PATERSON GROUP

Phase II – Environmental Site Investigation

158 Cardevco Road
Ottawa, Ontario

Prepared for Whelan Truck Repairs c/o
Pri-Tec Construction Ltd.

Report: PE5996-1R1
Date: November 21, 2024

FILE# D07-12-23-0002 SITE PLAN# 19363

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EXECUTIVE SUMMARY

Assessment

A Phase II ESA was conducted for the property addressed 158 Cardevco Road, in the City of Ottawa, Ontario. The purpose of the Phase II ESA was to address potentially contaminating activities (PCAs) and their resulting areas of potential environmental concern (APECs) that were identified during a previously completed Phase I ESA, as well as a brief historicaPEI investigation completed as part of the current assessment.

The Phase II ESA subsurface investigation consisted of drilling five boreholes, three of which (BH1-23, BH2-23, and BH3-23) were instrumented with groundwater monitoring wells to address the previously identified APECs. The boreholes were drilled to a maximum depth of 4.72 m.

Soil

A total of seven soil samples (including one duplicate) were submitted for analysis of metals, benzene, toluene, ethylbenzene xylenes (BTEX), petroleum hydrocarbons (PHCs, F1-F4) and/or polycyclic aromatic hydrocarbons (PAHs).

Metals

All of the analyzed metal parameters are in compliance with the selected MECP Table 2 Standards. The location of samples tested for metals in the soil are shown on Drawing PE5996-2 – Analytical Testing Plan – Soil.

PAHs

All of the analyzed PAH parameter concentrations are in compliance with the selected MECP Table 2 standards, with the exception of benzo[a]pyrene in soil sample BH4-23-SS2. The reported concentration of benzo[a]pyrene in BH4-23-SS2 is 0.4 ug/g which marginally exceeds the MECP Table 2 standard of 0.3 ug/g.

The location of samples tested for PAHs in the soil are shown on PE5996-2 – Analytical Testing Plan – Soil.

PHCs (F_1-F_4)

All of the analyzed PHC parameters are in compliance with the selected MECP Table 2 Standards. The location of samples tested for PHCs in the soil are shown on Drawing PE5996-2 – Analytical Testing Plan – Soil.

BTEX

All of the analyzed BTEX concentrations were non-detect and therefore in compliance with the selected MECP Table 2 standards. The location of samples tested for BTEX in the soil are shown on Drawing PE5996-2 – Analytical Testing Plan – Soil.

Groundwater

Groundwater samples from monitoring wells installed in BH1-23, BH2-23 and BH3-23 were collected on March 30, 2023, and were submitted for laboratory analysis of PHCs (F1-F4) and BTEX. All groundwater results comply with the selected MECP Table 2 Industrial standards.

Recommendations

Soil

The identified PAH concentration within soil sample BH4-23-SS2 is considered to be marginal and isolated to the fill material in the immediate vicinity of BH4-23 (northern portion of the Phase II Property). It is our understanding that the property will continue to operate as a truck repair shop. No other areas of impacted fill material were identified on the Phase II Property and as such, the marginal exceedance is considered to be confined to the fill layer in the immediate vicinity of BH4-23.

Based on the proposed location of the future infiltration gallery being within close proximity to BH4-23, it is our opinion that the impacted fill material should be removed through the means of a remediation excavation. Confirmatory sampling will be required once the impacted material has been removed and all contaminated material will be hauled to an accredited waste disposal facility.

Groundwater

It is recommended that the monitoring wells installed on the Phase II Property be maintained for future monitoring. The monitoring wells must be decommissioned in accordance with O.Reg 903

Remediation

Following the recommendations of the Phase II ESA, a remediation program was completed. A total of 4 test pits were excavated on August 12, 2024, for the purposes of delineating the area of PAH impacted fill material and to analyse the impacted material for landfill requirements. Based on these test pits, it was determined that PAH impacted fill material was not present beyond 3m from the initially identified location (BH4-23).

A remediation excavation was monitored by Paterson on September 30, 2024, during which a total of 126 mts of impacted were material removed and disposed of at Waste Management of Ottawa. As a result of the remediation program, no further work was recommended.

The full remediation summary is provided in Appendix 2.

1.0 INTRODUCTION

At the request of Pri-Tec Construction Ltd. acting on behalf of Whelan Truck Repairs, Paterson Group (Paterson) conducted a Phase II Environmental Site Assessment for the property addressed 158 Cardevco Road, in the City of Ottawa, Ontario. The purpose of this Phase II ESA has been to address areas of potential environmental concern (APECs) identified on the Phase II Property, during the Phase I ESA conducted by Pinchin in November of 2022, as well as a brief historical review completed as part of the current assessment.

1.1 Site Description

Address:	158 Cardevco Road, Ottawa, Ontario
Location:	The Phase II Property is located on the east side of Cardevco Road, approximately 260 m southwest of the Cardevco Road and Carp Road intersection, in the City of Ottawa, Ontario. The Phase II Property is shown on Figure 1 - Key Plan following the body of this report.
Latitude and Longitude:	45° 14’ 3.3" N, 75° 58' 43.4" W

Site Description:

Configuration:	Irregular
Site Area:	0.5 ha (approximate)
Zoning:	RG5 – Rural General Industrial Zone

1.2 Property Ownership

Paterson was engaged to conduct this Phase II-ESA by Mr. Mike Watters with Pri-Tec Construction Ltd. Mr. Watters can be reached via his mailing address at 112 John Cavanagh Drive, Carp, Ontario K0A and 1L0.

1.3 Current and Proposed Future Uses

The Phase II Property is currently occupied by a single-storey light industrial building operating as a truck repair shop. It is our understanding that an expansion of the existing light industrial building is to be constructed immediately to the east of the current shop.

1.4 Applicable Site Condition Standard

The site condition standards for the property were obtained from Table 2 of the document entitled "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", prepared by the Ontario Ministry of Environment, Conservation and Parks (MECP), April 2011. The MECP selected Table 2 Standards are based on the following considerations:

- ❒ Coarse-grained soil conditions
- ❒ Full depth generic site conditions
- ❒ Potable groundwater conditions
- ❒ Industrial land use

Section 35 of O.Reg. 153/04 applies to the Phase II Property as the Phase II Property and neighbouring properties are all serviced by private water wells and septic systems.

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

Section 43.1 of O.Reg. 153/04 does not apply to the Phase II Property in that the property is not a Shallow Soil property and the property is not within 30m of a water body.

Coarse-grained soil standards were chosen as a conservative approach. Grain size analysis was not completed. The Phase II Property will continue to be used for light industrial purposes and as such, the MECP Table 2 Industrial Standards have been selected for the purpose of this Phase II ESA.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

The Phase II Property is located on the east side of Cardevco Road, approximately 260 m southwest of the Cardevco Road and Carp Road intersection in the City of Ottawa, Ontario. According to the City of Ottawa

website, the Phase II Property is situated in a rural general industrial zone with surrounding properties consisting of commercial and industrial land use.

The Phase II Property is occupied by a centrally located single-storey light industrial building operating as a truck repair shop. The northern, eastern, and southern portions of the Phase II Property consist of asphaltic concrete/gravel parking areas and access lanes. The western portion of the Phase II Property consists of a landscaped grass area, which is where the septic tank/field are situated.

The Phase II Property is relatively flat and at grade with Cardevco Road and the regional topography slopes gently downward to the north, towards the Carp River. Site drainage occurs primarily through sheet flow to catch basins located along Cardevco Road as well as infiltration in the landscaped grass portion of the Phase II Property.

2.2 Past Investigations

The following report was reviewed prior to conducting this assessment:

- ‘Phase I Environmental Site Assessment, 158 Cardevco Road – Ottawa, Ontario, prepared by Pinchin Environmental Ltd., dated November 2022.

Based on the findings of the 2022 Phase I - ESA, three APECs were identified in the form of a historical diesel spill in the northern portion of the Phase II Property, the current use of the Phase II Property as a truck repair shop, and the presence of an automotive service garage on the adjacent property to the north/northeast.

Following a review of the Pinchin reports, Paterson completed a brief historical review of the Phase II Property. It was determined that the Phase II Property is situated within the boundaries of a previously existing quarry that had operated in the area. As a result, it was suspected that the Phase II Property was infilled with fill material of unknown quality following its decommission. The importation of fill material of unknown quality is considered to result in an APEC on the Phase II Property.

The APECs identified during the Pinchin Phase I – ESA and our brief historical review are highlighted below 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 (Groundwater, Soil, and/or Sediment)
APEC 1 Existing Truck Repair Shop	Central portion of the Phase II Property	*"Item 52 – Storage, Maintenance, Fuelling and Repair of Equipment, Vehicles, and Material Used to Maintain Transportation Systems"*	On-site	BTEX PHCs (F_1–F_4)	Soil Groundwater
APEC 2 Historical 150L Diesel Spill	Northern portion of the Phase II Property	*N/A*	On-site	BTEX PHCs (F_1–F_4)	Soil Groundwater
APEC 3 Automotive Service Garage	Eastern portion of the Phase II Property	*"Item 52 – Storage, Maintenance, Fuelling and Repair of Equipment, Vehicles, and Material Used to Maintain Transportation Systems"*	Off-site	BTEX PHCs (F_1–F_4)	Soil Groundwater
APEC 4 Fill Material of Unknown Quality	Entire Phase II Property	*"Item 30 – Importation of fill Material of Unknown Quality"*	On-site	Metals PAHs	Soil

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The subsurface investigation was conducted on March 24, 2023. The field program consisted of drilling five boreholes, three of which (BH1-23, BH2-23, and BH3-23) were instrumented with groundwater monitoring wells to address the APECs identified in the previously completed Pinchin Phase I – ESA and brief

historical review. The boreholes were drilled to a maximum depth of 4.72 m below the ground surface (mbgs).

3.2 Media Investigated

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

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

- ❒ Benzene, Toluene, Ethylbenzene, Xylenes (BTEX);
- ❒ Petroleum Hydrocarbons (PHCs);
- ❒ Metals;
- ❒ Polycyclic Aromatic Hydrocarbons (PAHs);

3.3 Phase I Conceptual Site Model

Geological and Hydrogeological Setting

The Ontario Geological Survey was consulted as part of this assessment. Based on the information from the survey, bedrock in the area of the site consists of limestone of the Bobcaygeon Formation. Based on the survey, the surficial geology consists of sand, silt and clay with an overburden thickness that ranges from 5 to 10 m.

The regional topography in the general area of the Phase I Property slopes down gently to the north, towards the Carp River.

Groundwater within the Phase II Study Area is generally expected to flow towards the north/northeast.

Buildings and Structures

The central portion of the Phase I Property is occupied by a single-storey light industrial building currently operating as a truck repair shop.

The northern, eastern, and southern portions of Phase II Property are occupied by asphaltic concrete/gravel parking areas and laneways.

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

Subsurface Structures and Utilities

The Phase II Property is situated in an area that is serviced by private well and septic systems. Underground utility services on the subject land include natural gas, electrical, cable, septic field/tank, and a private well.

No other subsurface structures were identified at the time of the site visit.

Water Bodies and Areas of Natural Significance

No areas of natural significance or water bodies were identified on the Phase I Property. One unnamed creek is located approximately 368 m east of the Phase I Property.

Drinking Water Wells

The Phase I Property is serviced by a private well located in the southern portion of the property. It should be noted that the well on the Phase I Property is not currently used for consumption purposes. The neighbouring properties are also serviced by private well and septic systems.

Monitoring Well Records

No monitoring well records were identified on the Phase I Property or within the Phase I Study Area.

Neighbouring Land Use

Neighbouring land use within the Phase I Study Area consists of a mixture of commercial and light industrial use. As previously discussed, the automotive service garage on the adjacent property to the north/northeast is considered to represent a PCA that results in an APEC on the Phase II Property.

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

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

- ❒ PCA 52 – Storage, Maintenance, Fuelling and Repair of Equipment, Vehicles, and Material Used to Maintain Transportation Systems – this PCA is associated with the existing truck repair shop operating on the Phase II Property (APEC 1).

- ❑ Based on the findings of the previously completed Pinchin Phase I ESA, it was determined that a 150L diesel spill had occurred in the northern portion of the Phase II Property. Although not defined as a specific PCA under Column A of Table 2 of O.Reg. 153/04, the historical diesel spill is considered to represent an APEC (APEC 2).

- ❒ PCA 52 – Storage, Maintenance, Fuelling and Repair of Equipment, Vehicles, and Material Used to Maintain Transportation Systems – this PCA is associated with the existing automotive service garage operating on the adjacent property to the north/northeast of the Phase II Property (APEC 3).

- ❒ PCA 30 – Importation of Fill Material of Unknown Quality– this PCA is associated with the suspected infilling of the Phase II Property following the decommissioning of a historically present quarry (APEC 4)

Contaminants of Potential Concern

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

- ❒ Metals
- ❒ Benzene, Toluene, Ethylbenzene, Xylenes (BTEX);
- ❒ Petroleum Hydrocarbons (PHCs); and
- ❒ Polycyclic Aromatic Hydrocarbons

Assessment of Uncertainty and/or Absence of Information

The information available for review as part of the preparation of the Phase I-ESA is considered to be sufficient to conclude that there are historical and existing on-site PCAs that have resulted in APECs on the Phase I Property. Additionally, one off-site PCA in the form of an automotive service garage is considered to result in an APEC on the Phase I Property.

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

3.4 Deviations from Sampling and Analysis Plan

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

3.5 Impediments

Physical impediments encountered during the Phase II ESA program include underground utilities, structures, parked vehicles, and on-site operations which limited the location of certain boreholes.

4.0 INVESTIGATION METHOD

4.1 Subsurface Investigation

The subsurface investigation was conducted on March 24, 2023.

Five boreholes were drilled to a maximum depth of 4.72 m, three of which (BH1-23, BH2-23 23,d BH3-23) were instrumented with groundwater monitoring wells.

The boreholes were strategically placed to address the aforementioned APECs listed in Table 1.

The boreholes were drilled with a low clearance drill rig operated by George Downing Estate Drilling of Hawkesbury, Ontario, under full-time supervision of Paterson personnel. The borehole locations are indicated on the attached Drawing PE5996-1 - Test Hole Location Plan.

4.2 Soil Sampling

A total of 24 soil samples were obtained from the boreholes by means of grab sampling from auger flights/auger samples and split spoon sampling. Split spoon samples were taken at approximate 0.76 m intervals. Rock core samples were collected with the use of coring equipment. The depths at which split spoon, auger flight and rock core samples were obtained from the boreholes are shown as “**SS**”, “**AU**” and “**RC**” respectively on the Soil Profile and Test Data Sheets.

The borehole profiles generally consist of a surficial layer of asphaltic concrete or gravel (ranging from 0.05-0.1 m in thickness), followed by fill material consisting of brown silty sand with gravel, crushed stone, cobbles and/or trace clay and topsoil. Asphalt and concrete fragments were identified in the fill layer encountered within BH2-23. Concrete fragments were also encountered in the fill layer within BH3-23 and BH4-23. Additionally, fragments of wood and brick were encountered in the fill layer within BH4-23. Brick fragments were also encountered in the fill material within BH5-23.

The silty sand fill layer extended to a maximum depth of 3.20 m in BH2-23 and BH4-23, and was underlain by fine to coarse brown silty sand with gravel extending to a maximum depth of 4.27 m. Grey limestone bedrock was inferred in BH2-23 at a depth of 4.04 m.

Borehole locations are shown on Drawing PE5996-1 – Test Hole Location Plan.

4.3 Field Screening Measurements

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

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

The maximum vapour reading measured was 13.4 ppm in the soil samples obtained.

These results were not considered to be indicative of potential significant contamination from volatile compounds. Vapour readings are noted on the Soil Profile and Test Data Sheets in Appendix 1.

No visual or olfactory indications of potential contamination were identified in the soil samples.

4.4 Groundwater Monitoring Well Installation

Three monitoring wells were installed on the Phase II Property as part of the subsurface investigation. The monitoring wells consisted of 32- and 50-mm Schedule 40 threaded PVC risers and screens. Monitoring well construction details are listed in Table 2 and are also presented on the Soil Profile and Test Data Sheets provided in Appendix 1.

Borehole locations and elevations were surveyed geodetically by Paterson personnel.

TABLE 2 - Monitoring Well Construction Details						
Well ID	**Ground Surface Elevation**	**Total Depth (m BGS)**	**Screened Interval (m BGS)**	**Sand Pack (m BGS)**	**Bentonite Seal (m BGS)**	**Casing Type**
BH1-23	117.83	4.27	2.8-4.3	2.1-4.27	0-2.1	Flushmount
BH2-23	117.47	4.09	2.5-4.0	1.8-4.04	0-1.8	Flushmount
BH3-23	117.30	3.81	2.3-3.8	1.8-3.8	0-1.8	Flushmount

4.5 Field Measurement of Water Quality Parameters

Groundwater sampling was conducted on March 30, 2023. Water quality parameters were measured in the field using a multi-parameter analyzer probe. Parameters measured in the field included temperature, pH, and electrical conductivity.

Field parameters were measured after each well volume purged. Wells were purged prior to sampling until at least three well volumes had been removed, the field parameters were relatively stable, or the well was dry. Stabilized field parameter values are summarized in Table 3.

Table 3: Groundwater Quality Parameters			
Well ID	**Temperature (ºC)**	**Conductivity (µs)**	**pH**
BH1-23	5.2	1978	7.53
BH2-23	5.4	1578	7.49
BH3-23	4.8	1139	7.81

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 and groundwater samples, as well as analyzed parameters are presented in Tables 4 and 5, respectively.

TABLE 4 – Analyzed Parameters for Submitted Soil Samples

Sample ID	Sample Depth & Stratigraphic Unit	Parameter				Rationale
		Metals	BTEX	PHCs F_1-F_4	PAHs	
BH1-23-SS2	0.76 – 1.37 m Silty Sand (Fill Material)	X[2]				Assess fill material of unknown quality
BH1-23-SS4	3.18 – 3.78 m Silty Sand Native		X	X		Assess potential soil impacts resulting from on-site truck repair shop
BH2-23-AU1	0.15 – 0.46 m Silty Sand (Fill Material)		X	X	X	Assess fill material of unknown quality and potential soil impacts resulting from historical diesel spill
BH3-23-SS4	2.28 – 2.89 m Silty Sand (Native)		X	X		Assess potential soil impacts resulting from off-site automotive service garage
BH4-23-SS2	0.76 – 1.37 m Silty Sand (Fill Material)	X			X	Assess fill material of unknown quality
BH5-23-SS2	0.76 – 1.37 m Silty Sand (Fill Material)	X			X	Assess fill material of unknown quality
DUP1-23 (Duplicate of BH1-12-SS4)	3.18 – 3.78 m Silty Sand Native		X	X		Assess potential soil impacts resulting from on-site truck repair shop

TABLE 5 - Testing Parameters for Submitted Groundwater Samples				
Sample ID	**Screened Interval**	**Parameters Analyzed**		**Rationale**
		PHCs F_1-F_4	**BTEX**	
BH1-23-GW1	2.74-4.28 m Native Silty Sand	X	X	Assess potential groundwater impacts resulting from on-site truck repair shop
BH2-23-GW1	2.51-4.10 m Silty Sand Fill into Native Silty Sand	X	X	Assess potential groundwater impacts resulting from on-site truck repair shop
DUP1-23-GW1 (duplicate of BH2-23-GW1)	2.51-4.10 m Silty Sand Fill into Native Silty Sand	X	X	QA/QC
BH3-23-GW1	2.29-3.81 Native Silty Sand	X	X	Assess potential groundwater impacts resulting from off-site automotive service garage

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

4.8 Residue Management

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

4.9 Elevation Surveying

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

4.10 Quality Assurance and Quality Control Measures

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

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

One duplicate soil sample was submitted as part of the subsurface investigation. The duplicate sample was recovered from BH1-23-SS4 and was submitted for PHCs and BTEX. All of the analyzed parameters were non-detect in both the original and duplicate sample.

A duplicate of groundwater sample from BH2-23-GW1 was also recovered, and both the original and duplicate sample were analysed for PHCs and BTEX. All of the analyzed parameters were non-detect in both the original and duplicate sample.

As a result of the analysed parameter concentrations being non-detect in both the original sample and duplicate, the RPD values cannot be calculated.

Based on the identical results in both the original and duplicate groundwater and soil samples, the data is considered to be of sufficient quality so as not to affect decision making.

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

5.0 REVIEW AND EVALUATION

5.1 Geology

The borehole profiles generally consist of a surficial layer of asphaltic concrete or gravel (ranging from 0.05-0.1 m in thickness), followed by fill material consisting of brown silty sand with gravel, crushed stone, cobbles and/or trace clay and topsoil. Occasional asphalt, concrete, plastic, brick, and wood fragments were identified in the fill layer in various boreholes.

The silty sand fill layer extended to a maximum depth of 3.20 m in BH2-23 and BH4-23, and was underlain by fine to coarse brown silty sand with gravel extending to a maximum depth of 4.27 m. Grey limestone bedrock was inferred in BH2-23 at a depth of 4.04 m.

Groundwater was encountered within the overburden at depths ranging from 1.09 to 1.80 m.

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

5.2 Groundwater Elevations, Flow Direction, and Hydraulic Gradient

Groundwater levels were measured during the groundwater sampling event on March 30, 2023, using an electronic water level meter. Groundwater levels were recorded from the monitoring wells installed in BH1-23, BH2-23, and BH3-23. Groundwater levels are summarized below in Table 6.

TABLE 6 - Groundwater Level Measurements

Borehole Location	Ground Surface Elevation (m)	Water Level Depth (m below grade)	Water Level Elevation (m ASL)	Date of Measurement
BH1-23	117.83	1.80	116.03	March 30, 2023
BH2-23	117.47	1.38	116.09	March 30, 2023
BH3-23	117.30	1.09	116.21	March 30, 2023

Based on the groundwater elevations measured during the sampling events, groundwater contour mapping was completed. Groundwater contours are shown on Drawing PE5996-1 – Test Hole Location Plan.

Based on the contour mapping, groundwater below the Phase II Property flows to the west, although these levels likely had not stabilized. It should be noted that groundwater levels are expected to fluctuate throughout the year with seasonal variations.

A horizontal hydraulic gradient of approximately 0.003 m/m was calculated.

5.3 Fine-Coarse Soil Texture

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

5.4 Soil: Field Screening

Field screening of the soil samples collected during drilling resulted in vapour readings ranging from 0.2 to 13.4 ppm. The PID readings are not considered to be indicative of contamination. The field screening results of each individual soil sample are provided on the Soil Profile and Test Data Sheets appended to this report.

5.5 Soil Quality

Based on the findings of the field screening in combination with sample depth and location, seven soil samples, including one duplicate sample, were submitted for analysis of metals, PHCs (F1-F4), BTEX and/or PAHs. The results of the analytical testing completed on the Phase II Property are presented in Tables 1A to 1D in Appendix 1. The laboratory Certificates of Analysis are also provided in Appendix 1.

Metals

All of the analyzed metal parameters are in compliance with the selected MECP Table 2 Standards. The location of samples tested for metals in the soil are shown on Drawing PE5996-2 – Analytical Testing Plan – Soil.

PAHs

All of the analyzed PAH parameter concentrations are in compliance with the selected MECP Table 2 standards, with the exception of benzo[a]pyrene in soil sample BH4-23-SS2. The reported concentration of benzo[a]pyrene in BH4-23-SS2 is 0.4 ug/g which marginally exceeds the MECP Table 2 standard of 0.3 ug/g.

The location of samples tested for PAHs in the soil are shown on PE5996-2 – Analytical Testing Plan – Soil.

PHCs (F_1-F_4)

All of the analyzed PHC parameters are in compliance with the selected MECP Table 2 Standards. The location of samples tested for PHCs in the soil are shown on Drawing PE5996-2 – Analytical Testing Plan – Soil.

BTEX

All of the analyzed BTEX concentrations were non-detect and therefore in compliance with the selected MECP Table 2 standards. The location of samples tested for BTEX in the soil are shown on Drawing PE5996-2 – Analytical Testing Plan – Soil.

The maximum parameter concentrations identified within the soil samples are listed below in Table 7.

TABLE 7: Maximum Concentrations – Soil			
Parameter	**Maximum Concentration (µg/g)**	**Soil Sample**	**Depth Interval (m BGS)**
Arsenic	2.4	BH1-23-SS2	0.76-1.37
Barium	101	BH5-23-SS2	0.76-1.37
Chromium	21.9	BH5-23-SS2	0.76-1.37
Cobalt	7	BH5-23-SS2	0.76-1.37
Copper	16	BH5-23-SS2	0.76-1.37
Lead	12.3	BH1-23-SS2	0.76-1.37
Nickel	13.1	BH5-23-SS2	0.76-1.37
Vanadium	34.7	BH5-23-SS2	0.76-1.37
Zinc	40.1	BH5-23-SS2	0.76-1.37
Acenaphthene	0.08	BH4-23-SS2	0.76-1.37
Anthracene	0.25	BH4-23-SS2	0.76-1.37
Benzo[a]anthracene	0.52	BH4-23-SS2	0.76-1.37
Benzo[a]pyrene	**0.40**	BH4-23-SS2	0.76-1.37
Benzo[b]fluoranthene	0.56	BH4-23-SS2	0.76-1.37
Benzo[g,h,i]perylene	0.24	BH4-23-SS2	0.76-1.37
Benzo[k]fluoranthene	0.28	BH4-23-SS2	0.76-1.37
Chrysene	0.60	BH4-23-SS2	0.76-1.37
Dibenzo[a,h]anthracene	0.08	BH4-23-SS2	0.76-1.37
Fluoranthene	1.48	BH4-23-SS2	0.76-1.37
Fluorene	0.15	BH4-23-SS2	0.76-1.37
Indeno [1,2,3-cd] pyrene	0.23	BH4-23-SS2	0.76-1.37
Naphthalene	0.02	BH4-23-SS2	0.76-1.37
Phenanthrene	1.39	BH4-23-SS2	0.76-1.37
Pyrene	1.17	BH4-23-SS2	0.76-1.37
F3 PHCs (C16-C34)	26	BH2-23-AU1	0.15-0.46
F4 PHCs (C34-C50)	29	BH2-23-AU1	0.15-0.46

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

5.6 Groundwater Quality

Four groundwater samples (including one duplicate) from monitoring wells installed in BH1-23, BH2-23, and BH3-23 were submitted for laboratory analysis of PHCs and BTEX. The results of the analytical testing are presented in Tables 2B and 2C in Appendix 1. The laboratory Certificates of Analysis are provided in Appendix 1.

PHCs (F_1-F_4)

All of the analyzed PHC parameters were non-detect and are therefore in compliance with the selected MECP Table 2 standards. The location of the samples tested for PHCs in the groundwater are shown on Drawing PE5996-3– Analytical Testing Plan – Groundwater.

BTEX

All of the analyzed BTEX parameters are in compliance with the applicable MECP Table 2 standards. The location of the samples tested for BTEX in the groundwater are shown on Drawing PE5996-3–Analytical Testing Plan – Groundwater.

5.7 Quality Assurance and Quality Control Results

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

One duplicate soil sample was collected from BH1-23-SS4 (DUP1-23) and was submitted for PHCs and BTEX.

The duplicate sample was collected with the intent of calculating the relative percent difference (RPD) between duplicate sample values, as a way of assessing the quality of the analytical test results.

A duplicate groundwater sample (DUP1-23-GW1) was obtained from the monitoring well installed in BH2-23 and submitted for laboratory analysis of PHC and BTEX parameters.

All of the analysed parameter concentrations were non-detect in both the original sample and duplicate, therefore, the RPD values cannot be calculated.

The quality of the field data collected during the Phase II ESA is considered to be sufficient to meet the overall objectives of the assessment.

5.8 Phase II Conceptual Site Model

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

Site Description

Potentially Contaminating Activity and Areas of Potential Environmental Concern

Based on the results of the previously completed Phase I ESA by Pinchin and the brief historical review, four PCAs were considered to result in APECs on the Phase II Property. The identified APECs on the Phase II Property are as follows:

- APEC 1: Resulting from the presence of an on-site truck repair shop (PCA #52);
- APEC 2: Resulting from a historical 150 L diesel spill on the Phase II Property;
- APEC 3: Resulting from the presence of an automotive service garage on the adjacent property to the east (PCA #52).
- APEC 4: Resulting from the importation of fill material of unknown quality (PCA #30);

Contaminants of Potential Concern

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

- Metals;
- Benzene, Toluene, Ethylbenzene, Xylenes (BTEX);
- Petroleum Hydrocarbons (PHCs);
- Polycyclic Aromatic Hydrocarbons (PAHs);

Subsurface Structures and Utilities

The Phase II Property is situated in an area serviced by private well and septic systems. Underground utility services on the Phase II Property include natural gas, electrical, cable, septic system, and a private well.

No other subsurface structures were identified at the time of the site visit.

Physical Setting

Site Stratigraphy

The stratigraphy of the Phase II Property generally consists of a surficial layer of asphaltic concrete or gravel (ranging from 0.05-0.1 m in thickness), followed by fill material consisting of brown silty sand with gravel, crushed stone, cobbles and/or trace topsoil. Occasional asphalt, concrete plastic, brick and wood fragments were identified in the fill layer in various boreholes.

The silty sand fill layer extended to a maximum depth of 3.20 m in BH2-23 and BH4-23 and was underlain by fine to coarse brown silty sand with gravel extending to a maximum depth of 4.27 m. Grey limestone bedrock was inferred in BH2-23 at a depth of 4. 04 m.

Groundwater was encountered within the overburden at depths ranging from 1.09 to 1.80 m.

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

- Asphaltic concrete and/or gravel; encountered at depths ranging from approximately 0.05 and 0 to 0.1 m below the existing ground surface.
- Fill material consisting of brown silty sand with gravel, crushed stone, cobbles and/or trace clay, topsoil and trace fragments of brick, asphaltic concrete and concrete was encountered at a maximum depth of 3.20 m below the existing ground surface.
- Silty sand with gravel was encountered at a maximum depth of 4.27 m below the existing ground surface.
- Limestone bedrock was encountered in BH2-23 at a depth of 4.04 m below the existing ground surface.

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

Hydrogeological Characteristics

Groundwater was encountered within the overburden at depths ranging from 1.09 to 1.80 m. Based on the groundwater monitoring event, groundwater beneath the Phase II Property flows to the west with a hydraulic gradient of 0.003 m/m, although these levels likely had not stabilized.

It should be noted that groundwater levels are expected to fluctuate throughout the year with seasonal variations. Groundwater contours are shown on Drawing PE5996-1 – Test Hole Location Plan.

Approximate Depth to Bedrock

Bedrock was inferred at a depth of 4.09 m in BH2-23 (northern portion of the Phase II Property).

Approximate Depth to Water Table

The depth to the water table at the Phase II Property varies between approximately 1.09 to 1.80 m below existing grade.

Sections 41 and 43.1 of the Regulation

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

Section 43.1 of the Regulation does not apply to the subject site as bedrock is not located less than 2 m below ground surface.

Fill Placement

Fill material consisting of brown silty sand with gravel, crushed stone, cobbles and/or topsoil and trace fragments of brick, asphaltic concrete and concrete was encountered in various boreholes across the Phase I Property. The fill material of unknown quality identified on the Phase II Property was considered to represent an APEC.

Existing Buildings and Structures

The Phase II Property is occupied by a single-storey and centrally located truck repair shop. The northern, eastern, and southern portions of the property consist of asphaltic concrete or gravel parking space/laneways.

Proposed Buildings and Other Structures

The proposed site development for the Phase II Property will consist of the construction of an expansion of the existing light industrial building to the east. The proposed building will be serviced by the existing private well and septic system.

Areas of Natural Scientific Interest and Water Bodies

No areas of natural significance or water bodies were identified on the Phase II Property.

Environmental Condition

Areas Where Contaminants are Present

Based on the findings of this Phase II - ESA, the fill material in the immediate vicinity of the BH4-23 (northern portion of the Phase II Property) marginally exceeded the MEPC Table 2 Industrial standards for one PAH parameter (benzo[a]pyrene). Based on the findings of the Phase II – ESA, the identified PAH impact is considered to be limited in extent and is isolated to the fill material in the immediate vicinity of BH4-23.

Types of Contaminants

Based on the findings of this Phase II ESA, the fill material in the immediate vicinity of BH4-23 (northern portion of the Phase II Property) exceeds the MECP Table 2 Industrial Standards for the PAH parameter benzo[a]pyrene.

Contaminated Media

Based on the findings of this Phase II ESA, the fill material in the immediate vicinity of BH4-23 (northern portion of the Phase II Property) exceeds the MECP Table 2 Industrial Standards for the PAH parameter benzo[a]pyrene.

What Is Known About Areas Where Contaminants Are Present

Based on the findings of this Phase II ESA, the fill material in the immediate vicinity of BH4-23 (northern portion of the Phase II Property) exceeds the MECP Table 2 Industrial Standards for the PAH parameter benzo[a]pyrene. The identified impacted fill material is considered to be a result of the infilling of the Phase II Property following the decommissioning of a historical quarry that had previously occupied the Phase II Property and neighbouring lands.

Distribution and Migration of Contaminants

Based on the findings of this Phase II ESA, the fill material in the immediate vicinity of BH4-23 (northern portion of the Phase II Property) exceeds the MECP Table 2 Industrial Standards for the PAH parameter benzo[a]pyrene. The identified PAH impact is considered to be limited in extent and is isolated to the fill material within the immediate vicinity of BH4-23.

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

Discharge of Contaminants

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

Climatic and Meteorological Conditions

In general, climatic, and meteorological conditions have the potential to affect contaminant distribution.

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

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

Potential for Vapour Intrusion

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

6.0 CONCLUSIONS

6.1 Assessment

A Phase II ESA was conducted for the property addressed 158 Cardevco Road, in the City of Ottawa, Ontario. The purpose of the Phase II ESA was to address potentially contaminating activities (PCAs) and their resulting areas of potential environmental concern (APECs) that were identified during a previously completed Phase I ESA, as well as a brief historical investigation completed as part of the current assessment.

The Phase II ESA subsurface investigation consisted of drilling five boreholes, three of which (BH1-23, BH2-23, and BH3-23) were instrumented with groundwater monitoring wells to address the previously identified APECs. The boreholes were drilled to a maximum depth of 4.72 m.

Soil

A total of seven soil samples (including one duplicate) were submitted for analysis of metals, benzene, toluene, ethylbenzene xylenes (BTEX), petroleum hydrocarbons (PHCs, F1-F4) and/or polycyclic aromatic hydrocarbons (PAHs).

Metals

All of the analyzed metal parameters are in compliance with the selected MECP Table 2 Standards. The location of samples tested for metals in the soil are shown on Drawing PE5996-2 – Analytical Testing Plan – Soil.

PAHs

All of the analyzed PAH parameter concentrations are in compliance with the selected MECP Table 2 standards, with the exception of benzo[a]pyrene in soil sample BH4-23-SS2. The reported concentration of benzo[a]pyrene in BH4-23-SS2 is 0.4 ug/g which marginally exceeds the MECP Table 2 standard of 0.3 ug/g.

The location of samples tested for PAHs in the soil are shown on PE5996-2 – Analytical Testing Plan – Soil.

PHCs (F_1-F_4)

All of the analyzed PHC parameters are in compliance with the selected MECP Table 2 Standards. The location of samples tested for PHCs in the soil are shown on Drawing PE5996-2 – Analytical Testing Plan – Soil.

BTEX

All of the analyzed BTEX concentrations were non-detect and therefore in compliance with the selected MECP Table 2 standards. The location of samples tested for BTEX in the soil are shown on Drawing PE5996-2 – Analytical Testing Plan – Soil.

Groundwater

Groundwater samples from monitoring wells installed in BH1-23, BH2-23 and BH3-23 were collected on March 30, 2023, and were submitted for laboratory analysis of PHCs (F1-F4) and BTEX. All groundwater results comply with the selected MECP Table 2 Industrial standards.

6.2 Recommendations

Soil

The identified PAH concentration within soil sample BH4-23-SS2 is considered to be marginal and isolated to the fill material in the immediate vicinity of BH4-23 (northern portion of the Phase II Property). It is our understanding that the property will continue to operate as a truck repair shop. No other areas of impacted fill material were identified on the Phase II Property and as such, the marginal exceedance is considered to be confined to the fill layer in the immediate vicinity of BH4-23.

Based on the proposed location of the future infiltration gallery being within close proximity to BH4-23, it is our opinion that the impacted fill material should be removed through the means of a remediation excavation. Confirmatory sampling will be required once the impacted material has been removed and all contaminated material will be hauled to an accredited waste disposal facility.

Groundwater

It is recommended that the monitoring wells installed on the Phase II Property be maintained for future monitoring. The monitoring wells must be decommissioned in accordance with O.Reg 903.

6.3 Remediation

Following the recommendations of the Phase II ESA, a remediation program was completed. A total of 4 test pits were excavated on August 12, 2024, for the purposes of delineating the area of PAH impacted fill material and to analyse the impacted material for landfill requirements. Based on these test pits, it was

determined that PAH impacted fill material was not present beyond 3m from the initially identified location (BH4-23).

A remediation excavation was monitored by Paterson on September 30, 2024, during which a total of 126 mts of impacted were material removed and disposed of at Waste Management of Ottawa. As a result of the remediation program, no further work was recommended.

The full remediation summary is provided in Appendix 2.

7.0 STATEMENT OF LIMITATIONS

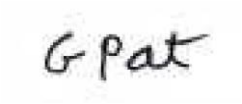
This Phase II - Environmental Site Assessment report has been prepared under the supervision of a Qualified Person, in general accordance with O. Reg 153/04. The conclusions presented herein are based on information gathered from a limited sampling and testing program. The test results represent conditions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

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

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

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

Paterson Group Inc.



Grant Paterson, Technologist

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

Report Distribution:

- ❒ Whelan Truck Repair c/o Pri-Tec Construction Ltd.
- ❒ Paterson Group

FIGURES

FIGURE 1 – KEY PLAN

DRAWING PE5996-1 – TEST HOLE LOCATION PLAN

DRAWING PE5996-2 – ANALYTICAL TESTING PLAN – SOIL

DRAWING PE5996-2A – CROSS-SECTION A – A' – SOIL

DRAWING PE5996-3 – ANALYTICAL TESTING PLAN – GROUNDWATER

DRAWING PE5996-3A – CROSS-SECTION A – A' – GROUNDWATER

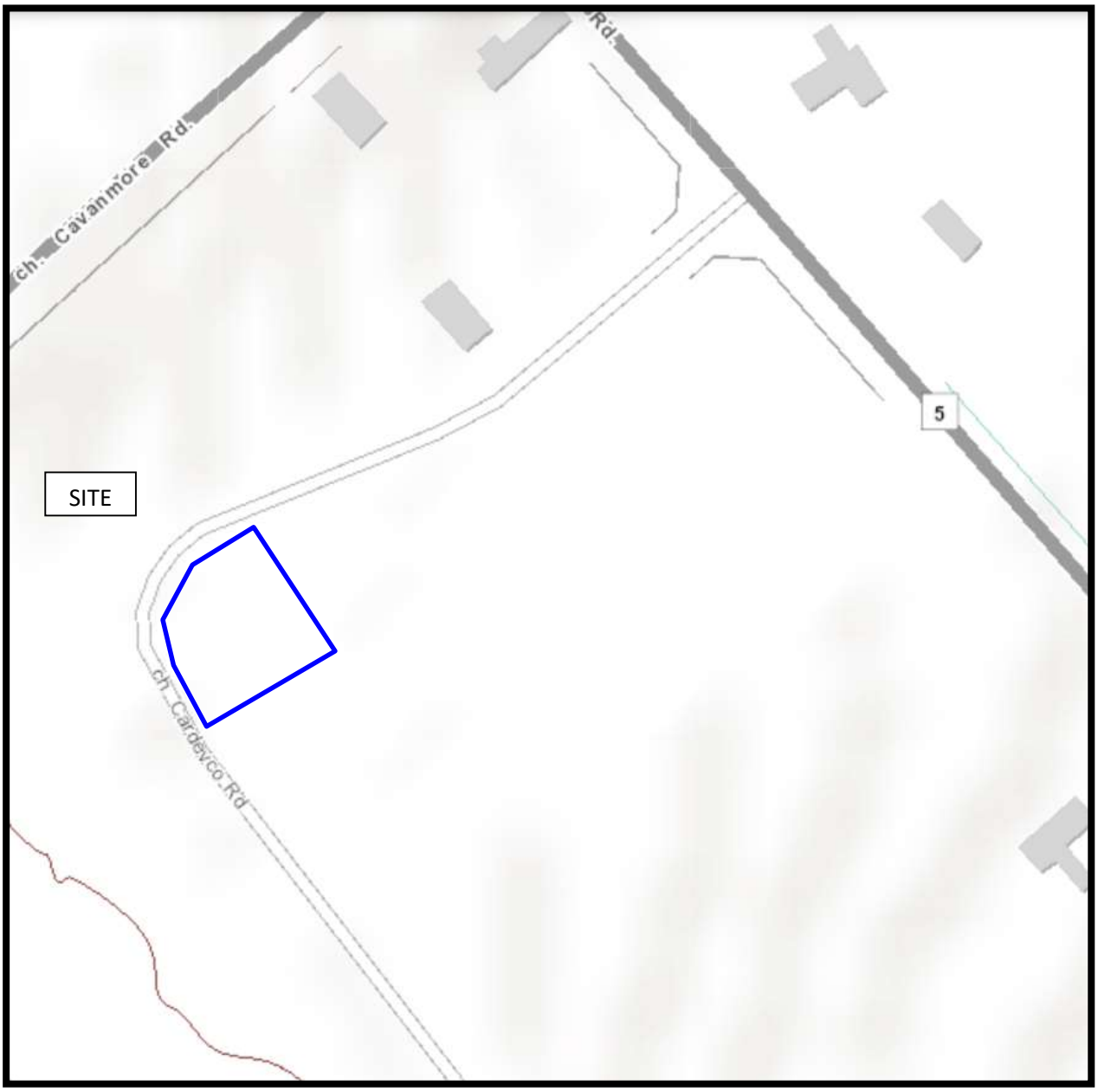


FIGURE 1

KEY PLAN

171 CARDEVCO ROAD
INDUSTRIAL

167 CARDEVCO ROAD
INDUSTRIAL

189 CARDEVCO ROAD
COMMERCIAL - RETAIL

CARDEVCO ROAD

163 CARDEVCO ROAD
LIGHT INDUSTRIAL -
CONTRACTOR'S YARD

N.GATE-POST
ELEV=118.41m

LANDSCAPED

UP

EXISTING LOCATION
OF SEPTIC FIELD

APPROX. AREA OF ABOVEGROUND
STORAGE TANKS USED IN CONJUCTION
WITH TRUCK REPAIR SHOP

164 CARDEVCO ROAD
COMMERCIAL -
AUTOMOTIVE
SERVICE GARAGE

BH 1-23
117.83
[113.56]
(116.03)

OFFICE
AREA

EXISTING BUILDING

BH 2-23
117.47
[113.43]
(116.09)

GRAVEL

116.08

116.1

(0.003m/m)

BH 4-23
117.76

158 CARDEVCO ROAD
LIGHT INDUSTRIAL -
TRUCK REPAIR SHOP

116.12

116.14

APPROXIMATE
LOCATION OF OIL /
WATER SEPARATOR

PROPOSED BUILDING

116.16

GRAVEL

159 CARDEVCO ROAD
INDUSTRIAL

CARDEVCO ROAD

SW-BOLT
ELEV=117.54m

EXISTING WELL
LOCATION

BH 5-23
117.62

BH 3-23
117.30
(116.21)

153 CARDEVCO ROAD
INDUSTRIAL

154 CARDEVCO ROAD
LIGHT INDUSTRIAL -
CONTRACTOR'S YARD

LEGEND:

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- 117.30 GROUND SURFACE ELEVATION (m)
- [113.56] INFERRED BEDROCK SURFACE ELEVATION (m)
- (116.21) GROUNDWATER SURFACE ELEVATION (m) (MARCH 30, 2023)
- 117 GROUNDWATER CONTOUR(m)
- (0.003m/m) APPROX. GROUNDWATER FLOW DIRECTION (HORIZONTAL HYDRAULIC GRADIENT)

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

SCALE: 1:500

0 5 10 15 20 25 30m

PATERSON GROUP
9 AURIGA DRIVE
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NO.	REVISIONS	DATE	INITIAL

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PHASE II - ENVIRONMENTAL SITE ASSESSMENT
158 CARDEVCO ROAD

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:500	Date: 04/2023
Drawn by: YA	Report No.: PE5996-1
Checked by: SB	Dwg. No.: PE5996-1
Approved by: MSD	Revision No.:

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FILE# D07-12-23-0002 SITE PLAN# 19363

171 CARDEVCO ROAD
INDUSTRIAL

189 CARDEVCO ROAD
COMMERCIAL - RETAIL

167 CARDEVCO ROAD
INDUSTRIAL

BH1-23-SS2	0.76-1.37m	24-MAR-2023
Metals comply with MECP Table 2 Standards		
BH1-23-SS4	3.18-3.78m	24-MAR-2023
PHCs comply with MECP Table 2 Standards		
DUP(1-23-SS4)	3.18-3.78m	24-MAR-2023
PHCs comply with MECP Table 2 Standards		
BH1-23-SS4	3.18-3.78m	24-MAR-2023
BTEX comply with MECP Table 2 Standards		
DUP(1-23-SS4)	3.18-3.78m	24-MAR-2023
BTEX comply with MECP Table 2 Standards		

BH4-23-SS2	0.76-1.37m	24-MAR-2023
Metals comply with MECP Table 2 Standards		

BH4-23-SS2	0.76-1.37m	24-MAR-2023
Parameter	Result(µg/g)	Standard(µg/g)
Benzo[a]pyrene	0.40	0.3
Remaining PAHs comply with MECP Table 2 Standards		

CARDEVCO ROAD

BH2-23-AU1	0.15-0.46m	24-MAR-2023
PAHs comply with MECP Table 2 Standards		
BH2-23-AU1	0.15-0.46m	24-MAR-2023
PHCs comply with MECP Table 2 Standards		
BH2-23-AU1	0.15-0.46m	24-MAR-2023
BTEX comply with MECP Table 2 Standards		

LANDSCAPED

UP

163 CARDEVCO ROAD
LIGHT INDUSTRIAL -
CONTRACTOR'S YARD

EXISTING LOCATION
OF SEPTIC FIELD

APPROX. AREA OF ABOVEGROUND
STORAGE TANKS USED IN CONJUCTION
WITH TRUCK REPAIR SHOP

N.GATE-POST
ELEV=118.41m

BH 1-23
117.83
[113.56]
(116.03)

OFFICE
AREA

EXISTING BUILDING

BH 2-23
117.47
[113.43]
(116.09)

164 CARDEVCO ROAD
COMMERCIAL -
AUTOMOTIVE
SERVICE GARAGE

BH3-23-SS4	2.28-2.89m	24-MAR-2023
PHCs comply with MECP Table 2 Standards		
BH3-23-SS4	2.28-2.89m	24-MAR-2023
BTEX comply with MECP Table 2 Standards		

GRAVEL

BH 4-23
117.76

158 CARDEVCO ROAD
LIGHT INDUSTRIAL -
TRUCK REPAIR SHOP

PROPOSED BUILDING

APPROXIMATE
LOCATION OF OIL /
WATER SEPARATOR

159 CARDEVCO ROAD
INDUSTRIAL

BH5-23-SS2	0.76-1.37m	24-MAR-2023
Metals comply with MECP Table 2 Standards		
BH5-23-SS2	0.76-1.37m	24-MAR-2023
PAHs comply with MECP Table 2 Standards		

CARDEVCO ROAD

GRAVEL

SW-BOLT
ELEV=117.54m

EXISTING WELL
LOCATION

BH 5-23
117.62

BH 3-23
117.30
(116.21)

153 CARDEVCO ROAD
INDUSTRIAL

154 CARDEVCO ROAD
LIGHT INDUSTRIAL -
CONTRACTOR'S YARD

LEGEND:

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- 117.30 GROUND SURFACE ELEVATION (m)
- [113.56] BEDROCK SURFACE ELEVATION (m)
- (116.21) GROUNDWATER SURFACE ELEVATION (m) (MARCH 30, 2023)
- A—A' CROSS SECTION

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

SCALE: 1:500

0 5 10 15 20 25 30m

SOIL RESULT COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 2 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

PRITEC CONSTRUCTION LTD.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
158 CARDEVCO ROAD

OTTAWA, ONTARIO

Title: ANALYTICAL TESTING PLAN - SOIL (METALS, PAHs, PHCs, BTEX)

Scale: 1:500	Date: 04/2023
Drawn by: YA	Report No.: PE5996-1
Checked by: SB	Dwg. No.: PE5996-2
Approved by: MSD	Revision No.:

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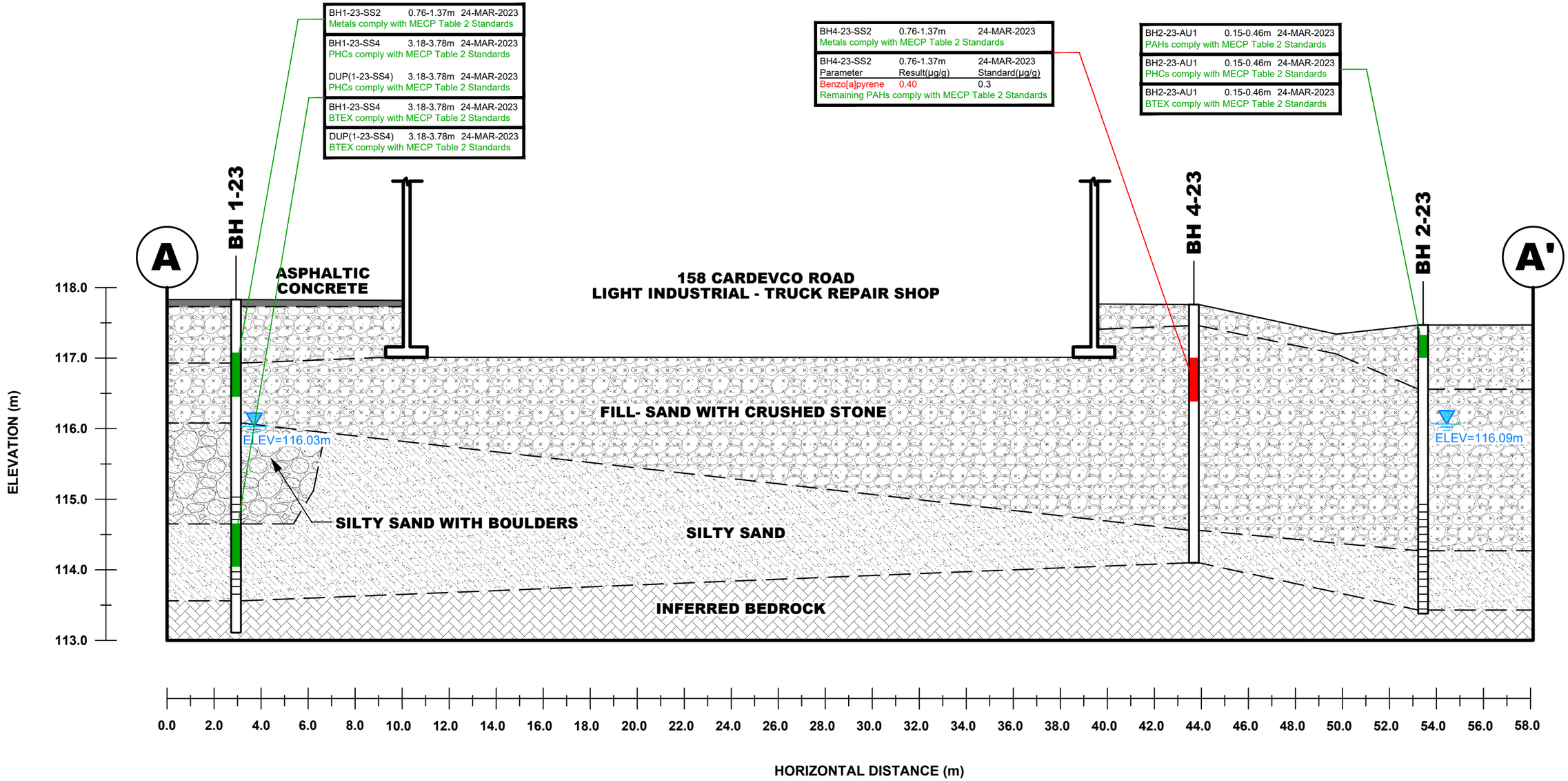
FILE# D07-12-23-0002 SITE PLAN# 19363

BH1-23-SS2	0.76-1.37m	24-MAR-2023
Metals comply with MECP Table 2 Standards		
BH1-23-SS4	3.18-3.78m	24-MAR-2023
PHCs comply with MECP Table 2 Standards		
DUP(1-23-SS4)	3.18-3.78m	24-MAR-2023
PHCs comply with MECP Table 2 Standards		
BH1-23-SS4	3.18-3.78m	24-MAR-2023
BTEX comply with MECP Table 2 Standards		
DUP(1-23-SS4)	3.18-3.78m	24-MAR-2023
BTEX comply with MECP Table 2 Standards		

BH4-23-SS2	0.76-1.37m	24-MAR-2023
Metals comply with MECP Table 2 Standards		
BH4-23-SS2	0.76-1.37m	24-MAR-2023
Parameter	Result(µg/g)	Standard(µg/g)
Benzo[a]pyrene	0.40	0.3
Remaining PAHs comply with MECP Table 2 Standards		

BH2-23-AU1	0.15-0.46m	24-MAR-2023
PAHs comply with MECP Table 2 Standards		
BH2-23-AU1	0.15-0.46m	24-MAR-2023
PHCs comply with MECP Table 2 Standards		
BH2-23-AU1	0.15-0.46m	24-MAR-2023
BTEX comply with MECP Table 2 Standards		



SOIL RESULT COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 2 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

PRITEC CONSTRUCTION LTD.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
158 CARDEVCO ROAD
OTTAWA, ONTARIO

Title: CROSS SECTION A-A' - SOIL (METALS, PAHs, PHCs, BTEX)

Scale: AS SHOWN	Date: 04/2023
Drawn by: YA	Report No.: PE5996-1
Checked by: SB	Dwg. No.: PE5996-2A
Approved by: MSD	Revision No.:

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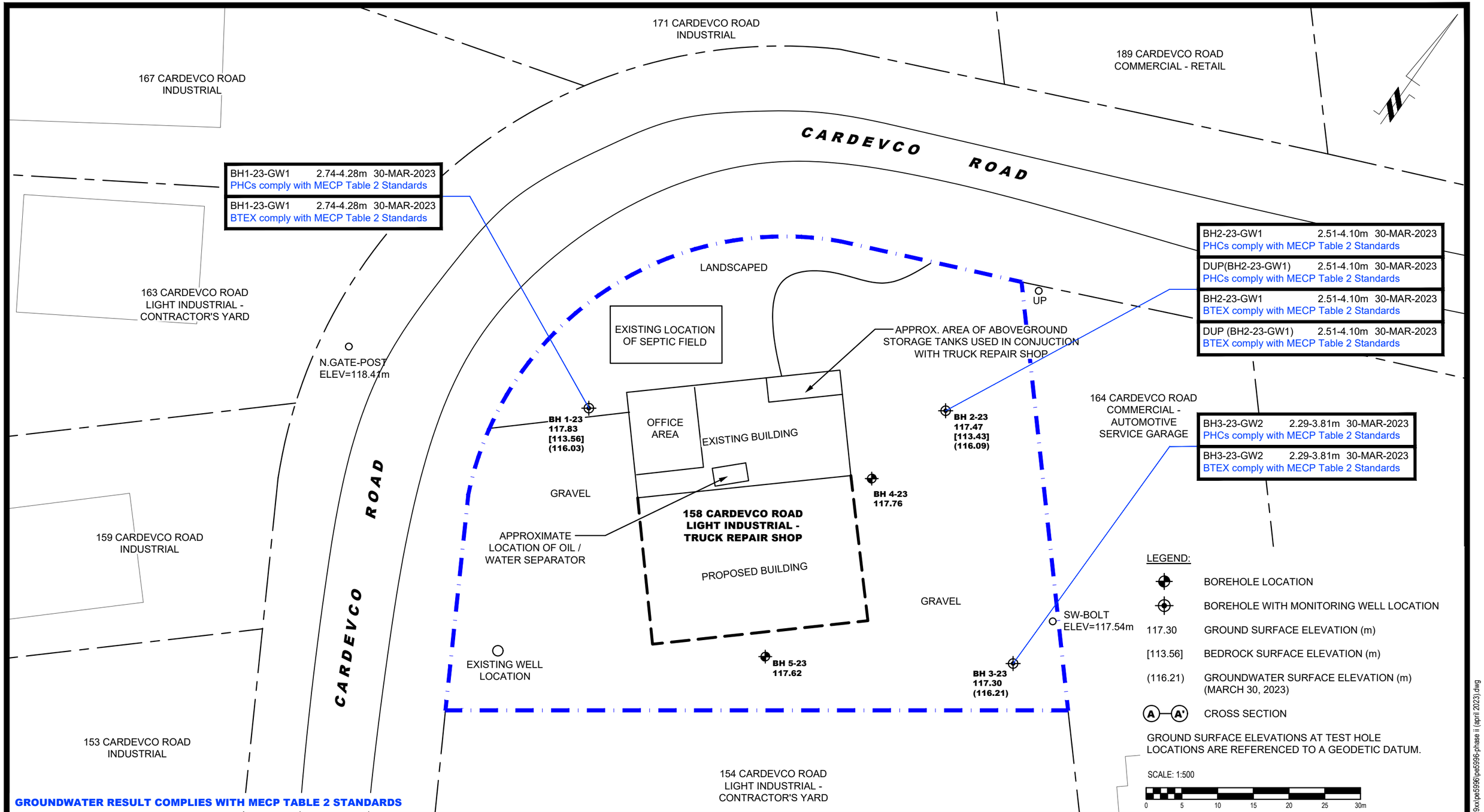
FILE# D07-12-23-0002 SITE PLAN# 19363



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NO.	REVISIONS	DATE	INITIAL

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PHASE II - ENVIRONMENTAL SITE ASSESSMENT
158 CARDEVCO ROAD
OTTAWA, ONTARIO

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

Scale: 1:500	Date: 04/2023
Drawn by: YA	Report No.: PE5996-1
Checked by: SB	Dwg. No.: PE5996-3
Approved by: MSD	Revision No.:

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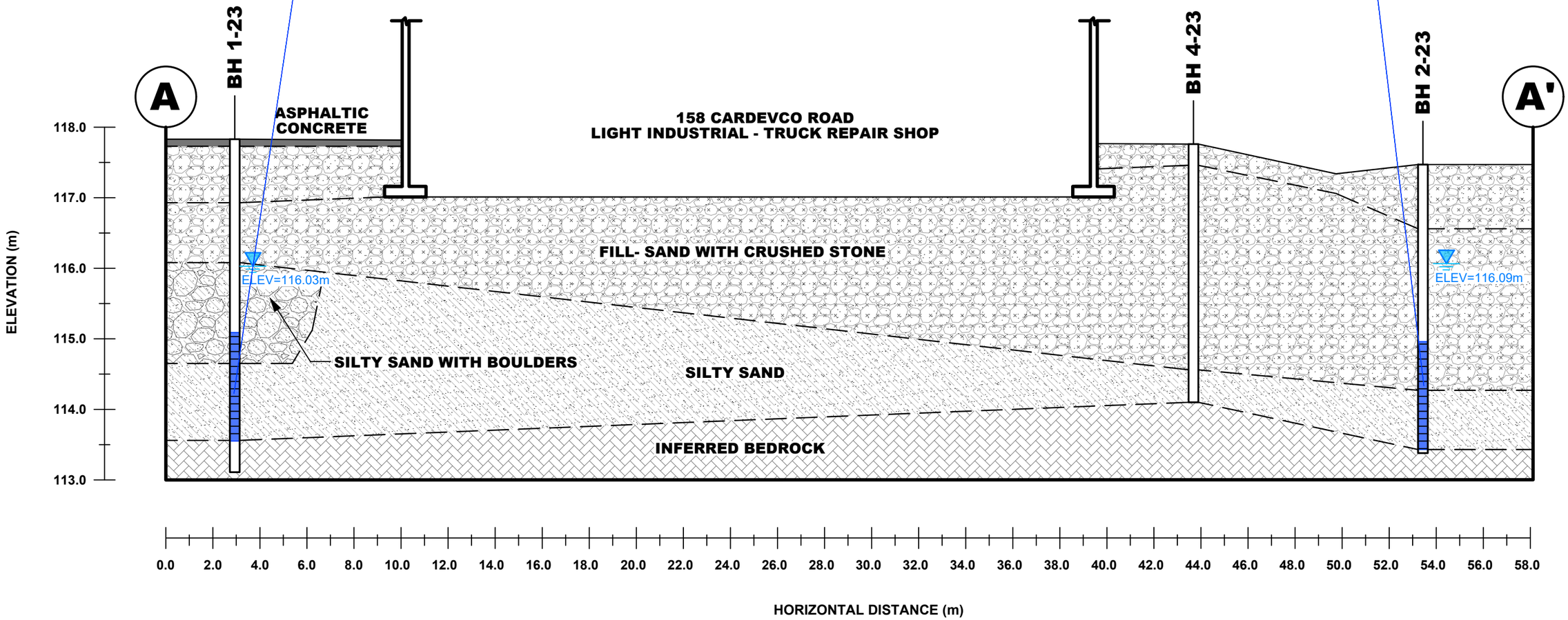
FILE# D07-12-23-0002 SITE PLAN# 19363

BH1-23-GW1	2.74-4.28m	30-MAR-2023
PHCs comply with MECP Table 2 Standards		
BH1-23-GW1	2.74-4.28m	30-MAR-2023
BTEX comply with MECP Table 2 Standards		

BH2-23-GW1	2.51-4.10m	30-MAR-2023
PHCs comply with MECP Table 2 Standards		
DUP(BH2-23-GW1)	2.51-4.10m	30-MAR-2023
PHCs comply with MECP Table 2 Standards		
BH2-23-GW1	2.51-4.10m	30-MAR-2023
BTEX comply with MECP Table 2 Standards		
DUP (BH2-23-GW1)	2.51-4.10m	30-MAR-2023
BTEX comply with MECP Table 2 Standards		



GROUNDWATER RESULT COMPLIES WITH MECP TABLE 2 STANDARDS

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

NO.	REVISIONS	DATE	INITIAL

PRITEC CONSTRUCTION LTD.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
158 CARDEVCO ROAD

OTTAWA, ONTARIO

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

Scale: AS SHOWN	Date: 04/2023
Drawn by: YA	Report No.: PE5996-1
Checked by: SB	Dwg. No.: PE5996-3A
Approved by: MSD	Revision No.:

11x17

FILE# D07-12-23-0002 SITE PLAN# 19363

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APPENDIX 1

SAMPLING AND ANALYSIS PLAN

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

ANALYTICAL TEST RESULTS

LABORATORY CERTIFICATES OF ANALYSIS

Sampling & Analysis Plan

158 Cardevco Road

Ottawa, Ontario

Prepared for Whelan Truck Repairs c/o

Pri-Tec Construction Ltd.

Report: PE5996-SAP
March 15, 2023

FILE# D07-12-23-0002 SITE PLAN# 19363

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FILE# D07-12-23-0002 SITE PLAN# 19363

1.0 SAMPLING PROGRAM

Paterson Group Inc. (Paterson) was commissioned by Pri-Tec Construction Ltd. on behalf of Whelan Truck Repairs, to conduct a Phase II – Environmental Site Assessment (Phase II ESA) for the property addressed 158 Cardevco Road, in the City of Ottawa, Ontario.

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

Borehole	Location & Rationale	Proposed Depth & Rationale
BH1-23	Western portion of the Phase II Property; to assess potential impacts resulting from the presence of an existing truck repair shop on the property.	3-5 m; to intercept the groundwater table for the purpose of installing a monitoring well.
BH2-23	Northern portion of the Phase II Property; to assess potential impacts resulting from a historical 150L diesel spill, and fill material of unknown quality.	3-5 m; to intercept the groundwater table for the purpose of installing a monitoring well.
BH3-23	Eastern portion of the Phase II Property; to assess potential impacts resulting from on-site activities and an off-site automotive service garage.	3-5 m; to intercept the groundwater table for the purpose of installing a monitoring well.
BH4-23	Northern portion of the Phase I Property; to assess potential impacts resulting from the presence of fill material of unknown quality and on-site garage.	3-5 m; for general coverage purposes.
BH5-23	Southern portion of the Phase I Property; to assess potential impacts resulting from the presence of fill material of unknown quality.	3-5 m; for general coverage purposes.

Borehole locations are shown on Drawing PE5996-1 – Test Hole Location Plan, appended to the main report.

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

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

2.0 ANALYTICAL TESTING PROGRAM

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

- ❒ At least one sample from each borehole should be submitted, in order to delineate the horizontal extent of contamination across the site.

- ❒ At least one sample from each stratigraphic unit should be submitted, in order to delineate the vertical extent of contamination at the site.
- ❒ In boreholes where there is visual or olfactory evidence of contamination, or where organic vapour meter or photoionization detector readings indicate the presence of contamination, the 'worst-case' sample from each borehole should be submitted for comparison with MECP site condition standards.

- ❒ In boreholes with evidence of contamination as described above, a sample should be submitted from the stratigraphic unit below the 'worst-case' sample to determine whether the contaminant(s) have migrated downward.

- ❒ Parameters analyzed should be consistent with the Contaminants of Potential Concern identified in the Phase I ESA.

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

- ❒ Groundwater monitoring wells should be installed in all boreholes with visual or olfactory evidence of soil contamination, in stratigraphic units where soil contamination was encountered, where those stratigraphic units are at or below the water table (i.e. a water sample can be obtained).

- ❒ Groundwater monitoring well screens should straddle the water table at sites where the contaminants of concern are suspected to be LNAPLs.

- ❒ At least one groundwater monitoring well should be installed in a stratigraphic unit below the suspected contamination, where said stratigraphic unit is water-bearing.

- ❒ Parameters analyzed should be consistent with the Contaminants of Concern identified in the Phase I ESA and with the contaminants identified in the soil samples.

3.0 STANDARD OPERATING PROCEDURES

3.1 Environmental Drilling Procedure

Purpose

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

Equipment

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

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

Determining Borehole Locations

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

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

Drilling Procedure

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

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

Spoon Washing Procedure

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

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

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

Screening Procedure

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

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

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

3.2 Monitoring Well Installation Procedure

Equipment

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

Procedure

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

3.3 Monitoring Well Sampling Procedure

Equipment

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

Sampling Procedure

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

4.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

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

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

5.0 DATA QUALITY OBJECTIVES

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

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

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

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

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

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

These considerations are discussed in the body of the report.

6.0 PHYSICAL IMPEDIMENTS

Physical impediments to the Sampling and Analysis plan may include:

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

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

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9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
158 Cardevco Road
Ottawa, Ontario

DATUM Elevations are referenced to a geodetic datum

FILE NO. PG5996

REMARKS

HOLE NO. BH 1-23

BORINGS BY CME 55 Power Auger **DATE** March 24, 2023

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
Asphaltic Concrete 0.10						0	117.83
FILL: Compacted granular base , brown silty sand with crushed stone and gravel 0.30		AU	1				
FILL: Compact to dense brown silty sand with some gravel, crushed stone, trace clay 0.91		SS	2	66	37	1	116.83
FILL: Dense to very dense brown silty sand with some gravel , trace clay 1.75		SS	3	42	50+		
Auger Refusal on Limestone cobbles,boulders Limestone Boulders Some cobbles and boulders by 1.80 Limestone Boulders Some cobbles and boulders by 1.80 3.18		RC	1	100	100	2	115.83
Compact, brown **SILTY SAND** with some gravel 4.27		SS	4		24	3	114.83
Excellent quality **LIMESTONE BEDROCK** 4.72		RC	2	100	100	4	113.83
End of Borehole (GWL @ 1.80m depth on March 30, 2023)							

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

Phase II - Environmental Site Assessment
158 Cardevco Road
Ottawa, Ontario

DATUM Elevations are referenced to a geodetic datum

FILE NO. PG5996

REMARKS

HOLE NO. BH 2-23

BORINGS BY CME 55 Power Auger **DATE** March 24, 2023

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	117.47
FILL: Compact to dense gravel surface, with brown silty sand, with some crushed stone, trace clay		AU	1				
0.91							
FILL: Compact brown silty sand with gravel, with gravel, crushed stone, trace plastic		SS	2	67	22	1	116.47
1.45							
FILL: Compact brown silty sand, some gravel and clay, trace concrete		SS	3	58	30	2	115.47
2.21							
FILL: Compact silty sand trace asphaltic concrete		SS	4	50		3	114.47
3.20							
Compact, brown **SILTY SAND**, some gravel		SS	5	67	31		
3.73							
Compact, brown **SILTY SAND**		SS	6	50	50+	4	113.47
4.04							
LIMESTONE BEDROCK 4.09							
End of Borehole							
(GWL @ 1.38m depth on March 30, 2023)							

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

Phase II - Environmental Site Assessment
158 Cardevco Road
Ottawa, Ontario

DATUM Elevations are referenced to a geodetic datum

FILE NO. PG5996

REMARKS

HOLE NO. BH 3-23

BORINGS BY CME 55 Power Auger **DATE** March 24, 2023

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	117.30
FILL: Compact to dense brown silty sand with gravel, crushed stone, sand and clay 0.30		AU	1				
FILL: Compact, redish brown silty sand, some gravel, occasional cobbles and boulders,		SS	2	75	21	1	116.30
Some concrete fragments by 1.52m depth		SS	3	42	29	2	115.30
2.29							
		SS	4				
Dense, brown **SAND** with gravel		SS	5	38		3	114.30
3.73							
Compact, brown **SILTY SAND** 3.91							
End of Borehole		SS	6	50			
(GWL @ 1.09m depth on March 30, 2023)							

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

Phase II - Environmental Site Assessment
158 Cardevco Road
Ottawa, Ontario

DATUM Elevations are referenced to a geodetic datum

FILE NO. PG5996

REMARKS

HOLE NO. BH 4-23

BORINGS BY CME 55 Power Auger **DATE** March 24, 2023

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	117.76
FILL: Compact, brown silty sand with gravel, crushed stone, trace clay		AU	1				
0.30							
FILL: Compact, brown silty sand with gravel, trace clay		SS	2	42	29	1	116.76
		SS	3	42	24	2	115.76
		SS	4	46	22	3	114.76
3.20							
Dense to very dense, brown **SILTY SAND**, some gravel, occasional cobbles		SS	5	63	40		
3.66							
End of borehole							

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

Phase II - Environmental Site Assessment
158 Cardevco Road
Ottawa, Ontario

DATUM Elevations are referenced to a geodetic datum

FILE NO. PG5996

REMARKS

HOLE NO. BH 5-23

BORINGS BY CME 55 Power Auger **DATE** March 24, 2023

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	117.62
FILL: Compact to dense brown silty sand with gravel, crushed stone, some clay, occasional brick fragments		AU	1				
0.30							
FILL: Compact to dense, brown silty sand some gravel and clay		SS	2	42	7	1	116.62
		SS	3	4	50+	2	115.62
2.03							
End of borehole						3	114.62

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

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

SYMBOLS AND TERMS

SOIL DESCRIPTION

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

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

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

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

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

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

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

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

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

ROCK DESCRIPTION

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

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

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

SAMPLE TYPES

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

SYMBOLS AND TERMS (continued)

PLASTICITY LIMITS AND GRAIN SIZE DISTRIBUTION

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

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

CONSOLIDATION TEST

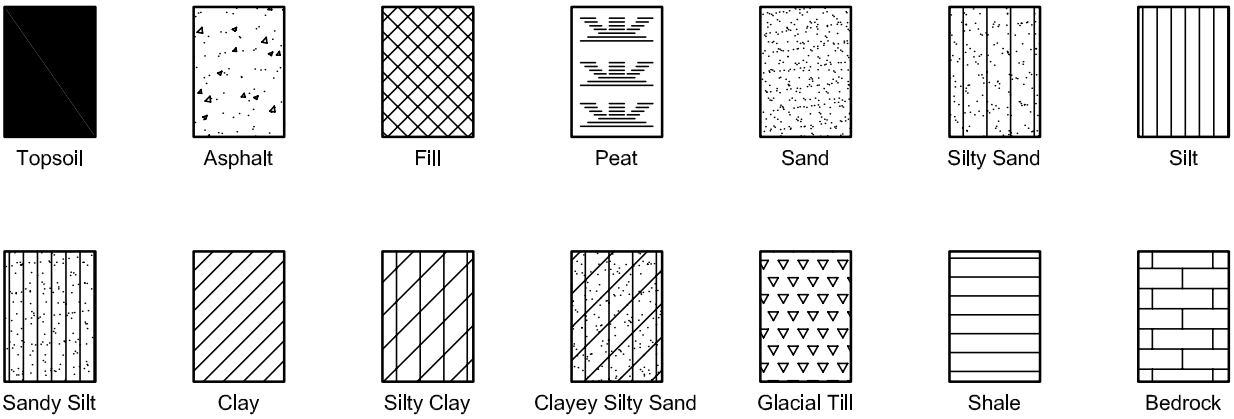
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void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

PERMEABILITY TEST

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

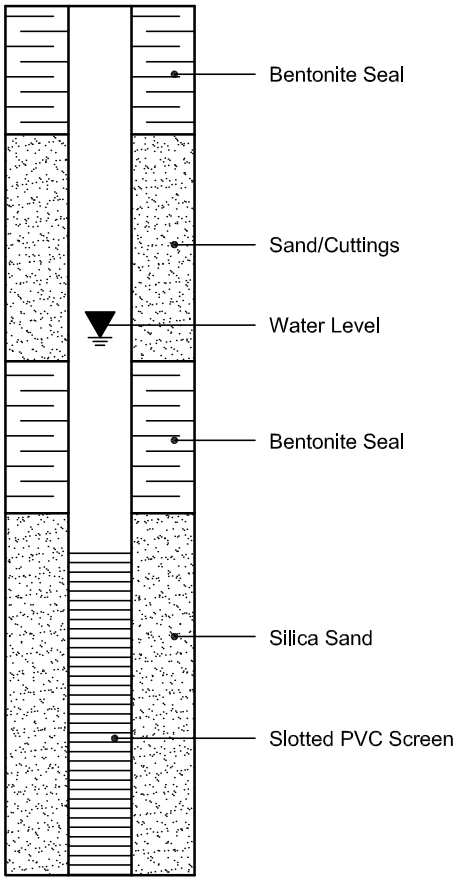
SYMBOLS AND TERMS (continued)

STRATA PLOT



MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION

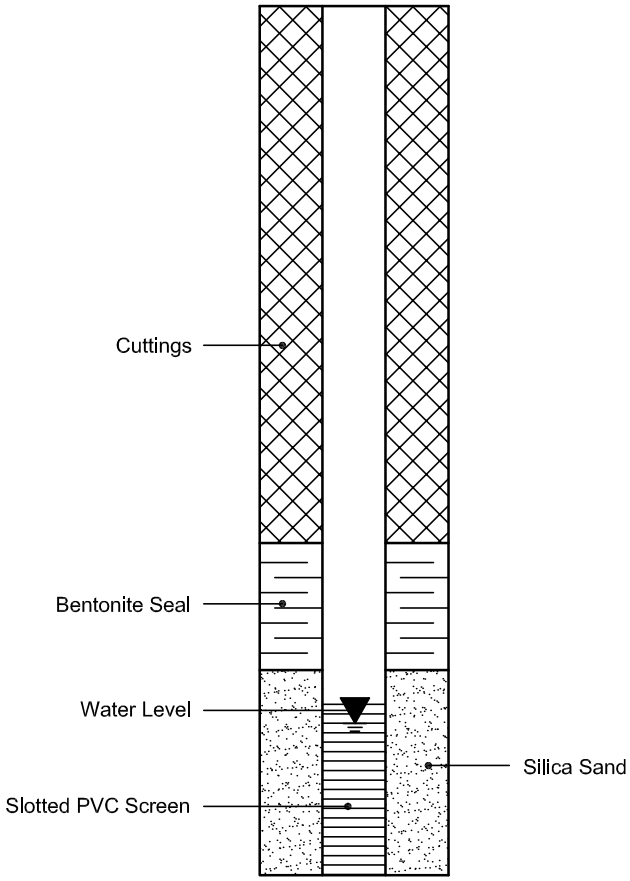


Table 1A Soil Analytical Test Results
Metals

Phase II - ESA
158 Cardevco Road, Ottawa
Whelan Truck Repairs c/o PriTec Construction Ltd.

Parameter	Units	MDL	Regulation	Sample		
				BH1-23-SS2	BH4-23-SS2	BH5-23-SS2
Sample Depth (m)				**0.76-1.37**	**0.76-1.37**	**0.76-1.37**
Sample Date (m/d/y)			**Reg 153/04 (2011)-Table 2 Industrial, coarse**	**03/24/2023**	**03/24/2023**	**03/24/2023**
Physical Characteristics						
% Solids	% by Wt.	0.1		89.1	91.3	89.2
Metals						
Antimony	ug/g dry	1.0	40 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)
Arsenic	ug/g dry	1.0	18 ug/g dry	2.4	1.6	1.8
Barium	ug/g dry	1.0	670 ug/g dry	78.8	96.3	101
Beryllium	ug/g dry	0.5	8 ug/g dry	ND (0.5)	ND (0.5)	ND (0.5)
Boron	ug/g dry	5.0	120 ug/g dry	ND (5.0)	ND (5.0)	ND (5.0)
Cadmium	ug/g dry	0.5	1.9 ug/g dry	ND (0.5)	ND (0.5)	ND (0.5)
Chromium	ug/g dry	5.0	160 ug/g dry	16.0	18.3	21.9
Cobalt	ug/g dry	1.0	80 ug/g dry	6.1	6.5	7.0
Copper	ug/g dry	5.0	230 ug/g dry	10.7	15.4	16.0
Lead	ug/g dry	1.0	120 ug/g dry	12.3	4.1	6.0
Molybdenum	ug/g dry	1.0	40 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)
Nickel	ug/g dry	5.0	270 ug/g dry	10.2	11.7	13.1
Selenium	ug/g dry	1.0	5.5 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)
Silver	ug/g dry	0.3	40 ug/g dry	ND (0.3)	ND (0.3)	ND (0.3)
Thallium	ug/g dry	1.0	3.3 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)
Uranium	ug/g dry	1.0	33 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)
Vanadium	ug/g dry	10.0	86 ug/g dry	28.8	31.0	34.7
Zinc	ug/g dry	20.0	340 ug/g dry	33.0	35.2	40.1

429	Exceeds MECP Table 2
ND (1.0)	Non-detect
N/A	Paramater not analyzed

Table 1B Soil Analytical Test Results
PHCs

Phase II - ESA
158 Cardevco Road, Ottawa
Whelan Truck Repairs c/o PriTec Construction Ltd.

Parameter	Units	MDL	Regulation	Sample			
				BH1-23-SS4	DUP1-23	BH2-23-AU1	BH3-23-SS4
Sample Depth (m)				**3.18-3.78**	**3.18-3.78**	**0.15-0.46**	**2.28-2.89**
Sample Date (m/d/y)			**Reg 153/04 (2011)-Table 2 Industrial, coarse**	**03/24/2023**	**03/24/2023**	**03/24/2023**	**03/24/2023**
Physical Characteristics							
% Solids	% by Wt.	0.1		91.3	87.1	87.2	88.3
Hydrocarbons							
F1 PHCs (C6-C10)	ug/g dry	7	55 ug/g dry	ND (7)	ND (7)	ND (7)	ND (7)
F2 PHCs (C10-C16)	ug/g dry	4	230 ug/g dry	ND (4)	ND (4)	ND (4)	ND (4)
F3 PHCs (C16-C34)	ug/g dry	8	1700 ug/g dry	ND (8)	ND (8)	26	ND (8)
F4 PHCs (C34-C50)	ug/g dry	6	3300 ug/g dry	ND (6)	ND (6)	29	ND (6)

429	Exceeds MECP Table 2
ND (1.0)	Non-detect
N/A	Paramater not analyzed

Table 1C Soil Analytical Test Results
BTEX

Phase II - ESA
158 Cardevco Road, Ottawa
Whelan Truck Repairs c/o PriTec Construction Ltd.

Parameter	Units	MDL	Regulation	Sample			
				BH1-23-SS4	DUP1-23	BH2-23-AU1	BH3-23-SS4
Sample Depth (m)				3.18-3.78	3.18-3.78	0.15-0.46	2.28-2.89
Sample Date (m/d/y)			**Reg 153/04 (2011)-Table 2 Industrial, coarse**	**03/24/2023**	**03/24/2023**	**03/24/2023**	**03/24/2023**
Physical Characteristics							
% Solids	% by Wt.	0.1		91.3	87.1	87.2	88.3
Volatiles							
Benzene	ug/g dry	0.02	0.32 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Ethylbenzene	ug/g dry	0.05	1.1 ug/g dry	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Toluene	ug/g dry	0.05	6.4 ug/g dry	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
m/p-Xylene	ug/g dry	0.05		ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
o-Xylene	ug/g dry	0.05		ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Xylenes, total	ug/g dry	0.05	26 ug/g dry	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)

429	Exceeds MECP Table 2
ND (1.0)	Non-detect
N/A	Paramater not analyzed

Table 1D Soil Analytical Test Results
PAHs

Phase II - ESA
158 Cardevco Road, Ottawa
Whelan Truck Repairs c/o PriTec Construction Ltd.

Parameter	Units	MDL	Regulation	Sample		
				BH2-23-AU1	BH4-23-SS2	BH5-23-SS2
Sample Depth (m)				**0.15-0.46**	**0.76-1.37**	**0.76-1.37**
Sample Date (m/d/y)			**Reg 153/04 (2011)-Table 2 Industrial, coarse**	**03/24/2023**	**03/24/2023**	**03/24/2023**
Semi-Volatiles						
Acenaphthene	ug/g dry	0.02	21 ug/g dry	ND (0.02)	0.08	ND (0.02)
Acenaphthylene	ug/g dry	0.02	0.15 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)
Anthracene	ug/g dry	0.02	0.67 ug/g dry	ND (0.02)	0.25	ND (0.02)
Benzo[a]anthracene	ug/g dry	0.02	0.96 ug/g dry	ND (0.02)	0.52	ND (0.02)
Benzo[a]pyrene	ug/g dry	0.02	0.3 ug/g dry	ND (0.02)	0.40	ND (0.02)
Benzo[b]fluoranthene	ug/g dry	0.02	0.96 ug/g dry	ND (0.02)	0.56	ND (0.02)
Benzo[g,h,i]perylene	ug/g dry	0.02	9.6 ug/g dry	ND (0.02)	0.24	ND (0.02)
Benzo[k]fluoranthene	ug/g dry	0.02	0.96 ug/g dry	ND (0.02)	0.28	ND (0.02)
Chrysene	ug/g dry	0.02	9.6 ug/g dry	ND (0.02)	0.60	ND (0.02)
Dibenzo[a,h]anthracene	ug/g dry	0.02	0.1 ug/g dry	ND (0.02)	0.08	ND (0.02)
Fluoranthene	ug/g dry	0.02	9.6 ug/g dry	ND (0.02)	1.48	0.02
Fluorene	ug/g dry	0.02	62 ug/g dry	ND (0.02)	0.15	ND (0.02)
Indeno [1,2,3-cd] pyrene	ug/g dry	0.02	0.76 ug/g dry	ND (0.02)	0.23	ND (0.02)
1-Methylnaphthalene	ug/g dry	0.02	30 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)
2-Methylnaphthalene	ug/g dry	0.02	30 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)
Methylnaphthalene (1&2)	ug/g dry	0.04	30 ug/g dry	ND (0.04)	ND (0.04)	ND (0.04)
Naphthalene	ug/g dry	0.01	9.6 ug/g dry	ND (0.01)	0.02	ND (0.01)
Phenanthrene	ug/g dry	0.02	12 ug/g dry	ND (0.02)	1.39	ND (0.02)
Pyrene	ug/g dry	0.02	96 ug/g dry	ND (0.02)	1.17	0.02

429	Exceeds MECP Table 2
ND (1.0)	Non-detect
N/A	Paramater not analyzed

Table 2B Soil Analytical Test Results
PHCs

Phase II - ESA
158 Cardevco Road, Ottawa
Whelan Truck Repairs c/o PriTec Construction Ltd.

Parameter	Units	MDL	Regulation	Sample			
				BH1-23-GW1	BH2-23-GW1	BH3-23-GW1	DUP
Sample Depth (m)				**2.74-4.28**	**2.51-4.10**	**2.29-3.81**	**2.51-4.0**
Sample Date (m/d/y)			**Reg 153/04 (2011)-Table 2 Potable Groundwater, coarse**	**03/30/2023 09:00 AM**	**03/30/2023 09:00 AM**	**03/30/2023 09:00 AM**	**03/30/2023 09:00 AM**
Hydrocarbons							
F1 PHCs (C6-C10)	ug/L	25	750 ug/L	ND (25)	ND (25)	ND (25)	ND (25)
F2 PHCs (C10-C16)	ug/L	100	150 ug/L	ND (100)	ND (100)	ND (100)	ND (100)
F3 PHCs (C16-C34)	ug/L	100	500 ug/L	ND (100)	ND (100)	ND (100)	ND (100)
F4 PHCs (C34-C50)	ug/L	100	500 ug/L	ND (100)	ND (100)	ND (100)	ND (100)

429	Exceeds MECP Table 2
ND (1.0)	Non-detect
N/A	Paramater not analyzed

Table 2C Soil Analytical Test Results
BTEX

Phase II - ESA
158 Cardevco Road, Ottawa
Whelan Truck Repairs c/o PriTec Construction Ltd.

Parameter	Units	MDL	Regulation	Sample			
				BH1-23-GW1	BH2-23-GW1	BH3-23-GW1	DUP
Sample Depth (m)				**2.74-4.28**	**2.51-4.10**	**2.29-3.81**	**2.51-4.0**
Sample Date (m/d/y)			**Reg 153/04 (2011)-Table 2 Potable Groundwater, coarse**	**03/30/2023**	**03/30/2023**	**03/30/2023**	**03/30/2023**
Volatiles							
Benzene	ug/L	0.5	5 ug/L	ND (0.5)	ND (0.5)	2.4	ND (0.5)
Ethylbenzene	ug/L	0.5	2.4 ug/L	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Toluene	ug/L	0.5	24 ug/L	ND (0.5)	ND (0.5)	10.2	ND (0.5)
m/p-Xylene	ug/L	0.5		ND (0.5)	ND (0.5)	2.6	ND (0.5)
o-Xylene	ug/L	0.5		ND (0.5)	ND (0.5)	0.6	ND (0.5)
Xylenes, total	ug/L	0.5	300 ug/L	ND (0.5)	ND (0.5)	3.2	ND (0.5)

429	Exceeds MECP Table 2
ND (1.0)	Non-detect
N/A	Paramater not analyzed

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Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Sam Berube

Client PO: 57109
Project: PE5996
Custody:

Report Date: 3-Apr-2023
Order Date: 28-Mar-2023

Order #: 2313190

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

Paracel ID	Client ID
2313190-01	BH1-23-SS2
2313190-02	BH1-23-SS4
2313190-03	DUP1-23
2313190-04	BH2-23-AU1
2313190-06	BH3-23-SS4
2313190-07	BH4-23-SS2
2313190-08	BH5-23-SS2

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 57109

Report Date: 03-Apr-2023

Order Date: 28-Mar-2023

Project Description: PE5996

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	30-Mar-23	30-Mar-23
PHC F1	CWS Tier 1 - P&T GC-FID	30-Mar-23	30-Mar-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	29-Mar-23	1-Apr-23
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	31-Mar-23	31-Mar-23
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	29-Mar-23	30-Mar-23
Solids, %	CWS Tier 1 - Gravimetric	29-Mar-23	29-Mar-23

Certificate of Analysis

Report Date: 03-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 28-Mar-2023

Client PO: 57109

Project Description: PE5996

	Client ID:	BH1-23-SS2	BH1-23-SS4	DUP1-23	BH2-23-AU1
	Sample Date:	24-Mar-23 00:00	24-Mar-23 00:00	24-Mar-23 00:00	24-Mar-23 00:00
	Sample ID:	2313190-01	2313190-02	2313190-03	2313190-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	89.1	91.3	87.1	87.2
Metals					
Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	2.4	-	-	-
Barium	1.0 ug/g dry	78.8	-	-	-
Beryllium	0.5 ug/g dry	<0.5	-	-	-
Boron	5.0 ug/g dry	<5.0	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	5.0 ug/g dry	16.0	-	-	-
Cobalt	1.0 ug/g dry	6.1	-	-	-
Copper	5.0 ug/g dry	10.7	-	-	-
Lead	1.0 ug/g dry	12.3	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	5.0 ug/g dry	10.2	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	10.0 ug/g dry	28.8	-	-	-
Zinc	20.0 ug/g dry	33.0	-	-	-
Volatiles					
Benzene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Ethylbenzene	0.05 ug/g dry	-	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	-	<0.05	<0.05	<0.05
m,p-Xylenes	0.05 ug/g dry	-	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	-	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	-	<0.05	<0.05	<0.05
Toluene-d8	Surrogate	-	98.5%	102%	98.9%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	-	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	-	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	-	<8	<8	26
F4 PHCs (C34-C50)	6 ug/g dry	-	<6	<6	29
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	-	-	<0.02

Certificate of Analysis

Report Date: 03-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 28-Mar-2023

Client PO: 57109

Project Description: PE5996

	Client ID:	BH1-23-SS2	BH1-23-SS4	DUP1-23	BH2-23-AU1
	Sample Date:	24-Mar-23 00:00	24-Mar-23 00:00	24-Mar-23 00:00	24-Mar-23 00:00
	Sample ID:	2313190-01	2313190-02	2313190-03	2313190-04
	MDL/Units	Soil	Soil	Soil	Soil
Acenaphthylene	0.02 ug/g dry	-	-	-	<0.02
Anthracene	0.02 ug/g dry	-	-	-	<0.02
Benzo [a] anthracene	0.02 ug/g dry	-	-	-	<0.02
Benzo [a] pyrene	0.02 ug/g dry	-	-	-	<0.02
Benzo [b] fluoranthene	0.02 ug/g dry	-	-	-	<0.02
Benzo [g,h,i] perylene	0.02 ug/g dry	-	-	-	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	-	-	-	<0.02
Chrysene	0.02 ug/g dry	-	-	-	<0.02
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	-	-	<0.02
Fluoranthene	0.02 ug/g dry	-	-	-	<0.02
Fluorene	0.02 ug/g dry	-	-	-	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	-	-	<0.02
1-Methylnaphthalene	0.02 ug/g dry	-	-	-	<0.02
2-Methylnaphthalene	0.02 ug/g dry	-	-	-	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	-	-	-	<0.04
Naphthalene	0.01 ug/g dry	-	-	-	<0.01
Phenanthrene	0.02 ug/g dry	-	-	-	<0.02
Pyrene	0.02 ug/g dry	-	-	-	<0.02
2-Fluorobiphenyl	Surrogate	-	-	-	90.2%
Terphenyl-d14	Surrogate	-	-	-	117%

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 57109

Report Date: 03-Apr-2023

Order Date: 28-Mar-2023

Project Description: PE5996

	Client ID:	BH3-23-SS4	BH4-23-SS2	BH5-23-SS2	-
	Sample Date:	24-Mar-23 00:00	24-Mar-23 00:00	24-Mar-23 00:00	-
	Sample ID:	2313190-06	2313190-07	2313190-08	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	88.3	91.3	89.2	-
Metals					
Antimony	1.0 ug/g dry	-	<1.0	<1.0	-
Arsenic	1.0 ug/g dry	-	1.6	1.8	-
Barium	1.0 ug/g dry	-	96.3	101	-
Beryllium	0.5 ug/g dry	-	<0.5	<0.5	-
Boron	5.0 ug/g dry	-	<5.0	<5.0	-
Cadmium	0.5 ug/g dry	-	<0.5	<0.5	-
Chromium	5.0 ug/g dry	-	18.3	21.9	-
Cobalt	1.0 ug/g dry	-	6.5	7.0	-
Copper	5.0 ug/g dry	-	15.4	16.0	-
Lead	1.0 ug/g dry	-	4.1	6.0	-
Molybdenum	1.0 ug/g dry	-	<1.0	<1.0	-
Nickel	5.0 ug/g dry	-	11.7	13.1	-
Selenium	1.0 ug/g dry	-	<1.0	<1.0	-
Silver	0.3 ug/g dry	-	<0.3	<0.3	-
Thallium	1.0 ug/g dry	-	<1.0	<1.0	-
Uranium	1.0 ug/g dry	-	<1.0	<1.0	-
Vanadium	10.0 ug/g dry	-	31.0	34.7	-
Zinc	20.0 ug/g dry	-	35.2	40.1	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
Toluene-d8	Surrogate	102%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	0.08	<0.02	-

Certificate of Analysis

Report Date: 03-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 28-Mar-2023

Client PO: 57109

Project Description: PE5996

	Client ID:	BH3-23-SS4	BH4-23-SS2	BH5-23-SS2	-
	Sample Date:	24-Mar-23 00:00	24-Mar-23 00:00	24-Mar-23 00:00	-
	Sample ID:	2313190-06	2313190-07	2313190-08	-
	MDL/Units	Soil	Soil	Soil	-
Acenaphthylene	0.02 ug/g dry	-	<0.02	<0.02	-
Anthracene	0.02 ug/g dry	-	0.25	<0.02	-
Benzo [a] anthracene	0.02 ug/g dry	-	0.52	<0.02	-
Benzo [a] pyrene	0.02 ug/g dry	-	0.40	<0.02	-
Benzo [b] fluoranthene	0.02 ug/g dry	-	0.56	<0.02	-
Benzo [g,h,i] perylene	0.02 ug/g dry	-	0.24	<0.02	-
Benzo [k] fluoranthene	0.02 ug/g dry	-	0.28	<0.02	-
Chrysene	0.02 ug/g dry	-	0.60	<0.02	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	0.08	<0.02	-
Fluoranthene	0.02 ug/g dry	-	1.48	0.02	-
Fluorene	0.02 ug/g dry	-	0.15	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	0.23	<0.02	-
1-Methylnaphthalene	0.02 ug/g dry	-	<0.02	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	-	<0.02	<0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	-	<0.04	<0.04	-
Naphthalene	0.01 ug/g dry	-	0.02	<0.01	-
Phenanthrene	0.02 ug/g dry	-	1.39	<0.02	-
Pyrene	0.02 ug/g dry	-	1.17	0.02	-
2-Fluorobiphenyl	Surrogate	-	80.8%	89.9%	-
Terphenyl-d14	Surrogate	-	112%	115%	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
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	*1.00*		*ug/g*		*75.3*	*50-140*			
Surrogate: Terphenyl-d14	*1.39*		*ug/g*		*104*	*50-140*			
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*7.58*		*ug/g*		*94.8*	*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	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	42	8	ug/g	60			34.0	30	QR-04
F4 PHCs (C34-C50)	42	6	ug/g	109			87.8	30	QR-04
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	2.3	1.0	ug/g	2.4			3.9	30	
Barium	78.9	1.0	ug/g	78.8			0.1	30	
Beryllium	ND	0.5	ug/g	ND			NC	30	
Boron	ND	5.0	ug/g	ND			NC	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium	16.0	5.0	ug/g	16.0			0.3	30	
Cobalt	6.6	1.0	ug/g	6.1			7.5	30	
Copper	10.5	5.0	ug/g	10.7			1.7	30	
Lead	11.8	1.0	ug/g	12.3			4.9	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	10.0	5.0	ug/g	10.2			1.6	30	
Selenium	ND	1.0	ug/g	ND			NC	30	
Silver	ND	0.3	ug/g	ND			NC	30	
Thallium	ND	1.0	ug/g	ND			NC	30	
Uranium	ND	1.0	ug/g	ND			NC	30	
Vanadium	29.9	10.0	ug/g	28.8			3.6	30	
Zinc	31.8	20.0	ug/g	33.0			3.8	30	
Physical Characteristics									
% Solids	77.6	0.1	% by Wt.	78.1			0.7	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	ND	0.02	ug/g	ND			NC	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*0.993*		*ug/g*		*70.4*	*50-140*			
Surrogate: Terphenyl-d14	*1.40*		*ug/g*		*98.9*	*50-140*			
Volatiles									
Benzene	ND	0.02	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: Toluene-d8	*8.11*		*ug/g*		*96.3*	*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)	173	7	ug/g	ND	86.7	80-120			
F2 PHCs (C10-C16)	116	4	ug/g	ND	134	60-140			
F3 PHCs (C16-C34)	320	8	ug/g	60	122	60-140			
F4 PHCs (C34-C50)	291	6	ug/g	109	135	60-140			
Metals									
Arsenic	54.2	1.0	ug/g	ND	107	70-130			
Barium	85.1	1.0	ug/g	31.5	107	70-130			
Beryllium	48.2	0.5	ug/g	ND	96.0	70-130			
Boron	44.0	5.0	ug/g	ND	84.7	70-130			
Cadmium	51.2	0.5	ug/g	ND	102	70-130			
Chromium	60.2	5.0	ug/g	6.4	108	70-130			
Cobalt	55.7	1.0	ug/g	2.4	107	70-130			
Copper	55.1	5.0	ug/g	ND	102	70-130			
Lead	53.1	1.0	ug/g	4.9	96.3	70-130			
Molybdenum	52.5	1.0	ug/g	ND	105	70-130			
Nickel	56.6	5.0	ug/g	ND	105	70-130			
Selenium	43.9	1.0	ug/g	ND	87.7	70-130			
Silver	47.4	0.3	ug/g	ND	94.8	70-130			
Thallium	49.9	1.0	ug/g	ND	99.6	70-130			
Uranium	51.4	1.0	ug/g	ND	102	70-130			
Vanadium	65.3	10.0	ug/g	11.5	107	70-130			
Zinc	61.5	20.0	ug/g	ND	96.7	70-130			
Semi-Volatiles									
Acenaphthene	0.193	0.02	ug/g	ND	109	50-140			
Acenaphthylene	0.159	0.02	ug/g	ND	90.0	50-140			
Anthracene	0.152	0.02	ug/g	ND	86.2	50-140			
Benzo [a] anthracene	0.172	0.02	ug/g	ND	97.7	50-140			
Benzo [a] pyrene	0.171	0.02	ug/g	ND	97.1	50-140			
Benzo [b] fluoranthene	0.232	0.02	ug/g	ND	131	50-140			
Benzo [g,h,i] perylene	0.172	0.02	ug/g	ND	97.2	50-140			
Benzo [k] fluoranthene	0.192	0.02	ug/g	ND	109	50-140			
Chrysene	0.179	0.02	ug/g	ND	102	50-140			
Dibenzo [a,h] anthracene	0.196	0.02	ug/g	ND	111	50-140			
Fluoranthene	0.171	0.02	ug/g	ND	96.7	50-140			
Fluorene	0.172	0.02	ug/g	ND	97.7	50-140			
Indeno [1,2,3-cd] pyrene	0.190	0.02	ug/g	ND	108	50-140			
1-Methylnaphthalene	0.154	0.02	ug/g	ND	87.3	50-140			
2-Methylnaphthalene	0.168	0.02	ug/g	ND	95.4	50-140			
Naphthalene	0.167	0.01	ug/g	ND	94.9	50-140			
Phenanthrene	0.148	0.02	ug/g	ND	83.6	50-140			
Pyrene	0.168	0.02	ug/g	ND	95.4	50-140			
Surrogate: 2-Fluorobiphenyl	*1.34*		*ug/g*		*95.3*	*50-140*			
Surrogate: Terphenyl-d14	*1.81*		*ug/g*		*128*	*50-140*			
Volatiles									
Benzene	3.43	0.02	ug/g	ND	85.8	60-130			
Ethylbenzene	3.62	0.05	ug/g	ND	90.5	60-130			
Toluene	4.15	0.05	ug/g	ND	104	60-130			
m,p-Xylenes	7.81	0.05	ug/g	ND	97.6	60-130			

Certificate of Analysis

Report Date: 03-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 28-Mar-2023

Client PO: 57109

Project Description: PE5996

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
o-Xylene	3.82	0.05	ug/g	ND	95.5	60-130			
Surrogate: Toluene-d8	*6.19*		*ug/g*		*77.3*	*50-140*			

Qualifier Notes:

QC Qualifiers :

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

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

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

CCME PHC additional information:

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

PARACEL LABORATORIES LTD.

Paracel ID: 2313190

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

Client Name: Paterson Group Inc.
Contact Name: Samuel Berube
Address: 9 Auriga Drive
Telephone: 613-226-7381

Project Ref: PE5996
Quote #:
PO #: 57109
E-mail: Sberube@patersongroup.ca

Page 1 of 1

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

☐ REG 153/04 ☐ REG 406/19

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

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

	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	BH1-23-SS2	S		1	Mar. 24/23				✓	✓			
2	BH1-23-SS4	S		2			✓						
3	DUP1-23	S		2			✓						
4	BH2-23-AU1	S		2			✓		✓				
5	BH2-23-SS2 (HOLD)	S		2									
6	BH3-23-SS4	S		2			✓		.				
7	BH4-23-SS2	S		1					✓	✓			
8	BH5-23-SS2	S		1					✓	✓			
9													
10													

Required Analysis

Comments: ☆ Please place BH2-23-SS2 on hold

Method of Delivery: PARACEL COURIER

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print):	Date/Time: 28/03/23 1530	Date/Time: Mar 28, 2023 04.10	Date/Time: Mar 28/23 1640
Date/Time:	Temperature: °C	Temperature: 8.5 C	pH Verified: ☐ By:

Chain of Custody (Blank).xlsx

Revision 4.0

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Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Sam Berube

Client PO: 57130
Project: PE5996
Custody:

Report Date: 5-Apr-2023
Order Date: 30-Mar-2023

Order #: 2313380

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

Paracel ID	Client ID
2313380-01	BH1-23-GW1
2313380-02	BH2-23-GW1
2313380-03	BH3-23-GW1
2313380-04	DUP

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 57130

Report Date: 05-Apr-2023

Order Date: 30-Mar-2023

Project Description: PE5996

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	2-Apr-23	2-Apr-23
PHC F1	CWS Tier 1 - P&T GC-FID	31-Mar-23	2-Apr-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	3-Apr-23	4-Apr-23

Certificate of Analysis

Report Date: 05-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 30-Mar-2023

Client PO: 57130

Project Description: PE5996

	Client ID:	BH1-23-GW1	BH2-23-GW1	BH3-23-GW1	DUP
	Sample Date:	30-Mar-23 09:00	30-Mar-23 09:00	30-Mar-23 09:00	30-Mar-23 09:00
	Sample ID:	2313380-01	2313380-02	2313380-03	2313380-04
	MDL/Units	Ground Water	Ground Water	Ground Water	Ground Water
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	2.4	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	10.2	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	2.6	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	0.6	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	3.2	<0.5
Toluene-d8	Surrogate	122%	121%	124%	123%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100

Certificate of Analysis

Report Date: 05-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 30-Mar-2023

Client PO: 57130

Project Description: PE5996

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									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: Toluene-d8	*97.4*		*ug/L*		*122*	*50-140*			

Certificate of Analysis

Report Date: 05-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 30-Mar-2023

Client PO: 57130

Project Description: PE5996

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									
Benzene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: Toluene-d8	*97.8*		*ug/L*		*122*	*50-140*			

Certificate of Analysis

Report Date: 05-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 30-Mar-2023

Client PO: 57130

Project Description: PE5996

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	2050	25	ug/L	ND	102	68-117			
F2 PHCs (C10-C16)	1740	100	ug/L	ND	108	60-140			
F3 PHCs (C16-C34)	4340	100	ug/L	ND	111	60-140			
F4 PHCs (C34-C50)	2580	100	ug/L	ND	104	60-140			
Volatiles									
Benzene	35.3	0.5	ug/L	ND	88.3	60-130			
Ethylbenzene	31.7	0.5	ug/L	ND	79.2	60-130			
Toluene	35.2	0.5	ug/L	ND	88.1	60-130			
m,p-Xylenes	81.5	0.5	ug/L	ND	102	60-130			
o-Xylene	33.2	0.5	ug/L	ND	83.0	60-130			
Surrogate: Toluene-d8	*82.4*		*ug/L*		*103*	*50-140*			

Qualifier Notes:

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

CCME PHC additional information:

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

Paracel ID: 2313380

PARACEL LABORATORIES LTD.

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2313380	

Client Name: Paterson	Project Ref: PE 5996	Page 1 of 1
Contact Name: Sam Berube	Quote #:	Turnaround Time
Address: 9 Auriga Drive	PO #: 57130	☐ 1 day ☐ 3 day
	E-mail: SBerube@patersongroup.ca	☐ 2 day ☑ Regular
Telephone: 613 226 7381		Date Required:

☑ REG 153/04 ☐ REG 406/19

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

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

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

	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	BH1-23-GW1	GW		3	March 30, 2023		X						
2	BH2-23-GW1	↓		↓	↓		↓						
3	BH3-23-GW1												
4	Dup												
5													
6													
7													
8													
9													
10													

Required Analysis

Comments:

Method of Delivery: PARACEL COURIER

Relinquished By (Sign): Bryce	Received By Driver/Depot: A. Stouse	Received at Lab: Sandra Demonias	Verified By: Sandra Demonias
Relinquished By (Print): Bryce Lee	Date/Time: 30/03/23 1505	Date/Time: Mar 30 3:45	Date/Time: Mar 30, 3:54
Date/Time: March 30, 2023	Temperature: °C	Temperature: 5.2	pH Verified: ☐ By:

APPENDIX 2

PE5996-LET.02 – Soil Remediation Summary

PATERSON GROUP

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

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

patersongroup.ca

October 16, 2024
File: PE5996-LET.02

Whelan Truck Repair Inc.
c/o Pri-Tec Construction Ltd.
112 John Cavanaugh Dr,
Carp, Ontario
K0A 1L0

Attention: **Mr. Alden Rattew**

Subject: **Soil Remediation Summary**
Whelan Truck Repair Inc.
158 Cardevco Road
Ottawa, Ontario

Dear Sir,

Further to your request and authorization, Paterson Group (Paterson) monitored a soil remediation excavation at the above-noted site. The remediation was initiated due to the identification of Polycyclic Aromatic Hydrocarbon (PAH) impacted fill material identified during a Phase II Environmental Site Assessment (ESA), dated November 16, 2023, conducted by Paterson.

Background

Paterson was commissioned to delineate the extent of PAH impacted fill material identified in BH4-23 during the 2023 Phase II ESA and to monitor the subsequent remediation excavation. Refer to the attached Drawing PE5996-6 Remediation Plan for the location of BH4-23 and the subsequent remediation area.

The following remediation summary should be read in conjunction with the previously completed Phase II ESA by Paterson.

FILE# D07-12-23-0002 SITE PLAN# 19363

Delineation

Paterson monitored the excavation of 4 test pits by backhoe on August 12, 2024, to a depth of 1.5m. One (1) test pit (TP1-24) was located in the immediate vicinity of BH4-23 and a sample was obtained for Toxicity Characteristic Leaching Procedure (TCLP) analysis on the impacted material prior to disposal at Waste Management of Ottawa.

The 3 remaining test pits were excavated 3m to the northwest, southeast, and northeast of BH4-23 (TP2-24 to TP4-24 respectively) for the purpose of delineating the extent of the impacted fill material. It should be noted a test pit could not be completed to the southwest of BH4-23 due to the presence of the building. A total of 10 samples were obtained from TP2-23 to TP4-24.

All soil samples collected were subjected to a preliminary screening procedure, which included visual screening for colour and evidence of deleterious materials, as well as soil vapour screening with a PID. No odours or staining were noted.

Analytical Test Results

Three (3) samples from TP2-24 to TP4-24 taken at a depth of 1.3m to 1.4m were submitted to Paracel Labs for analytical testing of PAH parameters.

The PAH parameters in the sample from TP4-24 were non-detect and therefore in compliance with the selected MECP Table 7 standards. Concentrations of various PAH parameters were identified in the samples from TP2-24 and TP3-24, however, all were in compliance with the selected MECP Table 7 standards.

Based on the analytical test results, it was concluded that the PAH impacted fill material was not present beyond 3m from BH4-23.

The sample from TP1-24 was submitted to Paracel Labs for TCLP analysis. All parameters were in compliance with MECP Schedule 4 for the disposal of contaminated soil in landfills.

Remediation

Paterson monitored the remediation excavation on September 30, 2024. Ken White Construction served as the excavation contractor and coordinated the licensed hauling contractors to dispose of the impacted material at Waste Management of Ottawa.

An area extending 3m out from BH4-23 in all directions was excavated to a depth of 1.3m, except to the southwest where the excavation was extended as close to the building foundation as safely possible (approximately 0.5m). The total area of the excavation was approximately 30m^2.

Based on the provided weigh scale tickets, a total of approximately 126 mts of impacted material was removed from the subject site.

Conclusion

Paterson monitored the excavation of 4 test pits on August 12, 2024, for the purposes of delineating impacted material identified in BH4-23 as part of a prior Phase II ESA dated November 16, 2023, and for TCLP analysis required for the disposal of impacted material by Waste Management of Ottawa.

Based on the analytical test results, it was concluded that PAH impacted fill material was not present beyond 3m from BH4-23.

Paterson monitored a remediation excavation on September 30, 2024, extending 3m out from BH4-23 in all directions to a depth of 1.3m, except to the southwest where the excavation was extended to approximately 0.5m away from the building foundation.

The total area of the remediation excavation was approximately 30m^2 and an approximate volume of 126 mts of impacted material was removed from site and hauled to Waste Management of Ottawa. Based on our observation and the analytical testing program, it is our opinion that the remediation was effective in removing the previously identified PAH impacted fill. No further work is recommended.

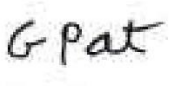
Statement of Limitations

Should any conditions at the site be encountered which differ from those at the test locations, we request that we be notified immediately in order to permit reassessment of our recommendations/conclusions.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than Whelan Truck Repairs Inc., or their agents, without review by this firm for the applicability of our recommendations to the altered use of the report, is prohibited.

Regards,

Paterson Group Inc.



Grant Paterson, Technologist

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

Attachments

- ❑ Waste Transfer Tickets
- ❑ Laboratory Results Compared to MECP Table 7 Commercial
- ❑ Laboratory Results Compared to MECP Schedule 4
- ❑ Certificates of Analysis
- ❑ Drawing No. PE5996-6- Remediation Plan

FILE# D07-12-23-0002 SITE PLAN# 19363

WASTE MANAGEMENT

Ottawa Transfer Station
2301 Carp rd
Carp, ON, K0A1L0

Reprint
Ticket# 232688

Ph: (613) 831-3563

Customer Name KEN WHITE CONSTRUCTION 107162
Ticket Date 10/01/2024
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 158 CARDEVCO

Carrier KEN WHITE
Vehicle# 18
Container
Driver
Check#
Billing# 0000363
Grid

Volume

	Time	Scale	Operator	Inbound		
In	10/01/2024 08:58:47	Scale 1	mmurph14		Gross	39600 kg
Out	10/01/2024 08:58:47		mmurph14		Tare	14580 kg
					Net	25020 kg
					Tons	25.02 t

Comments

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Special Misc RDW-Metric	100	25.02	t				

Total HST
Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:
"Solid Non-Hazardous Waste" means commercial solid waste (including trash, refuse, and garbage) and construction and demolition waste that has the characteristics of Solid Non-Hazardous Waste normally produced by apartments, stores, offices, other commercial buildings and schools, provided that under no circumstances shall Solid Non-Hazardous Waste include water or other material (a) which is in whole or part, asbestos, liquid, radioactive, polychlorinated biphenyl, reactive, ignitable, flammable, corrosive, pathological, or otherwise defined as hazardous or dangerous by federal, provincial or local laws or regulations, (b) requires special handling, or (c) which may present an occupational health hazard to employees, representatives or agents of Waste Management of Canada Corporation; and "Precleared Special Waste" means waste or other materials which is Asbestos or otherwise requires special handling, but only if its composition has been completely disclosed in writing to, and accepted in advance in writing by, Waste Management of Canada Corporation.

Driver`s Signature

WASTE MANAGEMENT

Ottawa Transfer Station
2301 Carp rd
Carp, ON, K0A1L0

Reprint
Ticket# 232696
Ph: (613) 831-3563

Customer Name KEN WHITE CONSTRUCTION 107162
Ticket Date 10/01/2024
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 158 CARDEVCO

Carrier KEN WHITE
Vehicle# 18
Container
Driver
Check#
Billing# 0000363
Grid

Volume

	Time	Scale	Operator	Inbound		
In	10/01/2024 09:30:07	Scale 1	mmurph14		Gross	39350 kg
Out	10/01/2024 09:30:07		mmurph14		Tare	14580 kg
					Net	24770 kg
					Tons	24.77 t

Comments

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Special Misc RDW-Metric	100	24.77	t				

Total HST
Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:
"Solid Non-Hazardous Waste" means commercial solid waste (including trash, refuse, and garbage) and construction and demolition waste that has the characteristics of Solid Non-Hazardous Waste normally produced by apartments, stores, offices, other commercial buildings and schools, provided that under no circumstances shall Solid Non-Hazardous Waste include water or other material (a) which is in whole or part, asbestos, liquid, radioactive, polychlorinated biphenyl, reactive, ignitable, flammable, corrosive, pathological, or otherwise defined as hazardous or dangerous by federal, provincial or local laws or regulations, (b) requires special handling, or (c) which may present an occupational health hazard to employees, representatives or agents of Waste Management of Canada Corporation; and "Precleared Special Waste" means waste or other materials which is Asbestos or otherwise requires special handling, but only if its composition has been completely disclosed in writing to, and accepted in advance in writing by, Waste Management of Canada Corporation.

Driver`s Signature

WASTE MANAGEMENT

Ottawa Transfer Station
2301 Carp rd
Carp, ON, K0A1L0

Reprint
Ticket# 232707
Ph: (613) 831-3563

Customer Name KEN WHITE CONSTRUCTION 107162
Ticket Date 10/01/2024
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 158 CARDEVCO

Carrier KEN WHITE
Vehicle# 18
Container
Driver
Check#
Billing# 0000363
Grid

Volume

	Time	Scale	Operator	Inbound		
In	10/01/2024 09:59:17	Scale 1	mmurph14		Gross	41290 kg
Out	10/01/2024 09:59:17		mmurph14		Tare	14580 kg
					Net	26710 kg
					Tons	26.71 t

Comments

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Special Misc RDW-Metric	100	26.71	t				

Total HST
Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:
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Driver`s Signature

WASTE MANAGEMENT

Ottawa Transfer Station
2301 Carp rd
Carp, ON, K0A1L0

Reprint
Ticket# 232677
Ph: (613) 831-3563

Customer Name KEN WHITE CONSTRUCTION 107162
Ticket Date 10/01/2024
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 158 CARDEVCO

Carrier KEN WHITE
Vehicle# 18
Container
Driver
Check#
Billing# 0000363
Grid

Volume

	Time	Scale	Operator	Inbound	Gross	39510 kg
In	10/01/2024 08:23:21	Scale 1	mmurph14		Tare	14580 kg
Out	10/01/2024 08:42:02	Scale 1	mmurph14		Net	24930 kg
					Tons	24.93 t

Comments

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1 Special Misc RDW-Metric	100	24.93	t				

Total HST
Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:
"Solid Non-Hazardous Waste" means commercial solid waste (including trash, refuse, and garbage) and construction and demolition waste that has the characteristics of Solid Non-Hazardous Waste normally produced by apartments, stores, offices, other commercial buildings and schools, provided that under no circumstances shall Solid Non-Hazardous Waste include water or other material (a) which is in whole or part, asbestos, liquid, radioactive, polychlorinated biphenyl, reactive, ignitable, flammable, corrosive, pathological, or otherwise defined as hazardous or dangerous by federal, provincial or local laws or regulations, (b) requires special handling, or (c) which may present an occupational health hazard to employees, representatives or agents of Waste Management of Canada Corporation; and "Precleared Special Waste" means waste or other materials which is Asbestos or otherwise requires special handling, but only if its composition has been completely disclosed in writing to, and accepted in advance in writing by, Waste Management of Canada Corporation.

Driver`s Signature

WASTE MANAGEMENT

Ottawa Transfer Station
2301 Carp rd
Carp, ON, K0A1L0

Reprint
Ticket# 232726

Ph: (613) 831-3563

Customer Name KEN WHITE CONSTRUCTION 107162
Ticket Date 10/01/2024
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 158 CARDEVCO

Carrier KEN WHITE
Vehicle# 18
Container
Driver
Check#
Billing# 0000363
Grid

Volume

	Time	Scale	Operator	Inbound		
In	10/01/2024 10:36:59	Scale 1	mmurph14		Gross	39250 kg
Out	10/01/2024 10:36:59		mmurph14		Tare	14580 kg
					Net	24670 kg
					Tons	24.67 t

Comments

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Special Misc RDW-Metric	100	24.67	t				

Total HST
Total Ticket

I/WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE IS DEFINED BELOW:
"Solid Non-Hazardous Waste" means commercial solid waste (including trash, refuse, and garbage) and construction and demolition waste that has the characteristics of Solid Non-Hazardous Waste normally produced by apartments, stores, offices, other commercial buildings and schools, provided that under no circumstances shall Solid Non-Hazardous Waste include water or other material (a) which is in whole or part, asbestos, liquid, radioactive, polychlorinated biphenyl, reactive, ignitable, flammable, corrosive, pathological, or otherwise defined as hazardous or dangerous by federal, provincial or local laws or regulations, (b) requires special handling, or (c) which may present an occupational health hazard to employees, representatives or agents of Waste Management of Canada Corporation; and "Precleared Special Waste" means waste or other materials which is Asbestos or otherwise requires special handling, but only if its composition has been completely disclosed in writing to, and accepted in advance in writing by, Waste Management of Canada Corporation.

Driver`s Signature

TABLE 1		**CLIENT: Paterson Group Consulting Engineers (Ottawa)**			
PARACEL LABORATORIES LTD.		**ATTENTION: Mark D'Arcy**			
WORKORDER: 2433150		**PROJECT: PE5996**			
REPORT DATE: 08/20/2024		**REFERENCE: #24-017 Standing Offer 2024**			

Parameter	Units	MDL	Regulation	Sample		
				TP2-24-G3 2433150-01	**TP3-24-G3 2433150-02**	**TP4-24-G3 2433150-03**
Sample Date (m/d/y)			**Reg 153/04 -T7 Ind/Com, coarse**	**08/12/2024 09:00 AM**	**08/12/2024 09:00 AM**	**08/12/2024 09:00 AM**
Physical Characteristics						
% Solids	% by Wt.	0.1		89.2	90.3	93.4
Semi-Volatiles						
Acenaphthene	ug/g dry	0.02	96 ug/g dry	ND (0.02)	0.02	ND (0.02)
Acenaphthylene	ug/g dry	0.02	0.15 ug/g dry	ND (0.02)	0.09	ND (0.02)
Anthracene	ug/g dry	0.02	0.67 ug/g dry	ND (0.02)	0.14	ND (0.02)
Benzo[a]anthracene	ug/g dry	0.02	0.96 ug/g dry	ND (0.02)	0.21	ND (0.02)
Benzo[a]pyrene	ug/g dry	0.02	0.3 ug/g dry	ND (0.02)	0.18	ND (0.02)
Benzo[b]fluoranthene	ug/g dry	0.02	0.96 ug/g dry	ND (0.02)	0.17	ND (0.02)
Benzo[g,h,i]perylene	ug/g dry	0.02	9.6 ug/g dry	ND (0.02)	0.12	ND (0.02)
Benzo[k]fluoranthene	ug/g dry	0.02	0.96 ug/g dry	ND (0.02)	0.09	ND (0.02)
Chrysene	ug/g dry	0.02	9.6 ug/g dry	ND (0.02)	0.20	ND (0.02)
Dibenzo[a,h]anthracene	ug/g dry	0.02	0.1 ug/g dry	ND (0.02)	0.03	ND (0.02)
Fluoranthene	ug/g dry	0.02	9.6 ug/g dry	0.04	0.60	ND (0.02)
Fluorene	ug/g dry	0.02	62 ug/g dry	ND (0.02)	0.04	ND (0.02)
Indeno [1,2,3-cd] pyrene	ug/g dry	0.02	0.76 ug/g dry	ND (0.02)	0.10	ND (0.02)
1-Methylnaphthalene	ug/g dry	0.02	76 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)
2-Methylnaphthalene	ug/g dry	0.02	76 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)
Methylnaphthalene (1&2)	ug/g dry	0.04	76 ug/g dry	ND (0.04)	ND (0.04)	ND (0.04)
Naphthalene	ug/g dry	0.01	9.6 ug/g dry	ND (0.01)	ND (0.01)	ND (0.01)
Phenanthrene	ug/g dry	0.02	12 ug/g dry	0.03	0.40	ND (0.02)
Pyrene	ug/g dry	0.02	96 ug/g dry	0.03	0.49	ND (0.02)

TABLE 1		CLIENT: Paterson Group Consulting Engineers (Ottawa)		
PARACEL LABORATORIES LTD.		ATTENTION: Mark D'Arcy		
WORKORDER: 2433154		PROJECT: PE5996		
REPORT DATE: 08/19/2024		REFERENCE: #24-017 Standing Offer 2024		
Parameter	**Units**	**MDL**	**Regulation**	**Sample**
				TCLP 2433154-01
Sample Date (m/d/y)			**Reg 558 Schedule 4**	**08/12/2024 09:00 AM**
Physical Characteristics				
Flashpoint	°C			>70
% Solids	% by Wt.	0.1		89.0
EPA 1311 - TCLP Leachate Inorganics				
Fluoride	mg/L	0.05	150 mg/L	0.17
Nitrate as N	mg/L	1	1000 mg/L	ND (1)
Nitrite as N	mg/L	1	1000 mg/L	ND (1)
Nitrate + Nitrite as N	mg/L	2	1000 mg/L	ND (2)
Cyanide, free	mg/L	0.02	20 mg/L	ND (0.02)
EPA 1311 - TCLP Leachate Metals				
Arsenic	mg/L	0.05	2.5 mg/L	ND (0.05)
Barium	mg/L	0.05	100 mg/L	0.56
Boron	mg/L	0.10	500 mg/L	ND (0.10)
Cadmium	mg/L	0.01	0.5 mg/L	ND (0.01)
Chromium	mg/L	0.05	5 mg/L	ND (0.05)
Lead	mg/L	0.05	5 mg/L	ND (0.05)
Mercury	mg/L	0.005	0.1 mg/L	ND (0.005)
Selenium	mg/L	0.05	1 mg/L	ND (0.05)
Silver	mg/L	0.05	5 mg/L	ND (0.05)
Uranium	mg/L	0.05	10 mg/L	ND (0.05)
EPA 1311 - TCLP Leachate Volatiles				
Benzene	mg/L	0.005	0.5 mg/L	ND (0.005)
Carbon Tetrachloride	mg/L	0.005	0.5 mg/L	ND (0.005)
Chlorobenzene	mg/L	0.004	8 mg/L	ND (0.004)
Chloroform	mg/L	0.006	10 mg/L	ND (0.006)
1,2-Dichlorobenzene	mg/L	0.004	20 mg/L	ND (0.004)
1,4-Dichlorobenzene	mg/L	0.004	0.5 mg/L	ND (0.004)
1,2-Dichloroethane	mg/L	0.005	0.5 mg/L	ND (0.005)
1,1-Dichloroethylene	mg/L	0.006	1.4 mg/L	ND (0.006)
Methyl Ethyl Ketone (2-Butanone)	mg/L	0.30	200 mg/L	ND (0.30)
Methylene Chloride	mg/L	0.04	5 mg/L	ND (0.04)
Tetrachloroethylene	mg/L	0.005	3 mg/L	ND (0.005)
Trichloroethylene	mg/L	0.004	5 mg/L	ND (0.004)
Vinyl Chloride	mg/L	0.005	0.2 mg/L	ND (0.005)
EPA 1311 - TCLP Leachate Organics				
Benzo[a]pyrene	mg/L	0.0001	0.001 mg/L	ND (0.0001)
General Inorganics				
pH	pH Units	0.05		7.05
Volatiles				
Benzene	ug/g dry	0.02		ND (0.02)
Ethylbenzene	ug/g dry	0.05		ND (0.05)
Toluene	ug/g dry	0.05		ND (0.05)
m/p-Xylene	ug/g dry	0.05		ND (0.05)
o-Xylene	ug/g dry	0.05		ND (0.05)
Xylenes, total	ug/g dry	0.05		ND (0.05)
Hydrocarbons				
F1 PHCs (C6-C10)	ug/g dry	7		ND (7)
F2 PHCs (C10-C16)	ug/g dry	4		ND (4)
F3 PHCs (C16-C34)	ug/g dry	8		ND (8)
F4 PHCs (C34-C50)	ug/g dry	6		ND (6)

PARACEL LABORATORIES LTD.

TRUSTED.
RESPONSIVE.
RELIABLE.

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

Certificate of Analysis

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

Client PO: 60983
Project: PE5996
Custody:

Report Date: 20-Aug-2024
Order Date: 12-Aug-2024

Order #: 2433150

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

Paracel ID	Client ID
2433150-01	TP2-24-G3
2433150-02	TP3-24-G3
2433150-03	TP4-24-G3

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	17-Aug-24	19-Aug-24
Solids, %	CWS Tier 1 - Gravimetric	15-Aug-24	16-Aug-24

Certificate of Analysis

Report Date: 20-Aug-2024

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

Order Date: 12-Aug-2024

Client PO: 60983

Project Description: PE5996

	Client ID:	TP2-24-G3	TP3-24-G3	TP4-24-G3	-		
	Sample Date:	12-Aug-24 09:00	12-Aug-24 09:00	12-Aug-24 09:00	-	-	-
	Sample ID:	2433150-01	2433150-02	2433150-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	89.2	90.3	93.4	-	-	-
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	0.02	<0.02	-	-	-
Acenaphthylene	0.02 ug/g	<0.02	0.09	<0.02	-	-	-
Anthracene	0.02 ug/g	<0.02	0.14	<0.02	-	-	-
Benzo [a] anthracene	0.02 ug/g	<0.02	0.21	<0.02	-	-	-
Benzo [a] pyrene	0.02 ug/g	<0.02	0.18	<0.02	-	-	-
Benzo [b] fluoranthene	0.02 ug/g	<0.02	0.17	<0.02	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	0.12	<0.02	-	-	-
Benzo [k] fluoranthene	0.02 ug/g	<0.02	0.09	<0.02	-	-	-
Chrysene	0.02 ug/g	<0.02	0.20	<0.02	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	0.03	<0.02	-	-	-
Fluoranthene	0.02 ug/g	0.04	0.60	<0.02	-	-	-
Fluorene	0.02 ug/g	<0.02	0.04	<0.02	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	0.10	<0.02	-	-	-
1-Methylnaphthalene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
2-Methylnaphthalene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g	<0.04	<0.04	<0.04	-	-	-
Naphthalene	0.01 ug/g	<0.01	<0.01	<0.01	-	-	-
Phenanthrene	0.02 ug/g	0.03	0.40	<0.02	-	-	-
Pyrene	0.02 ug/g	0.03	0.49	<0.02	-	-	-
2-Fluorobiphenyl	Surrogate	68.1%	62.9%	60.5%	-	-	-
Terphenyl-d14	Surrogate	96.8%	94.4%	85.4%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*0.772*		*%*	*57.9*	*50-140*			
Surrogate: Terphenyl-d14	*1.09*		*%*	*81.4*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Physical Characteristics									
% Solids	93.5	0.1	% by Wt.	93.4			0.1	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	ND	0.02	ug/g	ND			NC	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*1.09*		*%*		*70.2*	*50-140*			
Surrogate: Terphenyl-d14	*1.73*		*%*		*111*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Semi-Volatiles									
Acenaphthene	0.138	0.02	ug/g	ND	70.9	50-140			
Acenaphthylene	0.146	0.02	ug/g	ND	75.0	50-140			
Anthracene	0.133	0.02	ug/g	ND	68.2	50-140			
Benzo [a] anthracene	0.116	0.02	ug/g	ND	59.4	50-140			
Benzo [a] pyrene	0.117	0.02	ug/g	ND	59.9	50-140			
Benzo [b] fluoranthene	0.105	0.02	ug/g	ND	54.1	50-140			
Benzo [g,h,i] perylene	0.109	0.02	ug/g	ND	56.1	50-140			
Benzo [k] fluoranthene	0.108	0.02	ug/g	ND	55.4	50-140			
Chrysene	0.122	0.02	ug/g	ND	62.4	50-140			
Dibenzo [a,h] anthracene	0.104	0.02	ug/g	ND	53.2	50-140			
Fluoranthene	0.144	0.02	ug/g	ND	74.0	50-140			
Fluorene	0.128	0.02	ug/g	ND	65.7	50-140			
Indeno [1,2,3-cd] pyrene	0.098	0.02	ug/g	ND	50.4	50-140			
1-Methylnaphthalene	0.141	0.02	ug/g	ND	72.5	50-140			
2-Methylnaphthalene	0.146	0.02	ug/g	ND	74.9	50-140			
Naphthalene	0.144	0.01	ug/g	ND	74.0	50-140			
Phenanthrene	0.145	0.02	ug/g	ND	74.6	50-140			
Pyrene	0.149	0.02	ug/g	ND	76.2	50-140			
Surrogate: 2-Fluorobiphenyl	*1.04*		*%*		*66.4*	*50-140*			
Surrogate: Terphenyl-d14	*1.28*		*%*		*82.2*	*50-140*			

Qualifier Notes:

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

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

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

PARACEL LABORATORIES LTD.

Paracel ID: 2433150

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2433150	

Client Name: Paterson group	Project Ref: PE 5996	Page __ of __
Contact Name: Mark D'Arcy	Quote #:	**Turnaround Time**
Address: 9 Auriga dr	PO #: 60983	☐ 1 day ☐ 3 day
	E-mail: Mdarcy@patersongroup.ca gpaterson@patersongroup.ca	☐ 2 day ☑ Regular
Telephone: 613-226-7381		Date Required:

☐ REG 153/04 ☑ REG 406/19	Other Regulation	Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)
☐ 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:	

	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	TP2-24-G3	S		1	August 12 2024				✓									
2	~~TP3-24-G3~~ TP3-24-G3	S		1	August 12 2024				✓									
3	~~TP4-24-G3~~ TP4-24-G3	S		1	August 12 2024				✓									
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments: 2nd dash may be absent on jars

Method of Delivery: Paracel Courier

Relinquished By (Sign): GPat	Received at Depot:	Received at Lab: SS	Verified By: SO
Relinquished By (Print): Grant Paterson	Date/Time:	Date/Time: 12 Aug 24 1644	Date/Time: Aug 12, 2024 4:47 PM
Date/Time: AUG 12 2024	Temperature: °C	Temperature: 14.2	pH Verified: ☐ By:

Chain of Custody (Env).xlsx Revision 5.0

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Certificate of Analysis

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

Client PO: 60983
Project: PE5996
Custody:

Report Date: 19-Aug-2024
Order Date: 12-Aug-2024

Order #: 2433154

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

Paracel ID	Client ID
2433154-01	TCLP

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	14-Aug-24	14-Aug-24
Flashpoint	ASTM D93 - Pensky-Martens Closed Cup	14-Aug-24	14-Aug-24
Metals, ICP-MS	TCLP EPA 6020 - Digestion - ICP-MS	16-Aug-24	16-Aug-24
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	16-Aug-24	16-Aug-24
PHC F1	CWS Tier 1 - P&T GC-FID	14-Aug-24	14-Aug-24
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	16-Aug-24	17-Aug-24
REG 558 - Cyanide	TCLP MOE E3015- Auto Colour	16-Aug-24	16-Aug-24
REG 558 - Fluoride	TCLP EPA 340.2 - ISE	16-Aug-24	16-Aug-24
REG 558 - Mercury by CVAA	TCLP EPA 7470A, CVAA	16-Aug-24	16-Aug-24
REG 558 - NO3/NO2	TCLP EPA 300.1 - IC	16-Aug-24	16-Aug-24
REG 558 - PAHs	TCLP EPA 625 - GC-MS	16-Aug-24	16-Aug-24
REG 558 - VOCs	TCLP ZHE EPA 624 - P&T GC-MS	19-Aug-24	19-Aug-24
Solids, %	CWS Tier 1 - Gravimetric	15-Aug-24	16-Aug-24

	Client ID:	TCLP	-	-	-	-	-
	Sample Date:	12-Aug-24 09:00	-	-	-		
	Sample ID:	2433154-01	-	-	-		
	Matrix:	Soil	-	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	89.0	-	-	-	-	-
Flashpoint	°C	>70	-	-	-	-	-
EPA 1311 - TCLP Leachate Inorganics							
Fluoride	0.05 mg/L	0.17	-	-	-	-	-
Nitrate as N	1 mg/L	<1	-	-	-	-	-
Nitrite as N	1 mg/L	<1	-	-	-	-	-
Nitrate + Nitrite as N	2 mg/L	<2	-	-	-	-	-
Cyanide, free	0.02 mg/L	<0.02	-	-	-	-	-
EPA 1311 - TCLP Leachate Metals							
Arsenic	0.05 mg/L	<0.05	-	-	-	-	-
Barium	0.05 mg/L	0.56	-	-	-	-	-
Boron	0.10 mg/L	<0.10	-	-	-	-	-
Cadmium	0.01 mg/L	<0.01	-	-	-	-	-
Chromium	0.05 mg/L	<0.05	-	-	-	-	-
Lead	0.05 mg/L	<0.05	-	-	-	-	-
Mercury	0.005 mg/L	<0.005	-	-	-	-	-
Selenium	0.05 mg/L	<0.05	-	-	-	-	-
Silver	0.05 mg/L	<0.05	-	-	-	-	-
Uranium	0.05 mg/L	<0.05	-	-	-	-	-
EPA 1311 - TCLP Leachate Volatiles							
Benzene	0.005 mg/L	<0.005	-	-	-	-	-
Carbon Tetrachloride	0.005 mg/L	<0.005	-	-	-	-	-
Chlorobenzene	0.004 mg/L	<0.004	-	-	-	-	-
Chloroform	0.006 mg/L	<0.006	-	-	-	-	-
1,2-Dichlorobenzene	0.004 mg/L	<0.004	-	-	-	-	-

	Client ID:	TCLP	-	-	-	-	-
	Sample Date:	12-Aug-24 09:00	-	-	-		
	Sample ID:	2433154-01	-	-	-		
	Matrix:	Soil	-	-	-		
	MDL/Units						
EPA 1311 - TCLP Leachate Volatiles							
1,4-Dichlorobenzene	0.004 mg/L	<0.004	-	-	-	-	-
1,2-Dichloroethane	0.005 mg/L	<0.005	-	-	-	-	-
1,1-Dichloroethylene	0.006 mg/L	<0.006	-	-	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.30 mg/L	<0.30	-	-	-	-	-
Methylene Chloride	0.04 mg/L	<0.04	-	-	-	-	-
Tetrachloroethylene	0.005 mg/L	<0.005	-	-	-	-	-
Trichloroethylene	0.004 mg/L	<0.004	-	-	-	-	-
Vinyl chloride	0.005 mg/L	<0.005	-	-	-	-	-
Dibromofluoromethane	Surrogate	102%	-	-	-	-	-
4-Bromofluorobenzene	Surrogate	104%	-	-	-	-	-
Toluene-d8	Surrogate	104%	-	-	-	-	-
EPA 1311 - TCLP Leachate Organics							
Benzo [a] pyrene	0.0001 mg/L	<0.0001	-	-	-	-	-
Terphenyl-d14	Surrogate	92.3%	-	-	-	-	-
General Inorganics							
pH	0.05 pH Units	7.05	-	-	-	-	-
Volatiles							
Benzene	0.02 ug/g	<0.02	-	-	-	-	-
Ethylbenzene	0.05 ug/g	<0.05	-	-	-	-	-
Toluene	0.05 ug/g	<0.05	-	-	-	-	-
m,p-Xylenes	0.05 ug/g	<0.05	-	-	-	-	-
o-Xylene	0.05 ug/g	<0.05	-	-	-	-	-
Xylenes, total	0.05 ug/g	<0.05	-	-	-	-	-
Toluene-d8	Surrogate	111%	-	-	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	-	-	-	-	-

	Client ID:	TCLP	-	-	-		
	Sample Date:	12-Aug-24 09:00	-	-	-	-	-
	Sample ID:	2433154-01	-	-	-		
	Matrix:	Soil	-	-	-		
	MDL/Units						
Hydrocarbons							
F2 PHCs (C10-C16)	4 ug/g	<4	-	-	-	-	-
F3 PHCs (C16-C34)	8 ug/g	<8	-	-	-	-	-
F4 PHCs (C34-C50)	6 ug/g	<6	-	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics								
Fluoride	ND	0.05	mg/L					
Nitrate as N	ND	1	mg/L					
Nitrite as N	ND	1	mg/L					
Nitrate + Nitrite as N	ND	2	mg/L					
Cyanide, free	ND	0.02	mg/L					
EPA 1311 - TCLP Leachate Metals								
Arsenic	ND	0.05	mg/L					
Barium	ND	0.05	mg/L					
Boron	ND	0.10	mg/L					
Cadmium	ND	0.01	mg/L					
Chromium	ND	0.05	mg/L					
Lead	ND	0.05	mg/L					
Mercury	ND	0.005	mg/L					
Selenium	ND	0.05	mg/L					
Silver	ND	0.05	mg/L					
Uranium	ND	0.05	mg/L					
EPA 1311 - TCLP Leachate Organics								
Benzo [a] pyrene	ND	0.0001	mg/L					
Surrogate: Terphenyl-d14	*0.19*		*%*	*95.1*	*37-156*			
EPA 1311 - TCLP Leachate Volatiles								
Benzene	ND	0.005	mg/L					
Carbon Tetrachloride	ND	0.005	mg/L					
Chlorobenzene	ND	0.004	mg/L					
Chloroform	ND	0.006	mg/L					
1,2-Dichlorobenzene	ND	0.004	mg/L					
1,4-Dichlorobenzene	ND	0.004	mg/L					
1,2-Dichloroethane	ND	0.005	mg/L					
1,1-Dichloroethylene	ND	0.006	mg/L					
Methyl Ethyl Ketone (2-Butanone)	ND	0.30	mg/L					
Methylene Chloride	ND	0.04	mg/L					
Tetrachloroethylene	ND	0.005	mg/L					
Trichloroethylene	ND	0.004	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Vinyl chloride	ND	0.005	mg/L					
Surrogate: 4-Bromofluorobenzene	*0.0836*		*%*	*104*	*83-134*			
Surrogate: Dibromofluoromethane	*0.0820*		*%*	*102*	*78-124*			
Surrogate: Toluene-d8	*0.0841*		*%*	*105*	*76-118*			
Hydrocarbons								
F1 PHCs (C6-C10)	ND	7	ug/g					
F2 PHCs (C10-C16)	ND	4	ug/g					
F3 PHCs (C16-C34)	ND	8	ug/g					
F4 PHCs (C34-C50)	ND	6	ug/g					
Volatiles								
Benzene	ND	0.02	ug/g					
Ethylbenzene	ND	0.05	ug/g					
Toluene	ND	0.05	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
Xylenes, total	ND	0.05	ug/g					
Surrogate: Toluene-d8	*7.92*		*%*	*99.0*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Fluoride	0.13	0.05	mg/L	0.13			0.4	20	
Nitrate as N	ND	1	mg/L	ND			NC	20	
Nitrite as N	ND	1	mg/L	ND			NC	20	
Cyanide, free	ND	0.02	mg/L	ND			NC	20	
EPA 1311 - TCLP Leachate Metals									
Arsenic	ND	0.05	mg/L	ND			NC	29	
Barium	0.907	0.05	mg/L	0.773			15.9	34	
Boron	ND	0.10	mg/L	ND			NC	33	
Cadmium	ND	0.01	mg/L	ND			NC	33	
Chromium	ND	0.05	mg/L	ND			NC	32	
Lead	ND	0.05	mg/L	ND			NC	32	
Mercury	ND	0.005	mg/L	ND			NC	30	
Selenium	ND	0.05	mg/L	ND			NC	28	
Silver	ND	0.05	mg/L	ND			NC	28	
Uranium	ND	0.05	mg/L	ND			NC	27	
EPA 1311 - TCLP Leachate Volatiles									
Benzene	ND	0.005	mg/L	ND			NC	25	
Carbon Tetrachloride	ND	0.005	mg/L	ND			NC	25	
Chlorobenzene	ND	0.004	mg/L	ND			NC	25	
Chloroform	ND	0.006	mg/L	ND			NC	25	
1,2-Dichlorobenzene	ND	0.004	mg/L	ND			NC	25	
1,4-Dichlorobenzene	ND	0.004	mg/L	ND			NC	25	
1,2-Dichloroethane	ND	0.005	mg/L	ND			NC	25	
1,1-Dichloroethylene	ND	0.006	mg/L	ND			NC	25	
Methyl Ethyl Ketone (2-Butanone)	ND	0.30	mg/L	ND			NC	25	
Methylene Chloride	ND	0.04	mg/L	ND			NC	25	
Tetrachloroethylene	ND	0.005	mg/L	ND			NC	25	
Trichloroethylene	ND	0.004	mg/L	ND			NC	25	
Vinyl chloride	ND	0.005	mg/L	ND			NC	25	
Surrogate: 4-Bromofluorobenzene	*0.0853*		*%*		*107*	*83-134*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Surrogate: Dibromofluoromethane	*0.0799*		*%*		*99.9*	*78-124*			
Surrogate: Toluene-d8	*0.0845*		*%*		*106*	*76-118*			
General Inorganics									
pH	6.40	0.05	pH Units	6.36			0.6	2.3	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	36	8	ug/g	35			4.0	30	
F4 PHCs (C34-C50)	90	6	ug/g	84			6.7	30	
Physical Characteristics									
% Solids	93.5	0.1	% by Wt.	93.4			0.1	25	
Volatiles									
Benzene	ND	0.02	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: Toluene-d8	*11.9*		*%*		*115*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Fluoride	0.62	0.05	mg/L	0.13	97.7	70-130			
Nitrate as N	9	1	mg/L	ND	91.8	81-112			
Nitrite as N	9	1	mg/L	ND	90.5	76-107			
Cyanide, free	0.038	0.02	mg/L	ND	76.7	52-148			
EPA 1311 - TCLP Leachate Metals									
Arsenic	50.6	0.05	mg/L	0.114	101	83-119			
Barium	147	0.05	mg/L	77.3	140	80-120			QM-07
Boron	50.2	0.10	mg/L	2.45	95.6	71-128			
Cadmium	52.7	0.01	mg/L	0.010	105	78-119			
Chromium	61.3	0.05	mg/L	0.178	122	80-124			
Lead	52.4	0.05	mg/L	0.063	105	77-126			
Mercury	0.0291	0.005	mg/L	ND	97.0	70-130			
Selenium	44.9	0.05	mg/L	0.332	89.2	75-125			
Silver	54.0	0.05	mg/L	ND	108	70-128			
Uranium	48.6	0.05	mg/L	0.138	97.0	70-131			
EPA 1311 - TCLP Leachate Organics									
Benzo [a] pyrene	0.0366	0.0001	mg/L	ND	73.1	39-123			
Surrogate: Terphenyl-d14	*0.20*		*%*		*98.0*	*37-156*			
EPA 1311 - TCLP Leachate Volatiles									
Benzene	0.044	0.005	mg/L	ND	111	55-141			
Carbon Tetrachloride	0.040	0.005	mg/L	ND	100	49-149			
Chlorobenzene	0.045	0.004	mg/L	ND	113	64-137			
Chloroform	0.043	0.006	mg/L	ND	108	58-138			
1,2-Dichlorobenzene	0.040	0.004	mg/L	ND	99.6	60-150			
1,4-Dichlorobenzene	0.041	0.004	mg/L	ND	102	63-132			
1,2-Dichloroethane	0.046	0.005	mg/L	ND	114	50-140			
1,1-Dichloroethylene	0.041	0.006	mg/L	ND	102	43-153			
Methyl Ethyl Ketone (2-Butanone)	0.111	0.30	mg/L	ND	111	26-153			
Methylene Chloride	0.047	0.04	mg/L	ND	117	58-149			
Tetrachloroethylene	0.038	0.005	mg/L	ND	94.7	51-145			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Trichloroethylene	0.038	0.004	mg/L	ND	94.5	52-135			
Vinyl chloride	0.035	0.005	mg/L	ND	88.0	31-159			
Surrogate: 4-Bromofluorobenzene	*0.0924*		*%*		*115*	*83-134*			
Surrogate: Dibromofluoromethane	*0.0818*		*%*		*102*	*78-124*			
Surrogate: Toluene-d8	*0.0794*		*%*		*99.3*	*76-118*			
Hydrocarbons									
F1 PHCs (C6-C10)	187	7	ug/g	ND	93.4	85-115			
F2 PHCs (C10-C16)	102	4	ug/g	ND	88.0	60-140			
F3 PHCs (C16-C34)	297	8	ug/g	35	92.2	60-140			
F4 PHCs (C34-C50)	212	6	ug/g	84	70.8	60-140			
Volatiles									
Benzene	3.65	0.02	ug/g	ND	91.3	60-130			
Ethylbenzene	3.59	0.05	ug/g	ND	89.9	60-130			
Toluene	3.41	0.05	ug/g	ND	85.2	60-130			
m,p-Xylenes	7.16	0.05	ug/g	ND	89.5	60-130			
o-Xylene	3.63	0.05	ug/g	ND	90.7	60-130			
Surrogate: Toluene-d8	*7.84*		*%*		*98.0*	*50-140*			

Qualifier Notes:

Sample Qualifiers :

QC Qualifiers:

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

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

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

CCME PHC additional information:

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

- F1 range corrected for BTEX.

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

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

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

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

PARACEL LABORATORIES LTD.

Paracel ID: 2433154

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o K1G 4J8
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bs.com

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

Client Name: Paterson	Project Ref: PE5996
Contact Name: Mark D'Arcy	Quote #:
Address: 9 Auriga	PO #: 60983
Telephone: 613 226 7381	E-mail: mdarcy@patersongroup.ca, gpaterson@patersongroup.ca

Page __ of __

Turnaround Time

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

☒ REG 153/04 ☐ REG 406/19

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

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

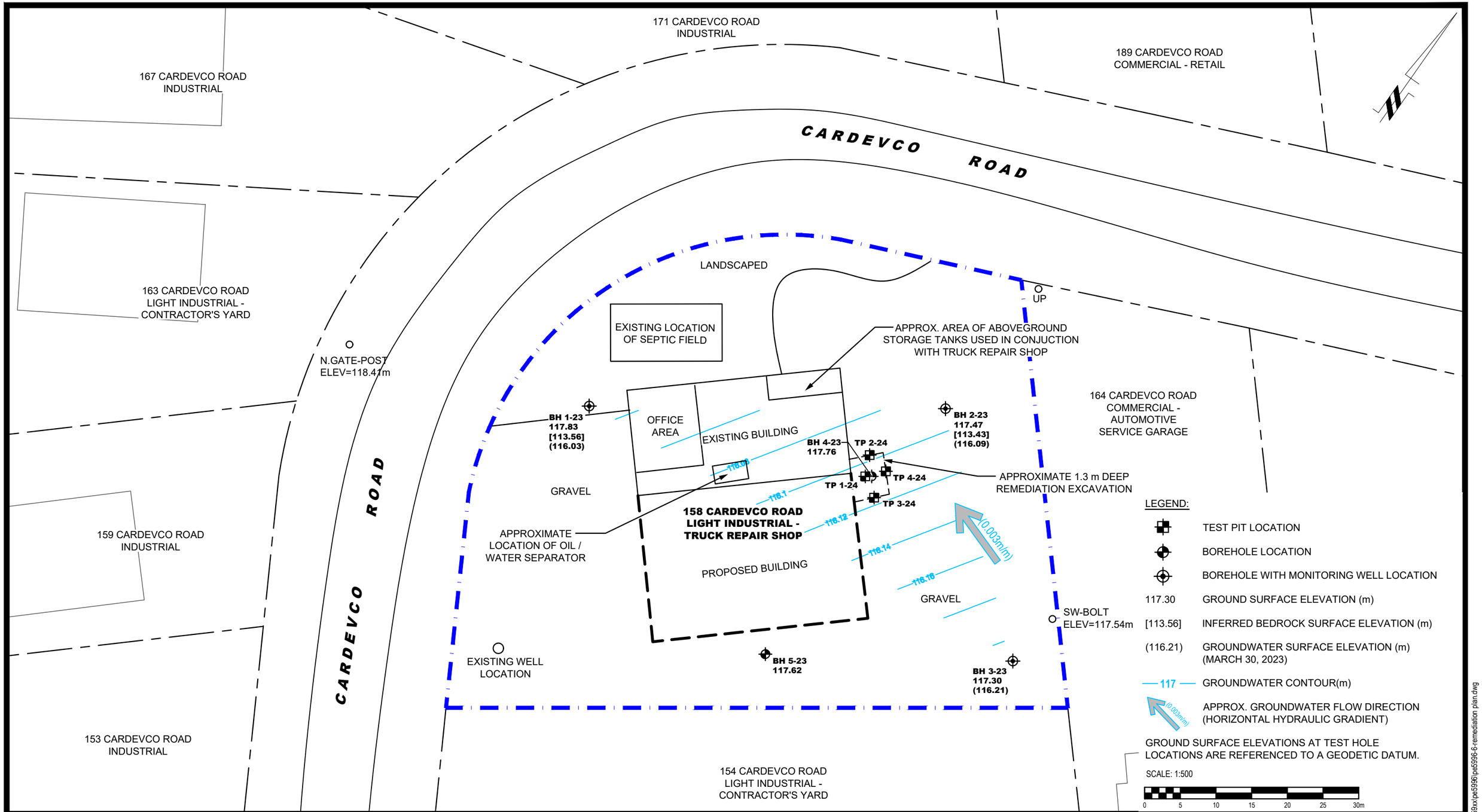
Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	Flash Point	PAH Leach	Metals + inorganics Leach	pH	VOCs Leach
1	TCLP	S		4	Aug 12		X							X	X	X	X	X
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign): G Pat	Received By Driver/Depot:	Received at Lab: SS	Verified By: SS
Relinquished By (Print): Grant Paterson	Date/Time:	Date/Time: 12 Aug 24 1642	Date/Time: 12 Aug 24 1643
Date/Time: Aug 12 2024	Temperature: °C	Temperature: 14.2	pH Verified: ☐ By:



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

NO.	REVISIONS	DATE	INITIAL

PRITEC CONSTRUCTION LTD.

SOIL REMEDIATION
158 CARDEVCO ROAD

OTTAWA, **ONTARIO**

Title:

REMEDIATION PLAN

Scale: 1:500	**Date:** 10/2024
Drawn by: YA	**Report No.:** PE5996-LET.02
Checked by: GP	**Dwg. No.:** PE5996-6
Approved by: MSD	**Revision No.:**

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11x17

FILE# D07-12-23-0002 SITE PLAN# 19363