RICHMOND RD	FORMER RETAIL FUEL OUTLET AND AUTO SERVICE GARAGE
14	256 RICHMOND RD	RETAIL FUEL OUTLET
15	255 RICHMOND RD	FORMER AUTO SERVICE GARAGE
16	261 RICHMOND RD	FORMER DRY CLEANERS
17	277 RICHMOND RD	FORMER AUTO BODY SHOP
18	2050 SCOTT ST	FORMER UNDERGROUND FUEL STORAGE TANK
19	2046 SCOTT ST	AUTO SERVICE GARAGE
20	2026 SCOTT ST	FORMER ABOVEGROUND FUEL STORAGE TANKS
21	314 ATHLONE AVE	FORMER AUTO BODY SHOP
22	2020 SCOTT ST	FORMER AUTO BODY REPAIR SHOP
23	N/A	FORMER CANADIAN PACIFIC RAILWAY
24	2 VAN LANG PRIV	FORMER COAL AND LUMBER STORAGE YARD
25	38 METROPOLE PRIV	FORMER COAL AND LUMBER STORAGE YARD
26	345 TWEEDSMUIR AVE	FORMER AUTOMOTIVE SERVICE GARAGE
27	199 RICHMOND RD	FORMER CONTRACTOR YARD AND FORMER AUTOMOTIVE SERVICE GARAGE
28	190 RICHMOND RD	FORMER PRINTERS & PUBLISHING
29	2070 SCOTT ST	FORMER AUTOMOTIVE SERVICE GARAGE AND FORMER RETAIL FUEL OUTLET
30	276 RICHMOND RD (FORMERLY 282 RICHMOND RD)	FORMER DRY CLEANERS

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PARK RIVER PROPERTIES

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:

SURROUNDING LAND USE PLAN

Scale: 1:3000	Date: 02/2024
Drawn by: ZS	Report No.: PE6402-1
Checked by: JD	Dwg. No.: PE6402-2
Approved by: MSD	Revision No.:

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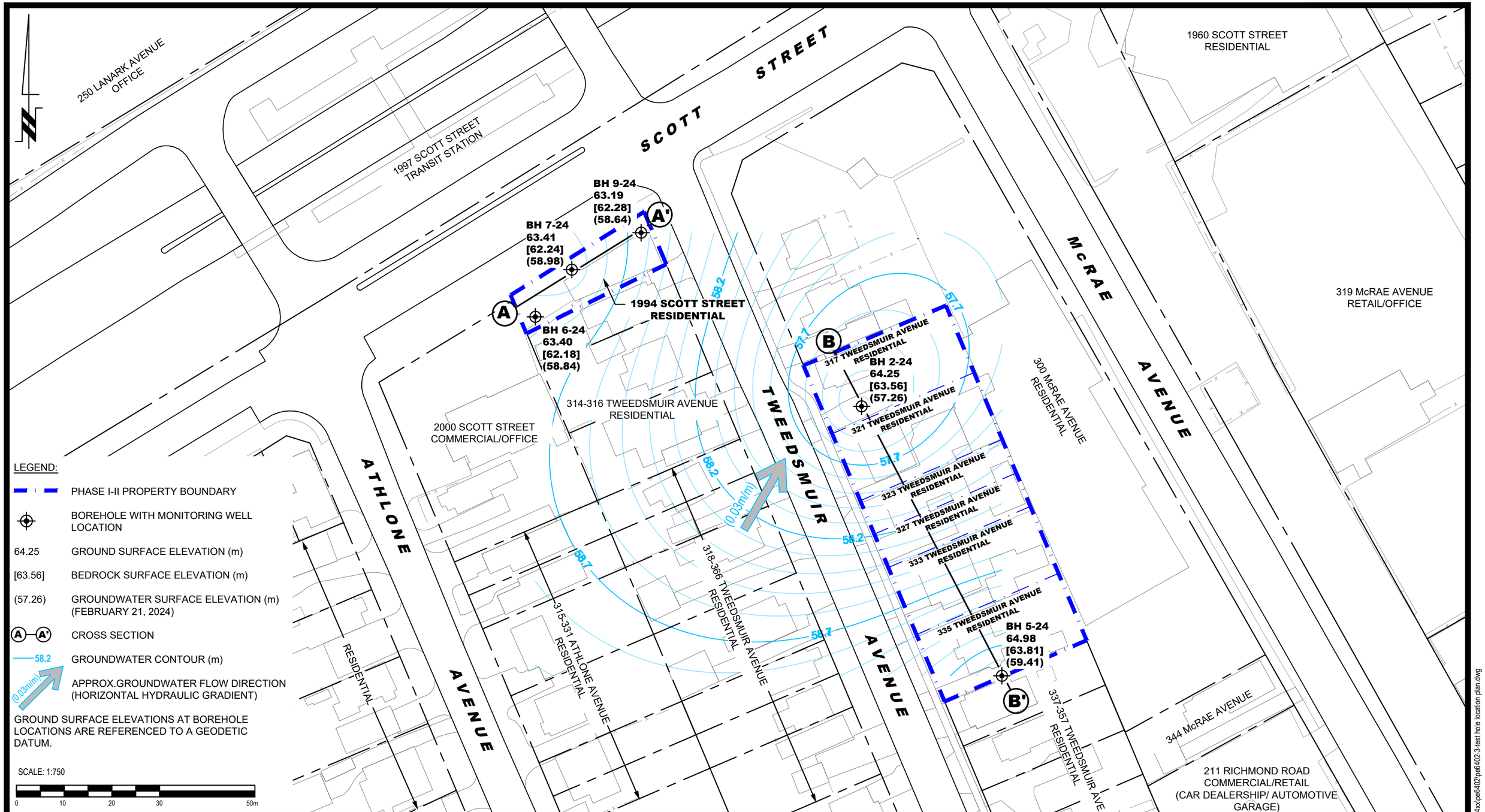

LEGEND:

- PHASE I-II PROPERTY BOUNDARY
- BOREHOLE WITH MONITORING WELL LOCATION
- 64.25 GROUND SURFACE ELEVATION (m)
- [63.56] BEDROCK SURFACE ELEVATION (m)
- (57.26) GROUNDWATER SURFACE ELEVATION (m) (FEBRUARY 21, 2024)
- A—A' CROSS SECTION
- 58.2 GROUNDWATER CONTOUR (m)
- (0.03m/m) APPROX.GROUNDWATER FLOW DIRECTION (HORIZONTAL HYDRAULIC GRADIENT)

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

SCALE: 1:750

0 10 20 30 50m

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PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:750	**Date:** 03/2024
Drawn by: GK	**Report No.:** PE6402-2
Checked by: JD	**Dwg. No.:** PE6402-3
Approved by: MD	**Revision No.:**

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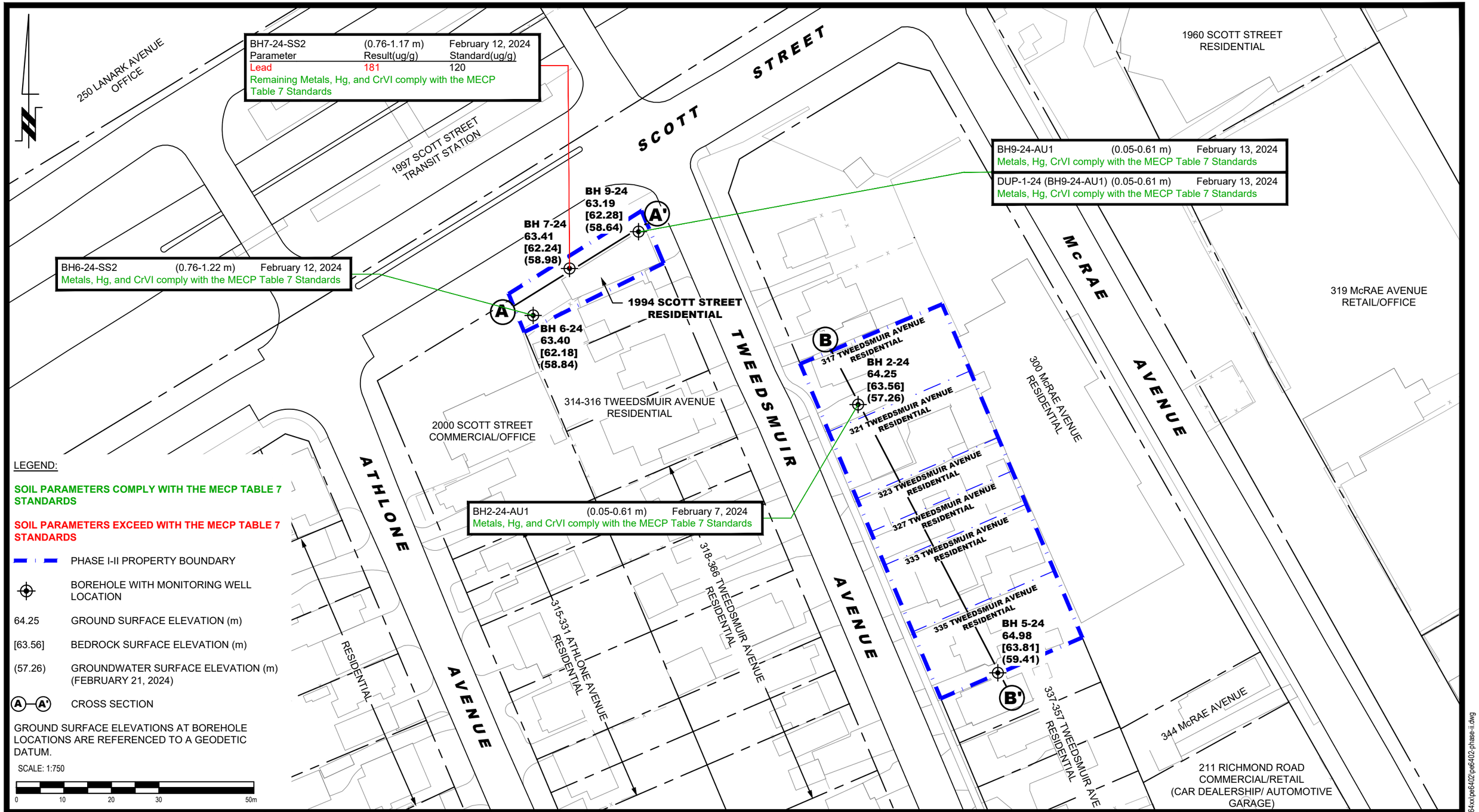

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PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - SOIL (METALs)

Scale: 1:750	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-4
Approved by: MD	Revision No.:

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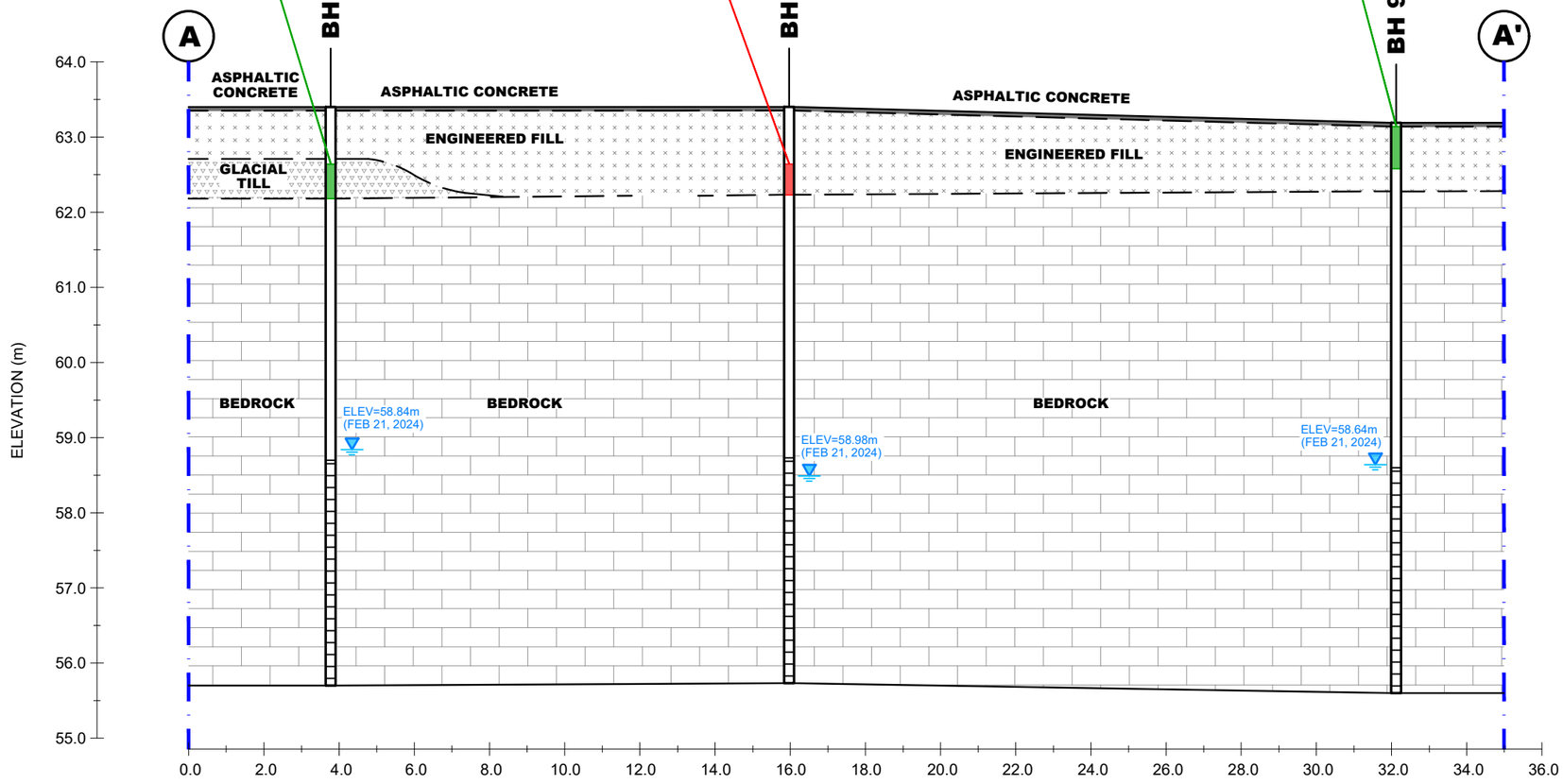
BH7-24-SS2	(0.76-1.17 m)	February 12, 2024
Parameter	Result(ug/g)	Standard(ug/g)
Lead	181	120

Remaining Metals, Hg, and CrVI comply with the MECP Table 7 Standards

BH9-24-AU1 (0.05-0.61 m) February 13, 2024
Metals, Hg, CrVI comply with the MECP Table 7 Standards

DUP-1-24 (BH9-24-AU1) (0.05-0.61 m) February 13, 2024
Metals, Hg, CrVI comply with the MECP Table 7 Standards

BH6-24-SS2 (0.76-1.22 m) February 12, 2024
Metals, Hg, and CrVI comply with the MECP Table 7 Standards



LEGEND:

PHASE I-II PROPERTY BOUNDARY

SOIL PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

SOIL PARAMETERS EXCEED WITH THE MECP TABLE 7 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL (METALs)

Scale: AS SHOWN	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-4A
Approved by: MD	Revision No.:

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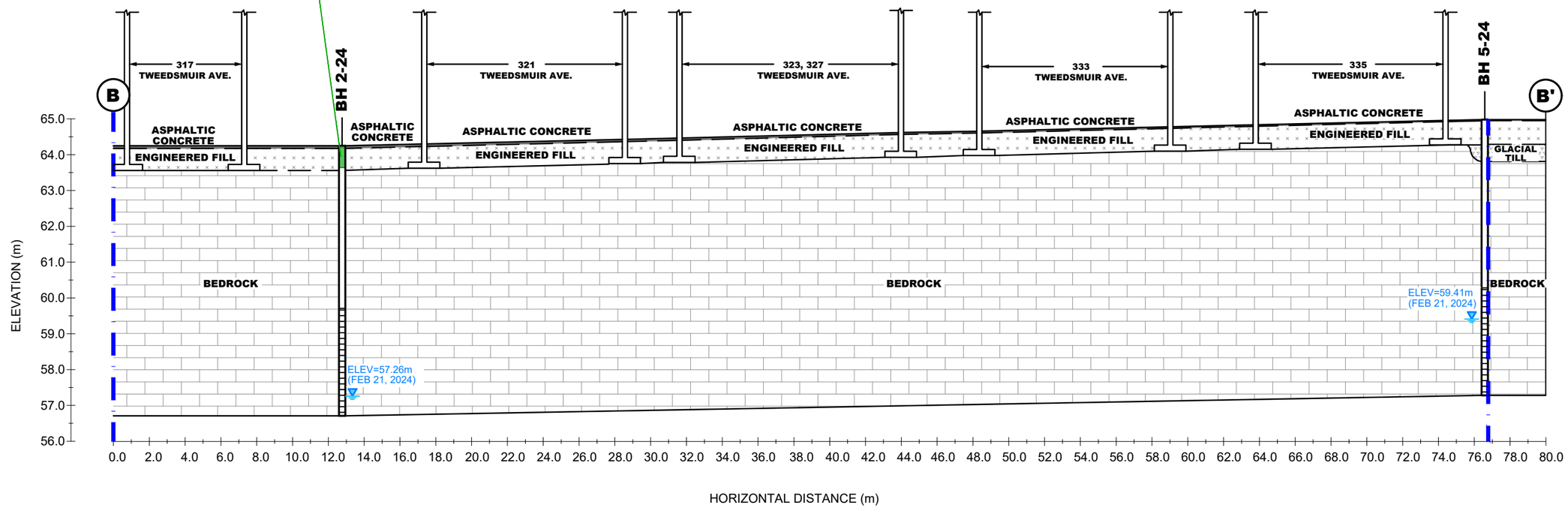
BH2-24-AU1 (0.05-0.61 m) February 7, 2024
Metals, Hg, and CrVI comply with the MECP Table 7 Standards



LEGEND:

PHASE I-II PROPERTY BOUNDARY

SOIL PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION B-B' - SOIL (METALs)

Scale: AS SHOWN	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-4B
Approved by: MD	Revision No.:

11x17

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BH7-24-SS2 (0.76-1.17 m) February 12, 2024
PAHs comply with the MECP Table 7 Standards

BH6-24-SS2 (0.76-1.22 m) February 12, 2024
PAHs comply with the MECP Table 7 Standards

BH9-24-AU1	(0.05-0.61 m)	February 13, 2024
Parameter	Result(ug/g)	Standard(ug/g)
Acenaphthylene	0.40 (MDL=0.40)*	0.15
Benzo[a]pyrene	0.40 (MDL=0.40)*	0.30
Dibenzo[a,h]anthracene	0.40 (MDL=0.40)*	0.10
Indeno[1,2,3-cd]pyrene	0.40 (MDL=0.40)*	0.38

* Elevated Laboratory Method Detection Limits (MDLs)
Remaining PAHs comply with the MECP Table 7 Standards

DUP-1-24 (BH9-24-AU1)	(0.05-0.61 m)	February 13, 2024
Parameter	Result(ug/g)	Standard(ug/g)
Acenaphthylene	0.40 (MDL=0.40)*	0.15
Benzo[a]pyrene	0.40 (MDL=0.40)*	0.30
Dibenzo[a,h]anthracene	0.40 (MDL=0.40)*	0.10
Indeno[1,2,3-cd]pyrene	0.40 (MDL=0.40)*	0.38

* Elevated Laboratory Method Detection Limits (MDLs)
Remaining PAHs comply with the MECP Table 7 Standards

250 LANARK AVENUE OFFICE
1997 SCOTT STREET TRANSIT STATION
SCOTT STREET
1960 SCOTT STREET RESIDENTIAL
319 McRAE AVENUE RETAIL/OFFICE
BH 9-24 63.19 [62.28] (58.64)
BH 7-24 63.41 [62.24] (58.98)
BH 6-24 63.40 [62.18] (58.84)
1994 SCOTT STREET RESIDENTIAL
2000 SCOTT STREET COMMERCIAL/OFFICE
314-316 TWEEDSMUIR AVENUE RESIDENTIAL
317 TWEEDSMUIR AVENUE RESIDENTIAL
BH 2-24 64.25 [63.56] (57.26)
321 TWEEDSMUIR AVENUE RESIDENTIAL
323 TWEEDSMUIR AVENUE RESIDENTIAL
327 TWEEDSMUIR AVENUE RESIDENTIAL
333 TWEEDSMUIR AVENUE RESIDENTIAL
335 TWEEDSMUIR AVENUE RESIDENTIAL
BH 5-24 64.98 [63.81] (59.41)
337-357 TWEEDSMUIR AVE RESIDENTIAL
300 McRAE AVENUE RESIDENTIAL
344 McRAE AVENUE
211 RICHMOND ROAD COMMERCIAL/RETAIL (CAR DEALERSHIP/ AUTOMOTIVE GARAGE)
315-331 ATHLONE AVENUE RESIDENTIAL
318-366 TWEEDSMUIR AVENUE RESIDENTIAL
ATHLONE AVENUE
TWEEDSMUIR AVENUE
McRAE AVENUE
A
A'
B
B'

LEGEND:

SOIL PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

SOIL PARAMETERS EXCEED WITH THE MECP TABLE 7 STANDARDS

- PHASE I-II PROPERTY BOUNDARY
- BOREHOLE WITH MONITORING WELL LOCATION
- 64.25 GROUND SURFACE ELEVATION (m)
- [63.56] BEDROCK SURFACE ELEVATION (m)
- (57.26) GROUNDWATER SURFACE ELEVATION (m) (FEBRUARY 21, 2024)
- A—A' CROSS SECTION

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

SCALE: 1:750

0 10 20 30 50m

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET
OTTAWA, ONTARIO

Title:
ANALYTICAL TESTING PLAN - SOIL (PAHs)

Scale: 1:750	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-5
Approved by: MD	Revision No.:

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11x17

BH7-24-SS2 (0.76-1.17 m) February 12, 2024
PAHs comply with the MECP Table 7 Standards

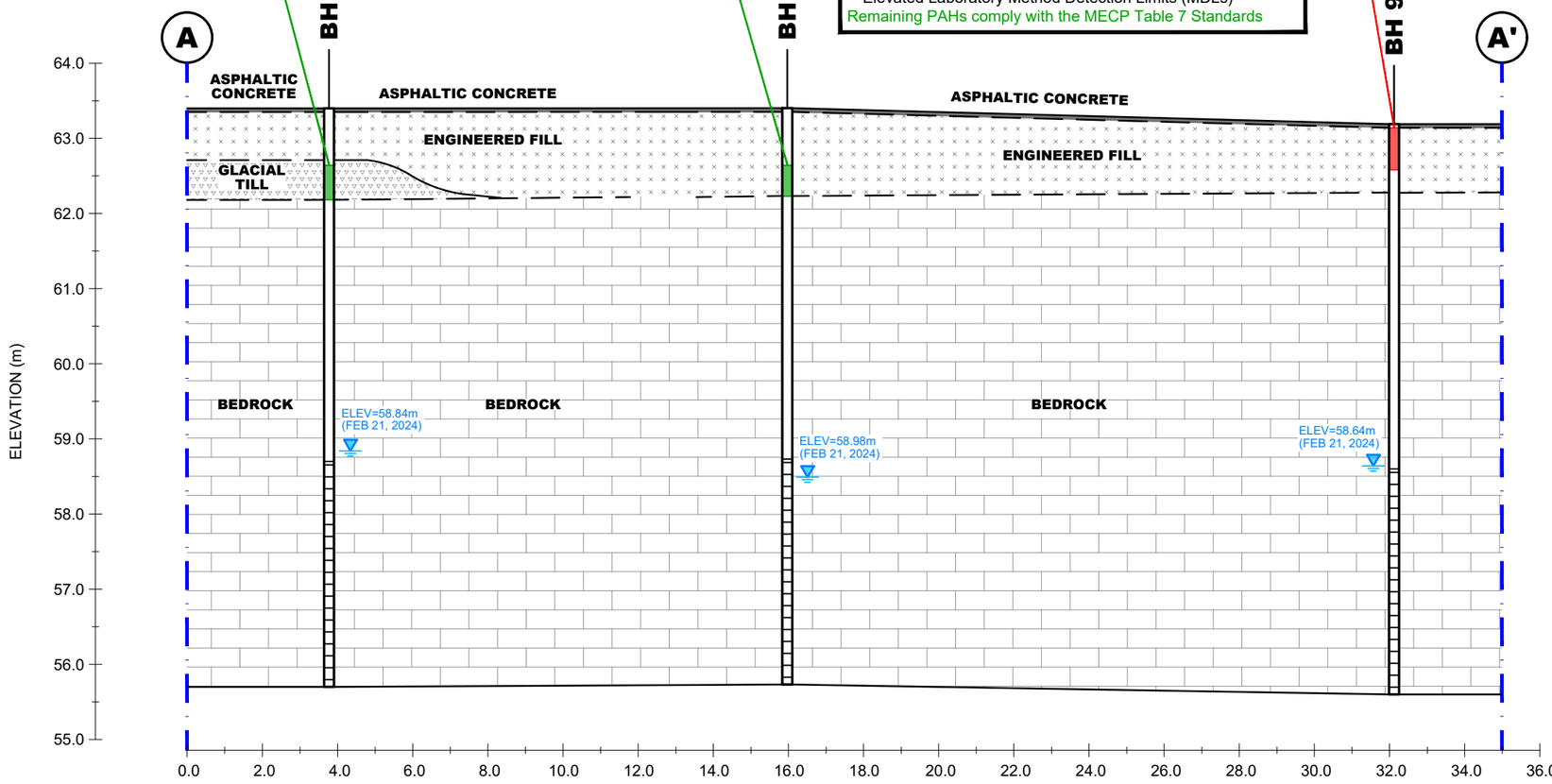
BH6-24-SS2 (0.76-1.22 m) February 12, 2024
PAHs comply with the MECP Table 7 Standards

BH9-24-AU1	(0.05-0.61 m)	February 13, 2024
Parameter	Result(ug/g)	Standard(ug/g)
Acenaphthylene	0.40 (MDL=0.40)*	0.15
Benzo[a]pyrene	0.40 (MDL=0.40)*	0.30
Dibenzo[a,h]anthracene	0.40 (MDL=0.40)*	0.10
Indeno[1,2,3-cd]pyrene	0.40 (MDL=0.40)*	0.38

* Elevated Laboratory Method Detection Limits (MDLs)
Remaining PAHs comply with the MECP Table 7 Standards

DUP-1-24 (BH9-24-AU1)	(0.05-0.61 m)	February 13, 2024
Parameter	Result(ug/g)	Standard(ug/g)
Acenaphthylene	0.40 (MDL=0.40)*	0.15
Benzo[a]pyrene	0.40 (MDL=0.40)*	0.30
Dibenzo[a,h]anthracene	0.40 (MDL=0.40)*	0.10
Indeno[1,2,3-cd]pyrene	0.40 (MDL=0.40)*	0.38

* Elevated Laboratory Method Detection Limits (MDLs)
Remaining PAHs comply with the MECP Table 7 Standards



LEGEND:

PHASE I-II PROPERTY BOUNDARY

SOIL PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

SOIL PARAMETERS EXCEED WITH THE MECP TABLE 7 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL (PAHs)

Scale: AS SHOWN	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-5A
Approved by: MD	Revision No.:

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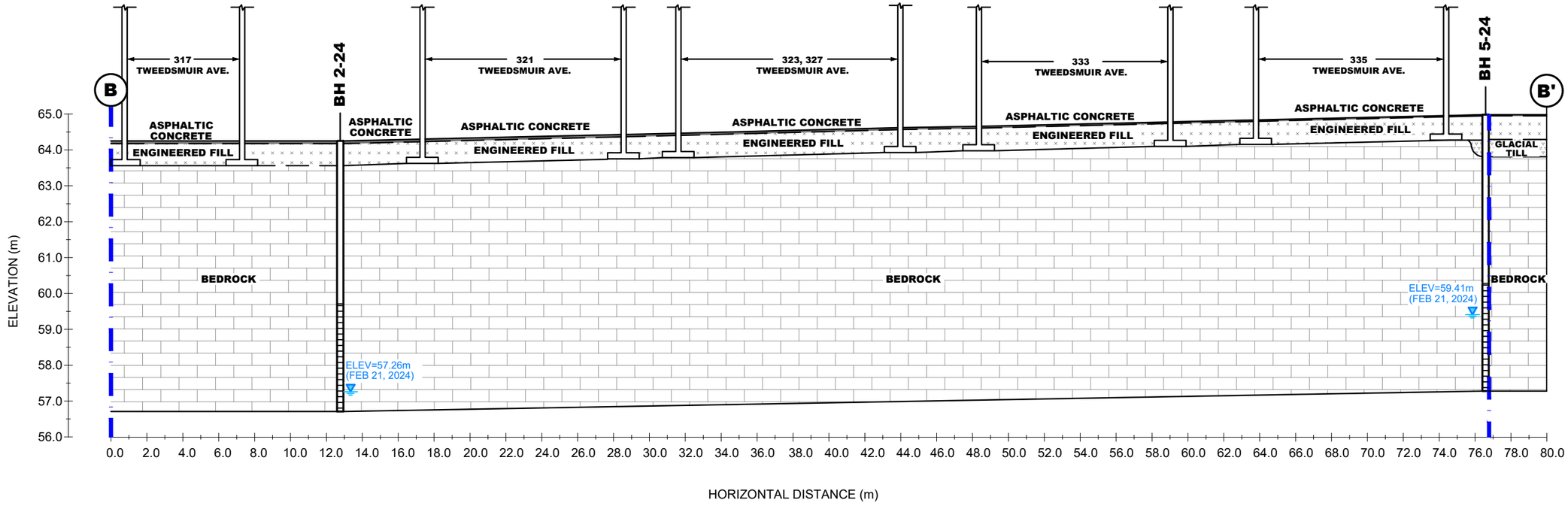
11x17



LEGEND:

PHASE I-II PROPERTY BOUNDARY

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION B-B' - SOIL (PAHs)

Scale: AS SHOWN	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-5B
Approved by: MD	Revision No.:

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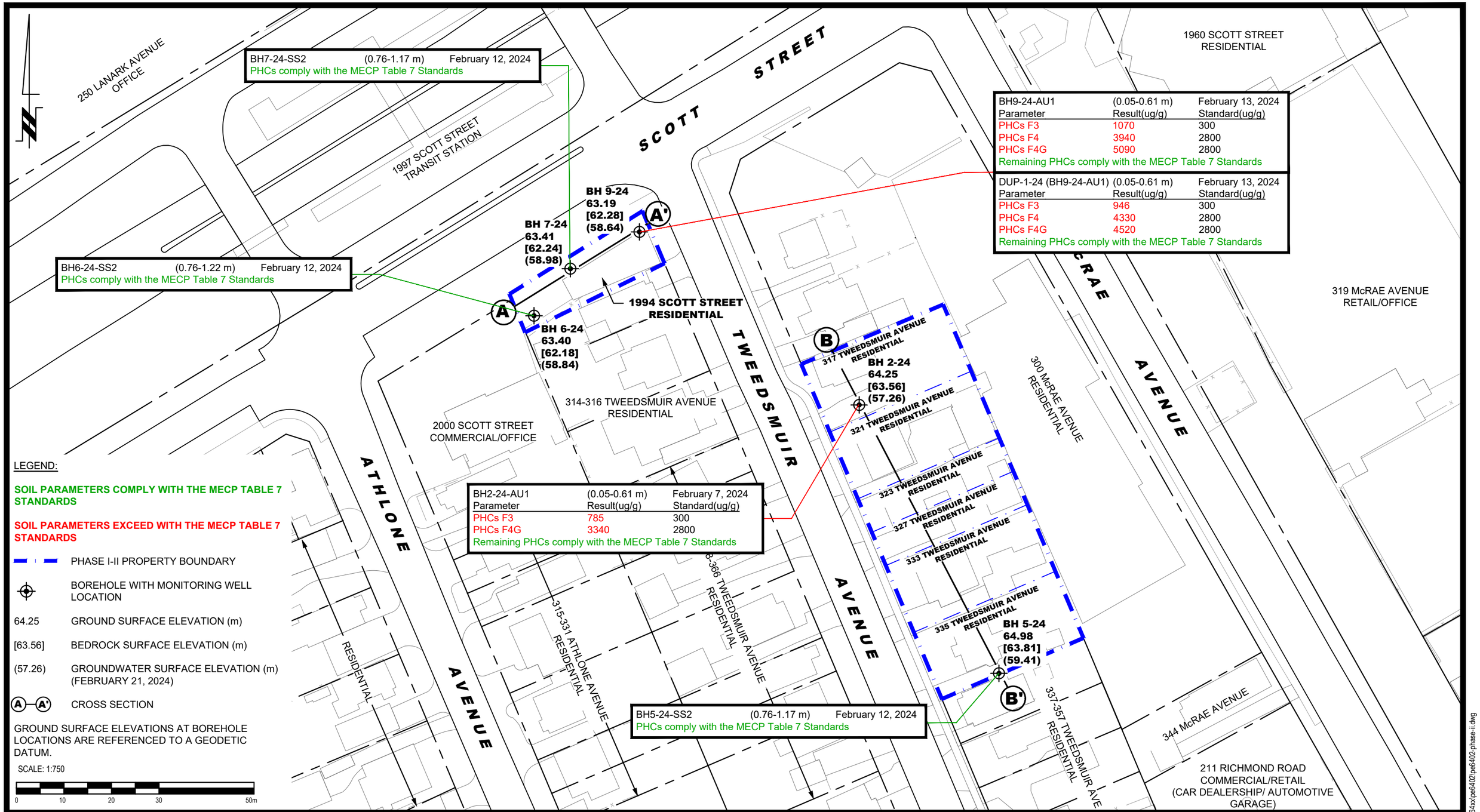
11x17



LEGEND:

SOIL PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

SOIL PARAMETERS EXCEED WITH THE MECP TABLE 7 STANDARDS

- PHASE I-II PROPERTY BOUNDARY
- BOREHOLE WITH MONITORING WELL LOCATION
- 64.25 GROUND SURFACE ELEVATION (m)
- [63.56] BEDROCK SURFACE ELEVATION (m)
- (57.26) GROUNDWATER SURFACE ELEVATION (m) (FEBRUARY 21, 2024)
- A—A' CROSS SECTION

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

SCALE: 1:750

0 10 20 30 50m

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - SOIL (PHCs)

Scale: 1:750	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-6
Approved by: MD	Revision No.:

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11x17

BH7-24-SS2 (0.76-1.17 m) February 12, 2024
PHCs comply with the MECP Table 7 Standards

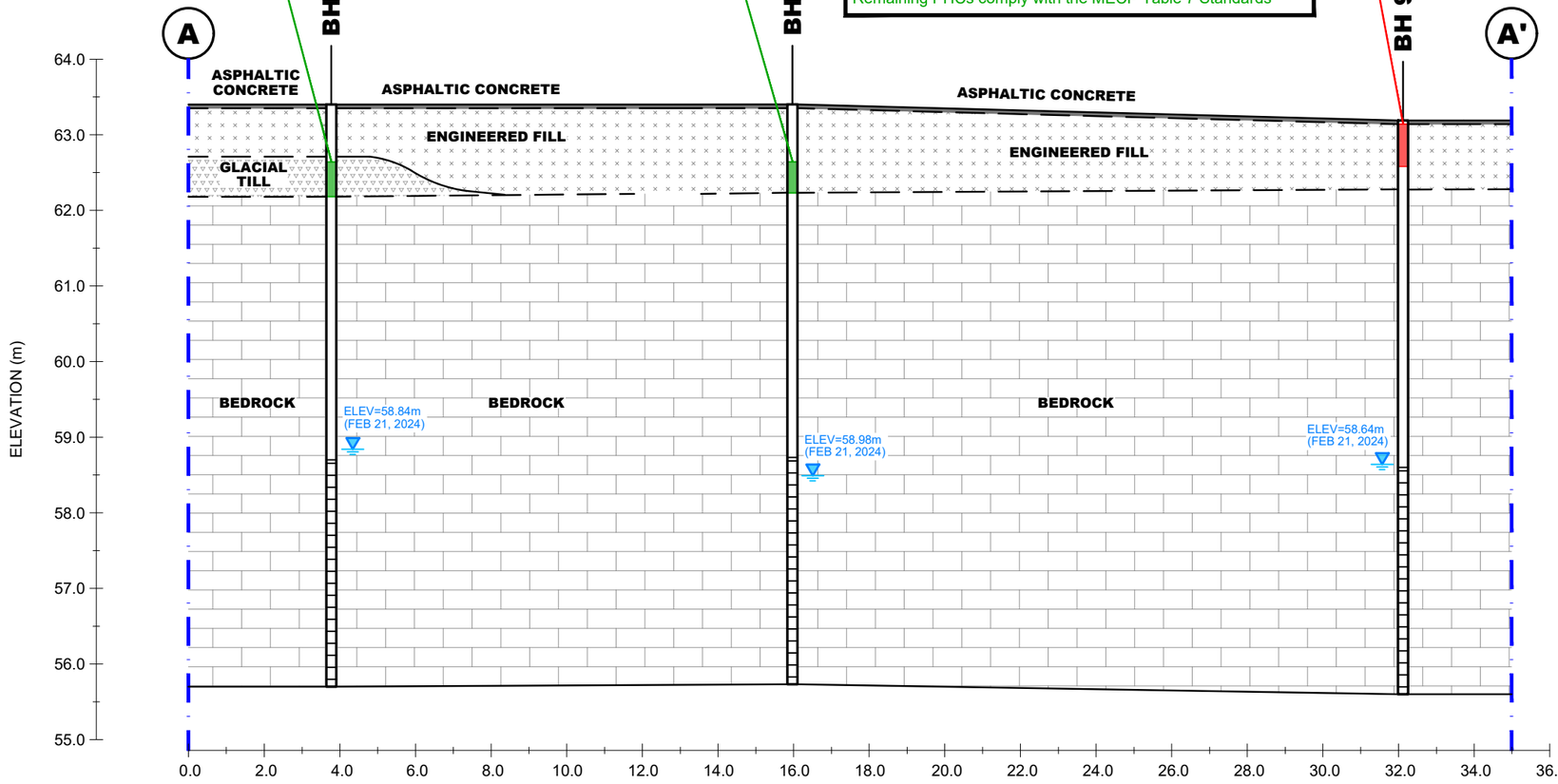
BH6-24-SS2 (0.76-1.22 m) February 12, 2024
PHCs comply with the MECP Table 7 Standards

BH9-24-AU1	(0.05-0.61 m)	February 13, 2024
Parameter	Result(ug/g)	Standard(ug/g)
PHCs F3	1070	300
PHCs F4	3940	2800
PHCs F4G	5090	2800

Remaining PHCs comply with the MECP Table 7 Standards

DUP-1-24 (BH9-24-AU1)	(0.05-0.61 m)	February 13, 2024
Parameter	Result(ug/g)	Standard(ug/g)
PHCs F3	946	300
PHCs F4	4330	2800
PHCs F4G	4520	2800

Remaining PHCs comply with the MECP Table 7 Standards



LEGEND:

PHASE I-II PROPERTY BOUNDARY

SOIL PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

SOIL PARAMETERS EXCEED WITH THE MECP TABLE 7 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL (PHCs)

Scale: AS SHOWN	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-6A
Approved by: MD	Revision No.:

11x17

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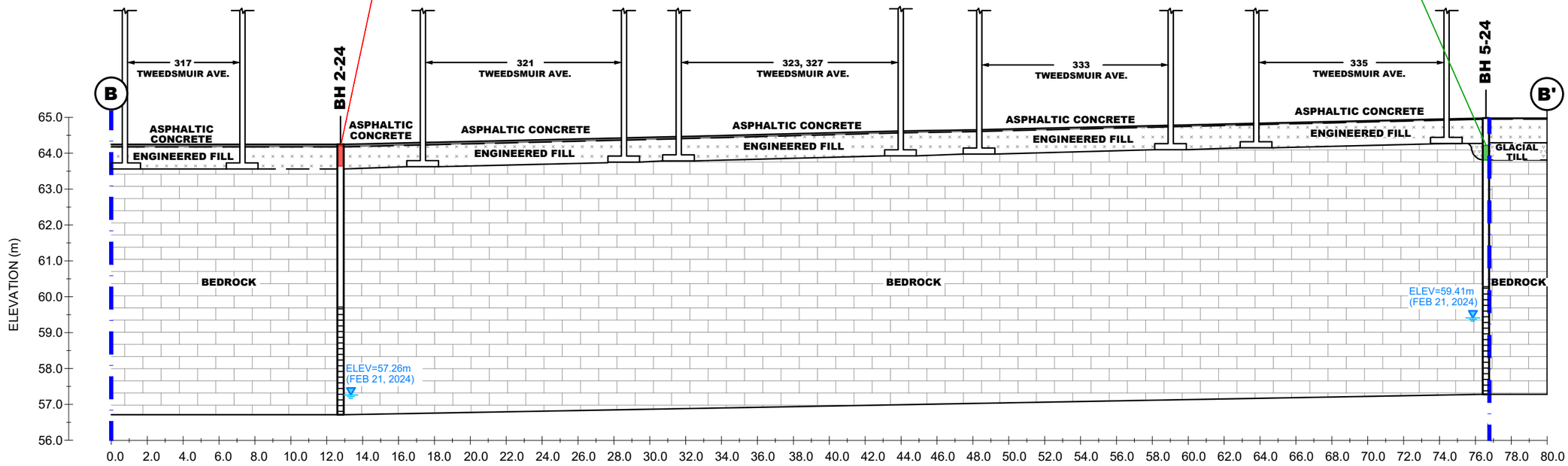
BH2-24-AU1	(0.05-0.61 m)	February 7, 2024
Parameter	Result(ug/g)	Standard(ug/g)
PHCs F3	785	300
PHCs F4G	3340	2800

Remaining PHCs comply with the MECP Table 7 Standards

BH5-24-SS2 (0.76-1.17 m) February 12, 2024
PHCs comply with the MECP Table 7 Standards



LEGEND:

PHASE I-II PROPERTY BOUNDARY

SOIL PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

SOIL PARAMETERS EXCEED WITH THE MECP TABLE 7 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION B-B' - SOIL (PHCs)

Scale: AS SHOWN	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-6B
Approved by: MD	Revision No.:

11x17

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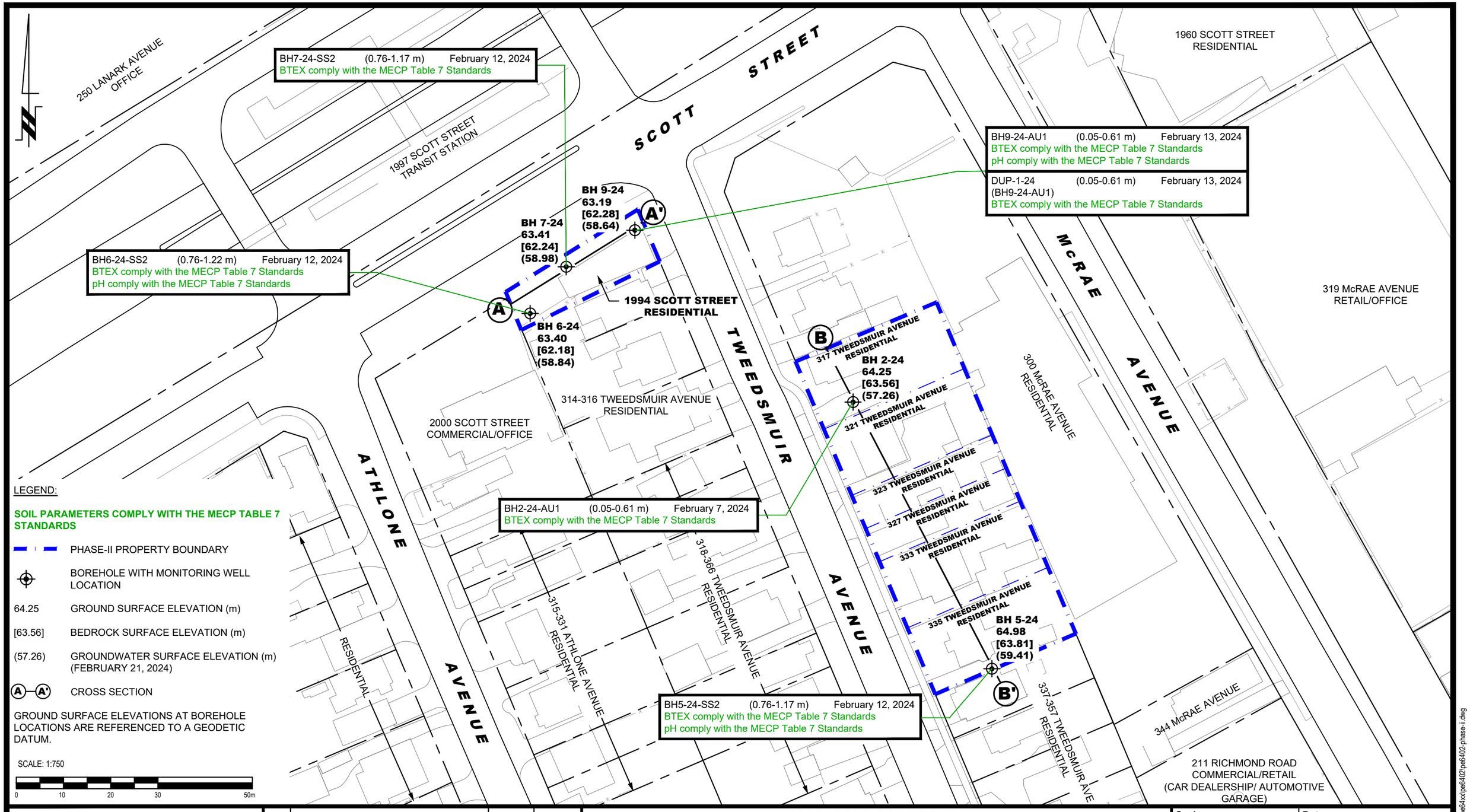

LEGEND:

SOIL PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

- PHASE-II PROPERTY BOUNDARY
- BOREHOLE WITH MONITORING WELL LOCATION
- 64.25 GROUND SURFACE ELEVATION (m)
- [63.56] BEDROCK SURFACE ELEVATION (m)
- (57.26) GROUNDWATER SURFACE ELEVATION (m) (FEBRUARY 21, 2024)
- A—A' CROSS SECTION

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

SCALE: 1:750

0 10 20 30 50m

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:
ANALYTICAL TESTING PLAN - SOIL (BTEX AND pH)

Scale: 1:750	**Date:** 03/2024
Drawn by: GK	**Report No.:** PE6402-2
Checked by: JD	**Dwg. No.:** PE6402-7
Approved by: MD	**Revision No.:**

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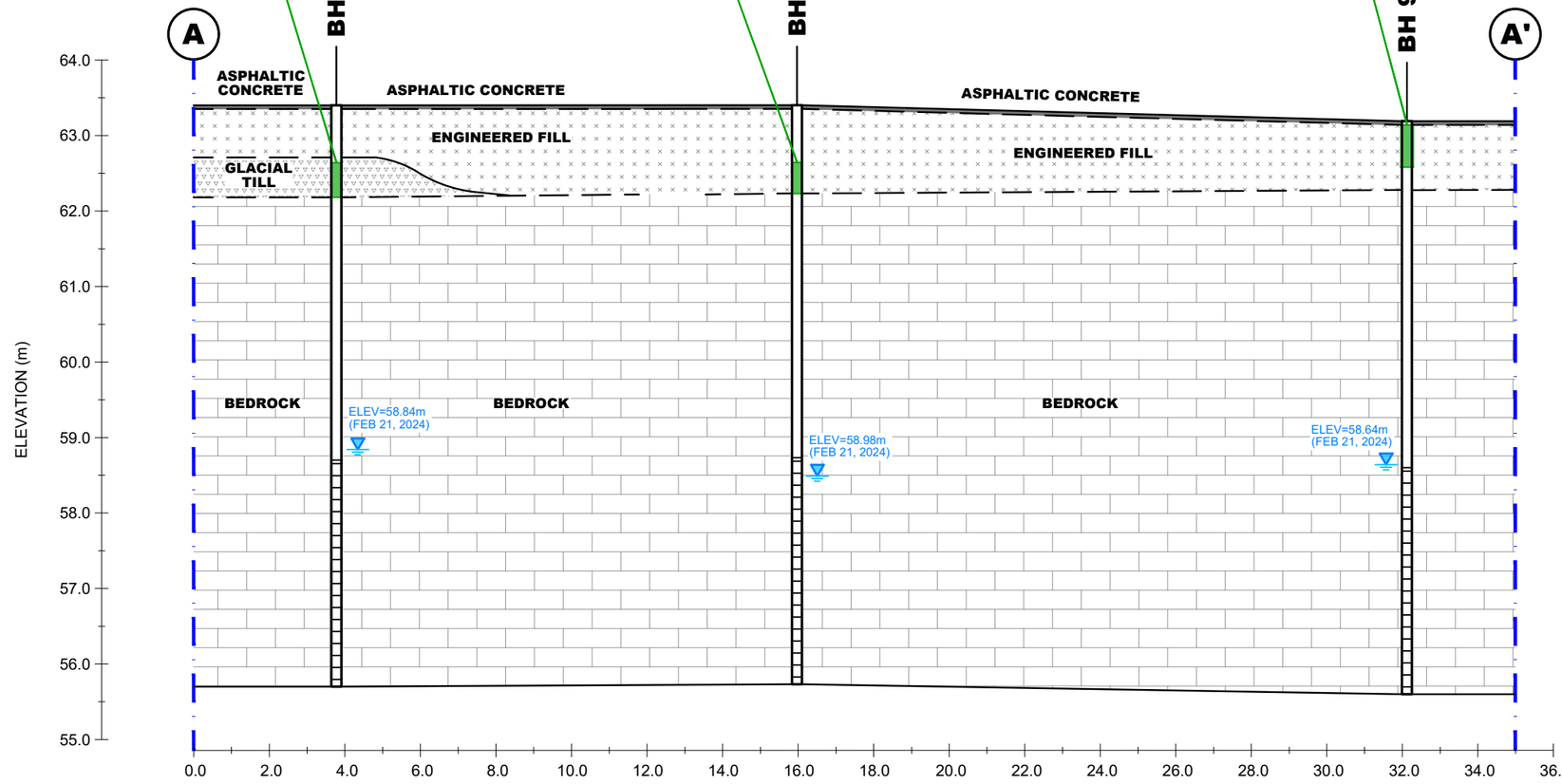
11x17

BH7-24-SS2 (0.76-1.17 m) February 12, 2024
BTEX comply with the MECP Table 7 Standards

BH9-24-AU1 (0.05-0.61 m) February 13, 2024
BTEX comply with the MECP Table 7 Standards
pH comply with the MECP Table 7 Standards

DUP-1-24 (0.05-0.61 m) February 13, 2024
(BH9-24-AU1)
BTEX comply with the MECP Table 7 Standards

BH6-24-SS2 (0.76-1.22 m) February 12, 2024
BTEX comply with the MECP Table 7 Standards
pH comply with the MECP Table 7 Standards



LEGEND:

PHASE I-II PROPERTY BOUNDARY

SOIL PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL (BTEX AND pH)

Scale: AS SHOWN	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-7A
Approved by: MD	Revision No.:

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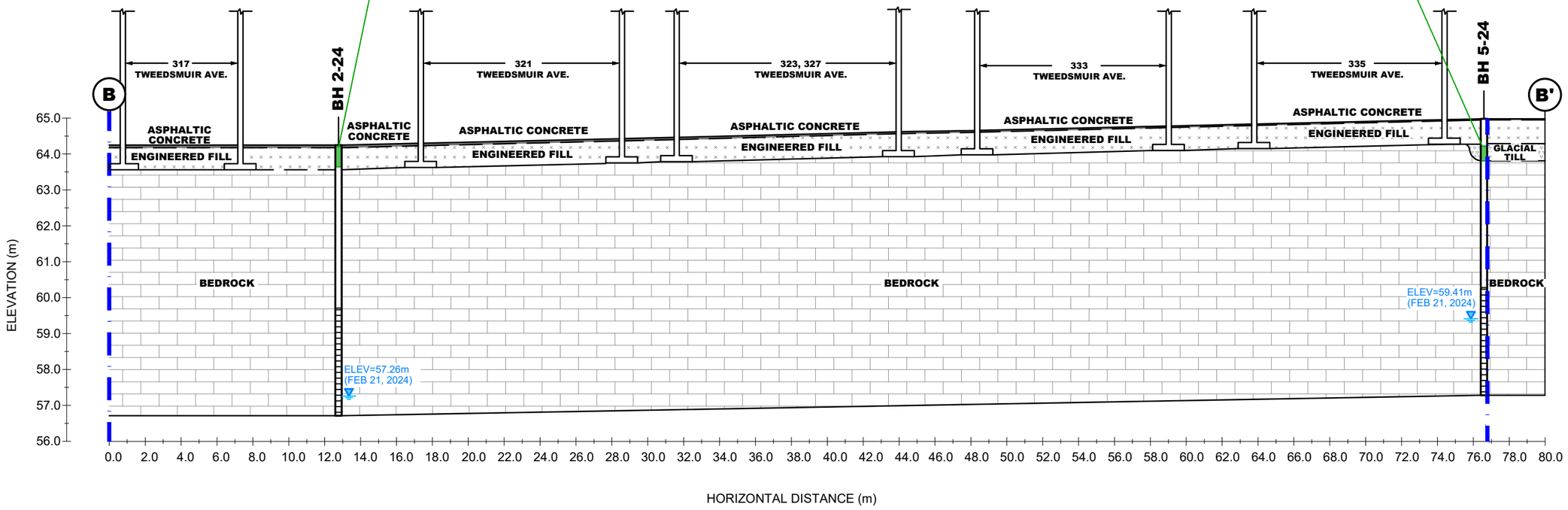
11x17

BH2-24-AU1 (0.05-0.61 m) February 7, 2024
BTEX comply with the MECP Table 7 Standards

BH5-24-SS2 (0.76-1.17 m) February 12, 2024
BTEX comply with the MECP Table 7 Standards
pH comply with the MECP Table 7 Standards



LEGEND:

PHASE I-II PROPERTY BOUNDARY

SOIL PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:
CROSS SECTION B-B' - SOIL (BTEX AND pH)

Scale: AS SHOWN	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-7B
Approved by: MD	Revision No.:

11x17

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BH7-24-GW1 (4.60-7.67 m) February 21, 2024
VOCs comply with the MECP Table 7 Non-Potable Standards

BH9-24-GW1 (4.60-7.59 m) February 21, 2024
VOCs comply with the MECP Table 7 Non-Potable Standards

DUP-GW1 (4.60-7.70 m) February 21, 2024
VOCs comply with the MECP Table 7 Non-Potable Standards

BH6-24-GW1 (4.60-7.70 m) February 21, 2024
VOCs comply with the MECP Table 7 Non-Potable Standards

BH2-24-GW1 (4.60-7.54 m) February 21, 2024
VOCs comply with the MECP Table 7 Non-Potable Standards

BH5-24-GW1	(4.60-7.70 m)	February 21, 2024
Parameter	Result(µg/L)	Standard(µg/L)
*Chloroform	9.7	2.0

* Chloroform is considered to be related to municipal water used during the field program and is not considered to exceed the MECP site standards
Remaining VOCs comply with the MECP Table 7 Non-Potable Standards

250 LANARK AVENUE OFFICE
1997 SCOTT STREET TRANSIT STATION
SCOTT STREET
1960 SCOTT STREET RESIDENTIAL
BH 9-24 63.19 [62.28] (58.64)
BH 7-24 63.41 [62.24] (58.98)
A
A'
1994 SCOTT STREET RESIDENTIAL
BH 6-24 63.40 [62.18] (58.84)
314-316 TWEEDSMUIR AVENUE RESIDENTIAL
2000 SCOTT STREET COMMERCIAL/OFFICE
TWEEDSMUIR AVENUE
B
317 TWEEDSMUIR AVENUE RESIDENTIAL
BH 2-24 64.25 [63.56] (57.26)
321 TWEEDSMUIR AVENUE RESIDENTIAL
323 TWEEDSMUIR AVENUE RESIDENTIAL
327 TWEEDSMUIR AVENUE RESIDENTIAL
333 TWEEDSMUIR AVENUE RESIDENTIAL
335 TWEEDSMUIR AVENUE RESIDENTIAL
BH 5-24 64.98 [63.81] (59.41)
B'
300 McRAE AVENUE RESIDENTIAL
McRAE AVENUE
319 McRAE AVENUE RETAIL/OFFICE
ATHLONE AVENUE
RESIDENTIAL
315-331 ATHLONE AVENUE RESIDENTIAL
318-366 TWEEDSMUIR AVENUE RESIDENTIAL
337-357 TWEEDSMUIR AVE RESIDENTIAL
344 McRAE AVENUE
211 RICHMOND ROAD COMMERCIAL/RETAIL (CAR DEALERSHIP/ AUTOMOTIVE GARAGE)

LEGEND:

GROUNDWATER PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

- PHASE I-II PROPERTY BOUNDARY
- BOREHOLE WITH MONITORING WELL LOCATION
- 64.25 GROUND SURFACE ELEVATION (m)
- [63.56] BEDROCK SURFACE ELEVATION (m)
- (57.26) GROUNDWATER SURFACE ELEVATION (m) (FEBRUARY 21, 2024)
- A—A' CROSS SECTION

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

SCALE: 1:750

0 10 20 30 50m

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:
ANALYTICAL TESTING PLAN - GROUNDWATER (VOCs)

Scale: 1:750	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-8
Approved by: MD	Revision No.:

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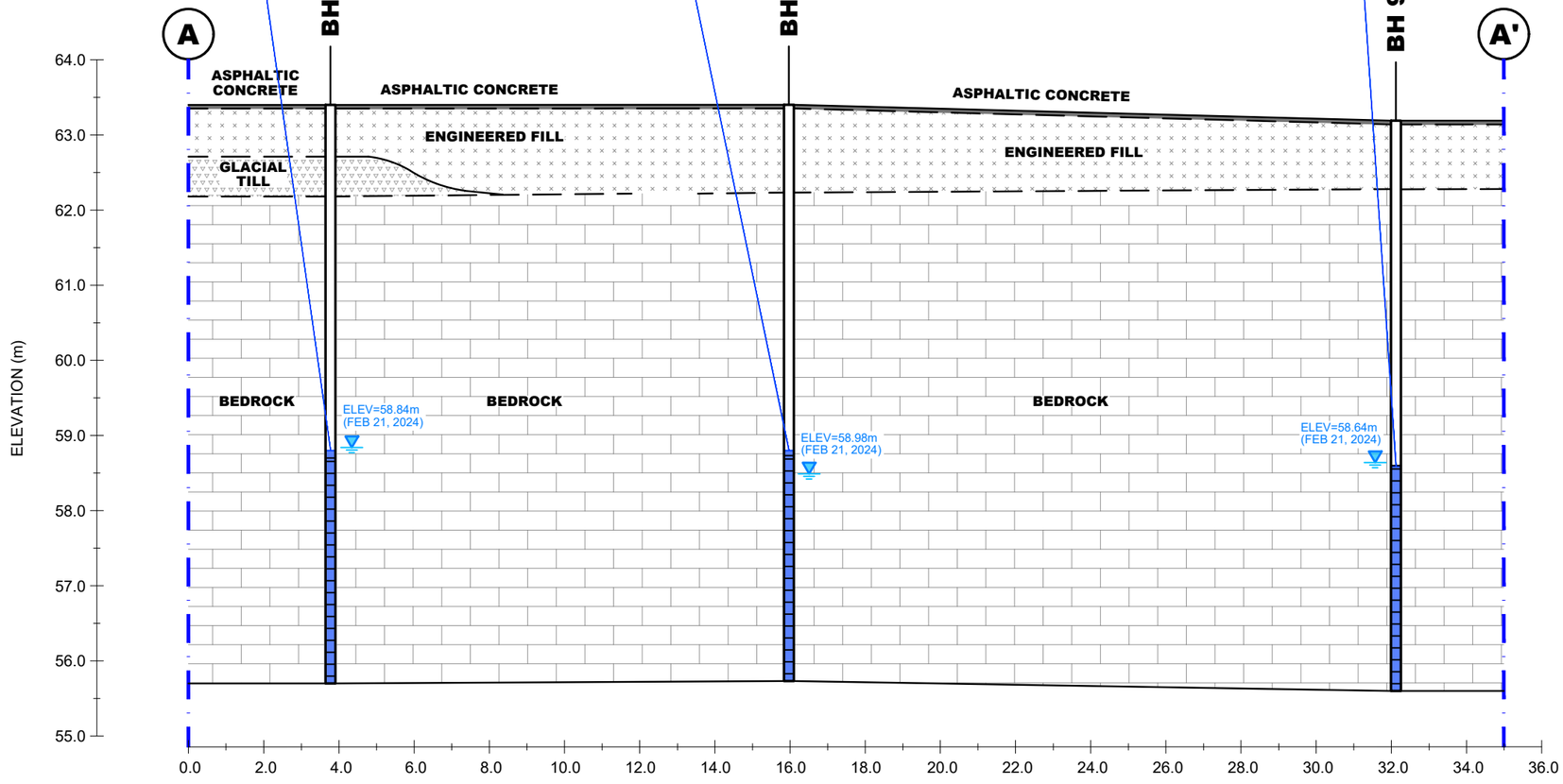
11x17

BH7-24-GW1 (4.60-7.67 m) February 21, 2024
VOCs comply with the MECP Table 7 Non-Potable Standards

BH6-24-GW1 (4.60-7.70 m) February 21, 2024
VOCs comply with the MECP Table 7 Non-Potable Standards

BH9-24-GW1 (4.60-7.59 m) February 21, 2024
VOCs comply with the MECP Table 7 Non-Potable Standards

DUP-GW1 (4.60-7.70 m) February 21, 2024
VOCs comply with the MECP Table 7 Non-Potable Standards



LEGEND:

PHASE I-II PROPERTY BOUNDARY

GROUNDWATER PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title: CROSS SECTION A-A' - GROUNDWATER (VOCs)

Scale: AS SHOWN	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-8A
Approved by: MD	Revision No.:

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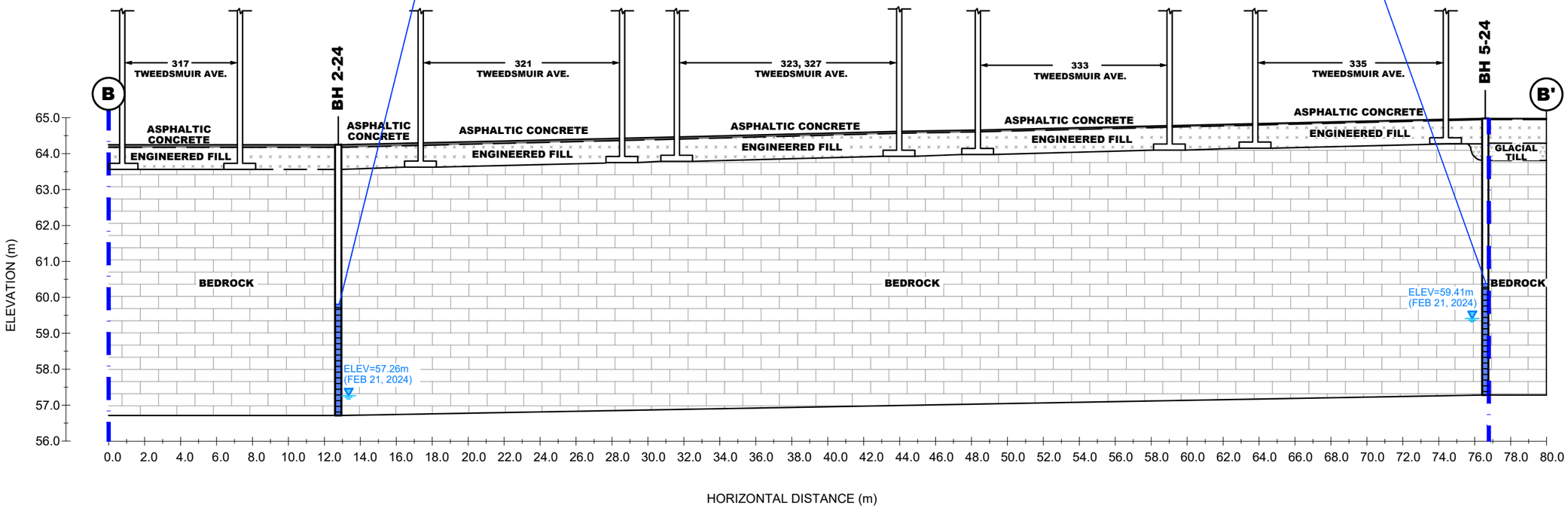
11x17

BH2-24-GW1 (4.60-7.54 m) February 21, 2024
VOCs comply with the MECP Table 7 Non-Potable Standards

BH5-24-GW1 (4.60-7.70 m) February 21, 2024

Parameter	Result(µg/L)	Standard(µg/L)
*Chloroform	9.7	2.0

* Chloroform is considered to be related to municipal water used during the field program and is not considered to exceed the MECP site standards
Remaining VOCs comply with the MECP Table 7 Non-Potable Standards



LEGEND:

PHASE I-II PROPERTY BOUNDARY

GROUNDWATER PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET
OTTAWA, ONTARIO

Title:
CROSS SECTION B-B' - GROUNDWATER (VOCs)

Scale: AS SHOWN	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-8B
Approved by: MD	Revision No.:

11x17

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BH7-24-GW1 (4.60-7.67 m) February 21, 2024
PHCs comply with the MECP Table 7 Non-Potable Standards
PAHs comply with the MECP Table 7 Non-Potable Standards

BH9-24-GW1 (4.60-7.59 m) February 21, 2024
PHCs comply with the MECP Table 7 Non-Potable Standards
PAHs comply with the MECP Table 7 Non-Potable Standards

BH6-24-GW1 (4.60-7.70 m) February 21, 2024
PHCs comply with the MECP Table 7 Non-Potable Standards
PAHs comply with the MECP Table 7 Non-Potable Standards

BH2-24-GW1 (4.60-7.54 m) February 21, 2024
PHCs comply with the MECP Table 7 Non-Potable Standards
PAHs comply with the MECP Table 7 Non-Potable Standards

BH5-24-GW1 (4.60-7.70 m) February 21, 2024
PHCs comply with the MECP Table 7 Non-Potable Standards
PAHs comply with the MECP Table 7 Non-Potable Standards

250 LANARK AVENUE OFFICE

1997 SCOTT STREET TRANSIT STATION

SCOTT STREET

1960 SCOTT STREET RESIDENTIAL

BH 9-24
63.19
[62.28]
(58.64)

A'

BH 7-24
63.41
[62.24]
(58.98)

A

1994 SCOTT STREET RESIDENTIAL

BH 6-24
63.40
[62.18]
(58.84)

2000 SCOTT STREET COMMERCIAL/OFFICE

314-316 TWEEDSMUIR AVENUE RESIDENTIAL

TWEEDSMUIR AVENUE

B

317 TWEEDSMUIR AVENUE RESIDENTIAL

BH 2-24
64.25
[63.56]
(57.26)

321 TWEEDSMUIR AVENUE RESIDENTIAL

323 TWEEDSMUIR AVENUE RESIDENTIAL

327 TWEEDSMUIR AVENUE RESIDENTIAL

333 TWEEDSMUIR AVENUE RESIDENTIAL

335 TWEEDSMUIR AVENUE RESIDENTIAL

BH 5-24
64.98
[63.81]
(59.41)

B'

300 McRAE AVENUE RESIDENTIAL

McRAE AVENUE

319 McRAE AVENUE RETAIL/OFFICE

344 McRAE AVENUE

337-357 TWEEDSMUIR AVE RESIDENTIAL

318-366 TWEEDSMUIR AVENUE RESIDENTIAL

315-331 ATHLONE AVENUE RESIDENTIAL

ATHLONE AVENUE

RESIDENTIAL

211 RICHMOND ROAD
COMMERCIAL/RETAIL
(CAR DEALERSHIP/ AUTOMOTIVE GARAGE)

LEGEND:

GROUNDWATER PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

- PHASE I-II PROPERTY BOUNDARY
- BOREHOLE WITH MONITORING WELL LOCATION
- 64.25 GROUND SURFACE ELEVATION (m)
- [63.56] BEDROCK SURFACE ELEVATION (m)
- (57.26) GROUNDWATER SURFACE ELEVATION (m) (FEBRUARY 21, 2024)
- A—A' CROSS SECTION

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

SCALE: 1:750

0 10 20 30 50m

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:
ANALYTICAL TESTING PLAN - GROUNDWATER (PHCs & PAHs)

Scale: 1:750	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-9
Approved by: MD	Revision No.:

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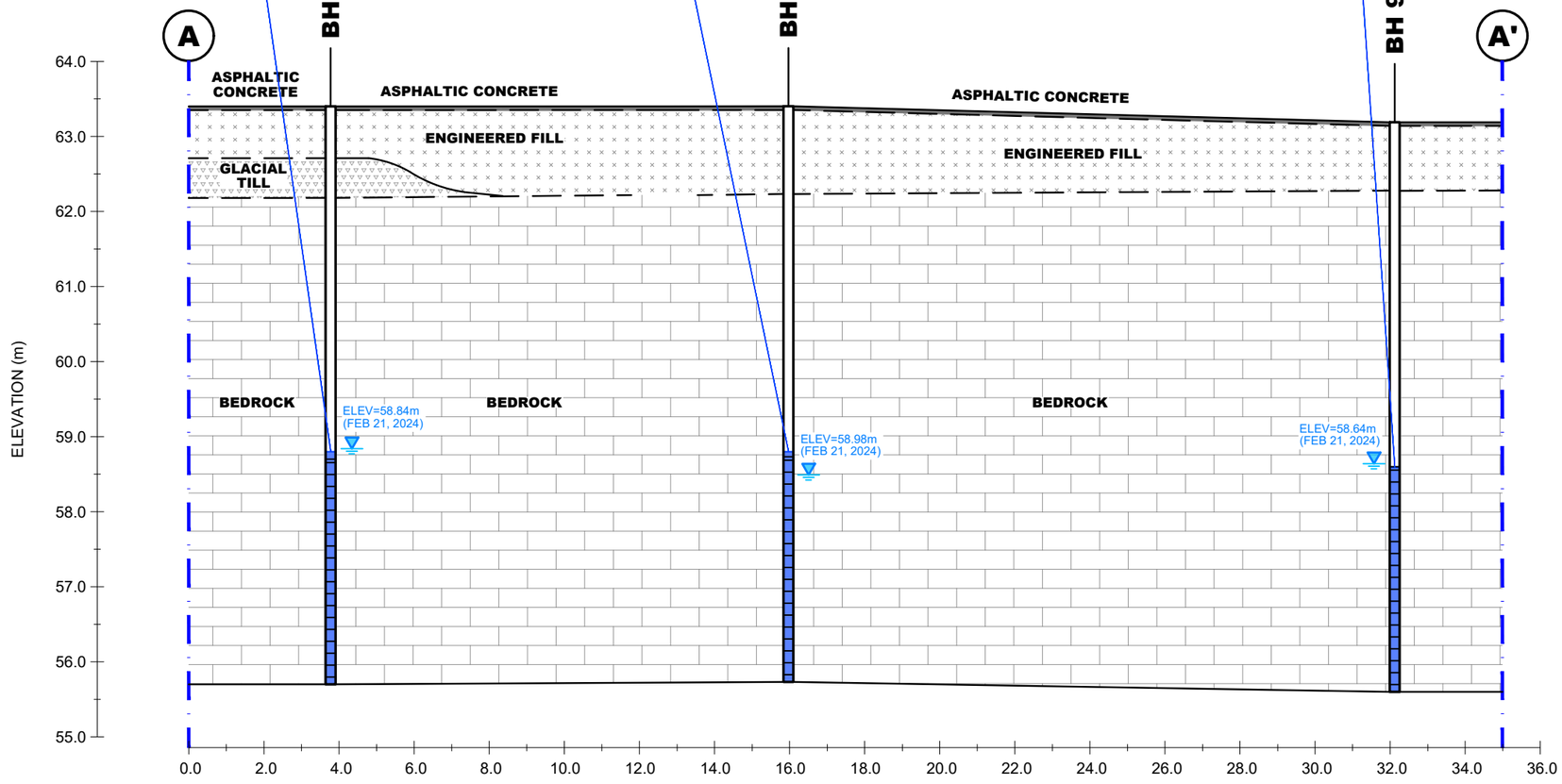
11x17

BH7-24-GW1 (4.60-7.67 m) February 21, 2024
PHCs comply with the MECP Table 7 Non-Potable Standards
PAHs comply with the MECP Table 7 Non-Potable Standards

BH6-24-GW1 (4.60-7.70 m) February 21, 2024
PHCs comply with the MECP Table 7 Non-Potable Standards
PAHs comply with the MECP Table 7 Non-Potable Standards

BH9-24-GW1 (4.60-7.59 m) February 21, 2024
PHCs comply with the MECP Table 7 Non-Potable Standards
PAHs comply with the MECP Table 7 Non-Potable Standards



LEGEND:

PHASE I-II PROPERTY BOUNDARY

GROUNDWATER PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:
CROSS SECTION A-A' - GROUNDWATER (PHCs & PAHs)

Scale: AS SHOWN	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-9A
Approved by: MD	Revision No.:

11x17

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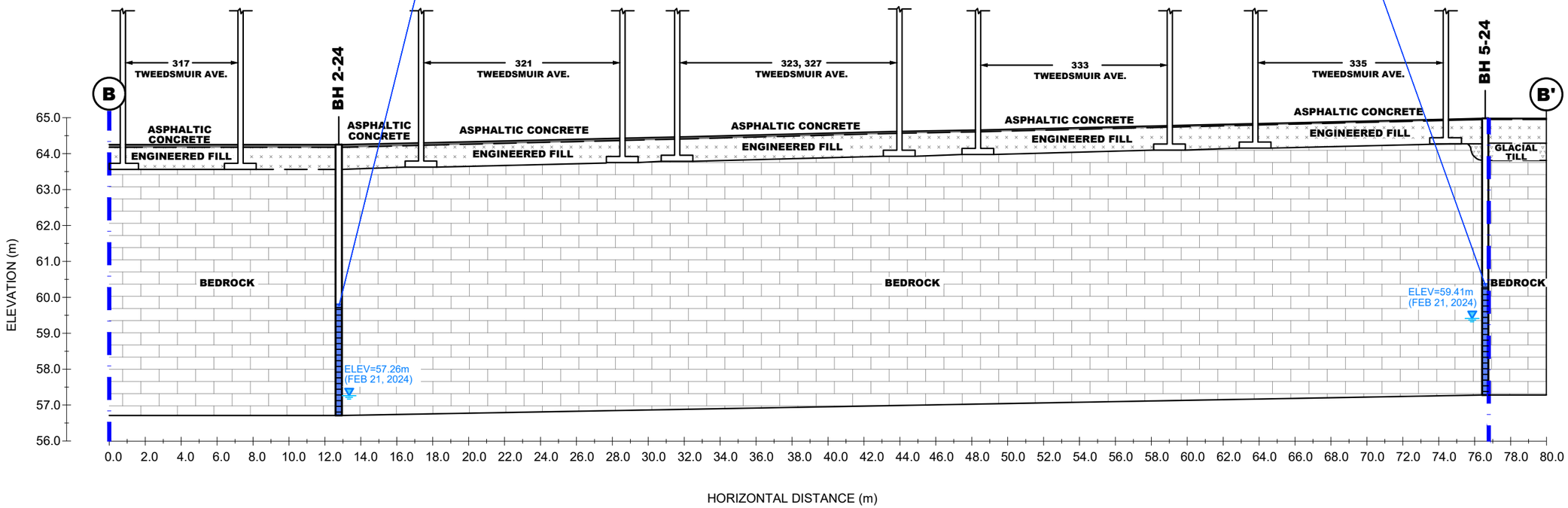
BH2-24-GW1 (4.60-7.54 m) February 21, 2024
PHCs comply with the MECP Table 7 Non-Potable Standards
PAHs comply with the MECP Table 7 Non-Potable Standards

BH5-24-GW1 (4.60-7.70 m) February 21, 2024
PHCs comply with the MECP Table 7 Non-Potable Standards
PAHs comply with the MECP Table 7 Non-Potable Standards



LEGEND:

PHASE I-II PROPERTY BOUNDARY

GROUNDWATER PARAMETERS COMPLY WITH THE MECP TABLE 7 STANDARDS

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PARK RIVER PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1994 SCOTT STREET

OTTAWA, ONTARIO

Title:
CROSS SECTION B-B' - GROUNDWATER (PHCs & PAHs)

Scale: AS SHOWN	Date: 03/2024
Drawn by: GK	Report No.: PE6402-2
Checked by: JD	Dwg. No.: PE6402-9B
Approved by: MD	Revision No.:

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11x17

APPENDIX 1

SAMPLING AND ANALYSIS PLAN

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

ANALYTICAL TEST RESULTS

LABORATORY CERTIFICATES OF ANALYSIS

PATERSON GROUP

Sampling & Analysis Plan

1994 Scott Street

Ottawa, Ontario

Prepared for Park River Properties

Report: PE6402-SAP
February 6, 2024

TABLE OF CONTENTS

PAGE

1.0 SAMPLING PROGRAM

Paterson Group Inc. (Paterson) was commissioned by Park River Properties, to conduct a Phase II – Environmental Site Assessment (Phase II-ESA) for the properties addressed 1994 Scott Street; and 317, 321, 323, 327, 333, 335 Tweedsmuir Avenue in the City of Ottawa, Ontario.

Based on the findings of the Phase I-ESA, the following subsurface investigation program was developed. The Phase II-ESA was carried out in conjunction with a geotechnical investigation which covered additional properties.

Borehole	Location & Rationale	Proposed Depth & Rationale
BH2-24	Northeastern portion of the Phase II Property; to assess potential impacts resulting from the presence of the neighbouring former automotive service garage.	5-7 m; to intercept the groundwater table for purpose of installing a monitoring well.
BH5-24	Southeastern portion of the Phase II Property; to assess the potential impacts resulting from the presence of the neighbouring former automotive service garage.	5-7 m; to intercept the groundwater table for the purpose of installing a monitoring well.
BH6-24	Northern portion (1994 Scott Street) of the Phase II Property; to assess potential impacts resulting from the neighbouring former underground storage tanks (USTs).	5-7 m; to intercept the groundwater table for the purpose of installing a monitoring well.
BH7-24	Northern portion (1994 Scott Street) of the Phase II Property; to assess potential impacts resulting from the neighbouring former retail fuel outlet.	5-7 m; to intercept the groundwater table for the purpose of installing a monitoring well.
BH9-24	Northern portion (1994 Scott Street) of the Phase II Property; to assess potential impacts resulting from the neighbouring former retail fuel outlet.	5-7 m; to intercept the groundwater table for the purpose of installing a monitoring well.

Borehole locations are shown on Drawing PE6402-3 – 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. All soil samples will be retained, and samples will be selected for submission following a preliminary screening analysis.

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

2.0 ANALYTICAL TESTING PROGRAM

The analytical testing program for soil at the Phase II Property is based on the following general considerations:

- ❒ At least one sample from each borehole within the identified APECs 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 soil at the Phase I Property 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

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.

patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

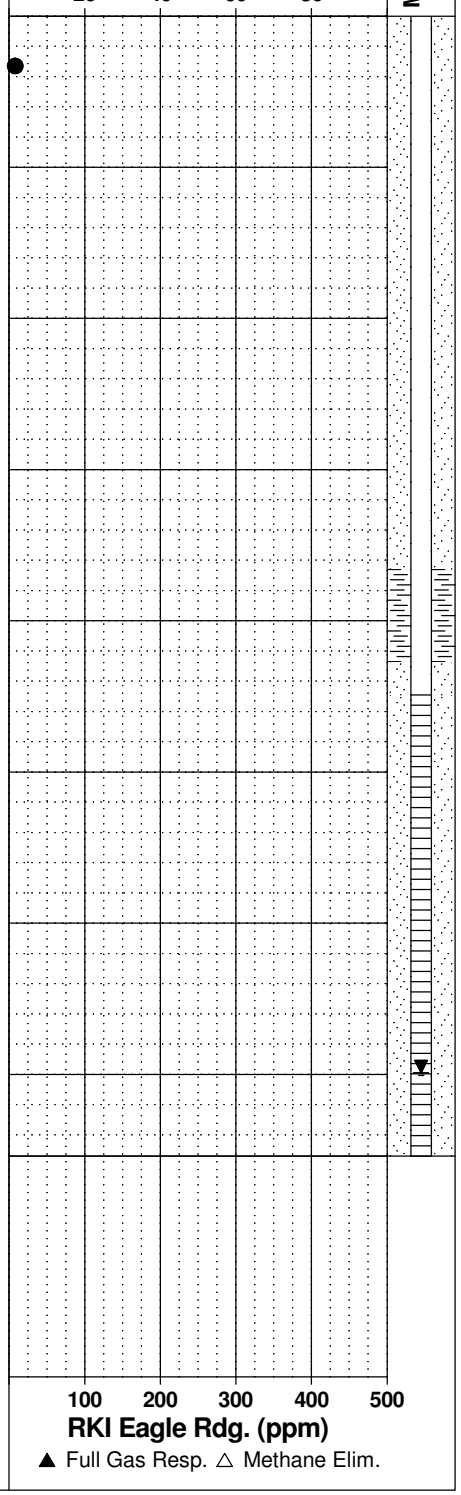
Phase II ESA
Proposed Development - 1994 Scott Street
Ottawa, Ontario

EASTING: 363444.685 **NORTHING:** 5028720.724 **ELEVATION:** 64.25
DATUM: Geodetic
REMARKS:
BORINGS BY: Truck-Mounted Drill **DATE:** February 7, 2024

FILE NO. PE6402
HOLE NO. BH 2-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
ASPHALT 0.05						0	64.25
FILL: Brown silty sand with gravel		AU	1				
0.69							
BEDROCK: Good to excellent quality limestone bedrock		RC	1	100	88	1	63.25
- poor quality between 1.1m to 2.6m depth		RC	2	86	47	2	62.25
		RC	3	100	80	3	61.25
		RC	4	95	83	4	60.25
		RC	5	89	73	5	59.25
		RC	6	100	92	6	58.25
7.54						7	57.25
End of Borehole							
(GWL @ 6.99m - Feb. 21, 2024)							

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



MONITORING WELL CONSTRUCTION

patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Phase II ESA
Proposed Development - 1994 Scott Street
Ottawa, Ontario

EASTING: 363474.105 **NORTHING:** 5028664.211 **ELEVATION:** 64.98
DATUM: Geodetic
REMARKS:
BORINGS BY: Truck-Mounted Drill **DATE:** February 12, 2024

FILE NO. PE6402
HOLE NO. BH 5-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	64.98
ASPHALT 0.03							
FILL: Brown silty sand with gravel, trace clay		AU	1				
0.69		SS	2	50	+50	1	63.98
GLACIAL TILL: Very dense, brown silty sand with gravel 1.17							
BEDROCK: Fair to good quality limestone bedrock		RC	1	83	63	2	62.98
						3	61.98
		RC	2	97	85		
						4	60.98
		RC	3	97	77	5	59.98
- excellent quality by 5.8m depth						6	58.98
		RC	4	100	97		
						7	57.98
7.70		RC	5	100	100		
End of Borehole							
(GWL @ 5.57m - Feb. 21, 2024)							

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

MONITORING WELL CONSTRUCTION

patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Phase II ESA
Proposed Development - 1994 Scott Street
Ottawa, Ontario

EASTING: 363376.246 **NORTHING:** 5028739.503 **ELEVATION:** 63.40
DATUM: Geodetic
REMARKS:
BORINGS BY: Truck-Mounted Drill **DATE:** February 12, 2024

FILE NO. PE6402
HOLE NO. BH 6-24

SAMPLE DESCRIPTION		STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							0	63.40
ASPHALT	0.05							
FILL: Brown silty sand with gravel			AU	1				
	0.69						1	62.40
GLACIAL TILL: Brown silty sand with gravel			SS	2	36	+50		
	1.22							
BEDROCK: Fair to good quality limestone bedrock			RC	1	81	64	2	61.40
- excellent quality by 2.7m depth							3	60.40
			RC	2	100	95	4	59.40
			RC	3	100	98	5	58.40
							6	57.40
			RC	4	100	100	7	56.40
			RC	5	100	100		
	7.70							
End of Borehole								
(GWL @ 4.56m - Feb. 21, 2024)								

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

20 40 60 80

100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

MONITORING WELL CONSTRUCTION

patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Phase II ESA
Proposed Development - 1994 Scott Street
Ottawa, Ontario

EASTING: 363383.893 **NORTHING:** 5028749.401 **ELEVATION:** 63.41
DATUM: Geodetic
REMARKS:
BORINGS BY: Truck-Mounted Drill **DATE:** February 12, 2024

FILE NO. PE6402
HOLE NO. BH 7-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	63.41
ASPHALT 0.05							
FILL: Brown silty sand with gravel and crushed stone, some clay		AU	1				
		SS	2	14	+50	1	62.41
1.17							
BEDROCK: Good to excellent quality limestone bedrock		RC	1	98	83	2	61.41
- fair quality between 2.7m to 4.2m depth						3	60.41
		RC	2	87	73	4	59.41
		RC	3	92	85	5	58.41
						6	57.41
		RC	4	100	100	7	56.41
7.67		RC	5	100	100		
End of Borehole							
(GWL @ 4.43m - Feb. 21, 2024)							

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

MONITORING WELL CONSTRUCTION

patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Phase II ESA
Proposed Development - 1994 Scott Street
Ottawa, Ontario

EASTING: 363398.439 **NORTHING:** 5028757.149 **ELEVATION:** 63.19
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Low Clearance Power Auger **DATE:** February 13, 2024

FILE NO. PE6402
HOLE NO. BH 9-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
ASPHALT 0.05						0	63.19
FILL: Brown silty sand with gravel		AU	1				
0.91						1	62.19
BEDROCK: Poor to fair quality limestone bedrock		RC	1	84	33		
		RC	2	92	78	2	61.19
- excellent quality by 3.1m depth						3	60.19
		RC	3	100	97	4	59.19
		RC	4	100	97	5	58.19
						6	57.19
		RC	5	100	93	7	56.19
7.59 End of Borehole							
(GWL @ 4.55m - Feb. 21, 2024)							

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

20 40 60 80

100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

MONITORING WELL CONSTRUCTION

SYMBOLS AND TERMS

SOIL DESCRIPTION

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

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

The standard terminology to describe the strength of cohesionless soils is the relative density, 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.

Relative Density	'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 vane tests, penetrometer tests, unconfined compression tests, or occasionally by Standard Penetration Tests.

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

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

Cohesive soils can also be classified according to their “sensitivity”. The sensitivity is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil.

Terminology used for describing soil strata based upon texture, or the proportion of individual particle sizes present is provided on the Textural Soil Classification Chart at the end of this information package.

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 NXL size core. However, it can be used on smaller core sizes, such as BX, 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
PS	-	Piston sample
AU	-	Auger sample or bulk sample
WS	-	Wash sample
RC	-	Rock core sample (Core bit size AXT, BXL, etc.). Rock core samples are obtained with the use of standard diamond drilling bits.

SYMBOLS AND TERMS (continued)

GRAIN SIZE DISTRIBUTION

MC%	-	Natural moisture 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 which xx% of the soil, by weight, is of finer grain sizes These grain size descriptions are not used below 0.075 mm grain size
D10	-	Grain size at which 10% of the soil is finer (effective grain size)
D60	-	Grain size at which 60% of the soil is finer
Cc	-	Concavity coefficient = $(D30)^2$ / (D10 x D60)
Cu	-	Uniformity coefficient = D60 / D10

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

CONSOLIDATION TEST

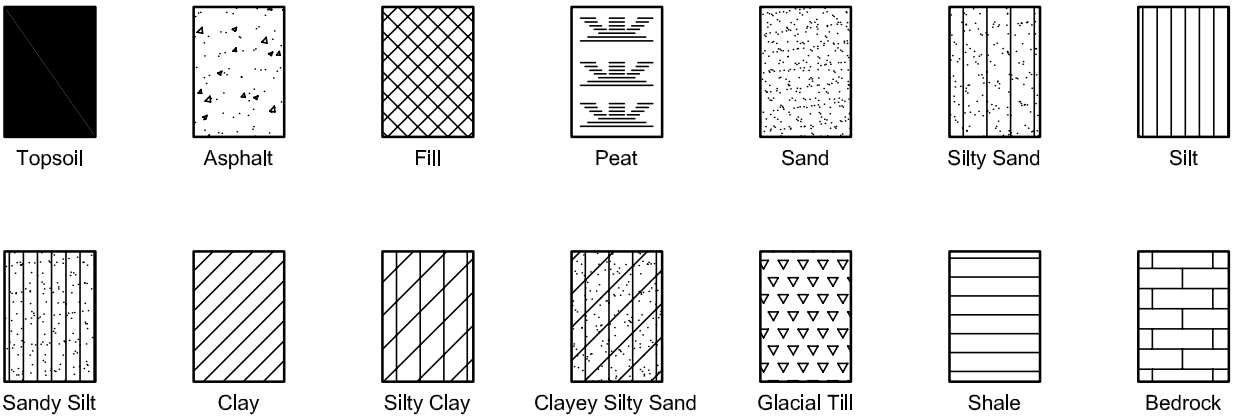
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void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

PERMEABILITY TEST

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

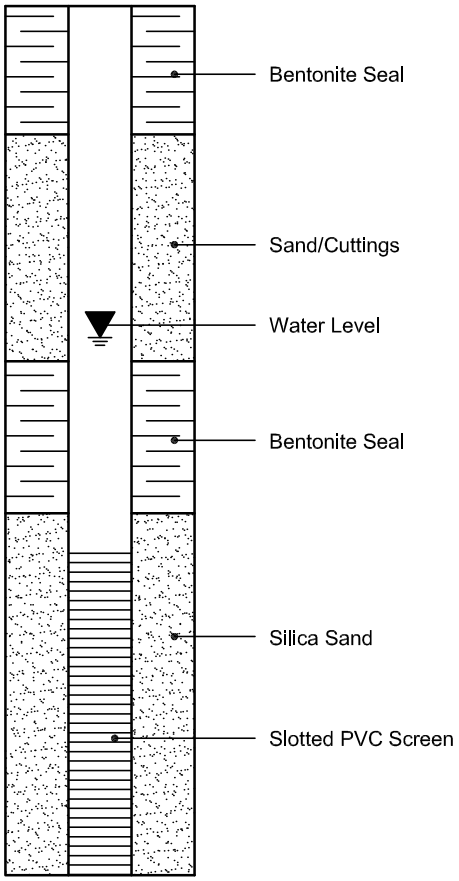
SYMBOLS AND TERMS (continued)

STRATA PLOT

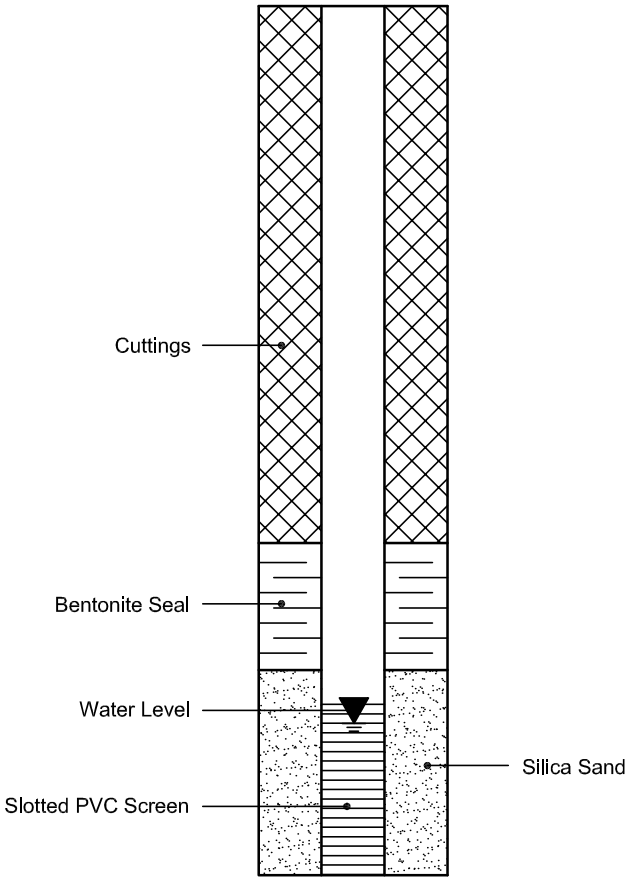


MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION



Parameter	Units	MDL	Regulation	Sample					
				BH2-24-AU1	BH5-24-SS2	BH6-24-SS2	BH7-24-SS2	BH9-24-AU1	DUP-1-24 (BH9-24-AU1)
Sample Date (m/d/y)			Reg 153/04 (2011)-Table 7 Residential, coarse	07-Feb-24	12-Feb-24	12-Feb-24	12-Feb-24	13-Feb-24	13-Feb-24
Metals									
Antimony	ug/g dry	1.0	7.5 ug/g dry	ND	NA	ND	ND	ND	ND
Arsenic	ug/g dry	1.0	18 ug/g dry	2.1	NA	4.0	5.3	1.9	2.0
Barium	ug/g dry	1.0	390 ug/g dry	110	NA	124	276	80.1	81.4
Beryllium	ug/g dry	0.5	4 ug/g dry	ND	NA	ND	0.6	ND	ND
Boron	ug/g dry	5.0	120 ug/g dry	13.4	NA	9.4	16.9	7.2	5.3
Cadmium	ug/g dry	0.5	1.2 ug/g dry	ND	NA	ND	0.6	ND	ND
Chromium (VI)	ug/g dry	0.2	8 ug/g dry	NA	NA	ND	ND	ND	ND
Chromium	ug/g dry	5.0	160 ug/g dry	14.5	NA	18.2	24.1	12.3	10.8
Cobalt	ug/g dry	1.0	22 ug/g dry	5.4	NA	5.3	7.4	4.3	4.2
Copper	ug/g dry	5.0	140 ug/g dry	9.4	NA	26.3	32.2	11.8	11.8
Lead	ug/g dry	1.0	120 ug/g dry	16.2	NA	66.7	181	28.4	28.8
Mercury	ug/g dry	0.1	0.27 ug/g dry	NA	NA	ND	ND	ND	ND
Molybdenum	ug/g dry	1.0	6.9 ug/g dry	ND	NA	ND	1.4	ND	ND
Nickel	ug/g dry	5.0	100 ug/g dry	11.9	NA	12.5	16.0	13.3	13.4
Selenium	ug/g dry	1.0	2.4 ug/g dry	ND	NA	ND	ND	ND	ND
Silver	ug/g dry	0.3	20 ug/g dry	ND	NA	ND	ND	ND	ND
Thallium	ug/g dry	1.0	1 ug/g dry	ND	NA	ND	ND	ND	ND
Uranium	ug/g dry	1.0	23 ug/g dry	ND	NA	ND	ND	ND	ND
Vanadium	ug/g dry	10.0	86 ug/g dry	27.3	NA	26.0	30.6	50.5	43.9
Zinc	ug/g dry	20.0	340 ug/g dry	20.3	NA	85.3	201	31.9	31.2
Volatiles									
Benzene	ug/g dry	0.02	0.21 ug/g dry	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/g dry	0.05	2 ug/g dry	ND	ND	ND	ND	ND	ND
Toluene	ug/g dry	0.05	2.3 ug/g dry	ND	ND	ND	ND	ND	ND
m/p-Xylene	ug/g dry	0.05		0.07	ND	ND	ND	ND	ND
o-Xylene	ug/g dry	0.05		ND	ND	ND	ND	ND	ND
Xylenes, total	ug/g dry	0.05	3.1 ug/g dry	0.07	ND	ND	ND	ND	ND
Hydrocarbons									
F1 PHCs (C6-C10)	ug/g dry	7	55 ug/g dry	ND	ND	ND	ND	ND	ND
F2 PHCs (C10-C16)	ug/g dry	4	98 ug/g dry	ND	ND	ND	ND	ND	ND
F3 PHCs (C16-C34)	ug/g dry	8	300 ug/g dry	785	116	69	122	1070	946
F4 PHCs (C34-C50)	ug/g dry	6	2800 ug/g dry	2030	213	182	365	3940	4330
F4G PHCs (gravimetric)	ug/g dry	50	2800 ug/g dry	3340	277	243	586	5090	4520
Semi-Volatiles									
Acenaphthene	ug/g dry	0.02	7.9 ug/g dry	NA	NA	ND	ND	ND (0.40)	ND (0.40)
Acenaphthylene	ug/g dry	0.02	0.15 ug/g dry	NA	NA	0.02	0.09	ND (0.40)	ND (0.40)
Anthracene	ug/g dry	0.02	0.67 ug/g dry	NA	NA	0.06	0.10	ND (0.40)	ND (0.40)
Benzo[a]anthracene	ug/g dry	0.02	0.5 ug/g dry	NA	NA	0.18	0.24	ND (0.40)	ND (0.40)
Benzo[a]pyrene	ug/g dry	0.02	0.3 ug/g dry	NA	NA	0.15	0.24	ND (0.40)	ND (0.40)

Parameter	Units	MDL	Regulation	Sample					
				BH2-24-AU1	BH5-24-SS2	BH6-24-SS2	BH7-24-SS2	BH9-24-AU1	DUP-1-24 (BH9-24-AU1)
Sample Date (m/d/y)			Reg 153/04 (2011)-Table 7 Residential, coarse	07-Feb-24	12-Feb-24	12-Feb-24	12-Feb-24	13-Feb-24	13-Feb-24
Benzo[b]fluoranthene	ug/g dry	0.02	0.78 ug/g dry	NA	NA	0.18	0.23	ND (0.40)	ND (0.40)
Benzo[g,h,i]perylene	ug/g dry	0.02	6.6 ug/g dry	NA	NA	0.09	0.15	ND (0.40)	ND (0.40)
Benzo[k]fluoranthene	ug/g dry	0.02	0.78 ug/g dry	NA	NA	0.11	0.14	ND (0.40)	ND (0.40)
Chrysene	ug/g dry	0.02	7 ug/g dry	NA	NA	0.17	0.23	ND (0.40)	ND (0.40)
Dibenzo[a,h]anthracene	ug/g dry	0.02	0.1 ug/g dry	NA	NA	0.02	0.02	ND (0.40)	ND (0.40)
Fluoranthene	ug/g dry	0.02	0.69 ug/g dry	NA	NA	0.47	0.43	ND (0.40)	ND (0.40)
Fluorene	ug/g dry	0.02	62 ug/g dry	NA	NA	ND	0.02	ND (0.40)	ND (0.40)
Indeno [1,2,3-cd] pyrene	ug/g dry	0.02	0.38 ug/g dry	NA	NA	0.08	0.12	ND (0.40)	ND (0.40)
1-Methylnaphthalene	ug/g dry	0.02	0.99 ug/g dry	NA	NA	ND	ND	ND (0.40)	ND (0.40)
2-Methylnaphthalene	ug/g dry	0.02	0.99 ug/g dry	NA	NA	ND	ND	ND (0.40)	ND (0.40)
Methylnaphthalene (1&2)	ug/g dry	0.04	0.99 ug/g dry	NA	NA	ND	ND	ND (0.80)	ND (0.80)
Naphthalene	ug/g dry	0.01	0.6 ug/g dry	NA	NA	0.02	0.01	ND (0.20)	ND (0.20)
Phenanthrene	ug/g dry	0.02	6.2 ug/g dry	NA	NA	0.22	0.24	ND (0.40)	ND (0.40)
Pyrene	ug/g dry	0.02	78 ug/g dry	NA	NA	0.36	0.40	ND (0.40)	ND (0.40)

Elevated reporting limits due to the nature of the sample matrix

Exceeds the selected MECP Table 7 Residential Standards

Parameter	Units	MDL	Regulation	Sample					
				BH2-24-GW1	BH5-24-GW1	BH6-24-GW1	BH7-24-GW1	BH9-24-GW1	DUP-GW1 (Duplicate of BH6-24-GW1)
Sample Date (m/d/y)			Reg 153/04 (2011)-Table 7 Non-Potable Groundwater, coarse	21-Feb-24	21-Feb-24	21-Feb-24	21-Feb-24	21-Feb-24	21-Feb-24
Volatiles									
Acetone	ug/L	5.0	100000 ug/L	ND	ND	ND	ND	ND	ND
Benzene	ug/L	0.5	0.5 ug/L	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ug/L	0.5	67000 ug/L	ND	ND	ND	ND	ND	ND
Bromoform	ug/L	0.5	5 ug/L	ND	ND	ND	ND	ND	ND
Bromomethane	ug/L	0.5	0.89 ug/L	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/L	0.2	0.2 ug/L	ND	ND	ND	ND	ND	ND
Chlorobenzene	ug/L	0.5	140 ug/L	ND	ND	ND	ND	ND	ND
Chloroform	ug/L	0.5	2 ug/L	ND	9.7	1.1	0.8	ND	0.9
Dibromochloromethane	ug/L	0.5	65000 ug/L	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/L	1.0	3500 ug/L	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/L	0.5	150 ug/L	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/L	0.5	7600 ug/L	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/L	0.5	0.5 ug/L	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/L	0.5	11 ug/L	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/L	0.5	0.5 ug/L	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/L	0.5	0.5 ug/L	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/L	0.5	1.6 ug/L	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/L	0.5	1.6 ug/L	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/L	0.5	0.58 ug/L	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropylene	ug/L	0.5		ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropylene	ug/L	0.5		ND	ND	ND	ND	ND	ND
1,3-Dichloropropene, total	ug/L	0.5	0.5 ug/L	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/L	0.5	54 ug/L	ND	ND	1.8	ND	ND	1.6
Ethylene dibromide (dibromoethane, 1,2-)	ug/L	0.2	0.2 ug/L	ND	ND	ND	ND	ND	ND
Hexane	ug/L	1.0	5 ug/L	ND	ND	ND	ND	ND	ND
Methyl Ethyl Ketone (2-Butanone)	ug/L	5.0	21000 ug/L	ND	ND	ND	ND	ND	ND
Methyl Isobutyl Ketone	ug/L	5.0	5200 ug/L	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether	ug/L	2.0	15 ug/L	ND	ND	ND	ND	ND	ND
Methylene Chloride	ug/L	5.0	26 ug/L	ND	ND	ND	ND	ND	ND
Styrene	ug/L	0.5	43 ug/L	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	ug/L	0.5	1.1 ug/L	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	0.5 ug/L	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	ug/L	0.5	0.5 ug/L	ND	ND	ND	ND	ND	ND
Toluene	ug/L	0.5	320 ug/L	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ug/L	0.5	23 ug/L	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/L	0.5	0.5 ug/L	ND	ND	ND	ND	ND	ND
Trichloroethylene	ug/L	0.5	0.5 ug/L	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ug/L	1.0	2000 ug/L	ND	ND	ND	ND	ND	ND

Parameter	Units	MDL	Regulation	Sample					
				BH2-24-GW1	BH5-24-GW1	BH6-24-GW1	BH7-24-GW1	BH9-24-GW1	DUP-GW1 (Duplicate of BH6-24-GW1)
Sample Date (m/d/y)			Reg 153/04 (2011)-Table 7 Non-Potable Groundwater, coarse	21-Feb-24	21-Feb-24	21-Feb-24	21-Feb-24	21-Feb-24	21-Feb-24
Vinyl Chloride	ug/L	0.5	0.5 ug/L	ND	ND	ND	ND	ND	ND
m/p-Xylene	ug/L	0.5		ND	0.9	ND	ND	ND	ND
o-Xylene	ug/L	0.5		ND	ND	ND	ND	ND	ND
Xylenes, total	ug/L	0.5	72 ug/L	ND	0.9	ND	ND	ND	ND
Hydrocarbons									
F1 PHCs (C6-C10)	ug/L	25	420 ug/L	ND	ND	ND	ND	ND	NA
F2 PHCs (C10-C16)	ug/L	100	150 ug/L	ND	ND	ND	ND	ND	NA
F3 PHCs (C16-C34)	ug/L	100	500 ug/L	ND	ND	ND	ND	ND	NA
F4 PHCs (C34-C50)	ug/L	100	500 ug/L	ND	ND	ND	ND	ND	NA
Semi-Volatiles									
Acenaphthene	ug/L	0.05	17 ug/L	NA	NA	0.38	ND	ND	NA
Acenaphthylene	ug/L	0.05	1 ug/L	NA	NA	ND	ND	ND	NA
Anthracene	ug/L	0.01	1 ug/L	NA	NA	ND	ND	ND	NA
Benzo[a]anthracene	ug/L	0.01	1.8 ug/L	NA	NA	ND	ND	ND	NA
Benzo[a]pyrene	ug/L	0.01	0.81 ug/L	NA	NA	ND	ND	ND	NA
Benzo[b]fluoranthene	ug/L	0.05	0.75 ug/L	NA	NA	ND	ND	ND	NA
Benzo[g,h,i]perylene	ug/L	0.05	0.2 ug/L	NA	NA	ND	ND	ND	NA
Benzo[k]fluoranthene	ug/L	0.05	0.4 ug/L	NA	NA	ND	ND	ND	NA
Chrysene	ug/L	0.05	0.7 ug/L	NA	NA	ND	ND	ND	NA
Dibenzo[a,h]anthracene	ug/L	0.05	0.4 ug/L	NA	NA	ND	ND	ND	NA
Fluoranthene	ug/L	0.01	44 ug/L	NA	NA	ND	ND	ND	NA
Fluorene	ug/L	0.05	290 ug/L	NA	NA	0.31	ND	ND	NA
Indeno [1,2,3-cd] pyrene	ug/L	0.05	0.2 ug/L	NA	NA	ND	ND	ND	NA
1-Methylnaphthalene	ug/L	0.05	1500 ug/L	NA	NA	4.20	ND	ND	NA
2-Methylnaphthalene	ug/L	0.05	1500 ug/L	NA	NA	ND	ND	ND	NA
Methylnaphthalene (1&2)	ug/L	0.10	1500 ug/L	NA	NA	4.20	ND	ND	NA
Naphthalene	ug/L	0.05	7 ug/L	NA	NA	ND	ND	ND	NA
Phenanthrene	ug/L	0.05	380 ug/L	NA	NA	0.13	ND	ND	NA
Pyrene	ug/L	0.01	5.7 ug/L	NA	NA	ND	ND	ND	NA

Exceeds the selected MECP Table 7 Non Potable Standards

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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: 59429
Project: PE6402
Custody:

Report Date: 21-Feb-2024
Order Date: 14-Feb-2024

Order #: 2407291

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

Paracel ID	Client ID
2407291-01	BH2-24-AU1
2407291-02	BH5-24-SS2
2407291-03	BH6-24-SS2
2407291-04	BH7-24-SS2
2407291-05	BH9-24-AU1
2407291-06	DUP-1-24

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	15-Feb-24	15-Feb-24
Chromium, hexavalent - soil	MOE E3056 - Extraction, colourimetric	15-Feb-24	20-Feb-24
Mercury by CVAA	EPA 7471B - CVAA, digestion	16-Feb-24	16-Feb-24
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	15-Feb-24	15-Feb-24
PHC F1	CWS Tier 1 - P&T GC-FID	15-Feb-24	15-Feb-24
PHC F4G (gravimetric)	CWS Tier 1 - Extraction Gravimetric	20-Feb-24	21-Feb-24
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	15-Feb-24	15-Feb-24
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	16-Feb-24	16-Feb-24
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	15-Feb-24	15-Feb-24
Solids, %	CWS Tier 1 - Gravimetric	20-Feb-24	21-Feb-24

Certificate of Analysis

Report Date: 21-Feb-2024

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

Order Date: 14-Feb-2024

Client PO: **59429**

Project Description: PE6402

	Client ID:	BH2-24-AU1	BH5-24-SS2	BH6-24-SS2	BH7-24-SS2	-	-
	Sample Date:	07-Feb-24 09:00	12-Feb-24 09:00	12-Feb-24 09:00	12-Feb-24 09:00		
	Sample ID:	2407291-01	2407291-02	2407291-03	2407291-04		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	94.6	90.3	90.4	87.0	-	-
General Inorganics							
pH	0.05 pH Units	-	7.32	7.38	-	-	-
Metals							
Antimony	1.0 ug/g	<1.0	-	<1.0	<1.0	-	-
Arsenic	1.0 ug/g	2.1	-	4.0	5.3	-	-
Barium	1.0 ug/g	110	-	124	276	-	-
Beryllium	0.5 ug/g	<0.5	-	<0.5	0.6	-	-
Boron	5.0 ug/g	13.4	-	9.4	16.9	-	-
Cadmium	0.5 ug/g	<0.5	-	<0.5	0.6	-	-
Chromium (VI)	0.2 ug/g	-	-	<0.2	<0.2	-	-
Chromium	5.0 ug/g	14.5	-	18.2	24.1	-	-
Cobalt	1.0 ug/g	5.4	-	5.3	7.4	-	-
Copper	5.0 ug/g	9.4	-	26.3	32.2	-	-
Lead	1.0 ug/g	16.2	-	66.7	181	-	-
Mercury	0.1 ug/g	-	-	<0.1	<0.1	-	-
Molybdenum	1.0 ug/g	<1.0	-	<1.0	1.4	-	-
Nickel	5.0 ug/g	11.9	-	12.5	16.0	-	-
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	<1.0	-	<1.0	<1.0	-	-
Vanadium	10.0 ug/g	27.3	-	26.0	30.6	-	-
Zinc	20.0 ug/g	20.3	-	85.3	201	-	-
Volatiles							

Certificate of Analysis

Report Date: 21-Feb-2024

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

Order Date: 14-Feb-2024

Client PO: **59429**

Project Description: PE6402

	Client ID:	BH2-24-AU1	BH5-24-SS2	BH6-24-SS2	BH7-24-SS2	-	-
	Sample Date:	07-Feb-24 09:00	12-Feb-24 09:00	12-Feb-24 09:00	12-Feb-24 09:00		
	Sample ID:	2407291-01	2407291-02	2407291-03	2407291-04		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Benzene	0.02 ug/g	<0.02	<0.02	<0.02	<0.02	-	-
Ethylbenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
Toluene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
m,p-Xylenes	0.05 ug/g	0.07	<0.05	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g	0.07	<0.05	<0.05	<0.05	-	-
Toluene-d8	Surrogate	117%	118%	119%	122%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	<7	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g	<4	<4	<4	<4	-	-
F3 PHCs (C16-C34)	8 ug/g	785	116	69	122	-	-
F4 PHCs (C34-C50)	6 ug/g	2030 [2]	213 [2]	182 [2]	365 [2]	-	-
F4G PHCs (gravimetric)	50 ug/g	3340	277	243	586	-	-
Semi-Volatiles							
Acenaphthene	0.02 ug/g	-	-	<0.02	<0.02	-	-
Acenaphthylene	0.02 ug/g	-	-	0.02	0.09	-	-
Anthracene	0.02 ug/g	-	-	0.06	0.10	-	-
Benzo [a] anthracene	0.02 ug/g	-	-	0.18	0.24	-	-
Benzo [a] pyrene	0.02 ug/g	-	-	0.15	0.24	-	-
Benzo [b] fluoranthene	0.02 ug/g	-	-	0.18	0.23	-	-
Benzo [g,h,i] perylene	0.02 ug/g	-	-	0.09	0.15	-	-
Benzo [k] fluoranthene	0.02 ug/g	-	-	0.11	0.14	-	-
Chrysene	0.02 ug/g	-	-	0.17	0.23	-	-
Dibenzo [a,h] anthracene	0.02 ug/g	-	-	0.02	0.02	-	-
Fluoranthene	0.02 ug/g	-	-	0.47	0.43	-	-

	Client ID:	BH2-24-AU1	BH5-24-SS2	BH6-24-SS2	BH7-24-SS2	-	-
	Sample Date:	07-Feb-24 09:00	12-Feb-24 09:00	12-Feb-24 09:00	12-Feb-24 09:00		
	Sample ID:	2407291-01	2407291-02	2407291-03	2407291-04		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Semi-Volatiles							
Fluorene	0.02 ug/g	-	-	<0.02	0.02	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g	-	-	0.08	0.12	-	-
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	-	-
Naphthalene	0.01 ug/g	-	-	0.02	0.01	-	-
Phenanthrene	0.02 ug/g	-	-	0.22	0.24	-	-
Pyrene	0.02 ug/g	-	-	0.36	0.40	-	-
2-Fluorobiphenyl	Surrogate	-	-	85.1%	139%	-	-
Terphenyl-d14	Surrogate	-	-	105%	102%	-	-

	Client ID:	BH9-24-AU1	DUP-1-24			-	-
	Sample Date:	13-Feb-24 09:00	13-Feb-24 09:00				
	Sample ID:	2407291-05	2407291-06				
	Matrix:	Soil	Soil				
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	97.4	97.1	-	-	-	-
General Inorganics							
pH	0.05 pH Units	7.57	-	-	-	-	-
Metals							
Antimony	1.0 ug/g	<1.0	<1.0	-	-	-	-
Arsenic	1.0 ug/g	1.9	2.0	-	-	-	-
Barium	1.0 ug/g	80.1	81.4	-	-	-	-
Beryllium	0.5 ug/g	<0.5	<0.5	-	-	-	-
Boron	5.0 ug/g	7.2	5.3	-	-	-	-
Cadmium	0.5 ug/g	<0.5	<0.5	-	-	-	-
Chromium (VI)	0.2 ug/g	<0.2	<0.2	-	-	-	-
Chromium	5.0 ug/g	12.3	10.8	-	-	-	-
Cobalt	1.0 ug/g	4.3	4.2	-	-	-	-
Copper	5.0 ug/g	11.8	11.8	-	-	-	-
Lead	1.0 ug/g	28.4	28.8	-	-	-	-
Mercury	0.1 ug/g	<0.1	<0.1	-	-	-	-
Molybdenum	1.0 ug/g	<1.0	<1.0	-	-	-	-
Nickel	5.0 ug/g	13.3	13.4	-	-	-	-
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	50.5	43.9	-	-	-	-
Zinc	20.0 ug/g	31.9	31.2	-	-	-	-
Volatiles							

Certificate of Analysis

Report Date: 21-Feb-2024

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

Order Date: 14-Feb-2024

Client PO: **59429**

Project Description: PE6402

	Client ID:	BH9-24-AU1	DUP-1-24			-	-
	Sample Date:	13-Feb-24 09:00	13-Feb-24 09:00				
	Sample ID:	2407291-05	2407291-06				
	Matrix:	Soil	Soil				
	MDL/Units						
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	-	-	-	-
o-Xylene	0.05 ug/g	<0.05	<0.05	-	-	-	-
Xylenes, total	0.05 ug/g	<0.05	<0.05	-	-	-	-
Toluene-d8	Surrogate	112%	113%	-	-	-	-
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	1070	946	-	-	-	-
F4 PHCs (C34-C50)	6 ug/g	3940 [2]	4330 [2]	-	-	-	-
F4G PHCs (gravimetric)	50 ug/g	5090	4520	-	-	-	-
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Acenaphthylene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Anthracene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Benzo [a] anthracene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Benzo [a] pyrene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Benzo [b] fluoranthene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Benzo [k] fluoranthene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Chrysene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Fluoranthene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-

	Client ID:	BH9-24-AU1	DUP-1-24			-	-
	Sample Date:	13-Feb-24 09:00	13-Feb-24 09:00				
	Sample ID:	2407291-05	2407291-06				
	Matrix:	Soil	Soil				
	MDL/Units						
Semi-Volatiles							
Fluorene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
1-Methylnaphthalene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
2-Methylnaphthalene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g	<0.80 [1]	<0.80 [1]	-	-	-	-
Naphthalene	0.01 ug/g	<0.20 [1]	<0.20 [1]	-	-	-	-
Phenanthrene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
Pyrene	0.02 ug/g	<0.40 [1]	<0.40 [1]	-	-	-	-
2-Fluorobiphenyl	Surrogate	79.8%	73.9%	-	-	-	-
Terphenyl-d14	Surrogate	81.0%	83.2%	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons								
F1 PHCs (C6-C10)	ND	7	ug/g					
F2 PHCs (C10-C16)	ND	4	ug/g					
F3 PHCs (C16-C34)	ND	8	ug/g					
F4 PHCs (C34-C50)	ND	6	ug/g					
F4G PHCs (gravimetric)	ND	50	ug/g					
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 (VI)	ND	0.2	ug/g					
Chromium	ND	5.0	ug/g					
Cobalt	ND	1.0	ug/g					
Copper	ND	5.0	ug/g					
Lead	ND	1.0	ug/g					
Mercury	ND	0.1	ug/g					
Molybdenum	ND	1.0	ug/g					
Nickel	ND	5.0	ug/g					
Selenium	ND	1.0	ug/g					
Silver	ND	0.3	ug/g					
Thallium	ND	1.0	ug/g					
Uranium	ND	1.0	ug/g					
Vanadium	ND	10.0	ug/g					
Zinc	ND	20.0	ug/g					
Semi-Volatiles								
Acenaphthene	ND	0.02	ug/g					
Acenaphthylene	ND	0.02	ug/g					
Anthracene	ND	0.02	ug/g					
Benzo [a] anthracene	ND	0.02	ug/g					
Benzo [a] pyrene	ND	0.02	ug/g					

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	*1.21*		*%*	*91.1*	*50-140*			
Surrogate: Terphenyl-d14	*1.18*		*%*	*88.6*	*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	*9.34*		*%*	*117*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
pH	6.86	0.05	pH Units	6.76			1.5	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)	10	8	ug/g	ND			NC	30	
F4 PHCs (C34-C50)	54	6	ug/g	18			NC	30	
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	3.6	1.0	ug/g	3.2			14.2	30	
Barium	32.6	1.0	ug/g	30.3			7.3	30	
Beryllium	0.8	0.5	ug/g	ND			NC	30	
Boron	ND	5.0	ug/g	ND			NC	30	
Cadmium	0.5	0.5	ug/g	ND			NC	30	
Chromium (VI)	ND	0.2	ug/g	ND			NC	35	
Chromium	9.4	5.0	ug/g	9.0			4.4	30	
Cobalt	3.5	1.0	ug/g	3.2			9.4	30	
Copper	12.2	5.0	ug/g	11.1			9.4	30	
Lead	20.6	1.0	ug/g	18.0			13.7	30	
Mercury	ND	0.1	ug/g	ND			NC	30	
Molybdenum	1.0	1.0	ug/g	ND			NC	30	
Nickel	7.3	5.0	ug/g	6.6			9.0	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	16.5	10.0	ug/g	15.7			5.1	30	
Zinc	55.9	20.0	ug/g	51.9			7.3	30	
Physical Characteristics									
% Solids	87.9	0.1	% by Wt.	87.3			0.7	25	
Semi-Volatiles									

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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	0.027	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	0.287	0.02	ug/g	0.166			NC	40	
2-Methylnaphthalene	0.354	0.02	ug/g	0.157			NC	40	
Naphthalene	0.157	0.01	ug/g	0.095			NC	40	
Phenanthrene	0.043	0.02	ug/g	0.023			NC	40	
Pyrene	0.027	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*1.53*		*%*		*97.0*	*50-140*			
Surrogate: Terphenyl-d14	*1.52*		*%*		*96.1*	*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	*12.8*		*%*		*125*	*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)	184	7	ug/g	ND	92.1	85-115			
F2 PHCs (C10-C16)	96	4	ug/g	ND	106	60-140			
F3 PHCs (C16-C34)	207	8	ug/g	ND	93.5	60-140			
F4 PHCs (C34-C50)	172	6	ug/g	18	110	60-140			
F4G PHCs (gravimetric)	1000	50	ug/g	ND	100	80-120			
Metals									
Antimony	36.8	1.0	ug/g	ND	73.4	70-130			
Arsenic	50.3	1.0	ug/g	1.3	98.1	70-130			
Barium	56.2	1.0	ug/g	12.1	88.1	70-130			
Beryllium	47.2	0.5	ug/g	ND	94.1	70-130			
Boron	41.9	5.0	ug/g	ND	81.6	70-130			
Cadmium	45.5	0.5	ug/g	ND	90.7	70-130			
Chromium (VI)	0.2	0.2	ug/g	ND	85.5	70-130			
Chromium	50.2	5.0	ug/g	ND	93.3	70-130			
Cobalt	47.4	1.0	ug/g	1.3	92.2	70-130			
Copper	49.1	5.0	ug/g	ND	89.4	70-130			
Lead	49.2	1.0	ug/g	7.2	84.0	70-130			
Mercury	1.40	0.1	ug/g	ND	93.5	70-130			
Molybdenum	43.2	1.0	ug/g	ND	85.7	70-130			
Nickel	47.0	5.0	ug/g	ND	88.6	70-130			
Selenium	46.0	1.0	ug/g	ND	91.9	70-130			
Silver	42.0	0.3	ug/g	ND	84.0	70-130			
Thallium	45.5	1.0	ug/g	ND	90.9	70-130			
Uranium	44.7	1.0	ug/g	ND	89.0	70-130			
Vanadium	53.3	10.0	ug/g	ND	94.0	70-130			
Zinc	63.9	20.0	ug/g	20.8	86.2	70-130			
Semi-Volatiles									
Acenaphthene	0.173	0.02	ug/g	ND	87.4	50-140			
Acenaphthylene	0.182	0.02	ug/g	ND	92.1	50-140			
Anthracene	0.193	0.02	ug/g	ND	97.7	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [a] anthracene	0.155	0.02	ug/g	ND	78.3	50-140			
Benzo [a] pyrene	0.142	0.02	ug/g	ND	71.7	50-140			
Benzo [b] fluoranthene	0.154	0.02	ug/g	ND	77.9	50-140			
Benzo [g,h,i] perylene	0.133	0.02	ug/g	ND	67.2	50-140			
Benzo [k] fluoranthene	0.152	0.02	ug/g	ND	77.0	50-140			
Chrysene	0.180	0.02	ug/g	ND	91.1	50-140			
Dibenzo [a,h] anthracene	0.147	0.02	ug/g	ND	74.6	50-140			
Fluoranthene	0.206	0.02	ug/g	ND	104	50-140			
Fluorene	0.179	0.02	ug/g	ND	90.4	50-140			
Indeno [1,2,3-cd] pyrene	0.149	0.02	ug/g	ND	75.5	50-140			
1-Methylnaphthalene	0.386	0.02	ug/g	0.166	112	50-140			
2-Methylnaphthalene	0.430	0.02	ug/g	0.157	138	50-140			
Naphthalene	0.256	0.01	ug/g	0.095	81.6	50-140			
Phenanthrene	0.205	0.02	ug/g	0.023	91.8	50-140			
Pyrene	0.217	0.02	ug/g	ND	110	50-140			
Surrogate: 2-Fluorobiphenyl	*1.44*		*%*		*91.0*	*50-140*			
Surrogate: Terphenyl-d14	*1.63*		*%*		*103*	*50-140*			
Volatiles									
Benzene	4.14	0.02	ug/g	ND	104	60-130			
Ethylbenzene	3.89	0.05	ug/g	ND	97.3	60-130			
Toluene	4.05	0.05	ug/g	ND	101	60-130			
m,p-Xylenes	8.41	0.05	ug/g	ND	105	60-130			
o-Xylene	4.33	0.05	ug/g	ND	108	60-130			
Surrogate: Toluene-d8	*8.60*		*%*		*107*	*50-140*			

Qualifier Notes:

Sample Qualifiers :

1: Elevated reporting limits due to the nature of the sample matrix.

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

QC Qualifiers:

Sample Data Revisions:

None

Certificate of Analysis

Report Date: 21-Feb-2024

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

Order Date: 14-Feb-2024

Client PO: 59429

Project Description: PE6402

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

Soil results are reported on a dry weight basis unlesss otherwise noted.

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

CCME PHC additional information:

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

- F1 range corrected for BTEX.

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

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

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

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

PARACEL LABORATORIES LTD

Paracel ID: 2407291

Paracel Order Number (Lab Use Only): 2407291

Chain Of Custody (Lab Use Only)

Page 1 of 1

Client Name: PATERSON GROUP	Project Ref: PE6402
Contact Name: Mark D'Arcy, Joshua Dempsey	Quote #:
Address: 9 Auriga Drive	PO #: 59429
Telephone: 613-226-7381	E-mail: jdempsey@patersongroup.ca

Turnaround Time

☐ 1 day ☐ 3 day

☐ 2 day ☒ Regular

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)

	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
1	BH2-24-AU1	S		2	Feb 7/24		X			X				
2	BH5-24-SS2				Feb 12/24		X							X
3	BH6-24-SS2						X		X	X	X	X		X
4	BH7-24-SS2						X		X	X	X	X		
5	BH9-24-AU1				Feb 13/24		X		X	X	X	X		X
6	DUP-1-24						X		X	X	X	X		
7														
8														
9														
10														

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab: SO	Verified By: SO
Relinquished By (Print): Joshua Dempsey	Date/Time:	Date/Time: Feb 14, 2024 4:40p	Date/Time: Feb 14, 2024 4:56p
Date/Time: February 14/2024	Temperature: °C	Temperature: 11.5	pH Verified: ☐ By:

Chain of Custody (Blank).xlsx

Revision 4.0

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Certificate of Analysis

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

Client PO: 59478
Project: PE6402
Custody:

Report Date: 28-Feb-2024
Order Date: 22-Feb-2024

Order #: 2408330

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

Paracel ID	Client ID
2408330-01	BH2-24-GW1
2408330-02	BH5-24-GW1
2408330-03	BH6-24-GW1
2408330-04	BH7-24-GW1
2408330-05	BH9-24-GW1
2408330-06	DUP-GW1

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHC F1	CWS Tier 1 - P&T GC-FID	23-Feb-24	23-Feb-24
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	27-Feb-24	27-Feb-24
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	27-Feb-24	27-Feb-24
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	23-Feb-24	23-Feb-24

	Client ID:	BH2-24-GW1	BH5-24-GW1	BH6-24-GW1	BH7-24-GW1	-	-
	Sample Date:	21-Feb-24 09:00	21-Feb-24 09:00	21-Feb-24 09:00	21-Feb-24 09:00		
	Sample ID:	2408330-01	2408330-02	2408330-03	2408330-04		
	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	9.7	1.1	0.8	-	-
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	1.8	<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: 28-Feb-2024

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

Order Date: 22-Feb-2024

Client PO: **59478**

Project Description: PE6402

	Client ID:	BH2-24-GW1	BH5-24-GW1	BH6-24-GW1	BH7-24-GW1	-	-
	Sample Date:	21-Feb-24 09:00	21-Feb-24 09:00	21-Feb-24 09:00	21-Feb-24 09:00		
	Sample ID:	2408330-01	2408330-02	2408330-03	2408330-04		
	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	0.9	<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	0.9	<0.5	<0.5	-	-
Dibromofluoromethane	Surrogate	96.9%	97.8%	108%	116%	-	-
Toluene-d8	Surrogate	105%	105%	105%	104%	-	-
4-Bromofluorobenzene	Surrogate	103%	101%	104%	101%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100	-	-

	Client ID:	BH2-24-GW1	BH5-24-GW1	BH6-24-GW1	BH7-24-GW1	-	-
	Sample Date:	21-Feb-24 09:00	21-Feb-24 09:00	21-Feb-24 09:00	21-Feb-24 09:00		
	Sample ID:	2408330-01	2408330-02	2408330-03	2408330-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Semi-Volatiles							
Acenaphthene	0.05 ug/L	-	-	0.38	<0.05	-	-
Acenaphthylene	0.05 ug/L	-	-	<0.05	<0.05	-	-
Anthracene	0.01 ug/L	-	-	<0.01	<0.01	-	-
Benzo [a] anthracene	0.01 ug/L	-	-	<0.01	<0.01	-	-
Benzo [a] pyrene	0.01 ug/L	-	-	<0.01	<0.01	-	-
Benzo [b] fluoranthene	0.05 ug/L	-	-	<0.05	<0.05	-	-
Benzo [g,h,i] perylene	0.05 ug/L	-	-	<0.05	<0.05	-	-
Benzo [k] fluoranthene	0.05 ug/L	-	-	<0.05	<0.05	-	-
Chrysene	0.05 ug/L	-	-	<0.05	<0.05	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	-	-	<0.05	<0.05	-	-
Fluoranthene	0.01 ug/L	-	-	<0.01	<0.01	-	-
Fluorene	0.05 ug/L	-	-	0.31	<0.05	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	-	-	<0.05	<0.05	-	-
1-Methylnaphthalene	0.05 ug/L	-	-	4.20	<0.05	-	-
2-Methylnaphthalene	0.05 ug/L	-	-	<0.05	<0.05	-	-
Methylnaphthalene (1&2)	0.10 ug/L	-	-	4.20	<0.10	-	-
Naphthalene	0.05 ug/L	-	-	<0.05	<0.05	-	-
Phenanthrene	0.05 ug/L	-	-	0.13	<0.05	-	-
Pyrene	0.01 ug/L	-	-	<0.01	<0.01	-	-
2-Fluorobiphenyl	Surrogate	-	-	72.5%	76.8%	-	-
Terphenyl-d14	Surrogate	-	-	109%	105%	-	-

	Client ID:	BH9-24-GW1	DUP-GW1			-	-
	Sample Date:	21-Feb-24 09:00	21-Feb-24 09:00				
	Sample ID:	2408330-05	2408330-06				
	Matrix:	Ground Water	Ground Water				
	MDL/Units						
Volatiles							
Acetone	5.0 ug/L	<5.0	<5.0	-	-	-	-
Benzene	0.5 ug/L	<0.5	<0.5	-	-	-	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
Bromoform	0.5 ug/L	<0.5	<0.5	-	-	-	-
Bromomethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	-	-	-	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	-	-	-	-
Chloroform	0.5 ug/L	<0.5	0.9	-	-	-	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	-	-	-	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	-	-	-	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	-	-	-	-
Ethylene dibromide (dibromoethane,	0.2 ug/L	<0.2	<0.2	-	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	1.6	-	-	-	-
Hexane	1.0 ug/L	<1.0	<1.0	-	-	-	-

	Client ID:	BH9-24-GW1	DUP-GW1			-	-
	Sample Date:	21-Feb-24 09:00	21-Feb-24 09:00				
	Sample ID:	2408330-05	2408330-06				
	Matrix:	Ground Water	Ground Water				
	MDL/Units						
Volatiles							
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	-	-	-	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	-	-	-	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	-	-	-	-
Methylene Chloride	5.0 ug/L	<5.0	<5.0	-	-	-	-
Styrene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
Toluene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	-	-	-	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	-	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	-	-	-	-
o-Xylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	-	-	-	-
4-Bromofluorobenzene	Surrogate	101%	103%	-	-	-	-
Dibromofluoromethane	Surrogate	114%	101%	-	-	-	-
Toluene-d8	Surrogate	104%	106%	-	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	<25	-	-	-	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	-	-	-	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	-	-	-	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	-	-	-	-	-

Certificate of Analysis

Report Date: 28-Feb-2024

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

Order Date: 22-Feb-2024

Client PO: 59478

Project Description: PE6402

	Client ID:	BH9-24-GW1	DUP-GW1			-	-
	Sample Date:	21-Feb-24 09:00	21-Feb-24 09:00				
	Sample ID:	2408330-05	2408330-06				
	Matrix:	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	82.9%	-	-	-	-	-
Terphenyl-d14	Surrogate	104%	-	-	-	-	-

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					
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	*12.4*		*%*	*61.9*	*50-140*			
Surrogate: Terphenyl-d14	*19.0*		*%*	*95.0*	*50-140*			
Volatiles								
Acetone	ND	5.0	ug/L					
Benzene	ND	0.5	ug/L					
Bromodichloromethane	ND	0.5	ug/L					
Bromoform	ND	0.5	ug/L					

Method Quality Control: Blank

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

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*78.2*		*%*	*97.8*	*50-140*			
Surrogate: Dibromofluoromethane	*64.3*		*%*	*80.3*	*50-140*			
Surrogate: Toluene-d8	*84.9*		*%*	*106*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	ND	0.5	ug/L	ND			NC	30	
Bromoform	ND	0.5	ug/L	ND			NC	30	
Bromomethane	ND	0.5	ug/L	ND			NC	30	
Carbon Tetrachloride	ND	0.2	ug/L	ND			NC	30	
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroform	1.20	0.5	ug/L	1.16			3.4	30	
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	11.0	5.0	ug/L	9.69			12.9	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	125	0.5	ug/L	131			4.0	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	*81.1*		*%*		*101*	*50-140*			
Surrogate: Dibromofluoromethane	*88.5*		*%*		*111*	*50-140*			
Surrogate: Toluene-d8	*82.1*		*%*		*103*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1830	25	ug/L	ND	91.5	85-115			
F2 PHCs (C10-C16)	1150	100	ug/L	ND	71.9	60-140			
F3 PHCs (C16-C34)	3550	100	ug/L	ND	90.5	60-140			
F4 PHCs (C34-C50)	2400	100	ug/L	ND	96.8	60-140			
Semi-Volatiles									
Acenaphthene	3.46	0.05	ug/L	ND	69.2	50-140			
Acenaphthylene	3.54	0.05	ug/L	ND	70.8	50-140			
Anthracene	4.69	0.01	ug/L	ND	93.9	50-140			
Benzo [a] anthracene	4.18	0.01	ug/L	ND	83.7	50-140			
Benzo [a] pyrene	4.05	0.01	ug/L	ND	80.9	50-140			
Benzo [b] fluoranthene	4.06	0.05	ug/L	ND	81.3	50-140			
Benzo [g,h,i] perylene	3.82	0.05	ug/L	ND	76.4	50-140			
Benzo [k] fluoranthene	4.36	0.05	ug/L	ND	87.2	50-140			
Chrysene	4.30	0.05	ug/L	ND	86.0	50-140			
Dibenzo [a,h] anthracene	4.16	0.05	ug/L	ND	83.2	50-140			
Fluoranthene	4.98	0.01	ug/L	ND	99.6	50-140			
Fluorene	3.98	0.05	ug/L	ND	79.6	50-140			
Indeno [1,2,3-cd] pyrene	4.21	0.05	ug/L	ND	84.1	50-140			
1-Methylnaphthalene	3.93	0.05	ug/L	ND	78.5	50-140			
2-Methylnaphthalene	4.24	0.05	ug/L	ND	84.8	50-140			
Naphthalene	4.16	0.05	ug/L	ND	83.2	50-140			
Phenanthrene	4.03	0.05	ug/L	ND	80.7	50-140			
Pyrene	5.11	0.01	ug/L	ND	102	50-140			
Surrogate: 2-Fluorobiphenyl	*16.8*		*%*		*84.0*	*50-140*			
Surrogate: Terphenyl-d14	*21.9*		*%*		*110*	*50-140*			
Volatiles									
Acetone	79.1	5.0	ug/L	ND	79.1	50-140			
Benzene	37.8	0.5	ug/L	ND	94.5	60-130			
Bromodichloromethane	39.4	0.5	ug/L	ND	98.6	60-130			
Bromoform	44.0	0.5	ug/L	ND	110	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromomethane	47.8	0.5	ug/L	ND	119	50-140			
Carbon Tetrachloride	34.4	0.2	ug/L	ND	86.0	60-130			
Chlorobenzene	43.6	0.5	ug/L	ND	109	60-130			
Chloroform	37.0	0.5	ug/L	ND	92.4	60-130			
Dibromochloromethane	41.7	0.5	ug/L	ND	104	60-130			
Dichlorodifluoromethane	36.1	1.0	ug/L	ND	90.2	50-140			
1,2-Dichlorobenzene	46.8	0.5	ug/L	ND	117	60-130			
1,3-Dichlorobenzene	46.2	0.5	ug/L	ND	116	60-130			
1,4-Dichlorobenzene	46.4	0.5	ug/L	ND	116	60-130			
1,1-Dichloroethane	34.3	0.5	ug/L	ND	85.8	60-130			
1,2-Dichloroethane	34.6	0.5	ug/L	ND	86.5	60-130			
1,1-Dichloroethylene	31.3	0.5	ug/L	ND	78.2	60-130			
cis-1,2-Dichloroethylene	36.8	0.5	ug/L	ND	92.0	60-130			
trans-1,2-Dichloroethylene	44.1	0.5	ug/L	ND	110	60-130			
1,2-Dichloropropane	38.3	0.5	ug/L	ND	95.8	60-130			
cis-1,3-Dichloropropylene	34.4	0.5	ug/L	ND	86.0	60-130			
trans-1,3-Dichloropropylene	32.0	0.5	ug/L	ND	80.0	60-130			
Ethylbenzene	46.5	0.5	ug/L	ND	116	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	38.6	0.2	ug/L	ND	96.4	60-130			
Hexane	33.2	1.0	ug/L	ND	83.0	60-130			
Methyl Ethyl Ketone (2-Butanone)	70.9	5.0	ug/L	ND	70.9	50-140			
Methyl Isobutyl Ketone	89.8	5.0	ug/L	ND	89.8	50-140			
Methyl tert-butyl ether	73.9	2.0	ug/L	ND	73.9	50-140			
Methylene Chloride	38.4	5.0	ug/L	ND	95.9	60-130			
Styrene	42.7	0.5	ug/L	ND	107	60-130			
1,1,1,2-Tetrachloroethane	40.4	0.5	ug/L	ND	101	60-130			
1,1,2,2-Tetrachloroethane	39.8	0.5	ug/L	ND	99.4	60-130			
Tetrachloroethylene	41.9	0.5	ug/L	ND	105	60-130			
Toluene	44.7	0.5	ug/L	ND	112	60-130			
1,1,1-Trichloroethane	35.2	0.5	ug/L	ND	88.1	60-130			
1,1,2-Trichloroethane	41.3	0.5	ug/L	ND	103	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Trichloroethylene	36.8	0.5	ug/L	ND	92.0	60-130			
Trichlorofluoromethane	33.7	1.0	ug/L	ND	84.4	60-130			
Vinyl chloride	44.1	0.5	ug/L	ND	110	50-140			
m,p-Xylenes	90.1	0.5	ug/L	ND	113	60-130			
o-Xylene	46.1	0.5	ug/L	ND	115	60-130			
Surrogate: 4-Bromofluorobenzene	*82.0*		*%*		*102*	*50-140*			
Surrogate: Dibromofluoromethane	*86.5*		*%*		*108*	*50-140*			
Surrogate: Toluene-d8	*81.0*		*%*		*101*	*50-140*			

Qualifier Notes:

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

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: 2408330

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

Client Name: PATERSON GROUP	Project Ref: PE6402	Page 1 of 1
Contact Name: Joshua Dempsey; Mark D'Arcy	Quote #:	Turnaround Time
Address: 9 Auriga Drive	PO #: 59478	☐ 1 day ☐ 3 day
	E-mail: jdempsey@patersongroup.ca	☐ 2 day ☒ Regular
Telephone: 613-226-7381		Date Required:

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

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

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)					
1	BH2-24-GW1	GW		3	Feb 21/24		X	X										
2	BH5-24-GW1	↓		3	↓		↓	↓										
3	BH6-24-GW1			4		82			X									
4	BH7-24-GW1			4					X									
5	BH9-24-GW1			4			↓	↓	X									
6	DUP-GW1	↓		2	↓			X										
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Joshua Dempsey	Date/Time:	Date/Time:	Date/Time: Feb 23/24 10:51
Date/Time: Feb 22/2024	Temperature: °C	Temperature: Feb 23/24 14:60 14.0°C	pH Verified: ☐ By: NA

Chain of Custody (Env).xlsx Revision 5.0