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Phase II Environmental Site Assessment

1950 Scott Street, 312 and 314 Clifton Road
Ottawa, Ontario

Prepared For

2506100 Ontario Inc.
c/o Colonnade Bridgeport

September 28, 2020

Report: PE4995-2

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EXECUTIVE SUMMARY

Assessment

A Phase II ESA was conducted for 1950 Scott Street, 312 and 314 Clifton Road, in the City of Ottawa, Ontario. The purpose of the Phase II ESA was to address two (2) potentially contaminating activities (PCAs) that were identified during the Phase I ESA and were considered to result in areas of potential environmental concern (APECs) on the Phase II Property. The subsurface investigation consisted of drilling four (4) boreholes, two (2) of which were completed as groundwater monitoring wells.

Soil samples were obtained from the boreholes and screened using visual observations and organic vapour measurements. Four (4) soil samples were submitted for laboratory analysis of metals and polycyclic aromatic hydrocarbons (PAHs). All metals and PAH concentrations identified in the soil samples were in compliance with MECP Table 7 Standards.

Three (3) groundwater samples from monitoring wells installed in BH3, BH4-20 and BH6-20 were recovered and analyzed for PHCs and VOCs. All PHC and VOC concentrations in the groundwater samples were in compliance with the MECP Table 7 Standards except for a concentration of chloroform identified in BH4-20. The exceedance is expected to be a result of the municipal water used during bedrock coring, and as such, is not considered a contaminant of concern.

Based on the findings of the Phase II ESA the soils and groundwater are in compliance with MECP Table 7 Standards.

Recommendations

Monitoring Wells

It is expected that the groundwater monitoring wells will be abandoned in accordance with O.Reg.903, at the time of construction excavation. It is recommended that the integrity of the monitoring wells be maintained, prior to future construction, for possible further groundwater monitoring purposes.

Soil

The Phase II – ESA did not identify any soil concentrations in excess of Table 7, however, the PAH results on sample BH4-20-SS2 did exceed the Table 1 MECP Standards. Based on this, it is likely that soil of the overburden will have to be disposed of off-site at an approved waste disposal facility as impacted soil.

1.0 INTRODUCTION

At the request of Colonnade Bridgeport., Paterson Group (Paterson) conducted a Phase II Environmental Site Assessment for 1950 Scott Street, 312 and 314 Clifton Road, in the City of Ottawa, Ontario. The purpose of this Phase II ESA has been to address an area of potential environmental concern (APEC) identified on the Phase II Property, during the Phase I ESA conducted by Paterson in September 2020.

1.1 Site Description

Address:	1950 Scott Street and 312 and 314 Clifton Road, Ottawa, Ontario.
Legal Description:	Lots 24 and 25 and Part of Lots 45, 46, 47 and 49, Registered Plan 369, City of Ottawa
Property Identification Numbers:	04021-0239, 04021-0050 and 04021-0049
Location:	The subject site is located at the southwest corner of the intersection of Scott Street and Clifton Road, in the City of Ottawa. The subject site is shown on Figure 1 - Key Plan following the body of this report.
Latitude and Longitude:	45° 23' 12" N, 75° 37' 24" W

Site Description:

Configuration:	Rectangular (approximate)
Site Area:	0.23 ha (approximate)

1.2 Property Ownership

Paterson was engaged to conduct this Phase II ESA by Mr. Olivier Tremblay of Colonnade Bridgeport, whose offices are located at 16 Concourse Gate, Suite 200 Ottawa, Ontario.

1.3 Current and Proposed Future Uses

The property at 1950 Scott Street is currently occupied by the International Buddhist Progress Society of Ottawa and is being used as a temple, while the properties at 312 and 314 Clifton Road are occupied by single-family residential dwellings with private garages.

The study area consists of a mixture of commercial and residential properties. It is our understanding that the subject site is to be developed for residential purposes.

1.4 Applicable Site Condition Standard

The site condition standards for the property were obtained from Table 7 of the document entitled “Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act”, prepared by the Ministry of the Environment, Conservation and Parks (MECP), April 2011. The MECP selected Table 7 Standards are based on the following considerations:

- Coarse-grained soil conditions
- Shallow soil site conditions
- Non-potable groundwater conditions
- Residential land use.

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

A comparison of the soil test data to the MECP Table 1 Standards was also conducted. The Table 1 standards are considered to be indicative of typical Ontario background concentrations and are commonly used to assess whether soil is clean for off-site disposal purposes.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

The Phase II property is located in a mixed residential and commercial area. The subject site is located at the southwest corner of the intersection of Scott Street and Clifton Road, in the City of Ottawa. Scott Street followed by the OC Transpo Transit is located to the north, and residential and commercial properties are located to the south, west and east of the subject site.

The Phase II property is generally flat, sloping slightly downwards to the north and east. Site drainage consists primarily of sheet flow to catch basins along Scott Street and Clifton Road, with some infiltration occurring in areas of permeable ground surface, such as the landscaped areas.

2.2 Past Investigations

Paterson has completed subsurface investigations for the following properties in the immediate vicinity of the Phase I Property: 1960 Scott Street, 319 McRae Avenue and 320 McRae Avenue. Based on the findings of the investigations at 1960 Scott Street and 319 McRae, immediately west and southwest of the Phase I Property, no environmental concerns were identified with regards to the soil located immediately adjacent to the west of the subject land. It should also be noted that the groundwater beneath these properties was determined to be in compliance with the MECP Table 7 standards for a residential land use.

Paterson completed a Phase I ESA for the subject site in September 2020. As part of the assessment, Paterson reviewed a geotechnical report for the subject site also completed by Paterson in March of 2018. The geotechnical assessment indicated fill material across the majority of the site which was identified as a potentially contaminating activity (PCA) that resulted in an APEC for the subject site. The PCA and resulting APEC, as well as the associated Contaminants of Potential Concern (CPCs), are summarised in Table 1.

Table 1: Areas of Potential Environmental Concern

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern with respect to Phase I Property	Potentially Contaminating Activity	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted
APEC1 Fill Material of Unknown Quality	Across entire site	Item 30 – Fill material of unknown quality	On-site	Metals PAHs	Soil and Groundwater
APEC 2 Historical Automtive Service Garage	Western portion of site	Item 10 – Commercial autobody shop	Off-site	PHCs (F_1-F_4) +BTEX VOCs	Soil and Groundwater

A Phase II ESA was recommended to address the APECs.

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The subsurface investigation was conducted on August 10, 2020. The field program consisted of drilling four (4) boreholes, two (2) of which were completed as groundwater monitoring wells. Two (2) of the boreholes were drilled to a maximum depth of 8.86 m below the existing grade.

3.2 Media Investigated

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

3.3 Phase I Conceptual Site Model

Geological and Hydrogeological Setting

The Geological Survey of Canada website on the Urban Geology of the National Capital Area was consulted as part of this assessment. Based on this information, the bedrock in the area of the subject site consists of interbedded limestone and dolostone of the Gull River Formation. Overburden soils are shown as glacial till, with a drift thickness on the order of 2 to 5 m. The findings of the Geotechnical Investigation confirm the reported subsurface conditions.

Contaminants of Potential Concern

Based on the areas of potential environmental concern on the subject site, the Contaminants of Potential Concern (CPCs) on the Phase I Property consist of metals and PAHs in the soil and VOCs and PHCs in the groundwater.

Existing Buildings and Structures

The parcel of the Phase I Property addressed 1950 Scott Street, is occupied by the International Buddhist Progress Society of Ottawa, which is operated as a temple. The building structure has one storey with a basement level and is constructed with a poured concrete foundation and concrete walls. The exterior is finished with parging and a flat, tar and gravel style. The building, constructed as early as 1953, is currently heated with electricity.

A residential dwelling, private garage and two (2) storage sheds occupy the property addressed 312 Clifton Road. The dwelling is constructed with a stone and mortar foundation and is finished on the exterior with brick and a peaked roof covered with asphaltic shingles. The dwelling is currently heated with natural gas-fired equipment. The private garage is a wood frame structure with a poured slab-on-grade foundation, finished on the exterior with vinyl siding and parging with a peaked roof covered with asphaltic shingles. The storage sheds are temporary metal frame structures. The dwelling and private garage are considered to have been constructed as early as 1928.

Water Bodies

There are no water bodies on the subject property or within the Phase I ESA study area.

Areas of Natural Significance

There are no areas of natural and scientific interest on the subject property or within the Phase I ESA study area.

Water Well Records

A total of 16 well records were identified within the Phase I Study Area. With the exception of two (2) domestic wells installed in 1948 and 1951, all of the wells in the area of the Phase I Property were utilized as test holes or groundwater monitoring wells.

Three monitoring wells were installed on the Phase I Property during a Geotechnical Investigation conducted by Paterson Group in March of 2018. The monitoring wells were installed within the limestone bedrock at depths of approximately 9.9 and 10.2m below ground surface.

Monitoring well records were identified for the properties addressed 1960 Scott Street, 309 Athlone Avenue, 145 Richmond Road, 160 Lanark Avenue (Mahoney Park) and further to the east along Scott Street.

Neighbouring Land Use

Neighbouring land use in the Phase I study area consists of residential and commercial properties. Land use is shown on Drawing PE4995-2 Surrounding Land Use Plan.

Potentially Contaminating Activities and Areas of Potential Environmental Concern

Seventeen (17) Potentially Contaminating Activities were previously identified in the Phase I Study area and none are considered to represent APECs on the subject site. Two (2) additional PCAs resulting in APECs were identified during the recent Phase I – ESA completed by Paterson. The APECs pertain to fill material of unknown quality across the entire site and a historical automotive service garage previously located on the adjacent lot to the west. Local land use is shown on Drawing PE4995-2 - Surrounding Land Use Plan.

Assessment of Uncertainty and/or Absence of Information

The information available for review as part of the preparation of this Phase I ESA was considered to be sufficient to conclude that there is an area of potential environmental concern (APEC) on the subject site. The presence of potentially contaminating activities 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 Sampling and Analysis Plan

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

3.5 Impediments

No physical impediments were encountered during the Phase II ESA program.

4.0 INVESTIGATION METHOD

4.1 Subsurface Investigation

The subsurface investigation was conducted on August 10, 2020. The field program consisted the drilling of four (4) boreholes on the Phase II Property, two (2) of which were completed with monitoring well installations.

The boreholes were placed to address the aforementioned area of potential environmental concern (APEC) and general coverage for geotechnical purposes.

The boreholes were drilled with a low clearance track-mounted drill rig, operated by George Downing Estate Drilling of Hawkesbury, Ontario, under the full-time supervision of Paterson personnel. Borehole locations are shown on Drawing PE4995-3 – Test Hole Location Plan appended to this report.

4.2 Soil Sampling

A total of nine (9) soil samples were obtained from the boreholes by means of sampling from shallow auger flights and split spoon sampling. The depths at which auger samples and split spoon samples were obtained from the boreholes are shown as "**AU**" and "**SS**" on the Soil Profile and Test Data Sheets, appended to this report.

Site soils generally consist of between 0.36 and 0.66 m of fill, consisting of brown silty sand with crushed stone. This fill overlays native brown silty sand and gravel till. This layer extended to bedrock at depths of 1.19m to 2.06m below the existing grade.

4.3 Field Screening Measurements

An RKI Eagle (gastech) calibrated to hexane was used to measure the combustible vapour concentrations in the headspace of all soil samples recovered from the boreholes. The technical protocol was obtained from Appendix C of the MECP document titled "Interim Guidelines for the Remediation of Petroleum Contamination at Operating Retail and Private Fuel Outlets in Ontario," dated March 1992.

Soil samples recovered at the time of sampling were placed immediately into airtight plastic bags with nominal headspace.

All lumps of soil inside the bags were broken by hand, and the soil was allowed to come to room temperature prior to conducting the vapour survey. Allowing the samples to stabilize to room temperature ensures consistency of readings between samples.

To measure the soil vapours, the analyzer probe is inserted into the nominal headspace above the soil sample. The sample is agitated/manipulated gently as the measurement is taken. The peak reading registered within the first 15 seconds is recorded as the vapour measurement. The parts per million (ppm) scale is used to measure concentrations of hydrocarbon vapours that are too low to register on the Lower Explosive Limit (LEL) scale. The explosive point, 100% LEL, represents the leanest mixture that will burn (or explode) if ignited.

The combustible vapour readings were found to be 0 ppm in the soil samples obtained. These results are not considered to represent significant petroleum hydrocarbon contamination.

Vapour readings are noted on the Soil Profile and Test Data Sheets in Appendix 1.

4.4 Groundwater Monitoring Well Installation

Two (2) groundwater monitoring wells were installed on the Phase II Property as part of the current subsurface investigation in addition the three (3) previously installed groundwater wells during a 2018 geotechnical investigation.

The monitoring wells consisted of 50 mm diameter Schedule 40 threaded PVC risers and screens. Monitoring well construction details are listed below in Table 1 and are also presented on the Soil Profile and Test Data Sheets provided in Appendix 1.

Table 1: Monitoring Well Construction Details

Well ID	Ground Surface Elevation	Total Depth (m BGS)	Screened Interval (m BGS)	Sand Pack (m BGS)	Bentonite Seal (m BGS)	Casing Type
BH1	64.34	9.91	6.30-9.91	6.30-9.91	0.0-6.60	Flush Mount
BH2	64.79	10.15	7.20-10.15	6.50-10.15	0.0-6.50	Flush Mount
BH3	64.23	10.19	7.10-10.15	6.40-10.15	0.0-6.40	Flush Mount
BH4-20	64.23	8.86	5.80-8.86	5.60 – 8.86	0.0-5.60	Flush Mount
BH6-20	64.61	8.86	5.90-8.86	5.60-8.86	0.0-5.60	Flush Mount

4.5 Field Measurement of Water Quality Parameters

Groundwater sampling was conducted at BH3, BH4-20 and BH6-20 on August 17 and 18, 2020. No water quality parameters were measured in the field at that time, due to limited groundwater sample volume.

4.6 Groundwater Sampling

Groundwater sampling protocols were followed using the MECP document entitled "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario," dated May 1996. Groundwater samples were obtained from each monitoring well, using dedicated sampling equipment.

Standing water was purged from each well prior to sampling. Samples were stored in coolers to reduce analyte volatilization during transportation. Details of our standard operating procedure for groundwater sampling are provided in the Sampling and Analysis Plan in Appendix 1.

4.7 Analytical Testing

Based on the guidelines outlined in the Sampling and Analysis Plan, appended to this report, the following soil samples were submitted for analysis:

Table 2: Soil Samples Submitted

Sample ID	Screened Interval/ Stratigraphic Unit	Parameter Analyzed		Rationale
		Metals	PAHs	
BH4-20-SS2	0.60 – 1.42 m Silty Sand with Gravel,	X	X	Assess potential impacts from APEC 1
BH5-20-SS2	0.60 – 1.19 m Silty Sand with Gravel,	X	X	Assess potential impacts from APEC 1
BH6-20-SS2	0.60-1.40 Silty Sand with Gravel,	X	X	Assess potential impacts from APEC 1 (fill of unknown quality)
BH7-20-SS2	0..80-1.27 Silty Sand with Gravel,	X	X	Assess potential impacts from APEC 1

Based on the guidelines outlined in the Sampling and Analysis Plan, appended to this report, the following groundwater samples were submitted for analysis:

Table 3: Groundwater Samples Submitted

Sample ID	Screened Interval/ Stratigraphic Unit	Parameters Analyzed		Rationale
		PHCs ($F_1 – F_4$) + BTEX	VOCs	
BH3-GW1	7.10-10.15 Bedrock (Limestone)	X	X	Asses potential impacts from APEC 2 (historical automotive service garage)
BH4 – 20-GW1	5.90-8.86 Bedrock (Limestone)	X	X	Asses potential impacts from APEC 2 (historical automotive service garage)
BH6-20-GW1	5.90-8.86 Bedrock (Limestone)	X	X	Asses potential impacts from APEC 2 (historical automotive service garage)
DUP	7.10-10.15 Bedrock (Limestone)		X[1]	General coverage

1 – Only VOCs were analyzed

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

4.8 Residue Management

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

4.9 Elevation Surveying

An elevation survey of all borehole locations was completed by Paterson at the time of the subsurface investigation. All borehole elevations are relative to the top spindle of a fire hydrant located in front of 320 McRae Avenue, geodetic elevation of 64.44 m asl, as presented on Drawing PE4995-3.

4.10 Quality Assurance and Quality Control Measures

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

5.0 REVIEW AND EVALUATION

5.1 Geology

The soil profile consists of between 0.36 and 0.66 m of fill overlying dense brown silty sand (glaciomarine deposits). Bedrock was encountered at a minimum depth of 1.19 m below the existing grade.

5.2 Groundwater Elevations, Flow Direction, and Hydraulic Gradient

Groundwater levels were measured during the groundwater sampling event on August 17, 2020, using an electronic water level meter. Groundwater levels are summarized below in Table 4. All elevations are relative to the top spindle of a fire hydrant located in front of 320 McRae Avenue, geodetic elevation of 64.44

Table 4: Groundwater Level Measurements

Borehole Location	Ground Surface Elevation (m)	Water Level Depth (m below grade)	Water Level Elevation (Asl)	Date of Measurement
BH3	64.23	6.03	58.20	August 17, 2020
BH2	64.79	6.32	58.47	August 17, 2020
BH4-20	64.23	5.34	58.89	August 17, 2020
BH6-20	64.61	5.88	58.73	August 17, 2020

Based on the groundwater levels recorded, the groundwater appears to flow to the east.

5.3 Fine-Coarse Soil Texture

No grain size analysis was completed for the subject site. Coarse-grained standards were selected based on the observed stratigraphy.

5.4 Soil: Field Screening

Field screening of the soil samples collected during drilling resulted in vapour readings of 0 ppm. No visual or olfactory indications of potential contamination were identified in the soil samples at the time of the field program. The field screening results of each individual soil sample are provided on the Soil Profile, and Test Data Sheets appended to this report.

5.5 Soil Quality

Four (4) soil samples including a duplicate were submitted for analysis of metals and PAHs. The results of the analytical testing are presented below in Tables 5 and 6. The laboratory certificates of analysis are provided in Appendix 1. Analytical test results are shown on Drawing PE4995-3A – Analytical Testing Plan.

Table 5: Analytical Test Results – Soil – Metals

Parameter	MDL (µg/g)	Soil Samples (µg/g)				MECP Table 7 Residential Standards (µg/g)
		August 10, 2020				
		BH4-20-SS2	BH5-20-SS2	BH6-20-SS2	BH7-20-SS2	
Chromium (VI)	0.2	nd	nd	nd	nd	8
Mercury	0.1	nd	nd	nd	nd	0.27
Antimony	1.0	nd	nd	nd	nd	7.5
Arsenic	1.0	7.7	2.7	1.9	2.7	18
Barium	1.0	125	38.9	47.5	76.8	390
Beryllium	0.5	0.9	nd	nd	nd	4
Boron	5.0	16.4	6.7	9.1	7.5	120
Cadmium	0.5	nd	nd	nd	nd	1.2
Chromium	5.0	37.8	13.8	11.7	12.4	160
Cobalt	1.0	12.8	5.2	nd	4.8	22
Copper	5.0	21.8	13.1	4.2	9.0	140
Lead	1.0	17.9	3.7	3.7	4.9	120
Molybdenum	1.0	1.2	nd	nd	nd	6.9
Nickel	5.0	29.0	9.3	8.2	8.7	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	2.3	nd	nd	23
Vanadium	10.0	44.9	23.5	17.7	21.5	86
Zinc	20.0	47.1	nd	21.0	nd	340

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

Bold and Underlined – Results exceed the selected MECP standards

The detected metal parameter concentrations comply with the MECP Table 7 and Table 1 Standards.

Table 6: Analytical Test Results – Soil – PAHs

Parameter	MDL (µg/g)	Soil Samples (µg/g)				MECP Table 7 Residential Standards (µg/g)
		August 10, 2020				
		BH4-20-SS2	BH5-20-SS2	BH6-20-SS2	BH7-20-SS2	
Acenaphthene	0.02	0.05	nd	nd	nd	7.9
Acenaphthylene	0.02	nd	nd	nd	nd	0.15
Anthracene	0.02	0.12	nd	nd	nd	0.67
Benzo(a)anthracene	0.02	0.28	nd	nd	nd	0.5
Benzo(a)pyrene	0.02	0.25	nd	nd	nd	0.3
Benzo(b)fluoranthene	0.02	0.34	nd	nd	nd	0.78
Benzo(g,h,i)perylene	0.02	0.17	nd	nd	nd	6.6
Benzo(k)fluoranthene	0.02	0.17	nd	nd	nd	0.78
Chrysene	0.02	0.25	nd	nd	nd	7
Dibenzo(a,h)anthracene	0.02	0.05	nd	nd	nd	0.1
Fluoranthene	0.02	0.68	nd	nd	nd	0.69
Fluorene	0.02	0.06	nd	nd	nd	62
Indeno(1,2,3-cd) pyrene	0.02	0.15	nd	nd	nd	0.38
1-Methylnaphthalene	0.02	nd	nd	nd	nd	0.99
2-Methylnaphthalene	0.02	nd	nd	nd	nd	0.99
Methylnaphthalene (1 & 2)	0.04	nd	nd	nd	nd	0.99
Naphthalene	0.01	nd	nd	nd	nd	0.6
Phenanthrene	0.02	0.51	nd	nd	nd	6.2
Pyrene	0.02	0.55	nd	nd	nd	78

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- NA – Parameter not analysed
- **Bold and Underlined** – Results exceed the selected MECP standards

The analyzed PAH concentrations were in compliance with the MECP Table 7 Standards. The PAH parameter concentration in BH4-20-SS2 exceeded the MECP Table 1 Standards.

The maximum concentrations of analyzed parameters in the soil at the site are summarized in Table 7.

TABLE 7: Maximum Concentrations – Soil

Parameter	Maximum Concentration (µg/g)	Soil Sample	Depth Interval (m BGS)
Arsenic	7.7	BH4-20-SS2	0.60-1.42, Native
Barium	125	BH4-20-SS2	0.60-1.42, Native
Beryllium	0.9	BH4-20-SS2	0.60-1.42, Native
Boron	16.4	BH4-20-SS2	0.60-1.42, Native
Chromium	37.8	BH4-20-SS2	0.60-1.42, Native
Cobalt	12.8	BH4-20-SS2	0.60-1.42, Native
Copper	21.8	BH4-20-SS2	0.60-1.42, Native
Lead	17.9	BH4-20-SS2	0.60-1.42, Native
Molybdenum	1.2	BH4-20-SS2	0.60-1.42, Native
Nickel	29.0	BH4-20-SS2	0.60-1.42, Native
Uranium	2.3	BH5-20-SS2	0.60-1.19, Native
Vanadium	44.9	BH4-20-SS2	0.60-1.42, Native
Zinc	47.1	BH4-20-SS2	0.60-1.42, Native
Acenaphthene	0.05	BH4-20-SS2	0.60-1.42, Native
Anthracene	0.12	BH4-20-SS2	0.60-1.42, Native
Benzo(a)anthracene	0.28	BH4-20-SS2	0.60-1.42, Native
Benzo(a)pyrene	0.25	BH4-20-SS2	0.60-1.42, Native
Benzo(b)fluoranthene	0.34	BH4-20-SS2	0.60-1.42, Native
Benzo(g,h,i)perylene	0.17	BH4-20-SS2	0.60-1.42, Native
Benzo(k)fluoranthene	0.17	BH4-20-SS2	0.60-1.42, Native
Chrysene	0.25	BH4-20-SS2	0.60-1.42, Native
Dibenzo(a,h)anthracene	0.05	BH4-20-SS2	0.60-1.42, Native
Fluoranthene	0.68	BH4-20-SS2	0.60-1.42, Native
Fluorene	0.06	BH4-20-SS2	0.60-1.42, Native
Indeno(1,2,3-cd) pyrene	0.15	BH4-20-SS2	0.60-1.42, Native
Methylnaphthalene (1 & 2)	0.04	BH4-20-SS2	0.60-1.42, Native
Phenanthrene	0.51	BH4-20-SS2	0.60-1.42, Native
Pyrene	0.55	BH4-20-SS2	0.60-1.42, Native

Notes:
- * Duplicate of BH3-AU1
- **Bold and Underlined** – Results exceed the selected MECP standards

All other parameter results were non-detect.

5.6 Groundwater Quality

Groundwater samples from monitoring wells installed in BH3, BH4-20 and BH6-20 were submitted for laboratory analysis of PHCs (F1-F4) and VOCs. The groundwater samples were obtained from the screened intervals noted in Table 2. The results of the analytical testing are presented below in Table 8 and Table 9. The laboratory certificate of analysis is provided in Appendix 1.

Analytical test results are shown on Drawing PE4995- 3B– Analytical Testing Plan – Groundwater.

Table 8: Analytical Test Results – Groundwater – PHCs (F_1-F_4)

Parameter	MDL (µg/g)	Soil Samples (µg/g)				MECP Table 7 Residential Standards (µg/g)
		August 17/August 18, 2020				
		BH3-GW1	BH4-20-GW1	BH6-20-GW1	DUP	
F1 PHCs (C6-C10)	25	nd	nd	nd	NA	420 ug/L
F2 PHCs (C10-C16)	100	nd)	nd	nd	NA	150 ug/L
F3 PHCs (C16-C34)	100	nd	nd	nd	N/A	500 ug/L
F4 PHCs (C34-C50)	100	nd	nd	nd	NA	500 ug/L

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

The PHC concentrations were not detected and therefore in compliance with the MECP Table 7 Standards.

Table 9: Analytical Test Results – Groundwater – VOCs						
Parameter	***MDL (µg/L)***	**Water Samples (µg/L)**				**MECP Table 7 Residential Standards (µg/L)**
		August 17/August 18, 2020				
		BH3-GW1	**BH4-20-GW1**	**BH6-20-GW1**	**DUP**	
Acetone	5.0	nd	nd	nd	nd	100000 ug/L
Benzene	0.5	nd	nd	nd	nd	0.5 ug/L
Bromodichloromethane	0.5		nd	nd	nd	67000 ug/L
Bromoform	0.5	nd	nd	nd	nd	5 ug/L
Bromomethane	0.5		nd	nd	nd	0.89 ug/L
Carbon Tetrachloride	0.2	nd	nd	nd	nd	0.2 ug/L
Chlorobenzene	0.5		nd	nd	nd	140 ug/L
Chloroform	0.5	nd	**7.0**	1.3	nd	2 ug/L
Dibromochloromethane	0.5		nd	nd	nd	65000 ug/L
Dichlorodifluoromethane	1.0	nd	nd	nd	nd	3500 ug/L
1,2-Dichlorobenzene	0.5		nd	nd	nd	150 ug/L
1,3-Dichlorobenzene	0.5	nd	nd	nd	nd	7600 ug/L
1,4-Dichlorobenzene	0.5		nd	nd	nd	0.5 ug/L
1,1-Dichloroethane	0.5	nd	nd	nd	nd	11 ug/L
1,2-Dichloroethane	0.5		nd	nd	nd	0.5 ug/L
1,1-Dichloroethylene	0.5	nd	nd	nd	nd	0.5 ug/L
cis-1,2-Dichloroethylene	0.5		nd	nd	nd	1.6 ug/L
trans-1,2-Dichloroethylene	0.5	nd	nd	nd	nd	1.6 ug/L
1,2-Dichloropropane	0.5		nd	nd	nd	0.58 ug/L
cis-1,3-Dichloropropylene	0.5	nd	nd	nd	nd	
trans-1,3-Dichloropropylene	0.5	nd	nd	nd	nd	
1,3-Dichloropropene, total	0.5	nd	nd	nd	nd	0.5 ug/L
Ethylbenzene	0.5	nd	nd	nd	nd	54 ug/L
Ethylene dibromide (dibromoethane, 1,2-)	0.2	nd	nd	nd	nd	0.2 ug/L
Hexane	1.0	nd	nd	nd	nd	5 ug/L
Methyl Ethyl Ketone (2-Butanone)	5.0	nd	nd	nd	nd	21000 ug/L
Methyl Isobutyl Ketone	5.0	nd	nd	nd	nd	5200 ug/L
Methyl tert-butyl ether	2.0	nd	nd	nd	nd	15 ug/L
Methylene Chloride	5.0	nd	nd	nd	nd	26 ug/L
Styrene	0.5	nd	nd	nd	nd	43 ug/L
1,1,1,2-Tetrachloroethane	0.5	nd	nd	nd	nd	1.1 ug/L
1,1,2,2-Tetrachloroethane	0.5	nd	nd	nd	nd	0.5 ug/L
Tetrachloroethylene	0.5	nd	nd	nd	nd	0.5 ug/L
Toluene	0.5	nd	nd	nd	nd	320 ug/L
1,1,1-Trichloroethane	0.5	nd	nd	nd	nd	23 ug/L
1,1,2-Trichloroethane	0.5	nd	nd	nd	nd	0.5 ug/L
Trichloroethylene	0.5	nd	nd	nd	nd	0.5 ug/L
Trichlorofluoromethane	1.0	nd	nd	nd	nd	2000 ug/L
Vinyl Chloride	0.5	nd	nd	nd	nd	0.5 ug/L
m/p-Xylene	0.5	nd	nd	nd	nd	
o-Xylene	0.5	nd	nd	nd	nd	
Xylenes, total	0.5	nd	nd	nd	nd	72 ug/L

Notes:
- MDL - Method Detection Limit
- nd - Not Detected (< MDL)
- NA – Parameter not analysed
- **Bold and Underlined** – Results exceed the selected MECP standards

The only VOC concentrations detected within the groundwater were chloroform in BH4-20 and BH6-20. A Chloroform concentration in excess of the selected standards was identified within BH4-20, however, it is expected to be a result of the municipal water used during bedrock coring, and as such, it is not considered a contaminant of concern. The groundwater is in compliance with the MECP Table 7 Standards for VOCs.

The maximum concentrations of analyzed parameters in the groundwater at the site are summarized in Table 10.

TABLE 10: Maximum Concentrations – Groundwater

Parameter	Maximum Concentration (µg/g)	Groundwater Sample	Screened Interval (m BGS)
Chloroform	7.0	BH4-20-GW1	5.80-8.86

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

5.7 Phase II Conceptual Site Model

The following section has been prepared in accordance with the requirements of O.Reg. 269/11 amended by the Environmental Protection Act. Conclusions and recommendations are discussed in a subsequent section.

Site Description

The Phase II Property is situated in a municipal urban setting of mixed commercial and residential uses. The property addressed 1950 Scott Street is currently operated by the International Buddhist Progress Society of Ottawa, as a temple while the properties addressed 312 and 314 Clifton Road are occupied by single-family residential dwellings with private garages.

Potentially Contaminating Activity and Areas of Potential Environmental Concern

As indicated in the Phase I-ESA report and Table 1 in Section 2.2 of this report, the following PCAs were considered to result in APECs on the Phase I/Phase II Property:

- ❑ Fill material of unknown quality across the entire site.
- ❑ Historical automotive service garage on the adjacent property to the west.

Contaminants of Potential Concern and Impacted Media

Contaminants of potential concern associated with the aforementioned PCAs include metals and PAHs in the soil and PHCs (F_1-F_4) and VOCs in the groundwater.

PHCs and VOCs were analysed in the groundwater on the subject site to assess the potential impact of the previously existing automotive service garage on the adjacent property to the west.

Subsurface Structures and Utilities

Underground service locates were completed prior to the subsurface investigation. Underground utilities on the Phase II Property include private electrical and sewer services as well as hydro and gas lines.

Physical Setting

Site Stratigraphy

The site stratigraphy, from the ground surface to the deepest aquifer or aquitard investigated consists of:

- Asphalt overlaying 0.60m of fill, consisting of brown silty sand with crushed stone.
- Native brown silty clay was generally found to underlie the fill material followed by limestone bedrock.
- The bedrock surface was encountered at approximately 1.37m below the existing grade.

Hydrogeological Characteristics

Groundwater at the Phase II Property was encountered within the bedrock.

Water levels were measured at the subject site on August 17 and 18, 2020, at depths ranging from 8.86 to 10.19m below grade. Based on the groundwater levels recorded, the groundwater appears to flow in an easterly direction towards the Ottawa River.

Approximate Depth to Bedrock

Bedrock is present at an average depth of 1.37m below the existing grade.

Approximate Depth to Water Table

Depth to the water table at the subject site varies between approximately 8.86 to 10.19m below the existing grade.

Sections 41 and 43.1 of the Regulation

Section 41 of the Regulation (Site Condition Standards, Environmentally Sensitive Areas) does not apply to the subject site.

Section 43.1 of the Regulation does apply to the subject site in that the subject site is a Shallow Soil Property.

Fill Placement

A surficial covering of asphaltic concrete overlying approximately 0.60m of fill, consisting of brown silty sand and crushed stone. This was generally considered to be engineered fill.

Proposed Buildings and Other Structures

It is our understanding that the subject site is to be redeveloped for residential purposes.

Areas of Natural Significance and Water Bodies

No areas of natural significance are present on or within the vicinity of the Phase II Property.

There are no water bodies on the subject property, or within the Phase I ESA study area.

Environmental Condition

Areas Where Contaminants are Present

Based on the analytical test results, there are no contaminants present on the Phase I/Phase II Property.

Types of Contaminants

Based on the analytical test results, there are no contaminants present on the Phase I Property.

Contaminated Media

Based on the findings of this Phase II ESA, the soil on the Phase I Property is in compliance with the MECP Table 7 residential standards. The groundwater conditions on the subject site are in compliance with the selected MECP Table 7 residential standards.

The exceeding chloroform concentration identified in the groundwater sampled from BH4-20 exceeded the MECP Table 7 Standards but it is expected to be a result of the municipal water used during bedrock coring, and as such, is not considered a contaminant of concern.

What Is Known About Areas Where Contaminants Are Present

The chloroform concentration in excess of the selected standards identified in BH4-20 is expected to be a result of the municipal water used during bedrock coring, and as such, is not considered a contaminant of concern.

Distribution and Migration of Contaminants

Based on the findings of the Phase II ESA, no significant distribution and/or migration of contaminants is considered to have occurred.

Discharge of Contaminants

Based on the analytical testing results, the only exceedance identified was chloroform in BH4-20. The chloroform concentration in excess of the selected standards identified in BH4-20 is expected to be a result of the municipal water used during bedrock coring, and as such, is not considered a contaminant of concern.

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 by means of the infiltration of precipitation, and the migration of contaminants via groundwater levels and/or flow, which may fluctuate seasonally. It is our opinion that climatic and meteorological conditions have not significantly influenced contaminant transport in the past.

Potential for Vapour Intrusion

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

6.0 CONCLUSIONS

Assessment

A Phase II ESA was conducted for 1950 Scott Street, 312 and 314 Clifton Road, in the City of Ottawa, Ontario. The purpose of the Phase II ESA was to address two (2) potentially contaminating activities (PCAs) that were identified during the Phase I ESA and were considered to result in areas of potential environmental concern (APECs) on the Phase II Property. The subsurface investigation consisted of drilling four (4) boreholes, two (2) of which were completed as groundwater monitoring wells.

Soil samples were obtained from the boreholes and screened using visual observations and organic vapour measurements. Four (4) soil samples were submitted for laboratory analysis of metals and polycyclic aromatic hydrocarbons (PAHs). All metals and PAH concentrations identified in the soil samples were in compliance with MECP Table 7 Standards.

Three (3) groundwater samples from monitoring wells installed in BH3, BH4-20 and BH6-20 were recovered and analyzed for PHCs and VOCs. All PHC and VOC concentrations in the groundwater samples were in compliance with the MECP Table 7 Standards except for a concentration of chloroform identified in BH4-20. The exceedance is expected to be a result of the municipal water used during bedrock coring, and as such, is not considered a contaminant of concern.

Based on the findings of the Phase II ESA the soils and groundwater are in compliance with MECP Table 7 Standards.

Recommendations

Monitoring Wells

It is expected that the groundwater monitoring wells will be abandoned in accordance with O.Reg.903, at the time of construction excavation. It is recommended that the integrity of the monitoring wells be maintained, prior to future construction, for possible further groundwater monitoring purposes.

Soil

The Phase II – ESA did not identify any soil concentrations in excess of Table 7, however, the PAH results on sample BH4-20-SS2 did exceed the MECP Table 1 Standards. Based on this, it is likely that soil of the overburden will have to be disposed of off-site at an approved waste disposal facility as impacted soil

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 meets the requirements of 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 subject site and/or historical information that differ from our findings, we request that we be notified immediately in order to allow for a reassessment.

This report was prepared for the sole use of 2506100 Ontario Inc. Notification from 2506100 Ontario Inc. and Paterson Group will be required to release this report to any other party.

Paterson Group Inc.

Samuel Berube, B.Eng.

Mark S. D'Arcy, P.Eng., QP$_{ESA}$

Report Distribution:

- Ontario 2506100 Inc. c/o Colonnade Bridgeport
- Paterson Group

FIGURES

FIGURE 1 – KEY PLAN

DRAWING PE4995-3 – TEST HOLE LOCATION PLAN

DRAWING PE4995-3A – ANALYTICAL TESTING PLAN – SOIL (METALS, CrVI, Hg and PAHs)

DRAWING PE4995-3B – ANALYTICAL TESTING PLAN – Groundwater (PHCs, BTEX and VOCs)

DRAWING PE4995-4A – CROSS SECTION A-A' SOIL (METALS, CrVI, Hg and PAHs)

DRAWING PE4995-4B – CROSS SECTION A-A' GROUNDWATER (PHCs, BTEX and VOCs)

DRAWING PE4995-5A – CROSS SECTION B-B' SOIL (METALS, CrVI, Hg and PAHs)

DRAWING PE4995-5B – CROSS SECTION B-B' GROUNDWATER (PHCs, BTEX and VOCs)

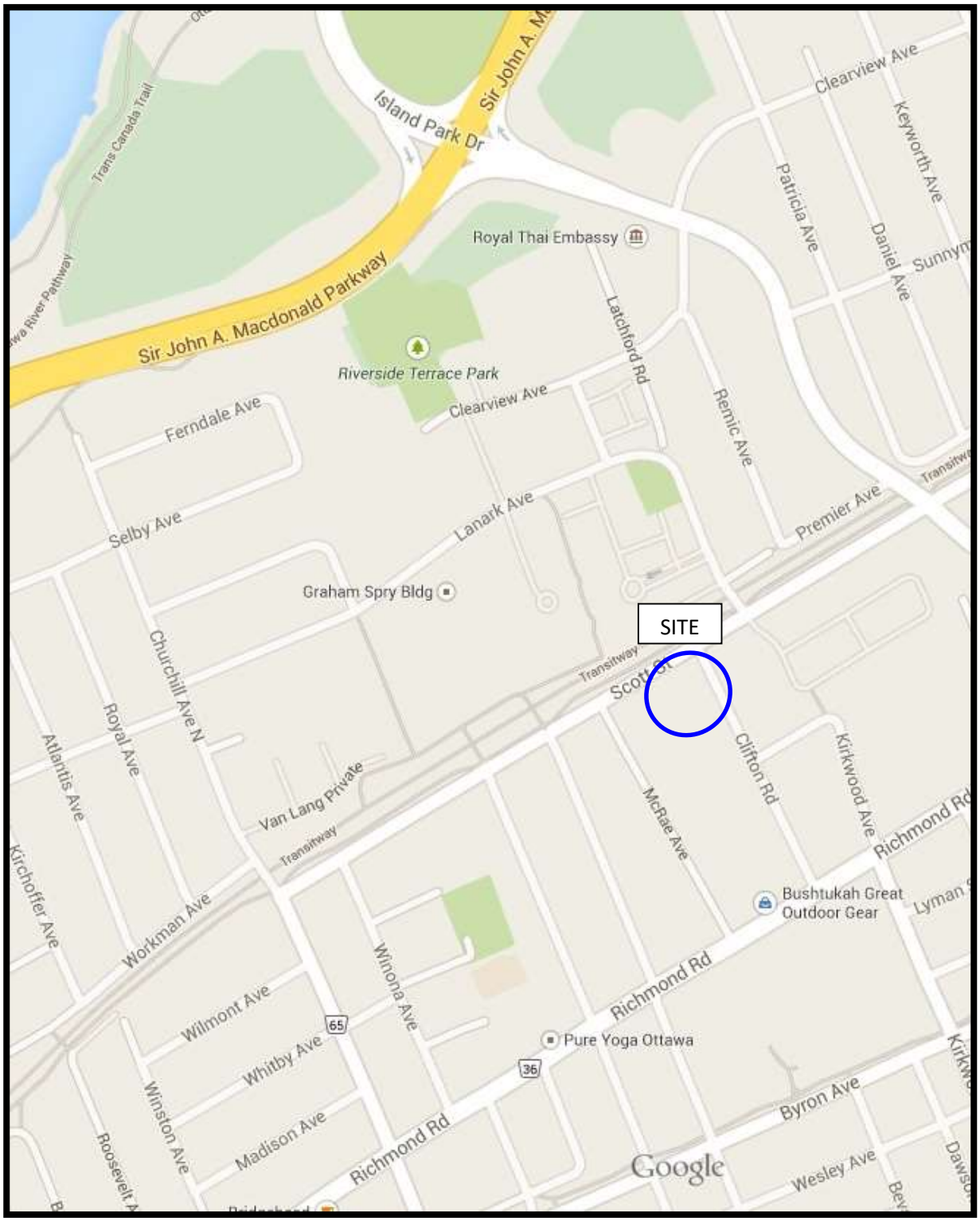

FIGURE 1

KEY PLAN

#305 CLIFTON ROAD
HYDRO SUBSTATION

#311-313 CLIFTON ROAD
RESIDENTIAL DWELLING

#315 CLIFTON ROAD
RESIDENTIAL DWELLING

#319 CLIFTON ROAD
RESIDENTIAL DWELLING

CLIFTON ROAD

SCOTT STREET

TRANSITWAY

LANDSCAPED

A

BH 3
64.23
[62.61]
(58.20)

BH 5-20
64.38

#312
CLIFTON ROAD
RESIDENTIAL
DWELLING

#314
CLIFTON ROAD
RESIDENTIAL
DWELLING

BH 7-20
64.38

58.3

58.4

58.5

58.6

58.7

58.8

#1950 SCOTT STREET
BHUDDIST PROGRESS
SOCIETY OF OTTAWA

ASPHALTIC CONCRETE LANEWAY

(0.02m/m)

ASPHALTIC CONCRETE

BH 2
64.79
[62.73]
(58.47)

BH 6-20
64.61
[62.99]
(58.73)

B'

BH 1
64.34
[62.84]

B

BH 4-20
64.23
[62.81]
(58.89)

A'

PRIVATE GARAGE

PRIVATE GARAGE

#316 CLIFTON ROAD
RESIDENTIAL DWELLING

#320 CLIFTON ROAD
RESIDENTIAL DWELLING

#1960 SCOTT STREET
RESIDENTIAL APARTMENT BUILDING

COMMERCIAL BUILDINGS

LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION
- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION (PATERSON GROUP REPORT PG4394, 2018)
- 64.79 GROUND SURFACE ELEVATION (m)
- [62.73] BEDROCK SURFACE ELEVATION (m)
- (58.47) GROUNDWATER SURFACE ELEV. (m)
- A — A' CROSS SECTION
- 58.7 GROUNDWATER CONTOUR (m)
- APPROX. GROUNDWATER FLOW DIRECTION (HORIZONTAL HYDRAULIC GRADIENT)

TBM - TOP SPINDLE OF FIRE HYDRANT LOCATED IN FRONT OF 320 McRAE AVENUE. GEODETIC ELEVATION = 64.44m.

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consulting engineers

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NO.	REVISIONS	DATE	INITIAL

2506100 ONTARIO INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1950 SCOTT STREET, 312 & 314 CLIFTON ROAD

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:300	Date: 10/2020
Drawn by: YA	Report No.: PE4995-2
Checked by: SB	Dwg. No.: PE4995-3
Approved by: MSD	Revision No.:

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#305 CLIFTON ROAD
HYDRO SUBSTATION

#311-313 CLIFTON ROAD
RESIDENTIAL DWELLING

#315 CLIFTON ROAD
RESIDENTIAL DWELLING

#319 CLIFTON ROAD
RESIDENTIAL DWELLING

CLIFTON ROAD

SCOTT STREET

TRANSITWAY

BH5-20-SS2 0.60-1.19m 10-AUG-2020
Metals, Mercury and CrVI comply with MECP Table 7 Standards

BH5-20-SS2 0.60-1.19m 10-AUG-2020
PAHs comply with MECP Table 7 Standards

BH7-20-SS2 0.80-1.27m 10-AUG-2020
Metals, Mercury and CRVI comply with MECP Table 7 Standards

BH7-20-SS2 0.80-1.27m 10-AUG-2020
PAHs comply with MECP Table 7 Standards

A

BH 3
64.23
[62.61]
(58.20)

LANDSCAPED

#1950 SCOTT STREET
BHUDDIST PROGRESS
SOCIETY OF OTTAWA

BH 5-20
64.38

#312
CLIFTON ROAD
RESIDENTIAL
DWELLING

ASPHALTIC CONCRETE LANEWAY

BH 7-20
64.38

LANDSCAPED

#314
CLIFTON ROAD
RESIDENTIAL
DWELLING

BH6-20-SS2 0.60-1.40m 10-AUG-2020
Metals, Mercury and CrVI comply with MECP Table 7 Standards

BH6-20-SS2 0.60-1.40m 10-AUG-2020
PAHs comply with MECP Table 7 Standards

BH 2
64.79
[62.73]
(58.47)

LANDSCAPED

ASPHALTIC CONCRETE

#316 CLIFTON ROAD
RESIDENTIAL DWELLING

#320 CLIFTON ROAD
RESIDENTIAL DWELLING

BH 6-20
64.61
[62.99]
(58.73)

B'

BH 4-20
64.23
[62.81]
(58.89)

ASPHALTIC
CONCRETE

BH 1
64.34
[62.84]

B

A'

PRIVATE
GARAGE

PRIVATE
GARAGE

BH4-20-SS2 0.60-1.42m 10-AUG-2020
Metals, Mercury and CrVI comply with MECP Table 7 Standards

BH4-20-SS2 0.60-1.42m 10-AUG-2020
PAHs comply with MECP Table 7 Standards

RES

COMMERCIAL BUILDINGS

SOIL RESULT COMPLIES WITH MECP TABLE 7 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 7 STANDARDS

LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION
- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION (PATERSON GROUP REPORT PG4394, 2018)
- 64.79 GROUND SURFACE ELEVATION (m)
- [62.73] BEDROCK SURFACE ELEVATION (m)
- (58.47) GROUNDWATER SURFACE ELEV. (m)
- A—A' CROSS SECTION

TBM - TOP SPINDLE OF FIRE HYDRANT LOCATED IN FRONT OF 320 McRAE AVENUE. GEODETIC ELEVATION = 64.44m.

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2506100 ONTARIO INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1950 SCOTT STREET, 312 & 314 CLIFTON ROAD

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - SOIL (METALS, CrVI, Hg, PAHs)

Scale: 1:300	Date: 10/2020
Drawn by: YA	Report No.: PE4995-2
Checked by: SB	Dwg. No.: PE4995-3A
Approved by: MSD	Revision No.:

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#305 CLIFTON ROAD
HYDRO SUBSTATION

#311-313 CLIFTON ROAD
RESIDENTIAL DWELLING

#315 CLIFTON ROAD
RESIDENTIAL DWELLING

#319 CLIFTON ROAD
RESIDENTIAL DWELLING

CLIFTON ROAD

SCOTT STREET

TRANSITWAY

BH3-GW1 7.10-10.15m 18-AUG-2020
PHCs, BTEX and VOCs comply with MECP Table 7 Standards

DUP-BH3-GW1 7.10-10.15m 18-AUG-2020
VOCs comply with MECP Table 7 Standards

BH 3
64.23
[62.61]
(58.20)

BH 5-20
64.38

BH 7-20
64.38

BH 2
64.79
[62.73]
(58.47)

BH 6-20
64.61
[62.99]
(58.73)

BH 4-20
64.23
[62.81]
(58.89)

BH 1
64.34
[62.84]

#1950 SCOTT STREET
BHUDDIST PROGRESS
SOCIETY OF OTTAWA

#312
CLIFTON ROAD
RESIDENTIAL
DWELLING

#314
CLIFTON ROAD
RESIDENTIAL
DWELLING

PRIVATE GARAGE

PRIVATE GARAGE

LANDSCAPED

ASPHALTIC CONCRETE LANEWAY

ASPHALTIC CONCRETE

BH6-20-GW1 5.90-8.86m 17-AUG-2020
PHCs, BTEX and VOCs comply with MECP Table 7 Standards

BH4-20-GW1 5.80-8.86m 17/18-AUG-2020
PHCs, BTEX and VOCs comply with MECP Table 7 Standards

#316 CLIFTON ROAD
RESIDENTIAL DWELLING

#320 CLIFTON ROAD
RESIDENTIAL DWELLING

#1960 S
RESIDENTIAL APARTMENT BUILDING

COMMERCIAL BUILDINGS

GROUNDWATER RESULT COMPLIES WITH MECP TABLE 7 STANDARDS

GROUNDWATER RESULT EXCEEDS MECP TABLE 7 STANDARDS

LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION
- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION (PATERSON GROUP REPORT PG4394, 2018)
- 64.79 GROUND SURFACE ELEVATION (m)
- [62.73] BEDROCK SURFACE ELEVATION (m)
- (58.47) GROUNDWATER SURFACE ELEV. (m)
- A—A' CROSS SECTION

TBM - TOP SPINDLE OF FIRE HYDRANT LOCATED IN FRONT OF 320 McRAE AVENUE. GEODETIC ELEVATION = 64.44m.

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NO.	REVISIONS	DATE	INITIAL

2506100 ONTARIO INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1950 SCOTT STREET, 312 & 314 CLIFTON ROAD

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - GROUNDWATER (PHCs, BTEX, VOCs)

Scale: 1:300	Date: 10/2020
Drawn by: YA	Report No.: PE4995-2
Checked by: SB	Dwg. No.: PE4995-3B
Approved by: MSD	Revision No.:

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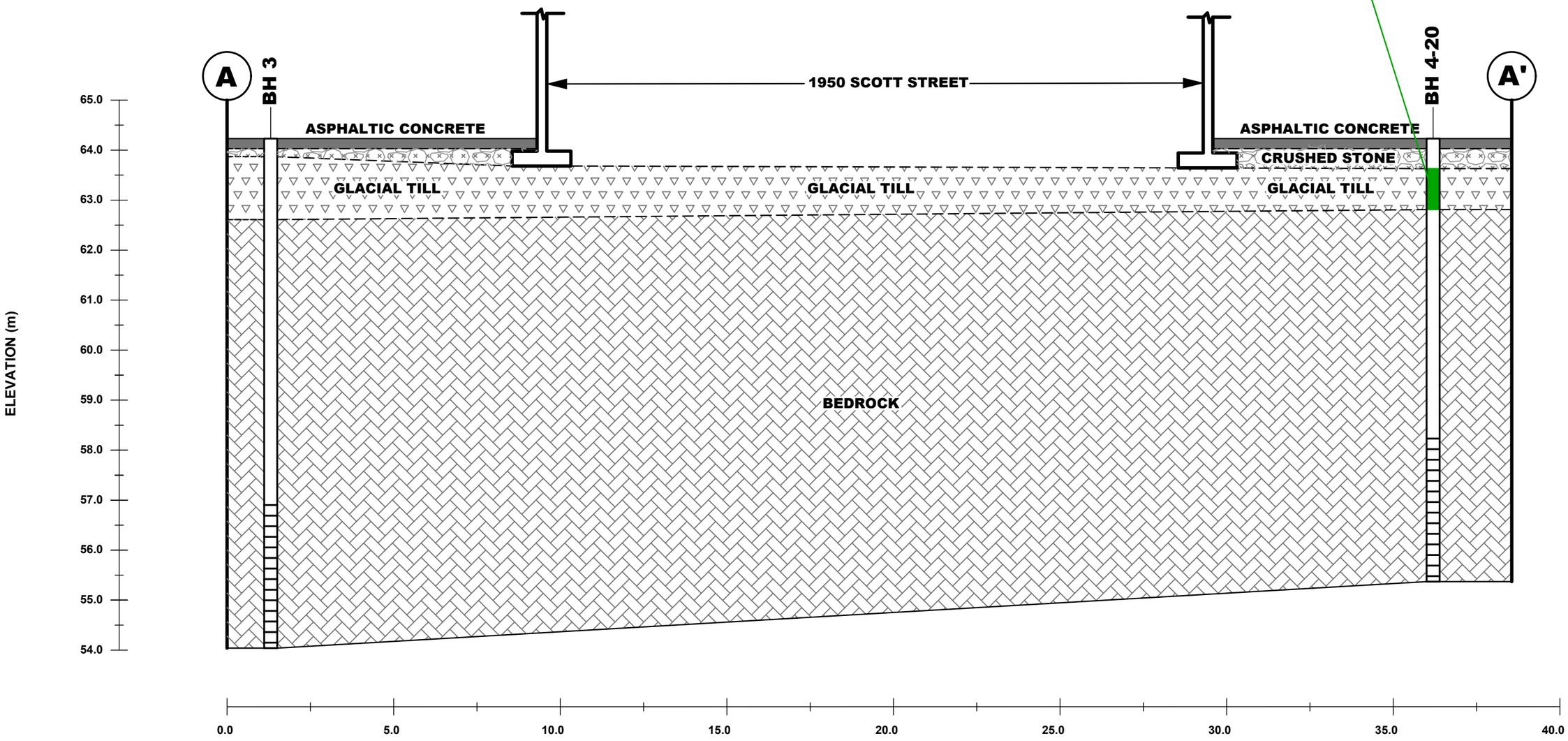
BH4-20-SS2	0.60-1.42m	10-AUG-2020
Metals, Mercury and CrVI comply with MECP Table 7 Standards		
BH4-20-SS2	0.60-1.42m	10-AUG-2020
PAHs comply with MECP Table 7 Standards		



SOIL RESULT COMPLIES WITH MECP TABLE 7 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 7 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

2506100 ONTARIO INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1950 SCOTT STREET, 312 & 314 CLIFTON ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL (METALS, CrVI, Hg, PAHs)

Scale: AS SHOWN	Date: 10/2020
Drawn by: YA	Report No.: PE4995-2
Checked by: SB	Dwg. No.: PE4995-4A
Approved by: MSD	Revision No.:

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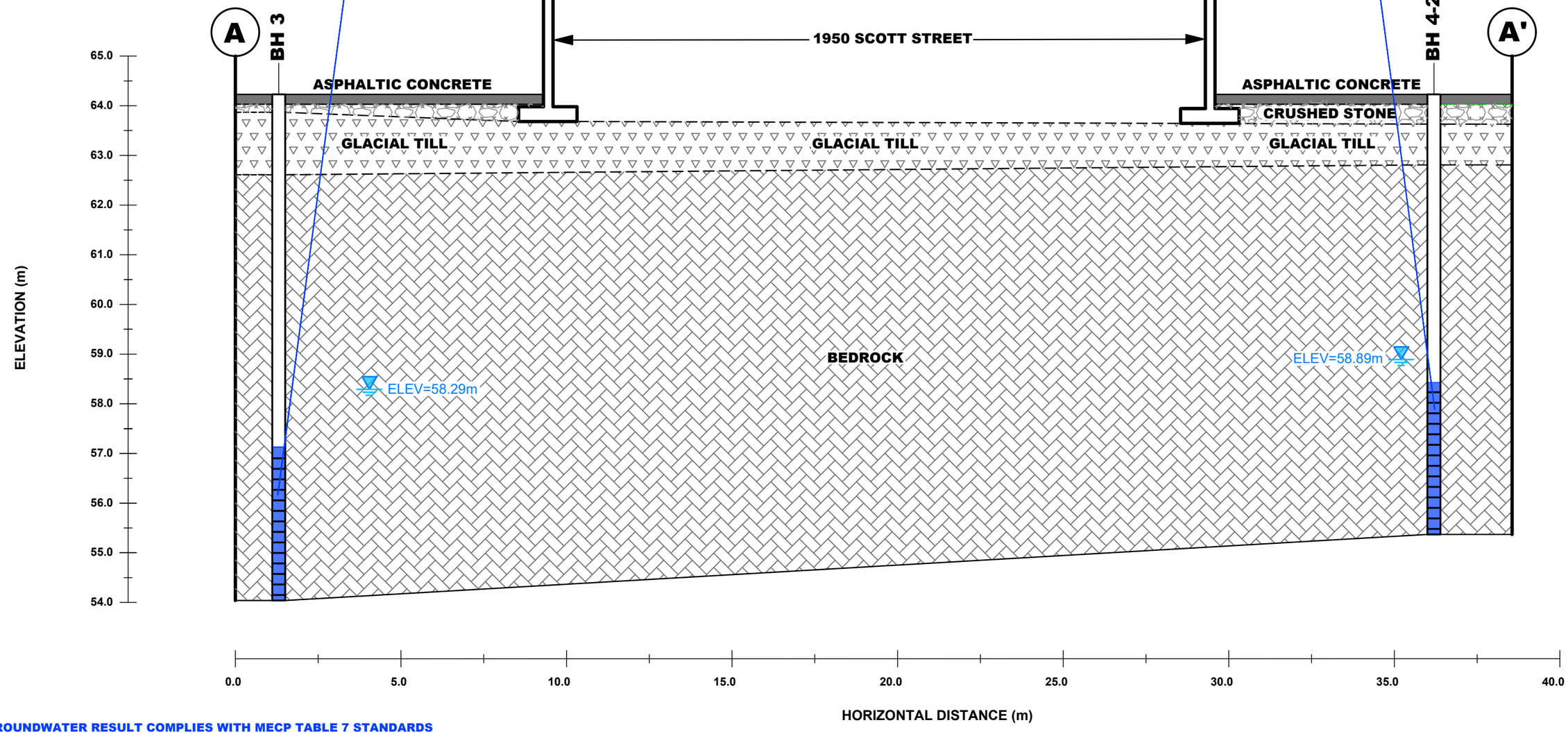
BH3-GW1	7.10-10.15m	17-AUG-2020
PHCs, BTEX and VOCs comply with MECP Table 7 Standards		
DUP-BH3-GW1	7.10-10.15m	17-AUG-2020
VOCs comply with MECP Table 7 Standards		

BH4-20-GW1	5.80-8.86m	17/18-AUG-2020
PHCs, BTEX and VOCs comply with MECP Table 7 Standards		



GROUNDWATER RESULT COMPLIES WITH MECP TABLE 7 STANDARDS

GROUNDWATER RESULT EXCEEDS MECP TABLE 7 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

2506100 ONTARIO INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1950 SCOTT STREET, 312 & 314 CLIFTON ROAD

OTTAWA, ONTARIO

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

Scale: AS SHOWN	Date: 10/2020
Drawn by: YA	Report No.: PE4995-2
Checked by: SB	Dwg. No.: PE4995-4B
Approved by: MSD	Revision No.:

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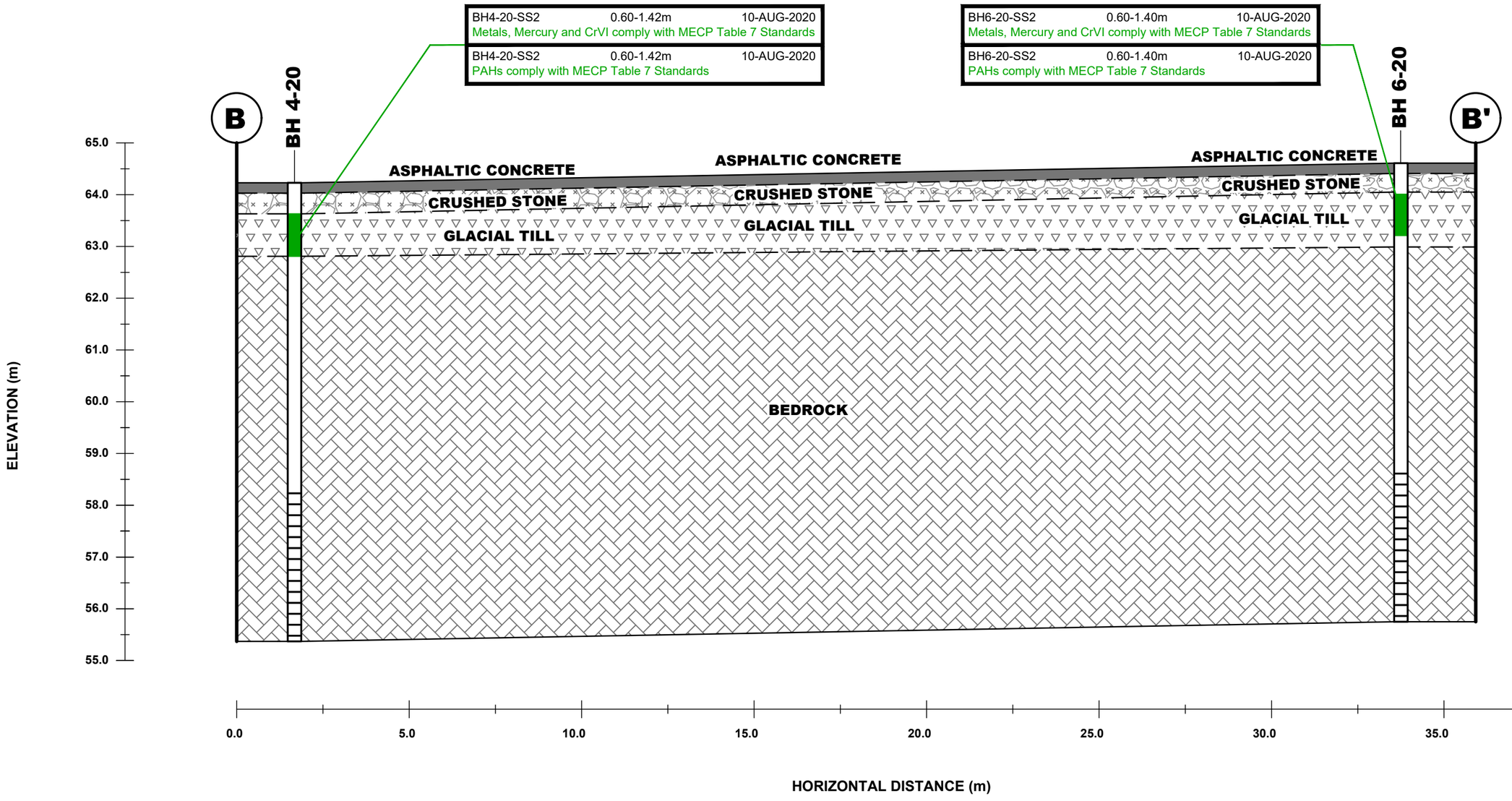

SOIL RESULT COMPLIES WITH MECP TABLE 7 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 7 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

2506100 ONTARIO INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1950 SCOTT STREET, 312 & 314 CLIFTON ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION B-B' - SOIL (METALS, CrVI, Hg, PAHs)

Scale: AS SHOWN	Date: 10/2020
Drawn by: YA	Report No.: PE4995-2
Checked by: SB	Dwg. No.: PE4995-5A
Approved by: MSD	Revision No.:

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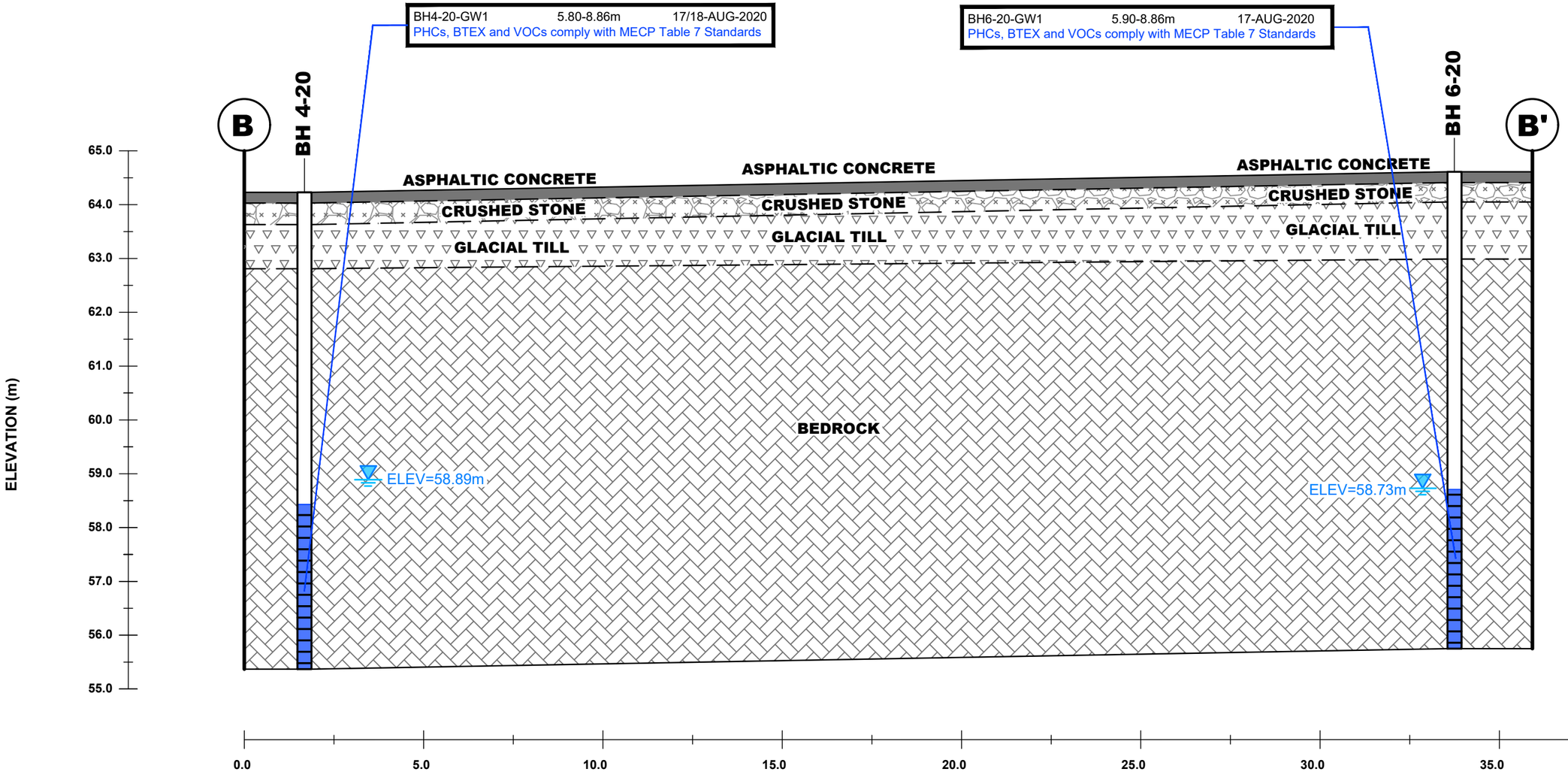
BH4-20-GW1 5.80-8.86m 17/18-AUG-2020
PHCs, BTEX and VOCs comply with MECP Table 7 Standards

BH6-20-GW1 5.90-8.86m 17-AUG-2020
PHCs, BTEX and VOCs comply with MECP Table 7 Standards



GROUNDWATER RESULT COMPLIES WITH MECP TABLE 7 STANDARDS

GROUNDWATER RESULT EXCEEDS MECP TABLE 7 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

2506100 ONTARIO INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
1950 SCOTT STREET, 312 & 314 CLIFTON ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - GROUNDWATER (PHCs, BTEX, VOCs)

Scale: AS SHOWN	Date: 10/2020
Drawn by: YA	Report No.: PE4995-2
Checked by: SB	Dwg. No.: PE4995-5B
Approved by: MSD	Revision No.:

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APPENDIX 1

SAMPLING AND ANALYSIS PLAN

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

LABORATORY CERTIFICATE OF ANALYSIS

Geotechnical Engineering

Environmental Engineering

Hydrogeology

Geological Engineering

Materials Testing

Building Science

Archaeological Services

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Sampling & Analysis Plan

Phase II Environmental Site Assessment

1950 Scott Street, 312 and 314 Clifton Avenue
Ottawa, Ontario

Prepared For

2506100 Ontario Inc.
c/o Colonnade Bridgeport

July 2020

Report: PE4995-SAP

TABLE OF CONTENTS

1.0 SAMPLING PROGRAM

Paterson Group Inc. (Paterson) was commissioned by 2506100 Ontario Inc. to conduct a Phase II Environmental Site Assessment (ESA) of 1950 Scott Street, 312 and 314 Clifton Avenue, Ottawa, Ontario. Based on our 2020 Phase I ESA Update completed for the subject property, a subsurface investigation program, consisting of borehole drilling, was developed.

Borehole	Location & Rationale	Proposed Depth & Rationale
BH1	General Coverage	Borehole to be advanced to approximately 2m below the expected long-term groundwater table and install a monitoring well.
BH2	General Coverage	Borehole to be advanced to approximately 2m below the expected long-term groundwater table and install a monitoring well.
BH3	General Coverage	Borehole to be advanced to approximately 2m below the expected long-term groundwater table and install a monitoring well.
BH4	General Coverage.	Borehole to be advanced to approximately practical refusal

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

Upon refusal, rock coring shall be undertaken to the required depth. Approximately every metre the well shall be purged by inertial pumping and the water level recorded to determine if groundwater water is entering the borehole.

Following borehole drilling, monitoring wells will be installed in selected boreholes (as above) for the measurement of water levels and the collection of groundwater samples. Borehole locations are shown on the Test Hole Location Plan appended to the main report.

2.0 ANALYTICAL TESTING PROGRAM

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

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

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

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

3.0 STANDARD OPERATING PROCEDURES

3.1 Environmental Drilling Procedure

Purpose

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

Equipment

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

- ❒ glass soil sample jars
- ❒ two buckets
- ❒ cleaning brush (toilet brush works well)
- ❒ dish detergent
- ❒ methyl hydrate
- ❒ water (if not available on site - water jugs available in the 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 catch basin of known geodetic elevation.

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 F1, a soil core from each soil sample which may be analysed 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 the 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 an RKI Eagle, PID, etc. depending on the 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 a brush in soapy water, inside and out, including the 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 the 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 the bag.
- ❒ Insert the probe into soil bag, creating a seal with your hand around the opening.
- ❒ Gently manipulate soil in the 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 the Sampling and Analysis Plan.

3.2 Monitoring Well Installation Procedure

Equipment

- ❒ 5’ x 2” [1.52 m x 50 mm] threaded sections of Schedule 40 PVC slotted well screen (5’ x 1 ¼” [1.52 m x 32 mm] if installing in a cored hole in bedrock)
- ❒ 5’ x 2” [1.52 m x 50 mm] threaded sections of Schedule 40 PVC riser pipe (5’ x 1 ¼” [1.52 m x 32 mm] if installing in a 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 the required depth, using drilling and sampling procedures described above.
- ❒ If the borehole is deeper than required monitoring well, backfill with bentonite chips to the 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 the screen. Thread the second section of the screen if required. Thread risers onto the screen. Lower into the borehole to the required depth. Ensure slip-cap or J-plug is inserted to prevent backfill materials from entering the 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 the 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 the 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 a socket wrench or Allan key to open metal flush mount protector cap. Remove plastic well cap.
- ❒ Measure water level, with respect to the existing ground surface, using water level meter or interface probe. If using an interface probe on suspected NAPL site, measure the thickness of the free product.
- ❒ Measure the total depth of well.
- ❒ Clean water level tape or interface probe using methanol and water. Change gloves between wells.
- ❒ Calculate the volume of standing water within well and record.
- ❒ Insert polyethylene tubing into well and attach to the peristaltic pump. Turn on the peristaltic pump and purge into the 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 the 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 the 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 a 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 the 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 (0.5 x) the laboratory detection limit.

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

These considerations are discussed in the body of the report.

6.0 PHYSICAL IMPEDIMENTS TO SAMPLING & ANALYSIS PLAN

Physical impediments to the Sampling and Analysis plan may include:

- ❒ The location of underground utilities
- ❒ Poor recovery of split-spoon soil samples
- ❒ Insufficient groundwater volume for groundwater samples
- ❒ Breakage of sampling containers following sampling or while in transit to the laboratory
- ❒ Elevated detection limits due to matrix interference (generally related to soil colour or presence of organic material)
- ❒ Elevated detection limits due to high concentrations of certain parameters, necessitating dilution of samples in the 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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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Multi-Storey Building - 1950 Scott Street
Ottawa, Ontario

DATUM TBM - Top spindle of fire hydrant located in front of 320 McRae Avenue. Geodetic elevation = 64.44m.

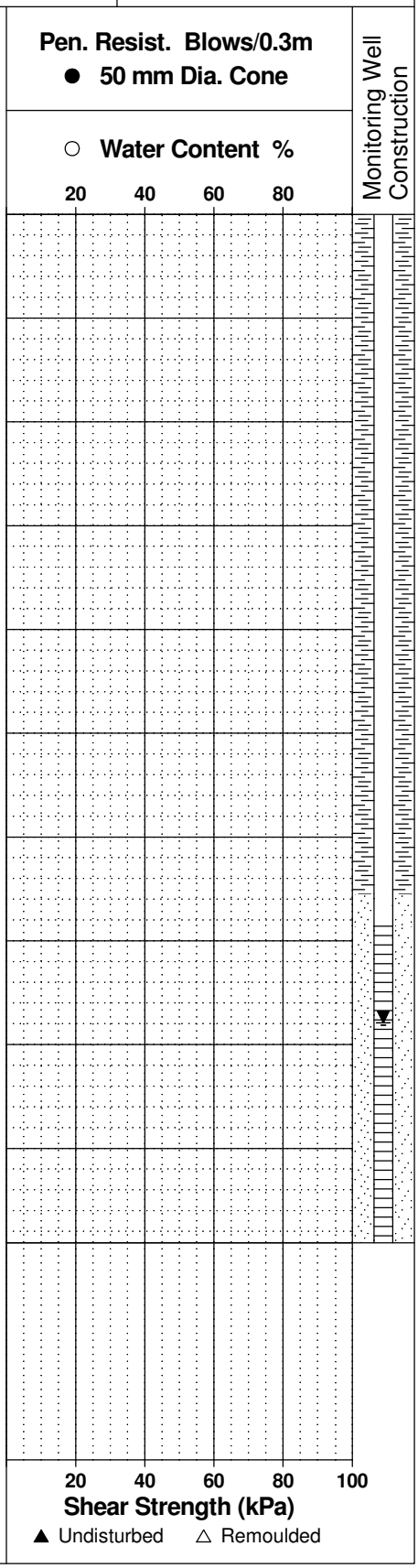
FILE NO. PG4394

REMARKS

HOLE NO. BH 1

BORINGS BY CME 55 Power Auger **DATE** March 6, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	64.34
Asphaltic concrete 0.10		AU	1				
FILL: Crushed stone with silt and sand 0.36							
GLACIAL TILL: Brown silty sand, some gravel and cobbles		SS	2	50	17	1	63.34
1.50		RC	1	95	70	2	62.34
		RC	2	98	91	3	61.34
		RC	3	99	99	4	60.34
BEDROCK: Grey limestone						5	59.34
		RC	4	96	95	6	58.34
		RC	5	98	98	7	57.34
		RC	6	100	100	8	56.34
9.91						9	55.34
End of Borehole							
(GWL @ 7.79m - March 19, 2018)							



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Multi-Storey Building - 1950 Scott Street
Ottawa, Ontario

DATUM TBM - Top spindle of fire hydrant located in front of 320 McRae Avenue. Geodetic elevation = 64.44m.

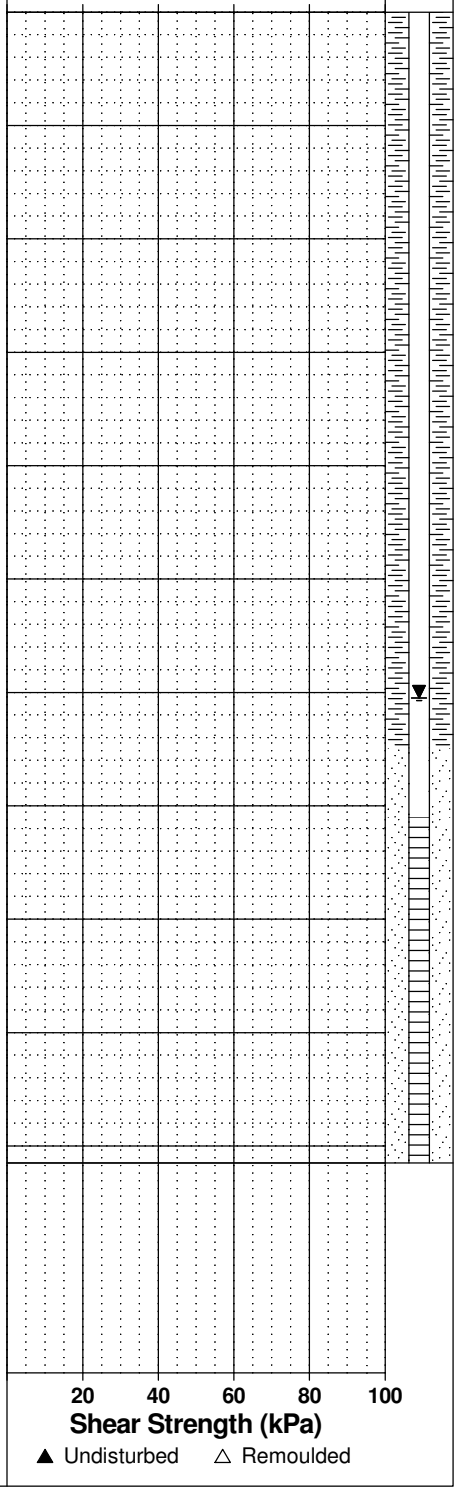
FILE NO. PG4394

REMARKS

HOLE NO. BH 2

BORINGS BY CME 55 Power Auger **DATE** March 6, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	64.79
25mm Asphaltic concrete over crushed stone with silt and sand 0.25		AU	1				
GLACIAL TILL: Brown silty sand, trace gravel, cobbles and boulders		SS	2	0	50+	1	63.79
		SS	3	44	50+		
2.06		RC	1	48	40	2	62.79
		RC	2	98	75	3	61.79
		RC	3	98	92	4	60.79
BEDROCK: Grey limestone		RC	4	100	98	5	59.79
		RC	5	100	98	6	58.79
		RC	6	100	100	7	57.79
10.15						8	56.79
End of Borehole						9	55.79
(GWL @ 6.05m - March 19, 2018)						10	54.79



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Multi-Storey Building - 1950 Scott Street
Ottawa, Ontario

DATUM TBM - Top spindle of fire hydrant located in front of 320 McRae Avenue. Geodetic elevation = 64.44m.

FILE NO. PG4394

REMARKS

HOLE NO. BH 3

BORINGS BY CME 55 Power Auger **DATE** March 6, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Monitoring Well Construction
GROUND SURFACE						0	64.23		
Asphaltic concrete 0.10		AU	1						
FILL: Crushed stonew with silt and sand 0.36									
GLACIAL TILL: Brown silty sand, some gravel, cobbles and boulders		SS	2	46	42	1	63.23		
1.62		RC	1	100	84	2	62.23		
		RC	2	97	83	3	61.23		
		RC	3	100	99	4	60.23		
BEDROCK: Grey limestone						5	59.23		
		RC	4	97	96	6	58.23		
		RC	5	100	100	7	57.23		
		RC	6	98	98	8	56.23		
10.19						9	55.23		
End of Borehole						10	54.23		
(GWL @ 5.94m - March 19, 2018)									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
1950 Scott Street
Ottawa, Ontario

DATUM TBM - Top spindle of fire hydrant located in front of 320 McRae Avenue. Geodetic elevation = 64.44m.

FILE NO. PE4995

REMARKS

HOLE NO. BH 4-20

BORINGS BY CME-55 Low Clearance Drill **DATE** August 10, 2020

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	64.23
FILL: Brown silty sand with crushed stone 0.60							
GLACIAL TILL: Very dense, brown silty sand with gravel, cobbles and boulders 1.42		SS	2	40	50+	1	63.23
		RC	1	75	33	2	62.23
						3	61.23
		RC	2	100	100	4	60.23
BEDROCK: Poor to excellent quality, grey limestone		RC	3	100	100	5	59.23
						6	58.23
		RC	4	100	92	7	57.23
						8	56.23
		RC	5	100	100		
8.86 End of Borehole							
(GWL @ 5.34m - August 17, 2020)							

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

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
1950 Scott Street
Ottawa, Ontario

DATUM TBM - Top spindle of fire hydrant located in front of 320 McRae Avenue. Geodetic elevation = 64.44m.

FILE NO. PE4995

REMARKS

HOLE NO. BH 5-20

BORINGS BY CME-55 Low Clearance Drill **DATE** August 10, 2020

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 0.08						0	64.38		
FILL: Brown silty sand with crushed stone 0.60		AU	1						
GLACIAL TILL: Very dense, brown silty sand with gravel, cobbles and boulders 1.19		SS	2	59	50+	1	63.38		
End of Borehole									
Practical refusal to augering at 1.19m depth.									

Photo Ionization Detector: ○ Lower Explosive Limit % — 20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
1950 Scott Street
Ottawa, Ontario

DATUM TBM - Top spindle of fire hydrant located in front of 320 McRae Avenue. Geodetic elevation = 64.44m.

FILE NO. PE4995

REMARKS

HOLE NO. BH 6-20

BORINGS BY CME-55 Low Clearance Drill **DATE** August 10, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
Asphaltic concrete 0.04		AU	1			0	64.61
FILL: Brown silty sand with crushed stone 0.56							
GLACIAL TILL: Very dense, brown silty sand with gravel, cobbles and boulders		SS	2	71	73	1	63.61
1.62		SS	3	100	50+		
		RC	1	100	41	2	62.61
						3	61.61
		RC	2	98	88	4	60.61
BEDROCK: Poor to excellent quality, grey limestone						5	59.61
		RC	3	93	90		
						6	58.61
		RC	4	100	98	7	57.61
						8	56.61
		RC	5	100	100		
8.86							
End of Borehole							
(GWL @ 5.88m - August 17, 2020)							

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

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SOIL PROFILE AND TEST DATA

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FILE NO. PE4995

REMARKS

HOLE NO. BH 7-20

BORINGS BY CME-55 Low Clearance Drill **DATE** August 10, 2020

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 0.05						0	64.38		
FILL: Brown silty sand with crushed stone 0.66		AU	1						
GLACIAL TILL: Very dense, brown silty sand with gravel, cobbles and boulders 1.27		SS	2		32	1	63.38		
End of Borehole									
Practical refusal to augering at 1.27m depth.									

Photo Ionization Detector: ○ Lower Explosive Limit % — 20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

SYMBOLS AND TERMS

SOIL DESCRIPTION

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

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

The standard terminology to describe the strength of cohesionless soils is the relative density, usually inferred from the results of the Standard Penetration Test (SPT) 'N' value. The SPT N value is the number of blows of a 63.5 kg hammer, falling 760 mm, required to drive a 51 mm O.D. split spoon sampler 300 mm into the soil after an initial penetration of 150 mm.

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

The standard terminology to describe the strength of cohesive soils is the consistency, which is based on the undisturbed undrained shear strength as measured by the in situ or laboratory vane tests, penetrometer tests, unconfined compression tests, or occasionally by Standard Penetration Tests.

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

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

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

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

ROCK DESCRIPTION

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

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

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

SAMPLE TYPES

SS	-	Split spoon sample (obtained in conjunction with the performing of the Standard Penetration Test (SPT))
TW	-	Thin wall tube or Shelby tube
PS	-	Piston sample
AU	-	Auger sample or bulk sample
WS	-	Wash sample
RC	-	Rock core sample (Core bit size AXT, BXL, etc.). Rock core samples are obtained with the use of standard diamond drilling bits.

SYMBOLS AND TERMS (continued)

GRAIN SIZE DISTRIBUTION

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

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

CONSOLIDATION TEST

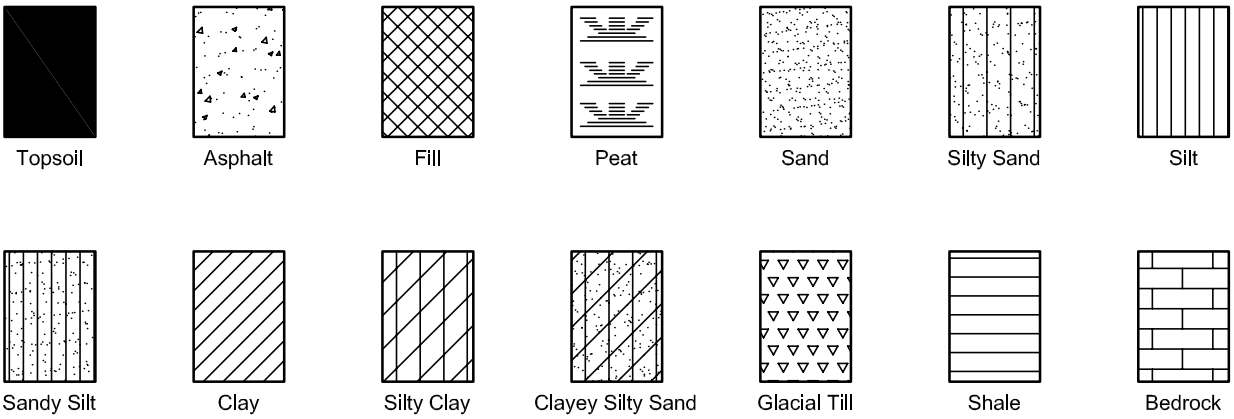
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void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

PERMEABILITY TEST

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

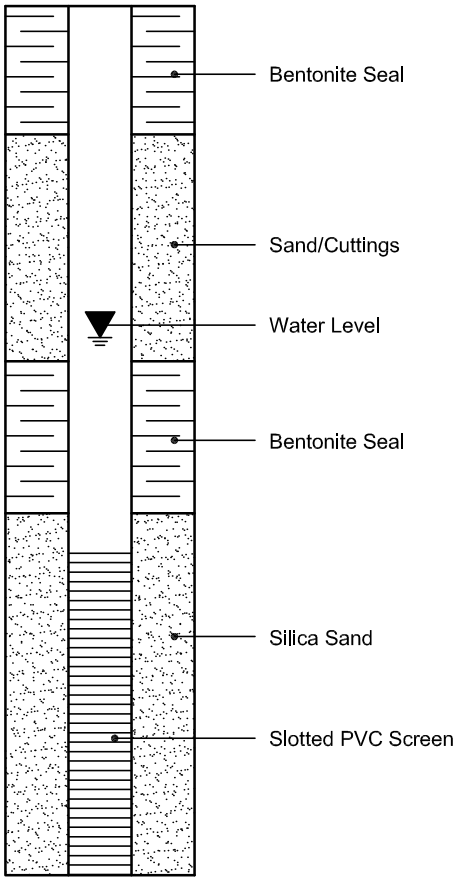
SYMBOLS AND TERMS (continued)

STRATA PLOT

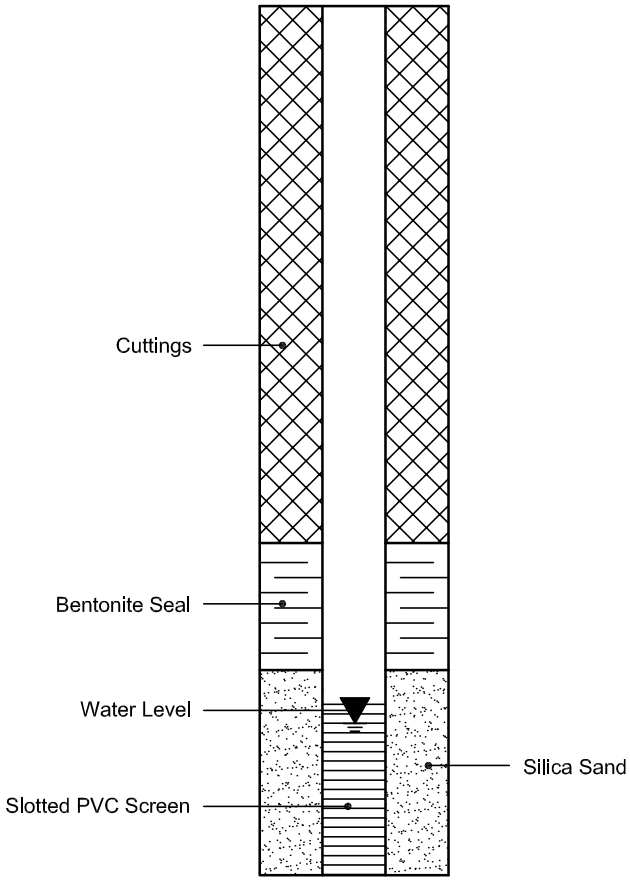


MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION



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Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Mark D'Arcy

Client PO: 30783
Project: PE4995
Custody: 128059

Report Date: 18-Aug-2020
Order Date: 12-Aug-2020

Order #: 2033366

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

Paracel ID	Client ID
2033366-01	BH4-20-SS2
2033366-02	BH5-20-SS2
2033366-03	BH6-20-SS2
2033366-04	BH7-20-SS2

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 18-Aug-2020

Client: Paterson Group Consulting Engineers

Order Date: 12-Aug-2020

Client PO: 30783

Project Description: PE4995

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Chromium, hexavalent - soil	MOE E3056 - Extraction, colourimetric	12-Aug-20	14-Aug-20
Mercury by CVAA	EPA 7471B - CVAA, digestion	13-Aug-20	17-Aug-20
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	14-Aug-20	14-Aug-20
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	13-Aug-20	14-Aug-20
Solids, %	Gravimetric, calculation	17-Aug-20	17-Aug-20

Certificate of Analysis

Report Date: 18-Aug-2020

Client: Paterson Group Consulting Engineers

Order Date: 12-Aug-2020

Client PO: 30783

Project Description: PE4995

	Client ID:	BH4-20-SS2	BH5-20-SS2	BH6-20-SS2	BH7-20-SS2
	Sample Date:	10-Aug-20 09:00	10-Aug-20 09:00	10-Aug-20 09:00	10-Aug-20 09:00
	Sample ID:	2033366-01	2033366-02	2033366-03	2033366-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	84.2	96.2	96.5	89.0
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	7.7	2.7	1.9	2.7
Barium	1.0 ug/g dry	125	38.9	47.5	76.8
Beryllium	0.5 ug/g dry	0.9	<0.5	<0.5	<0.5
Boron	5.0 ug/g dry	16.4	6.7	9.1	7.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	5.0 ug/g dry	37.8	13.8	11.7	12.4
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	12.1	5.2	4.2	4.8
Copper	5.0 ug/g dry	21.8	13.1	8.5	9.0
Lead	1.0 ug/g dry	17.9	3.7	3.7	4.9
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	1.2	<1.0	<1.0	<1.0
Nickel	5.0 ug/g dry	29.0	9.3	8.2	8.7
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	2.3	<1.0	<1.0
Vanadium	10.0 ug/g dry	44.9	23.5	17.7	21.5
Zinc	20.0 ug/g dry	47.1	<20.0	21.0	<20.0
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	0.05	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Anthracene	0.02 ug/g dry	0.12	<0.02	<0.02	<0.02
Benzo [a] anthracene	0.02 ug/g dry	0.28	<0.02	<0.02	<0.02
Benzo [a] pyrene	0.02 ug/g dry	0.25	<0.02	<0.02	<0.02
Benzo [b] fluoranthene	0.02 ug/g dry	0.34	<0.02	<0.02	<0.02
Benzo [g,h,i] perylene	0.02 ug/g dry	0.17	<0.02	<0.02	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	0.17	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	0.25	<0.02	<0.02	<0.02
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.05	<0.02	<0.02	<0.02
Fluoranthene	0.02 ug/g dry	0.68	<0.02	<0.02	<0.02
Fluorene	0.02 ug/g dry	0.06	<0.02	<0.02	<0.02

Certificate of Analysis

Report Date: 18-Aug-2020

Client: Paterson Group Consulting Engineers

Order Date: 12-Aug-2020

Client PO: 30783

Project Description: PE4995

	Client ID:	BH4-20-SS2	BH5-20-SS2	BH6-20-SS2	BH7-20-SS2
	Sample Date:	10-Aug-20 09:00	10-Aug-20 09:00	10-Aug-20 09:00	10-Aug-20 09:00
	Sample ID:	2033366-01	2033366-02	2033366-03	2033366-04
	MDL/Units	Soil	Soil	Soil	Soil
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.15	<0.02	<0.02	<0.02
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	<0.04	<0.04
Naphthalene	0.01 ug/g dry	<0.01	<0.01	<0.01	<0.01
Phenanthrene	0.02 ug/g dry	0.51	<0.02	<0.02	<0.02
Pyrene	0.02 ug/g dry	0.55	<0.02	<0.02	<0.02
2-Fluorobiphenyl	Surrogate	107%	103%	87.6%	86.5%
Terphenyl-d14	Surrogate	109%	95.2%	81.2%	81.8%

Certificate of Analysis

Report Date: 18-Aug-2020

Client: Paterson Group Consulting Engineers

Order Date: 12-Aug-2020

Client PO: 30783

Project Description: PE4995

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%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						
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	*1.07*		*ug/g*		*80.2*	*50-140*			
Surrogate: Terphenyl-d14	*1.15*		*ug/g*		*86.3*	*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 dry	ND			NC	30	
Arsenic	3.6	1.0	ug/g dry	3.5			2.2	30	
Barium	42.3	1.0	ug/g dry	45.6			7.6	30	
Beryllium	ND	0.5	ug/g dry	ND			NC	30	
Boron	5.3	5.0	ug/g dry	5.2			0.7	30	
Cadmium	ND	0.5	ug/g dry	ND			NC	30	
Chromium (VI)	ND	0.2	ug/g dry	ND			NC	35	
Chromium	15.7	5.0	ug/g dry	16.5			5.5	30	
Cobalt	5.5	1.0	ug/g dry	6.1			10.5	30	
Copper	18.2	5.0	ug/g dry	20.2			10.8	30	
Lead	16.8	1.0	ug/g dry	19.1			12.5	30	
Mercury	ND	0.1	ug/g dry	ND			NC	30	
Molybdenum	ND	1.0	ug/g dry	ND			NC	30	
Nickel	12.1	5.0	ug/g dry	13.3			9.4	30	
Selenium	ND	1.0	ug/g dry	ND			NC	30	
Silver	ND	0.3	ug/g dry	ND			NC	30	
Thallium	ND	1.0	ug/g dry	ND			NC	30	
Uranium	ND	1.0	ug/g dry	ND			NC	30	
Vanadium	22.5	10.0	ug/g dry	24.1			6.8	30	
Zinc	38.9	20.0	ug/g dry	43.2			10.2	30	
Physical Characteristics									
% Solids	87.4	0.1	% by Wt.	89.0			1.9	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g dry	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g dry	ND			NC	40	
Anthracene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g dry	ND			NC	40	
Chrysene	ND	0.02	ug/g dry	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g dry	ND			NC	40	
Fluoranthene	ND	0.02	ug/g dry	ND			NC	40	
Fluorene	ND	0.02	ug/g dry	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g dry	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g dry	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g dry	ND			NC	40	
Naphthalene	ND	0.01	ug/g dry	ND			NC	40	
Phenanthrene	ND	0.02	ug/g dry	ND			NC	40	
Pyrene	ND	0.02	ug/g dry	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*1.21*		*ug/g dry*		*78.7*	*50-140*			
Surrogate: Terphenyl-d14	*1.28*		*ug/g dry*		*83.5*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	46.4	1.0	ug/g	ND	92.6	70-130			
Arsenic	51.1	1.0	ug/g	1.4	99.3	70-130			
Barium	67.0	1.0	ug/g	18.2	97.5	70-130			
Beryllium	49.3	0.5	ug/g	ND	98.1	70-130			
Boron	43.8	5.0	ug/g	ND	83.4	70-130			
Cadmium	47.7	0.5	ug/g	ND	95.3	70-130			
Chromium (VI)	0.1	0.2	ug/g	ND	63.0	70-130			QM-05
Chromium	58.3	5.0	ug/g	6.6	103	70-130			
Cobalt	52.2	1.0	ug/g	2.5	99.5	70-130			
Copper	56.1	5.0	ug/g	8.1	96.0	70-130			
Lead	52.6	1.0	ug/g	7.6	89.9	70-130			
Mercury	1.48	0.1	ug/g	ND	98.7	70-130			
Molybdenum	49.7	1.0	ug/g	ND	99.1	70-130			
Nickel	54.0	5.0	ug/g	5.3	97.3	70-130			
Selenium	47.2	1.0	ug/g	ND	94.3	70-130			
Silver	38.0	0.3	ug/g	ND	76.0	70-130			
Thallium	46.0	1.0	ug/g	ND	92.0	70-130			
Uranium	47.1	1.0	ug/g	ND	93.9	70-130			
Vanadium	61.4	10.0	ug/g	ND	104	70-130			
Zinc	63.5	20.0	ug/g	ND	92.6	70-130			
Semi-Volatiles									
Acenaphthene	0.169	0.02	ug/g	ND	87.9	50-140			
Acenaphthylene	0.145	0.02	ug/g	ND	75.4	50-140			
Anthracene	0.150	0.02	ug/g	ND	78.4	50-140			
Benzo [a] anthracene	0.137	0.02	ug/g	ND	71.3	50-140			
Benzo [a] pyrene	0.132	0.02	ug/g	ND	68.9	50-140			
Benzo [b] fluoranthene	0.192	0.02	ug/g	ND	100	50-140			
Benzo [g,h,i] perylene	0.126	0.02	ug/g	ND	65.7	50-140			
Benzo [k] fluoranthene	0.171	0.02	ug/g	ND	89.0	50-140			
Chrysene	0.167	0.02	ug/g	ND	87.1	50-140			
Dibenzo [a,h] anthracene	0.132	0.02	ug/g	ND	68.9	50-140			
Fluoranthene	0.153	0.02	ug/g	ND	79.9	50-140			
Fluorene	0.162	0.02	ug/g	ND	84.4	50-140			
Indeno [1,2,3-cd] pyrene	0.128	0.02	ug/g	ND	66.5	50-140			
1-Methylnaphthalene	0.181	0.02	ug/g	ND	94.3	50-140			
2-Methylnaphthalene	0.201	0.02	ug/g	ND	105	50-140			
Naphthalene	0.171	0.01	ug/g	ND	89.3	50-140			
Phenanthrene	0.158	0.02	ug/g	ND	82.4	50-140			
Pyrene	0.158	0.02	ug/g	ND	82.5	50-140			
Surrogate: 2-Fluorobiphenyl	*1.28*		*ug/g*		*83.2*	*50-140*			
Surrogate: Terphenyl-d14	*1.36*		*ug/g*		*88.3*	*50-140*			

Certificate of Analysis

Report Date: 18-Aug-2020

Client: Paterson Group Consulting Engineers

Order Date: 12-Aug-2020

Client PO: 30783

Project Description: PE4995

Qualifier Notes:

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.

PARAC LABORATORIES

Paracel ID: 2033366

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Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2033366	Nº 128059

Client Name: Paterson
Project Ref: PE 4995
Page 1 of 1

Contact Name: Mark D'Arcy
Quote #:

Address: 154 colonnade
PO #: 30783
E-mail: mdarcy@patersongroup.ca

Telephone: 613 226 7381

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

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

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

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)						
1	BH4-~~MW~~20-552	S		1	Aug 10 2020				✓	✓	✓	✓							
2	BH5-20-552	↓		↓	↓				✓	✓	✓	✓							
3	BH6-20-552								✓	✓	✓	✓							
4	BH7-20-552								✓	✓	✓	✓							
5																			
6																			
7																			
8																			
9																			
10																			

Comments:

Method of Delivery: PARACEL COURIER

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab:	Verified By:
G Paak	M. Venne	Shreeparn Dokmai	
Relinquished By (Print): Grant Paterson	Date/Time: 12/08/20 3:25	Date/Time: AUG 12, 2020 04.40	Date/Time: 8-12-20 16:5
Date/Time: Aug 12 2020	Temperature: °C	Temperature: 11.1 °C	pH Verified: ☐ By:

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Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Mark D'Arcy

Client PO: 30548
Project: PE4995
Custody: 128075

Report Date: 21-Aug-2020
Order Date: 18-Aug-2020

Order #: 2034264

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

Paracel ID	Client ID
2034264-01	BH3-GW1
2034264-02	BH4-20-GW1
2034264-03	BH4-20-GW1
2034264-04	BH6-20-GW1
2034264-05	DUP

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 21-Aug-2020

Client: Paterson Group Consulting Engineers

Order Date: 18-Aug-2020

Client PO: 30548

Project Description: PE4995

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHC F1	CWS Tier 1 - P&T GC-FID	19-Aug-20	20-Aug-20
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	19-Aug-20	21-Aug-20
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	19-Aug-20	20-Aug-20

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 30548

Report Date: 21-Aug-2020

Order Date: 18-Aug-2020

Project Description: PE4995

	Client ID:	BH3-GW1	BH4-20-GW1	BH4-20-GW1	BH6-20-GW1
	Sample Date:	18-Aug-20 09:00	18-Aug-20 09:00	17-Aug-20 09:00	17-Aug-20 09:00
	Sample ID:	2034264-01	2034264-02	2034264-03	2034264-04
	MDL/Units	Water	Water	Water	Water
Volatiles					
Acetone	5.0 ug/L	<5.0	-	<5.0	<5.0
Benzene	0.5 ug/L	<0.5	-	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	-	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	-	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	-	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	-	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	-	<0.5	<0.5
Chloroform	0.5 ug/L	<0.5	-	7.0	1.3
Dibromochloromethane	0.5 ug/L	<0.5	-	<0.5	<0.5
Dichlorodifluoromethane	1.0 ug/L	<1.0	-	<1.0	<1.0
1,2-Dichlorobenzene	0.5 ug/L	<0.5	-	<0.5	<0.5
1,3-Dichlorobenzene	0.5 ug/L	<0.5	-	<0.5	<0.5
1,4-Dichlorobenzene	0.5 ug/L	<0.5	-	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	-	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	-	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	-	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	-	<0.5	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	-	<0.5	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	-	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	<0.5	<0.5
1,3-Dichloropropene, total	0.5 ug/L	<0.5	-	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	-	<0.5	<0.5
Ethylene dibromide (dibromoethane, 1,2-)	0.2 ug/L	<0.2	-	<0.2	<0.2
Hexane	1.0 ug/L	<1.0	-	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	-	<5.0	<5.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	-	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	-	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	-	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	-	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	-	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	-	<0.5	<0.5
Tetrachloroethylene	0.5 ug/L	<0.5	-	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	-	<0.5	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	-	<0.5	<0.5

Certificate of Analysis

Report Date: 21-Aug-2020

Client: Paterson Group Consulting Engineers

Order Date: 18-Aug-2020

Client PO: 30548

Project Description: PE4995

	Client ID:	BH3-GW1	BH4-20-GW1	BH4-20-GW1	BH6-20-GW1
	Sample Date:	18-Aug-20 09:00	18-Aug-20 09:00	17-Aug-20 09:00	17-Aug-20 09:00
	Sample ID:	2034264-01	2034264-02	2034264-03	2034264-04
	MDL/Units	Water	Water	Water	Water
1,1,2-Trichloroethane	0.5 ug/L	<0.5	-	<0.5	<0.5
Trichloroethylene	0.5 ug/L	<0.5	-	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	-	<1.0	<1.0
Vinyl chloride	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
4-Bromofluorobenzene	Surrogate	115%	-	118%	115%
Dibromofluoromethane	Surrogate	111%	-	112%	108%
Toluene-d8	Surrogate	105%	-	104%	104%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	-	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	<100	-	<100
F3 PHCs (C16-C34)	100 ug/L	<100	<100	-	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	-	<100

Certificate of Analysis

Report Date: 21-Aug-2020

Client: **Paterson Group Consulting Engineers**

Order Date: 18-Aug-2020

Client PO: **30548**

Project Description: **PE4995**

	Client ID:	DUP	-	-	-
	Sample Date:	17-Aug-20 09:00	-	-	-
	Sample ID:	2034264-05	-	-	-
	MDL/Units	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	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	<0.5	-	-	-

Certificate of Analysis

Report Date: 21-Aug-2020

Client: Paterson Group Consulting Engineers

Order Date: 18-Aug-2020

Client PO: 30548

Project Description: PE4995

	Client ID:	DUP	-	-	-
	Sample Date:	17-Aug-20 09:00	-	-	-
	Sample ID:	2034264-05	-	-	-
	MDL/Units	Water	-	-	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	-	-	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	-	-	-
Trichloroethylene	0.5 ug/L	<0.5	-	-	-
Trichlorofluoromethane	1.0 ug/L	<1.0	-	-	-
Vinyl chloride	0.5 ug/L	<0.5	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	-	-	-
o-Xylene	0.5 ug/L	<0.5	-	-	-
Xylenes, total	0.5 ug/L	<0.5	-	-	-
4-Bromofluorobenzene	Surrogate	116%	-	-	-
Dibromofluoromethane	Surrogate	109%	-	-	-
Toluene-d8	Surrogate	104%	-	-	-

Certificate of Analysis

Report Date: 21-Aug-2020

Client: Paterson Group Consulting Engineers

Order Date: 18-Aug-2020

Client PO: 30548

Project Description: PE4995

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						
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						
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	*90.1*		*ug/L*		*113*	*50-140*			
Surrogate: Dibromofluoromethane	*77.6*		*ug/L*		*97.0*	*50-140*			
Surrogate: Toluene-d8	*86.2*		*ug/L*		*108*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	1.72	0.5	ug/L	4.11			82.0	30	QR-07
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	4.59	0.5	ug/L	9.07			65.6	30	QR-07
Dibromochloromethane	ND	0.5	ug/L	2.65			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	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*90.0*		*ug/L*		*112*	*50-140*			
Surrogate: Dibromofluoromethane	*81.6*		*ug/L*		*102*	*50-140*			
Surrogate: Toluene-d8	*84.1*		*ug/L*		*105*	*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)	1630	25	ug/L	ND	81.4	68-117			
F2 PHCs (C10-C16)	1430	100	ug/L	ND	89.4	60-140			
F3 PHCs (C16-C34)	4420	100	ug/L	ND	113	60-140			
F4 PHCs (C34-C50)	2450	100	ug/L	ND	98.8	60-140			
Volatiles									
Acetone	63.6	5.0	ug/L	ND	63.6	50-140			
Benzene	40.7	0.5	ug/L	ND	102	60-130			
Bromodichloromethane	29.5	0.5	ug/L	ND	73.7	60-130			
Bromoform	47.7	0.5	ug/L	ND	119	60-130			
Bromomethane	37.5	0.5	ug/L	ND	93.8	50-140			
Carbon Tetrachloride	32.6	0.2	ug/L	ND	81.5	60-130			
Chlorobenzene	35.6	0.5	ug/L	ND	89.0	60-130			
Chloroform	37.0	0.5	ug/L	ND	92.6	60-130			
Dibromochloromethane	31.8	0.5	ug/L	ND	79.4	60-130			
Dichlorodifluoromethane	41.3	1.0	ug/L	ND	103	50-140			
1,2-Dichlorobenzene	35.0	0.5	ug/L	ND	87.6	60-130			
1,3-Dichlorobenzene	34.8	0.5	ug/L	ND	86.9	60-130			
1,4-Dichlorobenzene	36.2	0.5	ug/L	ND	90.4	60-130			
1,1-Dichloroethane	25.9	0.5	ug/L	ND	64.7	60-130			
1,2-Dichloroethane	49.3	0.5	ug/L	ND	123	60-130			
1,1-Dichloroethylene	40.3	0.5	ug/L	ND	101	60-130			
cis-1,2-Dichloroethylene	35.0	0.5	ug/L	ND	87.6	60-130			
trans-1,2-Dichloroethylene	24.8	0.5	ug/L	ND	62.0	60-130			
1,2-Dichloropropane	40.8	0.5	ug/L	ND	102	60-130			
cis-1,3-Dichloropropylene	44.4	0.5	ug/L	ND	111	60-130			
trans-1,3-Dichloropropylene	49.4	0.5	ug/L	ND	123	60-130			
Ethylbenzene	39.4	0.5	ug/L	ND	98.4	60-130			
Ethylene dibromide (dibromoethane, 1,2-	25.6	0.2	ug/L	ND	64.0	60-130			
Hexane	43.4	1.0	ug/L	ND	109	60-130			
Methyl Ethyl Ketone (2-Butanone)	102	5.0	ug/L	ND	102	50-140			
Methyl Isobutyl Ketone	96.2	5.0	ug/L	ND	96.2	50-140			
Methyl tert-butyl ether	67.0	2.0	ug/L	ND	67.0	50-140			
Methylene Chloride	26.5	5.0	ug/L	ND	66.3	60-130			
Styrene	30.2	0.5	ug/L	ND	75.4	60-130			
1,1,1,2-Tetrachloroethane	33.7	0.5	ug/L	ND	84.2	60-130			
1,1,2,2-Tetrachloroethane	37.6	0.5	ug/L	ND	94.1	60-130			
Tetrachloroethylene	32.6	0.5	ug/L	ND	81.6	60-130			
Toluene	41.1	0.5	ug/L	ND	103	60-130			
1,1,1-Trichloroethane	29.2	0.5	ug/L	ND	73.1	60-130			
1,1,2-Trichloroethane	34.8	0.5	ug/L	ND	87.1	60-130			
Trichloroethylene	32.6	0.5	ug/L	ND	81.4	60-130			
Trichlorofluoromethane	31.6	1.0	ug/L	ND	79.0	60-130			
Vinyl chloride	29.1	0.5	ug/L	ND	72.8	50-140			
m,p-Xylenes	81.2	0.5	ug/L	ND	102	60-130			
o-Xylene	40.0	0.5	ug/L	ND	100	60-130			
Surrogate: 4-Bromofluorobenzene	*93.0*		*ug/L*		*116*	*50-140*			
Surrogate: Dibromofluoromethane	*88.2*		*ug/L*		*110*	*50-140*			
Surrogate: Toluene-d8	*82.9*		*ug/L*		*104*	*50-140*			

Qualifier Notes:

QC Qualifiers :

QR-07 : Duplicate result exceeds RPD limits due to non-homogeneity between multiple sample vials. Remainder of QA/QC is acceptable.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

CCME PHC additional information:

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

PARACEL LABORATORIES LTD.

Paracel ID: 2034264

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2034264	Nº 128075

Client Name: Paterson	Project Ref: ~~4999~~ PE 4995	Page __ of __
Contact Name: Mark D'Arcy	Quote #:	Turnaround Time
Address: 154 Colonnade	PO #: 30548	☐ 1 day ☐ 3 day ☐ 2 day ☑ Regular
Telephone: 613 226 7381	E-mail: mdarcy@patersongroup.ca	Date Required:

Regulation 153/04	Other Regulation
☐ Table 1 ☐ Res/Park ☐ Med/Fine	☐ REG 558 ☐ PWQO
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ CCME ☐ MISA
☐ Table 3 ☐ Agri/Other	☐ SU - Sani ☐ SU - Storm
☑ Table 7	Mun:
For RSC: ☐ Yes ☐ No	☐ Other:

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

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)						
1	BH3-GW1	GW		3	Aug 18 2020		✓	✓											
2	BH4-20-GW1	GW		3	Aug 17/18 2020		✓	✓											
3	BH6-20-GW1	GW		3	Aug 17 2020		✓	✓											
4	Dup	GW		2	Aug 17/18 2020		MM	✓											
5																			
6																			
7																			
8																			
9																			
10																			

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab: Stonecairn Admin	Verified By:
Relinquished By (Print): Grant Paterson	Date/Time:	Date/Time: Aug 18, 2020 04.52	Date/Time: Aug 18, 2020 13:43
Date/Time: Aug 18 2020	Temperature: °C	Temperature: 15.0 °C	pH Verified: ☐ By: