PATERSON GROUP

Phase II – Environmental Site Assessment

134 Nelson Street

Ottawa, Ontario

Prepared for Smart Living Properties

Report: PE5929-3
December 19, 2023

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EXECUTIVE SUMMARY

Assessment

Paterson Group was retained by Smart Living Properties to conduct a Phase II – Environmental Site Assessment (Phase II ESA) for the property addressed 134 Nelson Street, 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 subject site (Phase II Property).

The subsurface investigation for this assessment was conducted on December 12, 2022, and consisted of drilling three boreholes (BH1-22 to BH3-22) throughout the Phase II Property, all of which were equipped with groundwater monitoring well installations to access the water table. The boreholes were advanced to a depth of approximately 7.62 m below the existing ground surface and terminated within an overburden layer of soft grey silty clay.

In general, the subsurface soil profile encountered at the borehole locations consists of a surficial pavement structure (asphaltic concrete over top of silty sand and gravel) overlying a layer of fill material (dark brown silty sand with some clay, organics, topsoil, and gravel), underlain by native grey silty clay. Bedrock was not encountered in any of the boreholes during the field drilling program.

Eight soil samples were submitted for laboratory analysis of either VOCs, PHCs (F_1-F_4), metals, PAHs, PCBs, EC/SAR, and/or pH parameters. Based on the analytical test results, the upper fill material in the vicinity of BH2-22 is contains concentrations of lead, multiple PAH parameters, as well as an elevated electrical conductivity level in excess of the selected MECP Table 3 Coarse-Grained Residential Soil Standards. Additionally, an elevated electrical conductivity concentration was detected at BH3-22. The presence of these contaminants are suspected to be the result of poor quality fill material placed in these areas, however, the electrical conductivity exceedances are considered to be a results of the application of a substance to surfaces for vehicular and pedestrian traffic during conditions of snow or ice or both, and as such, the levels of electrical conductivity are deemed to have met the site standards.

Three groundwater samples were submitted for laboratory analysis of either VOCs, BTEX, PHCs (F_1-F_4), PAHs, and/or PCB parameters. Based on the analytical test results, all detected parameter concentrations comply with the selected MECP Table 3 Coarse-Grained Residential Soil Standards.

Between December 11 and 12, 2023, Paterson Group monitored the removal of contaminated soil from the Phase II Property. Approximately 86 m^3 of impacted soil was removed from the Phase II Property. All confirmatory samples collected from the remediation area were found to be in compliance with the selected MECP Table 3 standards.

No additional remedial activities are recommended at this time.

Recommendations

Monitoring Wells

It is recommended that the monitoring wells be decommissioned at the time of construction, in accordance with Ontario Regulation 903 (Ontario Water Resources Act).

1.0 INTRODUCTION

At the request of Smart Living Properties, Paterson Group (Paterson) conducted a Phase II – Environmental Site Assessment (Phase II ESA) for the property addressed 134 Nelson Street, in the City of Ottawa, Ontario (the Phase II Property).

The purpose of this Phase II ESA has been to address the areas of potential environmental concern (APECs) identified on the Phase II Property as a result the findings of the Phase I ESA.

1.1 Site Description

Address:	134 Nelson Street, Ottawa, Ontario.
Location:	The Phase II Property is located on the west side of Nelson Street, approximately 100 m north of Rideau Street, in the City of Ottawa, Ontario. Refer to Figure 1 – Key Plan, appended to this report.
PIN #:	04213-0151.
Latitude and Longitude:	45° 25’ 48.5" N, 75° 41' 07.0" W.

Site Description:

Configuration:	Rectangular.
Area:	700 m^2 (approximately).
Zoning:	IG – General Industrial Zone.
Current Use:	The Phase II Property is currently occupied by a one storey commercial building, presently tenanted by a restaurant business.
Services:	The Phase II Property is located within a municipally serviced area.

1.2 Property Ownership

The Phase II Property is currently owned by Mr. In Kwon Hur. Paterson was retained to complete this Phase II ESA by Mr. Andrew Levitan of Smart Living Properties, prospective buyers of the property, whose office is located at 226 Argyle Avenue, Ottawa, Ontario, and can be contacted via telephone at 613-244-1551.

1.3 Applicable Site Condition Standard

The site condition standards for the subject property were obtained from Table 3 of the document entitled, *"Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act"*, prepared by the Ministry of the Environment, Conservation and Parks (MECP), and dated April 15, 2011. The selected MECP standards are based on the following considerations:

- ❒ Full depth soil conditions;
- ❒ Coarse-grained soil conditions;
- ❒ Non-potable groundwater conditions;
- ❒ Residential land use.

Grain-size analysis was not conducted as part of this assessment, and as such, the coarse-grained soil standards were selected as a conservative approach.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

The Phase II Property is currently occupied with a one-storey commercial building, currently tenanted by a restaurant business, located in the eastern half of the property, fronting Nelson Street. An asphaltic concrete laneway is present on the north side of the restaurant building, which leads towards a parking area at the rear (western) portion of the property.

The site topography is relatively flat, while the regional topography appears to slope down towards the north, in the general direction of the Ottawa River. The Phase II Property is considered to be at grade with respect to the adjacent street and the neighbouring properties.

The Phase II Property is situated within an urban setting and is serviced via municipal sewer and water infrastructure.

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The subsurface investigation for this assessment was conducted on December 12, 2022 and consisted of drilling three boreholes (BH1-22 to BH3-22) across the Phase II Property.

The boreholes were advanced to a depth of approximately 7.62 m below the existing ground surface and terminated within an overburden layer of soft grey silty clay. Upon completion, all three boreholes were instrumented with groundwater monitoring wells in order to access the groundwater table.

3.2 Media Investigated

During the course of this subsurface investigation, soil and groundwater samples were obtained from the Phase II Property and submitted for laboratory analysis. The rationale for sampling and analyzing these media is based on the contaminants of potential concern identified in the Phase I ESA.

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

- ❒ Volatile Organic Compounds (VOCs);
- ❒ Benzene, Ethylbenzene, Toluene, and Xylenes (BTEX);
- ❒ Petroleum Hydrocarbons, fractions 1 – 4 (PHCs F_1-F_4);
- ❒ Polycyclic Aromatic Hydrocarbons (PAHs);
- ❒ Metals (including Mercury and Hexavalent Chromium);
- ❒ Polychlorinated Biphenyls (PCBs);
- ❒ Electrical Conductivity (EC);
- ❒ Sodium Adsorption Ratio (SAR).

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

3.3 Phase I ESA Conceptual Site Model

Water Bodies and Areas of Natural and Scientific Interest

No water bodies or areas of natural and scientific interest are present on the Phase I Property or within the Phase I Study Area. The nearest named water body with respect to the Phase I Property is the Ottawa River, located approximately 700 m to the north.

Geological and Hydrogeological Setting

Based on the available mapping information, the bedrock beneath the Phase I Property generally consists of interbedded limestone and shale of the Verulam Formation, while the surficial geology consists largely of offshore marine sediments (erosional terraces) with an overburden ranging in thickness from approximately 5 m to 15 m.

Groundwater is known to be encountered within the overburden in the general vicinity of the Phase I Property and flow in a northwesterly direction towards the Ottawa River.

Drinking Water Wells

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

Existing Buildings and Structures

The Phase I Property is currently occupied with a one-storey restaurant building, with one basement level.

Neighbouring Land Use

The surrounding lands within the Phase I Study Area consist largely of commercial and residential properties.

Current land use is depicted on Drawing PE5929-2 – Surrounding Land Use Plan, in the Figures section of this report.

Current and Future Property Use

The Phase I Property is currently being used for commercial purposes.

It is our understanding that the Phase I Property may be redeveloped for residential purposes.

Due to the change to a more sensitive land use (commercial to residential), this will require that a record of site condition (RSC) be filed with the MECP.

Potentially Contaminating Activities and Areas of Potential Environmental Concern

As per Section 7.1 of the Phase I ESA report, five potentially contaminating activities (PCAs), resulting in areas of potential environmental concern (APECs), were identified on the Phase I Property. These APECs include:

- ❑ An existing Hydro Ottawa transformer substation, located on the adjacent property to the west of the Phase I Property (APEC #1);
- ❑ A former truck terminal and maintenance garage, located on the adjacent property to the west (APEC #2);
- ❑ A former transformer substation, located on the adjacent property to the south (APEC #3);
- ❑ A former dry cleaners, located approximately 75 m to the south of the Phase I Property (APEC #4);
- ❑ A former printing facility, located approximately 60 m to the east of the Phase I Property (APEC #5);
- ❑ The possible use of a substance for de-icing purposes during snow and ice conditions (APEC #6).

Other off-site PCAs were identified within the Phase I Study Area but were deemed not to be of any environmental concern to the Phase I Property based on their separation distances as well as their inferred down-gradient or cross-gradient orientation with respect to the known groundwater flow to the north.

Contaminants of Potential Concern

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

- ❒ Volatile Organic Compounds (VOCs);
- ❒ Benzene, Ethylbenzene, Toluene, and Xylenes (BTEX);
- ❒ Petroleum Hydrocarbons, fractions 1 – 4 (PHCs F_1-F_4);
- ❒ Polycyclic Aromatic Hydrocarbons (PAHs);
- ❒ Metals (including Mercury and Hexavalent Chromium);
- ❒ Polychlorinated Biphenyls (PCBs);
- ❒ Electrical Conductivity (EC);
- ❒ Sodium Adsorption Ratio (SAR).

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

Assessment of Uncertainty and/or Absence of Information

The information available for review as part of the preparation of the Phase I ESA is considered to be sufficient to conclude that there are PCAs and APECs associated with the Phase II Property.

The presence of any PCAs was confirmed by a variety of independent sources, 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 the Sampling and Analysis Plan

No deviations from the Sampling and Analysis were made during the course of this Phase II ESA.

3.5 Physical Impediments

Due to the presence of a tree canopy along the northern and southern property boundaries, as well as the location of certain aboveground/underground utility services, the final placement of select boreholes were marginally adjusted during the field drilling program. The impediments are not considered to have affected the outcome of the investigation.

4.0 INVESTIGATION METHOD

4.1 Subsurface Investigation

The subsurface investigation for this assessment was conducted on December 12, 2022, and consisted of drilling three boreholes (BH1-22 to BH3-22) throughout the Phase II Property, all of which were equipped with groundwater monitoring well installations to access the water table. The boreholes were advanced to a depth of approximately 7.62 m below the existing ground surface and terminated within an overburden layer of soft grey silty clay. Bedrock was not encountered in any of the boreholes at the time of the field drilling program.

Under the full-time supervision of Paterson personnel, the boreholes were drilled using a low-clearance drill rig provided by George Downing Estate Drilling of Hawkesbury, Ontario. The locations of the boreholes are illustrated on Drawing PE5929-3 – Test Hole Location Plan, appended to this report.

4.2 Soil Sampling

Soil 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.

The samples were recovered using a stainless-steel split spoon, while wearing protective gloves (changed after each sample), and immediately placed into plastic bags. If significant contamination was encountered, the samples were instead placed into glass jars. Sampling equipment was routinely washed in soapy water and rinsed with methylhydrate after each split spoon to prevent any cross contamination of the samples. The samples were also stored in coolers to reduce analyte volatilization during transportation.

A total of 30 soil samples were obtained from the boreholes by means of auger and split spoon sampling. The depths at which auger and split spoon samples were obtained from the boreholes are shown as "**AU**" and "**SS**", respectively, on the Soil Profile and Test Data Sheets, appended to this report.

4.3 Field Screening Measurements

All soil samples collected were subjected to a preliminary screening procedure, which included visual screening for colour and evidence of metals, as well as soil vapour screening with a Photo Ionization Detector.

The recovered soil samples 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, ensuring consistency of readings between samples. To measure the soil vapours, the analyser probe was inserted into the nominal headspace above the sample. The sample was then agitated and manipulated gently by hand as the measurement was taken. The peak reading registered within the first 15 seconds was recorded as the vapour measurement. The parts per million (ppm) scale was used to measure concentrations of organic vapours.

The results of the vapour survey are presented on the Soil Profile and Test Data Sheets, appended to this report.

4.4 Groundwater Monitoring Well Installation

Three groundwater monitoring wells were installed on the Phase II Property as part of this assessment. These monitoring wells were constructed using 50 mm diameter Schedule 40 threaded PVC risers and screens. A sand pack consisting of silica sand was placed around the screen with a bentonite seal placed above to minimize cross-contamination.

The ground surface elevations of each borehole were subsequently surveyed with respect to a known geodetic elevation.

A summary of the monitoring well construction details are listed below in Table 1 as well as on the Soil Profile and Test Data Sheets provided in Appendix 1.

Table 1
Monitoring Well Construction Details

Well ID	Ground Surface Elevation (m ASL)	Total Depth (m BGS)	Screened Interval (m BGS)	Sand Pack (m BGS)	Bentonite Seal (m BGS)	Casing Type
BH1-22	59.57	7.62	4.62 – 7.62	3.35 – 7.62	0.00 – 3.35	Flushmount
BH2-22	59.26	7.62	4.62 – 7.62	3.35 – 7.62	0.00 – 3.35	Flushmount
BH3-22	59.70	7.62	4.62 – 7.62	3.35 – 7.62	0.00 – 3.35	Flushmount

4.5 Field Measurement of Water Quality Parameters

Groundwater monitoring and sampling was conducted at BH1-22 to BH3-22 on December 19, 2022. At this time, water quality parameters were measured in the field using a multi-parameter analyzer. Parameters measured in the field included temperature, pH and electrical conductivity.

Field parameters were measured after each well volume purged. Wells were purged prior to sampling until at least three well volumes had been removed or the field parameters were relatively stable. Stabilized field parameter values are summarized in Table 2.

Table 2
Measurement of Water Quality Parameters

Well ID	Temperature (˚C)	Conductivity (µS)	pH (Units)
BH1-22	7.1	1,191	7.49
BH2-22	7.3	1,127	7.36
BH3-22	7.4	1,198	7.21

4.6 Groundwater Sampling

Groundwater sampling protocols were followed using the MECP document entitled, *"Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario"*, dated May 1996. Standing water was purged from each monitoring well prior to the recovery of the groundwater samples using dedicated sampling equipment. The samples were then stored in coolers to reduce possible analyte volatilization during their transportation. Further details of our standard operating procedure for groundwater sampling are provided in the Sampling and Analysis Plan, appended to this report.

4.7 Analytical Testing

The following soil and groundwater samples were submitted for laboratory analysis:

Table 3
Testing Parameters for Submitted Soil Samples

Sample ID	Sample Depth & Stratigraphic Unit	Parameters Analyzed								Rationale
		VOCs	PHCs (F_1-F_4)	PAHs	Metals[1]	PCBs	EC	SAR	pH	
BH1-22-SS2	0.76 m -1.37 m Fill Material			X	X					To assess for potential impacts resulting from the presence of fill material of unknown quality.
BH1-22-SS4	2.29 m – 2.90 m Silty Clay	X	X							To assess for potential impacts results from the presence of a former off-site truck terminal and maintenance garage, and elevated vapour readings.

Table 3
Testing Parameters for Submitted Soil Samples (Continued)

Sample ID	Sample Depth & Stratigraphic Unit	Parameters Analyzed								Rationale
		VOCs	PHCs (F_1-F_4)	PAHs	Metals[1]	PCBs	EC	SAR	pH	
BH1-22-SS5	3.05 m – 3.66 m Silty Clay					X				To assess for potential impacts resulting from the presence of an existing off-site transformer substation.
BH2-22-SS2/SS3	0.76 m – 2.13 m Fill Material			X	X		X	X		To assess for potential impacts resulting from the presence of fill material of unknown quality as well as the application of road salt for de-icing purposes.
BH2-22-SS4	2.29 m – 2.90 m Silty Clay			X		X				To assess for potential impacts resulting from the presence of fill material of unknown quality as well as a former off-site transformer substation.
BH2-22-SS8	5.33 m – 5.94 m Silty Clay	X							X	To assess for potential impacts resulting from the presence of a former off-site printing facility.
BH3-22-SS2/SS3	0.76 m – 2.13 m Fill Material			X	X				X	To assess for potential impacts resulting from the presence of fill material of unknown quality.
BH3-22-SS4	2.29 m – 2.90 m Silty Clay	X	X							To assess for potential impacts resulting from the presence of a former off-site dry cleaners.
BH3-22-SS5	3.05 m – 3.66 m Silty Clay				X		X	X		To assess for potential impacts resulting from a former off-site transformer substation.
DUP-1[2]	2.29 m – 2.90 m Silty Clay	X	X							For laboratory QA/QC purposes.

1 – Includes Mercury and Hexavalent Chromium
2 – Duplicate sample of BH1-22-SS4

Table 4
Testing Parameters for Submitted Groundwater Samples

Sample ID	Screened Interval & Stratigraphic Unit	Parameters Analyzed					Rationale
		VOCs	BTEX	PHCs (F_1-F_4)	PAHs	PCBs	
BH1-22-GW1	4.62 m – 7.62 m Silty Clay		X	X		X	To assess for potential impacts resulting from the presence of a former off-site truck terminal and maintenance garage as well as an existing off-site transformer substation.
BH2-22-GW1	4.62 m – 7.62 m Silty Clay		X	X			To assess for potential impacts resulting from the presence of a former off-site printing facility.
BH3-22-GW1	4.62 m – 7.62 m Silty Clay	X		X	X	X	To assess for potential impacts resulting from the presence of a former off-site transformer substation as well as a former off-site dry cleaners.
DUP-1[1]	4.62 m – 7.62 m Silty Clay		X	X			For laboratory QA/QC purposes.

1 – Duplicate sample of BH2-22-GW1

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) and is accredited and certified by the SCC/CALA for specific tests registered with the association.

4.8 Residue Management

All soil cuttings were removed from the site following the field program, while all purge water and equipment cleaning fluids were retained on-site.

4.9 Elevation Surveying

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

4.10 Quality Assurance and Quality Control Measures

A summary of the quality assurance and quality control (QA/QC) measures, undertaken as part of this assessment, is provided in the Sampling and Analysis Plan in Appendix 1.

5.0 REVIEW AND EVALUATION

5.1 Geology

In general, the subsurface soil profile encountered at the borehole locations consists of a surficial pavement structure (asphaltic concrete over top of silty sand and gravel) overlying a layer of fill material (dark brown silty sand with some clay, organics, topsoil, and gravel), underlain by native grey silty clay.

Bedrock was not encountered in any of the boreholes during the field drilling program.

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

5.2 Groundwater Elevations, Flow Direction, and Hydraulic Gradient

Groundwater levels were measured using an electronic water level meter at BH1-22 to BH3-22 on December 19, 2022. The 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
BH1-22	59.57	7.06	52.51	December 19, 2022
BH2-22	59.26	6.10	53.16	
BH3-22	59.70	6.80	52.90	

The groundwater at the Phase II Property was encountered within the overburden at depths ranging from approximately 6.10 m to 7.06 m below the existing ground surface. No unusual visual observations were identified within the recovered groundwater samples. Using the groundwater elevations recorded during the sampling event, groundwater contour mapping was completed as part of this assessment.

According to the mapped contour data, illustrated on Drawing PE5929-3 – Test Hole Location Plan in the appendix, the groundwater flow on the subject site was calculated to be in an easterly direction. A horizontal hydraulic gradient of approximately 0.02 m/m was also calculated as part of this assessment. 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. As a result, the coarse-grained soil standards were chosen as a conservative approach.

5.4 Field Screening

Field screening of the soil samples collected during the drilling program resulted in organic vapour readings ranging from 0.8 ppm to 285 ppm, indicating that there is a minor potential for the presence of volatile substances. 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

Eight soil samples were submitted for laboratory analysis of either PHCs (F_1-F_4), VOCs, metals, PAHs, PCBs, EC/SAR, and/or pH parameters. The results of the analytical testing are presented below in Tables 6 to 11, as well as on the laboratory Certificates of Analysis included in Appendix 1.

Table 6
Analytical Test Results – Soil
Petroleum Hydrocarbons (PHCs)

Parameter	MDL (µg/g)	Soil Samples (µg/g)		MECP Table 3 Coarse-Grained Residential Soil Standards (µg/g)
		December 12, 2022		
		BH1-22-SS4	BH3-22-SS4	
		Sample Depth (m bgs)		
		2.29 – 2.90 m	2.29 – 2.90 m	
PHCs F_1	7	nd	nd	55
PHCs F_2	4	nd	nd	98
PHCs F_3	8	nd	nd	300
PHCs F_4	6	nd	nd	2,800

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – value exceeds selected MECP standards

No PHC parameter concentrations were detected above the laboratory method detection limits in the soil samples analyzed. The results comply with the selected MECP Table 3 Coarse-Grained Residential Soil Standards.

Table 7
Analytical Test Results – Soil
Volatile Organic Compounds (VOCs)

Parameter	MDL (µg/g)	Soil Samples (µg/g)			MECP Table 3 Coarse-Grained Residential Soil Standards (µg/g)
		December 12, 2022			
		BH1-22-SS4	BH2-22-SS8	BH3-22-SS4	
		Sample Depth (m bgs)			
		2.29 – 2.90 m	5.33 – 5.94 m	2.29 – 2.90 m	
Acetone	0.50	nd	nd	nd	16
Benzene	0.02	nd	nd	nd	0.21
Bromodichloromethane	0.05	nd	nd	nd	13
Bromoform	0.05	nd	nd	nd	0.27
Bromomethane	0.05	nd	nd	nd	0.05
Carbon Tetrachloride	0.05	nd	nd	nd	0.05
Chlorobenzene	0.05	nd	nd	nd	2.4
Chloroform	0.05	nd	nd	nd	0.05
Dibromochloromethane	0.05	nd	nd	nd	9.4
Dichlorodifluoromethane	0.05	nd	nd	nd	16
1,2-Dichlorobenzene	0.05	nd	nd	nd	3.4
1,3-Dichlorobenzene	0.05	nd	nd	nd	4.8
1,4-Dichlorobenzene	0.05	nd	nd	nd	0.083
1,1-Dichloroethane	0.05	nd	nd	nd	3.5
1,2-Dichloroethane	0.05	nd	nd	nd	0.05
1,1-Dichloroethylene	0.05	nd	nd	nd	0.05
cis-1,2-Dichloroethylene	0.05	nd	nd	nd	3.4
trans-1,2-Dichloroethylene	0.05	nd	nd	nd	0.084
1,2-Dichloropropane	0.05	nd	nd	nd	0.05
1,3-Dichloropropene	0.05	nd	nd	nd	0.05
Ethylbenzene	0.05	nd	nd	nd	2
Ethylene Dibromide	0.05	nd	nd	nd	0.05
Hexane	0.05	nd	nd	nd	2.8
Methyl Ethyl Ketone	0.50	nd	nd	nd	16
Methyl Isobutyl Ketone	0.50	nd	nd	nd	1.7
Methyl tert-butyl ether	0.05	nd	nd	nd	0.75
Methylene Chloride	0.05	nd	nd	nd	0.1
Styrene	0.05	nd	nd	nd	0.7
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	0.058
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	0.05
Tetrachloroethylene	0.05	nd	nd	nd	0.28
Toluene	0.05	nd	nd	nd	2.3
1,1,1-Trichloroethane	0.05	nd	nd	nd	0.38
1,1,2-Trichloroethane	0.05	nd	nd	nd	0.05
Trichloroethylene	0.05	nd	nd	nd	0.061
Trichlorofluoromethane	0.05	nd	nd	nd	4
Vinyl Chloride	0.02	nd	nd	nd	0.02
Xylenes	0.05	nd	nd	nd	3.1

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – value exceeds selected MECP standards

No VOC parameters were detected above the laboratory method detection limits in any of the soil samples analyzed. The results comply with the selected MECP Table 3 Coarse-Grained Residential Soil Standards.

Table 8
Analytical Test Results – Soil
Metals

Parameter	MDL (µg/g)	Soil Samples (µg/g)				MECP Table 3 Coarse-Grained Residential Soil Standards (µg/g)
		December 12, 2022				
		BH1-22-SS4	BH2-22-SS2/SS3	BH3-22-SS2/SS3	BH3-22-SS5	
		Sample Depth (m bgs)				
		2.29 – 2.90 m	0.76 – 2.13 m	0.76 – 2.13 m	3.05 – 3.66 m	
Antimony	1.0	nd	2.2	nd	nd	7.5
Arsenic	1.0	2.4	2.6	2.0	4.3	18
Barium	1.0	33.7	202	25.7	142	390
Beryllium	0.5	nd	nd	nd	0.5	4
Boron	5.0	nd	6.8	nd	6.9	120
Cadmium	0.5	nd	nd	nd	nd	1.2
Chromium VI	0.2	nd	nd	nd	nd	8
Chromium	5.0	17.3	13.1	16.5	38.1	160
Cobalt	1.0	3.6	3.4	3.4	11.4	22
Copper	5.0	8.9	18.4	6.8	21.7	140
Lead	1.0	42.0	**366**	39.9	4.9	120
Mercury	0.1	0.1	0.2	nd	nd	0.27
Molybdenum	1.0	nd	nd	nd	nd	6.9
Nickel	5.0	8.0	8.6	7.8	24.6	100
Selenium	1.0	nd	nd	nd	nd	2.4
Silver	0.3	nd	nd	nd	nd	20
Thallium	1.0	nd	nd	nd	nd	1
Uranium	1.0	nd	nd	nd	nd	23
Vanadium	10.0	23.8	14.7	24.1	52.6	86
Zinc	20.0	27.6	156	32.5	63.7	340

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – value exceeds selected MECP standards

The concentration of lead detected in Sample BH2-22-SS2/SS3 exceeds the selected MECP Table 3 Coarse-Grained Residential Standards.

All remaining metal parameter concentrations identified in the soil samples analysed comply with the selected MECP Table 3 Coarse-Grained Residential Standards.

Table 9
Analytical Test Results – Soil
Polycyclic Aromatic Hydrocarbons (PAHs)

Parameter	MDL (µg/g)	Soil Samples (µg/g) December 12, 2022				MECP Table 3 Coarse-Grained Residential Soil Standards (µg/g)
		BH1-22-SS4	BH2-22-SS2/SS3	BH2-22-SS4	BH3-22-SS2/SS3	
		Sample Depth (m bgs)				
		0.76 – 1.37 m	0.76 – 2.13 m	2.29 – 2.90 m	0.76 – 2.13 m	
Acenaphthene	0.02	nd	**27.4**	0.03	Nd	7.9
Acenaphthylene	0.02	nd	**16.0**	Nd	0.03	0.15
Anthracene	0.02	nd	**104**	0.05	0.04	0.67
Benzo[a]anthracene	0.02	nd	**82.2**	0.07	0.17	0.5
Benzo[a]pyrene	0.02	nd	**65.6**	0.07	0.22	0.3
Benzo[b]fluoranthene	0.02	nd	**68.5**	0.06	0.23	0.78
Benzo[g,h,i]perylene	0.02	nd	**34.3**	0.04	0.11	6.6
Benzo[k]fluoranthene	0.02	nd	**36.7**	0.03	0.13	0.78
Chrysene	0.02	nd	**85.4**	0.08	0.19	7
Dibenzo[a,h]anthracene	0.02	nd	**8.69**	Nd	0.03	0.1
Fluoranthene	0.02	nd	**230**	0.19	0.22	0.69
Fluorene	0.02	nd	46.7	0.03	Nd	62
Indeno [1,2,3-cd] pyrene	0.02	nd	**31.9**	0.03	0.10	0.38
1-Methylnaphthalene	0.02	nd	**15.2**	Nd	Nd	0.99
2-Methylnaphthalene	0.02	nd	**23.5**	Nd	Nd	0.99
Methylnaphthalene (1&2)	0.04	nd	**38.7**	Nd	Nd	0.99
Naphthalene	0.01	nd	**62.3**	0.05	0.01	0.6
Phenanthrene	0.02	nd	**301**	0.25	0.12	6.2
Pyrene	0.02	nd	**179**	0.15	0.22	78

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – value exceeds selected MECP standards

The concentrations of multiple PAH parameters detected in Sample BH2-22-SS2/SS3 exceed the selected MECP Table 3 Coarse-Grained Residential Soil Standards.

All remaining PAH parameter concentrations identified in the soil samples analysed comply with the selected MECP Table 3 Coarse-Grained Residential Standards.

Table 10
Analytical Test Results – Soil
Polychlorinated Biphenyls (PCBs)

Parameter	MDL (µg/g)	Soil Samples (µg/g) December 12, 2022		MECP Table 3 Coarse-Grained Residential Soil Standards (µg/g)
		BH1-22-SS5	BH2-22-SS4	
		Sample Depth (m bgs)		
		3.05 – 3.66 m	2.29 – 2.90 m	
PCBs	0.05	nd	nd	0.35

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – value exceeds selected MECP standards

No PCB parameter concentrations were detected above the laboratory method detection limits in the soil samples analyzed. The results comply with the selected MECP Table 3 Coarse-Grained Residential Soil Standards.

Table 11
Analytical Test Results – Soil
General Inorganic Parameters

Parameter	MDL	Soil Samples				MECP Table 3 Coarse-Grained Residential Soil Standards
		December 12, 2022				
		BH2-22-SS2/SS3	BH2-22-SS8	BH3-22-SS2/SS3	BH3-22-SS5	
		Sample Depth (m bgs)				
Sodium Adsorption Ratio	0.01 Units	2.23	-	-	1.93	5 Units
Electrical Conductivity	5 µS/cm	**3,810**	-	-	**775**	700 µS/cm
pH	0.05 Units	-	7.77	7.56	-	5.00 – 11.00 Units

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – value exceeds selected MECP standards

The electrical conductivity level detected in Samples BH2-22-SS2/SS3 and BH3-22-SS5 exceed the selected MECP Table 3 Coarse-Grained Residential Soil Standards.

Table 12
Maximum Concentrations – Soil

Parameter	Maximum Concentration (µg/g)	Sample ID	Depth Interval (m BGS)
Antimony	2.2	BH2-22-SS2/SS3	0.76 – 2.13 m
Arsenic	4.3	BH3-22-SS5	3.05 – 3.66 m
Barium	202	BH2-22-SS2/SS3	0.76 – 2.13 m
Beryllium	0.5	BH3-22-SS5	3.05 – 3.66 m
Boron	6.9	BH3-22-SS5	3.05 – 3.66 m
Chromium	38.1	BH3-22-SS5	3.05 – 3.66 m
Cobalt	11.4	BH3-22-SS5	3.05 – 3.66 m
Copper	21.7	BH3-22-SS5	3.05 – 3.66 m
Lead	**366**	BH2-22-SS2/SS3	0.76 – 2.13 m
Mercury	0.2	BH2-22-SS2/SS3	0.76 – 2.13 m
Nickel	24.6	BH2-22-SS2/SS3	0.76 – 2.13 m
Vanadium	52.6	BH3-22-SS5	3.05 – 3.66 m
Zinc	156	BH2-22-SS2/SS3	0.76 – 2.13 m
Acenaphthene	**27.4**	BH2-22-SS2/SS3	0.76 – 2.13 m
Acenaphthylene	**16.0**	BH2-22-SS2/SS3	0.76 – 2.13 m
Anthracene	**104**	BH2-22-SS2/SS3	0.76 – 2.13 m
Benzo[a]anthracene	**82.2**	BH2-22-SS2/SS3	0.76 – 2.13 m
Benzo[a]pyrene	**65.6**	BH2-22-SS2/SS3	0.76 – 2.13 m
Benzo[b]fluoranthene	**68.5**	BH2-22-SS2/SS3	0.76 – 2.13 m
Benzo[g,h,i]perylene	**34.3**	BH2-22-SS2/SS3	0.76 – 2.13 m
Benzo[k]fluoranthene	**36.7**	BH2-22-SS2/SS3	0.76 – 2.13 m

Notes:
- **Bold and Underlined** – value exceeds selected MECP standards

Table 12
Maximum Concentrations – Soil (Continued)

Parameter	Maximum Concentration (µg/g)	Sample ID	Depth Interval (m BGS)
Chrysene	**85.4**	BH2-22-SS2/SS3	0.76 – 2.13 m
Dibenzo[a,h]anthracene	**8.69**	BH2-22-SS2/SS3	0.76 – 2.13 m
Fluoranthene	**230**	BH2-22-SS2/SS3	0.76 – 2.13 m
Fluorene	46.7	BH2-22-SS2/SS3	0.76 – 2.13 m
Indeno [1,2,3-cd] pyrene	**31.9**	BH2-22-SS2/SS3	0.76 – 2.13 m
1-Methylnaphthalene	**15.2**	BH2-22-SS2/SS3	0.76 – 2.13 m
2-Methylnaphthalene	**23.5**	BH2-22-SS2/SS3	0.76 – 2.13 m
Methylnaphthalene (1&2)	**38.7**	BH2-22-SS2/SS3	0.76 – 2.13 m
Naphthalene	**62.3**	BH2-22-SS2/SS3	0.76 – 2.13 m
Phenanthrene	**301**	BH2-22-SS2/SS3	0.76 – 2.13 m
Pyrene	**179**	BH2-22-SS2/SS3	0.76 – 2.13 m
Sodium Adsorption Ratio	2.23	BH2-22-SS2/SS3	0.76 – 2.13 m
Electrical Conductivity	**3,810**	BH2-22-SS2/SS3	0.76 – 2.13 m
pH	7.77	BH2-22-SS8	5.33 – 5.94 m

Notes:
- **Bold and Underlined** – value exceeds selected MECP standards

All other parameter concentrations analyzed were below the laboratory detection limits.

5.6 Groundwater Quality

Three groundwater samples were submitted for laboratory analysis of either VOCs, BTEX, PHCs (F_1-F_4), PAHs, and/or PCB parameters. The results of the analytical testing are presented below in Tables 13 to 16, as well as on the laboratory Certificates of Analysis included in Appendix 1.

Table 13
Analytical Test Results – Groundwater
BTEX & Petroleum Hydrocarbons (PHCs)

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)			MECP Table 3 Coarse-Grained Non-Potable Groundwater Standards (µg/L)
		December 19, 2022			
		BH1-22-GW1	BH2-22-GW1	BH3-22-GW1	
		Screening Interval (m bgs)			
		4.62 – 7.62 m	4.62 – 7.62 m	4.62 – 7.62 m	
Benzene	0.5	nd	nd	nd	44
Ethylbenzene	0.5	nd	nd	nd	2,300
Toluene	0.5	nd	nd	nd	18,000
Xylenes	0.5	nd	nd	nd	4,200
PHCs F_1	25	nd	nd	nd	750
PHCs F_2	100	nd	nd	nd	150
PHCs F_3	100	nd	nd	nd	500
PHCs F_4	100	nd	nd	nd	500

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – value exceeds selected MECP standards

No BTEX or PHC parameter concentrations were detected above the laboratory method detection limits in the groundwater samples analyzed. The results comply with the selected MECP Table 3 Non-Potable Groundwater Standards.

Table 14
Analytical Test Results – Groundwater
Volatile Organic Compounds (VOCs)

Parameter	MDL (µg/L)	Groundwater Samples (ug/L)	MECP Table 3 Coarse-Grained Non-Potable Groundwater Standards (µg/L)
		December 19, 2022	
		BH3-22-GW1	
		Screening Interval (m bgs)	
		4.62 – 7.62 m	
Acetone	5.0	nd	130,000
Benzene	0.5	nd	44
Bromodichloromethane	0.5	nd	85,000
Bromoform	0.5	nd	380
Bromomethane	0.5	nd	5.6
Carbon Tetrachloride	0.2	nd	0.79
Chlorobenzene	0.5	nd	630
Chloroform	0.5	nd	2.4
Dibromochloromethane	0.5	nd	82,000
Dichlorodifluoromethane	1.0	nd	4,400
1,2-Dichlorobenzene	0.5	nd	4,600
1,3-Dichlorobenzene	0.5	nd	9,600
1,4-Dichlorobenzene	0.5	nd	8
1,1-Dichloroethane	0.5	nd	320
1,2-Dichloroethane	0.5	nd	1.6
1,1-Dichloroethylene	0.5	nd	1.6
cis-1,2-Dichloroethylene	0.5	nd	1.6
trans-1,2-Dichloroethylene	0.5	nd	1.6
1,2-Dichloropropane	0.5	nd	16
1,3-Dichloropropene	0.5	nd	5.2
Ethylbenzene	0.5	0.5	2,300
Ethylene Dibromide	0.2	nd	0.25
Hexane	1.0	nd	51
Methyl Ethyl Ketone	5.0	nd	470,000
Methyl Isobutyl Ketone	5.0	nd	140,000
Methyl tert-butyl ether	2.0	nd	190
Methylene Chloride	5.0	nd	610
Styrene	0.5	nd	1,300
1,1,1,2-Tetrachloroethane	0.5	nd	3.3
1,1,2,2-Tetrachloroethane	0.5	nd	3.2
Tetrachloroethylene	0.5	nd	1.6
Toluene	0.5	1.2	18,000
1,1,1-Trichloroethane	0.5	nd	640
1,1,2-Trichloroethane	0.5	nd	4.7
Trichloroethylene	0.5	nd	1.6
Trichlorofluoromethane	1.0	nd	2,500
Vinyl Chloride	0.5	nd	0.5
Xylenes	0.5	3.1	4,200

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – value exceeds selected MECP standards

All detected VOC parameter concentrations identified in the groundwater sample analyzed comply with the selected MECP Table 3 Non-Potable Groundwater Standards.

Table 15
Analytical Test Results – Groundwater
Polychlorinated Biphenyls (PCBs)

Parameter	MDL (µg/L)	Groundwater Samples (ug/L)		MECP Table 3 Coarse-Grained Non-Potable Groundwater Standards (µg/L)
		December 19, 2022		
		BH1-22-GW1	BH3-22-GW1	
		Screening Interval (m bgs)		
		4.62 – 7.62 m	4.62 – 7.62 m	
PCBs	0.05	nd	nd	7.8

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – value exceeds selected MECP standards

No PCB parameter concentrations were detected above the laboratory method detection limits in the groundwater samples analyzed. The results are in compliance with the selected MECP Table 3 Non-Potable Groundwater Standards.

Table 16
Analytical Test Results – Groundwater
PAHs

Parameter	MDL (µg/L)	Groundwater Samples (ug/L)	MECP Table 3 Coarse-Grained Non-Potable Groundwater Standards (µg/L)
		December 19, 2022	
		BH3-22-GW1	
		Screening Interval (m bgs)	
		4.62 – 7.62 m	
Acenaphthene	0.05	nd	600
Acenaphthylene	0.05	nd	1.8
Anthracene	0.01	nd	2.4
Benzo[a]anthracene	0.01	nd	4.7
Benzo[a]pyrene	0.01	nd	0.81
Benzo[b]fluoranthene	0.05	nd	0.75
Benzo[g,h,i]perylene	0.05	nd	0.2
Benzo[k]fluoranthene	0.05	nd	0.04
Chrysene	0.05	nd	1.0
Dibenzo[a,h]anthracene	0.05	nd	0.52
Fluoranthene	0.01	0.02	130
Fluorene	0.05	nd	400
Indeno [1,2,3-cd] pyrene	0.05	nd	0.2
1-Methylnaphthalene	0.05	0.07	1,800
2-Methylnaphthalene	0.05	nd	1,800
Methylnaphthalene (1&2)	0.10	nd	1,800
Naphthalene	0.05	nd	1,400
Phenanthrene	0.05	0.06	580
Pyrene	0.01	0.02	68

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – value exceeds selected MECP standards

All detected PAH parameter concentrations identified in the groundwater sample analyzed comply with the selected MECP Table 3 Non-Potable Groundwater Standards.

Table 17
Maximum Concentrations – Groundwater

Parameter	Maximum Concentration (µg/L)	Sample ID	Depth Interval (m BGS)
Ethylbenzene	0.5	BH3-22-GW1	4.62 – 7.62 m
Toluene	1.2	BH3-22-GW1	4.62 – 7.62 m
Xylenes	3.1	BH3-22-GW1	4.62 – 7.62 m
Fluoranthene	0.02	BH3-22-GW1	4.62 – 7.62 m
1-Methylnaphthalene	0.07	BH3-22-GW1	4.62 – 7.62 m
Phenanthrene	0.06	BH3-22-GW1	4.62 – 7.62 m
Pyrene	0.02	BH3-22-GW1	4.62 – 7.62 m

Notes:
- **Bold and Underlined** – value exceeds selected MECP standards

All other parameter concentrations analyzed were below the laboratory detection limits. The laboratory certificates of analysis are provided in Appendix 1.

5.7 Quality Assurance and Quality Control Results

All samples submitted as part of this Phase II ESA were handled in accordance with the analytical protocols with respect to holding time, preservation method, storage requirement, and container type.

As per Subsection 47(3) of O. Reg. 153/04, as amended by the Environmental Protection Act, the certificates of analysis have been received for each sample submitted for laboratory analysis and have been appended to this report.

As per the Sampling and Analysis Plan, a duplicate soil sample was obtained from sample BH1-22-SS4 and submitted for laboratory analysis of VOCs and PHC parameters. The relative percent difference (RPD) calculations for the original and duplicate samples are provided below in Table 18.

Table 18
QA/QC Calculations – Soil

Parameter	MDL (µg/g)	BH1-22-SS4	DUP-1	RPD (%)	QA/QC Result (Target: <20% RPD)
Acetone	0.50	nd	nd	0	Meets Target
Benzene	0.02	nd	nd	0	Meets Target
Bromodichloromethane	0.05	nd	nd	0	Meets Target
Bromoform	0.05	nd	nd	0	Meets Target
Bromomethane	0.05	nd	nd	0	Meets Target
Carbon Tetrachloride	0.05	nd	nd	0	Meets Target

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL

Table 18
QA/QC Calculations – Soil (Continued)

Parameter	MDL (µg/g)	BH1-22-SS4	DUP-1	RPD (%)	QA/QC Result (Target: <20% RPD)
Chlorobenzene	0.05	nd	nd	0	Meets Target
Chloroform	0.05	nd	nd	0	Meets Target
Dibromochloromethane	0.05	nd	nd	0	Meets Target
Dichlorodifluoromethane	0.05	nd	nd	0	Meets Target
1,2-Dichlorobenzene	0.05	nd	nd	0	Meets Target
1,3-Dichlorobenzene	0.05	nd	nd	0	Meets Target
1,4-Dichlorobenzene	0.05	nd	nd	0	Meets Target
1,1-Dichloroethane	0.05	nd	nd	0	Meets Target
1,2-Dichloroethane	0.05	nd	nd	0	Meets Target
1,1-Dichloroethylene	0.05	nd	nd	0	Meets Target
cis-1,2-Dichloroethylene	0.05	nd	nd	0	Meets Target
trans-1,2-Dichloroethylene	0.05	nd	nd	0	Meets Target
1,2-Dichloropropane	0.05	nd	nd	0	Meets Target
1,3-Dichloropropene	0.05	nd	nd	0	Meets Target
Ethylbenzene	0.05	nd	nd	0	Meets Target
Ethylene Dibromide	0.05	nd	nd	0	Meets Target
Hexane	0.05	nd	nd	0	Meets Target
Methyl Ethyl Ketone	0.50	nd	nd	0	Meets Target
Methyl Isobutyl Ketone	0.50	nd	nd	0	Meets Target
Methyl tert-butyl ether	0.05	nd	nd	0	Meets Target
Methylene Chloride	0.05	nd	nd	0	Meets Target
Styrene	0.05	nd	nd	0	Meets Target
1,1,1,2-Tetrachloroethane	0.05	nd	nd	0	Meets Target
1,1,2,2-Tetrachloroethane	0.05	nd	nd	0	Meets Target
Tetrachloroethylene	0.05	nd	nd	0	Meets Target
Toluene	0.05	nd	nd	0	Meets Target
1,1,1-Trichloroethane	0.05	nd	nd	0	Meets Target
1,1,2-Trichloroethane	0.05	nd	nd	0	Meets Target
Trichloroethylene	0.05	nd	nd	0	Meets Target
Trichlorofluoromethane	0.05	nd	nd	0	Meets Target
Vinyl Chloride	0.02	nd	nd	0	Meets Target
Xylenes	0.05	nd	nd	0	Meets Target
PHCs F_1	55	nd	nd	0	Meets Target
PHCs F_2	98	nd	nd	0	Meets Target
PHCs F_3	300	nd	nd	0	Meets Target
PHCs F_4	2,800	nd	nd	0	Meets Target

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL

The relative percent difference (RPD) calculated for all parameters fell within of the acceptable range of 20%, and as such, is considered to meet the data quality objectives outlined in the Sampling and Analysis Plan, appended to this report.

A duplicate groundwater sample was obtained from sample BH2-22-GW1 and submitted for laboratory analysis of BTEX and PHC parameters. The relative percent difference (RPD) calculations for the original and duplicate samples are provided below in Table 19.

Table 19
QA/QC Calculations – Groundwater

Parameter	MDL (µg/L)	BH2-22-GW1	DUP-1	RPD (%)	QA/QC Result (Target: <20% RPD)
Benzene	0.5	nd	nd	0	Meets Target
Ethylbenzene	0.5	nd	nd	0	Meets Target
Toluene	0.5	nd	nd	0	Meets Target
Xylenes	0.5	nd	nd	0	Meets Target
PHCs F_1	25	nd	nd	0	Meets Target
PHCs F_2	100	nd	nd	0	Meets Target
PHCs F_3	100	nd	nd	0	Meets Target
PHCs F_4	100	nd	nd	0	Meets Target

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – value exceeds selected MECP standards

The relative percent difference (RPD) calculated for all parameters fell within of the acceptable range of 20%, and as such, is considered to meet the data quality objectives outlined in the Sampling and Analysis Plan, appended to this report.

Based on the results of the QA/QC analysis, the quality of the field data collected during this Phase II ESA is considered to be sufficient to meet the overall objectives of this assessment.

5.8 Phase II Conceptual Site Model

The following section has been prepared in accordance with the requirements of O. Reg. 153/04 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

As described in Section 7.1 of the Phase I ESA report, as well as Section 2.2 of this report, the following PCAs, as defined by Table 2 of O. Reg. 153/04, are considered to result in APECs on the Phase II Property:

Table 20
Areas of Potential Environmental Concern

Area of Potential Environmental Concern	Location of APEC on Phase I Property	Potentially Contaminating Activity (Table 2 – O. Reg. 153/04)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil, and/or Sediment)
APEC #1 Existing Hydro Ottawa Transformer Substation	Western Portion of Phase I Property	*"Item 18: Electricity Generation, Transformation and Power Stations"*	Off-Site	PHCs (F_1-F_4) PCBs	Soil and Groundwater
APEC #2 Former Truck Terminal and Maintenance Garage	Western Portion of Phase I Property	*"Item 52: Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems"*	Off-Site	VOCs PHCs (F_1-F_4) PAHs	Soil and Groundwater
APEC #3 Former Transformer Substation	Southwestern Portion of Phase I Property	*"Item 18: Electricity Generation, Transformation and Power Stations"*	Off-Site	PHCs (F_1-F_4) PAHs PCBs	Soil and Groundwater
APEC #4 Former Dry Cleaners	Southern Portion of Phase I Property	*"Item 37: Operation of Dry Cleaning Equipment (where chemicals are used)"*	Off-Site	VOCs	Groundwater
APEC #5 Former Printing Facility	Eastern Portion of Phase I Property	*"Item 31: Ink Manufacturing, Processing and Bulk Storage"*	Off-Site	VOCs	Groundwater
APEC #6 Application of Road Salt	Western Portion of Phase I Property	*"Item N/A: Use of a Substance for De-Icing Purposes During Snow and Ice Conditions"*	On-Site	EC/SAR	Soil

Contaminants of Potential Concern (CPCs)

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

- ❒ Volatile Organic Compounds (VOCs);
- ❒ Benzene, Ethylbenzene, Toluene, and Xylenes (BTEX);
- ❒ Petroleum Hydrocarbons, fractions 1 – 4 (PHCs F_1-F_4);
- ❒ Polycyclic Aromatic Hydrocarbons (PAHs);
- ❒ Metals (including Mercury and Hexavalent Chromium);
- ❒ Polychlorinated Biphenyls (PCBs);
- ❒ Electrical Conductivity (EC);

- Sodium Adsorption Ratio (SAR).

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

Subsurface Structures and Utilities

Underground service locates were completed prior to the subsurface investigation. Underground utilities on the Phase II Property include natural gas pipelines, as well as municipal water and wastewater services. Buried utilities are located predominantly along the frontage of the property.

No subsurface structures are present on the Phase II Property.

Physical Setting

Site Stratigraphy

The stratigraphy of the Phase II Property generally consists of:

- Pavement structure (asphaltic concrete over silty sand with crushed stone and gravel); extending to a depth of approximately 0.25 m to 0.43 m below ground surface.
- Fill material (dark brown silty sand with some gravel, clay, topsoil, and/or trace organics); extending to depths ranging from approximately 1.22 m to 1.45 m below ground surface.
- Fill material (light brown silty sand with trace gravel); extending to a depth of approximately 2.21 m below ground surface.
- Stiff, grey silty clay; extending to depths of approximately 7.62 m below ground surface (bottom of boreholes).

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

The groundwater at the Phase II Property was encountered within an overburden layer of grey silty clay at depths ranging from approximately 6.10 m to 7.06 m below the existing ground surface.

Based on the measured groundwater levels, the groundwater was calculated to flow in an easterly direction.

Approximate Depth to Bedrock

Bedrock was not confirmed in any of the boreholes during the field drilling program, however based on investigations conducted on adjacent properties, bedrock is anticipated to be encountered at a depth of approximately 11 m below grade.

Approximate Depth to Water Table

The depth to the water table is approximately 6.10 m to 7.06 m below the existing ground surface.

Sections 41 and 43.1 of Ontario Regulation 153/04

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, the pH of the subsurface soil is between 5 and 9, and the pH of the subsurface soil is between 5 and 11.

Section 43.1 of the Regulation does not apply to the Phase II Property in that the Phase II Property is not a Shallow Soil Property and is not within 30 m of a water body.

Section 49.1 of Ontario Regulation 153/04

Although the electrical conductivity was found to exceed the site standards at two locations within soil (BH2-22 and BH3-22), as per Section 49.1 of Ontario Regulation 153/04, the parameter group standard is deemed to have been met. It is the Qualified Person's opinion that the presence of elevated electrical conductivity is a result of the use of a substance on surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both.

Existing Buildings and Structures

The Phase II Property is currently occupied by a one-storey commercial building, with one basement level, presently tenanted by a restaurant business.

Environmental Condition

Areas Where Contaminants are Present

Based on the analytical test results, the upper fill material in the vicinity of BH2-22 is contaminated with lead, and multiple PAH parameters. Borehole BH2-22 is situated on the eastern portion of the Phase II Property.

Based on the analytical test results, the groundwater complies with the selected MECP Table 3 Non-Potable Groundwater Standards.

Types of Contaminants

Fill material was identified in BH2-22 which contains concentrations of lead and multiple PAH parameters above the selected MECP Table 3 Coarse-Grained Residential Soil Standards.

Based on the analytical test results, the groundwater complies with the selected MECP Table 3 Non-Potable Groundwater Standards.

Contaminated Media

The upper fill material identified at BH2-22 is considered to be contaminated.

Based on the analytical test results, the groundwater complies with the selected MECP Table 3 Non-Potable Groundwater Standards.

What Is Known About Areas Where Contaminants Are Present

The source of the soil contaminants in BH2-22 is suspected to have been the result of poor-quality fill material placed on this portion of the site.

Distribution and Migration of Contaminants

The surficial soil/fill in the vicinity of BH2-22 contains elevated concentrations of lead and multiple PAH parameters in excess of the selected MECP Table 3 Coarse-Grained Residential Soil Standards. Given the low mobility of lead and PAHs, as well as groundwater results which comply with site standards, these contaminants are anticipated to be limited to fill material and are not considered to extend into the underlying native soils or into the groundwater. Furthermore, PAHs in sample BH2-22-SS4 (collected from the native clay immediately below sample BH2-22-SS2/SS3) is compliant with site standards, thus vertically delineating the impacts identified above it.

Discharge of Contaminants

The surficial soil/fill in the vicinity of BH2-22 contains elevated concentrations of lead and multiple PAH parameters in excess of the selected MECP Table 3 Coarse-Grained Residential Soil Standards. Based on the sample depths, the source of these contaminants is suspected to have been the result of poor quality fill material placed in this location. The discharge is limited to a depth of 2.13 m below grade.

Climatic and Meteorological Conditions

In general, climatic and meteorological conditions have the potential to affect contaminant distribution. Two (2) ways by which climatic and meteorological conditions may affect contaminant distribution include the downward leaching of contaminants via the infiltration of precipitation, and the migration of contaminants via groundwater levels and/or flow, which may fluctuate seasonally.

The downward migration of metal and/or PAH contaminants in the vicinity of BH2-22 is not suspected to have occurred, based on the clean groundwater results as well as their relatively low mobility.

Potential for Vapour Intrusion

Given the low volatility of metals and PAH parameters, along with the location of the soil contamination outside of any existing building footprints, the potential for vapour intrusion is low. Furthermore, the potential for vapour intrusion within the proposed building will not create an environmental concern as all impacted soil will be removed prior to construction.

Remediation Program

Between December 11 and 12, 2023, Paterson Group monitored the removal of contaminated soil from the Phase II Property.

The remediation program consisted of the excavation of approximately 86 m^3 of contaminated soil, which was subsequently hauled off-site. Full horizontal and vertical delineation of the soil impacts were obtained during the remediation program. The remedial excavation was terminated at the north and east property lines. The excavation was terminated in a southern direction at the building footprint, which was noted to be founded on the clean, native clay material, and in a western direction, at a former foundation wall.

Based on the analytical test results, all confirmatory soil samples analyzed are in compliance with the selected MECP Table 3 Coarse-Grained Residential Soil Standards.

No groundwater was encountered during the remediation program. Furthermore, groundwater at BH2-22 (located within the remediation area) was in compliance with selected site standards.

No excess soil, as defined by Ontario Regulation 406/19, was brought from another property and placed on, in or under the RSC property as part of the

environmental remediation program. The remedial excavation was backfilled with granular material sourced from a licensed aggregate pit.

Refer to Appendix 2 for the complete remediation report.

6.0 CONCLUSIONS

Assessment

Paterson Group was retained by Smart Living Properties to conduct a Phase II – Environmental Site Assessment (Phase II ESA) for the property addressed 134 Nelson Street, 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 subject site (Phase II Property).

The subsurface investigation for this assessment was conducted on December 12, 2022, and consisted of drilling three boreholes (BH1-22 to BH3-22) throughout the Phase II Property, all of which were equipped with groundwater monitoring well installations to access the water table. The boreholes were advanced to a depth of approximately 7.62 m below the existing ground surface and terminated within an overburden layer of soft grey silty clay.

In general, the subsurface soil profile encountered at the borehole locations consists of a surficial pavement structure (asphaltic concrete over top of silty sand and gravel) overlying a layer of fill material (dark brown silty sand with some clay, organics, topsoil, and gravel), underlain by native grey silty clay. Bedrock was not encountered in any of the boreholes during the field drilling program.

Eight soil samples were submitted for laboratory analysis of either VOCs, PHCs (F_1-F_4), metals, PAHs, PCBs, EC/SAR, and/or pH parameters. Based on the analytical test results, the upper fill material in the vicinity of BH2-22 is contains concentrations of lead, multiple PAH parameters, as well as an elevated electrical conductivity level in excess of the selected MECP Table 3 Coarse-Grained Residential Soil Standards. Additionally, an elevated electrical conductivity concentration was detected at BH3-22. The presence of these contaminants are suspected to be the result of poor quality fill material placed in these areas, however, the electrical conductivity exceedances are considered to be a results of the application of a substance to surfaces for vehicular and pedestrian traffic during conditions of snow or ice or both, and as such, the levels of electrical conductivity are deemed to have met the site standards.

Three groundwater samples were submitted for laboratory analysis of either VOCs, BTEX, PHCs (F_1-F_4), PAHs, and/or PCB parameters. Based on the analytical test results, all detected parameter concentrations comply with the selected MECP Table 3 Coarse-Grained Residential Soil Standards.

Between December 11 and 12, 2023, Paterson Group monitored the removal of contaminated soil from the Phase II Property. Approximately 86 m^3 of impacted soil was removed from the Phase II Property. All confirmatory samples collected from the remediation area were found to be in compliance with the selected MECP Table 3 standards.

No additional remedial activities are recommended at this time.

Recommendations

Monitoring Wells

It is recommended that the monitoring wells be decommissioned at the time of construction, in accordance with Ontario Regulation 903 (Ontario Water Resources Act).

7.0 STATEMENT OF LIMITATIONS

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

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

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

This report was prepared for the sole use of Smart Living Properties. Permission and notification from Smart Living Properties and Paterson Group will be required prior to the release of this report to any other party.

Paterson Group Inc.

Nick Sullivan, B.Sc.

Adrian Menyhart, P.Eng., QP_{ESA}

Report Distribution:

- Smart Living Properties
- Paterson Group Inc.

FIGURES

FIGURE 1 – KEY PLAN

DRAWING PE5929-1 – SITE PLAN

DRAWING PE5929-2 – SURROUNDING LAND USE PLAN

DRAWING PE5929-3 – TEST HOLE LOCATION PLAN

DRAWING PE5929-4 – ANALYTICAL TESTING PLAN – SOIL (METALS)

DRAWING PE5929-4A – CROSS SECTION A-A' – SOIL (METALS)

DRAWING PE5929-4B – CROSS SECTION B-B' – SOIL (METALS)

DRAWING PE5929-5 – ANALYTICAL TESTING PLAN – SOIL (PAHs)

DRAWING PE5929-5A – CROSS SECTION A-A' – SOIL (PAHs)

DRAWING PE5929-5B – CROSS SECTION B-B' – SOIL (PAHs)

DRAWING PE5929-6 – ANALYTICAL TESTING PLAN – SOIL (EC)

DRAWING PE5929-6A – CROSS SECTION A-A' – SOIL (EC)

DRAWING PE5929-6B – CROSS SECTION B-B' – SOIL (EC)

DRAWING PE5929-7 – ANALYTICAL TESTING PLAN – SOIL (VOCs, PHCs, PCBs, SAR, pH)

DRAWING PE5929-7A – CROSS SECTION A-A' – SOIL (VOCs, PHCs, PCBs, SAR, pH)

DRAWING PE5929-7B – CROSS SECTION B-B' – SOIL (VOCs, PHCs, PCBs, SAR, pH)

DRAWING PE5929-8 – ANALYTICAL TESTING PLAN – GROUNDWATER

DRAWING PE5929-8A – CROSS SECTION A-A' – GROUNDWATER

DRAWING PE5929-8B – CROSS SECTION B-B' – GROUNDWATER

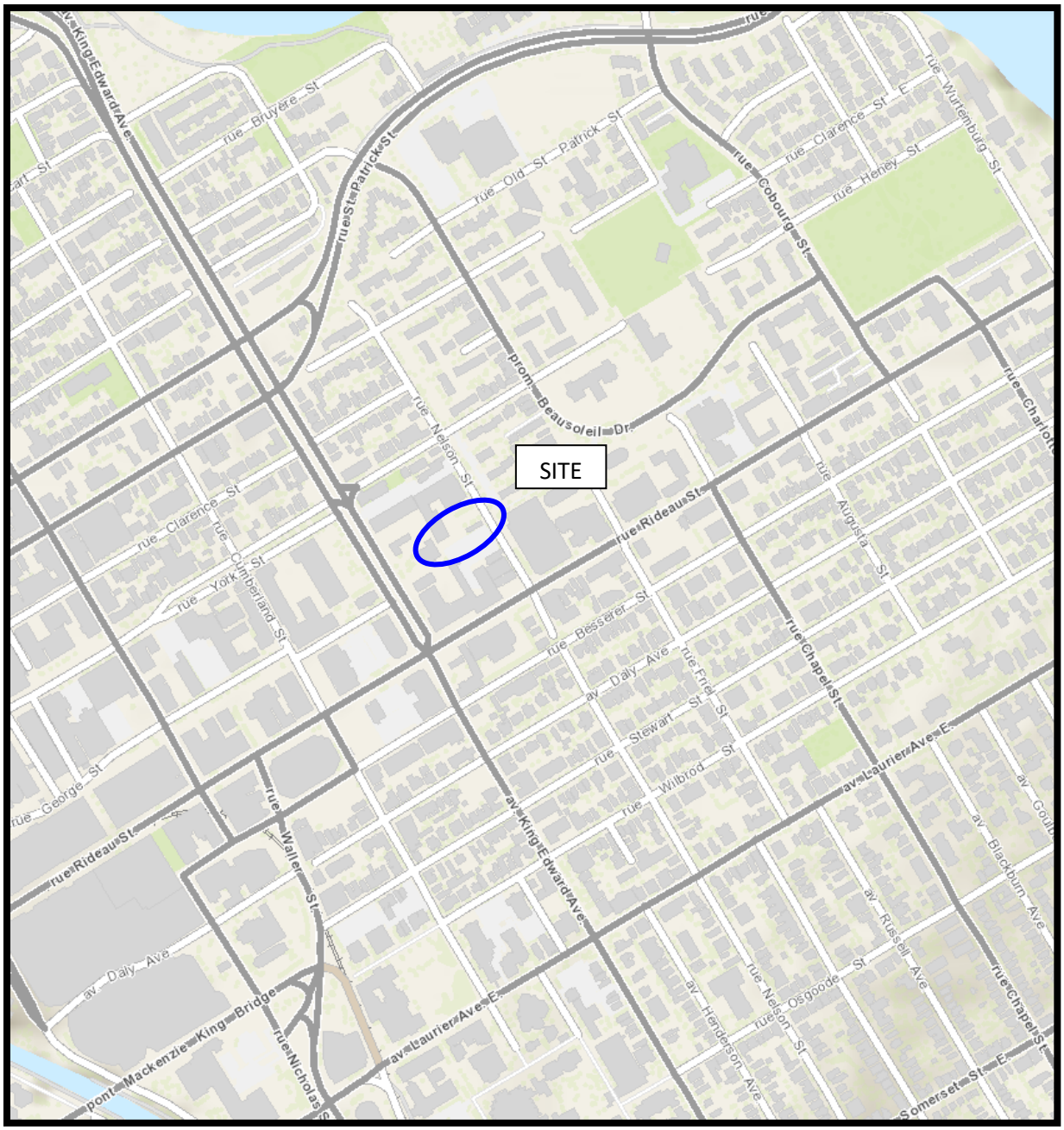
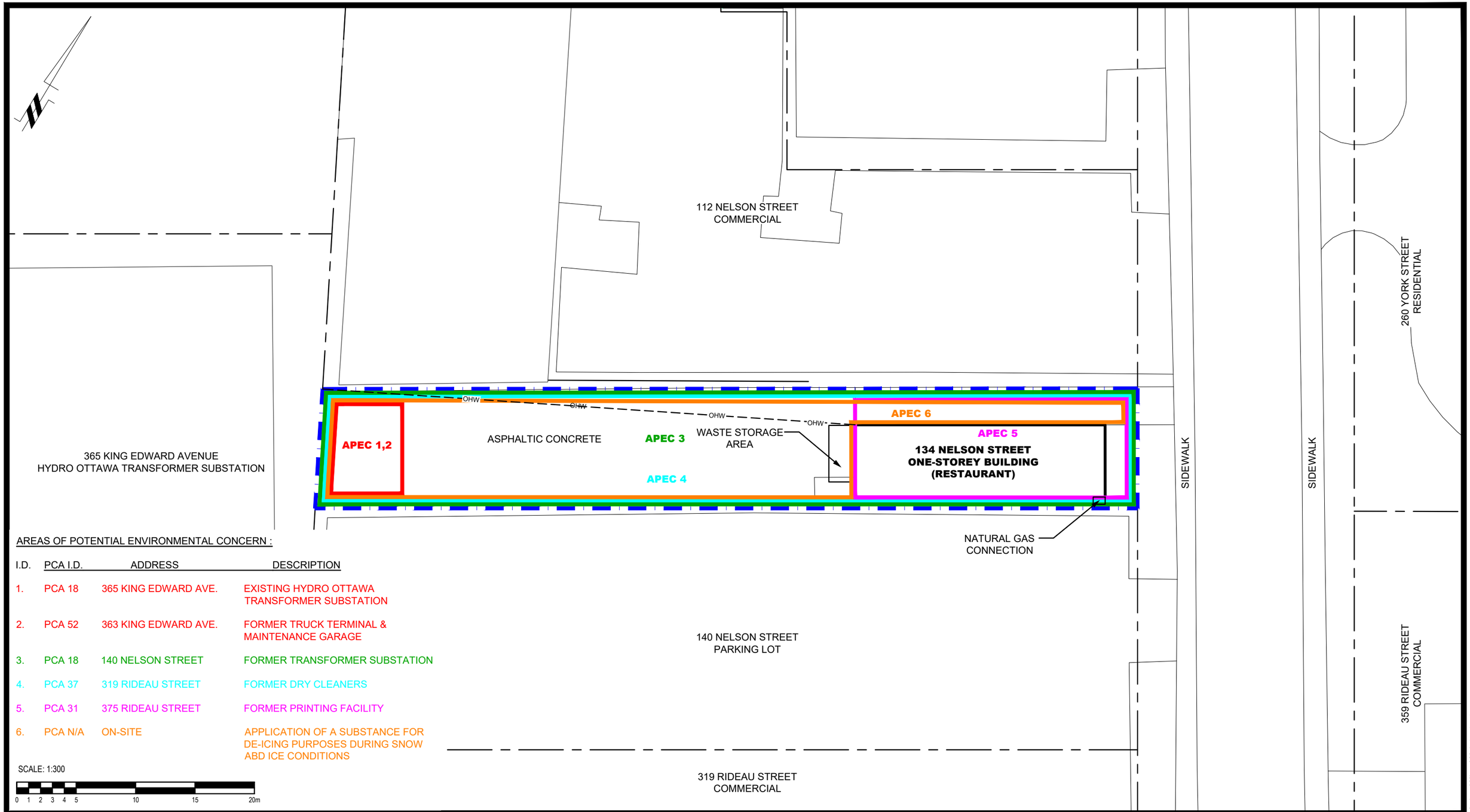


FIGURE 1

KEY PLAN



AREAS OF POTENTIAL ENVIRONMENTAL CONCERN :

I.D.	PCA I.D.	ADDRESS	DESCRIPTION
1.	PCA 18	365 KING EDWARD AVE.	EXISTING HYDRO OTTAWA TRANSFORMER SUBSTATION
2.	PCA 52	363 KING EDWARD AVE.	FORMER TRUCK TERMINAL & MAINTENANCE GARAGE
3.	PCA 18	140 NELSON STREET	FORMER TRANSFORMER SUBSTATION
4.	PCA 37	319 RIDEAU STREET	FORMER DRY CLEANERS
5.	PCA 31	375 RIDEAU STREET	FORMER PRINTING FACILITY
6.	PCA N/A	ON-SITE	APPLICATION OF A SUBSTANCE FOR DE-ICING PURPOSES DURING SNOW ABD ICE CONDITIONS

SCALE: 1:300

0 1 2 3 4 5 10 15 20m

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9 AURIGA DRIVE
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NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title:

SITE PLAN

Scale: 1:300	Date: 12/2022
Drawn by: YA	Report No.: PE5929-1
Checked by: NS	Dwg. No.: PE5929-1
Approved by: AM	Revision No.:

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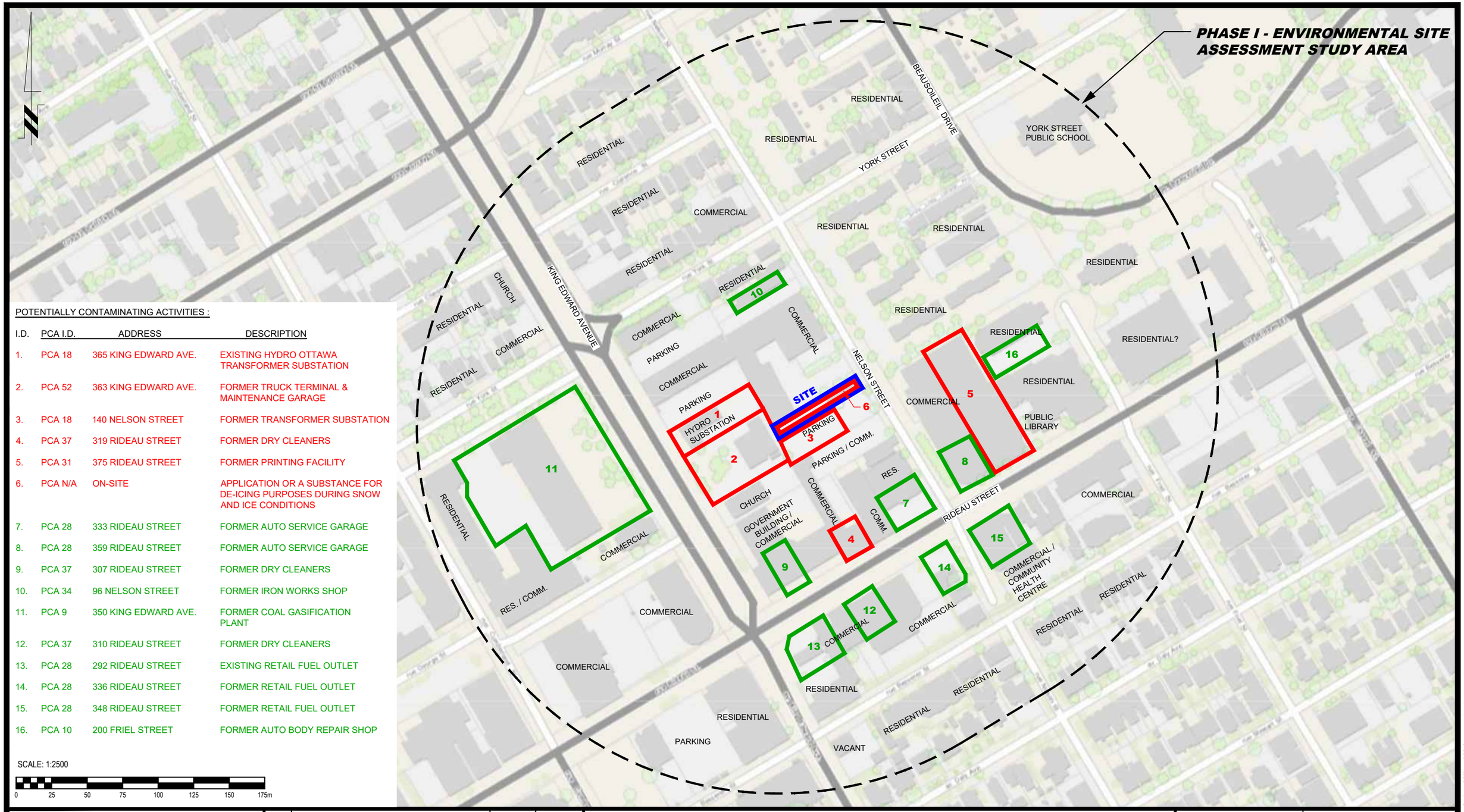

POTENTIALLY CONTAMINATING ACTIVITIES :

I.D.	PCA I.D.	ADDRESS	DESCRIPTION
1.	PCA 18	365 KING EDWARD AVE.	EXISTING HYDRO OTTAWA TRANSFORMER SUBSTATION
2.	PCA 52	363 KING EDWARD AVE.	FORMER TRUCK TERMINAL & MAINTENANCE GARAGE
3.	PCA 18	140 NELSON STREET	FORMER TRANSFORMER SUBSTATION
4.	PCA 37	319 RIDEAU STREET	FORMER DRY CLEANERS
5.	PCA 31	375 RIDEAU STREET	FORMER PRINTING FACILITY
6.	PCA N/A	ON-SITE	APPLICATION OR A SUBSTANCE FOR DE-ICING PURPOSES DURING SNOW AND ICE CONDITIONS
7.	PCA 28	333 RIDEAU STREET	FORMER AUTO SERVICE GARAGE
8.	PCA 28	359 RIDEAU STREET	FORMER AUTO SERVICE GARAGE
9.	PCA 37	307 RIDEAU STREET	FORMER DRY CLEANERS
10.	PCA 34	96 NELSON STREET	FORMER IRON WORKS SHOP
11.	PCA 9	350 KING EDWARD AVE.	FORMER COAL GASIFICATION PLANT
12.	PCA 37	310 RIDEAU STREET	FORMER DRY CLEANERS
13.	PCA 28	292 RIDEAU STREET	EXISTING RETAIL FUEL OUTLET
14.	PCA 28	336 RIDEAU STREET	FORMER RETAIL FUEL OUTLET
15.	PCA 28	348 RIDEAU STREET	FORMER RETAIL FUEL OUTLET
16.	PCA 10	200 FRIEL STREET	FORMER AUTO BODY REPAIR SHOP

SCALE: 1:2500

0 25 50 75 100 125 150 175m

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PHASE I - ENVIRONMENTAL SITE ASSESSMENT
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OTTAWA, ONTARIO

Title:

SURROUNDING LAND USE PLAN

Scale: 1:2500	Date: 12/2022
Drawn by: YA	Report No.: PE5929-1
Checked by: NS	Dwg. No.: PE5929-2
Approved by: AM	Revision No.:

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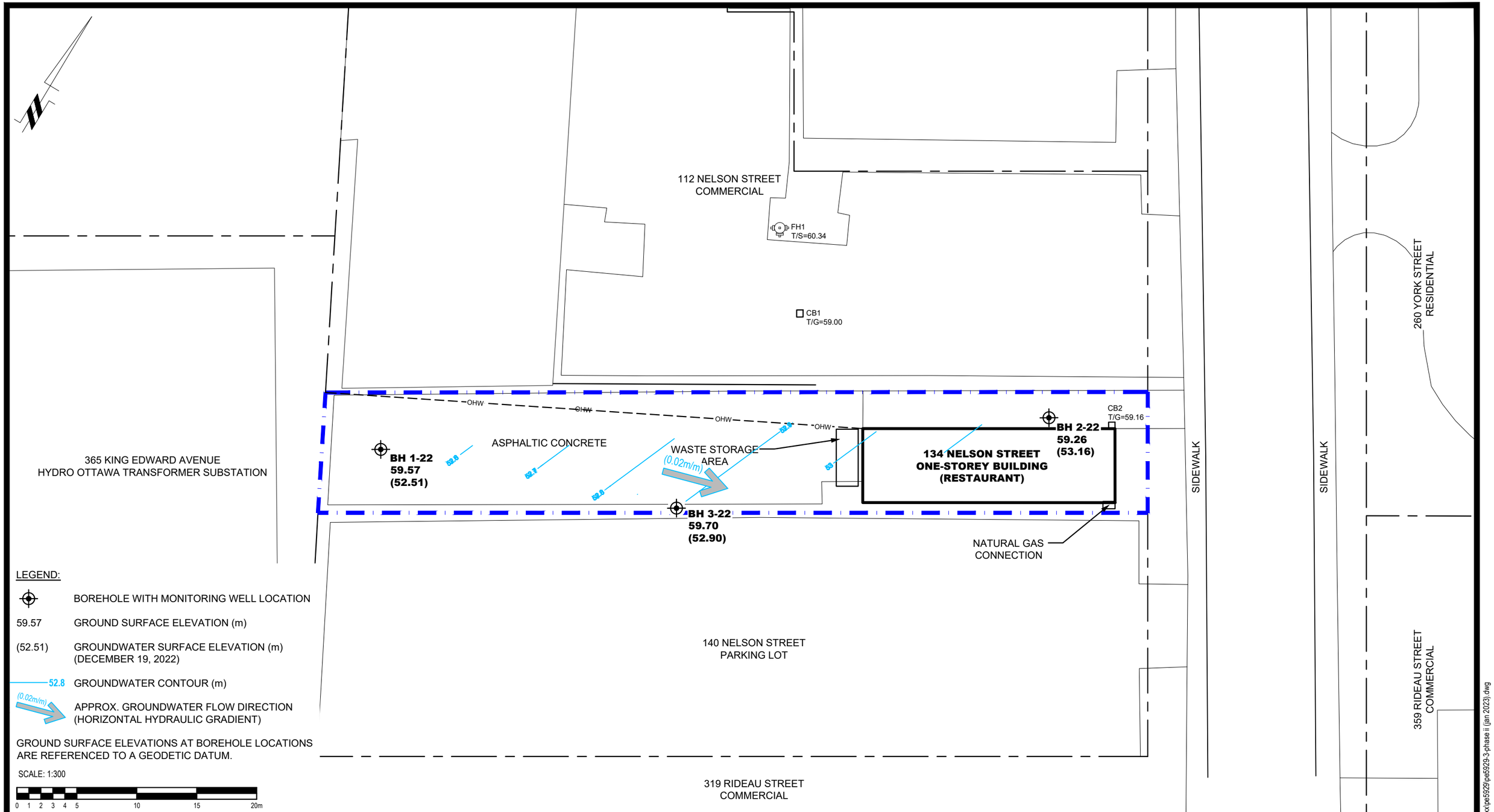

LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION
- 59.57 GROUND SURFACE ELEVATION (m)
- (52.51) GROUNDWATER SURFACE ELEVATION (m) (DECEMBER 19, 2022)
- 52.8 GROUNDWATER CONTOUR (m)
- (0.02m/m) APPROX. GROUNDWATER FLOW DIRECTION (HORIZONTAL HYDRAULIC GRADIENT)

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

SCALE: 1:300

0 1 2 3 4 5 10 15 20m

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SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:300	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-3
Approved by: AM	Revision No.:

11x17

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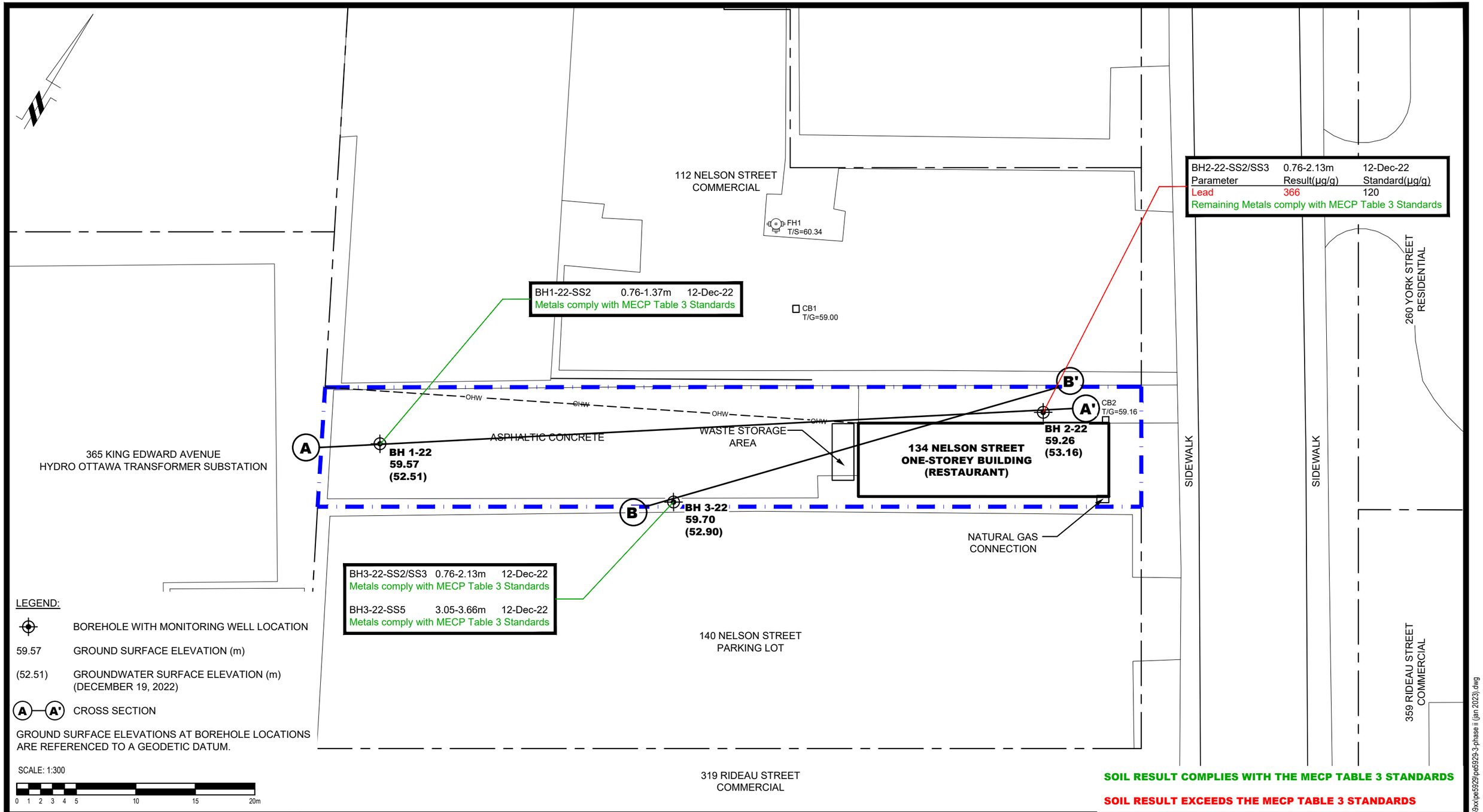

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SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title: ANALYTICAL TESTING PLAN - SOIL (METALS)

Scale: 1:300	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-4
Approved by: AM	Revision No.:

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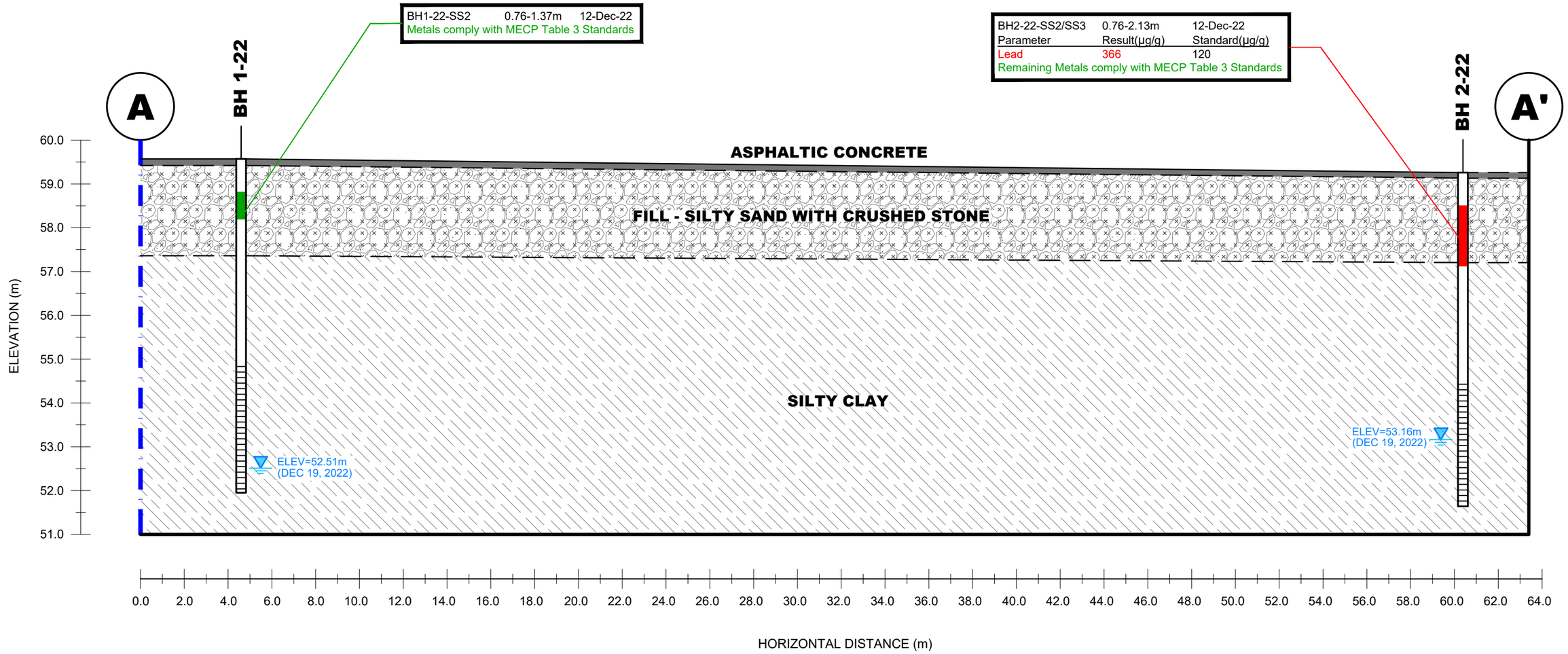

SOIL RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

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PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title: **CROSS SECTION A-A' - SOIL (METALS)**

Scale: AS SHOWN	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-4A
Approved by: AM	Revision No.:

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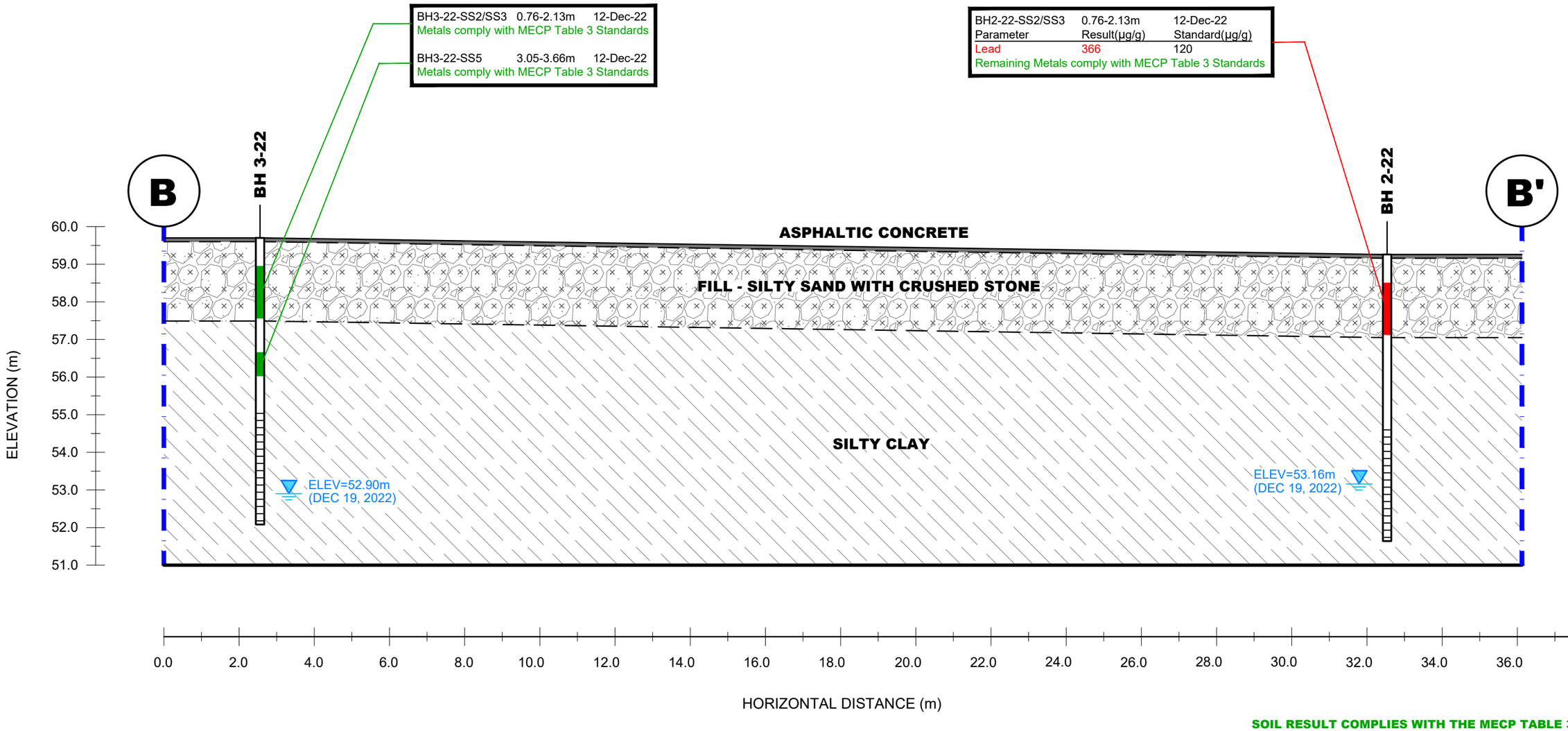
BH3-22-SS2/SS3 0.76-2.13m 12-Dec-22
Metals comply with MECP Table 3 Standards

BH3-22-SS5 3.05-3.66m 12-Dec-22
Metals comply with MECP Table 3 Standards

BH2-22-SS2/SS3 0.76-2.13m 12-Dec-22

Parameter	Result(µg/g)	Standard(µg/g)
Lead	366	120

Remaining Metals comply with MECP Table 3 Standards



SOIL RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title: CROSS SECTION B-B' - SOIL (METALS)

Scale: AS SHOWN	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-4B
Approved by: AM	Revision No.:

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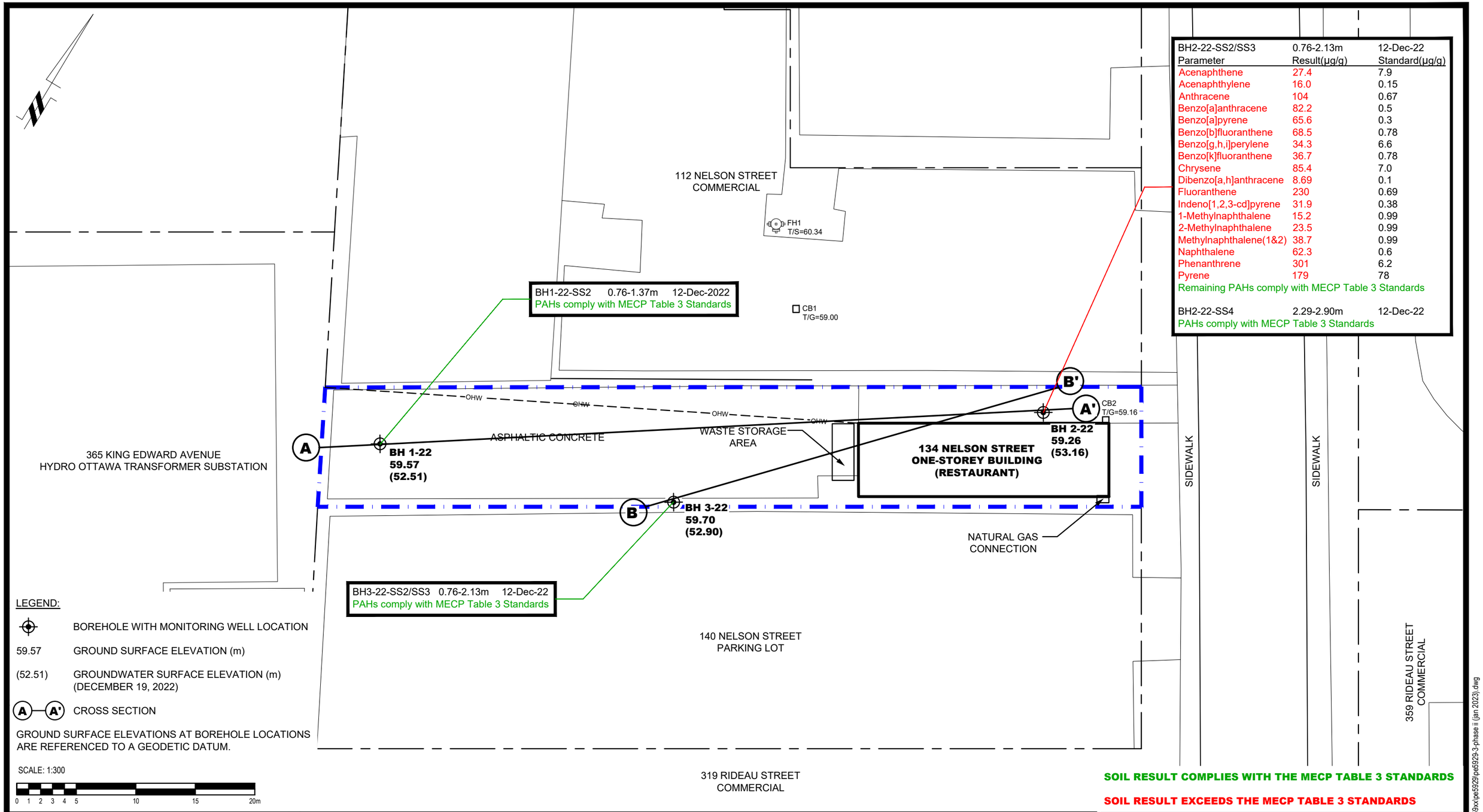

BH2-22-SS2/SS3	0.76-2.13m	12-Dec-22
Parameter	Result(µg/g)	Standard(µg/g)
Acenaphthene	27.4	7.9
Acenaphthylene	16.0	0.15
Anthracene	104	0.67
Benzo[a]anthracene	82.2	0.5
Benzo[a]pyrene	65.6	0.3
Benzo[b]fluoranthene	68.5	0.78
Benzo[g,h,i]perylene	34.3	6.6
Benzo[k]fluoranthene	36.7	0.78
Chrysene	85.4	7.0
Dibenzo[a,h]anthracene	8.69	0.1
Fluoranthene	230	0.69
Indeno[1,2,3-cd]pyrene	31.9	0.38
1-Methylnaphthalene	15.2	0.99
2-Methylnaphthalene	23.5	0.99
Methylnaphthalene(1&2)	38.7	0.99
Naphthalene	62.3	0.6
Phenanthrene	301	6.2
Pyrene	179	78

Remaining PAHs comply with MECP Table 3 Standards

BH2-22-SS4 2.29-2.90m 12-Dec-22
PAHs comply with MECP Table 3 Standards

LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION
- 59.57 GROUND SURFACE ELEVATION (m)
- (52.51) GROUNDWATER SURFACE ELEVATION (m) (DECEMBER 19, 2022)
- A—A' CROSS SECTION

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

SCALE: 1:300

0 1 2 3 4 5 10 15 20m

SOIL RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

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SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title: ANALYTICAL TESTING PLAN - SOIL (PAHs)

Scale: 1:300	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-5
Approved by: AM	Revision No.:

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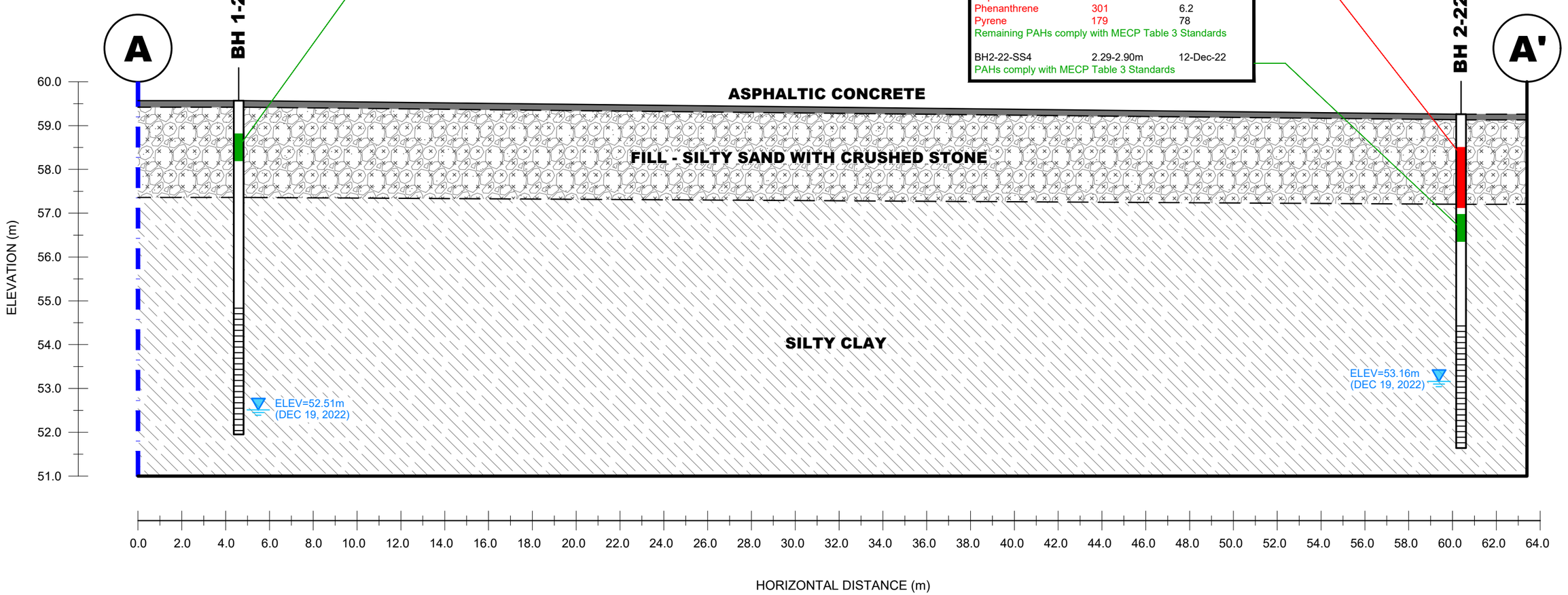
BH2-22-SS2/SS3	0.76-2.13m	12-Dec-22
Parameter	Result(µg/g)	Standard(µg/g)
Acenaphthene	27.4	7.9
Acenaphthylene	16.0	0.15
Anthracene	104	0.67
Benzo[a]anthracene	82.2	0.5
Benzo[a]pyrene	65.6	0.3
Benzo[b]fluoranthene	68.5	0.78
Benzo[g,h,i]perylene	34.3	6.6
Benzo[k]fluoranthene	36.7	0.78
Chrysene	85.4	7.0
Dibenzo[a,h]anthracene	8.69	0.1
Fluoranthene	230	0.69
Indeno[1,2,3-cd]pyrene	31.9	0.38
1-Methylnaphthalene	15.2	0.99
2-Methylnaphthalene	23.5	0.99
Methylnaphthalene(1&2)	38.7	0.99
Naphthalene	62.3	0.6
Phenanthrene	301	6.2
Pyrene	179	78
Remaining PAHs comply with MECP Table 3 Standards		
BH2-22-SS4	2.29-2.90m	12-Dec-22
PAHs comply with MECP Table 3 Standards		

BH1-22-SS2 0.76-1.37m 12-Dec-2022
PAHs comply with MECP Table 3 Standards



SOIL RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title: CROSS SECTION A-A' - SOIL (PAHs)

Scale: AS SHOWN	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-5A
Approved by: AM	Revision No.:

11x17

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BH2-22-SS2/SS3	0.76-2.13m	12-Dec-22
Parameter	Result(µg/g)	Standard(µg/g)
Acenaphthene	27.4	7.9
Acenaphthylene	16.0	0.15
Anthracene	104	0.67
Benzo[a]anthracene	82.2	0.5
Benzo[a]pyrene	65.6	0.3
Benzo[b]fluoranthene	68.5	0.78
Benzo[g,h,i]perylene	34.3	6.6
Benzo[k]fluoranthene	36.7	0.78
Chrysene	85.4	7.0
Dibenzo[a,h]anthracene	8.69	0.1
Fluoranthene	230	0.69
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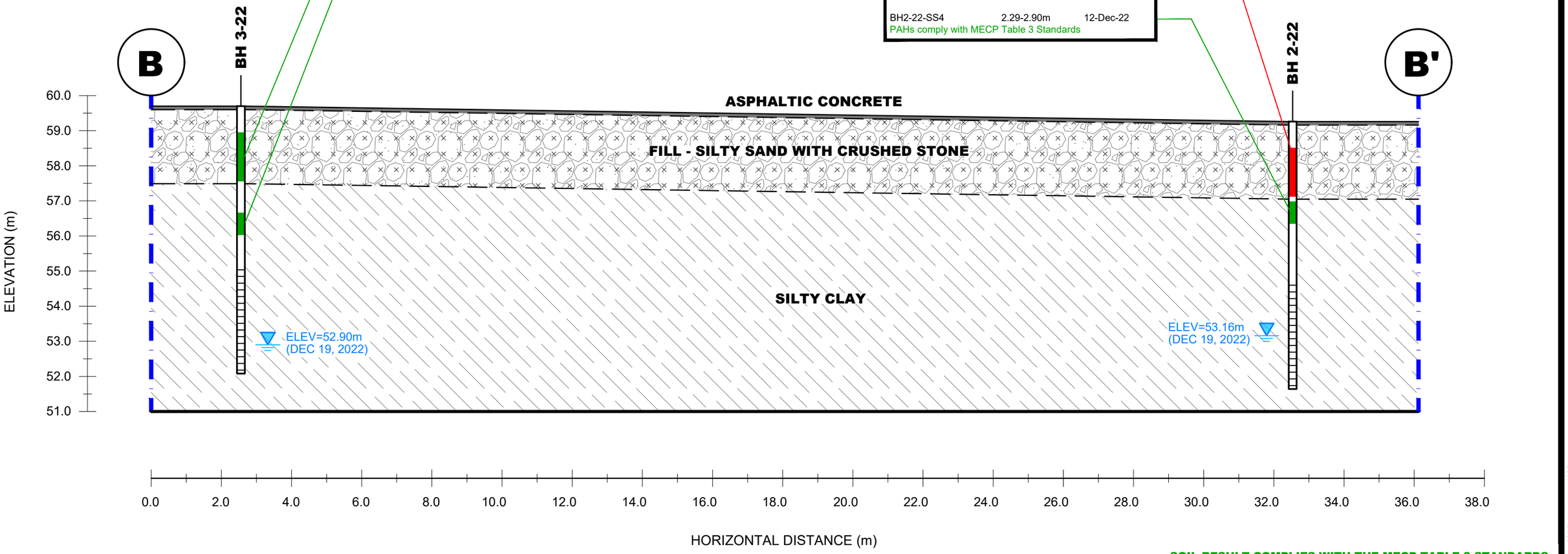
Pyrene	179	78

Remaining PAHs comply with MECP Table 3 Standards

BH2-22-SS4 2.29-2.90m 12-Dec-22
PAHs comply with MECP Table 3 Standards

BH3-22-SS2/SS3 0.76-2.13m 12-Dec-22
Metals comply with MECP Table 3 Standards

BH3-22-SS5 3.05-3.66m 12-Dec-22
Metals comply with MECP Table 3 Standards



SOIL RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

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K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title: CROSS SECTION B-B' - SOIL (PAHs)

Scale: AS SHOWN	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-5B
Approved by: AM	Revision No.:

11x17

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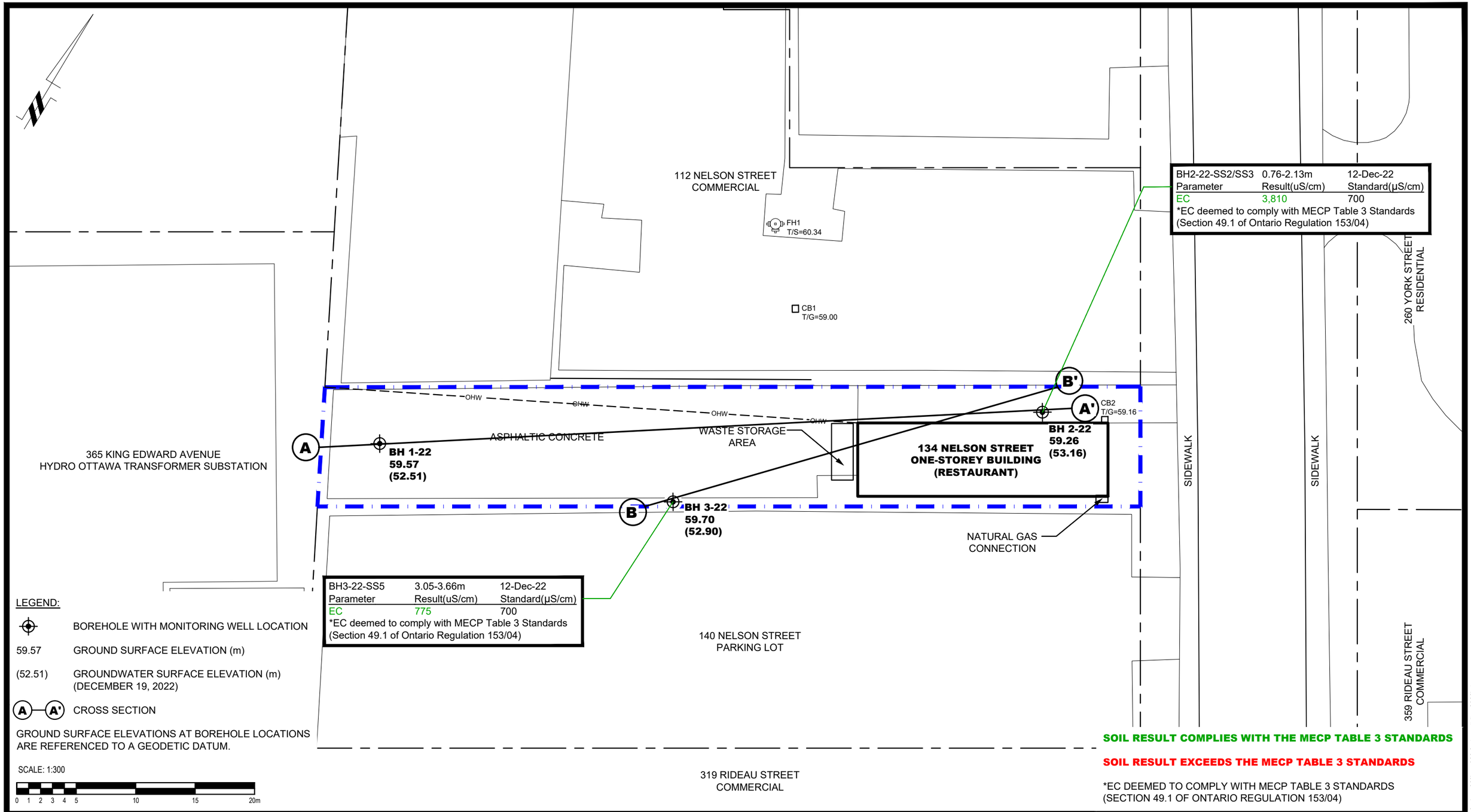

LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION
- 59.57 GROUND SURFACE ELEVATION (m)
- (52.51) GROUNDWATER SURFACE ELEVATION (m) (DECEMBER 19, 2022)
- A—A' CROSS SECTION

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

SCALE: 1:300

0 1 2 3 4 5 10 15 20m

SOIL RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

*EC DEEMED TO COMPLY WITH MECP TABLE 3 STANDARDS (SECTION 49.1 OF ONTARIO REGULATION 153/04)

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

NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - SOIL (EC)

Scale: 1:300	**Date:** 01/2023
Drawn by: YA	**Report No.:** PE5929-2
Checked by: NS	**Dwg. No.:** PE5929-6
Approved by: AM	**Revision No.:**

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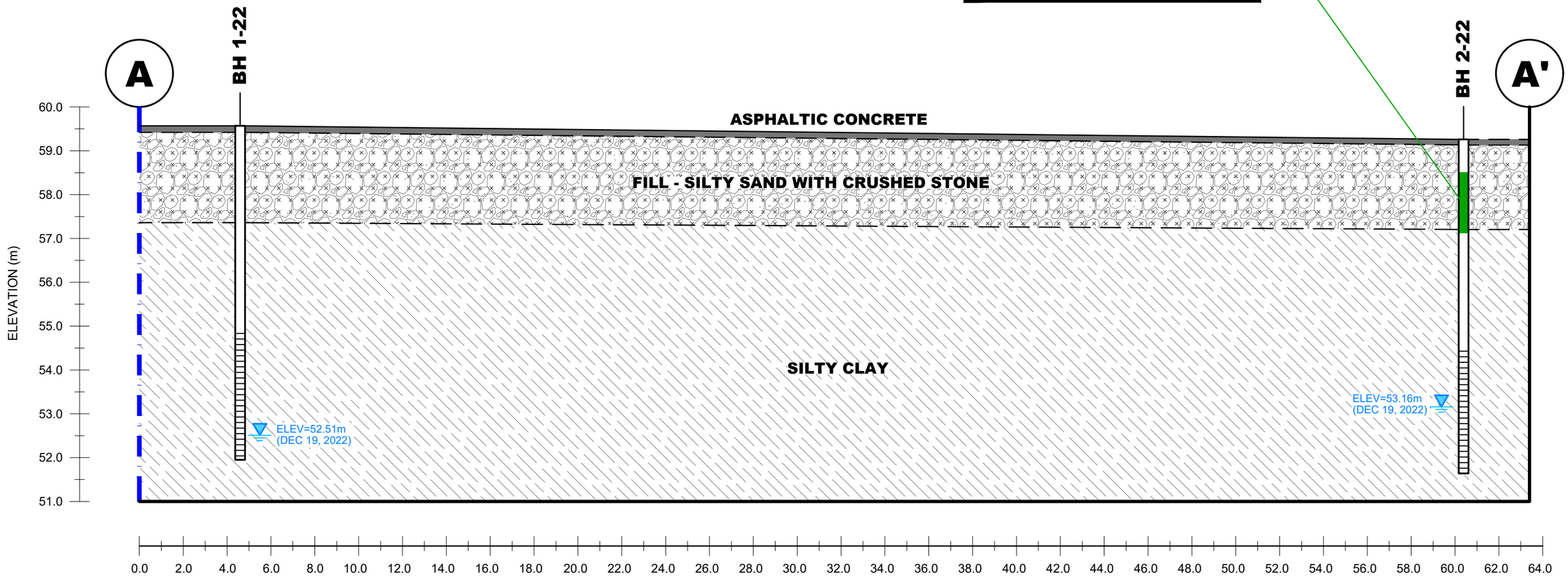
11x17

BH2-22-SS2/SS3	0.76-2.13m	12-Dec-22
Parameter	Result(uS/cm)	Standard(µS/cm)
EC	3,810	700

*EC deemed to comply with MECP Table 3 Standards (Section 49.1 of Ontario Regulation 153/04)



SOIL RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

*EC DEEMED TO COMPLY WITH MECP TABLE 3 STANDARDS (SECTION 49.1 OF ONTARIO REGULATION 153/04)

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

NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET
OTTAWA, ONTARIO

Title: CROSS SECTION A-A' - SOIL (EC)

Scale: AS SHOWN	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-6A
Approved by: AM	Revision No.:

11x17

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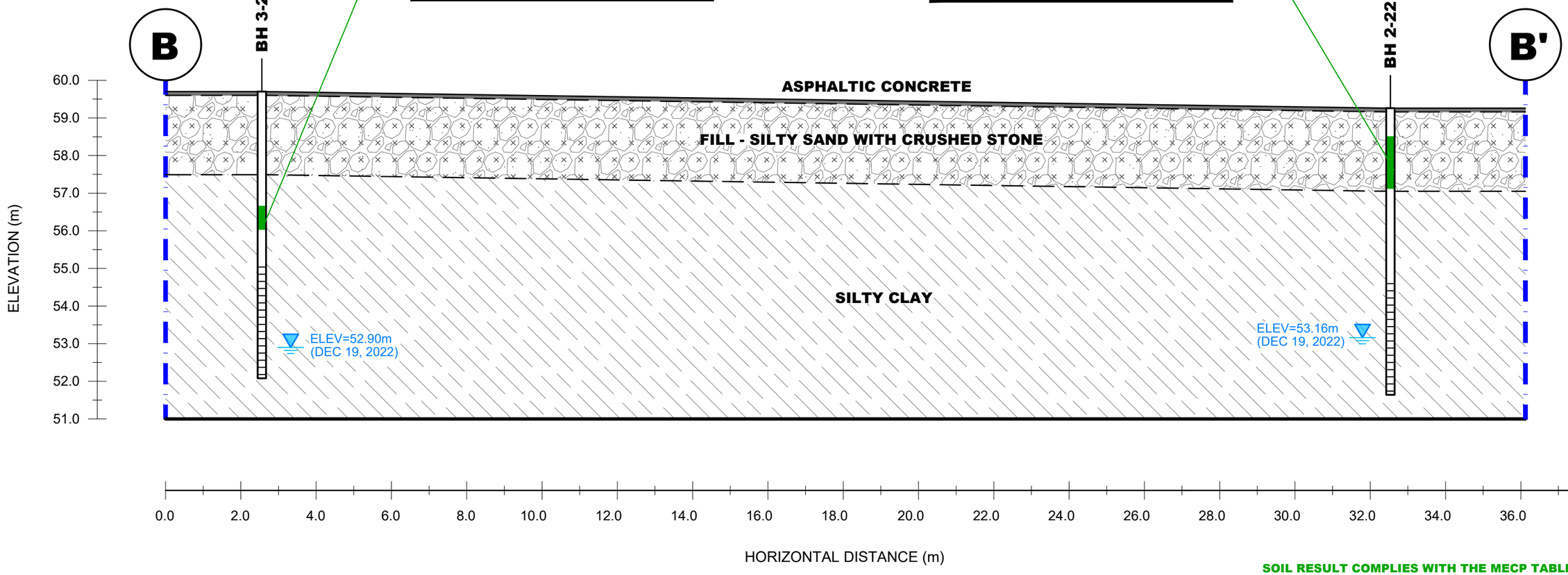
BH3-22-SS5	3.05-3.66m	12-Dec-22
Parameter	Result(uS/cm)	Standard(µS/cm)
EC	775	700

*EC deemed to comply with MECP Table 3 Standards (Section 49.1 of Ontario Regulation 153/04)

BH2-22-SS2/SS3	0.76-2.13m	12-Dec-22
Parameter	Result(uS/cm)	Standard(µS/cm)
EC	3,810	700

*EC deemed to comply with MECP Table 3 Standards (Section 49.1 of Ontario Regulation 153/04)



SOIL RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET
OTTAWA, ONTARIO

Title: CROSS SECTION B-B' - SOIL (EC)

Scale: AS SHOWN	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-6B
Approved by: AM	Revision No.:

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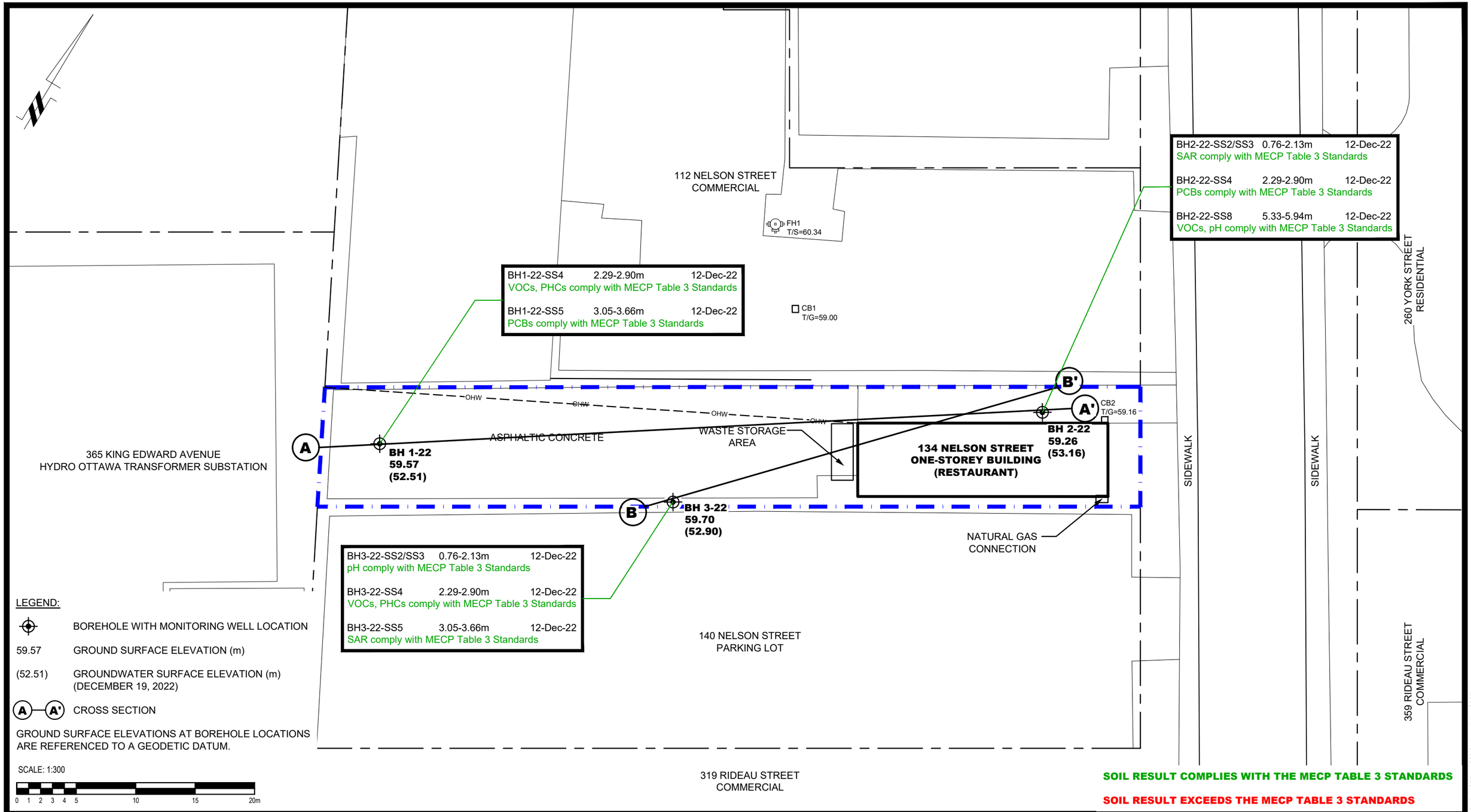

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title: ANALYTICAL TESTING PLAN - SOIL
(VOCs, PHCs, PCBs, SAR, pH)

Scale: 1:300	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-7
Approved by: AM	Revision No.:

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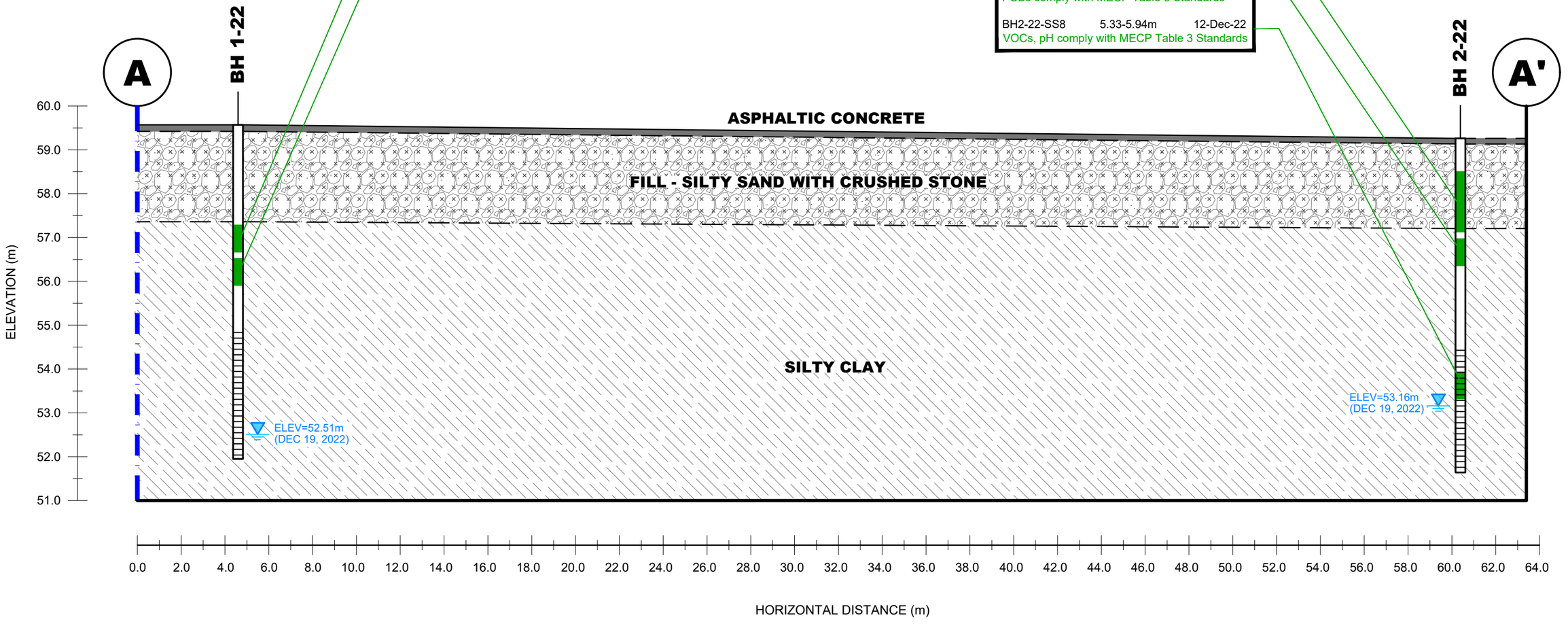
BH1-22-SS4 2.29-2.90m 12-Dec-22
VOCs, PHCs comply with MECP Table 3 Standards

BH1-22-SS5 3.05-3.66m 12-Dec-22
PCBs comply with MECP Table 3 Standards

BH2-22-SS2/SS3 0.76-2.13m 12-Dec-22
SAR comply with MECP Table 3 Standards

BH2-22-SS4 2.29-2.90m 12-Dec-22
PCBs comply with MECP Table 3 Standards

BH2-22-SS8 5.33-5.94m 12-Dec-22
VOCs, pH comply with MECP Table 3 Standards



SOIL RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title: CROSS SECTION A-A' - SOIL (VOCs, PHCs, PCBs, SAR, pH)

Scale: AS SHOWN	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-7A
Approved by: AM	Revision No.:

11x17

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BH3-22-SS2/SS3 0.76-2.13m 12-Dec-22
pH comply with MECP Table 3 Standards

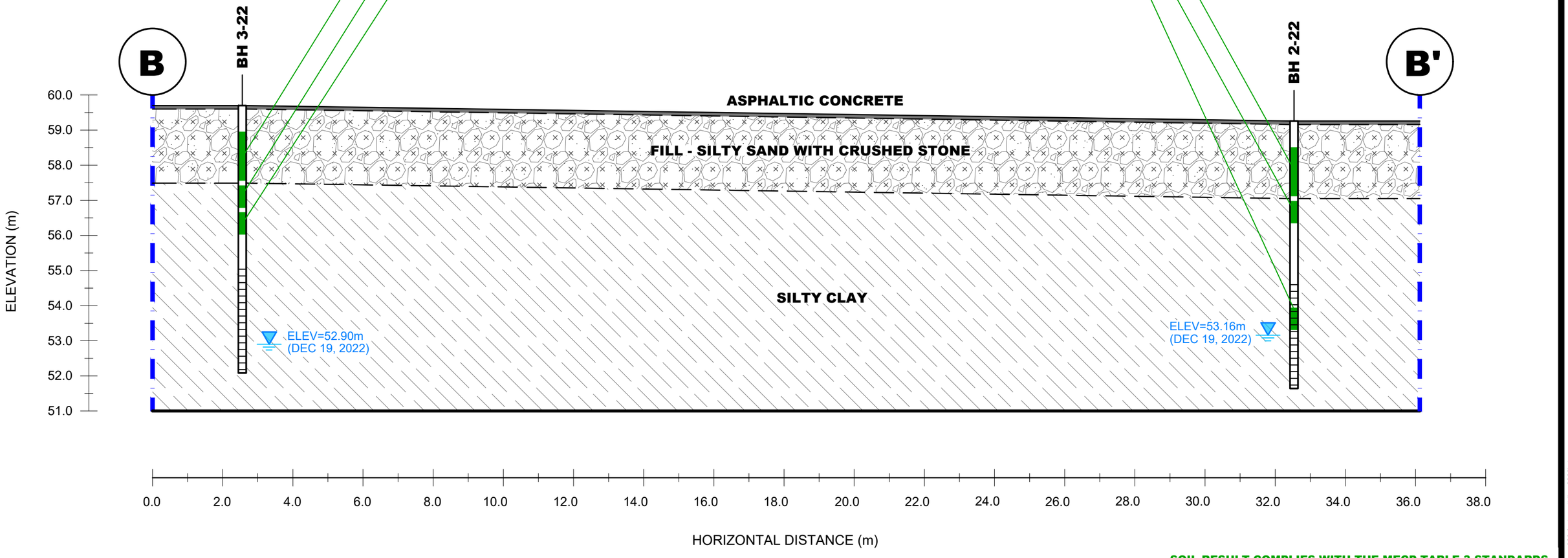
BH3-22-SS4 2.29-2.90m 12-Dec-22
VOCs, PHCs comply with MECP Table 3 Standards

BH3-22-SS5 3.05-3.66m 12-Dec-22
SAR comply with MECP Table 3 Standards

BH2-22-SS2/SS3 0.76-2.13m 12-Dec-22
SAR comply with MECP Table 3 Standards

BH2-22-SS4 2.29-2.90m 12-Dec-22
PCBs comply with MECP Table 3 Standards

BH2-22-SS8 5.33-5.94m 12-Dec-22
VOCs, pH comply with MECP Table 3 Standards



SOIL RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title: **CROSS SECTION B-B' - SOIL (VOCs, PHCs, PCBs, SAR, pH)**

Scale: AS SHOWN	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-7B
Approved by: AM	Revision No.:

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11x17

112 NELSON STREET
COMMERCIAL

FH1
T/S=60.34

BH1-22-GW1 4.62-7.62m 19-Dec-22
BTEX, PHCs, PCBs comply with MECP Table 3 Standards

CB1
T/G=59.00

BH2-22-GW1 4.62-7.62m 19-Dec-22
BTEX, PHCs comply with MECP Table 3 Standards

260 YORK STREET
RESIDENTIAL

365 KING EDWARD AVENUE
HYDRO OTTAWA TRANSFORMER SUBSTATION

OHW

ASPHALTIC CONCRETE

WASTE STORAGE
AREA

A

BH 1-22
59.57
(52.51)

B

BH 3-22
59.70
(52.90)

B'

A'

CB2
T/G=59.16

BH 2-22
59.26
(53.16)

134 NELSON STREET
ONE-STOREY BUILDING
(RESTAURANT)

SIDEWALK

SIDEWALK

NATURAL GAS
CONNECTION

BH3-22-GW1 4.62-7.62m 19-Dec-22
VOCs, BTEX, PHCs, PAHs, PCBs comply with MECP Table 3 Standards

140 NELSON STREET
PARKING LOT

359 RIDEAU STREET
COMMERCIAL

319 RIDEAU STREET
COMMERCIAL

LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION
- 59.57 GROUND SURFACE ELEVATION (m)
- (52.51) GROUNDWATER SURFACE ELEVATION (m) (DECEMBER 19, 2022)
- A—A' CROSS SECTION

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

SCALE: 1:300

0 1 2 3 4 5 10 15 20m

GROUNDWATER RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

GROUNDWATER RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title: **ANALYTICAL TESTING PLAN - GROUNDWATER (VOCs, BTEX, PHCs, PAHs, PCBs)**

Scale: 1:300	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-8
Approved by: AM	Revision No.:

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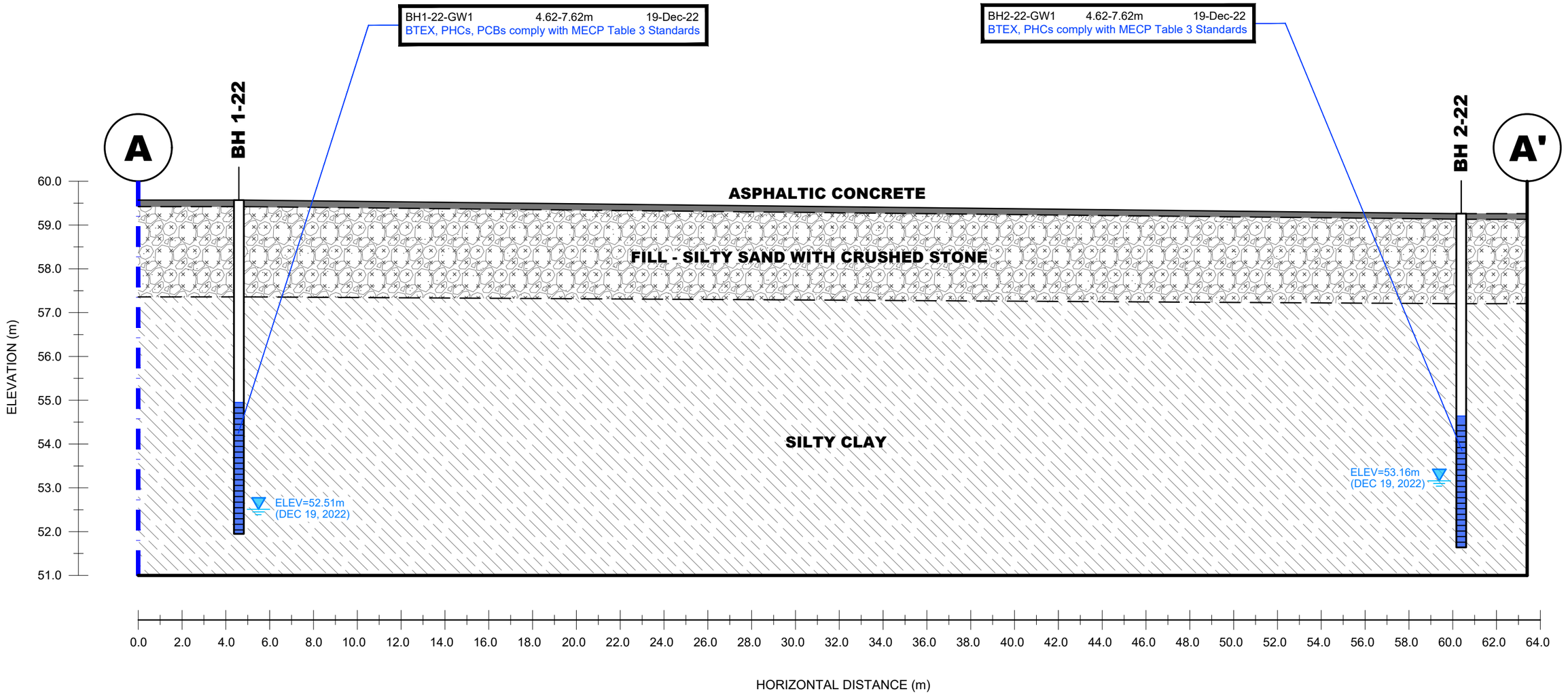

GROUNDWATER RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

GROUNDWATER RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title: CROSS SECTION A-A' - GROUNDWATER (VOCs, BTEX, PHCs, PAHs, PCBs)

Scale: AS SHOWN	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-8A
Approved by: AM	Revision No.:

11x17

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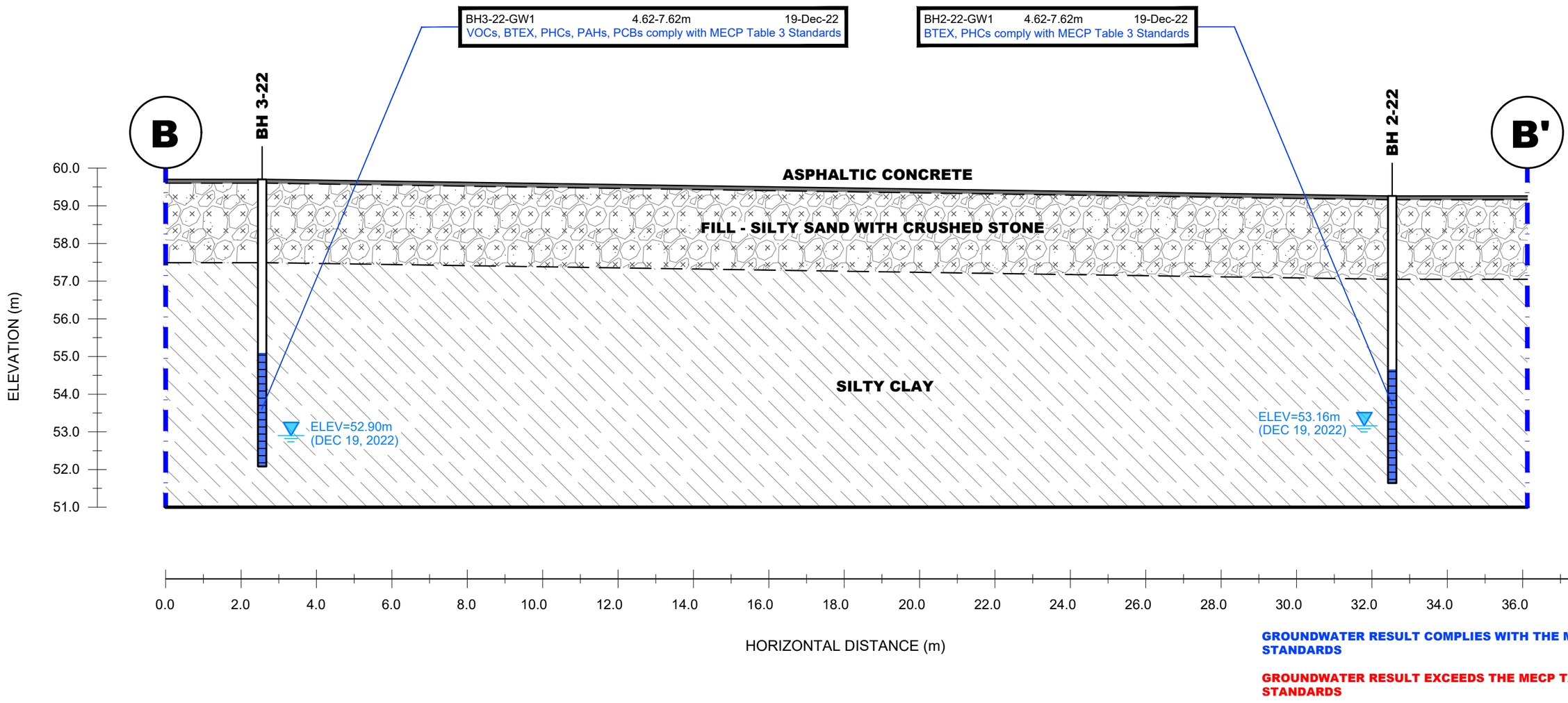

GROUNDWATER RESULT COMPLIES WITH THE MECP TABLE 3 STANDARDS

GROUNDWATER RESULT EXCEEDS THE MECP TABLE 3 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
134 NELSON STREET

OTTAWA, ONTARIO

Title: CROSS SECTION B-B' - GROUNDWATER (VOCs, BTEX, PHCs, PAHs, PCBs)

Scale: AS SHOWN	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-8B
Approved by: AM	Revision No.:

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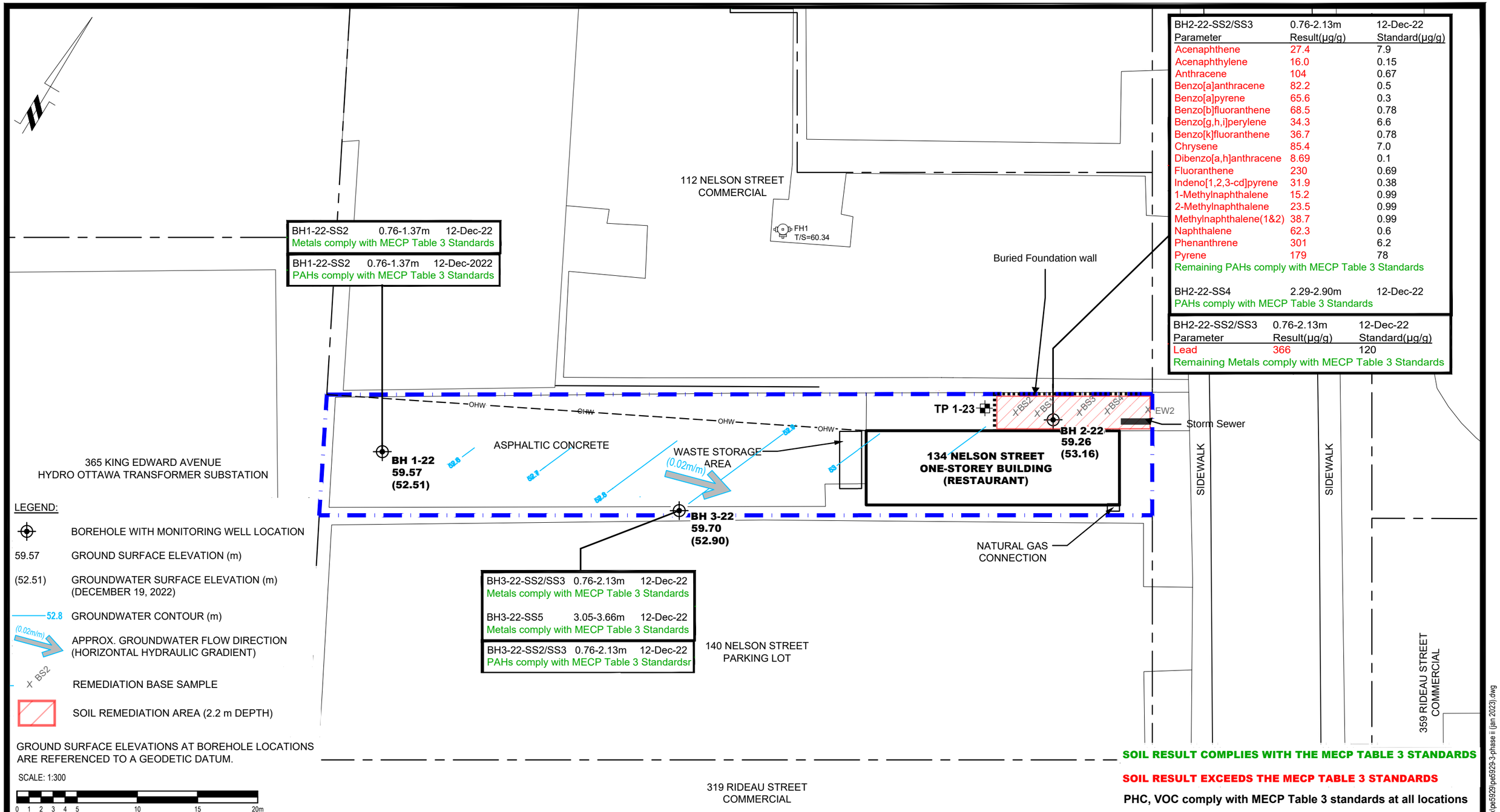

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

SOIL REMEDIATION PROGRAM
134 NELSON STREET

OTTAWA, ONTARIO

Title:

SOIL REMEDIATION SKETCH

Scale: 1:300	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-3R
Approved by: AM	Revision No.:

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11x17

APPENDIX 1

SAMPLING AND ANALYSIS PLAN

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

LABORATORY CERTIFICATES OF ANALYSIS

PATERSON GROUP

Sampling & Analysis Plan

134 Nelson Street

Ottawa, Ontario

Prepared for Smart Living Properties

Report: PE5929-SAP
December 1, 2022

TABLE OF CONTENTS

PAGE

1.0 SAMPLING PROGRAM

Paterson Group Inc. (Paterson) was commissioned by Smart Living Properties, to conduct a Phase II – Environmental Site Assessment (Phase II ESA) for the property addressed 134 Nelson Street, in the City of Ottawa, Ontario.

Based on the findings of the Phase I ESA, the following subsurface investigation program was developed.

Borehole	Location & Rationale	Proposed Depth & Rationale
BH1-22	Western portion of the Phase I Property; to assess for potential impacts resulting from the presence of fill material of unknown quality, the use of road salt for de-icing purposes, a former off-site truck terminal and maintenance garage, as well as an existing off-site transformer substation.	6-8 m; to intercept the groundwater table for the purpose of installing a monitoring well.
BH2-22	Eastern portion of the Phase I Property; to assess for potential impacts resulting from the presence of fill material of unknown quality, the use of road salt for de-icing purposes, a former off-site transformer substation, as well as a former off-site printing facility.	6-8 m; to intercept the groundwater table for the purpose of installing a monitoring well.
BH3-22	Central portion of the Phase I Property; to assess for potential impacts resulting from the presence of fill material of unknown quality, the use of road salt for de-icing purposes, a former off-site transformer substation, as well as a former off-site dry cleaners.	6-8 m; for general coverage purposes.

Borehole locations are shown on Drawing PE5929-3 – 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 three boreholes to allow for the collection of groundwater samples.

2.0 ANALYTICAL TESTING PROGRAM

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

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

The analytical testing program for 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.

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9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
134 Nelson Street
Ottawa, Ontario

DATUM Geodetic

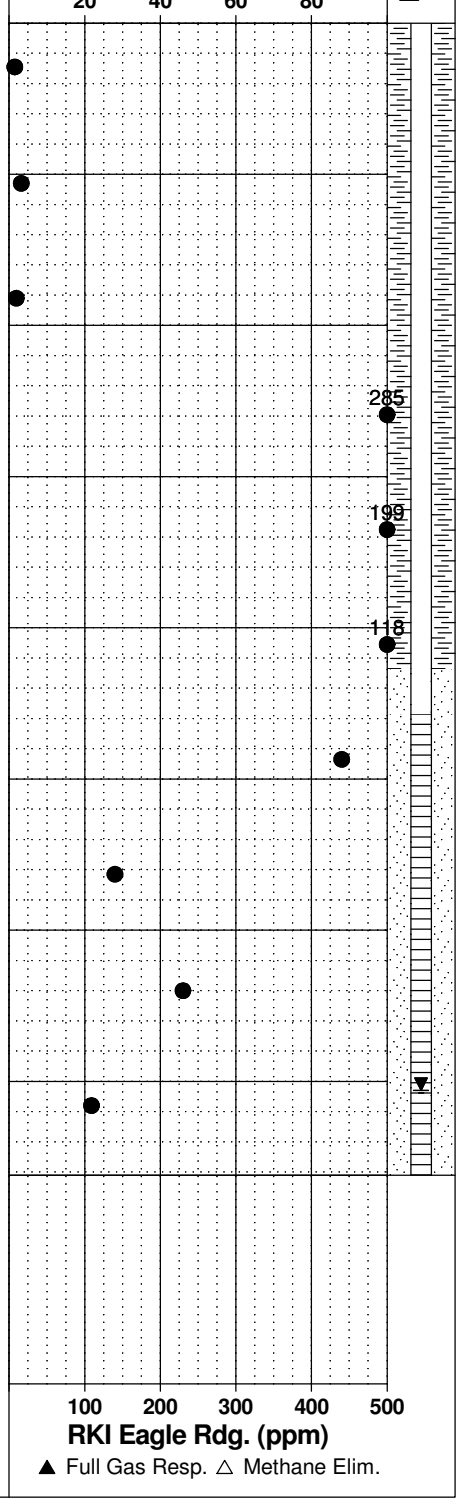
REMARKS

BORINGS BY CME-55 Low Clearance Drill **DATE** December 12, 2022

FILE NO. PE5929

HOLE NO. BH 1-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE									
Asphaltic concrete 0.15						0	59.57		
FILL: Crushed stone, trace sand 0.43		AU	1						
FILL: Dark brown silty sand with topsoil, organics, clay, gravel and wood 1.22		SS	2	29	5	1	58.57		
FILL: Reddish brown silty sand with organics, trace clay, occasional gravel 2.21		SS	3	38	10	2	57.57		
Stiff, brown **SILTY CLAY** 3.05		SS	4	100	1	3	56.57	285	
		SS	5	100	P			199	
		SS	6	100	P	4	55.57	118	
Stiff, grey **SILTY CLAY**		SS	7	100	P	5	54.57		
- firm by 5.3m depth		SS	8	100	P	6	53.57		
		SS	9	67	P				
		SS	10	83	P	7	52.57		
7.62									
End of Borehole									
(GWL @ 7.06m - Dec. 19, 2022)									



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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
134 Nelson Street
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY CME-55 Low Clearance Drill **DATE** December 12, 2022

FILE NO. PE5929

HOLE NO. BH 2-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	59.26
Asphaltic concrete 0.10							
FILL: Brown silty sand with crushed stone 0.36		AU	1				
FILL: Light brown silty sand with gravel, crushed stone, cobbles, boulders and concrete, trace clay		SS	2	8	3	1	58.26
		SS	3	19	17	2	57.26
2.21							
Stiff, brown **SILTY CLAY**		SS	4	92	3		
3.05						3	56.26
		SS	5	4	P		
		SS	6	100	P	4	55.26
		SS	7	100	P		
Stiff, grey **SILTY CLAY**						5	54.26
		SS	8	100	P		
		SS	9	83	P	6	53.26
		SS	10	79	P		
						7	52.26
7.62							
End of Borehole							
(GWL @ 6.10m - Dec. 19, 2022)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
134 Nelson Street
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY CME-55 Low Clearance Drill **DATE** December 12, 2022

FILE NO. PE5929

HOLE NO. BH 3-22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
Asphaltic concrete 0.08		AU	1			0	59.70
FILL: Dark brown silty sand with gravel, crushed stone, trace clay 0.25							
FILL: Dark brown silty sand, some gravel, trace topsoil and organics		SS	2	25	6	1	58.70
1.45							
FILL: Light brown silty sand, trace gravel		SS	3	38	5	2	57.70
2.21							
Stiff, brown **SILTY CLAY**		SS	4	100	P	3	56.70
3.05		SS	5	92	P		
		SS	6	100	P	4	55.70
		SS	7	100	P	5	54.70
Stiff, grey **SILTY CLAY**		SS	8	100	P		
		SS	9	100	P	6	53.70
		SS	10		P	7	52.70
7.62							
End of Borehole							
(GWL @ 6.80m - Dec. 19, 2022)							

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

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

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

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

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

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

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

ROCK DESCRIPTION

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

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

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

SAMPLE TYPES

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

SYMBOLS AND TERMS (continued)

PLASTICITY LIMITS AND GRAIN SIZE DISTRIBUTION

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

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

CONSOLIDATION TEST

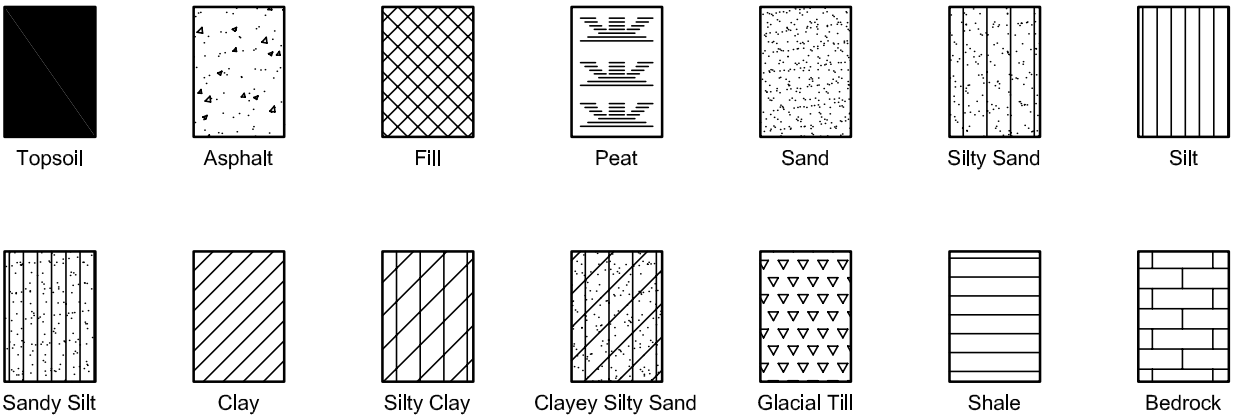
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void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

PERMEABILITY TEST

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

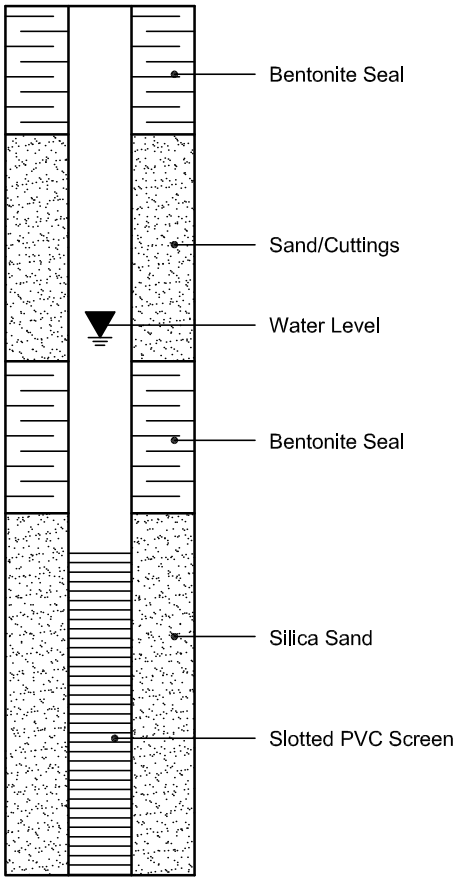
SYMBOLS AND TERMS (continued)

STRATA PLOT

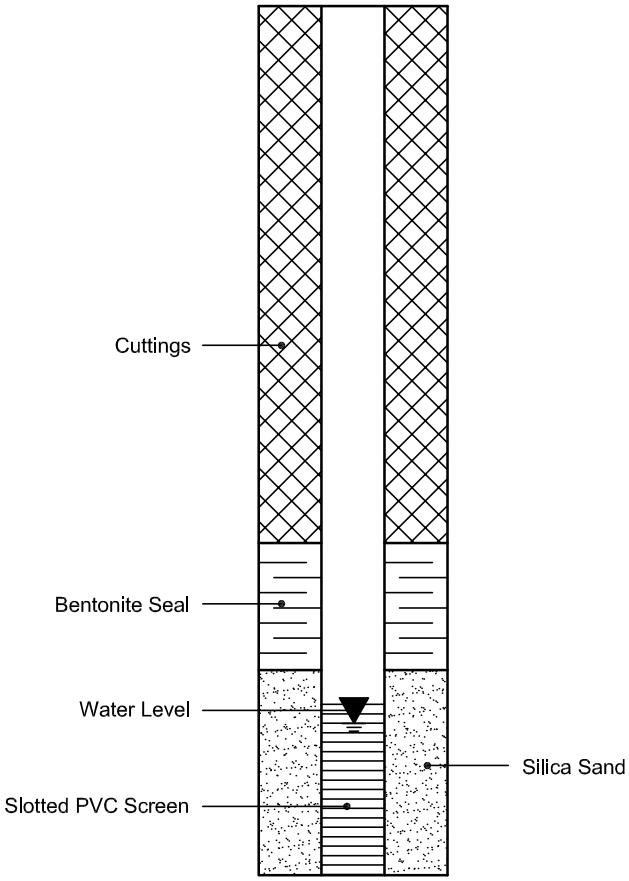


MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION



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Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Curtis Black

Client PO: 56466
Project: PE5929
Custody:

Report Date: 20-Dec-2022
Order Date: 14-Dec-2022

Order #: 2251310

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

Paracel ID	Client ID
2251310-01	BH1-22-SS2
2251310-02	BH1-22-SS4
2251310-03	Dup1
2251310-04	BH1-22-SS5
2251310-05	BH2-22-SS2+SS3
2251310-06	BH2-22-SS4
2251310-07	BH2-22-SS8
2251310-08	BH3-22-SS2+SS3
2251310-09	BH3-22-SS4
2251310-10	BH3-22-SS5

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Report Date: 20-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 14-Dec-2022

Client PO: 56466

Project Description: PE5929

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Chromium, hexavalent - soil	MOE E3056 - Extraction, colourimetric	15-Dec-22	16-Dec-22
Conductivity	MOE E3138 - probe @25 °C, water ext	20-Dec-22	20-Dec-22
Mercury by CVAA	EPA 7471B - CVAA, digestion	19-Dec-22	20-Dec-22
PCBs, total	SW846 8082A - GC-ECD	15-Dec-22	16-Dec-22
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	20-Dec-22	20-Dec-22
PHC F1	CWS Tier 1 - P&T GC-FID	15-Dec-22	16-Dec-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	15-Dec-22	15-Dec-22
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	19-Dec-22	19-Dec-22
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	15-Dec-22	17-Dec-22
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	15-Dec-22	16-Dec-22
SAR	Calculated	19-Dec-22	20-Dec-22
Solids, %	CWS Tier 1 - Gravimetric	15-Dec-22	16-Dec-22

Certificate of Analysis

Report Date: 20-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 14-Dec-2022

Client PO: 56466

Project Description: PE5929

	Client ID:	BH1-22-SS2	BH1-22-SS4	Dup1	BH1-22-SS5
	Sample Date:	12-Dec-22 12:00	12-Dec-22 12:00	12-Dec-22 12:00	12-Dec-22 12:00
	Sample ID:	2251310-01	2251310-02	2251310-03	2251310-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	82.2	74.0	73.1	71.9
Metals					
Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	2.4	-	-	-
Barium	1.0 ug/g dry	33.7	-	-	-
Beryllium	0.5 ug/g dry	<0.5	-	-	-
Boron	5.0 ug/g dry	<5.0	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	5.0 ug/g dry	17.3	-	-	-
Chromium (VI)	0.2 ug/g dry	<0.2	-	-	-
Cobalt	1.0 ug/g dry	3.6	-	-	-
Copper	5.0 ug/g dry	8.9	-	-	-
Lead	1.0 ug/g dry	42.0	-	-	-
Mercury	0.1 ug/g dry	0.1	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	5.0 ug/g dry	8.0	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	10.0 ug/g dry	23.8	-	-	-
Zinc	20.0 ug/g dry	27.6	-	-	-
Volatiles					
Acetone	0.50 ug/g dry	-	<0.50	<0.50	-
Benzene	0.02 ug/g dry	-	<0.02	<0.02	-
Bromodichloromethane	0.05 ug/g dry	-	<0.05	<0.05	-
Bromoform	0.05 ug/g dry	-	<0.05	<0.05	-
Bromomethane	0.05 ug/g dry	-	<0.05	<0.05	-
Carbon Tetrachloride	0.05 ug/g dry	-	<0.05	<0.05	-
Chlorobenzene	0.05 ug/g dry	-	<0.05	<0.05	-
Chloroform	0.05 ug/g dry	-	<0.05	<0.05	-
Dibromochloromethane	0.05 ug/g dry	-	<0.05	<0.05	-
Dichlorodifluoromethane	0.05 ug/g dry	-	<0.05	<0.05	-
1,2-Dichlorobenzene	0.05 ug/g dry	-	<0.05	<0.05	-
1,3-Dichlorobenzene	0.05 ug/g dry	-	<0.05	<0.05	-

Certificate of Analysis

Report Date: 20-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 14-Dec-2022

Client PO: 56466

Project Description: PE5929

	Client ID:	BH1-22-SS2	BH1-22-SS4	Dup1	BH1-22-SS5
	Sample Date:	12-Dec-22 12:00	12-Dec-22 12:00	12-Dec-22 12:00	12-Dec-22 12:00
	Sample ID:	2251310-01	2251310-02	2251310-03	2251310-04
	MDL/Units	Soil	Soil	Soil	Soil
1,4-Dichlorobenzene	0.05 ug/g dry	-	<0.05	<0.05	-
1,1-Dichloroethane	0.05 ug/g dry	-	<0.05	<0.05	-
1,2-Dichloroethane	0.05 ug/g dry	-	<0.05	<0.05	-
1,1-Dichloroethylene	0.05 ug/g dry	-	<0.05	<0.05	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	-	<0.05	<0.05	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	-	<0.05	<0.05	-
1,2-Dichloropropane	0.05 ug/g dry	-	<0.05	<0.05	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	-	<0.05	<0.05	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	-	<0.05	<0.05	-
1,3-Dichloropropene, total	0.05 ug/g dry	-	<0.05	<0.05	-
Ethylbenzene	0.05 ug/g dry	-	<0.05	<0.05	-
Ethylene dibromide (dibromoethane, 1,2-)	0.05 ug/g dry	-	<0.05	<0.05	-
Hexane	0.05 ug/g dry	-	<0.05	<0.05	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	-	<0.50	<0.50	-
Methyl Isobutyl Ketone	0.50 ug/g dry	-	<0.50	<0.50	-
Methyl tert-butyl ether	0.05 ug/g dry	-	<0.05	<0.05	-
Methylene Chloride	0.05 ug/g dry	-	<0.05	<0.05	-
Styrene	0.05 ug/g dry	-	<0.05	<0.05	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	-	<0.05	<0.05	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	-	<0.05	<0.05	-
Tetrachloroethylene	0.05 ug/g dry	-	<0.05	<0.05	-
Toluene	0.05 ug/g dry	-	<0.05	<0.05	-
1,1,1-Trichloroethane	0.05 ug/g dry	-	<0.05	<0.05	-
1,1,2-Trichloroethane	0.05 ug/g dry	-	<0.05	<0.05	-
Trichloroethylene	0.05 ug/g dry	-	<0.05	<0.05	-
Trichlorofluoromethane	0.05 ug/g dry	-	<0.05	<0.05	-
Vinyl chloride	0.02 ug/g dry	-	<0.02	<0.02	-
m,p-Xylenes	0.05 ug/g dry	-	<0.05	<0.05	-
o-Xylene	0.05 ug/g dry	-	<0.05	<0.05	-
Xylenes, total	0.05 ug/g dry	-	<0.05	<0.05	-
4-Bromofluorobenzene	Surrogate	-	106%	106%	-
Dibromofluoromethane	Surrogate	-	128%	128%	-
Toluene-d8	Surrogate	-	91.2%	92.3%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	-	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	-	<4	<4	-

Certificate of Analysis

Report Date: 20-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 14-Dec-2022

Client PO: 56466

Project Description: PE5929

	Client ID:	BH1-22-SS2	BH1-22-SS4	Dup1	BH1-22-SS5
	Sample Date:	12-Dec-22 12:00	12-Dec-22 12:00	12-Dec-22 12:00	12-Dec-22 12:00
	Sample ID:	2251310-01	2251310-02	2251310-03	2251310-04
	MDL/Units	Soil	Soil	Soil	Soil
F3 PHCs (C16-C34)	8 ug/g dry	-	<8	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	-	<6	<6	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	-	-	-
Acenaphthylene	0.02 ug/g dry	<0.02	-	-	-
Anthracene	0.02 ug/g dry	<0.02	-	-	-
Benzo [a] anthracene	0.02 ug/g dry	<0.02	-	-	-
Benzo [a] pyrene	0.02 ug/g dry	<0.02	-	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	-	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	-	-	-
Chrysene	0.02 ug/g dry	<0.02	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	-	-	-
Fluoranthene	0.02 ug/g dry	<0.02	-	-	-
Fluorene	0.02 ug/g dry	<0.02	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	-	-	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	-	-	-
Naphthalene	0.01 ug/g dry	<0.01	-	-	-
Phenanthrene	0.02 ug/g dry	<0.02	-	-	-
Pyrene	0.02 ug/g dry	<0.02	-	-	-
2-Fluorobiphenyl	Surrogate	66.7%	-	-	-
Terphenyl-d14	Surrogate	120%	-	-	-
PCBs					
PCBs, total	0.05 ug/g dry	-	-	-	<0.05
Decachlorobiphenyl	Surrogate	-	-	-	109%

Certificate of Analysis

Report Date: 20-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 14-Dec-2022

Client PO: 56466

Project Description: PE5929

	Client ID:	BH2-22-SS2+SS3	BH2-22-SS4	BH2-22-SS8	BH3-22-SS2+SS3
	Sample Date:	12-Dec-22 12:00	12-Dec-22 12:00	12-Dec-22 12:00	12-Dec-22 12:00
	Sample ID:	2251310-05	2251310-06	2251310-07	2251310-08
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	88.3	70.2	67.7	84.6
General Inorganics					
SAR	0.01 N/A	2.23	-	-	-
Conductivity	5 uS/cm	3810	-	-	-
pH	0.05 pH Units	-	-	7.77	7.56
Metals					
Antimony	1.0 ug/g dry	2.2	-	-	<1.0
Arsenic	1.0 ug/g dry	2.6	-	-	2.0
Barium	1.0 ug/g dry	202	-	-	25.7
Beryllium	0.5 ug/g dry	<0.5	-	-	<0.5
Boron	5.0 ug/g dry	6.8	-	-	<5.0
Cadmium	0.5 ug/g dry	<0.5	-	-	<0.5
Chromium	5.0 ug/g dry	13.1	-	-	16.5
Chromium (VI)	0.2 ug/g dry	<0.2	-	-	<0.2
Cobalt	1.0 ug/g dry	3.4	-	-	3.4
Copper	5.0 ug/g dry	18.4	-	-	6.8
Lead	1.0 ug/g dry	366	-	-	39.9
Mercury	0.1 ug/g dry	0.2	-	-	<0.1
Molybdenum	1.0 ug/g dry	<1.0	-	-	<1.0
Nickel	5.0 ug/g dry	8.6	-	-	7.8
Selenium	1.0 ug/g dry	<1.0	-	-	<1.0
Silver	0.3 ug/g dry	<0.3	-	-	<0.3
Thallium	1.0 ug/g dry	<1.0	-	-	<1.0
Uranium	1.0 ug/g dry	<1.0	-	-	<1.0
Vanadium	10.0 ug/g dry	14.7	-	-	24.1
Zinc	20.0 ug/g dry	156	-	-	32.5
Volatiles					
Acetone	0.50 ug/g dry	-	-	<0.50	-
Benzene	0.02 ug/g dry	-	-	<0.02	-
Bromodichloromethane	0.05 ug/g dry	-	-	<0.05	-
Bromoform	0.05 ug/g dry	-	-	<0.05	-
Bromomethane	0.05 ug/g dry	-	-	<0.05	-
Carbon Tetrachloride	0.05 ug/g dry	-	-	<0.05	-
Chlorobenzene	0.05 ug/g dry	-	-	<0.05	-
Chloroform	0.05 ug/g dry	-	-	<0.05	-

	Client ID:	BH2-22-SS2+SS3	BH2-22-SS4	BH2-22-SS8	BH3-22-SS2+SS3
	Sample Date:	12-Dec-22 12:00	12-Dec-22 12:00	12-Dec-22 12:00	12-Dec-22 12:00
	Sample ID:	2251310-05	2251310-06	2251310-07	2251310-08
	MDL/Units	Soil	Soil	Soil	Soil
Dibromochloromethane	0.05 ug/g dry	-	-	<0.05	-
Dichlorodifluoromethane	0.05 ug/g dry	-	-	<0.05	-
1,2-Dichlorobenzene	0.05 ug/g dry	-	-	<0.05	-
1,3-Dichlorobenzene	0.05 ug/g dry	-	-	<0.05	-
1,4-Dichlorobenzene	0.05 ug/g dry	-	-	<0.05	-
1,1-Dichloroethane	0.05 ug/g dry	-	-	<0.05	-
1,2-Dichloroethane	0.05 ug/g dry	-	-	<0.05	-
1,1-Dichloroethylene	0.05 ug/g dry	-	-	<0.05	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	-	-	<0.05	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	-	-	<0.05	-
1,2-Dichloropropane	0.05 ug/g dry	-	-	<0.05	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	-	-	<0.05	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	-	-	<0.05	-
1,3-Dichloropropene, total	0.05 ug/g dry	-	-	<0.05	-
Ethylbenzene	0.05 ug/g dry	-	-	<0.05	-
Ethylene dibromide (dibromoethane, 1	0.05 ug/g dry	-	-	<0.05	-
Hexane	0.05 ug/g dry	-	-	<0.05	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	-	-	<0.50	-
Methyl Isobutyl Ketone	0.50 ug/g dry	-	-	<0.50	-
Methyl tert-butyl ether	0.05 ug/g dry	-	-	<0.05	-
Methylene Chloride	0.05 ug/g dry	-	-	<0.05	-
Styrene	0.05 ug/g dry	-	-	<0.05	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	-	-	<0.05	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	-	-	<0.05	-
Tetrachloroethylene	0.05 ug/g dry	-	-	<0.05	-
Toluene	0.05 ug/g dry	-	-	<0.05	-
1,1,1-Trichloroethane	0.05 ug/g dry	-	-	<0.05	-
1,1,2-Trichloroethane	0.05 ug/g dry	-	-	<0.05	-
Trichloroethylene	0.05 ug/g dry	-	-	<0.05	-
Trichlorofluoromethane	0.05 ug/g dry	-	-	<0.05	-
Vinyl chloride	0.02 ug/g dry	-	-	<0.02	-
m,p-Xylenes	0.05 ug/g dry	-	-	<0.05	-
o-Xylene	0.05 ug/g dry	-	-	<0.05	-
Xylenes, total	0.05 ug/g dry	-	-	<0.05	-
4-Bromofluorobenzene	Surrogate	-	-	110%	-

Certificate of Analysis

Report Date: 20-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 14-Dec-2022

Client PO: 56466

Project Description: PE5929

	Client ID:	BH2-22-SS2+SS3	BH2-22-SS4	BH2-22-SS8	BH3-22-SS2+SS3
	Sample Date:	12-Dec-22 12:00	12-Dec-22 12:00	12-Dec-22 12:00	12-Dec-22 12:00
	Sample ID:	2251310-05	2251310-06	2251310-07	2251310-08
	MDL/Units	Soil	Soil	Soil	Soil
Dibromofluoromethane	Surrogate	-	-	125%	-
Toluene-d8	Surrogate	-	-	93.0%	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	27.4	0.03	-	<0.02
Acenaphthylene	0.02 ug/g dry	16.0	<0.02	-	0.03
Anthracene	0.02 ug/g dry	104	0.05	-	0.04
Benzo [a] anthracene	0.02 ug/g dry	82.2	0.07	-	0.17
Benzo [a] pyrene	0.02 ug/g dry	65.6	0.07	-	0.22
Benzo [b] fluoranthene	0.02 ug/g dry	68.5	0.06	-	0.23
Benzo [g,h,i] perylene	0.02 ug/g dry	34.3	0.04	-	0.11
Benzo [k] fluoranthene	0.02 ug/g dry	36.7	0.03	-	0.13
Chrysene	0.02 ug/g dry	85.4	0.08	-	0.19
Dibenzo [a,h] anthracene	0.02 ug/g dry	8.69	<0.02	-	0.03
Fluoranthene	0.02 ug/g dry	230	0.19	-	0.22
Fluorene	0.02 ug/g dry	46.7	0.03	-	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	31.9	0.03	-	0.10
1-Methylnaphthalene	0.02 ug/g dry	15.2	<0.02	-	<0.02
2-Methylnaphthalene	0.02 ug/g dry	23.5	<0.02	-	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	38.7	<0.04	-	<0.04
Naphthalene	0.01 ug/g dry	62.3	0.05	-	0.01
Phenanthrene	0.02 ug/g dry	301	0.25	-	0.12
Pyrene	0.02 ug/g dry	179	0.15	-	0.22
2-Fluorobiphenyl	Surrogate	124%	95.2%	-	106%
Terphenyl-d14	Surrogate	162% [3]	128%	-	122%
PCBs					
PCBs, total	0.05 ug/g dry	-	<0.05	-	-
Decachlorobiphenyl	Surrogate	-	99.3%	-	-

Certificate of Analysis

Report Date: 20-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 14-Dec-2022

Client PO: 56466

Project Description: PE5929

	Client ID:	BH3-22-SS4	BH3-22-SS5	-	-
	Sample Date:	12-Dec-22 12:00	12-Dec-22 12:00	-	-
	Sample ID:	2251310-09	2251310-10	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	71.7	69.6	-	-
General Inorganics					
SAR	0.01 N/A	-	1.93	-	-
Conductivity	5 uS/cm	-	775	-	-
Metals					
Antimony	1.0 ug/g dry	-	<1.0	-	-
Arsenic	1.0 ug/g dry	-	4.3	-	-
Barium	1.0 ug/g dry	-	142	-	-
Beryllium	0.5 ug/g dry	-	0.5	-	-
Boron	5.0 ug/g dry	-	6.9	-	-
Cadmium	0.5 ug/g dry	-	<0.5	-	-
Chromium	5.0 ug/g dry	-	38.1	-	-
Chromium (VI)	0.2 ug/g dry	-	<0.2	-	-
Cobalt	1.0 ug/g dry	-	11.4	-	-
Copper	5.0 ug/g dry	-	21.7	-	-
Lead	1.0 ug/g dry	-	4.9	-	-
Mercury	0.1 ug/g dry	-	<0.1	-	-
Molybdenum	1.0 ug/g dry	-	<1.0	-	-
Nickel	5.0 ug/g dry	-	24.6	-	-
Selenium	1.0 ug/g dry	-	<1.0	-	-
Silver	0.3 ug/g dry	-	<0.3	-	-
Thallium	1.0 ug/g dry	-	<1.0	-	-
Uranium	1.0 ug/g dry	-	<1.0	-	-
Vanadium	10.0 ug/g dry	-	52.6	-	-
Zinc	20.0 ug/g dry	-	63.7	-	-
Volatiles					
Acetone	0.50 ug/g dry	<0.50	-	-	-
Benzene	0.02 ug/g dry	<0.02	-	-	-
Bromodichloromethane	0.05 ug/g dry	<0.05	-	-	-
Bromoform	0.05 ug/g dry	<0.05	-	-	-
Bromomethane	0.05 ug/g dry	<0.05	-	-	-
Carbon Tetrachloride	0.05 ug/g dry	<0.05	-	-	-
Chlorobenzene	0.05 ug/g dry	<0.05	-	-	-
Chloroform	0.05 ug/g dry	<0.05	-	-	-
Dibromochloromethane	0.05 ug/g dry	<0.05	-	-	-

Certificate of Analysis

Report Date: 20-Dec-2022

Client: **Paterson Group Consulting Engineers**

Order Date: 14-Dec-2022

Client PO: **56466**

Project Description: PE5929

	Client ID:	BH3-22-SS4	BH3-22-SS5	-	-
	Sample Date:	12-Dec-22 12:00	12-Dec-22 12:00	-	-
	Sample ID:	2251310-09	2251310-10	-	-
	MDL/Units	Soil	Soil	-	-
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	-	-	-
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,1-Dichloroethane	0.05 ug/g dry	<0.05	-	-	-
1,2-Dichloroethane	0.05 ug/g dry	<0.05	-	-	-
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	-
1,2-Dichloropropane	0.05 ug/g dry	<0.05	-	-	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	-
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Ethylene dibromide (dibromoethane, 1	0.05 ug/g dry	<0.05	-	-	-
Hexane	0.05 ug/g dry	<0.05	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	-	-	-
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	-	-	-
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	-	-	-
Methylene Chloride	0.05 ug/g dry	<0.05	-	-	-
Styrene	0.05 ug/g dry	<0.05	-	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	-
Tetrachloroethylene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	-	-	-
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	-	-	-
Trichloroethylene	0.05 ug/g dry	<0.05	-	-	-
Trichlorofluoromethane	0.05 ug/g dry	<0.05	-	-	-
Vinyl chloride	0.02 ug/g dry	<0.02	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
4-Bromofluorobenzene	Surrogate	107%	-	-	-
Dibromofluoromethane	Surrogate	124%	-	-	-

Certificate of Analysis

Report Date: 20-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 14-Dec-2022

Client PO: 56466

Project Description: PE5929

	Client ID:	BH3-22-SS4	BH3-22-SS5	-	-
	Sample Date:	12-Dec-22 12:00	12-Dec-22 12:00	-	-
	Sample ID:	2251310-09	2251310-10	-	-
	MDL/Units	Soil	Soil	-	-
Toluene-d8	Surrogate	87.3%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Conductivity	ND	5	uS/cm						
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (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						
PCBs									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	*0.127*		*ug/g*		*127*	*60-140*			
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
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	*1.11*		*ug/g*		*83.4*	*50-140*			
Surrogate: Terphenyl-d14	*1.70*		*ug/g*		*128*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Ethylene dibromide (dibromoethane, 1,2	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: 4-Bromofluorobenzene	*3.09*		*ug/g*		*96.5*	*50-140*			
Surrogate: Dibromofluoromethane	*3.62*		*ug/g*		*113*	*50-140*			
Surrogate: Toluene-d8	*2.66*		*ug/g*		*83.0*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
SAR	1.48	0.01	N/A	1.26			16.1	30	
Conductivity	498	5	uS/cm	496			0.4	5	
pH	7.68	0.05	pH Units	7.77			1.2	2.3	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	12	4	ug/g	15			22.5	30	
F3 PHCs (C16-C34)	131	8	ug/g	140			6.4	30	
F4 PHCs (C34-C50)	221	6	ug/g	279			23.2	30	
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	3.4	1.0	ug/g	3.4			1.0	30	
Barium	70.0	1.0	ug/g	71.8			2.5	30	
Beryllium	ND	0.5	ug/g	ND			NC	30	
Boron	6.4	5.0	ug/g	6.3			2.1	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium (VI)	ND	0.2	ug/g	ND			NC	35	
Chromium	10.2	5.0	ug/g	10.6			3.9	30	
Cobalt	4.4	1.0	ug/g	4.5			1.3	30	
Copper	23.4	5.0	ug/g	24.6			4.9	30	
Lead	48.1	1.0	ug/g	41.3			15.3	30	
Mercury	0.180	0.1	ug/g	0.184			2.5	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	9.1	5.0	ug/g	9.4			3.2	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	16.6	10.0	ug/g	17.0			2.4	30	
Zinc	61.2	20.0	ug/g	65.8			7.3	30	
PCBs									
PCBs, total	ND	0.05	ug/g	ND			NC	40	
Surrogate: Decachlorobiphenyl	*0.157*		*ug/g*		*113*	*60-140*			
Physical Characteristics									
% Solids	94.1	0.1	% by Wt.	94.3			0.2	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	ND	0.02	ug/g	ND			NC	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*1.60*		*ug/g*		*90.0*	*50-140*			
Surrogate: Terphenyl-d14	*2.10*		*ug/g*		*118*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	ND	0.50	ug/g	ND			NC	50	
Benzene	ND	0.02	ug/g	ND			NC	50	
Bromodichloromethane	ND	0.05	ug/g	ND			NC	50	
Bromoform	ND	0.05	ug/g	ND			NC	50	
Bromomethane	ND	0.05	ug/g	ND			NC	50	
Carbon Tetrachloride	ND	0.05	ug/g	ND			NC	50	
Chlorobenzene	ND	0.05	ug/g	ND			NC	50	
Chloroform	ND	0.05	ug/g	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,4-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g	ND			NC	50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2	ND	0.05	ug/g	ND			NC	50	
Hexane	ND	0.05	ug/g	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g	ND			NC	50	
Styrene	ND	0.05	ug/g	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
1,1,1-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g	ND			NC	50	
Trichlorofluoromethane	ND	0.05	ug/g	ND			NC	50	
Vinyl chloride	ND	0.02	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: 4-Bromofluorobenzene	*5.02*		*ug/g*		*106*	*50-140*			
Surrogate: Dibromofluoromethane	*5.50*		*ug/g*		*117*	*50-140*			
Surrogate: Toluene-d8	*4.63*		*ug/g*		*98.1*	*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)	195	7	ug/g	ND	97.3	80-120			
F2 PHCs (C10-C16)	109	4	ug/g	15	104	60-140			
F3 PHCs (C16-C34)	387	8	ug/g	140	112	60-140			
F4 PHCs (C34-C50)	393	6	ug/g	279	82.0	60-140			
Metals									
Arsenic	42.1	1.0	ug/g	1.3	81.6	70-130			
Barium	69.0	1.0	ug/g	28.7	80.6	70-130			
Beryllium	39.5	0.5	ug/g	ND	78.7	70-130			
Boron	39.9	5.0	ug/g	ND	74.8	70-130			
Cadmium	40.0	0.5	ug/g	ND	79.8	70-130			
Chromium (VI)	0.1	0.2	ug/g	ND	50.5	70-130			QM-05
Chromium	43.8	5.0	ug/g	ND	79.2	70-130			
Cobalt	39.9	1.0	ug/g	1.8	76.2	70-130			
Copper	47.0	5.0	ug/g	9.8	74.4	70-130			
Lead	57.6	1.0	ug/g	16.5	82.1	70-130			
Mercury	1.47	0.1	ug/g	0.184	85.7	70-130			
Molybdenum	37.0	1.0	ug/g	ND	73.4	70-130			
Nickel	43.3	5.0	ug/g	ND	79.1	70-130			
Silver	39.3	0.3	ug/g	ND	78.5	70-130			
Thallium	41.0	1.0	ug/g	ND	81.9	70-130			
Uranium	42.0	1.0	ug/g	ND	83.5	70-130			
Vanadium	46.1	10.0	ug/g	ND	78.5	70-130			
Zinc	47.2	20.0	ug/g	ND	72.4	70-130			
PCBs									
PCBs, total	0.545	0.05	ug/g	ND	136	60-140			
Surrogate: Decachlorobiphenyl	*0.126*		*ug/g*		*126*	*60-140*			
Semi-Volatiles									
Acenaphthene	0.197	0.02	ug/g	ND	88.5	50-140			
Acenaphthylene	0.151	0.02	ug/g	ND	68.0	50-140			
Anthracene	0.143	0.02	ug/g	ND	64.1	50-140			
Benzo [a] anthracene	0.130	0.02	ug/g	ND	58.6	50-140			
Benzo [a] pyrene	0.121	0.02	ug/g	ND	54.6	50-140			
Benzo [b] fluoranthene	0.172	0.02	ug/g	ND	77.5	50-140			
Benzo [g,h,i] perylene	0.111	0.02	ug/g	ND	50.1	50-140			
Benzo [k] fluoranthene	0.155	0.02	ug/g	ND	69.9	50-140			
Chrysene	0.170	0.02	ug/g	ND	76.3	50-140			
Dibenzo [a,h] anthracene	0.127	0.02	ug/g	ND	57.3	50-140			
Fluoranthene	0.125	0.02	ug/g	ND	56.3	50-140			
Fluorene	0.167	0.02	ug/g	ND	75.1	50-140			
Indeno [1,2,3-cd] pyrene	0.121	0.02	ug/g	ND	54.4	50-140			
1-Methylnaphthalene	0.186	0.02	ug/g	ND	83.5	50-140			
2-Methylnaphthalene	0.199	0.02	ug/g	ND	89.5	50-140			
Naphthalene	0.208	0.01	ug/g	ND	93.5	50-140			
Phenanthrene	0.160	0.02	ug/g	ND	71.8	50-140			
Pyrene	0.126	0.02	ug/g	ND	56.7	50-140			
Surrogate: 2-Fluorobiphenyl	*1.58*		*ug/g*		*88.8*	*50-140*			
Surrogate: Terphenyl-d14	*2.14*		*ug/g*		*120*	*50-140*			
Volatiles									

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	9.23	0.50	ug/g	ND	92.3	50-140			
Benzene	4.94	0.02	ug/g	ND	123	60-130			
Bromodichloromethane	4.64	0.05	ug/g	ND	116	60-130			
Bromoform	4.38	0.05	ug/g	ND	109	60-130			
Bromomethane	4.48	0.05	ug/g	ND	112	50-140			
Carbon Tetrachloride	4.10	0.05	ug/g	ND	102	60-130			
Chlorobenzene	4.33	0.05	ug/g	ND	108	60-130			
Chloroform	4.64	0.05	ug/g	ND	116	60-130			
Dibromochloromethane	3.91	0.05	ug/g	ND	97.7	60-130			
Dichlorodifluoromethane	4.37	0.05	ug/g	ND	109	50-140			
1,2-Dichlorobenzene	4.91	0.05	ug/g	ND	123	60-130			
1,3-Dichlorobenzene	4.87	0.05	ug/g	ND	122	60-130			
1,4-Dichlorobenzene	4.82	0.05	ug/g	ND	121	60-130			
1,1-Dichloroethane	4.30	0.05	ug/g	ND	107	60-130			
1,2-Dichloroethane	4.14	0.05	ug/g	ND	104	60-130			
1,1-Dichloroethylene	4.09	0.05	ug/g	ND	102	60-130			
cis-1,2-Dichloroethylene	4.15	0.05	ug/g	ND	104	60-130			
trans-1,2-Dichloroethylene	4.34	0.05	ug/g	ND	108	60-130			
1,2-Dichloropropane	4.64	0.05	ug/g	ND	116	60-130			
cis-1,3-Dichloropropylene	4.23	0.05	ug/g	ND	106	60-130			
trans-1,3-Dichloropropylene	4.60	0.05	ug/g	ND	115	60-130			
Ethylbenzene	4.41	0.05	ug/g	ND	110	60-130			
Ethylene dibromide (dibromoethane, 1,2-	3.94	0.05	ug/g	ND	98.5	60-130			
Hexane	4.52	0.05	ug/g	ND	113	60-130			
Methyl Ethyl Ketone (2-Butanone)	8.14	0.50	ug/g	ND	81.4	50-140			
Methyl Isobutyl Ketone	10.7	0.50	ug/g	ND	107	50-140			
Methyl tert-butyl ether	9.46	0.05	ug/g	ND	94.6	50-140			
Methylene Chloride	4.58	0.05	ug/g	ND	115	60-130			
Styrene	4.28	0.05	ug/g	ND	107	60-130			
1,1,1,2-Tetrachloroethane	4.11	0.05	ug/g	ND	103	60-130			
1,1,2,2-Tetrachloroethane	4.19	0.05	ug/g	ND	105	60-130			
Tetrachloroethylene	4.06	0.05	ug/g	ND	102	60-130			
Toluene	4.14	0.05	ug/g	ND	103	60-130			
1,1,1-Trichloroethane	4.38	0.05	ug/g	ND	109	60-130			
1,1,2-Trichloroethane	4.78	0.05	ug/g	ND	120	60-130			
Trichloroethylene	4.26	0.05	ug/g	ND	106	60-130			
Trichlorofluoromethane	4.61	0.05	ug/g	ND	115	50-140			
Vinyl chloride	4.37	0.02	ug/g	ND	109	50-140			
m,p-Xylenes	8.55	0.05	ug/g	ND	107	60-130			
o-Xylene	4.95	0.05	ug/g	ND	124	60-130			
Surrogate: 4-Bromofluorobenzene	*1.83*		*ug/g*		*57.3*	*50-140*			
Surrogate: Dibromofluoromethane	*3.37*		*ug/g*		*105*	*50-140*			
Surrogate: Toluene-d8	*2.25*		*ug/g*		*70.2*	*50-140*			

Qualifier Notes:

Sample Qualifiers :

3 : The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.

QC Qualifiers :

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

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

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

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: 2251310

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2251310	

Client Name: Paterson	Project Ref: PE5929
Contact Name: Curtis Black	Quote #:
Address: 9 Auriga Dr.	PO #: 56466
Telephone: 613-282-7590	E-mail: CBlack@patersongroup.ca

Page 1 of 1

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)	EC/SAR	PHC + VOC	PCBs	pH	
1	BH1-22 - SS2	S		1	Dec 12	12:00 PM			X	X	X	X						
2	BH1-22 - SS4	↓		2	↓	↓									X			
3	DUP 1			2											X			
4	BH1-22 - SS5			1												X		
5	BH2-22 - SS2+SS3			1					X	X	X	X		X				
6	BH2-22 - SS4			1					X							X		
7	BH2-22 - SS8			2				X									X	
8	BH3-22 - SS2+SS3			1					X	X	X	X					X	
9	BH3-22 - SS4			2											X			
10	BH3-22 - SS5			1						X	X	X		X				

Required Analysis

Comments: Full Metals / MECP Metals.

Method of Delivery: PARACEL COURIER

Relinquished By (Sign): CBlack	Received By Driver/Depot: T. Keough	Received at Lab: Shreeram Bhatt	Verified By:
Relinquished By (Print): Curtis Black	Date/Time: 14/12/22 1110	Date/Time: Dec 14 2022 11:52	Date/Time: Dec 15/22
Date/Time: Dec 12, 2022.	Temperature: °C	Temperature: 19.3 C	pH Verified: ☐ By:

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Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Curtis Black

Client PO: 56504
Project: PE5929
Custody:

Report Date: 4-Jan-2023
Order Date: 19-Dec-2022

Revised Report

Order #: 2252119

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

Paracel ID	Client ID
2252119-01	BH1-22-GW1
2252119-02	BH2-22-GW1
2252119-03	BH3-22-GW1
2252119-04	DUP1

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	20-Dec-22	20-Dec-22
PCBs, total	EPA 608 - GC-ECD	21-Dec-22	22-Dec-22
PHC F1	CWS Tier 1 - P&T GC-FID	20-Dec-22	20-Dec-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	3-Jan-23	3-Jan-23
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	22-Dec-22	23-Dec-22
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	20-Dec-22	20-Dec-22

Certificate of Analysis

Report Date: 04-Jan-2023

Client: Paterson Group Consulting Engineers

Order Date: 19-Dec-2022

Client PO: 56504

Project Description: PE5929

	Client ID:	BH1-22-GW1	BH2-22-GW1	BH3-22-GW1	DUP1
	Sample Date:	19-Dec-22 12:00	19-Dec-22 12:00	19-Dec-22 12:00	19-Dec-22 12:00
	Sample ID:	2252119-01	2252119-02	2252119-03	2252119-04
	MDL/Units	Water	Water	Water	Water
Volatiles					
Acetone	5.0 ug/L	-	-	<5.0	-
Benzene	0.5 ug/L	-	-	<0.5	-
Bromodichloromethane	0.5 ug/L	-	-	<0.5	-
Bromoform	0.5 ug/L	-	-	<0.5	-
Bromomethane	0.5 ug/L	-	-	<0.5	-
Carbon Tetrachloride	0.2 ug/L	-	-	<0.2	-
Chlorobenzene	0.5 ug/L	-	-	<0.5	-
Chloroform	0.5 ug/L	-	-	<0.5	-
Dibromochloromethane	0.5 ug/L	-	-	<0.5	-
Dichlorodifluoromethane	1.0 ug/L	-	-	<1.0	-
1,2-Dichlorobenzene	0.5 ug/L	-	-	<0.5	-
1,3-Dichlorobenzene	0.5 ug/L	-	-	<0.5	-
1,4-Dichlorobenzene	0.5 ug/L	-	-	<0.5	-
1,1-Dichloroethane	0.5 ug/L	-	-	<0.5	-
1,2-Dichloroethane	0.5 ug/L	-	-	<0.5	-
1,1-Dichloroethylene	0.5 ug/L	-	-	<0.5	-
cis-1,2-Dichloroethylene	0.5 ug/L	-	-	<0.5	-
trans-1,2-Dichloroethylene	0.5 ug/L	-	-	<0.5	-
1,2-Dichloropropane	0.5 ug/L	-	-	<0.5	-
cis-1,3-Dichloropropylene	0.5 ug/L	-	-	<0.5	-
trans-1,3-Dichloropropylene	0.5 ug/L	-	-	<0.5	-
1,3-Dichloropropene, total	0.5 ug/L	-	-	<0.5	-
Ethylbenzene	0.5 ug/L	-	-	0.5	-
Ethylene dibromide (dibromoethane, 1,2-)	0.2 ug/L	-	-	<0.2	-
Hexane	1.0 ug/L	-	-	<1.0	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	-	-	<5.0	-
Methyl Isobutyl Ketone	5.0 ug/L	-	-	<5.0	-
Methyl tert-butyl ether	2.0 ug/L	-	-	<2.0	-
Methylene Chloride	5.0 ug/L	-	-	<5.0	-
Styrene	0.5 ug/L	-	-	<0.5	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	-	-	<0.5	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	-	-	<0.5	-
Tetrachloroethylene	0.5 ug/L	-	-	<0.5	-
Toluene	0.5 ug/L	-	-	1.2	-
1,1,1-Trichloroethane	0.5 ug/L	-	-	<0.5	-

Certificate of Analysis

Report Date: 04-Jan-2023

Client: Paterson Group Consulting Engineers

Order Date: 19-Dec-2022

Client PO: 56504

Project Description: PE5929

	Client ID:	BH1-22-GW1	BH2-22-GW1	BH3-22-GW1	DUP1
	Sample Date:	19-Dec-22 12:00	19-Dec-22 12:00	19-Dec-22 12:00	19-Dec-22 12:00
	Sample ID:	2252119-01	2252119-02	2252119-03	2252119-04
	MDL/Units	Water	Water	Water	Water
1,1,2-Trichloroethane	0.5 ug/L	-	-	<0.5	-
Trichloroethylene	0.5 ug/L	-	-	<0.5	-
Trichlorofluoromethane	1.0 ug/L	-	-	<1.0	-
Vinyl chloride	0.5 ug/L	-	-	<0.5	-
m,p-Xylenes	0.5 ug/L	-	-	1.7	-
o-Xylene	0.5 ug/L	-	-	1.4	-
Xylenes, total	0.5 ug/L	-	-	3.1	-
4-Bromofluorobenzene	Surrogate	-	-	94.9%	-
Dibromofluoromethane	Surrogate	-	-	113%	-
Toluene-d8	Surrogate	-	-	104%	-
Benzene	0.5 ug/L	<0.5	<0.5	-	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	-	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	-	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	-	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	-	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	-	<0.5
Toluene-d8	Surrogate	103%	103%	-	103%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100
Semi-Volatiles					
Acenaphthene	0.05 ug/L	-	-	<0.05	-
Acenaphthylene	0.05 ug/L	-	-	<0.05	-
Anthracene	0.01 ug/L	-	-	<0.01	-
Benzo [a] anthracene	0.01 ug/L	-	-	<0.01	-
Benzo [a] pyrene	0.01 ug/L	-	-	<0.01	-
Benzo [b] fluoranthene	0.05 ug/L	-	-	<0.05	-
Benzo [g,h,i] perylene	0.05 ug/L	-	-	<0.05	-
Benzo [k] fluoranthene	0.05 ug/L	-	-	<0.05	-
Chrysene	0.05 ug/L	-	-	<0.05	-
Dibenzo [a,h] anthracene	0.05 ug/L	-	-	<0.05	-
Fluoranthene	0.01 ug/L	-	-	0.02	-
Fluorene	0.05 ug/L	-	-	<0.05	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	-	-	<0.05	-

Certificate of Analysis

Report Date: 04-Jan-2023

Client: Paterson Group Consulting Engineers

Order Date: 19-Dec-2022

Client PO: 56504

Project Description: PE5929

	Client ID:	BH1-22-GW1	BH2-22-GW1	BH3-22-GW1	DUP1
	Sample Date:	19-Dec-22 12:00	19-Dec-22 12:00	19-Dec-22 12:00	19-Dec-22 12:00
	Sample ID:	2252119-01	2252119-02	2252119-03	2252119-04
	MDL/Units	Water	Water	Water	Water
1-Methylnaphthalene	0.05 ug/L	-	-	0.07	-
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	-	-	0.06	-
Pyrene	0.01 ug/L	-	-	0.02	-
2-Fluorobiphenyl	Surrogate	-	-	74.4%	-
Terphenyl-d14	Surrogate	-	-	80.6%	-
PCBs					
PCBs, total	0.05 ug/L	<0.05	-	<0.05	-
Decachlorobiphenyl	Surrogate	89.0%	-	99.3%	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
PCBs									
PCBs, total	ND	0.05	ug/L						
Surrogate: Decachlorobiphenyl	*0.429*		*ug/L*		*85.8*	*60-140*			
Semi-Volatiles									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	*17.0*		*ug/L*		*85.2*	*50-140*			
Surrogate: Terphenyl-d14	*22.3*		*ug/L*		*112*	*50-140*			
Volatiles									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroform	ND	0.5	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
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						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
Vinyl chloride	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: 4-Bromofluorobenzene	*79.7*		*ug/L*		*99.6*	*50-140*			
Surrogate: Dibromofluoromethane	*93.1*		*ug/L*		*116*	*50-140*			
Surrogate: Toluene-d8	*83.4*		*ug/L*		*104*	*50-140*			
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	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: Toluene-d8	*83.4*		*ug/L*		*104*	*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	0.95	0.5	ug/L	0.92			3.2	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	0.53	0.5	ug/L	0.59			10.7	30	
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Ethylene dibromide (dibromoethane, 1,2-	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND			NC	30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND			NC	30	
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	
Styrene	ND	0.5	ug/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
Tetrachloroethylene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
Trichloroethylene	ND	0.5	ug/L	ND			NC	30	
Trichlorofluoromethane	ND	1.0	ug/L	ND			NC	30	
Vinyl chloride	5.86	0.5	ug/L	5.76			1.7	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	*79.4*		*ug/L*		*99.3*	*50-140*			
Surrogate: Dibromofluoromethane	*89.0*		*ug/L*		*111*	*50-140*			
Surrogate: Toluene-d8	*83.3*		*ug/L*		*104*	*50-140*			
Benzene	0.95	0.5	ug/L	0.92			3.2	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Toluene	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: Toluene-d8	*83.3*		*ug/L*		*104*	*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)	1740	25	ug/L	ND	87.2	68-117			
F2 PHCs (C10-C16)	1520	100	ug/L	ND	94.7	60-140			
F3 PHCs (C16-C34)	4030	100	ug/L	ND	103	60-140			
F4 PHCs (C34-C50)	2730	100	ug/L	ND	110	60-140			
PCBs									
PCBs, total	0.814	0.05	ug/L	ND	81.4	65-135			
Surrogate: Decachlorobiphenyl	*0.429*		*ug/L*		*85.8*	*60-140*			
Semi-Volatiles									
Acenaphthene	4.86	0.05	ug/L	ND	97.1	50-140			
Acenaphthylene	4.32	0.05	ug/L	ND	86.3	50-140			
Anthracene	4.36	0.01	ug/L	ND	87.1	50-140			
Benzo [a] anthracene	4.48	0.01	ug/L	ND	89.5	50-140			
Benzo [a] pyrene	4.90	0.01	ug/L	ND	98.0	50-140			
Benzo [b] fluoranthene	6.19	0.05	ug/L	ND	124	50-140			
Benzo [g,h,i] perylene	4.09	0.05	ug/L	ND	81.7	50-140			
Benzo [k] fluoranthene	6.15	0.05	ug/L	ND	123	50-140			
Chrysene	4.79	0.05	ug/L	ND	95.8	50-140			
Dibenzo [a,h] anthracene	4.41	0.05	ug/L	ND	88.3	50-140			
Fluoranthene	4.39	0.01	ug/L	ND	87.7	50-140			
Fluorene	4.55	0.05	ug/L	ND	90.9	50-140			
Indeno [1,2,3-cd] pyrene	4.50	0.05	ug/L	ND	90.0	50-140			
1-Methylnaphthalene	4.81	0.05	ug/L	ND	96.1	50-140			
2-Methylnaphthalene	5.12	0.05	ug/L	ND	102	50-140			
Naphthalene	4.88	0.05	ug/L	ND	97.6	50-140			
Phenanthrene	4.37	0.05	ug/L	ND	87.4	50-140			
Pyrene	4.47	0.01	ug/L	ND	89.4	50-140			
Surrogate: 2-Fluorobiphenyl	*21.6*		*ug/L*		*108*	*50-140*			
Surrogate: Terphenyl-d14	*26.4*		*ug/L*		*132*	*50-140*			
Volatiles									
Acetone	105	5.0	ug/L	ND	105	50-140			
Benzene	44.2	0.5	ug/L	ND	110	60-130			
Bromodichloromethane	48.8	0.5	ug/L	ND	122	60-130			
Bromoform	43.7	0.5	ug/L	ND	109	60-130			
Bromomethane	35.4	0.5	ug/L	ND	88.4	50-140			
Carbon Tetrachloride	40.4	0.2	ug/L	ND	101	60-130			
Chlorobenzene	39.9	0.5	ug/L	ND	99.8	60-130			
Chloroform	42.6	0.5	ug/L	ND	107	60-130			
Dibromochloromethane	49.0	0.5	ug/L	ND	122	60-130			
Dichlorodifluoromethane	31.0	1.0	ug/L	ND	77.4	50-140			
1,2-Dichlorobenzene	36.6	0.5	ug/L	ND	91.4	60-130			
1,3-Dichlorobenzene	37.5	0.5	ug/L	ND	93.8	60-130			
1,4-Dichlorobenzene	35.8	0.5	ug/L	ND	89.4	60-130			
1,1-Dichloroethane	43.0	0.5	ug/L	ND	107	60-130			
1,2-Dichloroethane	36.9	0.5	ug/L	ND	92.2	60-130			
1,1-Dichloroethylene	43.7	0.5	ug/L	ND	109	60-130			
cis-1,2-Dichloroethylene	43.3	0.5	ug/L	ND	108	60-130			
trans-1,2-Dichloroethylene	47.9	0.5	ug/L	ND	120	60-130			
1,2-Dichloropropane	47.0	0.5	ug/L	ND	117	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
cis-1,3-Dichloropropylene	49.0	0.5	ug/L	ND	122	60-130			
trans-1,3-Dichloropropylene	37.7	0.5	ug/L	ND	94.2	60-130			
Ethylbenzene	39.0	0.5	ug/L	ND	97.4	60-130			
Ethylene dibromide (dibromoethane, 1,2-	46.8	0.2	ug/L	ND	117	60-130			
Hexane	43.3	1.0	ug/L	ND	108	60-130			
Methyl Ethyl Ketone (2-Butanone)	114	5.0	ug/L	ND	114	50-140			
Methyl Isobutyl Ketone	116	5.0	ug/L	ND	116	50-140			
Methyl tert-butyl ether	122	2.0	ug/L	ND	122	50-140			
Methylene Chloride	45.9	5.0	ug/L	ND	115	60-130			
Styrene	42.0	0.5	ug/L	ND	105	60-130			
1,1,1,2-Tetrachloroethane	45.7	0.5	ug/L	ND	114	60-130			
1,1,2,2-Tetrachloroethane	43.4	0.5	ug/L	ND	109	60-130			
Tetrachloroethylene	36.6	0.5	ug/L	ND	91.5	60-130			
Toluene	40.7	0.5	ug/L	ND	102	60-130			
1,1,1-Trichloroethane	41.4	0.5	ug/L	ND	104	60-130			
1,1,2-Trichloroethane	47.1	0.5	ug/L	ND	118	60-130			
Trichloroethylene	39.7	0.5	ug/L	ND	99.3	60-130			
Trichlorofluoromethane	38.7	1.0	ug/L	ND	96.6	60-130			
Vinyl chloride	42.9	0.5	ug/L	ND	107	50-140			
m,p-Xylenes	77.6	0.5	ug/L	ND	97.0	60-130			
o-Xylene	40.5	0.5	ug/L	ND	101	60-130			
Surrogate: 4-Bromofluorobenzene	*77.6*		*ug/L*		*97.0*	*50-140*			
Surrogate: Dibromofluoromethane	*98.1*		*ug/L*		*123*	*50-140*			
Surrogate: Toluene-d8	*79.1*		*ug/L*		*98.9*	*50-140*			
Benzene	44.2	0.5	ug/L	ND	110	60-130			
Ethylbenzene	39.0	0.5	ug/L	ND	97.4	60-130			
Toluene	40.7	0.5	ug/L	ND	102	60-130			
m,p-Xylenes	77.6	0.5	ug/L	ND	97.0	60-130			
o-Xylene	40.5	0.5	ug/L	ND	101	60-130			
Surrogate: Toluene-d8	*79.1*		*ug/L*		*98.9*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Samples received submerged in water, possibly melted ice. This condition can compromise sample integrity. F2-F4 bottle.

Applies to samples: BH1-22-GW1, BH2-22-GW1, BH3-22-GW1, DUP1

Sample Data Revisions

None

Work Order Revisions / Comments:

Revision 1-Revised report includes F2-F4 data.

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: 2252119

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2252119	

Client Name: Paterson
Contact Name: Curtis Black.
Address: 9 Auriga.
Telephone: 613-282-7570

Project Ref: PE5929
Quote #:
PO #: 56504
E-mail: CBlack@patersongroup.ca.

Page 1 of 1

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)	PCB's	PHC + VOC			
1	BH1-22-GW1	GW		3	Dec 19	12:00	X							X				
2	BH2-22-GW1	↓		2	↓	↓	X											
3	BH3-22-GW1	↓		4	↓	↓			X					X	X			
4	DUP1	↓		2	↓	↓	X											
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: PARACEL COURIER

Relinquished By (Sign): C.Black
Relinquished By (Print): Curtis Black
Date/Time: Dec. 19/2022.

Received By Driver/Depot: T. TOUSE
Date/Time: 19/12/22 1600
Temperature: °C

Received at Lab: Dyneepam Oakma
Date/Time: DEC 19, 2022 04.57
Temperature: 14.2 C

Verified By: Sandra Demain
Date/Time: Dec 20 10:13
pH Verified: ☐ By:

APPENDIX 2

REMEDIATION REPORT

PATERSON GROUP

Consulting Engineers
9 Auriga Drive
Ottawa, Ontario
K2E 7T9
Tel: (613) 226-7381

Geotechnical Engineering
Environmental Engineering
Hydrogeology
Materials Testing
Building Science
Rural Development Design
Retaining Wall Design
Noise and Vibration Studies

patersongroup.ca

December 15, 2023
File: PE5929-LET.04

Smart Living Properties
226 Argyle Avenue
Ottawa, Ontario
K2P 1B9

Attention: **Mr. Rakan Abushaar**
Chief Operating Officer

Subject: **Remedial Program Summary**
134 Nelson Street, Ottawa, Ontario

Dear Sir,

Further to your request and authorization, Paterson Group (Paterson) has prepared a remedial program summary for the proposed development at 134 Nelson Street (the subject site).

INTRODUCTION

In December 2023, Paterson Gorup (Paterson) began the monitoring of an environmental site remediation program at the property addressed 134 Nelson Street, Ottawa, Ontario (The RSC Property). The findings of the monitoring program are detailed in this report.

The subject property is approximately 700 m^2 in area, and is located on the west side of Nelson Street, approximately 100 m north of Rideau Street, in the City of Ottawa, Ontario. Refer to Figure 1 – Key Plan, appended to this report, for the general location of the subject property.

The remediation program was carried out in response to the identification of contaminated soil on the RSC Property during the preceding Phase II – Environmental Site Assessment (Phase II ESA), conducted by Paterson in January 2023, as well as to support the filing of a Record of Site Condition for the RSC Property as part of its proposed redevelopment.

Background

In 2022, Paterson carried out a Phase I ESA for the RSC Property to investigate the past and current use of the site and to identify any potentially contaminating activities (PCAs) which would result in areas of potential environmental concern (APECs). According to the historical research, the RSC Property was first developed for residential purposes sometime prior to the 1880's, and later redeveloped for commercial purposes with a restaurant circa 1980. The surrounding properties were mainly developed for a combination of residential and commercial purposes, though several historical records identified the presence of a former transformer substation on the adjacent property to the south, a former truck terminal and maintenance garage on the adjacent property to the west, a former dry cleaners approximately 75 m to the south, as well as a former printing facility approximately 60 m to the east, all of which were considered to represent APECs on the RSC Property.

Based on the findings of the assessment, a Phase II ESA was recommended and subsequently carried out for the RSC Property to assess the aforementioned APECs on the site.

The subsurface investigation for the Phase II ESA consisted of drilling three boreholes (BH1-22 to BH3-22) across the site, which were all advanced to a depth of approximately 7.6 m below the existing ground surface and terminated within the overburden to allow for the installation of groundwater monitoring wells in the water table.

Select soil and groundwater samples were recovered from the boreholes and submitted to an independent laboratory for analytical testing of various contaminant parameters. Based on the analytical test results, the upper fill material (0.0 m to 2.2 m deep) encountered in the vicinity of BH2-22 contained concentrations of lead and multiple polycyclic aromatic hydrocarbons (PAH) parameters in excess of the selected MECP Table 3 Coarse-Grained Residential Soil Standards. All other soil and groundwater samples analyzed were in compliance with the selected site standards.

The presence of these contaminants are suspected to be the result of poor quality fill material placed in these areas. Due to their low mobility, as well as the clean groundwater results, it was anticipated that the contamination is contained within the upper fill material in a localized area around BH2-22.

It was recommended that a soil remediation program be undertaken, in conjunction with the proposed redevelopment of the subject property. It is our understanding that the subject property is to be redeveloped with a multi-storey residential apartment building, with several levels of underground parking.

SOIL REMEDIATION PROGRAM

The soil remediation program was carried out between December 11 and December 12, 2023, during which time a representative from Paterson was on-site (under direction of a Qualified Person) to monitor the removal of the contaminated fill material present in the vicinity of BH2-22. Following the stripping of the surficial asphalt, the impacted soil was excavated using a hydraulic shovel and hauled off-site. Upon completion, the remediation excavation measured approximately 3.0 m x 13 m, and extended to a depth of approximately 2.2 m below surrounding grade. The approximate area is presented on the attached drawing.

A total volume of approximately 86 m^3 (or approximately 171 metric tonnes) of contaminated soil was excavated and removed from the subject site.

Note that as part of the excavation, a foundation wall was encountered along the northern property line. A foundation wall was also encountered perpendicular to the current building, and joined the foundation wall at the property line. Based on observations, it appears that this was a former foundation of a structure, which had been backfilled with poor quality fill material, resulting in impacted soil. Furthermore, a concrete floor slab was encountered at approximately 2.0 to 2.1 m below grade. The slab was removed in select locations in order to collect confirmatory base samples of the native clay material. Base samples are shown as samples BS1, BS2, BS3 and BS4. In addition to the base samples collected during the remediation, sample BH2-22-SS4 (Phase II-ESA) is also considered to serve as positive delineation.

The soil remediation extended to the north and east, terminating at the property lines in those directions. The remediation extended to the south and terminated against the building foundation, which was observed to be founded on the native clay. The remediation extended to the west and terminated at the former foundation wall.

No sidewall samples were collected from the north, east, or south walls due to the presence of structures and property lines. A sidewall sample was not collected on the western wall of the excavation, as the former foundation was left in place. Instead, a test pit, shown as test pit TP1-23 on the attached figure, was excavated to 2.2 m below grade on the opposite side of the foundation wall.

No signs of deleterious material, similar to that observed within the remedial excavation, was noted. Four confirmatory samples were collected from this test pit, collected within the fill material and native clay. Sample TP1-23-G2, G3, and G4, collected from the fill and clay, were all found to comply with the selected reuse standard. For remediation purposes, these samples are considered to represent sidewall samples.

FREE PRODUCT

No free product was encountered during the remediation.

CONFIRMATORY SOIL SAMPLING PROGRAM

Soil Sampling Protocol

The soil sampling protocols followed during this remedial program were in general accordance with the MECP document entitled *"Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario"*, dated May 1996. The samples were recovered using via direct grab sampling, while wearing protective gloves (changed after each sample), and immediately placed into plastic bags. If significant contamination was encountered, the samples were instead placed into glass jars. The samples were then stored in coolers to reduce analyte volatilization during transportation.

Field Screening Procedure

All soil samples collected were submitted to a preliminary screening procedure, which included visual screening as well as screening with an RKI Eagle combustible gas detector and/or a MiniRae photoionization detector (PID). The detection limit of the RKI Eagle is 5 ppm, with a precision of +/- 5 ppm. The detection limit of the PID is 0.1 ppm, with a precision of +/- 0.1 ppm. The soil vapours were measured by inserting the analyzer probe into the nominal headspace above the soil sample. Samples were then agitated and the peak readings recorded. It is noted that vapour screening is of limited use for non-volatile contaminants of concern (i.e. metals); visual screening was also used in conjunction with the above methodology.

In general, the worst-case soil samples based on visual or olfactory observations, or those with the highest vapour measurement, were selected for analytical testing. The number of confirmatory samples submitted is based on the area of the delineated contaminant and the prescribed samples density as outlined in O. Reg. 153/04.

Site Condition Standards

The site condition standards selected for the RSC Property were taken from Table 3 of the document entitled *"Soil, Groundwater and Sediment Standards for Use under Part XV.I of the Environmental Protection Act"* prepared by the Ontario Ministry of the Environment, Conservation and Parks (MECP), and dated April 15, 2011. The selected MECP standards are based on the following considerations:

- ❑ Coarse-grained soil conditions
- ❑ Non-potable groundwater conditions
- ❑ Residential land use
- ❑ Full depth conditions

The residential standards were selected based on the future land use of the Phase II Property. Grain-size analysis was not conducted as part of this assessment, and as such, the coarse-grained soil standards were selected as a conservative approach.

Analytical Testing

Paracel Laboratories Ltd (Paracel) performed the laboratory analysis of the samples submitted for analytical testing. Paracel is a members of the Standards Council of Canada/Canadian Association for Environmental Analytical Laboratories (SCC/CAEAL). Paracel is accredited and certified by SCC/CAEAL for specific tests registered with the association.

Soil Quality

A total of seven (7) final confirmatory soil samples were collected from the remedial excavation on the subject site. Confirmatory base samples were collected from native clay material and delineation samples were collected from an exploratory test pit made adjacent to remedial excavation to confirm the extents of contaminated soil. The remediation extended to the nearest property line in other directions. The samples were submitted for analytical testing of a combination of PAH and metal parameters. The results of the analysis can be found appended to this letter.

Based on the analytical test results, the majority of the metal and PAH parameter concentrations identified in the soil samples analyzed comply with the selected MECP Table 3 Coarse-Grained Residential Soil Standards, with some exceptions.

Quality Assurance/Quality Control

All samples submitted as part of the sampling events 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 during the sampling events, and all Certificates of Analysis are appended to this report.

Overall, the quality of the field data collected during the remediation program is considered to be sufficient to meet the overall objectives of this assessment.

Assessment

Between December 11 and 12, 2023, Paterson Group monitored the removal of contaminated soil from the property addressed 134 Nelson Street, Ottawa, Ontario. The soil remediation program was completed to support the filing of a Record of Site Condition for the subject property, as part of its proposed redevelopment.

The environmental site remediation program consisted of the excavation of approximately 86 m^3 of contaminated soil, which was subsequently hauled off-site. Full horizontal and vertical delineation of the soil impacts were obtained during the remediation program. The remedial excavation was terminated at the north and east property lines. The excavation was terminated in a southern direction at the building footprint, which was noted to be founded on the clean, native clay material, and in a western direction, at a former foundation wall.

Based on the analytical test results, all confirmatory soil samples analyzed are in compliance with the selected MECP Table 3 Coarse-Grained Residential Soil Standards.

Conclusion

Based on our field observations, in combination with the analytical test results, it is our opinion that **the remediation program was successful in removing all contaminated soil from the subject property. As a result, no further remedial work is required.**

We trust that this information meets your requirements.

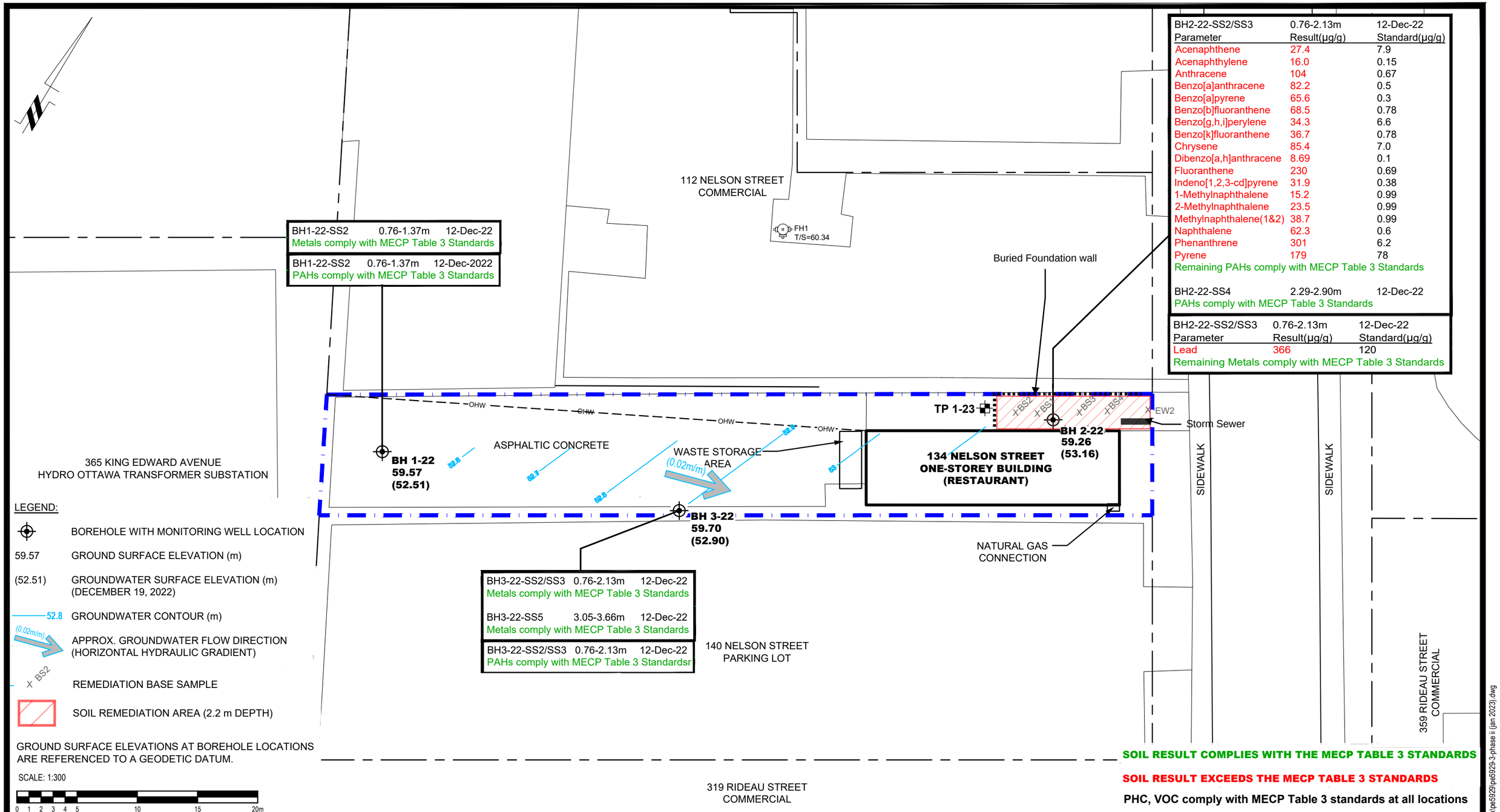
Sincerely,

Paterson Group Inc.

Adrian Menyhart, P.Eng., QP_{ESA}

Attachments

- ❑ PE5929-3R – Site Remediation Sketch
- ❑ Laboratory Certificates of Analysis



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

NO.	REVISIONS	DATE	INITIAL

SMART LIVING PROPERTIES

SOIL REMEDIATION PROGRAM
134 NELSON STREET

OTTAWA, ONTARIO

Title:

SOIL REMEDIATION SKETCH

Scale: 1:300	Date: 01/2023
Drawn by: YA	Report No.: PE5929-2
Checked by: NS	Dwg. No.: PE5929-3R
Approved by: AM	Revision No.:

p:\autocad drawings\environmental\pe5929xx\pe5929\pe5929-3-phase ii (jan 2023).dwg

11x17

Summary of Confirmatory Soil Sampling Results

Parameter	Units	MDL	Regulation	Sample	Sample				
				BS4 2350311-01	BS1 2350191-01	BS2 2350191-02	TP1-23-G2 2350191-04	TP1-23-G3 2350191-05	TP1-23-G4 2350191-06
Sample Date (m/d/y)			**Reg 153/04 (2011)-Table 3 Residential, coarse**	**12/12/2023 09:00 AM**	**12/11/2023 09:00 AM**	**12/11/2023 09:00 AM**	**12/11/2023 09:00 AM**	**12/11/2023 09:00 AM**	**12/11/2023 09:00 AM**
Physical Characteristics									
% Solids	% by Wt.	0.1		70.3	70.2	70.5	92.3	73.9	88.3
Metals									
Antimony	ug/g dry	1.0	7.5 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Arsenic	ug/g dry	1.0	18 ug/g dry	5.1	5.1	5.1	ND (1.0)	4.9	1.4
Barium	ug/g dry	1.0	390 ug/g dry	223	214	248	17.2	186	28.9
Beryllium	ug/g dry	0.5	4 ug/g dry	0.7	0.7	0.7	ND (0.5)	0.6	ND (0.5)
Boron	ug/g dry	5.0	120 ug/g dry	9.6	8.9	8.5	ND (5.0)	8.2	ND (5.0)
Cadmium	ug/g dry	0.5	1.2 ug/g dry	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Chromium	ug/g dry	5.0	160 ug/g dry	52.0	47.2	49.0	12.0	43.4	13.8
Cobalt	ug/g dry	1.0	22 ug/g dry	15.5	13.9	14.4	3.7	13.2	4.5
Copper	ug/g dry	5.0	140 ug/g dry	28.5	25.8	27.2	ND (5.0)	24.9	6.0
Lead	ug/g dry	1.0	120 ug/g dry	9.7	16.2	8.6	2.0	6.3	8.8
Molybdenum	ug/g dry	1.0	6.9 ug/g dry	1.1	ND (1.0)	ND (1.0)	ND (1.0)	1.0	ND (1.0)
Nickel	ug/g dry	5.0	100 ug/g dry	31.9	27.6	29.7	7.5	26.7	9.1
Selenium	ug/g dry	1.0	2.4 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Silver	ug/g dry	0.3	20 ug/g dry	ND (0.3)	ND (0.3)	ND (0.3)	ND (0.3)	ND (0.3)	ND (0.3)
Thallium	ug/g dry	1.0	1 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Uranium	ug/g dry	1.0	23 ug/g dry	1.1	1.0	1.0	ND (1.0)	1.2	ND (1.0)
Vanadium	ug/g dry	10.0	86 ug/g dry	73.9	66.5	69.5	12.2	64.1	17.2
Zinc	ug/g dry	20.0	340 ug/g dry	88.2	80.0	84.8	27.1	74.5	26.6
Semi-Volatiles									
Acenaphthene	ug/g dry	0.02	7.9 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Acenaphthylene	ug/g dry	0.02	0.15 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Anthracene	ug/g dry	0.02	0.67 ug/g dry	ND (0.02)	0.03	ND (0.02)	ND (0.02)	ND (0.02)	0.03
Benzo[a]anthracene	ug/g dry	0.02	0.5 ug/g dry	ND (0.02)	0.04	ND (0.02)	ND (0.02)	ND (0.02)	0.07
Benzo[a]pyrene	ug/g dry	0.02	0.3 ug/g dry	ND (0.02)	0.03	ND (0.02)	ND (0.02)	ND (0.02)	0.06
Benzo[b]fluoranthene	ug/g dry	0.02	0.78 ug/g dry	ND (0.02)	0.02	ND (0.02)	ND (0.02)	ND (0.02)	0.05
Benzo[g,h,i]perylene	ug/g dry	0.02	6.6 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	0.04
Benzo[k]fluoranthene	ug/g dry	0.02	0.78 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	0.04
Chrysene	ug/g dry	0.02	7 ug/g dry	ND (0.02)	0.04	ND (0.02)	ND (0.02)	ND (0.02)	0.07
Dibenzo[a,h]anthracene	ug/g dry	0.02	0.1 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Fluoranthene	ug/g dry	0.02	0.69 ug/g dry	ND (0.02)	0.12	ND (0.02)	ND (0.02)	ND (0.02)	0.21
Fluorene	ug/g dry	0.02	62 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Indeno [1,2,3-cd] pyrene	ug/g dry	0.02	0.38 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	0.04
1-Methylnaphthalene	ug/g dry	0.02	0.99 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
2-Methylnaphthalene	ug/g dry	0.02	0.99 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Methylnaphthalene (1&2)	ug/g dry	0.04	0.99 ug/g dry	ND (0.04)	ND (0.04)	ND (0.04)	ND (0.04)	ND (0.04)	ND (0.04)
Naphthalene	ug/g dry	0.01	0.6 ug/g dry	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Phenanthrene	ug/g dry	0.02	6.2 ug/g dry	ND (0.02)	0.11	ND (0.02)	ND (0.02)	ND (0.02)	0.12
Pyrene	ug/g dry	0.02	78 ug/g dry	ND (0.02)	0.09	ND (0.02)	ND (0.02)	ND (0.02)	0.17

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Certificate of Analysis

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

Client PO: 59081
Project: PE5929
Custody:

Report Date: 14-Dec-2023
Order Date: 13-Dec-2023

Order #: 2350311

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

Paracel ID	Client ID
2350311-01	BS4
2350311-02	EW2

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	14-Dec-23	14-Dec-23
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	14-Dec-23	14-Dec-23
Solids, %	CWS Tier 1 - Gravimetric	13-Dec-23	14-Dec-23

Certificate of Analysis

Report Date: 14-Dec-2023

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

Order Date: 13-Dec-2023

Client PO: 59081

Project Description: PE5929

	Client ID:	BS4	EW2	-	-	-	-
	Sample Date:	12-Dec-23 09:00	12-Dec-23 09:00	-	-		
	Sample ID:	2350311-01	2350311-02	-	-		
	Matrix:	Soil	Soil	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	70.3	80.3	-	-	-	-
Metals							
Antimony	1.0 ug/g	<1.0	<1.0	-	-	-	-
Arsenic	1.0 ug/g	5.1	4.3	-	-	-	-
Barium	1.0 ug/g	223	143	-	-	-	-
Beryllium	0.5 ug/g	0.7	<0.5	-	-	-	-
Boron	5.0 ug/g	9.6	<5.0	-	-	-	-
Cadmium	0.5 ug/g	<0.5	0.5	-	-	-	-
Chromium	5.0 ug/g	52.0	27.6	-	-	-	-
Cobalt	1.0 ug/g	15.5	6.6	-	-	-	-
Copper	5.0 ug/g	28.5	30.2	-	-	-	-
Lead	1.0 ug/g	9.7	218	-	-	-	-
Molybdenum	1.0 ug/g	1.1	<1.0	-	-	-	-
Nickel	5.0 ug/g	31.9	15.0	-	-	-	-
Selenium	1.0 ug/g	<1.0	<1.0	-	-	-	-
Silver	0.3 ug/g	<0.3	<0.3	-	-	-	-
Thallium	1.0 ug/g	<1.0	<1.0	-	-	-	-
Uranium	1.0 ug/g	1.1	<1.0	-	-	-	-
Vanadium	10.0 ug/g	73.9	30.1	-	-	-	-
Zinc	20.0 ug/g	88.2	139	-	-	-	-
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	0.21	-	-	-	-
Acenaphthylene	0.02 ug/g	<0.02	0.12	-	-	-	-
Anthracene	0.02 ug/g	<0.02	0.81	-	-	-	-
Benzo [a] anthracene	0.02 ug/g	<0.02	1.35	-	-	-	-

	Client ID:	BS4	EW2	-	-	-	-
	Sample Date:	12-Dec-23 09:00	12-Dec-23 09:00	-	-		
	Sample ID:	2350311-01	2350311-02	-	-		
	Matrix:	Soil	Soil	-	-		
	MDL/Units						
Semi-Volatiles							
Benzo [a] pyrene	0.02 ug/g	<0.02	0.98	-	-	-	-
Benzo [b] fluoranthene	0.02 ug/g	<0.02	0.97	-	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	0.61	-	-	-	-
Benzo [k] fluoranthene	0.02 ug/g	<0.02	0.60	-	-	-	-
Chrysene	0.02 ug/g	<0.02	1.18	-	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	0.16	-	-	-	-
Fluoranthene	0.02 ug/g	<0.02	4.04	-	-	-	-
Fluorene	0.02 ug/g	<0.02	0.25	-	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	0.59	-	-	-	-
1-Methylnaphthalene	0.02 ug/g	<0.02	0.05	-	-	-	-
2-Methylnaphthalene	0.02 ug/g	<0.02	0.05	-	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g	<0.04	0.10	-	-	-	-
Naphthalene	0.01 ug/g	<0.01	0.10	-	-	-	-
Phenanthrene	0.02 ug/g	<0.02	2.67	-	-	-	-
Pyrene	0.02 ug/g	<0.02	3.17	-	-	-	-
2-Fluorobiphenyl	Surrogate	81.4%	96.2%	-	-	-	-
Terphenyl-d14	Surrogate	88.4%	91.5%	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals								
Antimony	ND	1.0	ug/g					
Arsenic	ND	1.0	ug/g					
Barium	ND	1.0	ug/g					
Beryllium	ND	0.5	ug/g					
Boron	ND	5.0	ug/g					
Cadmium	ND	0.5	ug/g					
Chromium	ND	5.0	ug/g					
Cobalt	ND	1.0	ug/g					
Copper	ND	5.0	ug/g					
Lead	ND	1.0	ug/g					
Molybdenum	ND	1.0	ug/g					
Nickel	ND	5.0	ug/g					
Selenium	ND	1.0	ug/g					
Silver	ND	0.3	ug/g					
Thallium	ND	1.0	ug/g					
Uranium	ND	1.0	ug/g					
Vanadium	ND	10.0	ug/g					
Zinc	ND	20.0	ug/g					
Semi-Volatiles								
Acenaphthene	ND	0.02	ug/g					
Acenaphthylene	ND	0.02	ug/g					
Anthracene	ND	0.02	ug/g					
Benzo [a] anthracene	ND	0.02	ug/g					
Benzo [a] pyrene	ND	0.02	ug/g					
Benzo [b] fluoranthene	ND	0.02	ug/g					
Benzo [g,h,i] perylene	ND	0.02	ug/g					
Benzo [k] fluoranthene	ND	0.02	ug/g					
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					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
1-Methylnaphthalene	ND	0.02	ug/g					
2-Methylnaphthalene	ND	0.02	ug/g					
Methylnaphthalene (1&2)	ND	0.04	ug/g					
Naphthalene	ND	0.01	ug/g					
Phenanthrene	ND	0.02	ug/g					
Pyrene	ND	0.02	ug/g					
Surrogate: 2-Fluorobiphenyl	*0.776*		*%*	*58.2*	*50-140*			
Surrogate: Terphenyl-d14	*0.972*		*%*	*72.9*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	3.8	1.0	ug/g	3.7			0.6	30	
Barium	63.9	1.0	ug/g	68.5			7.0	30	
Beryllium	0.5	0.5	ug/g	0.5			1.4	30	
Boron	7.4	5.0	ug/g	8.6			14.7	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium	18.4	5.0	ug/g	19.9			7.8	30	
Cobalt	6.8	1.0	ug/g	7.2			5.3	30	
Copper	17.3	5.0	ug/g	17.8			3.1	30	
Lead	14.2	1.0	ug/g	14.7			3.4	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	15.1	5.0	ug/g	15.8			4.2	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	26.9	10.0	ug/g	29.2			8.2	30	
Zinc	52.7	20.0	ug/g	54.6			3.4	30	
Physical Characteristics									
% Solids	80.6	0.1	% by Wt.	73.5			9.3	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	ND	0.02	ug/g	ND			NC	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*1.33*		*%*		*58.9*	*50-140*			
Surrogate: Terphenyl-d14	*1.98*		*%*		*87.6*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Arsenic	54.5	1.0	ug/g	1.5	106	70-130			
Barium	79.4	1.0	ug/g	27.4	104	70-130			
Beryllium	52.4	0.5	ug/g	ND	104	70-130			
Boron	55.3	5.0	ug/g	ND	104	70-130			
Cadmium	54.0	0.5	ug/g	ND	108	70-130			
Chromium	64.1	5.0	ug/g	8.0	112	70-130			
Cobalt	58.1	1.0	ug/g	2.9	110	70-130			
Copper	58.8	5.0	ug/g	7.1	103	70-130			
Lead	58.5	1.0	ug/g	5.9	105	70-130			
Molybdenum	53.2	1.0	ug/g	ND	106	70-130			
Nickel	60.9	5.0	ug/g	6.3	109	70-130			
Selenium	49.1	1.0	ug/g	ND	97.8	70-130			
Silver	49.3	0.3	ug/g	ND	98.6	70-130			
Thallium	51.9	1.0	ug/g	ND	104	70-130			
Uranium	54.0	1.0	ug/g	ND	107	70-130			
Vanadium	68.2	10.0	ug/g	11.7	113	70-130			
Zinc	72.1	20.0	ug/g	21.8	101	70-130			
Semi-Volatiles									
Acenaphthene	0.236	0.02	ug/g	ND	83.3	50-140			
Acenaphthylene	0.251	0.02	ug/g	ND	88.7	50-140			
Anthracene	0.225	0.02	ug/g	ND	79.4	50-140			
Benzo [a] anthracene	0.185	0.02	ug/g	ND	65.5	50-140			
Benzo [a] pyrene	0.162	0.02	ug/g	ND	57.2	50-140			
Benzo [b] fluoranthene	0.267	0.02	ug/g	ND	94.4	50-140			
Benzo [g,h,i] perylene	0.160	0.02	ug/g	ND	56.6	50-140			
Benzo [k] fluoranthene	0.269	0.02	ug/g	ND	95.0	50-140			
Chrysene	0.178	0.02	ug/g	ND	62.9	50-140			
Dibenzo [a,h] anthracene	0.172	0.02	ug/g	ND	60.9	50-140			
Fluoranthene	0.225	0.02	ug/g	ND	79.5	50-140			
Fluorene	0.201	0.02	ug/g	ND	70.9	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Indeno [1,2,3-cd] pyrene	0.182	0.02	ug/g	ND	64.1	50-140			
1-Methylnaphthalene	0.164	0.02	ug/g	ND	58.0	50-140			
2-Methylnaphthalene	0.169	0.02	ug/g	ND	59.8	50-140			
Naphthalene	0.197	0.01	ug/g	ND	69.6	50-140			
Phenanthrene	0.194	0.02	ug/g	ND	68.6	50-140			
Pyrene	0.244	0.02	ug/g	ND	86.1	50-140			
Surrogate: 2-Fluorobiphenyl	*1.54*		*%*		*67.8*	*50-140*			
Surrogate: Terphenyl-d14	*2.43*		*%*		*107*	*50-140*			

Qualifier Notes:

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

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

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

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Paracel ID: 2350311

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Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2350311	

Client Name: Paterson
Contact Name: Adrian Menyhart
Address: 9 Auriga
Telephone: 613 226 7381

Project Ref: PE5929
Quote #:
PO #: 59081
E-mail: AMenyhart@Patersongroup.ca
GPaterson@Patersongroup.ca

Page __ of __

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

☒ REG 153/04 ☐ REG 406/19

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

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

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)						
1	BH4	S		3	Dec 12				X	X									
2	EW2	S		3	"				X	X									
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign): G Pat	Received By Driver/Depot:	Received at Lab: HP	Verified By: SD
Relinquished By (Print): Grant Paterson	Date/Time:	Date/Time: Dec 13,23 15:50	Date/Time: Dec 13 2023 3:54pm
Date/Time: Dec 13 2023	Temperature: °C	Temperature: 14.5°C	pH Verified: ☐ By:

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Certificate of Analysis

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

Client PO: 59067
Project: PE5929
Custody:

Report Date: 15-Dec-2023
Order Date: 12-Dec-2023

Order #: 2350191

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

Paracel ID	Client ID
2350191-01	BS1
2350191-02	BS2
2350191-03	TP1-23-G1
2350191-04	TP1-23-G2
2350191-05	TP1-23-G3
2350191-06	TP1-23-G4

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Chromium, hexavalent - soil	MOE E3056 - Extraction, colourimetric	13-Dec-23	14-Dec-23
Mercury by CVAA	EPA 7471B - CVAA, digestion	14-Dec-23	14-Dec-23
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	14-Dec-23	14-Dec-23
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	13-Dec-23	15-Dec-23
Solids, %	CWS Tier 1 - Gravimetric	13-Dec-23	14-Dec-23

Certificate of Analysis

Report Date: 15-Dec-2023

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

Order Date: 12-Dec-2023

Client PO: 59067

Project Description: PE5929

	Client ID:	BS1	BS2	TP1-23-G1	TP1-23-G2	-	-
	Sample Date:	11-Dec-23 09:00	11-Dec-23 09:00	11-Dec-23 09:00	11-Dec-23 09:00		
	Sample ID:	2350191-01	2350191-02	2350191-03	2350191-04		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	70.2	70.5	87.9	92.3	-	-
Metals							
Antimony	1.0 ug/g	<1.0	<1.0	1.1	<1.0	-	-
Arsenic	1.0 ug/g	5.1	5.1	2.3	<1.0	-	-
Barium	1.0 ug/g	214	248	93.7	17.2	-	-
Beryllium	0.5 ug/g	0.7	0.7	<0.5	<0.5	-	-
Boron	5.0 ug/g	8.9	8.5	<5.0	<5.0	-	-
Cadmium	0.5 ug/g	<0.5	<0.5	<0.5	<0.5	-	-
Chromium (VI)	0.2 ug/g	<0.2	0.2	0.4	0.3	-	-
Chromium	5.0 ug/g	47.2	49.0	16.8	12.0	-	-
Cobalt	1.0 ug/g	13.9	14.4	4.0	3.7	-	-
Copper	5.0 ug/g	25.8	27.2	11.3	<5.0	-	-
Lead	1.0 ug/g	16.2	8.6	133	2.0	-	-
Mercury	0.1 ug/g	<0.1	<0.1	0.1	<0.1	-	-
Molybdenum	1.0 ug/g	<1.0	<1.0	<1.0	<1.0	-	-
Nickel	5.0 ug/g	27.6	29.7	8.4	7.5	-	-
Selenium	1.0 ug/g	<1.0	<1.0	<1.0	<1.0	-	-
Silver	0.3 ug/g	<0.3	<0.3	<0.3	<0.3	-	-
Thallium	1.0 ug/g	<1.0	<1.0	<1.0	<1.0	-	-
Uranium	1.0 ug/g	1.0	1.0	<1.0	<1.0	-	-
Vanadium	10.0 ug/g	66.5	69.5	22.1	12.2	-	-
Zinc	20.0 ug/g	80.0	84.8	62.0	27.1	-	-
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	<0.02	0.14	<0.02	-	-
Acenaphthylene	0.02 ug/g	<0.02	<0.02	0.09	<0.02	-	-

Certificate of Analysis

Report Date: 15-Dec-2023

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

Order Date: 12-Dec-2023

Client PO: **59067**

Project Description: **PE5929**

	Client ID:	BS1	BS2	TP1-23-G1	TP1-23-G2	-	-
	Sample Date:	11-Dec-23 09:00	11-Dec-23 09:00	11-Dec-23 09:00	11-Dec-23 09:00		
	Sample ID:	2350191-01	2350191-02	2350191-03	2350191-04		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Semi-Volatiles							
Anthracene	0.02 ug/g	0.03	<0.02	0.70	<0.02	-	-
Benzo [a] anthracene	0.02 ug/g	0.04	<0.02	1.22	<0.02	-	-
Benzo [a] pyrene	0.02 ug/g	0.03	<0.02	0.89	<0.02	-	-
Benzo [b] fluoranthene	0.02 ug/g	0.02	<0.02	0.90	<0.02	-	-
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	<0.02	0.57	<0.02	-	-
Benzo [k] fluoranthene	0.02 ug/g	<0.02	<0.02	0.60	<0.02	-	-
Chrysene	0.02 ug/g	0.04	<0.02	1.03	<0.02	-	-
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	<0.02	0.15	<0.02	-	-
Fluoranthene	0.02 ug/g	0.12	<0.02	3.53	<0.02	-	-
Fluorene	0.02 ug/g	<0.02	<0.02	0.18	<0.02	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	<0.02	0.54	<0.02	-	-
1-Methylnaphthalene	0.02 ug/g	<0.02	<0.02	0.03	<0.02	-	-
2-Methylnaphthalene	0.02 ug/g	<0.02	<0.02	0.02	<0.02	-	-
Methylnaphthalene (1&2)	0.04 ug/g	<0.04	<0.04	0.05	<0.04	-	-
Naphthalene	0.01 ug/g	<0.01	<0.01	0.06	<0.01	-	-
Phenanthrene	0.02 ug/g	0.11	<0.02	1.98	<0.02	-	-
Pyrene	0.02 ug/g	0.09	<0.02	2.81	<0.02	-	-
2-Fluorobiphenyl	Surrogate	63.9%	60.9%	65.7%	59.0%	-	-
Terphenyl-d14	Surrogate	76.5%	63.3%	72.9%	62.8%	-	-

Certificate of Analysis

Report Date: 15-Dec-2023

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

Order Date: 12-Dec-2023

Client PO: **59067**

Project Description: PE5929

	Client ID:	TP1-23-G3	TP1-23-G4			-	-
	Sample Date:	11-Dec-23 09:00	11-Dec-23 09:00				
	Sample ID:	2350191-05	2350191-06				
	Matrix:	Soil	Soil				
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	73.9	88.3	-	-	-	-
Metals							
Antimony	1.0 ug/g	<1.0	<1.0	-	-	-	-
Arsenic	1.0 ug/g	4.9	1.4	-	-	-	-
Barium	1.0 ug/g	186	28.9	-	-	-	-
Beryllium	0.5 ug/g	0.6	<0.5	-	-	-	-
Boron	5.0 ug/g	8.2	<5.0	-	-	-	-
Cadmium	0.5 ug/g	<0.5	<0.5	-	-	-	-
Chromium	5.0 ug/g	43.4	13.8	-	-	-	-
Chromium (VI)	0.2 ug/g	<0.2	0.3	-	-	-	-
Cobalt	1.0 ug/g	13.2	4.5	-	-	-	-
Copper	5.0 ug/g	24.9	6.0	-	-	-	-
Lead	1.0 ug/g	6.3	8.8	-	-	-	-
Mercury	0.1 ug/g	<0.1	<0.1	-	-	-	-
Molybdenum	1.0 ug/g	1.0	<1.0	-	-	-	-
Nickel	5.0 ug/g	26.7	9.1	-	-	-	-
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	1.2	<1.0	-	-	-	-
Vanadium	10.0 ug/g	64.1	17.2	-	-	-	-
Zinc	20.0 ug/g	74.5	26.6	-	-	-	-
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	<0.02	-	-	-	-
Acenaphthylene	0.02 ug/g	<0.02	<0.02	-	-	-	-

Certificate of Analysis

Report Date: 15-Dec-2023

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

Order Date: 12-Dec-2023

Client PO: **59067**

Project Description: **PE5929**

	Client ID:	TP1-23-G3	TP1-23-G4			-	-
	Sample Date:	11-Dec-23 09:00	11-Dec-23 09:00				
	Sample ID:	2350191-05	2350191-06				
	Matrix:	Soil	Soil				
	MDL/Units						
Semi-Volatiles							
Anthracene	0.02 ug/g	<0.02	0.03	-	-	-	-
Benzo [a] anthracene	0.02 ug/g	<0.02	0.07	-	-	-	-
Benzo [a] pyrene	0.02 ug/g	<0.02	0.06	-	-	-	-
Benzo [b] fluoranthene	0.02 ug/g	<0.02	0.05	-	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	0.04	-	-	-	-
Benzo [k] fluoranthene	0.02 ug/g	<0.02	0.04	-	-	-	-
Chrysene	0.02 ug/g	<0.02	0.07	-	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	<0.02	-	-	-	-
Fluoranthene	0.02 ug/g	<0.02	0.21	-	-	-	-
Fluorene	0.02 ug/g	<0.02	<0.02	-	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	0.04	-	-	-	-
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	<0.01	<0.01	-	-	-	-
Phenanthrene	0.02 ug/g	<0.02	0.12	-	-	-	-
Pyrene	0.02 ug/g	<0.02	0.17	-	-	-	-
2-Fluorobiphenyl	Surrogate	63.3%	60.7%	-	-	-	-
Terphenyl-d14	Surrogate	73.7%	78.3%	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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					
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					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Fluorene	ND	0.02	ug/g					
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g					
1-Methylnaphthalene	ND	0.02	ug/g					
2-Methylnaphthalene	ND	0.02	ug/g					
Methylnaphthalene (1&2)	ND	0.04	ug/g					
Naphthalene	ND	0.01	ug/g					
Phenanthrene	ND	0.02	ug/g					
Pyrene	ND	0.02	ug/g					
Surrogate: 2-Fluorobiphenyl	*0.710*		*%*	*53.3*	*50-140*			
Surrogate: Terphenyl-d14	*0.868*		*%*	*65.1*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	3.8	1.0	ug/g	3.7			0.6	30	
Barium	63.9	1.0	ug/g	68.5			7.0	30	
Beryllium	0.5	0.5	ug/g	0.5			1.4	30	
Boron	7.4	5.0	ug/g	8.6			14.7	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium (VI)	ND	0.2	ug/g	ND			NC	35	
Chromium	18.4	5.0	ug/g	19.9			7.8	30	
Cobalt	6.8	1.0	ug/g	7.2			5.3	30	
Copper	17.3	5.0	ug/g	17.8			3.1	30	
Lead	14.2	1.0	ug/g	14.7			3.4	30	
Mercury	ND	0.1	ug/g	ND			NC	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	15.1	5.0	ug/g	15.8			4.2	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	26.9	10.0	ug/g	29.2			8.2	30	
Zinc	52.7	20.0	ug/g	54.6			3.4	30	
Physical Characteristics									
% Solids	80.6	0.1	% by Wt.	73.5			9.3	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	ND	0.02	ug/g	ND			NC	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*0.938*		*%*		*55.6*	*50-140*			
Surrogate: Terphenyl-d14	*1.25*		*%*		*74.5*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Arsenic	54.5	1.0	ug/g	1.5	106	70-130			
Barium	79.4	1.0	ug/g	27.4	104	70-130			
Beryllium	52.4	0.5	ug/g	ND	104	70-130			
Boron	55.3	5.0	ug/g	ND	104	70-130			
Cadmium	54.0	0.5	ug/g	ND	108	70-130			
Chromium (VI)	0.2	0.2	ug/g	ND	83.5	70-130			
Chromium	64.1	5.0	ug/g	8.0	112	70-130			
Cobalt	58.1	1.0	ug/g	2.9	110	70-130			
Copper	58.8	5.0	ug/g	7.1	103	70-130			
Lead	58.5	1.0	ug/g	5.9	105	70-130			
Mercury	1.52	0.1	ug/g	ND	101	70-130			
Molybdenum	53.2	1.0	ug/g	ND	106	70-130			
Nickel	60.9	5.0	ug/g	6.3	109	70-130			
Selenium	49.1	1.0	ug/g	ND	97.8	70-130			
Silver	49.3	0.3	ug/g	ND	98.6	70-130			
Thallium	51.9	1.0	ug/g	ND	104	70-130			
Uranium	54.0	1.0	ug/g	ND	107	70-130			
Vanadium	68.2	10.0	ug/g	11.7	113	70-130			
Zinc	72.1	20.0	ug/g	21.8	101	70-130			
Semi-Volatiles									
Acenaphthene	0.162	0.02	ug/g	ND	76.8	50-140			
Acenaphthylene	0.169	0.02	ug/g	ND	80.3	50-140			
Anthracene	0.195	0.02	ug/g	ND	92.6	50-140			
Benzo [a] anthracene	0.160	0.02	ug/g	ND	76.2	50-140			
Benzo [a] pyrene	0.131	0.02	ug/g	ND	61.9	50-140			
Benzo [b] fluoranthene	0.145	0.02	ug/g	ND	68.6	50-140			
Benzo [g,h,i] perylene	0.139	0.02	ug/g	ND	65.8	50-140			
Benzo [k] fluoranthene	0.170	0.02	ug/g	ND	80.8	50-140			
Chrysene	0.162	0.02	ug/g	ND	77.1	50-140			
Dibenzo [a,h] anthracene	0.138	0.02	ug/g	ND	65.6	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Fluoranthene	0.199	0.02	ug/g	ND	94.4	50-140			
Fluorene	0.146	0.02	ug/g	ND	69.1	50-140			
Indeno [1,2,3-cd] pyrene	0.140	0.02	ug/g	ND	66.5	50-140			
1-Methylnaphthalene	0.131	0.02	ug/g	ND	62.4	50-140			
2-Methylnaphthalene	0.133	0.02	ug/g	ND	63.1	50-140			
Naphthalene	0.165	0.01	ug/g	ND	78.2	50-140			
Phenanthrene	0.147	0.02	ug/g	ND	69.7	50-140			
Pyrene	0.200	0.02	ug/g	ND	95.2	50-140			
Surrogate: 2-Fluorobiphenyl	*0.997*		*%*		*59.2*	*50-140*			
Surrogate: Terphenyl-d14	*1.21*		*%*		*72.0*	*50-140*			

Qualifier Notes:

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

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

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

PARACE LABORATORIES LT

Paracel ID: 2350191

St. Laurent Blvd.
ntario K1G 4J8
49-1947
paracelabs.com
celabs.com

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2350191	

Client Name: Paterson Group	Project Ref: PE5929	Page 1 of 1
Contact Name: Adrian Menyhart	Quote #:	Turnaround Time
Address: 9 Auriga Dr, ottawa	PO #: 59067	☐ 1 day ☐ 3 day
	E-mail: amenyhart@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
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☐ Yes ☐ No

☐ 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)						
Required Analysis																			
1	BS1	S		1	Dec 11/23				X	X	X	X							
2	BS2	S		1	Dec 11/23				X	X	X	X							
3	TP1-23-G1	↓		↓	↓				X	X	X	X							
4	TP1-23-G2								X	X	X	X							
5	TP1-23-G3								X	X	X	X							
6	TP1-23-G4	↓		↓	↓				X	X	X	X							
7																			
8																			
9																			
10																			

Comments:

Method of Delivery: Swift

Relinquished By (Sign): Trudy Blair	Received By Driver/Depot:	Received at Lab: DROPPED	Verified By: SD
Relinquished By (Print): Trudy Blair	Date/Time:	Date/Time: Dec 12, 2023	Date/Time: Dec 12, 2023 4:14pm
Date/Time: Dec 12 2023	Temperature: °C	Temperature: 6.7	pH Verified: ☐ By: