PATERSON GROUP

Phase II Environmental Site Assessment

3252 Navan Road and Spring Valley Phase 5

Ottawa, Ontario

Prepared for Claridge Homes

Report: PE4588-5
September 26, 2025

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EXECUTIVE SUMMARY

Paterson Group was retained by Claridge Homes to carry out a Phase II – Environmental Site Assessment (Phase II ESA) for the property addressed 3252 Navan Road, and a contiguous unaddressed parcel referred to as Spring Valley Phase 5, in the City of Ottawa, Ontario (Phase II Property). The purpose of the Phase II ESA was to address potentially contaminating activities (PCAs) that were identified during the Phase I ESA and were considered to result in areas of potential environmental concern (APECs) on the Phase II Property.

The subsurface investigations for this assessment were conducted between May 16, 2019, and June 3rd, 2025, and consisted of drilling 17 boreholes (BH1 to BH8, BH10 to BH13, and BH1-24 to BH5-24) and excavating 6 test pits (TP1-24 to TP6-24) across the Phase II Property. The boreholes were advanced to depths ranging from 1.83 to 11.28 m below the ground surface (mbgs) and terminated within the overburden. Upon completion, 14 boreholes were instrumented with groundwater monitoring wells in order to access the groundwater table. Test pits were advanced to depths ranging from 2.5 to 2.7 m, and terminated within the overburden.

The soil profile generally consists of between 1.37 and 6.86 m of fill, consisting of silty sand, gravel, and some clay. Crushed stone was identified in the fill material within BH1, and brick debris was identified in the fill within BH5 and BH6. The fill material was underlain by native silty clay extending to at least 11.28 m (maximum depth investigated), with a shallow seem of grey silty sand identified within BH8 extending to 0.91 m.

A total of 31 soil samples were submitted for laboratory analysis of BTEX, PHCs, VOCs, metals, including hydride forming metals (As, Sb, Se), Mercury, Cr(VI) and/or PAHs, parameters. Previous soil samples submitted for laboratory analysis as part of previous investigations also compared to current standards and presented in the drawings detailed below.

Based on the analytical results, soil on the Phase II Property is contaminated with VOCs in one location (BH7). Elevated levels of cobalt and vanadium were identified on the Phase II Property and beyond. These exceedances were identified within the native silty clay deposits across the Phase II Property and are considered to be the result of geologic processes and not anthropogenic sources, and are therefore not considered to be contaminants.

A total of 32 groundwater samples were submitted for laboratory analysis of BTEX, PHCs, VOCs, metals, mercury, Cr(VI), PAHs, chloride, and/or cyanide parameters. Three groundwater samples analyzed in 2010 were also compared to current standards.

Based on the analytical results, groundwater on the Phase II Property is contaminated with metals and VOC parameters. Parameter concentrations above the MECP Table 2 Residential Fine-Grained standards for these method groups were identified at GP/MW3, BH1, BH5 and BH6.

Recommendations

Impacted groundwater was identified in BH1, however with the additional investigative work, the groundwater appears to have been horizontally and vertically delineated. The impacted soil in BH7 requires further delineation. Impacted groundwater as a result of metals in GP/MW3, BH5 and BH6 should be investigated further. It is recommended that these wells be retested prior to any delineation program to confirm these concentrations are still present above the site condition standard.

Following the closure of the existing site operations additional testing will be required to sufficiently investigate the fill remaining on site.

Monitoring Wells

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

1.0 INTRODUCTION

At the request of Claridge Homes, Paterson Group (Paterson) carried out a Phase II – Environmental Site Assessment (Phase II ESA) for 3252 Navan Road and an adjacent unaddressed parcel referred to as Spring Valley Phase 5, in the City of Ottawa, Ontario (Phase II Property).

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

1.1 Site Description

Address:	3252 Navan Road, and unaddressed parcel, Ottawa, Ontario.
Location:	The Phase II Property is located on the south side of Navan Road, east of Spring Valley Drive. The Phase I Property is shown on Figure 1 - Key Plan following the body of this report.
Latitude and Longitude:	45° 25' 34" N, 75° 30' 31" W
Configuration:	Irregular.
Area:	12.7 ha (approximate)
Zoning:	DR – Development Reserved Zone
Current Use:	The Phase II Property currently consists of undeveloped land being used as a construction staging area for adjacent development. The property use as defined by O.Reg. 153/04 is Commercial Use, based on the properties most recent use.
Services:	The Phase II Property is located in an area of mixed municipal and private services.

1.2 Property Ownership

The Phase II Property is currently owned by Claridge. Paterson was retained to complete this Phase II ESA by Ms. Victoria St. Pierre of Claridge Homes. Ms. St. Pierre can be contacted via her mailing address at 210 Gladstone Avenue, Ottawa, Ontario, K2P 0Y6.

1.3 Applicable Site Condition Standard

The site condition standards for the Phase II 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 Ministry of the Environment, Conservation and Parks (MECP), and dated April 15, 2011. The selected MECP standards are based on the following considerations:

- ❒ Full-depth conditions;
- ❒ Fine-grained soil conditions;
- ❒ Potable groundwater conditions;
- ❒ Residential land use.

A grain-size analysis was completed in 2024 for sample BH2-24-SS5, which indicated a medium to fine textured soil (90.9% passing 0.075 mm sieve). As the borehole logs indicate the majority of the soil encountered on the Phase II Property consists of similar fine-grained soils (clay and silt), fine-grained soil standards were selected for the site condition standards.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

The Phase II Study Area is residential to the north and west, with a landfill to the east and Mer Bleue conservation area to the south. The regional topography generally slopes down towards the south towards Mer Bleue conservation area. Site drainage consists primarily of infiltration and runoff to a ditch along the eastern boundary of the site.

2.2 Previous Investigations

A Phase I ESA was completed by Paterson Group in September 2025 for the current Phase II Property. Previous Phase I and II ESA reports have been

prepared for parcels including portions of the Phase II Property, which are discussed in detail in the Phase I ESA report.

Based on the findings of the historical research, the five potential environmental concerns identified to result in APECs on the Phase I Property as well as associated Contaminants of Potential Concern (CPCs) are presented in Table 1.

Table of 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 Fill Material of Unknown Quality	The central to northern portion of the Phase I Property	PCA 30 – Importation of Fill Material of Unknown Quality	On-site	BTEX PHCs Metals As, Se, Sb PAHs	Soil
APEC 2 Former Aboveground Storage Tank	The northern portion of the Phase I Property	PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX PHCs VOCs	Soil and Groundwater
APEC 3 Former Aboveground Storage Tank	The northern portion of the Phase I Property	PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX PHCs VOCs	Soil and Groundwater
APEC 4 Potential Impacts from Navan Road Landfill to the East	Eastern portion of the Phase I Property	PCA 58 – Waste Disposal and Waste Management, including landfilling	Off-site	BTEX PHCs VOCs Metals As, Se, Sb Mercury Cr(VI) PAHs	Soil
				BTEX PHCs VOCs Metals As, Se, Sb Mercury Cr(VI) Chloride Cyanide	Groundwater

Table of 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 5 Potential Impacts from Fill Material of Unknown Quality	The central to northern portion of the Phase I Property	PCA 30 – Importation of Fill Material of Unknown Quality	On-site	BTEX PHCs Metals As, Se, Sb Mercury Cr(VI) PAHs	Soil

The information contained in these past investigations have been incorporated into the current assessment.

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The subsurface investigation was carried out in four phases. The first phase was completed on May 16, 17 and 22, 2019 in conjunction with a Geotechnical Investigation. The field program consisted of drilling nine boreholes, eight of which were situated on the current Phase II Property (BH1 to BH8), and all of which were instrumented with groundwater monitoring wells. BH9 was situated off-site to the south of the Phase II Property, within the buffer zone for development, and is not considered as part of this assessment. Boreholes were drilled to depths ranging from 1.83 to 10.67 m below the existing grade.

The second phase was completed on September 5, 2019, and consisted of drilling four additional boreholes (BH 10 to BH13) situated on the Phase II Property, all of which were instrumented with groundwater monitoring wells. Boreholes were drilled to depths ranging from 5.18 to 11.28 m below the existing grade.

The third phase was completed in January 11th, 2024 and consisted of five additional boreholes (BH1-24 to BH5-24) Phase II Property of which two (BH4-24 and BH5-24) were instrumented with groundwater monitoring wells. Boreholes were drilled to depths ranging from 2.90 to 5.94 m below the existing grade.

The fourth phase was completed on June 3, 2024, and consisted of six test pits (TP1-24 to TP6-24) situated on the Phase II Property. Test pits were excavated to depths ranging from 2.5 to 2.7 m below the existing grade.

Bedrock surface was not encountered in any of the borehole locations. During the current field sampling program, groundwater was measured at depths ranging from 2.47 m to 3.63 m below the existing ground surface.

3.2 Media Investigated

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

The Contaminants of Potential Concern (CPCs) with respect to the soil and groundwater beneath the Phase II Property include the following:

Soil

- Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX);
- Petroleum Hydrocarbons, Fractions F_1 to F_4 (PHCs);
- Metals;
- Hydride forming metals (As, Se, Sb);
- Mercury (Hg);
- Hexavalent Chromium (Cr(VI));
- Volatile Organic Compounds (VOCs);
- Polycyclic Aromatic Hydrocarbons (PAHs);

Groundwater

- Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX);
- Petroleum Hydrocarbons, Fractions F_1 to F_4 (PHCs);
- Metals;
- Hydride forming metals (As, Se, Sb);
- Mercury (Hg);
- Hexavalent Chromium (Cr(VI));

- ❒ Volatile Organic Compounds (VOCs);
- ❒ Chloride;
- ❒ Cyanide.

In addition to the identified CPCs, leachate indicator parameters were analysed as part of the most recently completed Phase II ESA.

3.3 Phase I ESA Conceptual Site Model

Geological and Hydrogeological Setting

The Geological Survey of Canada website on the Urban Geology of the National Capital Area was consulted as part of this assessment. Based on the information from NRCAN, bedrock in the area of the site consists of shale, limestone, dolostone and siltstone of the Billings Formation. Based on the maps, both the thickness and composition of the overburden vary across the site. The northern portion of the Phase I Property consists of granular glaciomarine sediments with an overburden of approximately 50 m.

The central portion of the Phase I Property consists of colluvial deposits, and the southern portion of the Phase I Property consists of fine-grained glaciomarine sediments with a drift thickness of approximately 30 m.

This information is generally consistent with previous Phase II ESA and geotechnical investigations.

Water Bodies

The nearest body of water is the Mer Bleue Bog located 100 m south of the Phase I Property.

Areas of Natural Significance

The Mer Bleue conservation area lies 100 m south of the Phase II Property.

Drinking Water Wells

Based on the Phase I Property setting, potable drinking water wells are anticipated to remain in use within the Phase I Study Area.

Existing Buildings and Structures

One two-storey construction site office is situated on the northern portion of the Phase I Property. The building has a concrete slab-on-grade foundation, and the exterior is finished with vinyl siding and a sloped shingled roof. The building was constructed in approximately 1945 and was previously heated with propane gas.

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

Current and Future Property Use

The Phase II Property consists of Commercial Use land based on it's most recent use in the north, and Agricultural or Other Use land in the southwest.

Based on our current understanding, the Phase II Property will be redeveloped with residential dwellings. As the property is proposed to be developed for residential use, a record of site condition (RSC) will need to be filed with the MECP for portion(s) of the Phase II Property that have been used for less sensitive land uses (commercial use).

Neighbouring Land Use

Neighbouring land use in the Phase I Study Area is primarily residential to the north (across Navan Road) and west, with Navan Landfill to the east and Agricultural Use land, a former rail line, and the Mer Bleue conservation area to the south.

Current land use is depicted on Drawing PE4588-2 – Surrounding Land Use Plan, in the Figures section of this report.

Potentially Contaminating Activities and Areas of Potential Environmental Concern

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

APEC 1 (PCA 1 on Drawing PE4588-1, Item 30 "Importation of Fill Material of Unknown Quality")

Based on a review of aerial photographs, as well as past investigations, fill material of unknown quality is present across the central to northern portion of the Phase I Property, the origin and quality of which is unknown. The presence of this fill

material is considered to represent an APEC potentially impacting soil on the Phase I Property.

APEC 1 is considered to extend across the central to northern portions of the Phase I Property.

APEC 2 (PCA 2 on Drawing PE4588-1, Item 28 "Former Aboveground Storage Tank")

This APEC is related to the former diesel aboveground storage tank present on the Phase I Property for refuelling of vehicles and equipment. The presence of this former AST is considered to represent an APEC potentially impacting soil and groundwater on the Phase I Property.

APEC 2 is situated in the northern portion of the Phase I Property.

APEC 3 (PCA 3 on Drawing PE4588-1, Item 28 "Former Aboveground Storage Tank")

This APEC is related to the location of two former diesel aboveground storage tanks (clear and colored diesel) present on the Phase I Property for refuelling of vehicles and equipment. The presence of this former AST location is considered to represent an APEC potentially impacting soil and groundwater on the Phase I Property.

APEC 2 is situated in the northern portion of the Phase I Property.

APEC 4 (PCA 4 on Drawing PE4588-1, Item 58 "Potential Impacts from Navan Road Landfill to the East")

This APEC is related to the landfill situated east of Phase I Property. This off-site activity is considered to represent an APEC potentially impacting soil and groundwater on the Phase I Property.

APEC 4 is situated along the southeast to east portion of the Phase I Property.

APEC 5 (PCA 5 on Drawing PE4588-1, Item 30 "Potential Impacts from Fill Material of Unknown Quality")

Based on a review of aerial photographs, as well as past investigations, fill material of unknown quality is present in the western portion of the Phase I Property, the origin and quality of which is unknown. The presence of this fill material is

considered to represent an APEC potentially impacting soil on the Phase I Property.

APEC 5 is considered to be present in the western portion of the Phase I Property.

APEC 5 is situated in the northeastern and northwestern portions of the Phase I Property.

Contaminants of Potential Concern

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

Soil

- ❒ Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX);
- ❒ Petroleum Hydrocarbons, Fractions F_1 to F_4 (PHCs);
- ❒ Metals;
- ❒ Hydride forming metals (As, Se, Sb);
- ❒ Mercury (Hg);
- ❒ Hexavalent Chromium (Cr(VI));
- ❒ Volatile Organic Compounds (VOCs);
- ❒ Polycyclic Aromatic Hydrocarbons (PAHs);

Groundwater

- ❒ Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX);
- ❒ Petroleum Hydrocarbons, Fractions F_1 to F_4 (PHCs);
- ❒ Metals;
- ❒ Hydride forming metals (As, Se, Sb);
- ❒ Mercury (Hg);
- ❒ Hexavalent Chromium (Cr(VI));
- ❒ Volatile Organic Compounds (VOCs);
- ❒ Chloride;
- ❒ Cyanide.

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

Assessment of Uncertainty and/or Absence of Information

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

The presence of any PCAs was confirmed by a variety of independent sources, and as such, the conclusions of this report are not affected by uncertainty which may be present with respect to the individual sources.

3.4 Deviations from the Sampling and Analysis Plan

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

3.5 Physical Impediments

No physical impediments were encountered during the course of the field drilling program.

4.0 INVESTIGATION METHOD

4.1 Subsurface Investigation

The subsurface investigation was carried out in four phases. The first phase was completed on May 16, 17 and 22, 2019 in conjunction with a Geotechnical Investigation. The field program consisted of drilling nine (9) boreholes, eight of which were situated on the current Phase II Property (BH1 to BH8), and all of which were instrumented with groundwater monitoring wells. BH9 was situated off-site to the south of the Phase II Property, within the buffer zone for development, and is not considered as part of this assessment. Boreholes were drilled to depths ranging from 1.83 to 10.67 m below the existing grade.

The second phase was completed on September 5, 2019, and consisted of drilling four additional boreholes (BH 10 to BH13) situated on the Phase II Property, all of which were instrumented with groundwater monitoring wells. Boreholes were drilled to depths ranging from 5.18 to 11.28 m below the existing grade.

The third phase was completed in January 11th, 2024 and consisted of five additional boreholes (BH1-24 to BH5-24) Phase II Property of which two (BH4-24 and BH5-24) were instrumented with groundwater monitoring wells. Boreholes were drilled to depths ranging from 2.90 to 5.94 m below the existing grade.

The fourth phase was completed on June 3, 2024, and consisted of six test pits (TP1-24 to TP6-24) situated on the Phase II Property. Test pits were excavated to depths ranging from 2.5 to 2.7 m below the existing grade.

Bedrock surface was not encountered in any of the borehole locations. During the current field sampling program, groundwater was measured at depths ranging from 2.47 m to 3.63 m below the existing ground surface.

Under the full-time supervision of Paterson personnel, the boreholes were drilled using a track-mounted drill rig provided by George Downing Estate Drilling of Hawkesbury, Ontario. The test pits were excavated with a hydraulic back hoe provided by Wright Glenn Excavating of Ottawa, Ontario. The locations of the test holes are illustrated on Drawing PE4588-3 – Test Hole Location Plan, appended to this report.

4.2 Soil Sampling

Soil sampling protocols were followed using the MECP document entitled, *"Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario"*, dated May 1996.

The borehole samples were recovered using a stainless-steel split spoon, while wearing protective gloves (changed after each sample), and immediately placed into plastic bags. If significant contamination was encountered, the samples were instead placed into glass jars. Test pit samples were obtained directly from the excavator bucket, while wearing protective gloves, ensuring that the samples did not come in contact with the excavator. Sampling equipment was routinely washed in soapy water and rinsed with methylhydrate after each split spoon to prevent any cross contamination of the samples. The samples were also stored in coolers to reduce analyte volatilization during transportation.

A total of 131 soil samples were obtained from the boreholes by means of auger and split spoon sampling. In addition, 36 soil samples were obtained by means of grab samples obtained from test pit sidewalls by means of a hydraulic excavator. The depths at which auger, split spoon, rock core samples, and grab samples were

obtained from the test holes are shown as "**AU**", "**SS**", "**RC**", and "**G**" respectively, on the Soil Profile and Test Data Sheets, appended to this report.

4.3 Field Screening Measurements

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

The recovered soil samples were placed immediately into airtight plastic bags with nominal headspace. All lumps of soil inside the bags were broken by hand, and the soil was allowed to come to room temperature prior to conducting the vapour survey, ensuring consistency of readings between samples. To measure the soil vapours, the analyser probe was inserted into the nominal headspace above the sample. The sample was then agitated and manipulated gently by hand as the measurement was taken. The peak reading registered within the first 15 seconds was recorded as the vapour measurement. The parts per million (ppm) scale was used to measure concentrations of organic vapours.

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

4.4 Groundwater Monitoring Well Installation

14 groundwater monitoring wells were installed on the Phase II Property as part of this assessment. These monitoring wells were constructed using 50 mm diameter Schedule 40 threaded PVC risers and screens. A sand pack consisting of silica sand was placed around the screen with a bentonite seal placed above to minimize cross-contamination. A summary of the monitoring well construction details are listed below in Table 1 as well as on the Soil Profile and Test Data Sheets provided in Appendix 1.

Upon completion, the groundwater monitoring wells were developed using a dedicated inertial lift pump, with a minimum of three well volumes being removed from the wells at the time of installation. The wells were developed until the appearance of the water was noted to have stabilized. In addition, the ground surface elevations of each borehole were subsequently surveyed with respect to a known geodetic elevation.

Table 1
Monitoring Well Construction Details

Well ID	Ground Surface Elevation (m ASL)	Total Depth (m BGS)	Screened Interval (m BGS)	Sand Pack (m BGS)	Bentonite Seal (m BGS)
BH4-24	85.77	5.94	2.89 - 5.94	2.59 - 5.94	0.00 - 2.59
BH5-24	85.83	5.94	2.89 - 5.94	2.59 - 5.94	0.00 - 2.59
BH5-20	66.50	6.04	2.99 - 6.04	2.85 - 6.04	0.00 - 2.85
BH1	85.78	6.10	3.05 - 6.10	2.75 - 6.10	1.98 - 2.29
BH2	85.67	6.10	3.05 - 6.10	2.75 - 6.10	1.22 - 1.83
BH3	84.01	4.57	1.52 - 4.57	1.22 - 4.57	1.52 - 1.98
BH4	79.10	8.38	5.33 - 8.38	5.03 - 8.38	1.98 - 2.74
BH5	82.34	10.67	7.62 - 10.67	7.32 - 10.67	1.22 - 1.98
BH6	75.47	10.67	7.62 - 10.67	7.32 - 10.67	1.52 - 1.83
BH7	73.97	3.05	1.22 - 2.74	0.92 - 2.74	0.00 - 0.92
BH8	71.09	1.83	0.31 - 1.83	0.21 - 1.83	0.00 - 0.21
BH9	69.49	3.05	1.53 - 3.05	1.23 - 3.05	0.00 - 1.23
BH10	86.03	5.18	1.52 - 4.57	1.22 - 4.57	0.00 - 1.22
BH11	85.53	11.28	7.40 - 10.45	7.10 - 10.45	0.00 - 7.10
BH12	85.14	5.18	1.43 - 4.48	1.13 - 4.48	0.00 - 1.13
BH13	85.37	5.18	1.43 - 4.48	1.13 - 4.48	0.00 - 1.13

4.5 Field Measurement of Water Quality Parameters

The most recent groundwater monitoring and sampling was carried out on January 18, 2024. During this event, water quality parameters were measured in the field using a multi-parameter analyzer. Parameters measured in the field included temperature, pH and electrical conductivity.

Field parameters were measured after each well volume purged. Wells were purged prior to sampling until at least three well volumes had been removed or the field parameters were relatively stable. Stabilized field parameter values are summarized below in Table 2 as well as on the Analytical Results Tables provided in Appendix 1.

Table 2
Measurement of Water Quality Parameters

Test Hole ID	Temperature (˚C)	Conductivity (µS)	pH	Date of Measurement
BH4-24	5.1	1174	6.3	18-Jan-2024
BH5-24	3.7	1222	6.1	18-Jan-2024
BH10	8.8	2251	6.3	18-Jan-2024
BH11	4.2	2418	5.9	18-Jan-2024
BH13	5.9	1867	7.2	18-Jan-2024

4.6 Groundwater Sampling

Groundwater sampling protocols were followed using the MECP document entitled, *"Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario"*, dated May 1996.

Standing water was purged from each monitoring well prior to the recovery of the groundwater samples using dedicated sampling equipment. The samples were then stored in coolers to reduce possible analyte volatilization during their transportation. Further details of our standard operating procedure for groundwater sampling are provided in the Sampling and Analysis Plan, appended to this report.

4.7 Analytical Testing

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

Table 3:
Laboratory Testing Parameters for Submitted Soil Samples

Sample ID	Sample Depth (mbgs)	Sampling Date (dd-mm-yy)	Rationale	PID Vapour Reading (ppm)	Parameter Groups Analyzed									
					PHCs	BTEX	VOCs	PAHs	PCBs	Metals	Mercury	Cr^{VI}	EC	SAR
BH1-SS4 1921256-01	2.29 - 2.90	16-May-2019	To assess soil adjacent to the location of former aboveground storage tanks (APEC 2) (APEC 3)	2.6	✓	✓								
BH2-SS3 1921256-02	1.52 - 2.13	16-May-2019	To assess soil adjacent to the location of former aboveground storage tank (APEC 2)	2.4	✓	✓								
BH3-AU1 1921256-03	0.00 - 0.61	16-May-2019	To assess fill material of unknown quality (APEC 1)	0.9				✓		✓	✓	✓		
BH4-SS2 1921256-04	0.76 - 1.37	16-May-2019	To assess fill material of unknown quality (APEC 1)	0						✓	✓	✓		
BH5-SS2 1921256-05	0.76 - 1.37	17-May-2019	To assess fill material of unknown quality (APEC 1) and to assess soil for potential impacts resulting from the nearby landfill (APEC 4)	113.8			✓	✓						
BH5-SS6 1921256-06	3.81 - 4.42	17-May-2019	To assess fill material of unknown quality (APEC 1) and to assess soil for potential impacts resulting from the nearby landfill (APEC 4)	36.6	✓	✓				✓	✓	✓		
BH6-SS8 1921256-07	5.33 - 5.94	17-May-2019	To assess fill material of unknown quality (APEC 1)	3.7				✓		✓	✓	✓		
BH7-SS5 1921390-01	2.44 - 3.05	22-May-2019	To assess soil for potential impacts resulting from the nearby landfill (APEC 4)	0.6	✓		✓			✓	✓	✓		
BH8-SS3 1921390-02	1.22 - 1.83	22-May-2019	To assess soil for potential impacts resulting from the nearby landfill (APEC 4)	0	✓		✓			✓	✓	✓		
BH10-SS2 1936482-01	1.52 - 2.13	5-Sep-2019	To assess soil adjacent to previous VOC exceedance in groundwater	0.8			✓							

Table 3 Continued
Laboratory Testing Parameters for Submitted Soil Samples

BH11-SS1 1936482-02	6.10 - 6.71	5-Sep-2019	To assess soil adjacent to previous VOC exceedance in groundwater	0.5			✓							
BH12-SS2 1936482-03	1.52 - 2.13	5-Sep-2019	To assess soil adjacent to previous VOC exceedance in groundwater	0.3			✓							
BH13-SS2 1936482-04	1.52 - 2.13	5-Sep-2019	To assess soil adjacent to previous VOC exceedance in groundwater	0.6			✓							
BH13-SS1 1937091-01	0.76 - 1.37	5-Sep-2019	To assess soil adjacent to previous VOC exceedance in groundwater	NA	✓*			✓						
BH2-24-SS5 2403068-01	3.05 - 3.66	11-Jan-2024	To assess soil for potential impacts resulting from the nearby landfill (APEC 4)	8.2						✓				
BH4-24-SS5 2403068-02	3.05 - 3.66	11-Jan-2024	To assess soil adjacent to the location of former aboveground storage tanks (APEC 2) (APEC 3)	1.8						✓				
BH1-24-AU1 2403076-01	0.00 - 0.61	11-Jan-2024	To assess fill material of unknown quality (APEC 1), and to assess soil for potential impacts resulting from the nearby landfill (APEC 4)	1.2				✓		✓	✓	✓		
BH1-24-SS4 2403076-02	2.29 - 2.90	11-Jan-2024	High PID reading, and to assess soil for potential impacts resulting from the nearby landfill (APEC 4)	112.5			✓							
BH2-24-SS4A 2403076-03	2.29 - 2.90	11-Jan-2024	To assess soil material for impacts of the nearby landfill (APEC 4)	44	✓		✓	✓		✓	✓	✓		
BH3-24-SS3 2403076-04	1.52 - 2.13	11-Jan-2024	To assess soil material for impacts of the nearby landfill (APEC 4)	33.3	✓		✓	✓		✓	✓	✓		
BH4-24-SS2 2403076-05	0.76 - 1.37	11-Jan-2024	To assess fill material of unknown quality (APEC 1), and to assess soil material between two former aboveground storage tanks (APEC 2) (APEC 3)	2.3	✓		✓	✓		✓	✓	✓		
BH4-24-SS6 2403076-06	3.81 - 4.42	11-Jan-2024	To assess soil material between two former aboveground storage tanks (APEC 2) (APEC 3)	3.2	✓		✓							
BH5-24-SS2 2403076-07	0.76 - 1.37	11-Jan-2024	To assess soil material near former aboveground storage tank (APEC 2)	1.4				✓		✓	✓	✓		

Table 3 Continued
Laboratory Testing Parameters for Submitted Soil Samples

BH5-24-SS6 2403076-08	3.81 - 4.42	11-Jan-2024	To assess soil material near former aboveground storage tank (APEC 2)	2.1	✓		✓							
TP1-24-G6 2423399-01	2.40 - 2.50	3-Jun-2024	Assessment of APECs from previous investigation	NA						✓	✓	✓		
TP2-24-G2 2423399-02	0.40 - 0.50	3-Jun-2024	Assessment of APECs from previous investigation	NA	✓	✓	✓							
TP3-24-G5 2423399-03	1.90 - 2.10	3-Jun-2024	Assessment of APECs from previous investigation	NA	✓	✓	✓			✓	✓	✓		
TP4-24-G6 2423399-04	2.40 - 2.50	3-Jun-2024	Assessment of APECs from previous investigation	NA	✓	✓	✓			✓	✓	✓		
TP5-24-G4 2423399-05	1.40 - 1.50	3-Jun-2024	Assessment of metals for naturally occurring rationale	NA						✓				
TP6-24-G4 2423399-06	1.50 - 1.60	3-Jun-2024	Assessment of metals for naturally occurring rationale	NA	✓	✓	✓			✓	✓	✓		

Table 4
Laboratory Testing Parameters for Submitted Groundwater Samples

Sample ID	Sample Depth (mbgs)	Sampling Date (dd-mm-yy)	Rationale	Parameter Groups Analyzed									
				PHCs	BTEX	VOCs	PAHs	PCBs	Metals	Mercury	Cr^{VI}	Chloride	Cyanide
BH3-07 1345102-02	7.47 - 8.99	4-Nov-2013	Assessment of APECs from previous investigation			✓						✓	
MW1 1345102-03	1.53 - 2.13	4-Nov-2013	Assessment of APECs from previous investigation			✓						✓	
MW3 1345102-05	1.53 - 2.13	4-Nov-2013	Assessment of APECs from previous investigation			✓						✓	
BH3-07 1350232-03	7.47 - 8.99	11-Dec-2013	Assessment of APECs from previous investigation			✓						✓	
MW1 1350232-06	1.53 - 2.13	11-Dec-2013	Assessment of APECs from previous investigation			✓						✓	
MW3 1350232-07	1.53 - 2.13	11-Dec-2013	Assessment of APECs from previous investigation			✓						✓	
GP/MW3 1419133-02	1.53 - 2.13	2-May-2014	Assessment of APECs from previous investigation						✓				
BH1-GW1 1808457-01	1.52 - 4.57	23-Feb-2018	Assessment of APECs from previous investigation	✓	✓	✓			✓	✓	✓		
BH2-GW1 1808457-02	1.52 - 4.57	23-Feb-2018	Assessment of APECs from previous investigation	✓	✓	✓			✓	✓	✓		
BH3-GW1 1808457-03	1.52 - 4.57	23-Feb-2018	Assessment of APECs from previous investigation	✓	✓	✓			✓	✓	✓		
BH2-GW1 1923072-02	3.05 - 6.1	30-May-2019	To assess potential groundwater impacts due to former aboveground storage tanks (APEC 2) (APEC 3)	✓	✓	✓							

Table 4 Continued
Laboratory Testing Parameters for Submitted Groundwater Samples

BH4-GW1 1923072-03	5.33 - 8.38	30-May-2019	To assess potential groundwater impacts due to fill of unknown quality (APEC 1)				✓		✓				
BH5-GW1 1923072-04	7.62 - 10.67	30-May-2019	To assess potential groundwater impacts due to fill of unknown quality (APEC 1)	✓	✓	✓	✓		✓	✓	✓		
BH6-GW1 1923072-05	7.62 - 10.67	30-May-2019	To assess potential groundwater impacts due to fill of unknown quality (APEC 1)				✓		✓	✓	✓		
BH1-GW1 1923072-01	1.52 - 4.57	31-May-2019	To assess potential groundwater impacts due to former aboveground storage tanks (APEC 2) (APEC 3)	✓	✓	✓			✓	✓	✓		
BH7-GW1 1923526-01	1.22 - 2.74	3-Jun-2019	To assess potential groundwater impacts due to the nearby landfill (APEC 4)			✓							
BH8-GW1 1923526-02	0.31 - 1.83	3-Jun-2019	To assess potential groundwater impacts due to the nearby landfill (APEC 4)	✓	✓	✓			✓	✓	✓		
BH1-GW2 1929208-01	1.52 - 4.57	15-Jul-2019	To assess potential groundwater impacts due to former aboveground storage tanks (APEC 2) (APEC 3)			✓							
BH10-GW1 1937092-01	1.52 - 4.57	9-Sep-2019	Delineation of VOC impacts			✓							
BH12-GW1 1937092-02	1.43 - 4.48	9-Sep-2019	Delineation of VOC impacts			✓							
BH13-GW1 1937092-03	1.43 - 4.48	9-Sep-2019	Delineation of VOC impacts			✓							
BH11-GW1 1937355-01	7.4 - 10.45	9-Sep-2019	Delineation of VOC impacts			✓							
BH3-20 2107504-01	2.11 - 3.63	11-Feb-2021	To assess potential groundwater impacts due to the nearby landfill (APEC 4)									✓	✓
BH5 2107504-02	7.62 - 10.67	11-Feb-2021	To assess potential groundwater impacts due to the nearby landfill (APEC 4)									✓	✓
BH7 2107504-03	1.22 - 2.74	11-Feb-2021	To assess potential groundwater impacts due to the nearby landfill (APEC 4)									✓	✓

Table 4 Continued
Laboratory Testing Parameters for Submitted Groundwater Samples

BH4-24 2403380-01	2.89 - 5.94	18-Jan-2024	To assess potential groundwater impacts due to former aboveground storage tanks (APEC 2) (APEC 3) and replicate destroyed monitoring well with previous VOC exceedance	✓	✓	✓			✓	✓	✓
BH5-24-GW 2403380-02	2.89 - 5.94	18-Jan-2024	Delineation of VOC impacts, and to assess potential groundwater impacts due to former aboveground storage tanks (APEC 2) (APEC 3)	✓	✓	✓					
BH10-GW 2403380-03	1.52 - 4.57	18-Jan-2024	To assess potential groundwater impacts due to former aboveground storage tanks (APEC 2) (APEC 3)			✓					
BH11 2403380-04	7.4 - 10.45	18-Jan-2024	To assess potential groundwater impacts due to former aboveground storage tanks (APEC 2) (APEC 3)			✓					
BH-1-GW1 2423394-01	1.52 - 4.57	5-Jun-2024	Assessment of APECs from previous investigation	✓	✓	✓			✓	✓	✓
BH-2-GW1 2423394-02	1.52 - 4.57	3-Jun-2024	Assessment of APECs from previous investigation	✓	✓	✓			✓	✓	✓
BH-3-GW1 2423394-03	1.52 - 4.57	3-Jun-2024	Assessment of APECs from previous investigation	✓	✓	✓			✓	✓	✓

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

Landfill gas monitoring was also conducted using a GEM5000 at five monitoring well locations on August 2, 2021.

4.8 Residue Management

All soil cuttings, purge water and equipment cleaning fluids were retained on site during the field program.

4.9 Elevation Surveying

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

4.10 Quality Assurance and Quality Control Measures

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

5.0 REVIEW AND EVALUATION

5.1 Geology

The soil profile generally consists of between 1.37 and 6.86 m of fill, consisting of silty sand, gravel, and some clay. Crushed stone was identified in the fill material within BH1, and brick debris was identified in the fill within BH5 and BH6. The fill material was underlain by native silty clay extending to at least 11.28 m (maximum, with a shallow seem of grey silty sand identified within BH8 extending to 0.91 m. The site stratigraphy is shown on Drawing PE4588-4A– Cross-Section A-A' and Drawing PE4588-4B– Cross-Section B-B'.

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

5.2 Groundwater Elevations, Flow Direction, and Hydraulic Gradient

Groundwater levels were measured using an electronic water level meter on January 18th and June 3rd, 2024, during the most recent sampling events. The measured groundwater levels are summarized below in Table 5.

Table 5:
Groundwater Level Measurements

Test Hole ID	Ground Surface Elevation (masl)	Water Level Depth (m)	Water Level Elevation (masl)	Date of Measurement
BH1 (2018)	69.55	0.76	68.79	3-Jun-2024
BH2 (2018)	70.76	0.22	70.54	3-Jun-2024
BH3 (2018)	69.97	0.43	69.54	3-Jun-2024
BH4-24	85.77	2.25	83.52	18-Jan-2024
BH5-24	85.83	2.40	83.43	18-Jan-2024
BH10	86.03	2.14	83.89	18-Jan-2024
BH11	85.53	2.34	83.19	18-Jan-2024
BH13	85.14	2.48	82.66	18-Jan-2024

The groundwater at the Phase II Property was encountered within the overburden at depths ranging from 0.22 to 2.48 m below the existing ground surface.

No unusual visual or olfactory observations were noted with respect to the recovered groundwater samples.

Using the groundwater elevations recorded during the sampling events on January 18th and June 3rd, 2024, groundwater contour mapping was completed as part of this assessment. According to the mapped contour data, illustrated on Drawing PE4588-3 – Test Hole Location Plan in the appendix, the groundwater on the Phase II Property was calculated to flow in a westerly direction. A horizontal hydraulic gradient of 0.03 m/m was calculated. It should be noted that groundwater levels are expected to fluctuate throughout the year with seasonal variations.

5.3 Fine/Coarse Soil Texture

A grain-size analysis was completed in 2024 for sample BH2-24-SS5, which indicated a medium to fine textured soil (90.9% passing 0.075 mm sieve). As the

borehole logs indicate the majority of the soil encountered on the Phase II Property consists of similar fine-grained soils (clay and silt), fine-grained soil standards were selected for the site condition standards.

5.4 Field Screening

Field screening of the soil samples collected during the drilling program resulted in organic vapour readings ranging from 0 to 36.6 ppm, indicating that there is a low potential for the presence of volatile substances, with the exception of two samples with elevated PID readings of 112.5 and 113.8. 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

A total of 31 soil samples were submitted for laboratory analysis of Benzene, Ethylbenzene, Toluene, and Xylenes (BTEX), Petroleum Hydrocarbons, Fractions F_1 to F_4 (PHCs), Volatile Organic Compounds (VOCs), metals, including hydride forming metals (As, Sb, Se), Mercury, Cr(VI), and/or Polycyclic Aromatic Hydrocarbons (PAHs) parameters. Previous soil samples submitted for laboratory analysis as part of previous investigations also compared to current standards and presented in the drawings detailed below. The results of the analytical testing are presented in the laboratory Certificates of Analysis included in Appendix 1.

Metals, including As, Sb, Se

20 soil samples were submitted for analysis of metals parameters (including As, Sb, Se). 11 samples exceeded the MECP Table 2 Residential Fine-Grained standards for cobalt and/or vanadium only. These exceedances were identified within the native silty clay deposits across the Phase II Property and are considered to be the result of geologic processes and not anthropogenic sources, and are therefore not considered to be contaminants of concern. As such, metals parameter concentrations are in compliance with the MECP Table 2 Residential Fine-Grained standards.

The analytical results where metals and As, Se, Sb were analyzed on the Phase II Property are shown on the following drawings:

- Drawing PE4588-4 – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)

- ❑ Drawing PE4588-4A – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-4B – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)

Mercury

16 soil samples were submitted for analysis of mercury. All mercury parameter concentrations are in compliance with the MECP Table 2 Residential Fine-Grained standards.

The analytical results where mercury was analyzed on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-4 – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-4A – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-4B – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)

Cr(VI)

16 soil samples were submitted for analysis of Cr(VI). All Cr(VI) parameter concentrations are in compliance with the MECP Table 2 Residential Fine-Grained standards.

The analytical results where Cr(VI) was analyzed on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-4 – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-4A – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-4B – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)

VOCs, including BTEX

17 soil samples were submitted for analysis of VOC and BTEX parameters. One sample (BH7-SS5) exceeded the MECP Table 2 Residential Fine-Grained standards for bromomethane. All remaining VOC parameter concentrations in soil are in compliance with the MECP Table 2 Residential Fine-Grained standards. All BTEX parameter concentrations in soil are in compliance with the MECP Table 2 Residential Fine-Grained standards.

VOC parameter concentrations in soil exceed the MECP Table 2 Residential Fine-Grained standards in BH7.

The analytical results where VOCs exceeded the applicable site condition standards in soil on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-4 – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-4A – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-4B – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)

PAHs

9 soil samples were submitted for analysis of PAH parameters. All PAH parameter concentrations are in compliance with the MECP Table 2 Residential Fine-Grained standards.

The analytical results where PAHs were analyzed on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-4 – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-4A – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-4B – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)

PHCs

15 soil samples were submitted for analysis of PHC parameters. One previous sample was submitted for fractions F2 to F4 only, the results of which were included for informational purposes. All PHC parameter concentrations are in compliance with the MECP Table 2 Residential Fine-Grained standards.

The analytical results where PHCs were analyzed on the Phase II Property are shown on the following drawing:

- ❑ Drawing PE4588-4 – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-4A – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-4B – Analytical Testing Plan – Soil (Metals, BTEX, PHCs, PAHs, and VOCs)

Summary of Soil Results

Based on the analytical results, soil on the Phase II Property is contaminated with VOCs in one location (BH7).

Elevated levels of cobalt and vanadium were identified on the Phase II Property and beyond. These exceedances were identified within the native silty clay deposits across the Phase II Property and are considered to be the result of geologic processes and not anthropogenic sources, and are therefore not considered to be contaminants.

The results of the analytical testing are presented in the laboratory Certificates of Analysis and Analytical Data Tables included in Appendix 1.

5.6 Groundwater Quality

A total of 32 groundwater samples were submitted for laboratory analysis of BTEX, PHCs, VOCs, metals, mercury, Cr(VI), PAHs, chloride, and/or cyanide parameters. Three groundwater samples analyzed in 2010 were also compared to current standards. The results of the analytical testing are presented in the laboratory Certificates of Analysis included in Appendix 1.

Metals, including As, Sb, Se

14 groundwater samples were submitted for laboratory analysis of metals parameters, including hydride forming metals As, Sb, Se. One groundwater sample (GP/MW3) exceeded the MECP Table 2 Residential Fine-Grained standards for vanadium. Two samples (BH5-GW1 and BH6-GW1) exceeded the MECP Table 2 Residential Fine-Grained standards for sodium. One of these samples (BH5-GW1) also exceeded the MECP Table 2 Residential Fine-Grained standards for cobalt.

Metals parameter concentrations in groundwater exceed the MECP Table 2 Residential Fine-Grained standards in GP/MW3, BH5 and BH6.

The analytical results for Metals, As, Se, Sb, in groundwater on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-5 – Analytical Testing Plan – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5A – Cross Section A-A' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5B – Cross Section B-B' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)

Mercury

12 groundwater samples were submitted for laboratory analysis of mercury. All mercury parameter concentrations in groundwater are in compliance with the MECP Table 2 Residential Fine-Grained standards.

The analytical results for mercury in groundwater on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-5 – Analytical Testing Plan – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5A – Cross Section A-A' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5B – Cross Section B-B' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)

Cr(VI)

12 groundwater samples were submitted for laboratory analysis of Cr(VI). All Cr(VI) parameter concentrations in groundwater are in compliance with the MECP Table 2 Residential Fine-Grained standards.

The analytical results for Cr(VI) in groundwater on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-5 – Analytical Testing Plan – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5A – Cross Section A-A' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5B – Cross Section B-B' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)

PAHs

Three groundwater samples were submitted for laboratory analysis of PAH parameters. All PAH parameter concentrations in groundwater are in compliance with the MECP Table 2 Residential Fine-Grained standards.

The analytical results for PAHs in groundwater on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-5 – Analytical Testing Plan – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5A – Cross Section A-A' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5B – Cross Section B-B' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)

VOCs

26 groundwater samples were submitted for laboratory analysis of VOC parameters. Sample BH1-GW1 and BH1-GW2 exceeded the MECP Table 2 Residential Fine-Grained standards for Tetrachloroethylene (PCE).

VOC parameter concentrations in groundwater exceed the MECP Table 2 Residential Fine-Grained standards in BH1.

The analytical results for VOCs in groundwater on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-5 – Analytical Testing Plan – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5A – Cross Section A-A' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5B – Cross Section B-B' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)

BTEX

26 groundwater samples were submitted for laboratory analysis of BTEX parameters. All BTEX parameter concentrations in groundwater are in compliance with the MECP Table 2 Residential Fine-Grained standards.

The analytical results for BTEX in groundwater on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-5 – Analytical Testing Plan – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5A – Cross Section A-A' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5B – Cross Section B-B' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)

PHCs

12 groundwater samples were submitted for laboratory analysis of PHC parameters. All PHC parameter concentrations in groundwater are in compliance with the MECP Table 2 Residential Fine-Grained standards.

The analytical results for PHCs in groundwater on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-5 – Analytical Testing Plan – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5A – Cross Section A-A' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)

- ❑ Drawing PE4588-5B – Cross Section B-B' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)

Chloride

Nine groundwater samples were submitted for laboratory analysis of chloride. All chloride parameter concentrations in groundwater are in compliance with the MECP Table 2 Residential Fine-Grained standards.

The analytical results for chloride in groundwater on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-5 – Analytical Testing Plan – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5A – Cross Section A-A' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5B – Cross Section B-B' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)

Cyanide

Nine groundwater samples were submitted for laboratory analysis of cyanide. All cyanide parameter concentrations in groundwater are in compliance with the MECP Table 2 Residential Fine-Grained standards.

The analytical results for cyanide in groundwater on the Phase II Property are shown on the following drawings:

- ❑ Drawing PE4588-5 – Analytical Testing Plan – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5A – Cross Section A-A' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)
- ❑ Drawing PE4588-5B – Cross Section B-B' – Groundwater (Metals, BTEX, PHCs, PAHs, and VOCs)

Summary of Groundwater Results

Based on the analytical results, groundwater on the Phase II Property is contaminated with metals and VOC parameters.

Parameter concentrations above the MECP Table 2 Residential Fine-Grained standards for these method groups were identified at GP/MW3, BH1, BH5 and BH6.

The results of the analytical testing are presented in the laboratory Certificates of Analysis and Analytical Data Tables included in Appendix 1.

5.7 Landfill Gas Monitoring

Methane, carbon dioxide and oxygen levels were analyzed at five of the monitoring well locations, located along the eastern property boundary of the Phase II Property. All methane concentrations were identified below 1% which is not considered to be indicative of significant landfill gas migration onto the Phase II Property. The analyzed methane percentages are presented below in Table 14.

Table 6:
Gas Monitoring: % CH_4, O_2 and CO_2

Parameter	Gas Levels (%)				
	BH3	BH5	BH7	BH8	BH9
Methane (CH_4)	0.1	0	0.1	0	0.1
O_2	20.2	20	19.9	20.3	21.2
CO_2	0.2	0.1	0.2	0.1	0.1
BAL	79.5	80	79.9	79.6	78.5

Notes:
BAL - Balance

5.8 Quality Assurance and Quality Control Results

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

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

As per the Sampling and Analysis Plan, duplicate soil samples were obtained from at least 10% of the submitted samples and submitted for laboratory analysis. The relative percent difference (RPD) calculations for the original and duplicate samples are presented in the Analytical Data Tables included in Appendix 1.

The majority of the RPD calculated for the parameters detected fell within of the acceptable range of 20%, however some parameters exceeded this range as a result of the heterogeneous nature of the fill material analyzed, and/or low identified concentrations causing higher percent differences. As a result, it is the opinion of the QP that the data quality objectives outlined in the Sampling and Analysis Plan, appended to this report, are considered to have been met.

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

5.9 Phase II Conceptual Site Model

The following section has been prepared in accordance with the requirements of O. Reg. 153/04 amended by the Environmental Protection Act. For the purposes of the proposed uses of this Phase II Property, the Phase II Conceptual Site Model was prepared with consideration for O.Reg. 153/04 only. Conclusions and recommendations are discussed in a subsequent section.

Site Description

Potentially Contaminating Activity and Areas of Potential Environmental Concern

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

Table of Areas of Potential Environmental Concern

Area of potential environmental concern	Location of area of potential environmental concern on phase one 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 Fill Material of Unknown Quality	The central to northern portion of the Phase I Property	PCA 30 – Importation of Fill Material of Unknown Quality	On-site	BTEX PHCs Metals As, Se, Sb PAHs	Soil

Table of Areas of Potential Environmental Concern

Area of potential environmental concern	Location of area of potential environmental concern on phase one property	Potentially contaminating activity	Location of PCA (on-site or off-site)	Contaminants of potential concern	Media potentially impacted (Groundwater, soil and/or sediment)
APEC 2 Former Aboveground Storage Tank	The northern portion of the Phase I Property	PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX PHCs VOCs	Soil and Groundwater
APEC 3 Former Aboveground Storage Tank	The northern portion of the Phase I Property	PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX PHCs VOCs	Soil and Groundwater
APEC 4 Potential Impacts from Navan Road Landfill to the East	Eastern portion of the Phase I Property	PCA 58 – Waste Disposal and Waste Management, including landfilling	Off-site	BTEX PHCs VOCs Metals As, Se, Sb Mercury Cr(VI) PAHs	Soil
				BTEX PHCs VOCs Metals As, Se, Sb Mercury Cr(VI) Chloride Cyanide	Groundwater
APEC 5 Potential Impacts from Fill Material of Unknown Quality	The western portion of the Phase I Property	PCA 30 – Importation of Fill Material of Unknown Quality	On-site	BTEX PHCs Metals As, Se, Sb Mercury Cr(VI) PAHs	Soil

Contaminants of Potential Concern (CPCs)

As detailed in the table above, the following Contaminants of Potential Concern (CPCs) were identified with respect to the soil or groundwater on the Phase II Property:

Soil

- ❒ Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX);
- ❒ Petroleum Hydrocarbons, Fractions F_1 to F_4 (PHCs);
- ❒ Metals;
- ❒ Hydride forming metals (As, Se, Sb);
- ❒ Mercury (Hg);
- ❒ Hexavalent Chromium (Cr(VI));
- ❒ Volatile Organic Compounds (VOCs);
- ❒ Polycyclic Aromatic Hydrocarbons (PAHs);

Groundwater

- ❒ Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX);
- ❒ Petroleum Hydrocarbons, Fractions F_1 to F_4 (PHCs);
- ❒ Metals;
- ❒ Hydride forming metals (As, Se, Sb);
- ❒ Mercury (Hg);
- ❒ Hexavalent Chromium (Cr(VI));
- ❒ Volatile Organic Compounds (VOCs);
- ❒ Chloride;
- ❒ Cyanide.

In addition to the identified CPCs, leachate indicator parameters were analysed as part of the most recently completed Phase II ESA.

Subsurface Structures and Utilities

Underground service locates were completed prior to the subsurface investigation. Underground utilities on the Phase II Property include electrical, and sewerage services.

Physical Setting

Site Stratigraphy

The site stratigraphy, from the ground surface to the deepest aquifer or aquitard investigated, is illustrated on Drawing PE4588-4A. The stratigraphy consists of:

- In the northern portion (approximately half) of the Phase II Property, silty sand fill material extending to a maximum depth of 6.86 m;
- In BH7 to BH9 topsoil was encountered to a maximum depth of 0.3 m below the existing grade.
- Native silty sand was identified on the north portion of the site in several boreholes, beneath the fill and above the silty clay material.
- Silty clay was identified beneath the fill material and extending to the maximum depth investigated.

Hydrogeological Characteristics

Groundwater at the Phase II Property was encountered within the overburden soil. This unit is interpreted to function as a local aquifer at the subject site.

Water levels were measured at the subject site at depths ranging from 0.05 m to 3.66 m below grade. Based on groundwater elevations, the groundwater is calculated to flow in a southerly direction, toward the Mer Bleue conservation area.

Approximate Depth to Bedrock

Bedrock was not encountered during the investigation. Bedrock is expected to be present between 30 and 50 m below the existing ground surface.

Approximate Depth to Water Table

Depth to the water table at the Phase II Property varies between approximately 0.05 and 3.66 m below the existing grade.

Sections 41 and 43.1 of Ontario Regulation 153/04

Section 41 of the Regulation (Site Condition Standards, Environmentally Sensitive Areas) does not apply to the Phase II Property.

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

Fill Placement

Fill material was identified across the northern portion of the Phase II Property, extending to depths ranging from 0.51 to 6.86m below grade.

Proposed Buildings and Other Structures

It is our understanding that the Phase II Property will be redeveloped for residential purposes.

Areas of Natural Significance and Water Bodies

The Mer Bleue conservation area lies 80 m south of the Phase II Proprerty.

Environmental Condition

Areas Where Contaminants are Present

Soil impacted with VOC parameters (bromomethane) was identified in BH7 at a depth of 2.44 to 3.05 m, which is located along the eastern Phase II Property boundary.

Groundwater impacted with metals (vanadium, cobalt, and/or sodium) was identified in BH5, BH6, and GP/MW3, which is located in the central portion of the Phase II Property. Groundwater impacted with PCE was identified in BH1, which is located in the northeastern corner of the Phase II Property.

Types of Contaminants

Based on the findings of the Phase II ESA to date, the following contaminants of concern (CPCs) are considered to be present on the Phase II Property:

<u>Soil:</u>

- VOCs
  - Bromomethane

Groundwater:

- Metals
  - Cobalt
  - Sodium
  - Vanadium
- VOCs
  - Tetrachloroethylene

Contaminated Media

Based on the findings of this assessment, soil on the Phase II Property is contaminated with VOCs above the MECP Table 2 Residential Fine-Grained standards.

Groundwater is impacted with metals and VOCs above the MECP Table 2 Residential Fine-Grained standards.

What Is Known About Areas Where Contaminants Are Present

The VOC impacted soil identified on the eastern property is anticipated to be a result of the landfill on the adjacent property to the east. The VOC impacted groundwater identified in the northeastern corner of the Phase II Property is anticipated to have resulted from former ASTs previously located in this area of the Phase II Property. The metals impacted groundwater in the central portion of the Phase II Property is anticipated to be a result of the placement of poor quality fill material on the Phase II Property.

Distribution and Migration of Contaminants

Based on the results of the analytical testing results, the migration and distribution of the contaminants present above the applicable site standards appear to the limited to the immediate areas of the impacts.

Discharge of Contaminants

Based on the analytical testing results, VOC impacts were identified within the soil in BH7. The VOC parameters in excess of the selected standards are expected to be a result of the landfill on the adjacent property to the east. Groundwater impacted with tetrachloroethylene was identified in BH1 and is anticipated to have resulted from former ASTs previously located in this area. Groundwater impacted

with VOCs was identified in BH1 and is anticipated to have resulted from former ASTs previously located in this area.

Groundwater impacted with metals (vanadium, cobalt, and/or sodium) was identified in BH5, BH6, and GP/MW3, which is located in the central portion of the Phase II Property, and are anticipated to be a result of the placement of poor-quality fill material 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. It is our opinion that climatic and meteorological conditions have not influenced contaminant transport in the past.

Potential for Vapour Intrusion

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

6.0 CONCLUSIONS

Assessment

Paterson Group was retained by Claridge Homes to carry out a Phase II – Environmental Site Assessment (Phase II ESA) for the property addressed 3252 Navan Road, and a contiguous unaddressed parcel referred to as Spring Valley Phase 5, in the City of Ottawa, Ontario (Phase II Property). The purpose of the Phase II ESA was to address potentially contaminating activities (PCAs) that were identified during the Phase I ESA and were considered to result in areas of potential environmental concern (APECs) on the Phase II Property.

The subsurface investigations for this assessment were conducted between May 16, 2019, and June 3rd, 2025, and consisted of drilling 17 boreholes (BH1 to BH8, BH10 to BH13, and BH1-24 to BH5-24) and excavating 6 test pits (TP1-24 to TP6-24) across the Phase II Property. The boreholes were advanced to depths ranging

from 1.83 to 11.28 m below the ground surface (mbgs) and terminated within the overburden. Upon completion, 14 boreholes were instrumented with groundwater monitoring wells in order to access the groundwater table. Test pits were advanced to depths ranging from 2.5 to 2.7 m, and terminated within the overburden.

The soil profile generally consists of between 1.37 and 6.86 m of fill, consisting of silty sand, gravel, and some clay. Crushed stone was identified in the fill material within BH1, and brick debris was identified in the fill within BH5 and BH6. The fill material was underlain by native silty clay extending to at least 11.28 m (maximum depth investigated), with a shallow seem of grey silty sand identified within BH8 extending to 0.91 m.

A total of 31 soil samples were submitted for laboratory analysis of BTEX, PHCs, VOCs, metals, including hydride forming metals (As, Sb, Se), Mercury, Cr(VI) and/or PAHs, parameters. Previous soil samples submitted for laboratory analysis as part of previous investigations also compared to current standards and presented in the drawings detailed below.

Based on the analytical results, soil on the Phase II Property is contaminated with VOCs in one location (BH7). Elevated levels of cobalt and vanadium were identified on the Phase II Property and beyond. These exceedances were identified within the native silty clay deposits across the Phase II Property and are considered to be the result of geologic processes and not anthropogenic sources, and are therefore not considered to be contaminants.

A total of 32 groundwater samples were submitted for laboratory analysis of BTEX, PHCs, VOCs, metals, mercury, Cr(VI), PAHs, chloride, and/or cyanide parameters. Three groundwater samples analyzed in 2010 were also compared to current standards.

Based on the analytical results, groundwater on the Phase II Property is contaminated with metals and VOC parameters. Parameter concentrations above the MECP Table 2 Residential Fine-Grained standards for these method groups were identified at GP/MW3, BH1, BH5 and BH6.

Recommendations

Impacted groundwater was identified in BH1, however with the additional investigative work, the groundwater appears to have been horizontally and

vertically delineated. The impacted soil in BH7 requires further delineation. Impacted groundwater as a result of metals in GP/MW3, BH5 and BH6 should be investigated further. It is recommended that these wells be retested prior to any delineation program to confirm these concentrations are still present above the site condition standard.

Following the closure of the existing site operations additional testing will be required to sufficiently investigate the fill remaining on site.

Monitoring Wells

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

7.0 STATEMENT OF LIMITATIONS

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

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

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

This report was prepared for the sole use of Claridge Homes. Permission and notification from the above noted parties and Paterson Group will be required prior to the release of this report to any other party.

Paterson Group Inc.



Jesse Andrechek, P.Eng., QP_{ESA}

Michael Beaudoin, P.Eng., QP_{ESA}

Report Distribution:

- Claridge Homes
- Paterson Group Inc.

FIGURES

FIGURE 1 – KEY PLAN

DRAWING PE4588-1 – SITE PLAN

DRAWING PE4588-2 – SURROUNDING LAND USE PLAN

DRAWING PE4588-3 – TEST HOLE LOCATION PLAN

DRAWING PE4588-4 – ANALYTICAL TESTING PLAN – SOIL (METALS, BTEX, PHCs, PAHs AND VOCs)

DRAWING PE4588-4A – CROSS SECTION A-A' – SOIL (METALS, BTEX, PHCs, PAHs AND VOCs)

DRAWING PE4588-4B – CROSS SECTION B-B' – SOIL (METALS, BTEX, PHCs, PAHs AND VOCs)

DRAWING PE4588-5 – ANALYTICAL TESTING PLAN – GROUNDWATER (METALS, BTEX, PHCs, PAHs AND VOCs)

DRAWING PE4588-5A – CROSS SECTION A-A' – GROUNDWATER (METALS, BTEX, PHCs, PAHs AND VOCs)

DRAWING PE4588-5B – CROSS SECTION B-B' – GROUNDWATER (METALS, BTEX, PHCs, PAHs AND VOCs)

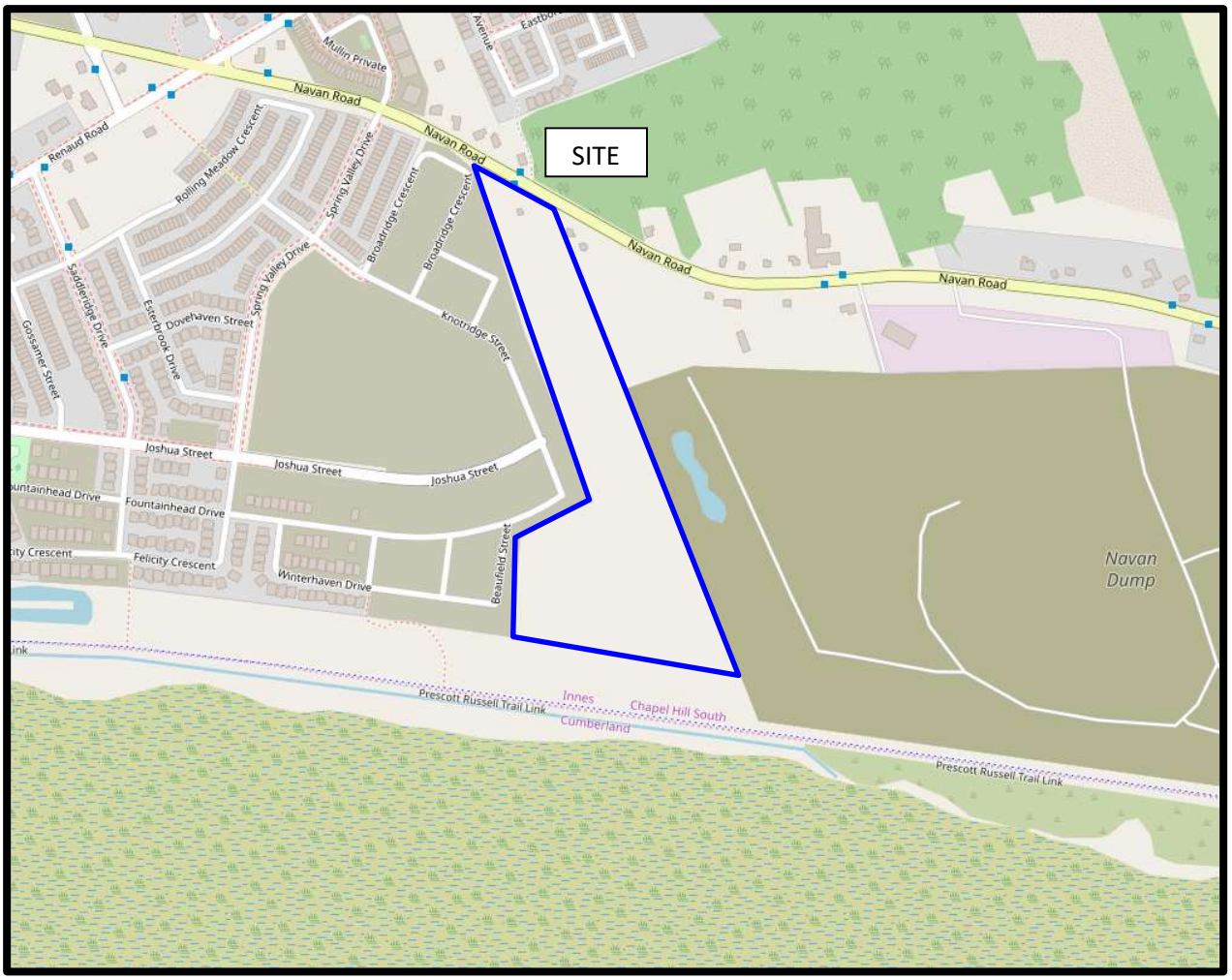
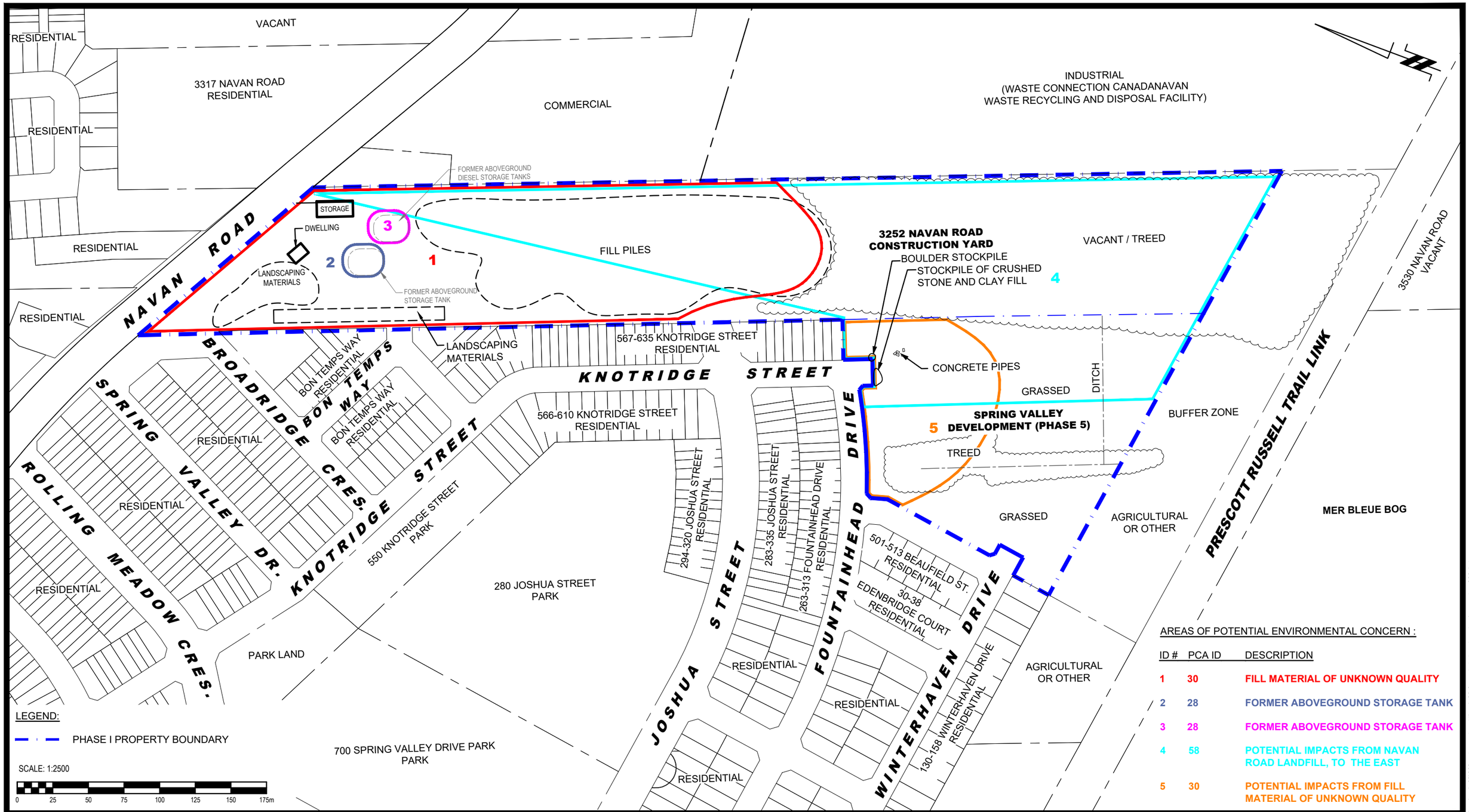


FIGURE 1

KEY PLAN



AREAS OF POTENTIAL ENVIRONMENTAL CONCERN :

ID #	PCA ID	DESCRIPTION
1	30	FILL MATERIAL OF UNKNOWN QUALITY
2	28	FORMER ABOVEGROUND STORAGE TANK
3	28	FORMER ABOVEGROUND STORAGE TANK
4	58	POTENTIAL IMPACTS FROM NAVAN ROAD LANDFILL, TO THE EAST
5	30	POTENTIAL IMPACTS FROM FILL MATERIAL OF UNKNOWN QUALITY

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

NO.	REVISIONS	DATE	INITIAL

CLARIDGE HOMES (GLADSTONE) INC.

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
3252 NAVAN ROAD AND SPRING VALLEY DEVELOPMENT (PHASE 5)
OTTAWA, ONTARIO

Title: **SITE PLAN**

Scale: 1:2500	Date: 09/2025
Drawn by: GK	Report No.: PE4588-2
Checked by: JA	Dwg. No.: PE4588-1
Approved by: MB	Revision No.:

11x17

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PHASE I - ENVIRONMENTAL SITE ASSESSMENT STUDY AREA

NAVAN ROAD

BROADRIDGE CRES.

SPRING VALLEY DRIVE

KNOTRIDGE STREET

JOSHUA STREET

FOUNTAINHEAD DRIVE

WINTERHAVEN DRIVE

PRESCOTT RUSSELL TRAIL LINK

RESIDENTIAL

AGRICULTURAL OR OTHER

COMMERCIAL

INDUSTRIAL
(WASTE CONNECTION CANADANAVAN
WASTE RECYCLING AND DISPOSAL FACILITY)

4

VACANT

PARK LAND

1

2

3

5

6

SITE

LEGEND:

PHASE I PROPERTY BOUNDARY

SCALE: 1:4000

0 50 100 150 200 250m

POTENTIAL ENVIRONMENTAL CONCERN :

ID #	PCA ID	DESCRIPTION
1	30	FILL MATERIAL OF UNKNOWN QUALITY
2	28	FORMER ABOVEGROUND STORAGE TANK
3	28	FORMER ABOVEGROUND STORAGE TANK
4	58	WASTE DISPOSAL FACILITY
5	30	FILL MATERIAL OF UNKNOWN QUALITY
6	46	FORMER RAIL LINE

BASED ON TABLE 2, O.REG. 153/04

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NO.	REVISIONS	DATE	INITIAL

CLARIDGE HOMES (GLADSTONE) INC.

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
3252 NAVAN ROAD AND SPRING VALLEY DEVELOPMENT (PHASE 5)
OTTAWA, ONTARIO

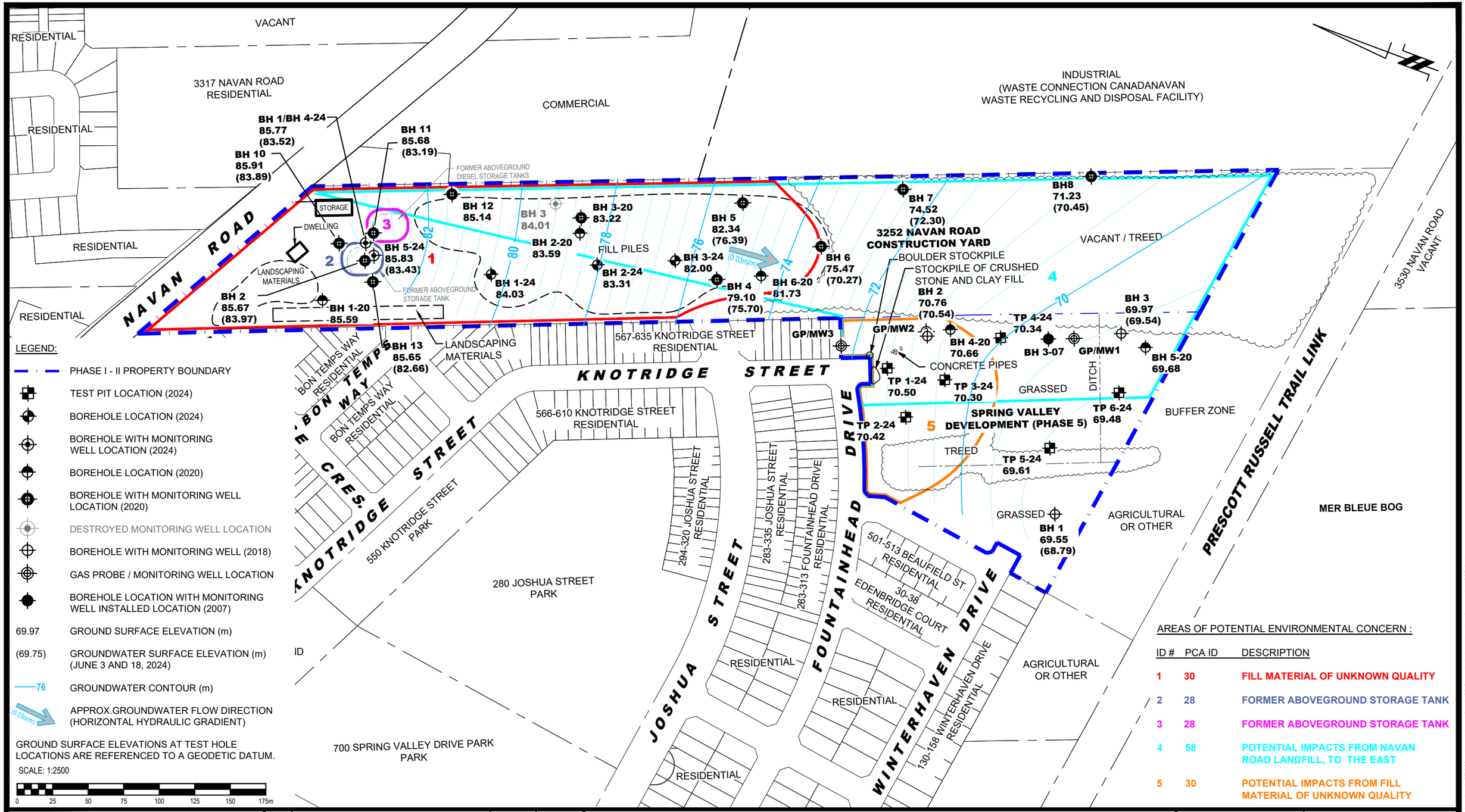
Title:

SURROUNDING LAND USE PLAN

Scale: 1:4000	Date: 09/2025
Drawn by: GK	Report No.: PE4588-2
Checked by: JA	Dwg. No.: PE4588-2
Approved by: MB	Revision No.:

11x17

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LEGEND:

- PHASE I - II PROPERTY BOUNDARY
- TEST PIT LOCATION (2024)
- BOREHOLE LOCATION (2024)
- BOREHOLE WITH MONITORING WELL LOCATION (2024)
- BOREHOLE LOCATION (2020)
- BOREHOLE WITH MONITORING WELL LOCATION (2020)
- DESTROYED MONITORING WELL LOCATION
- BOREHOLE WITH MONITORING WELL (2018)
- GAS PROBE / MONITORING WELL LOCATION
- BOREHOLE LOCATION WITH MONITORING WELL INSTALLED LOCATION (2007)
- 69.97 GROUND SURFACE ELEVATION (m)
- (69.75) GROUNDWATER SURFACE ELEVATION (m) (JUNE 3 AND 18, 2024)
- 76 GROUNDWATER CONTOUR (m)
- (0.03m/m) APPROX.GROUNDWATER FLOW DIRECTION (HORIZONTAL HYDRAULIC GRADIENT)

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

SCALE: 1:2500

0 25 50 75 100 125 150 175m

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN :

ID #	PCA ID	DESCRIPTION
1	30	FILL MATERIAL OF UNKNOWN QUALITY
2	28	FORMER ABOVEGROUND STORAGE TANK
3	28	FORMER ABOVEGROUND STORAGE TANK
4	58	POTENTIAL IMPACTS FROM NAVAN ROAD LANDFILL, TO THE EAST
5	30	POTENTIAL IMPACTS FROM FILL MATERIAL OF UNKNOWN QUALITY

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NO.	REVISIONS	DATE	INITIAL

CLARIDGE HOMES (GLADSTONE) INC.

PHASE II- ENVIRONMENTAL SITE ASSESSMENT
3252 NAVAN ROAD AND SPRING VALLEY DEVELOPMENT (PHASE 5)
OTTAWA, ONTARIO

Title: **TEST HOLE LOCATION PLAN**

Scale: 1:2500	Date: 09/2025
Drawn by: GK	Report No.: PE4588-2
Checked by: JA	Dwg. No.: PE4588-3
Approved by: MB	Revision No.:

11x17

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BH11-SS1 6.10 - 6.71m 5-SEPT-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH1-SS4 2.29 - 2.90m 16-MAY-2019
BTEX and PHCs (F1-F4) comply with MECP Table 2 Standards

BH4-24-SS2 0.76-1.37m 11-JAN-2024
Metals (including Mercury and CrVI) comply with MECP Table 2 Standards

BH4-24-SS6 3.81-4.42m 11-JAN-2024
BTEX, PHCs and VOCs comply with MECP Table 2 Standards

BH10-SS2 1.52 - 2.13m 5-SEPT-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH2-SS3 1.52 - 2.13m 16-MAY-2019
BTEX and PHCs (F1-F4) comply with MECP Table 2 Standards

BH13-SS1 0.76 - 1.37m 5-SEPT-2019
PHCs (F2-F4) and PAHs comply with MECP Table 2 Standards

BH13-SS2 1.52 - 2.13m 5-SEPT-2019
BTEX, VOCs and PHCs (F1-F4) comply with MECP Table 2 Standards

BH5-24-SS2 0.76-1.37m 11-JAN-2024
PAHs and Metals (including Mercury and CrVI) comply with MECP Table 2 Standards

BH5-24-SS6 3.81-4.42m 11-JAN-2024
BTEX, PHCs, and VOCs comply with MECP Table 2 Standards

BH12-SS2 1.52 - 2.13m 5-SEPT-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH1-24-AU1 0.00-0.61m 11-JAN-2024
Metals (including Mercury and CrVI) and PAHs comply with MECP Table 2 Standards

BH1-24-SS4 2.29-2.90m 11-JAN-2024
VOCs comply with MECP Table 2 Standards

BH3-AU1 0.00 - 0.61m 16-MAY-2019
Metals and PAHs comply with MECP Table 2 Standards

BH6-SS8 5.33 - 5.94m 16-MAY-2019
Metals (including Mercury and CrVI) and PAHs comply with MECP Table 2 Standards

BH5-SS2 0.76 - 1.37m 17-MAY-2019
BTEX, VOCs and PAHs comply with MECP Table 2 Standards

BH5-SS6 3.81 - 4.42m 16-MAY-2019
Metals, BTEX and PHCs (F1-F4) comply with MECP Table 2 Standards

BH2-24-SS4A 2.29-2.90m 11-JAN-2024
BTEX, PHCs, VOCs, and Metals (including Mercury and CrVI) comply with MECP Table 2 Standards

BH3-24-SS3 1.52-2.13m 11-JAN-2024
BTEX, PHCs, VOCs, and Metals (including Mercury and CrVI) comply with MECP Table 2 Standards

BH4-SS2 0.76 - 1.37m 16-MAY-2019
Metals comply with MECP Table 2 Standards

TP1-24-G6	2.40 - 2.50m	03-JUNE-2024
Parameter	Result(µg/g)	Standard(µg/g)
*Vanadium	119	86
*Cobalt	25	22

Remaining Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

DUP	2.40 - 2.50m	03-JUNE-2024
Parameter	Result(µg/g)	Standard(µg/g)
*Vanadium	118	86
*Cobalt	26.3	22

Remaining Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

TP2-24-G2	0.40 - 0.50m	03-JUNE-2024
Parameter	Result(µg/g)	Standard(µg/g)
*Vanadium	93.8	86

VOCs, BTEX and PHCs F1-F4 comply with MECP Table 2 Standards
Remaining Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

BH7-SS5	2.44 - 3.05m	22-MAY-2019
Parameter	Result(µg/g)	Standard(µg/g)
Bromomethane	0.06	0.05
Chloroform	0.06	0.05
*Vanadium	91.5	86

BTEX and PHCs (F1-F4) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

BH2-SS4	2.30 - 2.90m	08-FEB-2018
Parameter	Result(µg/g)	Standard(µg/g)
*Vanadium	99.5	86

VOCs, BTEX and PHCs F1-F4 comply with MECP Table 2 Standards
Remaining Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

BH8-SS3	1.22 - 1.83m	22-MAY-2019
Parameter	Result(µg/g)	Standard(µg/g)
*Cobalt	22.7	22
*Vanadium	103	86

BTEX, VOCs and PHCs (F1-F4) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

TP4-24-G6	2.40 - 2.50m	03-JUNE-2024
Parameter	Result(µg/g)	Standard(µg/g)
*Vanadium	116	86
*Cobalt	24.9	22

VOCs, BTEX and PHCs F1-F4 comply with MECP Table 2 Standards
Remaining Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

BH3-07-SS6	4.57-5.18m	15-JUNE-2007
Parameter	Result(µg/g)	Standard(µg/g)
*Vanadium	95	86

Remaining Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

BH3-SS4	2.30 - 2.90m	08-FEB-2018
Parameter	Result(µg/g)	Standard(µg/g)
*Vanadium	105	86

VOCs, BTEX and PHCs F1-F4 comply with MECP Table 2 Standards
Remaining Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

TP6-24-G4	1.50 -1.60m	03-JUNE-2024
Parameter	Result(µg/g)	Standard(µg/g)
*Vanadium	118	86
*Cobalt	23.5	22

Remaining Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

TP5-24-G4	1.40 -1.50m	03-JUNE-2024
Parameter	Result(µg/g)	Standard(µg/g)
*Vanadium	126	86
*Cobalt	25.6	22

Remaining Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

BH1-SS4 2.30-2.90m 08-FEB-2018
VOCs, BTEX & PHCs F1-F4 comply with MECP Table 2 Standards

TP3-24-G5	1.90 - 2.10m	03-JUNE-2024
Parameter	Result(µg/g)	Standard(µg/g)
*Vanadium	116	86
*Cobalt	25.8	22

Remaining Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

VACANT
3317 NAVAN ROAD
RESIDENTIAL
COMMERCIAL
INDUSTRIAL
(WASTE CONNECTION CANADANAVAN
WASTE RECYCLING AND DISPOSAL FACILITY)
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
VACANT / TREED
3330 NAVAN ROAD
VACANT
3252 NAVAN ROAD
CONSTRUCTION YARD
BOULDER STOCKPILE
STOCKPILE OF CRUSHED
STONE AND CLAY FILL
CONCRETE PIPES
GRASSED
DITCH
BUFFER ZONE
SPRING VALLEY
DEVELOPMENT (PHASE 5)
TREED
GRASSED
AGRICULTURAL
OR OTHER
MER BLEUE BOG
AGRICULTURAL
OR OTHER
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
567-635 KNOTRIDGE STREET
RESIDENTIAL
566-610 KNOTRIDGE STREET
RESIDENTIAL
BON TEMPS WAY
RESIDENTIAL
BON TEMPS WAY
RESIDENTIAL
550 KNOTRIDGE STREET
PARK
294-320 JOSHUA STREET
RESIDENTIAL
283-335 JOSHUA STREET
RESIDENTIAL
263-313 FOUNTAINHEAD DRIVE
RESIDENTIAL
501-513 BEAUFIELD ST.
RESIDENTIAL
30-38
EDENBRIDGE COURT
RESIDENTIAL
130-156 WINTERHAVEN DRIVE
RESIDENTIAL
PARK LAND
700 SPRING VALLEY DRIVE PARK
PARK
FORMER ABOVEGROUND
DIESEL STORAGE TANKS
FORMER ABOVEGROUND
STORAGE TANK
FILL PILES
STORAGE
DWELLING
LANDSCAPING
MATERIALS
LANDSCAPING
MATERIALS

BH 1/BH 4-24
85.77
(83.52)
BH 10
85.91
(83.89)
BH 11
85.68
(83.19)
BH 12
85.14
BH 3
84.01
BH 3-20
83.22
BH 2-20
83.59
BH 5
82.34
(76.39)
BH 7
74.52
(72.30)
BH8
71.23
(70.45)
BH 5-24
85.83
(83.43)
BH 2
85.67
(83.97)
BH 1-20
85.59
BH 1-24
84.03
BH 2-24
83.31
BH 3-24
82.00
BH 4
79.10
(75.70)
BH 6-20
81.73
BH 6
75.47
(70.27)
BH 13
85.65
(82.66)
GP/MW3
GP/MW2
BH 2
70.76
(70.54)
BH 4-20
70.66
TP 4-24
70.34
BH 3-07
GP/MW1
BH 3
69.97
(69.54)
BH 5-20
69.68
TP 1-24
70.50
TP 3-24
70.30
TP 2-24
70.42
TP 6-24
69.48
TP 5-24
69.61
BH 1
69.55
(68.79)

BROADRIDGE CRES.
SPRING VALLEY DR.
BON TEMPS WAY
KNOTRIDGE STREET
JOSHUA STREET
FOUNTAINHEAD DRIVE
WINTERHAVEN DRIVE
PRESCOTT RUSSELL TRAIL LINK

LEGEND:

SOIL SAMPLES COMPLY WITH MECP TABLE 2 STANDARDS

SOIL SAMPLES EXCEED MECP TABLE 2 STANDARDS

- PHASE I - II PROPERTY BOUNDARY
- TEST PIT LOCATION (2024)
- BOREHOLE LOCATION (2024)
- BOREHOLE WITH MONITORING WELL LOCATION (2024)
- BOREHOLE LOCATION (2020)
- BOREHOLE WITH MONITORING WELL LOCATION (2020)
- DESTROYED MONITORING WELL LOCATION
- BOREHOLE WITH MONITORING WELL (2018)
- GAS PROBE / MONITORING WELL LOCATION
- BOREHOLE LOCATION WITH MONITORING WELL INSTALLED LOCATION (2007)
- 69.97 GROUND SURFACE ELEVATION (m)
- (69.75) GROUNDWATER SURFACE ELEVATION (m) (JUNE 3 AND 18, 2024)

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

SCALE: 1:1250
0 5 10 15 20 25 50 75m

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

NO.	REVISIONS	DATE	INITIAL

CLARIDGE HOMES (GLADSTONE) INC.

PHASE II- ENVIRONMENTAL SITE ASSESSMENT
3252 NAVAN ROAD AND SPRING VALLEY DEVELOPMENT (PHASE 5)

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN-SOIL (METALS,BTEX,PHCS,PAHS AND VOCS)

Scale:	1:1250
Drawn by:	GK
Checked by:	JA
Approved by:	MB
Date:	09/2025
Report No.:	PE4588-2
Drawing No.:	PE4588-4
Revision No.:	

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BH4-24-SS2 0.76-1.37m 11-JAN-2024
Metals (including Mercury and CrVI) comply with MECP Table 2 Standards

BH10-SS2 1.52 - 2.13m 5-SEPT-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH1-SS4 2.29 - 2.90m 16-MAY-2019
BTEX and PHCs (F1-F4) comply with MECP Table 2 Standards

BH11-SS1 6.10 - 6.71m 5-SEPT-2019
BTEX and VOCs comply with MECP Table 2 Standards

STORAGE UNIT

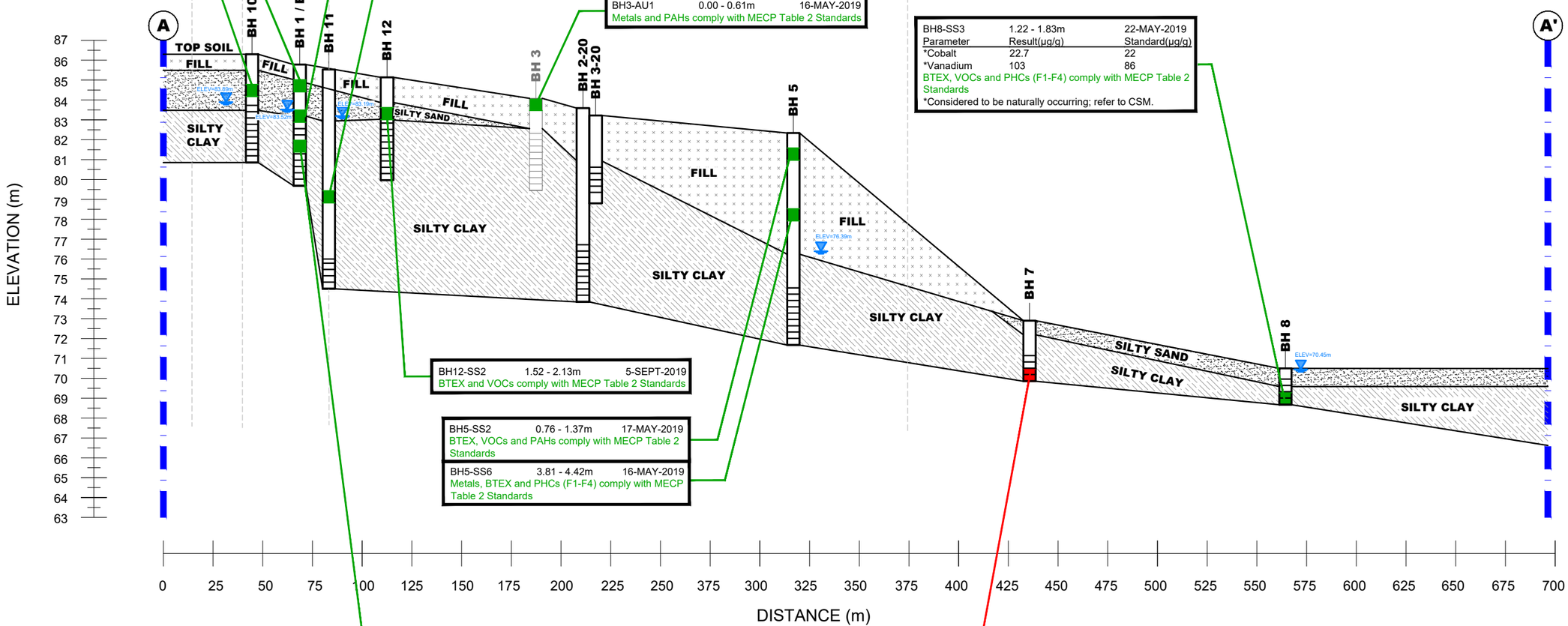
EXTENT OF FILL PILE

BH3-AU1 0.00 - 0.61m 16-MAY-2019
Metals and PAHs comply with MECP Table 2 Standards

BH8-SS3 1.22 - 1.83m 22-MAY-2019

Parameter	Result(µg/g)	Standard(µg/g)
*Cobalt	22.7	22
*Vanadium	103	86

BTEX, VOCs and PHCs (F1-F4) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.



BH12-SS2 1.52 - 2.13m 5-SEPT-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH5-SS2 0.76 - 1.37m 17-MAY-2019
BTEX, VOCs and PAHs comply with MECP Table 2 Standards

BH5-SS6 3.81 - 4.42m 16-MAY-2019
Metals, BTEX and PHCs (F1-F4) comply with MECP Table 2 Standards

BH4-24-SS6 3.81-4.42m 11-JAN-2024
BTEX, PHCs and VOCs comply with MECP Table 2 Standards

BH7-SS5 2.44 - 3.05m 22-MAY-2019

Parameter	Result(µg/g)	Standard(µg/g)
Bromomethane	0.06	0.05
Chloroform	0.06	0.05
*Vanadium	91.5	86

BTEX and PHCs (F1-F4) comply with MECP Table 2 Standards
*Considered to be naturally occurring; refer to CSM.

LEGEND:

SOIL SAMPLES COMPLY WITH MECP TABLE 2 STANDARDS

SOIL SAMPLES EXCEED MECP TABLE 2 STANDARDS

PHASE I - II PROPERTY BOUNDARY

DECOMMISSIONED MONITORING WELL

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

NO.	REVISIONS	DATE	INITIAL

CLARIDGE HOMES (GLADSTONE) INC.

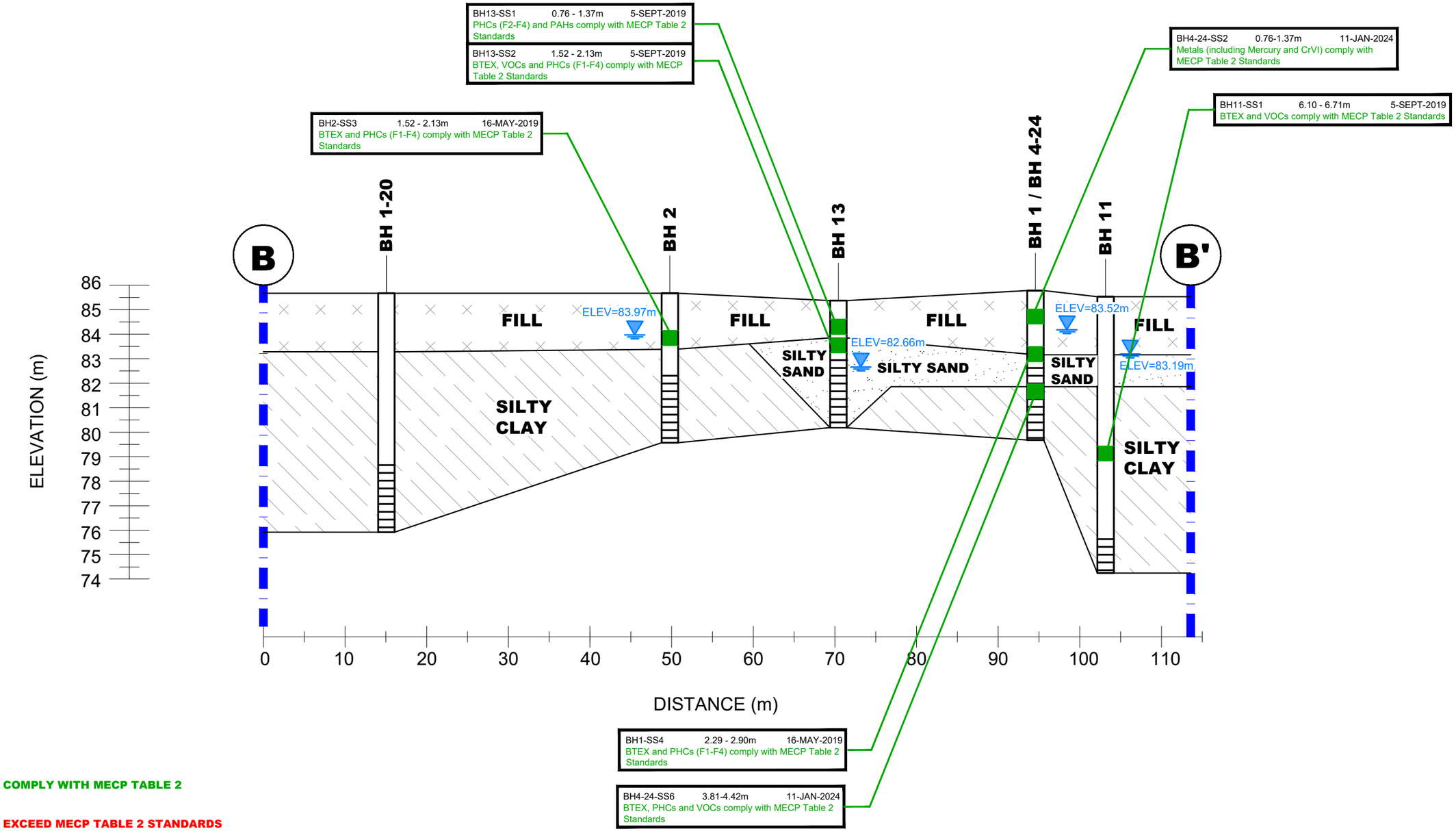
PHASE II- ENVIRONMENTAL SITE ASSESSMENT
3252 NAVAN ROAD AND SPRING VALLEY DEVELOPMENT (PHASE 5)
OTTAWA, ONTARIO

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

Scale: AS SHOWN	Date: 09/2025
Drawn by: GK	Report No.: PE4588-2
Checked by: JA	Dwg. No.: PE4588-4A
Approved by: MB	Revision No.:

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11x17



LEGEND:

SOIL SAMPLES COMPLY WITH MECP TABLE 2 STANDARDS

SOIL SAMPLES EXCEED MECP TABLE 2 STANDARDS

PHASE I - II PROPERTY BOUNDARY

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OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

CLARIDGE HOMES (GLADSTONE) INC.

PHASE II- ENVIRONMENTAL SITE ASSESSMENT
3252 NAVAN ROAD AND SPRING VALLEY DEVELOPMENT (PHASE 5)
OTTAWA, ONTARIO

Title: **CROSS SECTION B-B'-SOIL (METALS,BTEX,PHCs,PAHs AND VOCs)**

Scale: AS SHOWN	Date: 09/2025
Drawn by: GK	Report No.: PE4588-2
Checked by: JA	Dwg. No.: PE4588-4B
Approved by: MB	Revision No.:

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11x17

BH11-GW1 9.00-10.50m 09-SEP-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH11 7.40-10.50m 18-JAN-2024
VOCs comply with MECP Table 2 Standards

BH1-GW1 3.00-6.10m 31-MAY-2019

Parameter	Result(µg/L)	Standard(µg/L)
Tetrachloroethylene	286	1.6

Metals, BTEX and PHCs (F1-F4) comply with MECP Table 2 Standards

BH1-GW2 3.00-6.10m 15-MAY-2019

Parameter	Result(µg/L)	Standard(µg/L)
Tetrachloroethylene	43.1	1.6

Metals, BTEX and PHCs (F1-F4) comply with MECP Table 2 Standards

BH4-24 2.89-5.94m 18-JAN-2024
VOCs and BTEX comply with MECP Table 2 Standards

BH5-24-GW 2.89-5.94m 18-JAN-2024
VOCs and BTEX comply with MECP Table 2 Standards

BH6-GW1 7.60-10.67m 30-MAY-2019

Parameter	Result(µg/L)	Standard(µg/L)
Cobalt	4.5	3.8
Sodium	722200	490000

Metals including Hg and Cr(VI) and PAHs comply with MECP Table 2 Standards

BH12-GW1 3.66-4.60m 09-SEP-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH3-20 2.11-3.63m 11-FEB-2021
Cyanide and Chloride comply with MECP Table 2 Standards

GP/MW3 1.53-2.13 m 2-May-2014

Parameter	Result(µg/L)	Standard(µg/L)
Vanadium	6.7	6.2

Remaining Metals comply with MECP Table 2 Standards

MW3 1.53-2.13m 04-NOV-2013
VOCs and Chloride comply with MECP Table 2 Standards

MW3 1.53-2.13m 11-DEC-2013
VOCs and Chloride comply with MECP Table 2 Standards

BH8-GW1 0.30-1.83m 03-JUN-2019
Metals including Hg, Cr(VI), VOCs, BTEX, and PHCs (F1-F4) comply with MECP Table 2 Standards

BH3-07 7.00-8.99m 04-NOV-2013
VOCs and Chloride comply with MECP Table 2 Standards

BH3-07 7.00-8.99m 11-DEC-2013
VOCs and Chloride comply with MECP Table 2 Standards

BH7-GW1 1.20-2.80m 03-JUN-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH7 1.22-2.74m 11-FEB-2021
Chloride and Cyanide comply with MECP Table 2 standards

MW1 0.60-2.13m 04-NOV-2013
VOCs and Chloride comply with MECP Table 2 Standards

MW1 0.60-2.13m 11-DEC-2013
VOCs and Chloride comply with MECP Table 2 Standards

BH10-GW1 1.92-5.18m 09-SEP-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH10-GW 1.52-4.57m 18-JUNE-2024
VOCs comply with MECP Table 2 Standards

BH3-GW1 1.50-4.57m 23-FEB-2018
VOCs, BTEX, PHCs F1-F4 and Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards

DUP 1.50-4.57m 23-FEB-2018
VOCs comply with MECP Table 2 Standards

BH3-GW1 1.50-4.57m 03-JUNE-2024
VOCs, BTEX, PHCs F1-F4 and Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards

BH2-GW1 3.00-6.10m 30-MAY-2019
VOCs, BTEX and PHCs (F1-F4) comply with MECP Table 2 Standards

BH4-GW1 5.40-8.38m 30-MAY-2019
Metals, PAHs comply with MECP Table 2 Standards

BH13-GW1 2.28-5.18m 09-SEP-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH5 7.62-10.67m 11-FEB-2021
Metals, VOCs, PAHs, BTEX, and PHCs (F1-F4) comply with MECP Table 2 Standards

BH5-GW1 7.60-10.67m 30-MAY-2019
Chloride and Cyanide comply with MECP Table 2 standards

BH5-GW1 7.62-10.67 m 30-MAY-2019

Parameter	Result(µg/L)	Standard(µg/L)
Cobalt	4.5	3.8
Sodium	793000	490000

Metals including Hg and Cr(VI), BTEX, PHCs (F1-F4) and PAHs comply with MECP Table 2 Standards

BH2-GW1 1.50-4.57m 23-FEB-2018
VOCs, BTEX, PHCs F1-F4 and Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards

BH-2-GW1 1.50-4.57m 03-JUNE-2024
VOCs, BTEX, PHCs F1-F4 & Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards

BH1-GW1 1.50-4.57m 23-FEB-2018
VOCs, PHCs F1-F4 and Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards

BH1-GW1 1.50-4.57m 31-MAY-2019
BTEX and PHCs F1-F4 comply with MECP Table 2 Standards

BH1-GW1 1.50-4.57m 05-JUNE-2024
VOCs, PHCs F1-F4 and Metals (including As, Sb, Se, Hg and CrVI) comply with MECP Table 2 Standards

DUP 1.50-4.57m 05-JUNE-2024
VOCs & PHCs F1-F4 comply with MECP Table 2 Standards

BH 1/BH 4-24 85.77 (83.52)
BH 10 85.91 (83.89)
BH 11 85.68 (83.19)
BH 12 85.14
BH 3 84.01
BH 3-20 83.22
BH 2-20 83.59
BH 5 82.34 (76.39)
BH 5-24 85.83 (83.43)
BH 3-24 82.00
BH 6 75.47 (70.27)
BH 1-24 84.03
BH 2-24 83.31
BH 4 79.10 (75.70)
BH 6-20 81.73
BH 7 74.52 (72.30)
BH8 71.23 (70.45)
BH 2 85.67 (83.97)
BH 1-20 85.59
BH 13 85.65 (82.66)
BH 2 70.76 (70.54)
BH 4-20 70.66
TP 4-24 70.34
BH 3-07
GP/MW1
BH 3 69.97 (69.54)
BH 5-20 69.68
TP 1-24 70.50
TP 3-24 70.30
TP 2-24 70.42
TP 6-24 69.48
TP 5-24 69.61
BH 1 69.55 (68.79)
GP/MW3
GP/MW2

A
A'
B
B'

NAVAN ROAD
BROADRIDGE CRES.
BON TEMPS WAY
KNOTRIDGE STREET
SPRING VALLEY DR.
JOSHUA
FOUNTAINHEAD DRIVE
WINTERHAVEN DRIVE
PRESCOTT RUSSELL TRAIL LINK

VACANT
RESIDENTIAL
COMMERCIAL
INDUSTRIAL
(WASTE CONNECTION CANADANAVAN WASTE RECYCLING AND DISPOSAL FACILITY)
3530 NAVAN ROAD VACANT
3252 NAVAN ROAD CONSTRUCTION YARD
VACANT / TREED
BOULDER STOCKPILE
STOCKPILE OF CRUSHED STONE AND CLAY FILL
CONCRETE PIPES
GRASSED
DITCH
BUFFER ZONE
TREED
AGRICULTURAL OR OTHER
MER BLEUE BOG
FORMER ABOVEGROUND DIESEL STORAGE TANKS
FORMER ABOVEGROUND STORAGE TANK
FILL PILES
STORAGE
DWELLING
LANDSCAPING MATERIALS
567-635 KNOTRIDGE STREET RESIDENTIAL
566-610 KNOTRIDGE STREET RESIDENTIAL
550 KNOTRIDGE STREET PARK
280 JOSHUA STREET PARK
700 SPRING VALLEY DRIVE PARK PARK
BON TEMPS WAY RESIDENTIAL
294-320 JOSHUA STREET RESIDENTIAL
283-335 JOSHUA STREET RESIDENTIAL
263-313 FOUNTAINHEAD DRIVE RESIDENTIAL
501-513 BEAUFIELD ST. RESIDENTIAL
30-38 EDENBRIDGE COURT RESIDENTIAL
130-158 WINTERHAVEN DRIVE RESIDENTIAL
SPRING VALLEY DEVELOPMENT (PHASE 5)

LEGEND:

GROUNDWATER SAMPLES COMPLY WITH MECP TABLE 2 STANDARDS

GROUNDWATER SAMPLES EXCEED MECP TABLE 2 STANDARDS

- PHASE I - II PROPERTY BOUNDARY
- TEST PIT LOCATION (2024)
- BOREHOLE LOCATION (2024)
- BOREHOLE WITH MONITORING WELL LOCATION (2024)
- BOREHOLE LOCATION (2020)
- BOREHOLE WITH MONITORING WELL LOCATION (2020)
- DESTROYED MONITORING WELL LOCATION
- BOREHOLE WITH MONITORING WELL (2018)
- GAS PROBE / MONITORING WELL LOCATION
- BOREHOLE LOCATION WITH MONITORING WELL INSTALLED LOCATION (2007)

69.97 GROUND SURFACE ELEVATION (m)

(69.75) GROUNDWATER SURFACE ELEVATION (m) (JUNE 3 AND 18, 2024)

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

SCALE: 1:1250
0 5 10 15 20 25 50 75m

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

NO.	REVISIONS	DATE	INITIAL

CLARIDGE HOMES (GLADSTONE) INC.

PHASE II- ENVIRONMENTAL SITE ASSESSMENT
3252 NAVAN ROAD AND SPRING VALLEY DEVELOPMENT (PHASE 5)
OTTAWA, ONTARIO

Title:
ANALYTICAL TESTING PLAN-GROUNDWATER (METALS,BTEX,PHCs,PAHs AND VOCs)

Scale:	1:1250
Drawn by:	GK
Checked by:	JA
Approved by:	MB
Date:	09/2025
Report No.:	PE4588-2
Drawing No.:	PE4588-5
Revision No.:	

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BH10-GW1 1.92-5.18m 09-SEP-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH10-GW 1.52-4.57m 18-JUNE-2024
VOCs comply with MECP Table 2 Standards

BH1-GW1 3.00-6.10m 31-MAY-2019

Parameter	Result(µg/L)	Standard(µg/L)
Tetrachloroethylene	286	1.6

Metals, BTEX and PHCs (F1-F4) comply with MECP Table 2 Standards

BH1-GW2 3.00-6.10m 15-MAY-2019

Parameter	Result(µg/L)	Standard(µg/L)
Tetrachloroethylene	43.1	1.6

Metals, BTEX and PHCs (F1-F4) comply with MECP Table 2 Standards

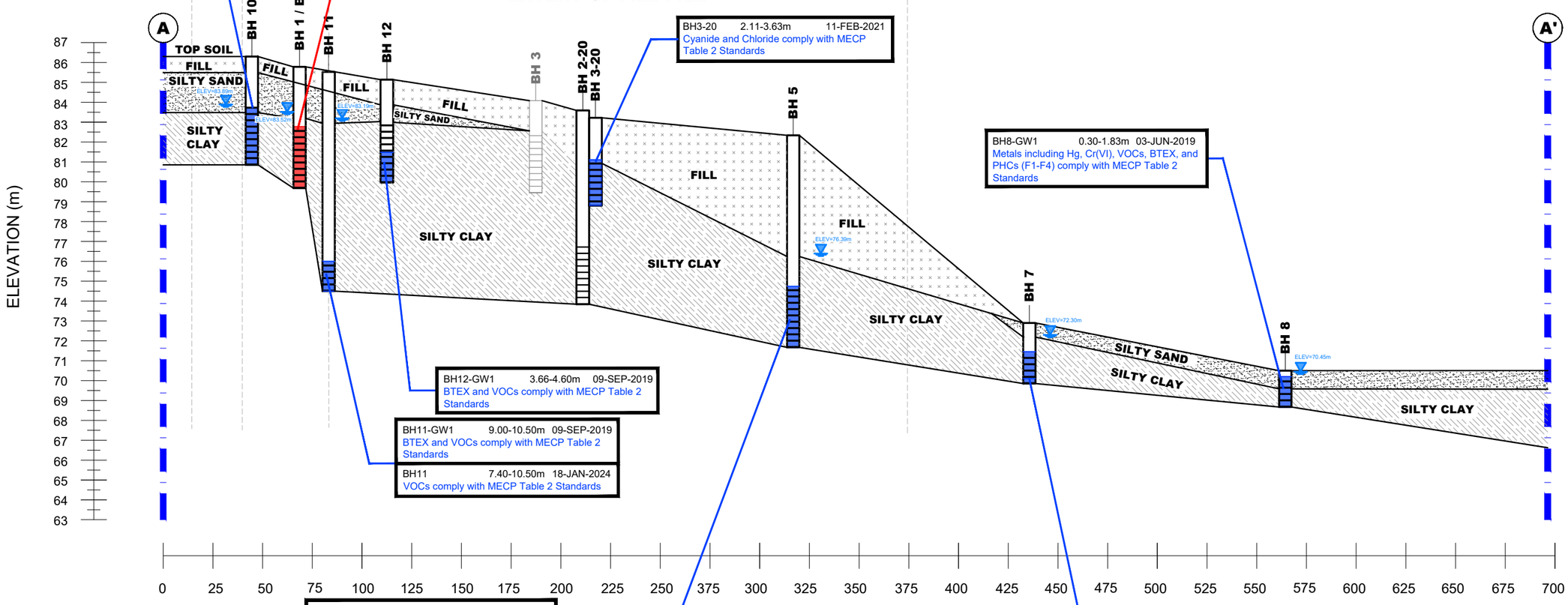
BH4-24 2.89-5.94m 18-JAN-2024
VOCs and BTEX comply with MECP Table 2 Standards

STORAGE UNIT

EXTENT OF FILL PILE

BH3-20 2.11-3.63m 11-FEB-2021
Cyanide and Chloride comply with MECP Table 2 Standards

BH8-GW1 0.30-1.83m 03-JUN-2019
Metals including Hg, Cr(VI), VOCs, BTEX, and PHCs (F1-F4) comply with MECP Table 2 Standards



BH12-GW1 3.66-4.60m 09-SEP-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH11-GW1 9.00-10.50m 09-SEP-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH11 7.40-10.50m 18-JAN-2024
VOCs comply with MECP Table 2 Standards

BH5 7.62-10.67m 11-FEB-2021
Metals, VOCs, PAHs, BTEX, and PHCs (F1-F4) comply with MECP Table 2 Standards

BH5-GW1 7.60-10.67m 30-MAY-2019
Chloride and Cyanide comply with MECP Table 2 standards

BH5-GW1 7.62-10.67 m 30-MAY-2019

Parameter	Result(µg/L)	Standard(µg/L)
Cobalt	4.5	3.8
Sodium	793000	490000

Metals including Hg and Cr(VI), BTEX, PHCs (F1-F4) and PAHs comply with MECP Table 2 Standards

BH7-GW1 1.20-2.80m 03-JUN-2019
BTEX and VOCs comply with MECP Table 2 Standards

BH7 1.22-2.74m 11-FEB-2021
Chloride and Cyanide comply with MECP Table 2 standards

LEGEND:

GROUNDWATER SAMPLES COMPLY WITH MECP TABLE 2 STANDARDS

GROUNDWATER SAMPLES EXCEED MECP TABLE 2 STANDARDS

PHASE I - II PROPERTY BOUNDARY

DECOMMISSIONED MONITORING WELL

PATERSON GROUP
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NO.	REVISIONS	DATE	INITIAL

CLARIDGE HOMES (GLADSTONE) INC.

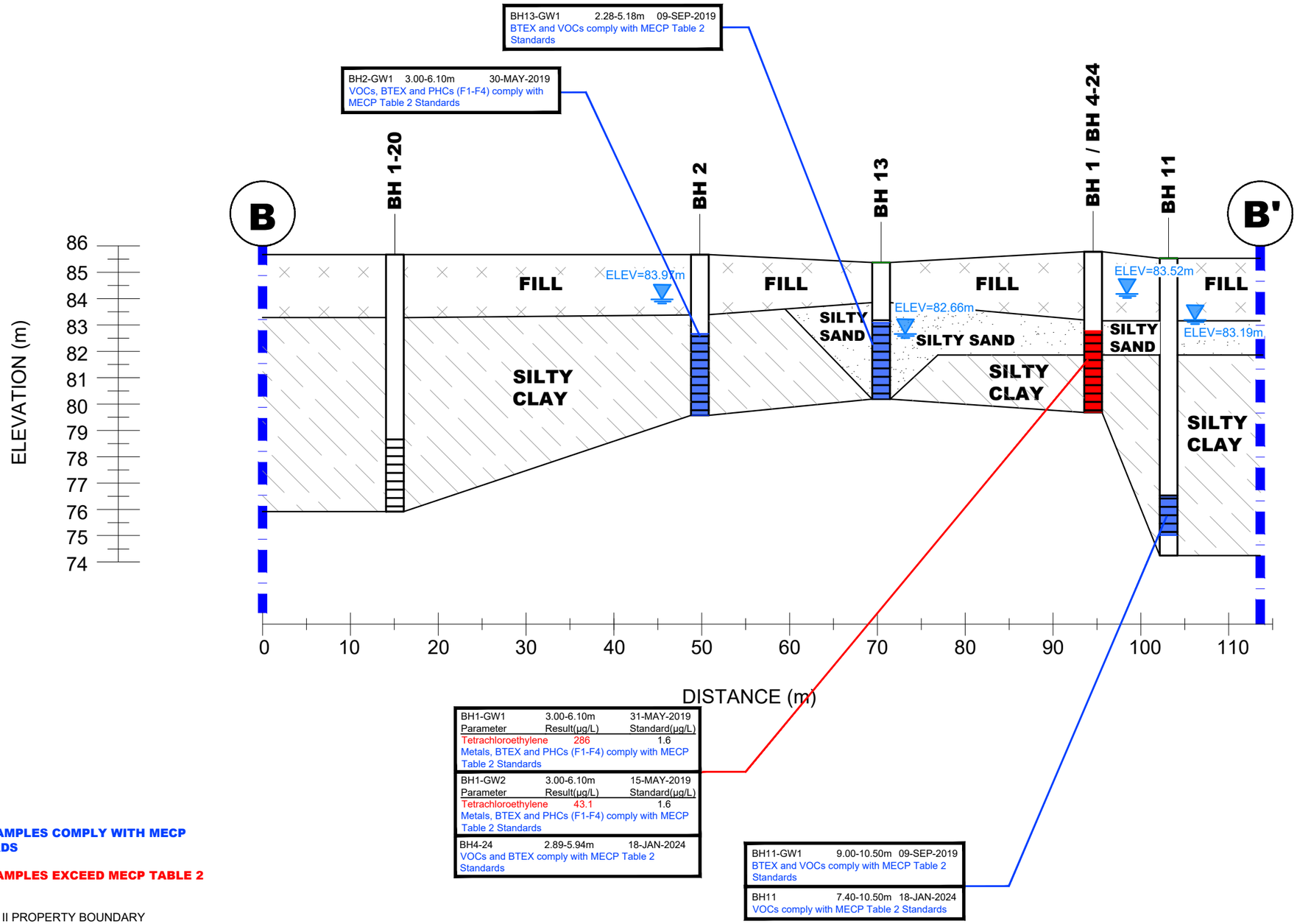
PHASE II- ENVIRONMENTAL SITE ASSESSMENT
3252 NAVAN ROAD AND SPRING VALLEY DEVELOPMENT (PHASE 5)
OTTAWA, ONTARIO

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

Scale: AS SHOWN	Date: 09/2025
Drawn by: GK	Report No.: PE4588-2
Checked by: JA	Dwg. No.: PE4588-5A
Approved by: MB	Revision No.:

11x17

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LEGEND:

GROUNDWATER SAMPLES COMPLY WITH MECP TABLE 2 STANDARDS

GROUNDWATER SAMPLES EXCEED MECP TABLE 2 STANDARDS

PHASE I - II PROPERTY BOUNDARY

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
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NO.	REVISIONS	DATE	INITIAL

CLARIDGE HOMES (GLADSTONE) INC.

PHASE II- ENVIRONMENTAL SITE ASSESSMENT
3252 NAVAN ROAD AND SPRING VALLEY DEVELOPMENT (PHASE 5)
OTTAWA, ONTARIO

Title: **CROSS SECTION B-B'-GROUNDWATER (METALS,BTEX,PHCs,PAHs AND VOCs)**

Scale: AS SHOWN	Date: 09/2025
Drawn by: GK	Report No.: PE4588-2
Checked by: JA	Dwg. No.: PE4588-5B
Approved by: MB	Revision No.:

11x17

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APPENDIX 1

SAMPLING AND ANALYSIS PLAN

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

LABORATORY CERTIFICATES OF ANALYSIS

Geotechnical Engineering

Environmental Engineering

Hydrogeology

Geological Engineering

Materials Testing

Building Science

Archaeological Services

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Sampling & Analysis Plan

Phase II Environmental Site Assessment

3252 Navan Road
Ottawa, Ontario

Prepared For

Claridge Homes (Gladstone) Inc.

April, 2019

Report: PE4588-SAP

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1.0 SAMPLING PROGRAM

Paterson Group Inc. (Paterson) was commissioned by Claridge Homes (Gladstone) Inc. to conduct a Phase II Environmental Site Assessment (ESA) of 3252 Navan Road, Ottawa, Ontario. Based on our Phase I ESA completed for the subject property, a subsurface investigation program, consisting of borehole drilling, was developed.

Borehole	Location & Rationale	Proposed Depth & Rationale
BH1	Place borehole on the northern portion of the subject site, to assess any potential impacts from APEC 3; Two existing ASTs.	Borehole to be advanced to approximately 2 m below the expected long-term groundwater table and install a monitoring well.
BH2	Place borehole on the northern portion of the subject site, to assess any potential impacts from APEC 2; Historical AST.	Borehole to be advanced to approximately 2 m below the expected long-term groundwater table and install a monitoring well.
BH3 - 6	Place boreholes towards the central portion of the subject site, to assess any potential impacts from APEC 1; Fill piles.	Borehole to be advanced to approximately 2 m below the expected long-term groundwater table and install a monitoring well.
BH3, BH5, BH7 to BH9	Place boreholes towards the eastern boundary of the subject site, to assess any potential impacts from APEC 4; Navan landfill.	Borehole to be advanced to approximately 2 m below the expected long-term groundwater table and install a monitoring well.
BH10, BH12, BH13	Near BH1 for horizontal delineation purposes	Near BH1 for horizontal delineation purposes
BH11	Near BH1 for vertical delineation purposes	Near BH1 for vertical delineation purposes

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

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

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

2.0 ANALYTICAL TESTING PROGRAM

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

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

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

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

3.0 STANDARD OPERATING PROCEDURES

3.1 Environmental Drilling Procedure

Purpose

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

Equipment

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

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

Determining Borehole Locations

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

After drilling is completed a plan with the borehole locations must be provided. Distances and orientations of boreholes with respect to site features (buildings, roadways, etc.) must be provided. Distances should be measured using a measuring tape or wheel rather than paced off. Ground surface elevations at each borehole should be surveyed relative to a catch basin of known geodetic elevation.

Drilling Procedure

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

- ❒ Continuous split spoon samples (every 0.6 m or 2') or semi-continuous (every 0.76 m or 2'6") are required.
- ❒ Make sure samples are well sealed in plastic bags with no holes prior to screening and are kept cool but unfrozen.
- ❒ If sampling for VOCs, BTEX, or PHCs F1, a soil core from each soil sample which may be 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 the vertical extent of contamination is delineated.
- ❒ As a general rule, environmental boreholes should be deep enough to intercept the groundwater table (unless this is impossible/impractical - call project manager to discuss).
- ❒ If at all possible, soil samples should be submitted to a preliminary screening procedure on-site, either using an RKI Eagle, PID, etc. depending on the type of suspected contamination.

Spoon Washing Procedure

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

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

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

Screening Procedure

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

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

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

3.2 Monitoring Well Installation Procedure

Equipment

- ❒ 5' x 2" [1.52 m x 50 mm] threaded sections of Schedule 40 PVC slotted well screen (5' x 1 ¼" [1.52 m x 32 mm] if installing in a cored hole in bedrock)
- ❒ 5' x 2" [1.52 m x 50 mm] threaded sections of Schedule 40 PVC riser pipe (5' x 1 ¼" [1.52 m x 32 mm] if installing in a cored hole in bedrock)
- ❒ Threaded end-cap
- ❒ Slip-cap or J-plug
- ❒ Asphalt cold patch or concrete
- ❒ Silica Sand
- ❒ Bentonite chips (Holeplug)
- ❒ Steel flushmount casing

Procedure

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

- ❒ Install a flushmount casing. Seal space between flushmount and borehole annulus with concrete, cold patch, or holeplug to match the surrounding ground surface.

3.3 Monitoring Well Sampling Procedure

Equipment

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

Sampling Procedure

- ❒ Locate well and use a socket wrench or Allan key to open metal flushmount protector cap. Remove plastic well cap.
- ❒ Measure water level, with respect to the existing ground surface, using water level meter or interface probe. If using an interface probe on suspected NAPL site, measure the thickness of the free product.
- ❒ Measure the total depth of well.
- ❒ Clean water level tape or interface probe using methanol and water. Change gloves between wells.
- ❒ Calculate the volume of standing water within well and record.
- ❒ Insert polyethylene tubing into well and attach it to the peristaltic pump. Turn on the peristaltic pump and purge into the graduated bucket. Purge at least three well volumes of water from the well. Measure and record field chemistry. Continue to purge, measuring field chemistry after every well volume until appearance or field chemistry stabilizes.
- ❒ Note the appearance of purge water, including colour, opacity (clear, cloudy, silty), sheen, presence of LNAPL, and odour. Note any other unusual features (particulate matter, effervescence (bubbling) of dissolved gas, etc.).

- ❒ Fill the required sample bottles. If sampling for metals, attach 75-micron filter to discharge tube and filter metals sample. If sampling for VOCs, use a low flow rate to ensure a continuous stream of non-turbulent flow into sample bottles. Ensure no headspace is present in VOC vials.
- ❒ Replace well cap and flushmount casing cap.

4.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

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

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

5.0 DATA QUALITY OBJECTIVES

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

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

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

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

For the purpose of calculating the RPD, it is desirable to select field duplicates from samples for which parameters are present in concentrations above laboratory detection limits, i.e. samples which are expected to be contaminated. If parameters are below laboratory detection limits for selected samples or duplicates, the RPD may be calculated using a concentration equal to one half (0.5 x) of 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 that meet the DQOs must also be considered in developing the Phase II Conceptual Site Model; often there are enough data available to produce a reliable Phase II Conceptual Site Model even if DQOs are not met for certain individual samples.

These considerations are discussed in the body of the report.

6.0 PHYSICAL IMPEDIMENTS TO SAMPLING & ANALYSIS PLAN

Physical impediments to the Sampling and Analysis plan may include:

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

Site-specific impediments to the Sampling and Analysis Plan are discussed in the body of the Phase II ESA report.

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Consulting Engineers

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

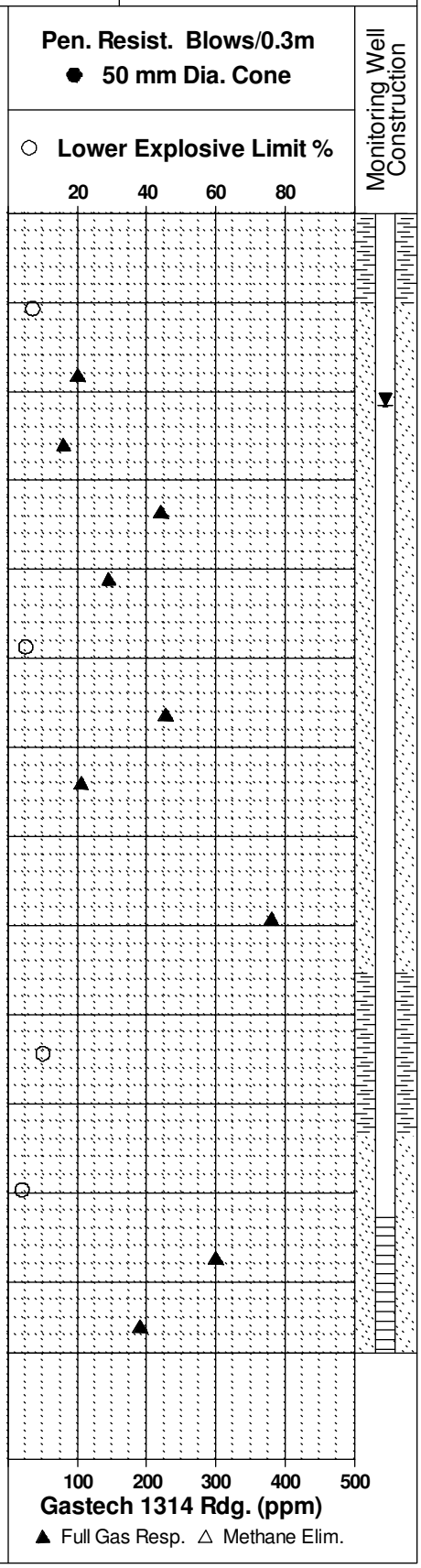
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REMARKS

HOLE NO. BH 1-07

BORINGS BY CME 55 Power Auger **DATE** Feb 21, 07

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.73
TOPSOIL 0.36							
Stiff, brown **SILTY CLAY**		SS	1	25	8	1	68.73
- firm to soft and grey by 0.9m depth		SS	2	100	2	2	67.73
		SS	3	100	1	3	66.73
		SS	4	100	2	4	65.73
		SS	5	100	1	5	64.73
		SS	6	100	1	6	63.73
		SS	7	100	1	7	62.73
		SS	8	100	1	8	61.73
		SS	9	100	1	9	60.73
		SS	10	100	1	10	59.73
		SS	11	100	1	11	58.73
		SS	12	100	1	12	57.73
12.80		SS	13	100	2		
End of Borehole							
(GWL @ 2.15m-July 4/07)							



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SOIL PROFILE AND TEST DATA

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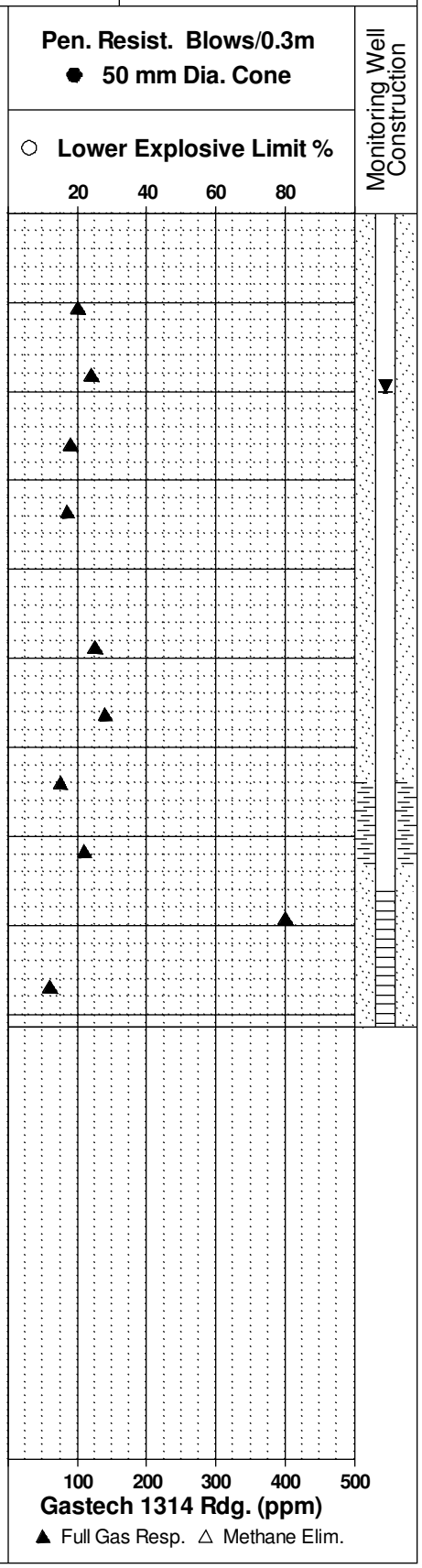
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REMARKS

HOLE NO. BH 2-07

BORINGS BY CME 75 Power Auger **DATE** Jun 14, 07

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.31
TOPSOIL 0.30							
Stiff to firm, brown **SILTY CLAY**		SS	1	50	7	1	68.31
		SS	2	67	9	2	67.31
- grey by 2.1m depth		SS	3	100	2	3	66.31
		SS	4	100	1	4	65.31
		SS	5	100	1	5	64.31
		SS	6	100	1	6	63.31
		SS	7	100	1	7	62.31
		SS	8	100	1	8	61.31
		SS	9	100	1		
		SS	10	100	1	9	60.31
9.14							
End of Borehole							
(GWL @ 2.0-July 4/07)							



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FILE NO. E2474

REMARKS

HOLE NO. BH 3-07

BORINGS BY CME 75 Power Auger **DATE** Jun 14, 07

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	70.06
TOPSOIL 0.36							
Stiff to firm, brown **SILTY CLAY**		SS	1	75	8	1	69.06
- grey-brown by 1.4m depth		SS	2	100	2	2	68.06
- grey by 2.1m depth		SS	3	100	1	3	67.06
		SS	4	100	1		
		SS	5	100	1	4	66.06
		SS	6	100	1	5	65.06
		SS	7	100	1	6	64.06
		SS	8	100	1	7	63.06
		SS	9	100	1	8	62.06
8.99		SS	10	100	1		
End of Borehole							
(GWL @ 1.93-July 4/07)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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FILE NO. E2474

REMARKS

HOLE NO. BH 4-07

BORINGS BY CME 75 Power Auger **DATE** Jun 14, 07

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	69.10		
Inferred **SILTY CLAY**						1	68.10		
						2	67.10		
						3	66.10		
						4	65.10		
4.57									
End of Borehole									
(GWL @ 1.09-July 4/07)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Lower Explosive Limit %
20 40 60 80

100 200 300 400 500
Gastech 1314 Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. BH 5-07

BORINGS BY CME 75 Power Auger **DATE** Jun 14, 07

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.23
TOPSOIL 0.28							
		SS	1	58	8	1	68.23
Stiff to firm, brown **SILTY CLAY**		SS	2	100	3	2	67.23
		SS	3	100	1		
- grey by 2.7m depth						3	66.23
		SS	4	100	1		
4.11						4	65.23
End of Borehole							
(GWL @ 1.38-July 4/07)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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REMARKS

HOLE NO. BH 6-07

BORINGS BY CME 75 Power Auger **DATE** Jun 15, 07

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	71.51
TOPSOIL 0.30							
		SS	1	50	11	1	70.51
Stiff to firm, brown **SILTY CLAY**		SS	2	75	5	2	69.51
- grey by 2.3m depth		SS	3	100	1	3	68.51
		SS	4	100	1	4	67.51
4.11							
End of Borehole							
(GWL @ 1.56-July 4/07)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %
20 40 60 80

Monitoring Well Construction

100 200 300 400 500
Gastech 1314 Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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REMARKS

HOLE NO. BH 7-07

BORINGS BY CME 75 Power Auger **DATE** Jun 15, 07

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	70.81
TOPSOIL 0.25							
		SS	1	0	14	1	69.81
Stiff to firm, brown **SILTY CLAY**		SS	2	8	9	2	68.81
- grey by 2.3m depth		SS	3	100	4	3	67.81
		SS	4	100	1	4	66.81
4.11							
End of Borehole							
(GWL @ 1.38-July 4/07)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

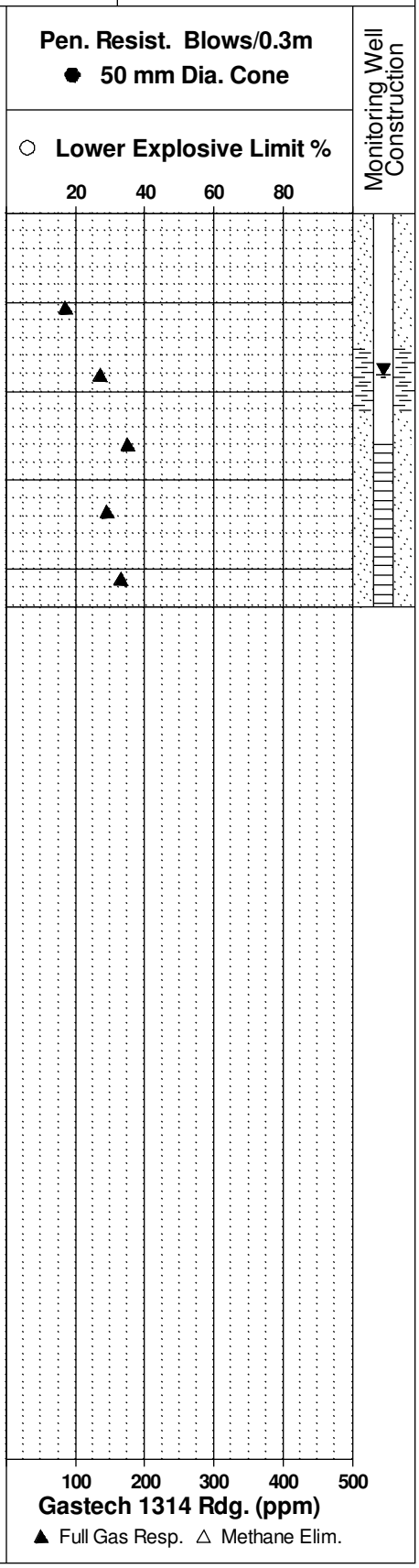
FILE NO. E2474

REMARKS

HOLE NO. BH 8-07

BORINGS BY CME 75 Power Auger **DATE** Jun 15, 07

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	84.38
TOPSOIL 0.10							
Loose, brown **SILTY** fine **SAND**		SS	1	33	5	1	83.38
1.27							
Firm, red-brown **SILTY CLAY**		SS	2	100	1	2	82.38
- grey by 2.1m depth		SS	3	100	1		
		SS	4	100	1	3	81.38
4.42		SS	5	8	1	4	80.38
End of Borehole							
(GWL @ 1.82-July 4/07)							



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28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. BH 9-07

BORINGS BY CME 55 Power Auger **DATE** Jul 13, 07

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	
TOPSOIL 0.20							
Stiff to firm, brown **SILTY CLAY**		SS	1	100	10	1	
- grey by 1.1m depth						2	
		SS	2	100	1	3	
		SS	3	100	1	4	
		SS	4	100	1	5	
		SS	5	100	1	6	
		SS	6	100	1	7	
9.75						8	
End of Borehole						9	
(GWL @ 8.09-July 16/07)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. BH10-08

BORINGS BY CME 55 Power Auger **DATE** Sep 29, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.28
13mm Topsoil		AU	1				
		SS	2	83	7	1	68.28
		SS	3	88	8	2	67.28
Brown **SILTY SAND** , some sand to 2.2m depth		SS	4	100	1		
		SS	5	100	1	3	66.28
- grey by 2.2m depth		SS	6	100	1	4	65.28
		SS	7	100	1	5	64.28
		SS	8	100	1		
		SS	9	100	1	6	63.28
		SS	10	100	1	7	62.28
		SS	11	100	1	8	61.28
		SS	12	100	1		
9.14						9	60.28
End of Borehole							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %
20 40 60 80

Monitoring Well Construction

100 200 300 400 500
Gastech 1314 Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. BH11-08

BORINGS BY CME 55 Power Auger **DATE** Sep 29, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	70.69
FILL: Brown silty clay		AU	1				
0.60							
		SS	2	58	8	1	69.69
		SS	3	92	5	2	68.69
Grey-brown **SILTY CLAY**, some sand to 2.2m depth		SS	4	100	1		
		SS	5	100	1	3	67.69
- grey by 2.2m depth		SS	6	100	1	4	66.69
		SS	7	100	1	5	65.69
		SS	8	100	1		
		SS	9	100	1	6	64.69
		SS	10	100	1	7	63.69
		SS	11	100	1	8	62.69
		SS	12	100	1		
9.14						9	61.69
End of Borehole							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %
20 40 60 80

Monitoring Well Construction

100 200 300 400 500
Gastech 1314 Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. BH12-08

BORINGS BY CME 55 Power Auger **DATE** Sep 30, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	71.78
25mm Topsoil		AU	1				
		SS	2	75	14	1	70.78
		SS	3	83	8	2	69.78
Brown **SILTY CLAY** , trace organic matter		SS	4	100	2		
		SS	5	100	1	3	68.78
- grey by 2.2m depth		SS	6	100	1	4	67.78
		SS	7	100	1	5	66.78
		SS	8	100	1		
		SS	9	100	1	6	65.78
		SS	10	100	1	7	64.78
		SS	11	100	1	8	63.78
		SS	12	100	1		
9.14						9	62.78
End of Borehole							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %
20 40 60 80

Monitoring Well Construction

100 200 300 400 500
Gastech 1314 Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW 1

BORINGS BY CME 55 Power Auger **DATE** Sep 30, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.73
		AU	1				
Very stiff, brown **SILTY CLAY**, trace sand		SS	2	75	9	1	68.73
		SS	3	100	4		
2.13						2	67.73
End of Monitoring Well							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %
20 40 60 80

Monitoring Well Construction

100 200 300 400 500
Gastech 1314 Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW 2

BORINGS BY CME 55 Power Auger **DATE** Sep 29, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	
		AU	1				
Brown **SILTY CLAY** , some organic matter and sand seams		SS	2	71	9	1	
		SS	3	92	5		
2.13						2	
End of Monitoring Well							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %
20 40 60 80

Monitoring Well Construction

100 200 300 400 500
Gastech 1314 Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW 3

BORINGS BY CME 55 Power Auger **DATE** Sep 30, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	71.79		
		AU	1						
Brown **SILTY CLAY** , some organic matter and sand seams		SS	2	67	7	1	70.79		
		SS	3		4				
2.13						2	69.79		
End of Monitoring Well									

Lower Explosive Limit % scale: 20 40 60 80

Gastech 1314 Rdg. (ppm) scale: 100 200 300 400 500

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW 4

BORINGS BY CME 55 Power Auger **DATE** Sep 30, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	74.07		
		AU	1						
Brown **SILTY CLAY** , some organic matter and sand seams		SS	2	83	9	1	73.07		
		SS	3	100	6				
2.13						2	72.07		
End of Monitoring Well									

Lower Explosive Limit % scale: 20 40 60 80

Gastech 1314 Rdg. (ppm) scale: 100 200 300 400 500

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW 5

BORINGS BY CME 55 Power Auger **DATE** Oct 1, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	78.70
		AU	1				
FILL: Brown silty sand, some wood and organic matter		SS	2	58	8	1	77.70
1.50							
		SS	3	10	7	2	76.70
		SS	4	25	6		
FILL: Brown silty clay, trace sand						3	75.70
		SS	5	83	4		
4.06		SS		0	50	4	74.70
End of Monitoring Well							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %
20 40 60 80

Monitoring Well Construction

100 200 300 400 500
Gastech 1314 Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW 6

BORINGS BY CME 55 Power Auger **DATE** Oct 1, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	82.10
		AU	1				
		SS	2	42	10	1	81.10
FILL: Brown islty clay with sand, asphalt and wood pieces		SS	3	42	7	2	80.10
		SS	4	83	9		
3.20						3	79.10
		SS	5	100	9		
Brown **SILTY CLAY** , trace sand seams		SS	6	75	12	4	78.10
		SS	7	100	9	5	77.10
5.33							
End of Monitoring Well							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW 7

BORINGS BY CME 55 Power Auger **DATE** Sep 29, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	83.34
FILL: Brown sand with silt		AU	1				
0.69						1	82.34
Compact, brown **SAND**		SS	2	62	23		
1.45							
		SS	3	100	2	2	81.34
Grey **SILTY CLAY**		SS	4	100	1		
						3	80.34
		SS	5	100	1		
3.66							
End of Monitoring Well							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %
20 40 60 80

Monitoring Well Construction

100 200 300 400 500
Gastech 1314 Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW 8

BORINGS BY CME 55 Power Auger **DATE** Sep 29, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit % (20, 40, 60, 80)	Monitoring Well Construction
GROUND SURFACE						0	70.56		
		AU	1						
Brown **SILTY CLAY** , some organic matter and sand seams		SS	2	75	6	1	69.56		
		SS	3	100	3				
2.13						2	68.56		
End of Monitoring Well									

Gastech 1314 Rdg. (ppm) (100, 200, 300, 400, 500)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW 9

BORINGS BY CME 55 Power Auger **DATE** Sep 30, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	70.80		
		AU	1						
Brown **SILTY CLAY** , some organic matter and sand seams		SS	2	62	5	1	69.80		
		SS	3	100	5				
2.13						2	68.80		
End of Monitoring Well									

Lower Explosive Limit % scale: 20 40 60 80

Gastech 1314 Rdg. (ppm) scale: 100 200 300 400 500

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW10

BORINGS BY CME 55 Power Auger **DATE** Oct 1, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	69.59		
		AU	1						
Brown **SILTY CLAY** , some organic matter and sand seams		SS	2	100	5	1	68.59		
		SS	3	100	4				
2.13						2	67.59		
End of Monitoring Well									

Lower Explosive Limit % scale: 20 40 60 80

Gastech 1314 Rdg. (ppm) scale: 100 200 300 400 500

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW11

BORINGS BY CME 55 Power Auger **DATE** Sep 30, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.09
		AU	1				
Brown **SILTY CLAY** , some organic matter and sand seams		SS	2	100	5	1	68.09
		SS	3	100	2		
2.13						2	67.09
End of Monitoring Well							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW12

BORINGS BY CME 55 Power Auger **DATE** Oct 1, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	70.03		
		AU	1						
Brown **SILTY CLAY** , some organic matter and sand seams		SS	2	50	3	1	69.03		
		SS	3	100	4				
						2	68.03		
2.39									
End of Monitoring Well									

Lower Explosive Limit % scale: 20 40 60 80

Gastech 1314 Rdg. (ppm) scale: 100 200 300 400 500

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW13

BORINGS BY CME 55 Power Auger **DATE** Oct 1, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	70.23
		AU	1				
Brown **SILTY CLAY** , some organic matter and sand seams		SS	2	83	6	1	69.23
		SS	3	92	4		
						2	68.23
2.13							
End of Monitoring Well							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW14

BORINGS BY CME 55 Power Auger **DATE** Sep 29, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	80.61		
		AU	1						
Brown **SILTY CLAY** , some organic matter and sand seams		SS	2	75	7	1	79.61	▲	
		SS	3	83	8			▲	
2.13						2	78.61		
End of Monitoring Well									

Lower Explosive Limit %: 20 40 60 80

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Supplemental Environmental Site Assessment
Navan Road at Renaud Road
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebekk Ltd.

FILE NO. E2474

REMARKS

HOLE NO. GP/MW15

BORINGS BY CME 55 Power Auger **DATE** Oct 1, 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	70.54		
		AU	1						
Brown **SILTY CLAY** , some organic matter and sand seams		SS	2	62	8	1	69.54		
		SS	3	100	4				
2.13						2	68.54		
End of Monitoring Well									

Lower Explosive Limit % scale: 20 40 60 80

Gastech 1314 Rdg. (ppm) scale: 100 200 300 400 500

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
Spring Valley Development - Phase 5
Ottawa, Ontario

DATUM Geodetic

FILE NO. PE4210

REMARKS

HOLE NO. BH 1

BORINGS BY CME 55 Power Auger **DATE** February 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.55
TOPSOIL		AU	1				
0.33							
		SS	2	83	5	1	68.55
		SS	3	100	2	2	67.55
Brown **SILTY CLAY,** trace sand							
- grey by 2.3m depth		SS	4	100	W	3	66.55
		SS	5	100	W		
		SS	6	100	W	4	65.55
4.57							
End of Borehole							
(GWL @ 0.53m - Feb. 27, 2018)							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
Spring Valley Development - Phase 5
Ottawa, Ontario

DATUM Geodetic

FILE NO. PE4210

REMARKS

HOLE NO. BH 2

BORINGS BY CME 55 Power Auger **DATE** February 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	70.76
TOPSOIL		AU	1				
0.36							
		SS	2	62	7	1	69.76
		SS	3	92	5	2	68.76
Brown **SILTY CLAY,** trace sand							
- grey by 2.3m depth		SS	4	100	W	3	67.76
		SS	5	100	W		
		SS	6	100	W	4	66.76
4.57							
End of Borehole							
(GWL @ 0.12m - Feb. 27, 2018)							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
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Ottawa, Ontario

DATUM Geodetic

FILE NO. PE4210

REMARKS

HOLE NO. BH 3

BORINGS BY CME 55 Power Auger **DATE** February 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.97
TOPSOIL		AU	1				
0.51							
		SS	2	58	4	1	68.97
		SS	3	100	4	2	67.97
Brown **SILTY CLAY,** trace sand							
- grey by 2.4m depth		SS	4	100	1	3	66.97
		SS	5	100	W		
		SS	6	100	W	4	65.97
4.57							
End of Borehole							
(GWL @ 0.15m - Feb. 27, 2018)							

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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9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

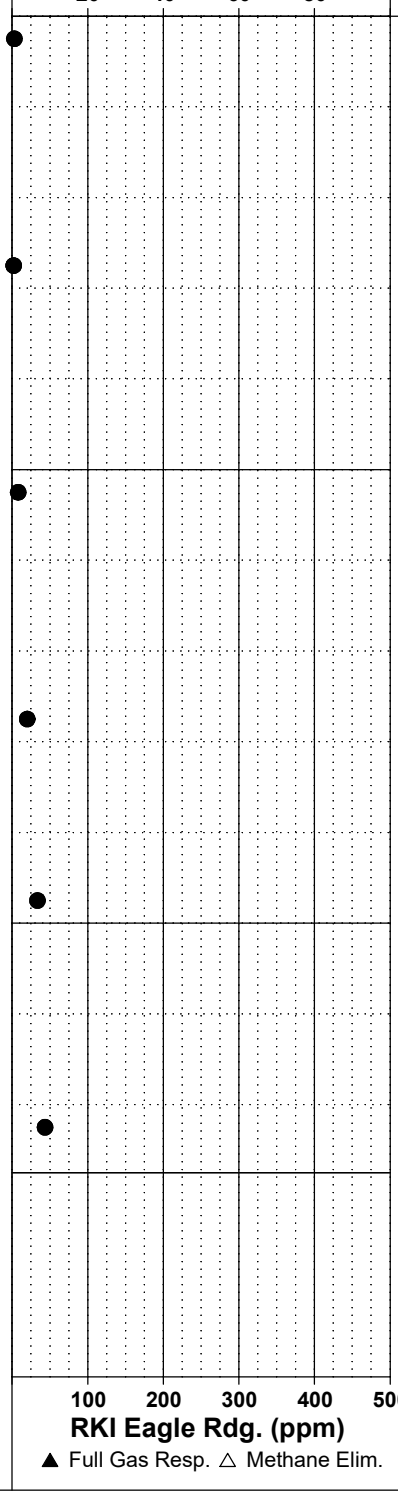
Phase II - Environmental Site Assessment Update
Spring Valley Development - Phase 5
Ottawa, Ontario

EASTING: 382337.947 **NORTHING:** 5032120.359 **ELEVATION:** 70.50
DATUM: Geodetic
REMARKS:
BORINGS BY: Backhoe **DATE:** June 3, 2024

FILE NO. PE4210
HOLE NO. TP 1-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
TOPSOIL mixed with some placed clay fill		G	1			0	70.50
0.32							
Brown **SILTY CLAY**, trace sand		G	2				
- Grey by 2.4 m depth						1	69.50
		G	3				
		G	4				
		G	5			2	68.50
		G	6				
2.55							
End of Test Pit							

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



MONITORING WELL CONSTRUCTION

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SOIL PROFILE AND TEST DATA

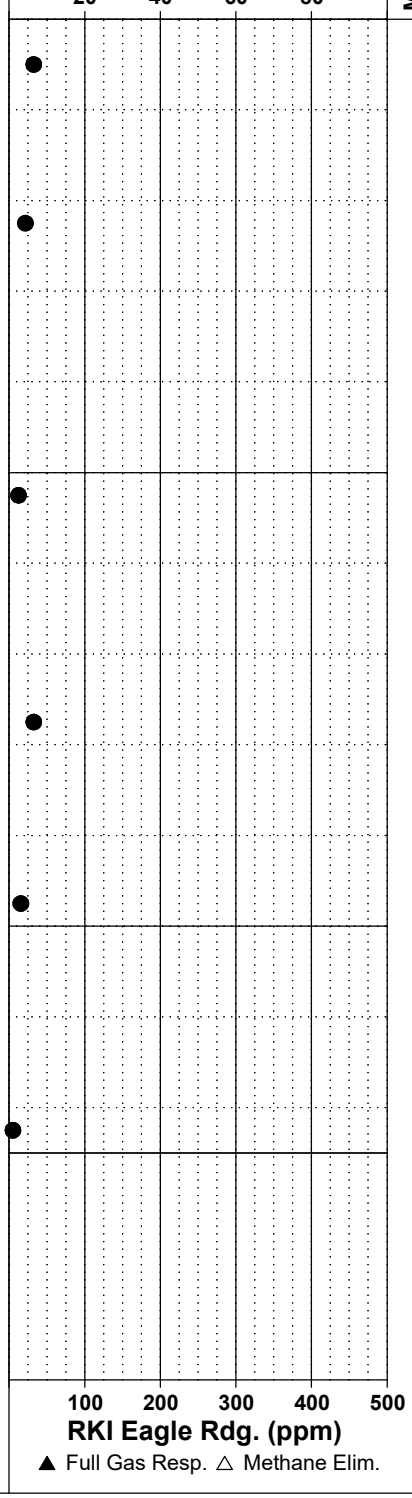
Phase II - Environmental Site Assessment Update
Spring Valley Development - Phase 5
Ottawa, Ontario

EASTING: 382310.788 **NORTHING:** 5032095.405 **ELEVATION:** 70.42
DATUM: Geodetic
REMARKS:
BORINGS BY: Backhoe **DATE:** June 3, 2024

FILE NO. PE4210
HOLE NO. TP 2-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	70.42
TOPSOIL, clay, roots		G	1				
0.20							
FILL: Loose silty clay							
0.50		G	2				
Brown **SILTY CLAY**, trace sand							
- Grey by 2.4 m depth						1	69.42
		G	3				
		G	4				
		G	5			2	68.42
		G	6				
2.50							
End of Test Pit							

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



MONITORING WELL CONSTRUCTION

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment Update
Spring Valley Development - Phase 5
Ottawa, Ontario

EASTING: 382345.293 **NORTHING:** 5032079.512 **ELEVATION:** 70.30
DATUM: Geodetic
REMARKS:
BORINGS BY: Backhoe **DATE:** June 3, 2024

FILE NO. PE4210
HOLE NO. TP 3-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	70.30
TOPSOIL, clay, sand and roots		G	1				
0.20							
FILL: Loose silty clay, trace roots		G	2				
0.45							
SILTY CLAY, trace sand							
- Grey from 1.5 to 2.5 m depth		G	3			1	69.30
		G	4				
		G	5			2	68.30
2.50		G	6				
End of Test Pit							

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 Update
Spring Valley Development - Phase 5
Ottawa, Ontario

EASTING: 382387.241 **NORTHING:** 5032053.793 **ELEVATION:** 70.34
DATUM: Geodetic
REMARKS:
BORINGS BY: Backhoe **DATE:** June 3, 2024

FILE NO. PE4210
HOLE NO. TP 4-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	70.34
TOPSOIL, clay, sand and roots		G	1				
0.30							
SILTY SAND		G	2				
0.54							
Brown **SILTY CLAY**							
- Grey from 1.5 to 2.7 m depth		G	3			1	69.34
		G	4				
		G	5			2	68.34
		G	6				
2.70							
End of Test Pit							

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 Update
Spring Valley Development - Phase 5
Ottawa, Ontario

EASTING: 382327.776 **NORTHING:** 5031993.167 **ELEVATION:** 69.61
DATUM: Geodetic
REMARKS:
BORINGS BY: Backhoe **DATE:** June 3, 2024

FILE NO. PE4210
HOLE NO. TP 5-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	69.61
TOPSOIL, clay, roots and sand		G	1				
0.29							
FILL: Silty clay with sand		G	2				
0.46							
Brown **SILTY CLAY**							
- Grey from 2 to 2.6 m depth		G	3			1	68.61
		G	4				
		G	5			2	67.61
		G	6				
2.60							
End of Test Pit							

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 Update
Spring Valley Development - Phase 5
Ottawa, Ontario

EASTING: 382381.855 **NORTHING:** 5031962.142 **ELEVATION:** 69.48
DATUM: Geodetic
REMARKS:
BORINGS BY: Backhoe **DATE:** June 3, 2024

FILE NO. PE4210
HOLE NO. TP 6-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	MONITORING WELL CONSTRUCTION
GROUND SURFACE									
TOPSOIL, clay, sand and roots						0	69.48		
0.30		G	1						
Brown **SILTY CLAY**, trace sand									
- Grey by 2.4 m depth		G	2						
		G	3			1	68.48		
		G	4						
		G	5			2	67.48		
2.50		G	6						
End of Test Pit									

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

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

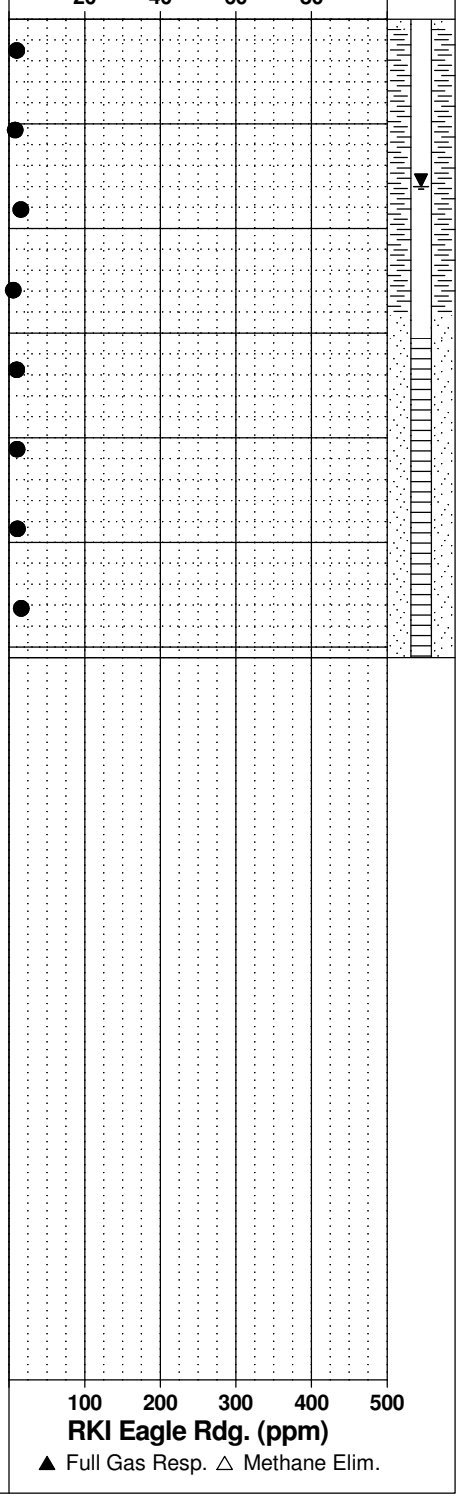
REMARKS

HOLE NO. BH 1

BORINGS BY CME 55 Power Auger **DATE** 2019 May 16

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING							
FILL: Brown silty sand with crushed stone and gravel		AU	1			0	85.78
0.51							
Brown **SILTY SAND**		SS	2	33	14	1	84.78
		SS	3	75	6	2	83.78
2.59		SS	4	100	6		
Brown **SILTY CLAY**		SS	5	100	4	3	82.78
- grey by 3.8m depth		SS	6	100	4	4	81.78
		SS	7	100	1	5	80.78
		SS	8	100	W		
6.10						6	79.78
End of Borehole							
(GWL @ 1.60m - May 31, 2019)							

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



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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
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FILE NO. PE4588

REMARKS

HOLE NO. BH 2

BORINGS BY CME 55 Power Auger **DATE** 2019 May 16

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING						0	85.67
FILL: Brown silty sand, some gravel, trace clay		AU	1				
		SS	2	21	15	1	84.67
		SS	3	79	13	2	83.67
2.29							
		SS	4	46	7		
Brown **SILTY CLAY**		SS	5	100	5	3	82.67
- grey by 3.8m depth		SS	6	100	4	4	81.67
		SS	7	100	W	5	80.67
		SS	8	100	W		
6.10						6	79.67
End of Borehole							
(GWL @ 1.70m - May 30, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

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FILE NO. PE4588

REMARKS

HOLE NO. BH 3

BORINGS BY CME 55 Power Auger **DATE** 2019 May 16

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING						0	84.01
FILL: Brown silty sand with gravel		AU	1				
		SS	2	71	18	1	83.01
1.52							
Brown **SILTY CLAY**		SS	3	83	7	2	82.01
		SS	4	100	3		
- grey by 2.3m depth		SS	5	100	3	3	81.01
		SS	6	100	1	4	80.01
4.57							
End of Borehole							
(MW damaged - May 30, 2019)							

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
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH 4

BORINGS BY CME 55 Power Auger **DATE** 2019 May 16

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING						0	79.10
FILL: Brown silty sand with gravel		AU	1				
0.60							
FILL: Brow nsilty sand with clay, gravel and sandstone, trace organics		SS	2	33	27	1	78.10
1.37		SS	3	58	9	2	77.10
		SS	4	88	7		
		SS	5	100	7	3	76.10
Brown **SILTY CLAY**		SS	6	100	9	4	75.10
		SS	7	100	7	5	74.10
		SS	8	100	4		
- grey by 6.1m depth		SS	9	100	2	6	73.10
		SS	10	100	2	7	72.10
		SS	11	100		8	71.10
8.38							
End of Borehole							
(GWL @ 3.40m - May 30, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH 5

BORINGS BY CME 55 Power Auger **DATE** 2019 May 17

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
UNDERSIDE OF FOOTING						0	82.34		
		AU	1						
		SS	2	33	8	1	81.34	113.8	
		SS	3	54	9	2	80.34		
FILL: Brown silty sand, some gravel and brick		SS	4	29	14	3	79.34		
		SS	5	58	5				
		SS	6	42	15	4	78.34		
		SS	7	38	6	5	77.34		
		SS	8	12	5				
6.10						6	76.34		
		SS	9	79	21				
		SS	10	100	15	7	75.34		
Brown **SILTY CLAY**		SS	11	100	8	8	74.34		
- grey by 8.4m depth		SS	12	88	4	9	73.34		
		SS	13	100	2				
		SS	14	100	1	10	72.34		
10.67									
End of Borehole									
(GWL @ 5.95m - May 30, 2019)									

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.

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

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FILE NO. PE4588

REMARKS

HOLE NO. BH 6

BORINGS BY CME 55 Power Auger **DATE** 2019 May 17

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING						0	75.47
		AU	1				
		SS	2	58	16	1	74.47
		SS	3	33	7	2	73.47
		SS	4	71	7		
FILL: Brown silty sand with gravel, some clay, trace brick and topsoil		SS	5	62	8	3	72.47
		SS	6	75	22	4	71.47
		SS	7	71	8	5	70.47
		SS	8	67	20	6	69.47
		SS	9	46	8		
6.86							
		SS	10	88	15	7	68.47
Brown **SILTY CLAY**		SS	11	100	7	8	67.47
- grey by 8.4m depth		SS	12	100	5	9	66.47
		SS	13	100	2		
		SS	14	100	W	10	65.47
10.67							
End of Borehole							
(GWL @ 5.20m - May 30, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH 7

BORINGS BY Portable Drill **DATE** 2019 May 22

SOIL DESCRIPTION		STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING								
TOPSOIL	0.30		SS	1	100		0	72.90
Brown **SILTY CLAY**	0.71		SS	2	100		1	71.90
Brown **SILTY CLAY**			SS	3	100		2	70.90
- grey by 1.8m depth			SS	4	100			
	3.05		SS	5	100		3	69.90
End of Borehole								
(GWL @ 0.60m - June 3, 2019)								

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
3252 Navan Road
Ottawa, Ontario

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FILE NO. PE4588

REMARKS

HOLE NO. BH 8

BORINGS BY Portable Drill **DATE** 2019 May 22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING							
TOPSOIL 0.28		SS	1	12		0	70.50
Grey **SILTY SAND** 0.91		SS	2	58		1	69.50
Brown **SILTY CLAY** - grey by 1.5m depth 1.83		SS	3	100			
End of Borehole							
(GWL @ 0.05m - June 3, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ **Lower Explosive Limit %**
20 40 60 80

Monitoring Well Construction

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

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH 9

BORINGS BY Portable Drill **DATE** 2019 May 22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING							
TOPSOIL 0.15		SS	1	62		0	69.49
		SS	2	71		1	68.49
Brown **SILTY CLAY**		SS	3	100			
		SS	4	100		2	67.49
3.05		SS	5	100		3	66.49
End of Borehole							
(GWL @ 0.49m - June 3, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH10

BORINGS BY CME 55 Power Auger **DATE** 2019 September 5

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING							
FILL: Brown silty clay, trace sand and gravel						0	86.03
0.81							
		SS	1	75	10	1	85.03
Compact to loose, brown **SILTY SAND**		SS	2	88	24	2	84.03
2.82		SS	3	88	9		
Brown **SILTY CLAY**		SS	4	100	2	3	83.03
- grey by 3.3m depth		SS	5	100	W	4	82.03
5.18		SS	6	100	W	5	81.03
End of Borehole							
(GWL @ 1.92m - Sept. 9, 2019)							

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
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH11

BORINGS BY CME 55 Power Auger **DATE** 2019 September 5

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
UNDERSIDE OF FOOTING						0	85.53		
						1	84.53		
						2	83.53		
OVERBURDEN						3	82.53		
						4	81.53		
						5	80.53		
6.10						6	79.53		
		SS	1	100	1				
		SS	2	100		7	78.53		
		SS	3	100		8	77.53		
		SS	4	100					
						9	76.53		
Grey **SILTY CLAY**		SS	5	100					
		SS	6	100		10	75.53		
11.28		SS	7	100		11	74.53		
End of Borehole									
(GWL @ 2.84m - Sept. 9, 2019)									

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.

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH12

BORINGS BY CME 55 Power Auger **DATE** 2019 September 5

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING						0	85.14
FILL: Brown silty sand with gravel		SS	1	79	30	1	84.14
1.27							
Compact, grey **SILTY SAND**		SS	2	75	12	2	83.14
2.11							
		SS	3	100	1		
		SS	4	100	W	3	82.14
Brown to grey **SILTY CLAY**		SS	5	100	W	4	81.14
		SS	6	100	W	5	80.14
5.18							
End of Borehole							
(GWL @ 3.66m - Sept. 9, 2019)							

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
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH13

BORINGS BY CME 55 Power Auger **DATE** 2019 September 5

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING						0	85.37
FILL: Brown silty sand with gravel, trace cobbles and boulders		SS	1	58	24	1	84.37
1.52							
		SS	2	58	18	2	83.37
Compact, brown **SILTY SAND**		SS	3	17	42		
3.05						3	82.37
		SS	4	100	4		
Brown **SILTY SAND**		SS	5	100	3	4	81.37
- grey by 3.8m depth							
5.18		SS	6	100	W	5	80.37
End of Borehole							
(GWL @ 2.28m - Sept. 9, 2019)							

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

Geotechnical Investigation
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic

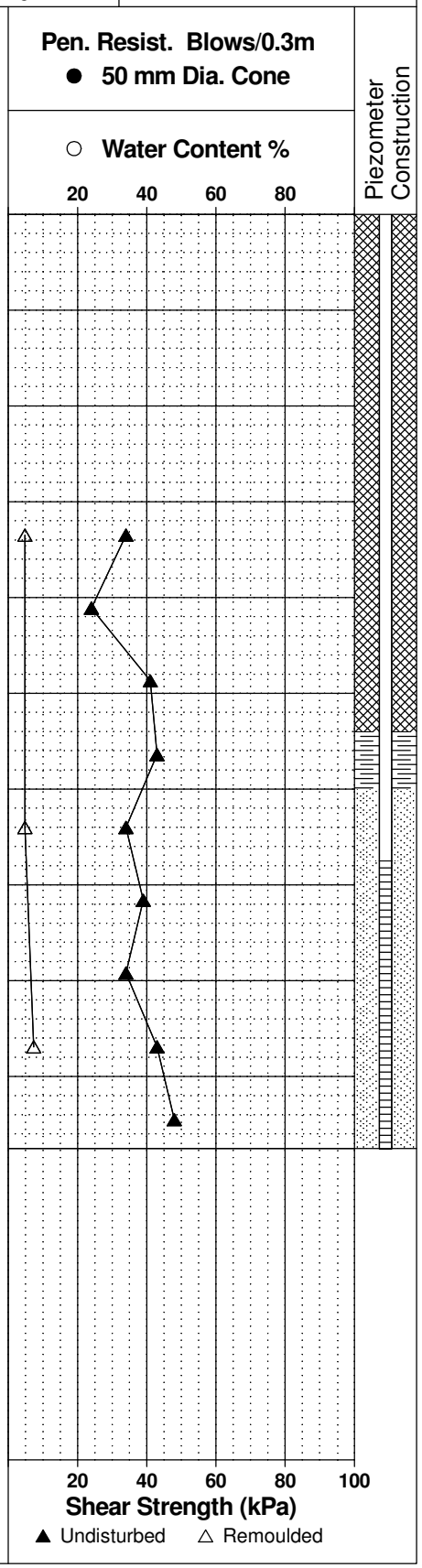
FILE NO. PG5224

REMARKS

HOLE NO. BH 1-20

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

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	85.59
FILL: Brown silty sand, trace gravel and cobbles		AU	1				
0.76							
FILL: Grey-brown silty clay, trace sand and gravel		SS	2	75	23	1	84.59
0.97							
FILL: Brown silty sand, trace gravel		SS	3	100	21	2	83.59
2.39							
		SS	4	100	2	3	82.59
		SS	5	100	P		
		SS	6	100	P	4	81.59
		SS	7	50		5	80.59
Firm, grey **SILTY CLAY**						6	79.59
		SS	8	50	P		
						7	78.59
		SS	9	79	P	8	77.59
						9	76.59
9.75							
End of Borehole							
(Piezometer damaged - Sept. 18, 2020)							



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic

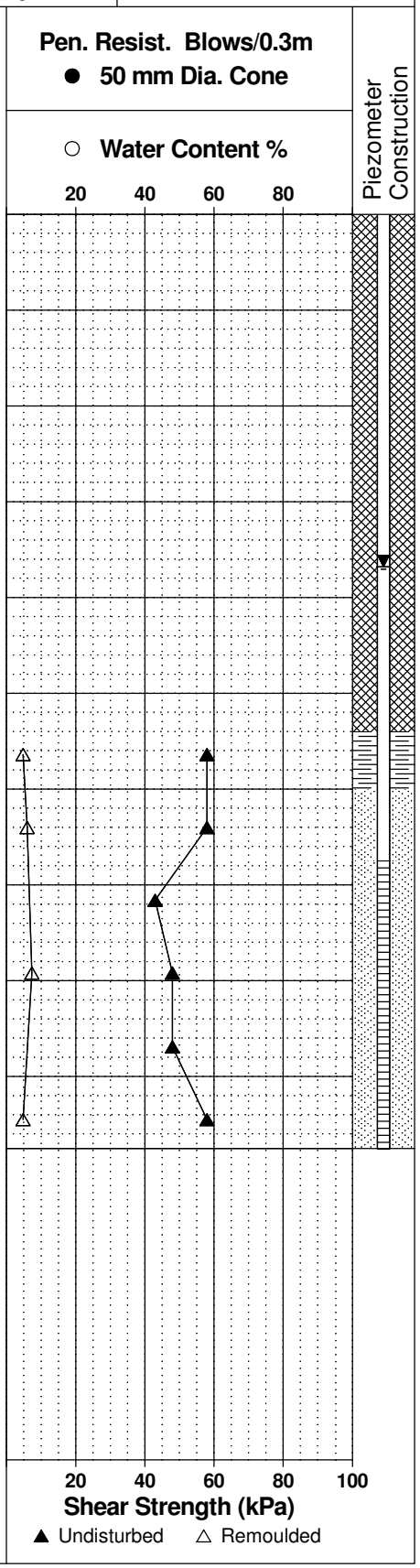
FILE NO. PG5224

REMARKS

HOLE NO. BH 2-20

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

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	83.59
FILL: Topsoil with construction debris and gravel		AU	1				
0.60							
		SS	2		6	1	82.59
FILL: Grey silty clay with roots, asphalt, gravel and brick		SS	3		18	2	81.59
2.29							
		SS	4		10	3	80.59
		SS	5		9		
		SS	6			4	79.59
		SS	7		4	5	78.59
Stiff to firm, brown **SILTY CLAY**							
- grey by 6.1m depth						6	77.59
						7	76.59
						8	75.59
						9	74.59
9.75							
End of Borehole							
(GWL @ 3.68m - Sept. 18, 2020)							



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic

FILE NO. PG5224

REMARKS

HOLE NO. BH 3-20

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

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	83.22
FILL: Brown silty sand with topsoil and construction debris		AU	1			1	82.22
1.52							
FILL: Grey silty clay with sand and construction debris		SS	2	38	16	2	81.22
2.29							
		SS	3	75	6		
Stiff to firm, brown **SILTY CLAY**		SS	4	54	7	3	80.22
- grey by 3.8m depth		SS	5	92	6	4	79.22
4.42							
End of Borehole							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %

20 40 60 80

Monitoring Well Construction

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic

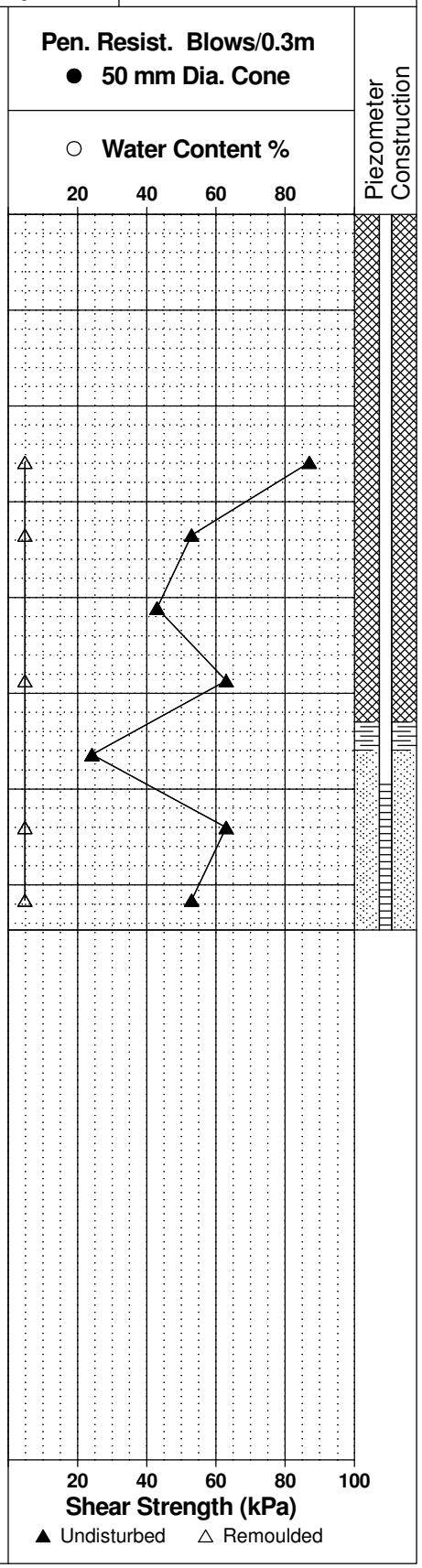
FILE NO. PG5224

REMARKS

HOLE NO. BH 4-20

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

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	70.66
TOPSOIL 0.15		AU	1				
Stiff, brown **SILTY CLAY**		SS	2	83	7	1	69.66
- grey by 1.5m depth		SS	3	92	5	2	68.66
						3	67.66
- firm to stiff by 3.8m depth						4	66.66
		SS	4	75	P	5	65.66
						6	64.66
		SS	5	83	P	7	63.66
7.47							
End of Borehole							
(Piezometer damaged - Sept. 18, 2020)							



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic

FILE NO. PG5224

REMARKS

HOLE NO. BH 5-20

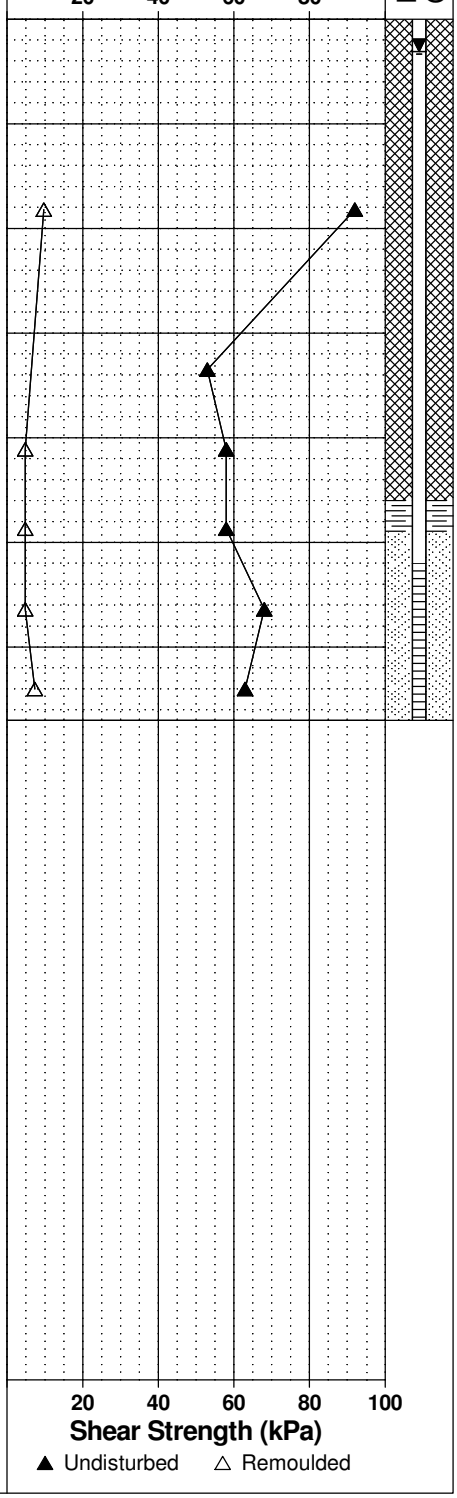
BORINGS BY CME-55 Low Clearance Drill **DATE** September 11, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE									
TOPSOIL 0.20		AU	1			0	69.68		
Stiff, brown **SILTY CLAY,** trace organics to 0.9m depth.		SS	2	75	4	1	68.68		
- grey by 1.4m depth		SS	3	100	P	2	67.68		
		SS	4	50	P	3	66.68		
		SS	5	83	P	4	65.68		
						5	64.68		
6.70						6	63.68		

Dynamic Cone Penetration Test commenced at 6.70m depth and cone was pushed to 24.0m depth.

Practical DCPT refusal at 24.56m depth.

(GWL @ 0.31m - Sept. 18, 2020)



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic

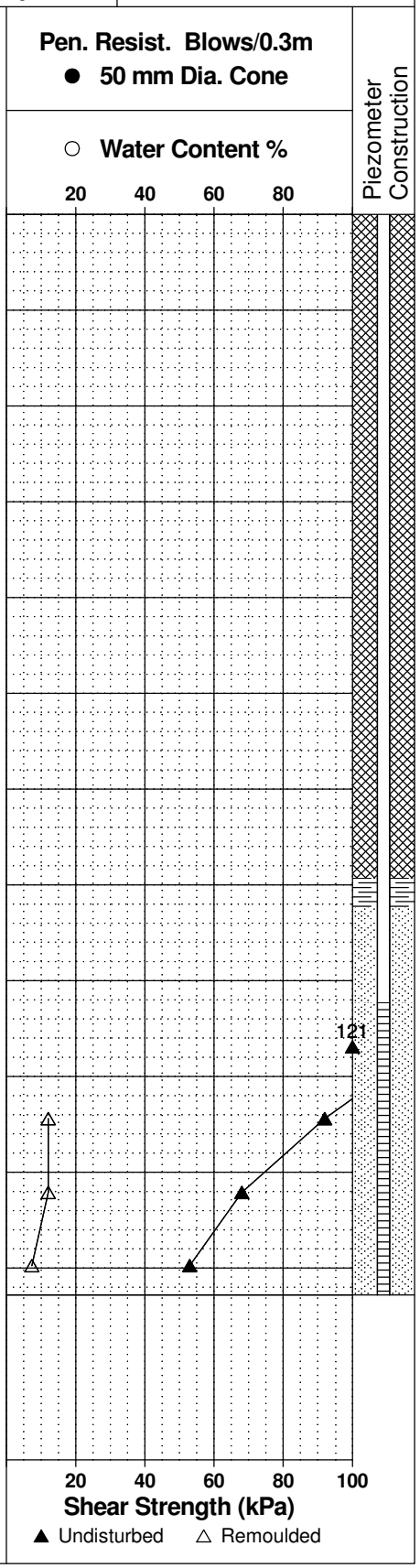
FILE NO. PG5224

REMARKS

HOLE NO. BH 6-20

BORINGS BY CME-55 Low Clearance Drill **DATE** September 11, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	81.73
FILL: Brown silty sand, trace gravel, cobbles, topsoil and construction debris		AU	1			1	80.73
		SS	2	0	7	2	79.73
2.29							
		SS	3	29	8	3	78.73
FILL: Brown silty sand, trace clay, gravel and construction debris		SS	4	21	10	4	77.73
4.57							
		SS	5	21	7	5	76.73
		SS	6	17	7		
FILL: Grey silty clay, trace organics, gravel and construction debris		SS	7	67	14	6	75.73
7.16		SS	8	67	15	7	74.73
FILL: Brown silty clay with sand							
7.62							
		SS	9	79	8	8	73.73
Very stiff to stiff, brown **SILTY CLAY,** trace sand seams						9	72.73
- grey by 9.1m depth		SS	10	96	P	10	71.73
		SS	11	96	P	11	70.73
11.28							
End of Borehole							
(Piezometer damaged - Sept. 18, 2020)							



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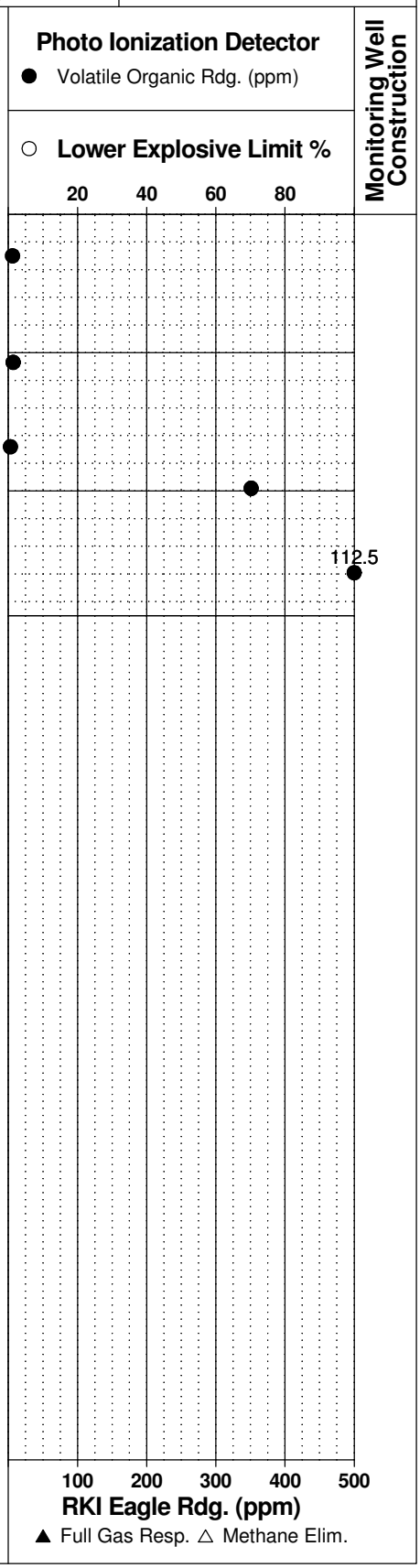
SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

EASTING: 382297.78 **NORTHING:** 5032413.723 **ELEVATION:** 84.03
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Low Clearance Power Auger **DATE:** January 11, 2024

FILE NO. PE4588
HOLE NO. BH 1-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	84.03
FILL: Brown silty sand, some gravel		AU	1				
0.69							
Brown **SILTY SAND**		SS	2	75	38	1	83.03
1.63							
Brown **SILTY CLAY**		SS	3	100	6	2	82.03
- grey by 2.3m depth		SS	4	100	3		
2.90							
End of Borehole							



Monitoring Well Construction

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SOIL PROFILE AND TEST DATA

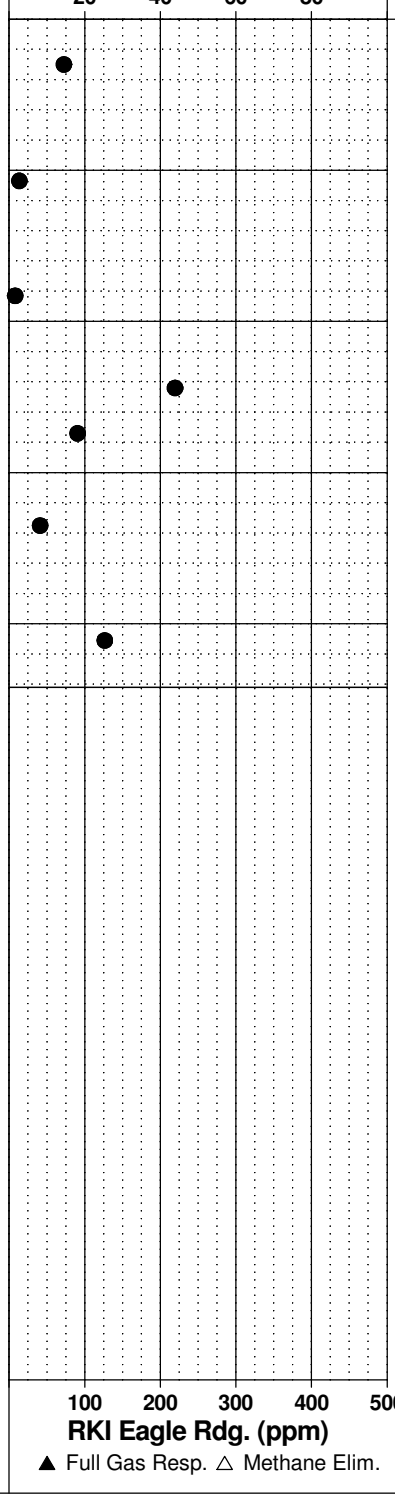
Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

EASTING: 382330.168 **NORTHING:** 5032346.04 **ELEVATION:** 83.31
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Low Clearance Power Auger **DATE:** January 11, 2024

FILE NO. PE4588
HOLE NO. BH 2-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	83.31
FILL: Brown silty sand, some gravel, trace brick		AU	1				
0.61							
FILL: Brown silty clay with organics, some sand, trace brick		SS	2	42	11	1	82.31
1.52							
Brown **SILTY SAND**		SS	3	25	21	2	81.31
2.39							
Brown **SILTY CLAY**		SS	4	100	5	3	80.31
		SS	5	100	11		
- grey by 3.8m depth		SS	6	100	4	4	79.31
4.42							
End of Borehole							

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



▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

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9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

EASTING: **NORTHING:** **ELEVATION:**
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Low Clearance Power Auger **DATE:** January 11, 2024

FILE NO. PE4588
HOLE NO. BH 3-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE									
FILL: Brown silty sand - trace gravel and brick extending to 0.7m depth		AU	1			0			
- clay and some organics by 0.7m depth		SS	2	50	7	1			
1.37									
FILL: Grey silty clay, some sand and organics, trace gravel		SS	3	92	14	2			
2.29									
FILL: Brown silty sand, trace asphalt		SS	4	4	6	3			
2.90									
Brown **SILTY CLAY**		SS	5	100	11				
		SS	6	100	24	4			
4.42									
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.

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

EASTING: 382287.622 **NORTHING:** 5032504.152 **ELEVATION:** 85.77
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Low Clearance Power Auger **DATE:** January 11, 2024

FILE NO. PE4588
HOLE NO. BH 4-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	85.77
FILL: Brown silty sand with gravel and crushed stone		AU	1				
0.69							
FILL: Grey silty clay, some gravel, trace organics		SS	2	92	14	1	84.77
1.37							
Brown **SILTY SAND**		SS	3	75	10	2	83.77
		SS	4	50	12		
2.74							
Brown **SILTY CLAY**		SS	5	100	3	3	82.77
		SS	6	100	2	4	81.77
- grey by 4.6m depth		SS	7	100	0	5	80.77
		SS	8	100	0		
5.94							
End of Borehole							
(GWL @ 2.25m - Jan. 18, 2024)							

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

20 40 60 80

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

Monitoring Well Construction

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9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

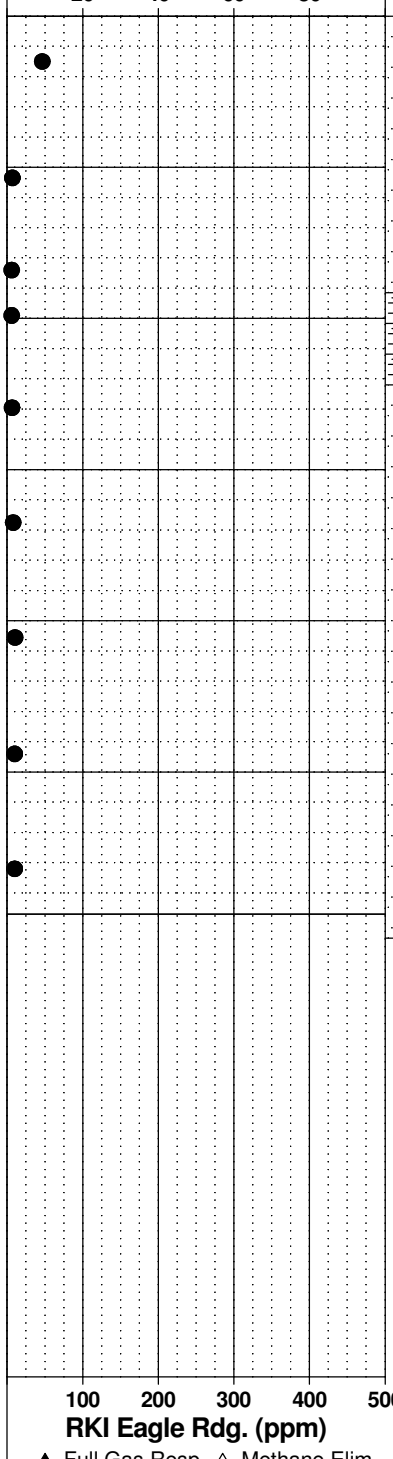
Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

EASTING: 382281.345 **NORTHING:** 5032495.629 **ELEVATION:** 85.83
DATUM: Geodetic
REMARKS:
BORINGS BY: CME 55 Low Clearance Power Auger **DATE:** January 11, 2024

FILE NO. PE4588
HOLE NO. BH 5-24

SAMPLE DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	85.83
FILL: Brown silty sand with gravel and crushed stone		AU	1				
0.61							
FILL: Grey to brown silty clay with sand, trace to some organics - trace gravel extending to 1.7m depth		SS	2	42	20	1	84.83
		SS	3	42	9	2	83.83
2.21							
Brown **SILTY SAND**		SS	4	58	18	3	82.83
3.05							
Brown **SILTY CLAY**		SS	5	100	3		
		SS	6	100	4	4	81.83
- grey by 4.4m depth		SS	7	100	0	5	80.83
		SS	8	100	0		
5.94							
End of Borehole							
(GWL @ 2.40m - Jan. 18, 2024)							

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



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

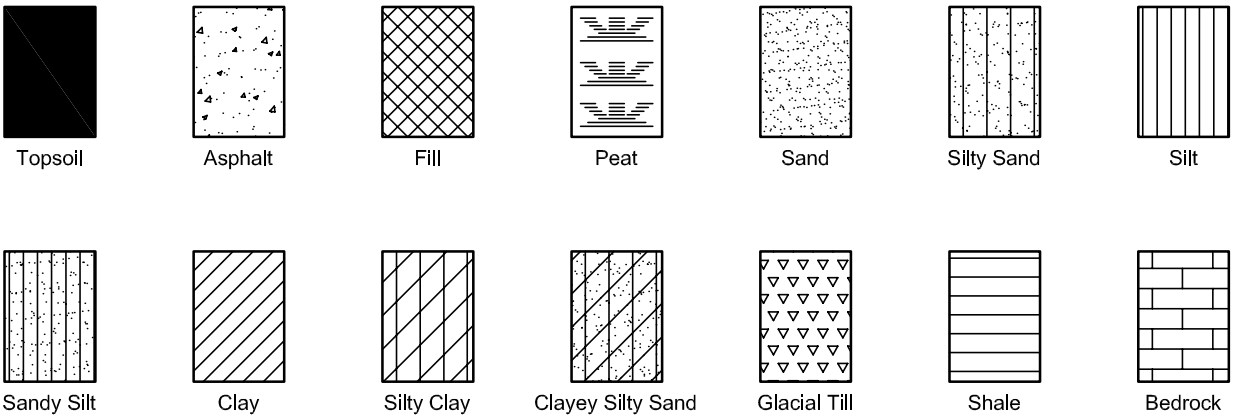
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void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

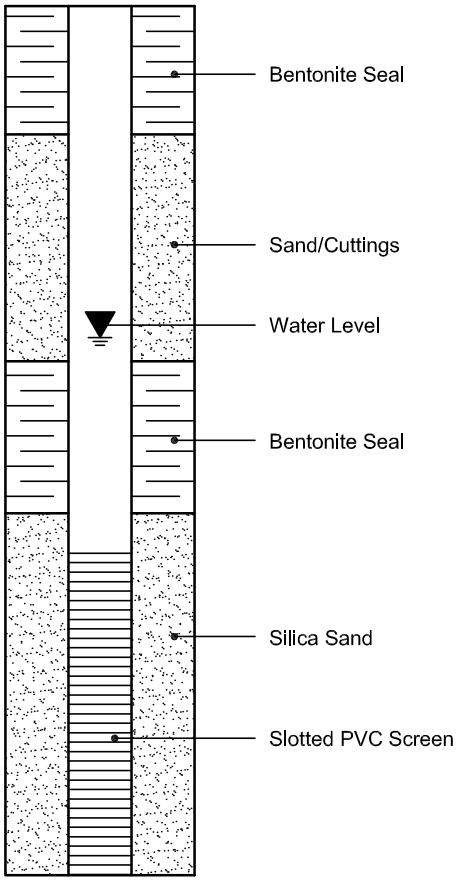
SYMBOLS AND TERMS (continued)

STRATA PLOT

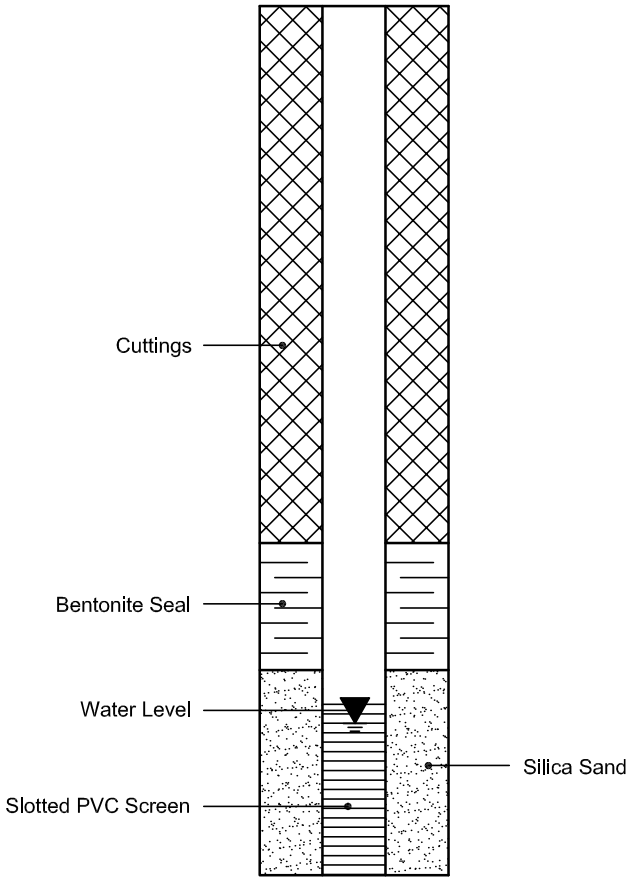


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Certificate of Analysis

Paterson Group Consulting Engineers
154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Dan Arnott

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 15999
Project: PE2990
Custody: 14427

Report Date: 9-May-2014
Order Date: 6-May-2014
Order #: 1419133

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

Paracel ID	Client ID
1419133-01	BH8-07
1419133-02	GP/MW3
1419133-03	GP/MW7

Approved By:



Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Report Date: 09-May-2014
Order Date:6-May-2014

Client: **Paterson Group Consulting Engineers**
Client PO: 15999 Project Description: PE2990

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 200.8 - ICP-MS	8-May-14	8-May-14

PARACEL LABORATORIES LTD.

Order #: 1419133

Certificate of Analysis

Report Date: 09-May-2014
Order Date:6-May-2014

Client: **Paterson Group Consulting Engineers**

Client PO: 15999

Project Description: PE2990

	Client ID:	BH8-07	GP/MW3	GP/MW7	-
	Sample Date:	02-May-14	02-May-14	02-May-14	-
	Sample ID:	1419133-01	1419133-02	1419133-03	-
	MDL/Units	Water	Water	Water	-
Metals					
Antimony	0.5 ug/L	<0.5	<0.5	<0.5	-
Arsenic	1 ug/L	2	<1	2	-
Barium	1 ug/L	29	50	23	-
Beryllium	0.5 ug/L	<0.5	<0.5	<0.5	-
Boron	10 ug/L	97	168	91	-
Cadmium	0.1 ug/L	<0.1	<0.1	<0.1	-
Chromium	1 ug/L	4	6	4	-
Cobalt	0.5 ug/L	1.7	2.1	1.1	-
Copper	0.5 ug/L	1.7	3.4	1.7	-
Lead	0.1 ug/L	<0.1	<0.1	<0.1	-
Molybdenum	0.5 ug/L	5.7	1.1	4.4	-
Nickel	1 ug/L	2	3	2	-
Selenium	1 ug/L	<1	<1	<1	-
Silver	0.1 ug/L	<0.1	<0.1	<0.1	-
Sodium	200 ug/L	147000	446000	62600	-
Thallium	0.1 ug/L	<0.1	<0.1	<0.1	-
Uranium	0.1 ug/L	0.3	1.1	0.7	-
Vanadium	0.5 ug/L	6.2	6.7	7.1	-
Zinc	5 ug/L	<5	<5	<5	-

Certificate of Analysis

Report Date: 09-May-2014
Order Date:6-May-2014

Client: **Paterson Group Consulting Engineers**

Client PO: 15999 Project Description: PE2990

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						

Certificate of Analysis

Report Date: 09-May-2014
Order Date:6-May-2014

Client: **Paterson Group Consulting Engineers**

Client PO: 15999 Project Description: PE2990

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	0.66	0.5	ug/L	0.79			17.9	20	
Arsenic	ND	1	ug/L	ND			0.0	20	
Barium	26.3	1	ug/L	26.6			1.1	20	
Beryllium	ND	0.5	ug/L	ND			0.0	20	
Boron	26	10	ug/L	28			5.8	20	
Cadmium	ND	0.1	ug/L	ND			0.0	20	
Chromium	13.1	1	ug/L	13.3			1.3	20	
Cobalt	ND	0.5	ug/L	ND			0.0	20	
Copper	1.06	0.5	ug/L	1.14			7.5	20	
Lead	ND	0.1	ug/L	ND			0.0	20	
Molybdenum	1.34	0.5	ug/L	1.38			2.7	20	
Nickel	ND	1	ug/L	ND			0.0	20	
Selenium	ND	1	ug/L	1.0			0.0	20	
Silver	ND	0.1	ug/L	ND			0.0	20	
Sodium	17100	200	ug/L	17400			1.7	20	
Thallium	ND	0.1	ug/L	ND			0.0	20	
Uranium	0.1	0.1	ug/L	0.1			4.4	20	
Vanadium	3.65	0.5	ug/L	3.71			1.7	20	
Zinc	10	5	ug/L	13			28.5	20	QR-01

Certificate of Analysis

Report Date: 09-May-2014
Order Date:6-May-2014

Client: **Paterson Group Consulting Engineers**

Client PO: 15999 Project Description: PE2990

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	57.8		ug/L	0.79	114	80-120			
Arsenic	65.0		ug/L	0.7	129	80-120			QM-07
Barium	78.6		ug/L	26.6	104	80-120			
Beryllium	46.2		ug/L	ND	92.4	80-120			
Boron	67		ug/L	28	78.6	80-120			QM-07
Cadmium	53.8		ug/L	ND	108	80-120			
Chromium	56.4		ug/L	13.3	86.1	80-120			
Cobalt	45.6		ug/L	0.04	91.2	80-120			
Copper	46.8		ug/L	1.14	91.2	80-120			
Lead	51.6		ug/L	ND	104	80-120			
Molybdenum	51.4		ug/L	1.38	99.9	80-120			
Nickel	46.8		ug/L	1.0	91.6	80-120			
Selenium	69.0		ug/L	2.8	132	80-120			QS-02
Silver	51.3		ug/L	0.005	103	80-120			
Sodium	895		ug/L	ND	89.5	80-120			
Thallium	51.1		ug/L	ND	102	80-120			
Uranium	53.0		ug/L	0.1	106	80-120			
Vanadium	48.9		ug/L	3.71	90.3	80-120			
Zinc	62		ug/L	13	98.9	80-120			

Certificate of Analysis

Report Date: 09-May-2014
Order Date:6-May-2014

Client: **Paterson Group Consulting Engineers**
Client PO: 15999 Project Description: PE2990

Qualifier Notes:

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.

QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

QS-02 : Spike level outside of control limits. Analysis batch accepted based on other QC included in the batch.

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.

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Page 1 of 1

Client Name: Paterson Group Inc.	Project Reference: PE 2990
Contact Name: Dan Arnott	Quote #
Address: 154 Colonnade Rd Ottawa, ON K2E 7J5	PO # 15999
Telephone: 613. 226. 7381	Email Address: darnott@patersongroup.ca

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [X] O. Reg. 153/04 (As Amended) Table 2 [X] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

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

Paracel Order Number: 1419133

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analyses: Metals by ICPMS
1	BH8-07	GW		1	2-MAY-14		X
2	GP/MW3	↓		1	↓		X
3	GP/MW7	↓		1	↓		X
4							
5							
6							
7							
8							
9							
10							

Comments:

Method of Delivery: Paracel

Relinquished By (Sign): Dan Arnott	Received by Driver/Depot: T. Lecouse	Received at Lab: MC	Verified By: MC
Relinquished By (Print): Dan Arnott	Date/Time: 06/05/14 2:15 PM	Date/Time: May 6/14 4:00	Date/Time: May 6/14 5:17
Date/Time: 6-MAY-14 7:10 AM	Temperature: ____ °C	Temperature: 16.7 °C	pH Verified [Y] By: MC

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Certificate of Analysis

Paterson Group Consulting Engineers

28 Concourse Gate, Unit 1
Nepean, ON K2E 7T7
Attn: Mark D'Arcy

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 4747
Project: E2474
Custody: 38360

Report Date: 3-Jul-2007
Order Date: 18-Jun-2007
Order #: 7250026

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

Paracel ID	Client ID
7250026-01	BH2-SS5
7250026-02	BH2-SS9
7250026-03	BH3-SS6
7250026-04	BH7-SS4

Approved By:

Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

PARACEL LABORATORIES LTD.

Order #: 7250026

Certificate of Analysis

Report Date: 03-Jul-2007
Order Date:18-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 4747 Project Description: E2474

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.8 - ICP-MS	22-Jun-07	22-Jun-07
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	26-Jun-07	26-Jun-07
Loss on Ignition, 550C	84-045	20-Jun-07	20-Jun-07
Mercury	EPA 7471A - CVAA, digestion	21-Jun-07	21-Jun-07
Metals	EPA 6020 - Digestion - ICP-MS	20-Jun-07	20-Jun-07
Solids, Dry Weight	Gravimetric, calculation	19-Jun-07	19-Jun-07

PARACEL LABORATORIES LTD.

Order #: 7250026

Certificate of Analysis

Report Date: 03-Jul-2007
Order Date:18-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 4747 Project Description: E2474

	Client ID:	BH2-SS5	BH2-SS9	BH3-SS6	BH7-SS4
	Sample Date:	15-Jun-07	15-Jun-07	15-Jun-07	15-Jun-07
	Sample ID:	7250026-01	7250026-02	7250026-03	7250026-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	55.5	58.9	55.4	56.5
General Inorganics					
Loss on Ignition, 550C	0.10 % by Wt.	-	1.36	1.26	2.55
Metals					
Antimony	1 ug/g dry	<1	-	<1	<1
Arsenic	1 ug/g dry	1	-	1	<1
Barium	10 ug/g dry	306	-	350	361
Beryllium	0.5 ug/g dry	0.7	-	0.8	0.7
Boron, available	0.5 ug/g dry	4.1	-	5.4	4.0
Cadmium	0.5 ug/g dry	0.6	-	0.6	0.5
Chromium	5 ug/g dry	119	-	102	93
Chromium (VI)	0.4 ug/g dry	<0.4	-	<0.4	<0.4
Cobalt	5 ug/g dry	22	-	21	20
Copper	5 ug/g dry	51	-	46	45
Iron	200 ug/g dry	44100	-	42000	42300
Lead	1 ug/g dry	8	-	7	7
Mercury	0.1 ug/g dry	<0.1	-	<0.1	<0.1
Molybdenum	1 ug/g dry	<1	-	1	<1
Nickel	5 ug/g dry	67	-	59	53
Selenium	1 ug/g dry	<1	-	<1	<1
Silver	0.3 ug/g dry	<0.3	-	<0.3	<0.3
Thallium	1 ug/g dry	<1	-	<1	<1
Vanadium	10 ug/g dry	93	-	95	94
Zinc	20 ug/g dry	115	-	116	114

Certificate of Analysis

Report Date: 03-Jul-2007
Order Date:18-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 4747 Project Description: E2474

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Loss on Ignition, 550C	ND	0.10	% by Wt.						
Metals									
Antimony	ND	1	ug/g						
Arsenic	ND	1	ug/g						
Barium	ND	10	ug/g						
Beryllium	ND	0.5	ug/g						
Boron, available	ND	0.5	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.4	ug/g						
Chromium	ND	5	ug/g						
Cobalt	ND	5	ug/g						
Copper	ND	5	ug/g						
Iron	ND	200	ug/g						
Lead	ND	1	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1	ug/g						
Nickel	ND	5	ug/g						
Selenium	ND	1	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1	ug/g						
Vanadium	ND	10	ug/g						
Zinc	ND	20	ug/g						

Certificate of Analysis

Report Date: 03-Jul-2007
Order Date:18-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 4747 Project Description: E2474

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Loss on Ignition, 550C	1.71	0.10	% by Wt.	1.36			22.8	35	
Metals									
Antimony	1.8	1	ug/g dry	ND				26	QR-01
Arsenic	1.0	1	ug/g dry	1.0			0.4	35	
Barium	367	10	ug/g dry	350			4.7	34	
Beryllium	0.75	0.5	ug/g dry	0.79			6.0	25	
Boron, available	4.22	0.5	ug/g dry	4.07			3.5	35	
Cadmium	0.60	0.5	ug/g dry	0.59			1.7	33	
Chromium (VI)	ND	0.4	ug/g dry	ND				35	
Chromium	107	5	ug/g dry	102			5.3	32	
Cobalt	22.1	5	ug/g dry	21.4			3.4	32	
Copper	47.4	5	ug/g dry	45.9			3.3	32	
Iron	44300	200	ug/g dry	42000			5.3	32	
Lead	7.0	1	ug/g dry	6.7			3.9	44	
Mercury	1.31	0.1	ug/g dry	1.33			1.0	35	
Molybdenum	1.3	1	ug/g dry	1.0			21.9	29	
Nickel	61.3	5	ug/g dry	58.6			4.4	29	
Selenium	ND	1	ug/g dry	ND				28	
Silver	ND	0.3	ug/g dry	ND				28	
Thallium	ND	1	ug/g dry	ND				27	
Vanadium	102	10	ug/g dry	95.4			6.5	27	
Zinc	122	20	ug/g dry	116			5.3	27	

Certificate of Analysis

Report Date: 03-Jul-2007
Order Date:18-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 4747 Project Description: E2474

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	48.4		ug/L	0.09	96.7	78-126			
Arsenic	41.6		ug/L	0.4	82.3	80-120			
Barium	196		ug/L	140	113	83-116			
Beryllium	43.2		ug/L	0.32	85.8	72-123			
Boron, available	7.50	0.5	ug/g	4.07	68.5	70-122			QS-02
Cadmium	51.0		ug/L	0.24	102	78-118			
Chromium (VI)	5.0	0.4	ug/g	ND	100	89-123			
Chromium	82.5		ug/L	40.7	83.7	80-124			
Cobalt	49.2		ug/L	8.6	81.2	78-125			
Copper	57.2		ug/L	18.4	77.8	75-123			
Iron	19200		ug/L	16800	238	66-119			QS-02
Lead	51.9		ug/L	2.7	98.5	80-120			
Mercury	2.48	0.1	ug/g	1.33	76.6	72-128			
Molybdenum	51.2		ug/L	0.4	102	82-119			
Nickel	62.5		ug/L	23.5	78.1	78-119			
Selenium	42.2		ug/L	0.08	84.2	81-125			
Silver	46.5		ug/L	0.09	92.8	70-128			
Thallium	50.0		ug/L	0.2	99.7	82-127			
Vanadium	80.6		ug/L	38.2	84.8	82-123			
Zinc	92.0		ug/L	46.4	91.3	78-130			

PARACEL LABORATORIES LTD.

Order #: 7250026

Certificate of Analysis

Report Date: 03-Jul-2007
Order Date:18-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 4747 Project Description: E2474

Sample and QC Qualifiers Notes

1- QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.
2- QS-02 : Spike level outside of control limits. Analysis batch accepted based on other QC included in the batch.

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
Soil results are reported on a dry weight basis when the units are denoted with 'dry'.

PARACEL Laboratories Ltd.

Environmental & Indoor Air Quality

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Chain of Custody Record

№ 38360

Pg. __ of __

Contact: Mark D'Arcy.
Company: Paterson Group Inc.
Address: 28 Concourse Gate Unit 1
Ottawa, ON K2E 7T7
Tel: 613-226-7381 Fax: 613-226-6344

Project Ref: E2474
PO #: 4747
Quote #: ☒ Not Quoted
Email:
Preservative to be added by Paracel? ☐ Yes ☒ No

REPORTING REQUIREMENTS
☒ Hard Copy ☒ Email – PDF
☐ FAX ☐ Email - spreadsheet

TURN AROUND TIME
[ ] 1-day [ ] 2-day [X] Regular

REGULATORY/GUIDELINE REQUIREMENTS
MOE Table 3

Matrix Types: S–Soil/Sed GW–Ground Water SW–Surface Water SS–Storm/Sanitary Sewer A-Air O-Other

Paracel Order # 725026	Sample Identification	Matrix	# Bottles	Date Sampled d/m/y	Analysis Required: metals	organic content (LOI)
1	BH2-SS5	S	1	15/06/07	✓	
2	BH2-SS9	S	1	↓		✓
3	BH3-SS6	S	1		✓	✓
4	BH7-SS4	S	1	↓	✓	✓
5						
6						
7						
8						
9						
10						

Comments:

Relinquished by: K.M.
Date: June 18/07. Time: 10:30.

Received by: #1048
Date: 18/6/07 Time: 12:55
June 18/07

Verified by:
Date: June 18/07 Time: 1:05

PARACEL LABORATORIES LTD.

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

Certificate of Analysis

Paterson Group Consulting Engineers

28 Concourse Gate, Unit 1
Nepean, ON K2E 7T7
Attn: Mark D'Arcy

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 5202
Project: E2474
Custody: 38376

Report Date: 9-Jul-2007
Order Date: 28-Jun-2007
Order #: 7260126

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

Paracel ID	Client ID
7260126-01	BH1 WS3
7260126-02	BH2 WS1
7260126-03	BH3 WS1
7260126-04	BH4 WS1
7260126-05	BH7 WS1

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

PARACEL LABORATORIES LTD.

Order #: 7260126

Certificate of Analysis

Report Date: 09-Jul-2007
Order Date:28-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5202 Project Description: E2474

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Alkalinity, total	EPA 310.1 - Titration	6-Jul-07	9-Jul-07
Ammonia, as N	EPA 351.2 - Auto Colour	29-Jun-07	29-Jun-07
Anions	EPA 300.1 - IC	3-Jul-07	3-Jul-07
Biochemical Oxygen Demand	SM 5210B - DO Probe	29-Jun-07	29-Jun-07
Chromium, hexavalent	MOE E3056 - colourimetric	29-Jun-07	29-Jun-07
COD	EPA 410.1 - Digestion, Colourimetric	29-Jun-07	29-Jun-07
Conductivity	EPA 120.1 - probe	29-Jun-07	29-Jun-07
DOC	MOE E3247B - Combustion IR, filtration	3-Jul-07	3-Jul-07
Mercury	EPA 245.1 - Cold Vapour AA	29-Jun-07	29-Jun-07
Metals	EPA 200.8 - ICP-MS	29-Jun-07	29-Jun-07
pH	EPA 150.1 - pH probe	29-Jun-07	29-Jun-07
Phenolics	EPA 420.2 - Auto Colour	29-Jun-07	3-Jul-07
Phosphorus, total	EPA 364.4 - Auto Colour, digestion	4-Jul-07	4-Jul-07
Solids, dissolved	EPA SM 2540C - gravimetric, filtration	6-Jul-07	6-Jul-07
Solids, total suspended	SM 2540D - Gravimetric	4-Jul-07	4-Jul-07
Total Kjeldahl Nitrogen	EPA 351.2 - Auto Colour, digestion	4-Jul-07	5-Jul-07

PARACEL LABORATORIES LTD.

Order #: 7260126

Certificate of Analysis

Report Date: 09-Jul-2007
Order Date:28-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5202 Project Description: E2474

	Client ID:	BH1 WS3	BH2 WS1	BH3 WS1	BH4 WS1
	Sample Date:	28-Jun-07	28-Jun-07	28-Jun-07	28-Jun-07
	Sample ID:	7260126-01	7260126-02	7260126-03	7260126-04
	MDL/Units	Water	Water	Water	Water
General Inorganics					
Alkalinity, total	5 mg/L	1600	1150	920	-
Ammonia as N	0.01 mg/L	5.03	4.30	4.42	-
BOD	2 mg/L	141	208	544	-
Chemical Oxygen Demand	10 mg/L	918	236	1020	-
Conductivity	5 uS/cm	7850	5840	3930	-
pH	0.05 pH Units	7.66	7.57	7.82	-
Phenolics	0.001 mg/L	1.05	0.185	0.040	-
Phosphorus, total	0.01 mg/L	3.43	0.33	6.21	-
Total Dissolved Solids	10 mg/L	5530	5230	3220	-
Total Suspended Solids	2 mg/L	106	231	2880	-
Total Kjeldahl Nitrogen	0.1 mg/L	5.1	6.0	7.5	-
Dissolved Organic Carbon	0.5 mg/L	76.0	33.6	185	-
Anions					
Chloride	1 mg/L	1580	1580	308	-
Nitrate as N	0.1 mg/L	<0.1	<0.1	<0.1	-
Nitrite as N	0.05 mg/L	<0.05	<0.05	<0.05	-
Sulphate	1 mg/L	559	149	665	-
Metals					
Antimony	1 ug/L	2	1	1	<1
Arsenic	10 ug/L	37	12	11	<10
Barium	10 ug/L	149	28	110	40
Beryllium	1 ug/L	<1	<1	<1	<1
Boron	50 ug/L	1690	1660	1940	993
Cadmium	1 ug/L	<1	<1	<1	<1
Chromium	50 ug/L	<50	<50	<50	<50
Chromium (VI)	10 ug/L	<500 [1]	<10	<500 [1]	-
Cobalt	5 ug/L	6	8	10	9
Copper	5 ug/L	51	32	27	18
Iron	200 ug/L	1020	1070	8560	1930
Lead	1 ug/L	1	<1	1	1
Mercury	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Molybdenum	5 ug/L	17	329	55	39
Nickel	5 ug/L	9	23	32	19
Selenium	5 ug/L	11	43	8	<5
Silver	1 ug/L	<1	<1	<1	<1

Certificate of Analysis

Report Date: 09-Jul-2007
Order Date:28-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5202 Project Description: E2474

	Client ID:	BH1 WS3	BH2 WS1	BH3 WS1	BH4 WS1
	Sample Date:	28-Jun-07	28-Jun-07	28-Jun-07	28-Jun-07
	Sample ID:	7260126-01	7260126-02	7260126-03	7260126-04
	MDL/Units	Water	Water	Water	Water
Metals (continued)					
Sodium	200 ug/L	2160000	2270000	1240000	1150000
Thallium	1 ug/L	<1	<1	<1	<1
Vanadium	10 ug/L	57	<10	22	<10
Zinc	20 ug/L	<20	20	33	31

PARACEL LABORATORIES LTD.

Order #: 7260126

Certificate of Analysis

Report Date: 09-Jul-2007
Order Date:28-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5202 Project Description: E2474

	Client ID:	BH7 WS1	-	-	-
	Sample Date:	28-Jun-07	-	-	-
	Sample ID:	7260126-05	-	-	-
	MDL/Units	Water	-	-	-
General Inorganics					
Alkalinity, total	5 mg/L	862	-	-	-
Ammonia as N	0.01 mg/L	1.13	-	-	-
BOD	2 mg/L	<2	-	-	-
Chemical Oxygen Demand	10 mg/L	114	-	-	-
Conductivity	5 uS/cm	1910	-	-	-
pH	0.05 pH Units	7.56	-	-	-
Phenolics	0.001 mg/L	0.018	-	-	-
Phosphorus, total	0.01 mg/L	0.49	-	-	-
Total Dissolved Solids	10 mg/L	1210	-	-	-
Total Suspended Solids	2 mg/L	63	-	-	-
Total Kjeldahl Nitrogen	0.1 mg/L	1.6	-	-	-
Dissolved Organic Carbon	0.5 mg/L	8.8	-	-	-
Anions					
Chloride	1 mg/L	78	-	-	-
Nitrate as N	0.1 mg/L	<0.1	-	-	-
Nitrite as N	0.05 mg/L	<0.05	-	-	-
Sulphate	1 mg/L	94	-	-	-
Metals					
Antimony	1 ug/L	<1	-	-	-
Arsenic	10 ug/L	<10	-	-	-
Barium	10 ug/L	26	-	-	-
Beryllium	1 ug/L	<1	-	-	-
Boron	50 ug/L	1150	-	-	-
Cadmium	1 ug/L	<1	-	-	-
Chromium	50 ug/L	<50	-	-	-
Chromium (VI)	10 ug/L	<10	-	-	-
Cobalt	5 ug/L	<5	-	-	-
Copper	5 ug/L	14	-	-	-
Iron	200 ug/L	2030	-	-	-
Lead	1 ug/L	<1	-	-	-
Mercury	0.1 ug/L	<0.1	-	-	-
Molybdenum	5 ug/L	36	-	-	-
Nickel	5 ug/L	8	-	-	-
Selenium	5 ug/L	<5	-	-	-
Silver	1 ug/L	<1	-	-	-

Certificate of Analysis

Report Date: 09-Jul-2007
Order Date:28-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5202 Project Description: E2474

	Client ID:	BH7 WS1	-	-	-
	Sample Date:	28-Jun-07	-	-	-
	Sample ID:	7260126-05	-	-	-
	MDL/Units	Water	-	-	-
Metals (continued)					
Sodium	200 ug/L	540000	-	-	-
Thallium	1 ug/L	<1	-	-	-
Vanadium	10 ug/L	<10	-	-	-
Zinc	20 ug/L	24	-	-	-

Certificate of Analysis

Report Date: 09-Jul-2007
Order Date:28-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5202 Project Description: E2474

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	1	mg/L						
Nitrate as N	ND	0.1	mg/L						
Nitrite as N	ND	0.05	mg/L						
Sulphate	ND	1	mg/L						
General Inorganics									
Alkalinity, total	ND	5	mg/L						
Ammonia as N	ND	0.01	mg/L						
BOD	ND	2	mg/L						
Chemical Oxygen Demand	ND	10	mg/L						
Conductivity	ND	5	uS/cm						
Phenolics	ND	0.001	mg/L						
Phosphorus, total	ND	0.01	mg/L						
Total Dissolved Solids	ND	10	mg/L						
Total Suspended Solids	ND	2	mg/L						
Total Kjeldahl Nitrogen	ND	0.1	mg/L						
Dissolved Organic Carbon	ND	0.5	mg/L						
Metals									
Antimony	ND	1	ug/L						
Arsenic	ND	10	ug/L						
Barium	ND	10	ug/L						
Beryllium	ND	1	ug/L						
Boron	ND	50	ug/L						
Cadmium	ND	1	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	50	ug/L						
Cobalt	ND	5	ug/L						
Copper	ND	5	ug/L						
Iron	ND	200	ug/L						
Lead	ND	1	ug/L						
Mercury	ND	0.1	ug/L						
Molybdenum	ND	5	ug/L						
Nickel	ND	5	ug/L						
Selenium	ND	5	ug/L						
Silver	ND	1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	1	ug/L						
Vanadium	ND	10	ug/L						
Zinc	ND	20	ug/L						

Certificate of Analysis

Report Date: 09-Jul-2007
Order Date:28-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5202 Project Description: E2474

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	61.2	1	mg/L	61.2			0.1	10	
Nitrate as N	ND	0.1	mg/L	ND				20	
Nitrite as N	ND	0.05	mg/L	ND				20	
Sulphate	1.47	1	mg/L	1.44			1.6	10	
General Inorganics									
Alkalinity, total	210	5	mg/L	210			0.0	2	
Ammonia as N	0.071	0.01	mg/L	0.073			3.3	8	
BOD	4370	2	mg/L	3980			9.4	20	
Chemical Oxygen Demand	413	10	mg/L	416			0.7	12	
Conductivity	312	5	uS/cm	307			1.6	11	
pH	7.65	0.05	pH Units	7.66			0.1	10	
Phenolics	ND	0.001	mg/L	ND				10	
Phosphorus, total	ND	0.01	mg/L	ND				10	
Total Dissolved Solids	158	10	mg/L	150			5.2	10	
Total Suspended Solids	ND	2	mg/L	ND				10	
Total Kjeldahl Nitrogen	0.6	0.1	mg/L	0.6			0.7	10	
Dissolved Organic Carbon	1.8	0.5	mg/L	1.6			11.0	37	
Metals									
Antimony	6.2	1	ug/L	6.3			1.7	26	
Arsenic	ND	10	ug/L	ND				29	
Barium	250	10	ug/L	243			2.9	34	
Beryllium	ND	1	ug/L	ND				25	
Boron	90.5	50	ug/L	98.5			8.6	33	
Cadmium	ND	1	ug/L	ND				33	
Chromium (VI)	ND	10	ug/L	ND				13	
Chromium	ND	50	ug/L	ND				32	
Cobalt	8.0	5	ug/L	ND				32	QR-01
Copper	ND	5	ug/L	ND				32	
Iron	16000	200	ug/L	16000			0.2	32	
Lead	1.1	1	ug/L	ND				32	QR-01
Mercury	ND	0.1	ug/L	ND				20	
Molybdenum	12.5	5	ug/L	12.2			2.3	29	
Nickel	8.6	5	ug/L	8.2			5.2	29	
Selenium	ND	5	ug/L	ND				28	
Silver	ND	1	ug/L	1.6			200.0	28	QR-01
Sodium	112000	200	ug/L	117000			4.3	27	
Thallium	ND	1	ug/L	ND				27	
Vanadium	ND	10	ug/L	ND				27	
Zinc	ND	20	ug/L	ND				27	

Certificate of Analysis

Report Date: 09-Jul-2007
Order Date:28-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5202 Project Description: E2474

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	9.38	1	mg/L	ND	93.8	78-112			
Nitrate as N	0.91	0.1	mg/L	ND	91.0	81-112			
Nitrite as N	0.926	0.05	mg/L	ND	92.6	76-107			
Sulphate	9.67	1	mg/L	ND	96.7	75-111			
General Inorganics									
Ammonia as N	0.268	0.01	mg/L	ND	107	81-124			
BOD	186		mg/L	ND	93.0	71-121			
Chemical Oxygen Demand	194	10	mg/L	ND	97.0	85-111			
Phenolics	0.027	0.001	mg/L	ND	107	69-132			
Phosphorus, total	0.45	0.01	mg/L	ND	89.7	80-120			
Total Dissolved Solids	102	10	mg/L	ND	100	75-125			
Total Suspended Solids	20.4	2	mg/L	ND	100	75-125			
Total Kjeldahl Nitrogen	2.1	0.1	mg/L	ND	103	81-126			
Metals									
Antimony	47.7		ug/L	ND	95.3	78-126			
Arsenic	51.8		ug/L	ND	104	83-119			
Barium	51.7		ug/L	ND	103	83-116			
Beryllium	54.7		ug/L	ND	109	72-132			
Boron	56.2		ug/L	ND	112	71-128			
Cadmium	47.1		ug/L	ND	94.2	78-119			
Chromium (VI)	179	10	ug/L	ND	89.5	75-120			
Chromium	49.6		ug/L	ND	99.3	80-124			
Cobalt	49.6		ug/L	ND	99.3	78-125			
Copper	48.4		ug/L	ND	96.8	75-123			
Iron	1000		ug/L	ND	100	66-119			
Lead	50.2		ug/L	ND	100	77-126			
Mercury	3.20	0.1	ug/L	ND	107	78-137			
Molybdenum	49.9		ug/L	ND	99.7	82-119			
Nickel	48.5		ug/L	ND	97.1	78-119			
Selenium	51.6		ug/L	ND	103	81-125			
Silver	49.5		ug/L	ND	99.1	70-128			
Sodium	1150		ug/L	ND	115	68-132			
Thallium	52.9		ug/L	ND	106	82-127			
Vanadium	50.7		ug/L	ND	101	82-123			
Zinc	52.8		ug/L	ND	106	80-120			

Certificate of Analysis

Report Date: 09-Jul-2007
Order Date:28-Jun-2007

Client: **Paterson Group Consulting Engineers**

Client PO: 5202 Project Description: E2474

Sample and QC Qualifiers Notes

1- GEN02 : Elevated Reporting Limit due to matrix iinterference.

2- QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

PARACEL Laboratories Ltd.
Environmental & Indoor Air Quality

300-2319 St. Laurent Blvd., Ottawa, ON K1G 4J8
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Toll Free: (800) 749-1947 email: paracel@paracellabs.com

Chain of Custody Record

№ 38376 Pg. 1 of 1

Contact: MARK D'ARCY
Company: PATERSON GROUP
Address: 28 CONCOURSE GATE – UNIT 1
OTTAWA, ONT.
Tel: 613-226-7318 Fax: 613-226-6344

Project Ref: E2474
PO #: 5202
Quote #: [X] Not Quoted
Email: mdarcy@patersongroup.ca
Preservative to be added by Paracel? [ ] Yes [X] No

REPORTING REQUIREMENTS
[X] Hard Copy [X] Email – PDF
[ ] FAX [ ] Email - spreadsheet

TURN AROUND TIME
[ ] 1-day [ ] 2-day [X] Regular

REGULATORY/GUIDELINE REQUIREMENTS
METALS MOE TABLE III

Matrix Types: S–Soil/Sed GW–Ground Water SW–Surface Water SS–Storm/Sanitary Sewer A-Air O-Other

	Paracel Order # / Sample Identification	Matrix	# Bottles	Date Sampled d/m/y	Analysis Required: Sch A&B Column I CAMB PIBC	Analysis Required: METALS	Analysis Required: Filtered
	7260126-H2O 7260127-SOIL						
1	BH1 WS3	GW	1	28/06/07	X	X	Filtered
2	BH2 WS1	GW	1	—	X	X	Filtered
3	BH3 WS1	GW	1	—	X	X	Filtered
4	BH4 WS1	GW	1	—		X	
5	BH7 WS1	GW	1	—	X	X	Filtered
6	[illegible]	[illegible]	0				
7	G1	S	1	—		X	
8							
9							
10							

Comments: Please filter samples before testing,

Relinquished by: [signature]
Date: June 28/07 Time:

Received by: [signature]
Date: June 29, 07 Time: 2:02

Verified by:
Date: Time:

ACCUTEST LABORATORIES LTD

REPORT OF ANALYSIS

Client: Paterson Group
28 Concourse Gate, Unit 1
Nepean, ON
K2E 7T7
Attention: Mr. Mark D'Arcy

Report Number: 2715395
Date: 2007-07-18
Date Submitted: 2007-07-16

Project: E2474

INVOICE: Paterson Group Inc.
Chain of Custody Number: 23492

P.O. Number: 5619
Matrix: Groundwater

	LAB ID:	557240	557241	557242	557243		GUIDELINE		
	Sample Date:	2007-07-16	2007-07-16	2007-07-16	2007-07-16				
	Sample ID:	BH1 WS4	BH2 WS2	BH3 WS2	BH9 WS1				
PARAMETER	UNITS	MRL					TYPE	LIMIT	UNITS
Alkalinity as CaCO3	mg/L	5	1610	1310	965	753			
Chemical Oxygen Demand	mg/L	5	455	448	582	89			
Chloride	mg/L	1	1450	1510	279	141			
Conductivity	uS/cm	5	8360	8160	3990	2320			
N-NH3 (Ammonia)	mg/L	0.02	1.12	3.38	1.53	1.40			
N-NH3 (unionized)	mg/L	0.02	0.04	0.13	0.06	0.05			
N-NO2 (Nitrite)	mg/L	0.10	<0.10	<0.10	<0.10	<0.10			
N-NO3 (Nitrate)	mg/L	0.10	<0.10	<0.10	<0.10	<0.10			
pH			7.87	7.90	7.96	7.77			
Phenols	mg/L	0.001	0.025	0.002	0.002	0.005			
Sulphate	mg/L	1	560	645	625	334			
TDS (COND - CALC)	mg/L	5	6270	6120	2990	1620			
Total Kjeldahl Nitrogen	mg/L	0.10	6.87	7.76	5.44	4.38			
Total Phosphorus	mg/L	0.02	1.74	0.79	2.04	11.0			
Total Suspended Solids	mg/L	2	4380	185	528	11800			
Calcium	mg/L	1				174			
Magnesium	mg/L	1				30			
Potassium	mg/L	1				20			
Sodium	mg/L	2				536			
Aluminum	mg/L	0.1				17.7			
Antimony	mg/L	0.01				<0.01			
Arsenic	mg/L	0.01				<0.01			
Barium	mg/L	0.1				0.4			
Beryllium	mg/L	0.01				<0.01			
Boron	mg/L	0.1				1.0			
Cadmium	mg/L	0.001				<0.001			
Chromium	mg/L	0.05				<0.05			
Cobalt	mg/L	0.002				0.025			
Copper	mg/L	0.01				<0.01			
Iron	mg/L	0.3	0.3	6.0	7.0	32.2			

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:
557240: Iron MDL elevated due to matrix interference.
557241: Iron MDL elevated due to matrix interference.
557242: Iron MDL elevated due to matrix interference.
557243: Metals MDL elevated due to matrix interference.

APPROVAL:
Ewan McRobbie
Inorganic Lab Supervisor

Results relate only to the parameters tested on the samples submitted for analysis.

Client: Paterson Group
28 Concourse Gate, Unit 1
Nepean, ON
K2E 7T7
Attention: Mr. Mark D'Arcy

Report Number: 2715395
Date: 2007-07-18
Date Submitted: 2007-07-16
Project: E2474
P.O. Number: 5619
Matrix: Groundwater

INVOICE: Paterson Group Inc.
Chain of Custody Number: 23492

			LAB ID:	557240	557241	557242	557243		GUIDELINE		
			Sample Date:	2007-07-16	2007-07-16	2007-07-16	2007-07-16				
			Sample ID:	BH1 WS4	BH2 WS2	BH3 WS2	BH9 WS1				
PARAMETER	UNITS	MRL							TYPE	LIMIT	UNITS
Lead	mg/L	0.01					0.01				
Manganese	mg/L	0.1					4.8				
Mercury	mg/L	0.0001					<0.0001				
Molybdenum	mg/L	0.05					<0.05				
Nickel	mg/L	0.05					<0.05				
Selenium	mg/L	0.01					<0.01				
Silicon	mg/L	1					13				
Silver	mg/L	0.001					<0.001				
Strontium	mg/L	0.01					2.85				
Thallium	mg/L	0.001					<0.001				
Titanium	mg/L	0.1					0.1				
Vanadium	mg/L	0.01					0.06				
Zinc	mg/L	0.1					<0.1				

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:
557240: Iron MDL elevated due to matrix interference.
557241: Iron MDL elevated due to matrix interference.
557242: Iron MDL elevated due to matrix interference.
557243: Metals MDL elevated due to matrix interference.

APPROVAL:
Ewan McRobbie
Inorganic Lab Supervisor

ACCUTEST LABORATORIES LTD

REPORT OF ANALYSIS

Client: Paterson Group
28 Concourse Gate, Unit 1
Nepean, ON
K2E 7T7
Attention: Mr. Mark D'Arcy

Report Number: 2715396
Date: 2007-07-24
Date Submitted: 2007-07-16

Project: E2474

P.O. Number: 5619
Matrix: Groundwater

INVOICE: Paterson Group Inc.
Chain of Custody Number: 23492

			LAB ID:	557244	557245	557246	557247		GUIDELINE		
			Sample Date:	2007-07-16	2007-07-16	2007-07-16	2007-07-16				
			Sample ID:	BH1 WS4	BH2 WS2	BH3 WS2	BH9 WS1				
PARAMETER	UNITS	MRL							TYPE	LIMIT	UNITS
Biochemical Oxygen Demand	mg/L	1		163	99	153	27				

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:

Ewan McRobbie
Inorganic Lab Supervisor

Results relate only to the parameters tested on the samples submitted for analysis.

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Certificate of Analysis

Paterson Group Consulting Engineers

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

Client PO: 27691
Project: PE4588
Custody: 123156

Report Date: 10-Sep-2019
Order Date: 9-Sep-2019

Order #: 1937092

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

Paracel ID	Client ID
1937092-01	BH10-GW1
1937092-02	BH12-GW1
1937092-03	BH13-GW1

Approved By:



Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 27691

Report Date: 10-Sep-2019
Order Date: 9-Sep-2019
Project Description: PE4588

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	9-Sep-19	9-Sep-19

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 27691

Report Date: 10-Sep-2019

Order Date: 9-Sep-2019

Project Description: PE4588

	Client ID:	BH10-GW1	BH12-GW1	BH13-GW1	-
	Sample Date:	09-Sep-19 09:00	09-Sep-19 09:00	09-Sep-19 09:00	-
	Sample ID:	1937092-01	1937092-02	1937092-03	-
	MDL/Units	Water	Water	Water	-
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	-
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylene dibromide (dibromoethan	0.2 ug/L	<0.2	<0.2	<0.2	-
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	-
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 27691

Report Date: 10-Sep-2019

Order Date: 9-Sep-2019

Project Description: PE4588

	Client ID:	BH10-GW1	BH12-GW1	BH13-GW1	-
	Sample Date:	09-Sep-19 09:00	09-Sep-19 09:00	09-Sep-19 09:00	-
	Sample ID:	1937092-01	1937092-02	1937092-03	-
	MDL/Units	Water	Water	Water	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	-
4-Bromofluorobenzene	Surrogate	89.8%	90.1%	88.8%	-
Dibromofluoromethane	Surrogate	110%	106%	109%	-
Toluene-d8	Surrogate	102%	103%	102%	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroform	ND	0.5	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Ethylene dibromide (dibromoethane	ND	0.2	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
Vinyl chloride	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: 4-Bromofluorobenzene	*82.8*		*ug/L*		*104*	*50-140*			
Surrogate: Dibromofluoromethane	*80.9*		*ug/L*		*101*	*50-140*			
Surrogate: Toluene-d8	*92.6*		*ug/L*		*116*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	ND	5.0	ug/L	ND				30	
Benzene	ND	0.5	ug/L	ND				30	
Bromodichloromethane	ND	0.5	ug/L	ND				30	
Bromoform	ND	0.5	ug/L	ND				30	
Bromomethane	ND	0.5	ug/L	ND				30	
Carbon Tetrachloride	ND	0.2	ug/L	ND				30	
Chlorobenzene	ND	0.5	ug/L	ND				30	
Chloroform	ND	0.5	ug/L	ND				30	
Dibromochloromethane	ND	0.5	ug/L	ND				30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND				30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,1-Dichloroethane	ND	0.5	ug/L	ND				30	
1,2-Dichloroethane	ND	0.5	ug/L	ND				30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND				30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
1,2-Dichloropropane	ND	0.5	ug/L	ND				30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Ethylene dibromide (dibromoethane	ND	0.2	ug/L	ND				30	
Hexane	ND	1.0	ug/L	ND				30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND				30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND				30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND				30	
Methylene Chloride	ND	5.0	ug/L	ND				30	
Styrene	ND	0.5	ug/L	ND				30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
Tetrachloroethylene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND				30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND				30	
Trichloroethylene	ND	0.5	ug/L	ND				30	
Trichlorofluoromethane	ND	1.0	ug/L	ND				30	
Vinyl chloride	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: 4-Bromofluorobenzene	*81.0*		*ug/L*		*101*	*50-140*			
Surrogate: Dibromofluoromethane	*87.9*		*ug/L*		*110*	*50-140*			
Surrogate: Toluene-d8	*78.4*		*ug/L*		*98.1*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	66.8	5.0	ug/L		66.8	50-140			
Benzene	33.5	0.5	ug/L		83.8	60-130			
Bromodichloromethane	34.5	0.5	ug/L		86.2	60-130			
Bromoform	36.6	0.5	ug/L		91.4	60-130			
Bromomethane	33.9	0.5	ug/L		84.7	50-140			
Carbon Tetrachloride	35.3	0.2	ug/L		88.3	60-130			
Chlorobenzene	33.5	0.5	ug/L		83.7	60-130			
Chloroform	34.4	0.5	ug/L		85.9	60-130			
Dibromochloromethane	35.0	0.5	ug/L		87.5	60-130			
Dichlorodifluoromethane	34.4	1.0	ug/L		86.0	50-140			
1,2-Dichlorobenzene	33.0	0.5	ug/L		82.5	60-130			
1,3-Dichlorobenzene	33.4	0.5	ug/L		83.4	60-130			
1,4-Dichlorobenzene	33.3	0.5	ug/L		83.3	60-130			
1,1-Dichloroethane	34.2	0.5	ug/L		85.6	60-130			
1,2-Dichloroethane	35.4	0.5	ug/L		88.4	60-130			
1,1-Dichloroethylene	36.3	0.5	ug/L		90.8	60-130			
cis-1,2-Dichloroethylene	35.0	0.5	ug/L		87.6	60-130			
trans-1,2-Dichloroethylene	35.8	0.5	ug/L		89.6	60-130			
1,2-Dichloropropane	33.6	0.5	ug/L		84.0	60-130			
cis-1,3-Dichloropropylene	36.0	0.5	ug/L		89.9	60-130			
trans-1,3-Dichloropropylene	37.3	0.5	ug/L		93.2	60-130			
Ethylbenzene	33.7	0.5	ug/L		84.2	60-130			
Ethylene dibromide (dibromoethane	35.1	0.2	ug/L		87.8	60-130			
Hexane	40.5	1.0	ug/L		101	60-130			
Methyl Ethyl Ketone (2-Butanone)	90.6	5.0	ug/L		90.6	50-140			
Methyl Isobutyl Ketone	83.4	5.0	ug/L		83.4	50-140			
Methyl tert-butyl ether	85.9	2.0	ug/L		85.9	50-140			
Methylene Chloride	32.7	5.0	ug/L		81.7	60-130			
Styrene	34.7	0.5	ug/L		86.8	60-130			
1,1,1,2-Tetrachloroethane	34.7	0.5	ug/L		86.8	60-130			
1,1,2,2-Tetrachloroethane	37.5	0.5	ug/L		93.8	60-130			
Tetrachloroethylene	35.0	0.5	ug/L		87.5	60-130			
Toluene	32.4	0.5	ug/L		81.0	60-130			
1,1,1-Trichloroethane	34.4	0.5	ug/L		86.1	60-130			
1,1,2-Trichloroethane	34.9	0.5	ug/L		87.3	60-130			
Trichloroethylene	33.5	0.5	ug/L		83.8	60-130			
Trichlorofluoromethane	29.8	1.0	ug/L		74.4	60-130			
Vinyl chloride	35.4	0.5	ug/L		88.4	50-140			
m,p-Xylenes	67.3	0.5	ug/L		84.1	60-130			
o-Xylene	33.8	0.5	ug/L		84.4	60-130			
Surrogate: 4-Bromofluorobenzene	*82.3*		*ug/L*		*103*	*50-140*			

Qualifier Notes:

None

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.

PARACEL LABORATORIES LTD.

Paracel ID: 1937092

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com

Chain of Custody
(Lab Use Only)
№ 123156

Page 1 of 1

Client Name: Paterson Group
Contact Name: Mark D'Arcy
Address: 154 Colonnade Rd. S.
Telephone: 613-226-7381

Project Reference: PE4588
Quote #
PO # 27691
Email Address: mdarcy@patersongroup.ca

Turnaround Time:
☒ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

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

Paracel Order Number: 1937092

	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	BH10-GW1	GW		2	Sept 9 2019			X												
~~2~~	~~BH11-GW1~~							X												
3	BH12-GW1							X												
4	BH13-GW1							X												
5																				
6																				
7																				
8																				
9																				
10																				

Comments:

Method of Delivery: Paracel

Relinquished By (Sign):	Received by Driver/Depot: T. Towe	Received at Lab:	Verified By:
Relinquished By (Print): Nicholas Doucette	Date/Time: 09/09/19 4:30 PM	Date/Time: 9-9-19 17:15	Date/Time: 9-9-19 17:15
Date/Time:	Temperature: °C	Temperature: 14.7 °C	pH Verified [ ] By:

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Certificate of Analysis

Paterson Group Consulting Engineers

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

Client PO: 27694
Project: PE4588
Custody: 123209

Report Date: 12-Sep-2019
Order Date: 11-Sep-2019

Revised Report **Order #: 1937355**

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

Paracel ID	Client ID
1937355-01	BH11-GW1

Approved By: Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 27694

Report Date: 12-Sep-2019
Order Date: 11-Sep-2019
Project Description: PE4588

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	12-Sep-19	12-Sep-19

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 27694

Report Date: 12-Sep-2019

Order Date: 11-Sep-2019

Project Description: PE4588

	Client ID:	BH11-GW1	-	-	-
	Sample Date:	09-Sep-19 09:00	-	-	-
	Sample ID:	1937355-01	-	-	-
	MDL/Units	Water	-	-	-
Volatiles					
Acetone	5.0 ug/L	<5.0	-	-	-
Benzene	0.5 ug/L	<0.5	-	-	-
Bromodichloromethane	0.5 ug/L	<0.5	-	-	-
Bromoform	0.5 ug/L	<0.5	-	-	-
Bromomethane	0.5 ug/L	<0.5	-	-	-
Carbon Tetrachloride	0.2 ug/L	<0.2	-	-	-
Chlorobenzene	0.5 ug/L	<0.5	-	-	-
Chloroform	0.5 ug/L	15.0	-	-	-
Dibromochloromethane	0.5 ug/L	<0.5	-	-	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	-	-	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-
1,1-Dichloroethane	0.5 ug/L	<0.5	-	-	-
1,2-Dichloroethane	0.5 ug/L	<0.5	-	-	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	-	-	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	-	-	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	-	-	-
1,2-Dichloropropane	0.5 ug/L	<0.5	-	-	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	-	-	-
Ethylene dibromide (dibromoethan	0.2 ug/L	<0.2	-	-	-
Hexane	1.0 ug/L	<1.0	-	-	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	-	-	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	-	-	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	-	-	-
Methylene Chloride	5.0 ug/L	<5.0	-	-	-
Styrene	0.5 ug/L	<0.5	-	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	-	-	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	-	-	-
Tetrachloroethylene	0.5 ug/L	<0.5	-	-	-
Toluene	0.5 ug/L	<0.5	-	-	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	-	-	-

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 27694

Report Date: 12-Sep-2019

Order Date: 11-Sep-2019

Project Description: PE4588

	Client ID:	BH11-GW1	-	-	-
	Sample Date:	09-Sep-19 09:00	-	-	-
	Sample ID:	1937355-01	-	-	-
	MDL/Units	Water	-	-	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	-	-	-
Trichloroethylene	0.5 ug/L	<0.5	-	-	-
Trichlorofluoromethane	1.0 ug/L	<1.0	-	-	-
Vinyl chloride	0.5 ug/L	<0.5	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	-	-	-
o-Xylene	0.5 ug/L	<0.5	-	-	-
Xylenes, total	0.5 ug/L	<0.5	-	-	-
4-Bromofluorobenzene	Surrogate	99.2%	-	-	-
Dibromofluoromethane	Surrogate	109%	-	-	-
Toluene-d8	Surrogate	98.6%	-	-	-

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 27694

Report Date: 12-Sep-2019
Order Date: 11-Sep-2019
Project Description: PE4588

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroform	ND	0.5	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Ethylene dibromide (dibromoethane	ND	0.2	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
Vinyl chloride	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: 4-Bromofluorobenzene	*81.2*		*ug/L*		*102*	*50-140*			
Surrogate: Dibromofluoromethane	*73.4*		*ug/L*		*91.7*	*50-140*			
Surrogate: Toluene-d8	*75.9*		*ug/L*		*94.9*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	ND	5.0	ug/L	ND				30	
Benzene	ND	0.5	ug/L	ND				30	
Bromodichloromethane	ND	0.5	ug/L	ND				30	
Bromoform	ND	0.5	ug/L	ND				30	
Bromomethane	ND	0.5	ug/L	ND				30	
Carbon Tetrachloride	ND	0.2	ug/L	ND				30	
Chlorobenzene	ND	0.5	ug/L	ND				30	
Chloroform	ND	0.5	ug/L	ND				30	
Dibromochloromethane	ND	0.5	ug/L	ND				30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND				30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,1-Dichloroethane	ND	0.5	ug/L	ND				30	
1,2-Dichloroethane	ND	0.5	ug/L	ND				30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND				30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
1,2-Dichloropropane	ND	0.5	ug/L	ND				30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Ethylene dibromide (dibromoethane	ND	0.2	ug/L	ND				30	
Hexane	ND	1.0	ug/L	ND				30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND				30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND				30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND				30	
Methylene Chloride	6.69	5.0	ug/L	8.16			19.8	30	
Styrene	ND	0.5	ug/L	ND				30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
Tetrachloroethylene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND				30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND				30	
Trichloroethylene	ND	0.5	ug/L	ND				30	
Trichlorofluoromethane	ND	1.0	ug/L	ND				30	
Vinyl chloride	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: 4-Bromofluorobenzene	*80.8*		*ug/L*		*101*	*50-140*			
Surrogate: Dibromofluoromethane	*80.1*		*ug/L*		*100*	*50-140*			
Surrogate: Toluene-d8	*77.5*		*ug/L*		*96.9*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	87.3	5.0	ug/L		87.3	50-140			
Benzene	29.5	0.5	ug/L		73.7	60-130			
Bromodichloromethane	28.7	0.5	ug/L		71.8	60-130			
Bromoform	37.1	0.5	ug/L		92.8	60-130			
Bromomethane	34.1	0.5	ug/L		85.4	50-140			
Carbon Tetrachloride	27.6	0.2	ug/L		68.9	60-130			
Chlorobenzene	35.1	0.5	ug/L		87.7	60-130			
Chloroform	43.6	0.5	ug/L		109	60-130			
Dibromochloromethane	34.6	0.5	ug/L		86.6	60-130			
Dichlorodifluoromethane	43.8	1.0	ug/L		110	50-140			
1,2-Dichlorobenzene	31.2	0.5	ug/L		78.1	60-130			
1,3-Dichlorobenzene	30.4	0.5	ug/L		76.0	60-130			
1,4-Dichlorobenzene	31.1	0.5	ug/L		77.8	60-130			
1,1-Dichloroethane	48.7	0.5	ug/L		122	60-130			
1,2-Dichloroethane	40.3	0.5	ug/L		101	60-130			
1,1-Dichloroethylene	45.0	0.5	ug/L		113	60-130			
cis-1,2-Dichloroethylene	39.3	0.5	ug/L		98.2	60-130			
trans-1,2-Dichloroethylene	44.2	0.5	ug/L		110	60-130			
1,2-Dichloropropane	38.2	0.5	ug/L		95.4	60-130			
cis-1,3-Dichloropropylene	48.8	0.5	ug/L		122	60-130			
trans-1,3-Dichloropropylene	30.5	0.5	ug/L		76.3	60-130			
Ethylbenzene	35.4	0.5	ug/L		88.6	60-130			
Ethylene dibromide (dibromoethane	36.0	0.2	ug/L		90.0	60-130			
Hexane	42.9	1.0	ug/L		107	60-130			
Methyl Ethyl Ketone (2-Butanone)	130	5.0	ug/L		130	50-140			
Methyl Isobutyl Ketone	67.2	5.0	ug/L		67.2	50-140			
Methyl tert-butyl ether	97.4	2.0	ug/L		97.4	50-140			
Methylene Chloride	44.1	5.0	ug/L		110	60-130			
Styrene	36.1	0.5	ug/L		90.4	60-130			
1,1,1,2-Tetrachloroethane	35.7	0.5	ug/L		89.2	60-130			
1,1,2,2-Tetrachloroethane	48.6	0.5	ug/L		121	60-130			
Tetrachloroethylene	34.2	0.5	ug/L		85.4	60-130			
Toluene	34.7	0.5	ug/L		86.7	60-130			
1,1,1-Trichloroethane	26.3	0.5	ug/L		65.7	60-130			
1,1,2-Trichloroethane	27.6	0.5	ug/L		69.1	60-130			
Trichloroethylene	33.8	0.5	ug/L		84.5	60-130			
Trichlorofluoromethane	40.7	1.0	ug/L		102	60-130			
Vinyl chloride	40.3	0.5	ug/L		101	50-140			
m,p-Xylenes	71.7	0.5	ug/L		89.6	60-130			
o-Xylene	37.6	0.5	ug/L		94.0	60-130			
Surrogate: 4-Bromofluorobenzene	*71.4*		*ug/L*		*89.2*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

only one VOC received

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.

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Paracel ID: 1937355

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aracel@paracellabs.com

Chain of Custody
(Lab Use Only)
№ 123209

Page ___ of ___

Client Name: Paterson Group	Project Reference: PE 4588
Contact Name: Mark D'Arcy	Quote #
Address: 154 Colonnade Rd, Nepean, Ontario	PO # 27694
Telephone: 613-226-7381	Email Address: mdarcy@patersongroup.ca

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

Criteria: ☑ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

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

Required Analyses

Paracel Order Number: 1937355

	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	BH11 - GW1	GW		1	Sept 9/19			✓												✓
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Comments: Only one VOC received

Method of Delivery: Paracel

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Nicholas Doucette	Date/Time: 11/09/19 4:00 pm	Date/Time: SEP 11 2019 09:50	Date/Time: 09/11/19 12:45
Date/Time:	Temperature:	Temperature: 22.6°C	pH Verified [ ] By: NA

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e: paracel@paracellabs.com
www.paracellabs.com

Certificate of Analysis

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

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 14990
Project: PE2990
Custody: 99425/6/7

Report Date: 23-Dec-2013
Order Date: 12-Dec-2013
Revised Report **Order #: 1350232**

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

Paracel ID	Client ID
1350232-01	BH1-07
1350232-02	BH2-07
1350232-03	BH3-07
1350232-04	BH10-08
1350232-05	BH12-08
1350232-06	MW1
1350232-07	MW3
1350232-08	MW5
1350232-09	MW7
1350232-10	MW9
1350232-11	MW11

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Alkalinity, total to pH 4.5	EPA 310.1 - Titration to pH 4.5	16-Dec-13	16-Dec-13
Ammonia, as N	EPA 351.2 - Auto Colour	13-Dec-13	13-Dec-13
Anions	EPA 300.1 - IC	12-Dec-13	12-Dec-13
Biochemical Oxygen Demand	SM 5210B - DO Probe	13-Dec-13	18-Dec-13
COD	EPA 410.1 - Digestion, Colourimetric	12-Dec-13	13-Dec-13
Conductivity	EPA 9050A- probe @25 °C	16-Dec-13	16-Dec-13
DOC	MOE E3247B - Combustion IR, filtration	16-Dec-13	17-Dec-13
Hardness	Hardness as CaCO3	18-Dec-13	18-Dec-13
Metals, ICP-MS	EPA 200.8 - ICP-MS	13-Dec-13	13-Dec-13
TKN	EPA 351.2 - Auto Colour, digestion	13-Dec-13	13-Dec-13
VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	13-Dec-13	15-Dec-13

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	BH1-07	BH2-07	BH3-07	BH10-08
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	11-Dec-13
	Sample ID:	1350232-01	1350232-02	1350232-03	1350232-04
	MDL/Units	Water	Water	Water	Water
General Inorganics					
Alkalinity, total	5 mg/L	899	1360	1010	1240
Ammonia as N	0.01 mg/L	1.74	4.22	1.62	4.04
BOD	2 mg/L	15	21	14	6
Chemical Oxygen Demand	10 mg/L	189	112	85	88
Dissolved Organic Carbon	0.5 mg/L	21.9	25.5	28.5	27.9
Conductivity	5 uS/cm	4190	6950	2670	4440
Hardness	1.0 mg/L	172	431	53.1	196
Total Kjeldahl Nitrogen	0.1 mg/L	3.1	5.3	3.5	4.4
Anions					
Chloride	1 mg/L	810	1590	250	781
Nitrate as N	0.1 mg/L	<0.1	<0.1	<0.1	<0.1
Nitrite as N	0.05 mg/L	<0.05	<0.05	<0.05	<0.05
Sulphate	1 mg/L	61	8	41	8
Metals					
Boron	10 ug/L	876	1710	1820	1780
Magnesium	200 ug/L	26400	73300	7540	33100
Manganese	5 ug/L	202	261	16	59
Potassium	100 ug/L	9240	29100	16200	24100
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloroethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloromethane	3.0 ug/L	<3.0	<3.0	<3.0	<3.0
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	BH1-07	BH2-07	BH3-07	BH10-08
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	11-Dec-13
	Sample ID:	1350232-01	1350232-02	1350232-03	1350232-04
	MDL/Units	Water	Water	Water	Water
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	<10.0	<10.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
4-Bromofluorobenzene	Surrogate	93.5%	93.3%	93.2%	92.5%

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

	Client ID:	BH1-07	BH2-07	BH3-07	BH10-08
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	11-Dec-13
	Sample ID:	1350232-01	1350232-02	1350232-03	1350232-04
	MDL/Units	Water	Water	Water	Water
Dibromofluoromethane	Surrogate	97.7%	98.4%	101%	98.9%
Toluene-d8	Surrogate	109%	109%	109%	109%

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	BH12-08	MW1	MW3	MW5
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	11-Dec-13
	Sample ID:	1350232-05	1350232-06	1350232-07	1350232-08
	MDL/Units	Water	Water	Water	Water
General Inorganics					
Alkalinity, total	5 mg/L	980	481	151	460
Ammonia as N	0.01 mg/L	1.58	0.12	0.26	0.07
BOD	2 mg/L	9	<2	<2	<2
Chemical Oxygen Demand	10 mg/L	86	35	49	30
Dissolved Organic Carbon	0.5 mg/L	30.5	6.5	6.2	15.8
Conductivity	5 uS/cm	2580	1360	1300	1180
Hardness	1.0 mg/L	107	134	180	523
Total Kjeldahl Nitrogen	0.1 mg/L	3.3	1.1	1.6	1.2
Anions					
Chloride	1 mg/L	248	75	260	49
Nitrate as N	0.1 mg/L	<0.1	<0.1	<0.1	<0.1
Nitrite as N	0.05 mg/L	<0.05	<0.05	<0.05	<0.05
Sulphate	1 mg/L	21	133	70	134
Metals					
Boron	10 ug/L	1610	842	186	46
Magnesium	200 ug/L	13800	16400	26000	39200
Manganese	5 ug/L	45	277	71	396
Potassium	100 ug/L	10700	4350	5630	6130
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloroethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloromethane	3.0 ug/L	<3.0	<3.0	<3.0	<3.0
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	BH12-08	MW1	MW3	MW5
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	11-Dec-13
	Sample ID:	1350232-05	1350232-06	1350232-07	1350232-08
	MDL/Units	Water	Water	Water	Water
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	<10.0	<10.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

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Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	BH12-08	MW1	MW3	MW5
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	11-Dec-13
	Sample ID:	1350232-05	1350232-06	1350232-07	1350232-08
	MDL/Units	Water	Water	Water	Water
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
4-Bromofluorobenzene	Surrogate	93.2%	92.8%	92.8%	93.2%
Dibromofluoromethane	Surrogate	103%	103%	97.6%	101%
Toluene-d8	Surrogate	109%	109%	109%	108%

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	MW7	MW9	MW11	-
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	-
	Sample ID:	1350232-09	1350232-10	1350232-11	-
	MDL/Units	Water	Water	Water	-
General Inorganics					
Alkalinity, total	5 mg/L	229	273	927	-
Ammonia as N	0.01 mg/L	0.06	0.05	0.15	-
BOD	2 mg/L	<2	<2	<2	-
Chemical Oxygen Demand	10 mg/L	<10	<10	19	-
Dissolved Organic Carbon	0.5 mg/L	3.8	2.5	4.1	-
Conductivity	5 uS/cm	707	686	2060	-
Hardness	1.0 mg/L	228	148	148	-
Total Kjeldahl Nitrogen	0.1 mg/L	0.3	0.3	0.6	-
Anions					
Chloride	1 mg/L	53	5	114	-
Nitrate as N	0.1 mg/L	0.1	<0.1	<0.1	-
Nitrite as N	0.05 mg/L	<0.05	<0.05	<0.05	-
Sulphate	1 mg/L	59	90	77	-
Metals					
Boron	10 ug/L	93	482	756	-
Magnesium	200 ug/L	20900	16800	24000	-
Manganese	5 ug/L	71	79	43	-
Potassium	100 ug/L	6300	2410	10300	-
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	-
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Chloroethane	1.0 ug/L	<1.0	<1.0	<1.0	-
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	-
Chloromethane	3.0 ug/L	<3.0	<3.0	<3.0	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	<0.2	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-

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Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	MW7	MW9	MW11	-
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	-
	Sample ID:	1350232-09	1350232-10	1350232-11	-
	MDL/Units	Water	Water	Water	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	<10.0	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	-
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	-
4-Bromofluorobenzene	Surrogate	89.8%	95.9%	92.4%	-

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	MW7	MW9	MW11	-
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	-
	Sample ID:	1350232-09	1350232-10	1350232-11	-
	MDL/Units	Water	Water	Water	-
Dibromofluoromethane	Surrogate	109%	105%	103%	-
Toluene-d8	Surrogate	107%	111%	108%	-

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	1	mg/L						
Nitrate as N	ND	0.1	mg/L						
Nitrite as N	ND	0.05	mg/L						
Sulphate	ND	1	mg/L						
General Inorganics									
Alkalinity, total	ND	5	mg/L						
Ammonia as N	ND	0.01	mg/L						
BOD	ND	2	mg/L						
Chemical Oxygen Demand	ND	10	mg/L						
Dissolved Organic Carbon	ND	0.5	mg/L						
Conductivity	ND	5	uS/cm						
Total Kjeldahl Nitrogen	ND	0.1	mg/L						
Metals									
Boron	ND	10	ug/L						
Magnesium	ND	200	ug/L						
Manganese	ND	5	ug/L						
Potassium	ND	100	ug/L						
Volatiles									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroethane	ND	1.0	ug/L						
Chloroform	ND	0.5	ug/L						
Chloromethane	ND	3.0	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dibromoethane	ND	0.2	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloroethylene, total	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Toluene	ND	0.5	ug/L						
1,2,4-Trichlorobenzene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
1,3,5-Trimethylbenzene	ND	0.5	ug/L						
Vinyl chloride	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: 4-Bromofluorobenzene	*76.4*		*ug/L*		*95.5*	*50-140*			
Surrogate: Dibromofluoromethane	*78.0*		*ug/L*		*97.5*	*50-140*			
Surrogate: Toluene-d8	*86.5*		*ug/L*		*108*	*50-140*			

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	1110	10	mg/L	1110			0.1	10	
Nitrate as N	ND	0.1	mg/L	ND				20	
Nitrite as N	ND	0.05	mg/L	ND				20	
Sulphate	252	1	mg/L	254			0.7	10	
General Inorganics									
Alkalinity, total	601	5	mg/L	607			0.9	14	
Ammonia as N	25.3	1.00	mg/L	25.2			0.2	8	
BOD	333	2	mg/L	370			10.7	20	
Chemical Oxygen Demand	179	10	mg/L	189			5.4	12	
Dissolved Organic Carbon	22.7	0.5	mg/L	22.6			0.4	37	
Conductivity	1950	5	uS/cm	1940			0.4	11	
Total Kjeldahl Nitrogen	3.16	0.2	mg/L	3.10			2.1	10	
Metals									
Boron	29	10	ug/L	36			21.5	20	QR-01
Magnesium	10200	200	ug/L	10700			4.8	20	
Manganese	ND	5	ug/L	ND			0.0	20	
Potassium	1900	100	ug/L	1910			0.4	20	
Volatiles									
Acetone	145	5.0	ug/L	61.6			80.9	30	
Benzene	ND	0.5	ug/L	ND				30	
Bromodichloromethane	ND	0.5	ug/L	ND				30	
Bromoform	ND	0.5	ug/L	ND				30	
Bromomethane	ND	0.5	ug/L	ND				30	
Carbon Tetrachloride	ND	0.2	ug/L	ND				30	
Chlorobenzene	ND	0.5	ug/L	ND				30	
Chloroethane	ND	1.0	ug/L	ND				30	
Chloroform	ND	0.5	ug/L	ND				30	
Chloromethane	ND	3.0	ug/L	ND				30	
Dibromochloromethane	ND	0.5	ug/L	ND				30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND				30	
1,2-Dibromoethane	ND	0.2	ug/L	ND				30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,4-Dichlorobenzene	19.8	0.5	ug/L	19.2			3.1	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND				30	
1,2-Dichloroethane	ND	0.5	ug/L	ND				30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND				30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
1,2-Dichloropropane	ND	0.5	ug/L	ND				30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Hexane	ND	1.0	ug/L	ND				30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND				30	
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L	ND				30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND				30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND				30	
Methylene Chloride	ND	5.0	ug/L	ND				30	
Styrene	ND	0.5	ug/L	ND				30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
Tetrachloroethylene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,2,4-Trichlorobenzene	ND	0.5	ug/L	ND				30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND				30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND				30	
Trichloroethylene	ND	0.5	ug/L	ND				30	
Trichlorofluoromethane	ND	1.0	ug/L	ND				30	
1,3,5-Trimethylbenzene	ND	0.5	ug/L	ND				30	
Vinyl chloride	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: 4-Bromofluorobenzene	*72.3*		*ug/L*	*ND*	*90.3*	*50-140*			
Surrogate: Dibromofluoromethane	*87.9*		*ug/L*	*ND*	*110*	*50-140*			
Surrogate: Toluene-d8	*87.4*		*ug/L*	*ND*	*109*	*50-140*			

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	9.14	1	mg/L	ND	91.4	78-112			
Nitrate as N	0.96	0.1	mg/L	ND	96.5	81-112			
Nitrite as N	1.02	0.05	mg/L	ND	102	76-117			
Sulphate	69.3	1	mg/L	60.8	85.7	75-111			
General Inorganics									
Ammonia as N	0.244	0.01	mg/L	ND	97.8	81-124			
BOD	167		mg/L	ND	83.5	71-121			
Chemical Oxygen Demand	300	10	mg/L	189	55.5	85-111			QM-07
Dissolved Organic Carbon	32.1	0.5	mg/L	22.6	94.7	60-133			
Total Kjeldahl Nitrogen	2.04	0.1	mg/L	ND	102	81-126			
Metals									
Boron	77		ug/L	36	81.3	80-120			
Magnesium	1050		ug/L	ND	105	80-120			
Manganese	46.7		ug/L	0.8	91.8	80-120			
Potassium	2590		ug/L	1910	68.1	80-120			QM-07
Volatiles									
Acetone	63.0	5.0	ug/L	ND	63.0	50-140			
Benzene	44.6	0.5	ug/L	3.41	103	50-140			
Bromodichloromethane	40.0	0.5	ug/L	ND	99.9	50-140			
Bromoform	32.4	0.5	ug/L	ND	81.0	50-140			
Bromomethane	43.7	0.5	ug/L	ND	109	50-140			
Carbon Tetrachloride	25.3	0.2	ug/L	ND	63.2	50-140			
Chlorobenzene	39.4	0.5	ug/L	ND	98.6	50-140			
Chloroethane	36.8	1.0	ug/L	ND	92.1	50-140			
Chloroform	38.3	0.5	ug/L	ND	95.7	50-140			
Chloromethane	33.4	3.0	ug/L	ND	83.6	50-140			
Dibromochloromethane	37.6	0.5	ug/L	ND	94.0	50-140			
Dichlorodifluoromethane	32.4	1.0	ug/L	ND	81.1	50-140			
1,2-Dibromoethane	35.8	0.2	ug/L	ND	89.5	50-140			
1,2-Dichlorobenzene	40.9	0.5	ug/L	ND	102	50-140			
1,3-Dichlorobenzene	38.0	0.5	ug/L	ND	94.9	50-140			
1,4-Dichlorobenzene	38.0	0.5	ug/L	ND	95.0	50-140			
1,1-Dichloroethane	41.4	0.5	ug/L	ND	104	50-140			
1,2-Dichloroethane	32.0	0.5	ug/L	ND	79.9	50-140			
1,1-Dichloroethylene	36.2	0.5	ug/L	ND	90.4	50-140			
cis-1,2-Dichloroethylene	37.9	0.5	ug/L	ND	94.7	50-140			
trans-1,2-Dichloroethylene	51.8	0.5	ug/L	ND	130	50-140			
1,2-Dichloropropane	40.0	0.5	ug/L	ND	99.9	50-140			
cis-1,3-Dichloropropylene	35.6	0.5	ug/L	ND	89.0	50-140			
trans-1,3-Dichloropropylene	32.3	0.5	ug/L	ND	80.8	50-140			
Ethylbenzene	47.2	0.5	ug/L	10.2	92.4	50-140			
Hexane	34.6	1.0	ug/L	ND	86.4	50-140			
Methyl Ethyl Ketone (2-Butanone)	72.6	5.0	ug/L	ND	72.6	50-140			
Methyl Butyl Ketone (2-Hexanone)	87.6	10.0	ug/L	ND	87.6	50-140			
Methyl Isobutyl Ketone	85.6	5.0	ug/L	ND	85.6	50-140			
Methyl tert-butyl ether	113	2.0	ug/L	ND	113	50-140			
Methylene Chloride	30.2	5.0	ug/L	ND	75.4	50-140			
Styrene	36.6	0.5	ug/L	ND	91.6	50-140			

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	28.3	0.5	ug/L	ND	70.7	50-140			
1,1,2,2-Tetrachloroethane	35.6	0.5	ug/L	ND	88.9	50-140			
Tetrachloroethylene	39.7	0.5	ug/L	ND	99.2	50-140			
Toluene	44.3	0.5	ug/L	5.15	98.0	50-140			
1,2,4-Trichlorobenzene	40.4	0.5	ug/L	ND	101	50-140			
1,1,1-Trichloroethane	33.1	0.5	ug/L	ND	82.8	50-140			
1,1,2-Trichloroethane	39.8	0.5	ug/L	ND	99.5	50-140			
Trichloroethylene	33.0	0.5	ug/L	ND	82.4	50-140			
Trichlorofluoromethane	29.8	1.0	ug/L	ND	74.6	50-140			
1,3,5-Trimethylbenzene	37.5	0.5	ug/L	4.20	83.2	50-140			
Vinyl chloride	29.9	0.5	ug/L	ND	74.8	50-140			
m,p-Xylenes	90.7	0.5	ug/L	32.2	73.1	50-140			
o-Xylene	44.3	0.5	ug/L	8.85	88.6	50-140			
Surrogate: 4-Bromofluorobenzene	*71.0*		*ug/L*		*88.7*	*50-140*			

Certificate of Analysis

Report Date: 23-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Qualifier Notes:

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.

QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

Sample Data Revisions

None

Work Order Revisions / Comments:

Revision 1 - This report includes revised sample data based on analysis of duplicate vial.

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.

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Page 1 of 3

Client Name: PATERSON GROUP INC.
Contact Name: MARK D'ARCY
Address: 154 COLONNADE ROAD SOUTH
Telephone: (613) 226-7381

Project Reference: PE2990
Quote #
PO # 14990
Email Address: MDARCY@PATERSONGROUP.CA

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

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

Required Analyses

Paracel Order Number: 1350232

	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)	BOD	COD	TKN	NO_2	NO_3	DOC	Alkalinity
1	BH1-07	GW		8	Dec 11, 2013	pm		X						X	X	X	X	X	X	X
2	BH2-07					pm														
3	BH3-07					am														
4	BH10-08					pm														
5	BH12-08					am														
6	MW1					am														
7	MW3					am														
8	MW5					am														
9	MW7					am														
10	MW9					pm														
11	MW11					pm														

Comments: All metals Field Filtered.

Method of Delivery: Paracel Courier

Relinquished By (Sign):	Received by Driver/Depot: A. DROUSE	Received at Lab: SUNEEPORN	Verified By: MC
Relinquished By (Print): SEAN MAGGRIDGE	Date/Time: 12/12/13 10:20 AM	Date/Time: DEC 13, 2013 10:55	Date/Time: Dec 12/13 12:17
Date/Time: Dec 11, 2013 ~5:15 pm	Temperature: ____ °C	Temperature: 8.4 °C	pH Verified [ ] By: MC

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www.paracellabs.com

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№ 99426

Page 2 of 3

Client Name: PATERSON GROUP INC.
Contact Name: MARK D'ARCY
Address: 154 COLONNADE ROAD SOUTH
Telephone: (613) 226-7381

Project Reference: PE2990
Quote #
PO # 14990
Email Address: MDARCY@PATERSONGROUP.CA

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

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

Paracel Order Number: 1350232

	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)	Ammonia	Boron	Chloride	Hardness	Magnesium	Manganese	Potassium
1	BH1-07	GW		8	Dec 1, 2013	pm								X	X	X	X	X	X	X
2	BH2-07					pm														
3	BH3-07					am														
4	BH10-08					pm														
5	BH12-08					am														
6	MW1					am														
7	MW3					am														
8	MW5					am														
9	MW7					am														
10	MW9					pm														
	MW11					pm														

Comments: _____

Method of Delivery: Paracel Courier

Relinquished By (Sign):	Received by Driver/Depot: T Bedore	Received at Lab: SUNCE PURI	Verified By: MC
Relinquished By (Print): SEAN MCGRIDLE	Date/Time: 12/12/13 10:20 AM	Date/Time: Dec 12 2013 10:50	Date/Time: Dec 12/13 12:17
Date/Time: Dec 11, 2013 ~5:15pm	Temperature: ____ °C	Temperature: 0.4 °C	pH Verified [ ] By: MC

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Page 3 of 3

Client Name: MARK D'ARCY
Contact Name: PATERSON GROUP INC.
Address: 154 COLONNADE ROAD SOUTH
Telephone: (613) 226-7381

Project Reference: PE 2990
Quote #
PO # 14990
Email Address: MDARCY@PATERSONGROUP.CA

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

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

Paracel Order Number: 1350232

	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)	Electrical Conductivity	Sulphate					
1	BH1-07	GW			Dec 11, 2013	pm								X	X					
2	BH2-07					pm														
3	BH3-07				am	am														
4	BH10-08					pm														
5	BH12-08					am														
6	MW1				am	am														
7	MW3				am	am														
8	MW5				am	am														
9	MW7				am	am														
10	MW9					pm														
11	MW11	↓	↓	↓	↓	pm								↓	↓					

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign):	Received by Driver/Depot: M. LEDUC	Received at Lab: SUNEE PURI	Verified By: MC
Relinquished By (Print): SEAN MCGARRIGLE	Date/Time: 12/12/13 10:20 am	Date/Time: DEC 13, 2013 10:55	Date/Time: Dec 12/13 12:17
Date/Time: Dec 11, 2013 ~5:15 pm	Temperature: ____ °C	Temperature: 8.4 °C	pH Verified [ ] By: MC

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Certificate of Analysis

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

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 14964
Project: PE2990
Custody: 98305/06/07

Report Date: 11-Nov-2013
Order Date: 5-Nov-2013
Order #: 1345102

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

Paracel ID	Client ID
1345102-01	BH1-07
1345102-02	BH3-07
1345102-03	BH12-08
1345102-04	MW1
1345102-05	MW3
1345102-06	MW5
1345102-07	MW7

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964 Project Description: PE2990

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Alkalinity, total to pH 4.5	EPA 310.1 - Titration to pH 4.5	7-Nov-13	7-Nov-13
Ammonia, as N	EPA 351.2 - Auto Colour	8-Nov-13	8-Nov-13
Anions	EPA 300.1 - IC	5-Nov-13	5-Nov-13
Biochemical Oxygen Demand	SM 5210B - DO Probe	6-Nov-13	11-Nov-13
COD	EPA 410.1 - Digestion, Colourimetric	5-Nov-13	6-Nov-13
Conductivity	EPA 9050A- probe @25 °C	7-Nov-13	7-Nov-13
DOC	MOE E3247B - Combustion IR, filtration	11-Nov-13	11-Nov-13
Hardness	Hardness as CaCO3	6-Nov-13	6-Nov-13
Metals, ICP-MS	EPA 200.8 - ICP-MS	6-Nov-13	6-Nov-13
TKN	EPA 351.2 - Auto Colour, digestion	6-Nov-13	6-Nov-13
VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	7-Nov-13	8-Nov-13

PARACEL LABORATORIES LTD.

Order #: 1345102

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964

Project Description: PE2990

	Client ID:	BH1-07	BH3-07	BH12-08	MW1
	Sample Date:	04-Nov-13	04-Nov-13	04-Nov-13	04-Nov-13
	Sample ID:	1345102-01	1345102-02	1345102-03	1345102-04
	MDL/Units	Water	Water	Water	Water
General Inorganics					
Alkalinity, total	5 mg/L	746	1020	983	461
Ammonia as N	0.01 mg/L	0.68	1.74	1.55	0.01
BOD	2 mg/L	9	15	9	<2
Chemical Oxygen Demand	10 mg/L	49	108	111	49
Dissolved Organic Carbon	0.5 mg/L	13.9	29.2	29.7	7.6
Conductivity	5 uS/cm	2940	2600	2490	1360
Hardness	1.0 mg/L	134	67.8	41.6	104
Total Kjeldahl Nitrogen	0.1 mg/L	1.5	3.5	3.6	1.1
Anions					
Chloride	1 mg/L	521	254	251	69
Nitrate as N	0.1 mg/L	<0.1	<0.1	<0.1	<0.1
Nitrite as N	0.05 mg/L	<0.05	<0.05	<0.05	<0.05
Sulphate	1 mg/L	32	34	9	168
Metals					
Boron	10 ug/L	887	1700	1790	710
Magnesium	200 ug/L	23300	11400	6820	15800
Manganese	5 ug/L	145	98	34	23
Potassium	100 ug/L	14100	18400	16400	4680
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloroethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloromethane	3.0 ug/L	<3.0	<3.0	<3.0	<3.0
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964

Project Description: PE2990

	Client ID:	BH1-07	BH3-07	BH12-08	MW1
	Sample Date:	04-Nov-13	04-Nov-13	04-Nov-13	04-Nov-13
	Sample ID:	1345102-01	1345102-02	1345102-03	1345102-04
	MDL/Units	Water	Water	Water	Water
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	<10.0	<10.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
4-Bromofluorobenzene	Surrogate	110%	110%	109%	110%

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964

Project Description: PE2990

	Client ID:	BH1-07	BH3-07	BH12-08	MW1
	Sample Date:	04-Nov-13	04-Nov-13	04-Nov-13	04-Nov-13
	Sample ID:	1345102-01	1345102-02	1345102-03	1345102-04
	MDL/Units	Water	Water	Water	Water
Dibromofluoromethane	Surrogate	95.2%	94.1%	88.0%	78.9%
Toluene-d8	Surrogate	92.4%	92.1%	91.8%	92.9%

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964

Project Description: PE2990

	Client ID:	MW3	MW5	MW7	-
	Sample Date:	04-Nov-13	04-Nov-13	04-Nov-13	-
	Sample ID:	1345102-05	1345102-06	1345102-07	-
	MDL/Units	Water	Water	Water	-
General Inorganics					
Alkalinity, total	5 mg/L	114	514	238	-
Ammonia as N	0.01 mg/L	0.04	0.05	0.15	-
BOD	2 mg/L	<2	3	<2	-
Chemical Oxygen Demand	10 mg/L	64	59	22	-
Dissolved Organic Carbon	0.5 mg/L	8.6	19.6	5.5	-
Conductivity	5 uS/cm	1320	1380	727	-
Hardness	1.0 mg/L	184	574	192	-
Total Kjeldahl Nitrogen	0.1 mg/L	1.8	1.4	0.5	-
Anions					
Chloride	1 mg/L	303	64	54	-
Nitrate as N	0.1 mg/L	<0.1	<0.1	<0.1	-
Nitrite as N	0.05 mg/L	<0.05	<0.05	<0.05	-
Sulphate	1 mg/L	73	199	62	-
Metals					
Boron	10 ug/L	142	27	100	-
Magnesium	200 ug/L	28600	46700	19700	-
Manganese	5 ug/L	70	1470	295	-
Potassium	100 ug/L	6330	11600	7010	-
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	-
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Chloroethane	1.0 ug/L	<1.0	<1.0	<1.0	-
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	-
Chloromethane	3.0 ug/L	<3.0	<3.0	<3.0	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	<0.2	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964

Project Description: PE2990

	Client ID:	MW3	MW5	MW7	-
	Sample Date:	04-Nov-13	04-Nov-13	04-Nov-13	-
	Sample ID:	1345102-05	1345102-06	1345102-07	-
	MDL/Units	Water	Water	Water	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	<10.0	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	-
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	-

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964

Project Description: PE2990

	Client ID:	MW3	MW5	MW7	-
	Sample Date:	04-Nov-13	04-Nov-13	04-Nov-13	-
	Sample ID:	1345102-05	1345102-06	1345102-07	-
	MDL/Units	Water	Water	Water	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	-
4-Bromofluorobenzene	Surrogate	108%	108%	108%	-
Dibromofluoromethane	Surrogate	96.2%	94.7%	94.9%	-
Toluene-d8	Surrogate	92.4%	92.4%	92.4%	-

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964 Project Description: PE2990

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	1	mg/L						
Nitrate as N	ND	0.1	mg/L						
Nitrite as N	ND	0.05	mg/L						
Sulphate	ND	1	mg/L						
General Inorganics									
Alkalinity, total	ND	5	mg/L						
Ammonia as N	ND	0.01	mg/L						
BOD	ND	2	mg/L						
Chemical Oxygen Demand	ND	10	mg/L						
Dissolved Organic Carbon	ND	0.5	mg/L						
Conductivity	ND	5	uS/cm						
Total Kjeldahl Nitrogen	ND	0.1	mg/L						
Metals									
Boron	ND	10	ug/L						
Magnesium	ND	200	ug/L						
Manganese	ND	5	ug/L						
Potassium	ND	100	ug/L						
Volatiles									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroethane	ND	1.0	ug/L						
Chloroform	ND	0.5	ug/L						
Chloromethane	ND	3.0	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dibromoethane	ND	0.2	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloroethylene, total	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964 Project Description: PE2990

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Toluene	ND	0.5	ug/L						
1,2,4-Trichlorobenzene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
1,3,5-Trimethylbenzene	ND	0.5	ug/L						
Vinyl chloride	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: 4-Bromofluorobenzene	*90.6*		*ug/L*		*113*	*50-140*			
Surrogate: Dibromofluoromethane	*63.2*		*ug/L*		*79.0*	*50-140*			
Surrogate: Toluene-d8	*72.1*		*ug/L*		*90.2*	*50-140*			

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964 Project Description: PE2990

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	119	1	mg/L	120			0.4	10	
Nitrate as N	0.11	0.1	mg/L	ND			0.0	20	
Nitrite as N	ND	0.05	mg/L	ND				20	
Sulphate	72.1	1	mg/L	72.5			0.5	10	
General Inorganics									
Alkalinity, total	187	5	mg/L	189			1.2	14	
Ammonia as N	0.907	0.01	mg/L	0.906			0.1	8	
BOD	3350	2	mg/L	3540			5.4	20	
Chemical Oxygen Demand	46	10	mg/L	49			6.3	12	
Dissolved Organic Carbon	3.1	0.5	mg/L	3.0			1.0	37	
Conductivity	602	5	uS/cm	620			3.0	11	
Total Kjeldahl Nitrogen	3.47	0.2	mg/L	3.52			1.5	10	
Metals									
Boron	ND	10	ug/L	ND			0.0	20	
Magnesium	ND	200	ug/L	ND			0.0	20	
Manganese	ND	5	ug/L	ND			0.0	20	
Potassium	ND	100	ug/L	ND			0.0	20	
Volatiles									
Acetone	ND	5.0	ug/L	ND				30	
Benzene	ND	0.5	ug/L	ND				30	
Bromodichloromethane	ND	0.5	ug/L	ND				30	
Bromoform	ND	0.5	ug/L	ND				30	
Bromomethane	ND	0.5	ug/L	ND				30	
Carbon Tetrachloride	ND	0.2	ug/L	ND				30	
Chlorobenzene	ND	0.5	ug/L	ND				30	
Chloroethane	ND	1.0	ug/L	ND				30	
Chloroform	ND	0.5	ug/L	ND				30	
Chloromethane	ND	3.0	ug/L	ND				30	
Dibromochloromethane	ND	0.5	ug/L	ND				30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND				30	
1,2-Dibromoethane	ND	0.2	ug/L	ND				30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,1-Dichloroethane	ND	0.5	ug/L	ND				30	
1,2-Dichloroethane	ND	0.5	ug/L	ND				30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND				30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
1,2-Dichloropropane	ND	0.5	ug/L	ND				30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Hexane	ND	1.0	ug/L	ND				30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND				30	
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L	ND				30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND				30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND				30	
Methylene Chloride	ND	5.0	ug/L	ND				30	
Styrene	ND	0.5	ug/L	ND				30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
Tetrachloroethylene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964 Project Description: PE2990

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,2,4-Trichlorobenzene	ND	0.5	ug/L	ND				30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND				30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND				30	
Trichloroethylene	ND	0.5	ug/L	ND				30	
Trichlorofluoromethane	ND	1.0	ug/L	ND				30	
1,3,5-Trimethylbenzene	ND	0.5	ug/L	ND				30	
Vinyl chloride	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: 4-Bromofluorobenzene	*88.7*		*ug/L*	*ND*	*111*	*50-140*			
Surrogate: Dibromofluoromethane	*74.7*		*ug/L*	*ND*	*93.4*	*50-140*			
Surrogate: Toluene-d8	*73.8*		*ug/L*	*ND*	*92.3*	*50-140*			

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964 Project Description: PE2990

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	9.32	1	mg/L	ND	93.2	78-112			
Nitrate as N	1.11	0.1	mg/L	ND	111	81-112			
Nitrite as N	1.00	0.05	mg/L	ND	100	76-117			
Sulphate	80.3	1	mg/L	72.5	77.7	75-111			
General Inorganics									
Ammonia as N	0.240	0.01	mg/L	ND	96.1	81-124			
BOD	180		mg/L	ND	90.1	71-121			
Chemical Oxygen Demand	243	10	mg/L	49	97.0	85-111			
Dissolved Organic Carbon	13.1	0.5	mg/L	3.0	101	60-133			
Total Kjeldahl Nitrogen	1.96	0.1	mg/L	ND	98.1	81-126			
Metals									
Boron	45		ug/L	ND	97.7	80-120			
Magnesium	1150		ug/L	ND	116	80-120			
Manganese	50.2		ug/L	ND	101	80-120			
Potassium	1290		ug/L	39	125	80-120			QM-07
Volatiles									
Acetone	113	5.0	ug/L	ND	113	50-140			
Benzene	33.8	0.5	ug/L	ND	84.4	50-140			
Bromodichloromethane	29.0	0.5	ug/L	ND	72.6	50-140			
Bromoform	39.9	0.5	ug/L	ND	99.7	50-140			
Bromomethane	49.4	0.5	ug/L	ND	123	50-140			
Carbon Tetrachloride	27.2	0.2	ug/L	ND	68.1	50-140			
Chlorobenzene	41.5	0.5	ug/L	ND	104	50-140			
Chloroethane	44.3	1.0	ug/L	ND	111	50-140			
Chloroform	30.2	0.5	ug/L	ND	75.5	50-140			
Chloromethane	31.5	3.0	ug/L	ND	78.7	50-140			
Dibromochloromethane	38.0	0.5	ug/L	ND	95.1	50-140			
Dichlorodifluoromethane	32.7	1.0	ug/L	ND	81.6	50-140			
1,2-Dibromoethane	39.7	0.2	ug/L	ND	99.2	50-140			
1,2-Dichlorobenzene	41.6	0.5	ug/L	ND	104	50-140			
1,3-Dichlorobenzene	40.0	0.5	ug/L	ND	100	50-140			
1,4-Dichlorobenzene	33.0	0.5	ug/L	ND	82.6	50-140			
1,1-Dichloroethane	43.2	0.5	ug/L	ND	108	50-140			
1,2-Dichloroethane	35.0	0.5	ug/L	ND	87.5	50-140			
1,1-Dichloroethylene	29.3	0.5	ug/L	ND	73.3	50-140			
cis-1,2-Dichloroethylene	36.9	0.5	ug/L	ND	92.2	50-140			
trans-1,2-Dichloroethylene	36.1	0.5	ug/L	ND	90.2	50-140			
1,2-Dichloropropane	33.8	0.5	ug/L	ND	84.4	50-140			
cis-1,3-Dichloropropylene	32.1	0.5	ug/L	ND	80.3	50-140			
trans-1,3-Dichloropropylene	30.4	0.5	ug/L	ND	76.0	50-140			
Ethylbenzene	32.6	0.5	ug/L	ND	81.6	50-140			
Hexane	31.0	1.0	ug/L	ND	77.6	50-140			
Methyl Ethyl Ketone (2-Butanone)	94.7	5.0	ug/L	ND	94.7	50-140			
Methyl Butyl Ketone (2-Hexanone)	80.7	10.0	ug/L	ND	80.7	50-140			
Methyl Isobutyl Ketone	77.6	5.0	ug/L	ND	77.6	50-140			
Methyl tert-butyl ether	62.4	2.0	ug/L	ND	62.4	50-140			
Methylene Chloride	40.2	5.0	ug/L	ND	101	50-140			
Styrene	41.6	0.5	ug/L	ND	104	50-140			

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964 Project Description: PE2990

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	36.1	0.5	ug/L	ND	90.2	50-140			
1,1,2,2-Tetrachloroethane	42.9	0.5	ug/L	ND	107	50-140			
Tetrachloroethylene	40.8	0.5	ug/L	ND	102	50-140			
Toluene	33.0	0.5	ug/L	ND	82.5	50-140			
1,2,4-Trichlorobenzene	33.5	0.5	ug/L	ND	83.8	50-140			
1,1,1-Trichloroethane	28.1	0.5	ug/L	ND	70.2	50-140			
1,1,2-Trichloroethane	38.4	0.5	ug/L	ND	96.1	50-140			
Trichloroethylene	29.1	0.5	ug/L	ND	72.8	50-140			
Trichlorofluoromethane	33.7	1.0	ug/L	ND	84.2	50-140			
1,3,5-Trimethylbenzene	30.1	0.5	ug/L	ND	75.2	50-140			
Vinyl chloride	37.0	0.5	ug/L	ND	92.4	50-140			
m,p-Xylenes	77.1	0.5	ug/L	ND	96.4	50-140			
o-Xylene	34.7	0.5	ug/L	ND	86.7	50-140			
Surrogate: 4-Bromofluorobenzene	*85.4*		*ug/L*		*107*	*50-140*			

Certificate of Analysis

Report Date: 11-Nov-2013
Order Date:5-Nov-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14964 Project Description: PE2990

Qualifier Notes:

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.

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Page 1 of 3

Client Name: PATERSON GROUP INC.
Contact Name: MARK D'ARCY
Address: 154 COLONNADE RD. SOUTH
Telephone: (613) 226 - 7381

Project Reference: PE2990
Quote #
PO # 14964
Email Address: MDARCY@PATERSONGROUP.CA

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

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

Required Analyses

Paracel Order Number: 1345102

	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)	BOD	COD	TKN	NO2	NO3	DOC	Alkalinity
1	BH1-07	GW		8	Nov 4, 2013	~4:30 pm		X						X	X	X	X	X	X	X
2	BH3-07	↓		↓		~3:45 pm		↓						↓	↓	↓	↓	↓	↓	↓
3	BH12-08					~3 pm														
4	MW1					~4 pm														
5	MW3					~3:15 pm														
6	MW5					~2 pm														
7	MW7	↓		↓	↓	~1 pm		↓						↓	↓	↓	↓	↓	↓	↓
8																				
9																				
10																				

Comments: *NO regs comparison per Sean. SC.

Method of Delivery: Walk-in

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): SEAN MCGARRIGLE	Date/Time:	Date/Time: Nov 5/13 9:58a	Date/Time: Nov 5/13 10:30a
Date/Time: Nov 5, 2013 ~10am	Temperature: _____ °C	Temperature: 11.0 °C	pH Verified [ ] By: SC

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Chain of Custody
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№ 98306

Client Name: PATERSON GROUP INC.	Project Reference: PE 2990	TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Contact Name: MARK D'ARCY	Quote #	
Address: 154 COLONNADE RD - SOUTH	PO # 14964	Date Required:
Telephone: (613) 226-7381	Email Address: MDARCY@PATERSONGROUP.CA	

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

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

Required Analyses

Paracel Order Number: 1345102

	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)	Ammonia	Boron	Chloride	Hardness	Magnesium	Manganese	Potassium
1	BH1-07	GW		8	Nov 4, 2013	~4:30 pm								X	X	X	X	X	X	X
2	BH3-07					~5:45 pm														
3	BH12-08					~3 pm														
4	MW1					~4 pm														
5	MW3					~3:15 pm														
6	MW5					~2 pm														
7	MW7					~1 pm														
8																				
9																				
10																				

Comments: Metals Field Filtered.

Method of Delivery: Walk-in

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): SEAN RIDGE	Date/Time:	Date/Time: Nov 5/13 9:59a	Date/Time: Nov 5/13 10:30a
Date/Time: Nov 5, 2013 ~10a	Temperature: _____ °C	Temperature: 11.0 °C	pH Verified [ ] By: SC

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Page 3 of 3

Client Name: Paterson Group Inc.	Project Reference: PE2990
Contact Name: Mark D'Arcy	Quote #
Address: 154 Colonnade Road South	PO # 14964
Telephone: (613) 226-7381	Email Address: MDarcy@patersongroup.ca

TATs: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day

Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

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

Required Analyses

Paracel Order Number: 1345102

	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)	Electrical Conductivity	Sulphate					
1	BH1-07	GW		8	Nov 4, 2013	~4:30pm								X	X					
2	BH3-07	↓		↓		~3:45pm								↓	↓					
3	BH12-08					~3pm														
4	MW1					~4pm														
5	MW3					~3:15pm														
6	MW5					~2pm														
7	MW7	↓		↓	↓	~1pm								↓	↓					
8																				
9																				
10																				

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Evan MacGregor	Date/Time:	Date/Time: Nov 5/13 10:00a	Date/Time: Nov 5/13 10:30a
Date/Time: Nov 5, 2013 ~1pm	Temperature: _____ °C	Temperature: 11.4 °C	pH Verified [ ] By: BC

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Certificate of Analysis

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

Phone: (613) 226-7381
Fax: (613) 226-6344

Client PO: 14990
Project: PE2990
Custody: 99425/6/7

Report Date: 18-Dec-2013
Order Date: 12-Dec-2013
Order #: 1350232

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

Paracel ID	Client ID
1350232-01	BH1-07
1350232-02	BH2-07
1350232-03	BH3-07
1350232-04	BH10-08
1350232-05	BH12-08
1350232-06	MW1
1350232-07	MW3
1350232-08	MW5
1350232-09	MW7
1350232-10	MW9
1350232-11	MW11

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Alkalinity, total to pH 4.5	EPA 310.1 - Titration to pH 4.5	16-Dec-13	16-Dec-13
Ammonia, as N	EPA 351.2 - Auto Colour	13-Dec-13	13-Dec-13
Anions	EPA 300.1 - IC	12-Dec-13	12-Dec-13
Biochemical Oxygen Demand	SM 5210B - DO Probe	13-Dec-13	18-Dec-13
COD	EPA 410.1 - Digestion, Colourimetric	12-Dec-13	13-Dec-13
Conductivity	EPA 9050A- probe @25 °C	16-Dec-13	16-Dec-13
DOC	MOE E3247B - Combustion IR, filtration	16-Dec-13	17-Dec-13
Hardness	Hardness as CaCO3	18-Dec-13	18-Dec-13
Metals, ICP-MS	EPA 200.8 - ICP-MS	13-Dec-13	13-Dec-13
TKN	EPA 351.2 - Auto Colour, digestion	13-Dec-13	13-Dec-13
VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	13-Dec-13	15-Dec-13

PARACEL LABORATORIES LTD.

Order #: 1350232

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	BH1-07	BH2-07	BH3-07	BH10-08
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	11-Dec-13
	Sample ID:	1350232-01	1350232-02	1350232-03	1350232-04
	MDL/Units	Water	Water	Water	Water
General Inorganics					
Alkalinity, total	5 mg/L	899	1360	1010	1240
Ammonia as N	0.01 mg/L	1.74	4.22	1.62	4.04
BOD	2 mg/L	15	21	14	6
Chemical Oxygen Demand	10 mg/L	189	112	85	88
Dissolved Organic Carbon	0.5 mg/L	21.9	25.5	28.5	27.9
Conductivity	5 uS/cm	4190	6950	2670	4440
Hardness	1.0 mg/L	172	431	53.1	196
Total Kjeldahl Nitrogen	0.1 mg/L	3.1	5.3	3.5	4.4
Anions					
Chloride	1 mg/L	810	1590	250	781
Nitrate as N	0.1 mg/L	<0.1	<0.1	<0.1	<0.1
Nitrite as N	0.05 mg/L	<0.05	<0.05	<0.05	<0.05
Sulphate	1 mg/L	61	8	41	8
Metals					
Boron	10 ug/L	876	1710	1820	1780
Magnesium	200 ug/L	26400	73300	7540	33100
Manganese	5 ug/L	202	261	16	59
Potassium	100 ug/L	9240	29100	16200	24100
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloroethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloromethane	3.0 ug/L	<3.0	<3.0	<3.0	<3.0
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	BH1-07	BH2-07	BH3-07	BH10-08
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	11-Dec-13
	Sample ID:	1350232-01	1350232-02	1350232-03	1350232-04
	MDL/Units	Water	Water	Water	Water
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	<10.0	<10.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
4-Bromofluorobenzene	Surrogate	93.5%	93.3%	93.2%	92.5%

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	BH1-07	BH2-07	BH3-07	BH10-08
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	11-Dec-13
	Sample ID:	1350232-01	1350232-02	1350232-03	1350232-04
	MDL/Units	Water	Water	Water	Water
Dibromofluoromethane	Surrogate	97.7%	98.4%	101%	98.9%
Toluene-d8	Surrogate	109%	109%	109%	109%

PARACEL LABORATORIES LTD.

Order #: 1350232

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	BH12-08	MW1	MW3	MW5
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	11-Dec-13
	Sample ID:	1350232-05	1350232-06	1350232-07	1350232-08
	MDL/Units	Water	Water	Water	Water
General Inorganics					
Alkalinity, total	5 mg/L	980	481	151	460
Ammonia as N	0.01 mg/L	1.58	0.12	0.26	0.07
BOD	2 mg/L	9	<2	<2	<2
Chemical Oxygen Demand	10 mg/L	86	35	49	30
Dissolved Organic Carbon	0.5 mg/L	30.5	6.5	6.2	15.8
Conductivity	5 uS/cm	2580	1360	1300	1180
Hardness	1.0 mg/L	107	134	180	523
Total Kjeldahl Nitrogen	0.1 mg/L	3.3	1.1	1.6	1.2
Anions					
Chloride	1 mg/L	248	75	260	49
Nitrate as N	0.1 mg/L	<0.1	<0.1	<0.1	<0.1
Nitrite as N	0.05 mg/L	<0.05	<0.05	<0.05	<0.05
Sulphate	1 mg/L	21	133	70	134
Metals					
Boron	10 ug/L	1610	842	186	46
Magnesium	200 ug/L	13800	16400	26000	39200
Manganese	5 ug/L	45	277	71	396
Potassium	100 ug/L	10700	4350	5630	6130
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloroethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloromethane	3.0 ug/L	<3.0	<3.0	<3.0	<3.0
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	BH12-08	MW1	MW3	MW5
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	11-Dec-13
	Sample ID:	1350232-05	1350232-06	1350232-07	1350232-08
	MDL/Units	Water	Water	Water	Water
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	<10.0	<10.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	BH12-08	MW1	MW3	MW5
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	11-Dec-13
	Sample ID:	1350232-05	1350232-06	1350232-07	1350232-08
	MDL/Units	Water	Water	Water	Water
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
4-Bromofluorobenzene	Surrogate	93.2%	92.8%	92.8%	93.2%
Dibromofluoromethane	Surrogate	103%	103%	97.6%	101%
Toluene-d8	Surrogate	109%	109%	109%	108%

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	MW7	MW9	MW11	-
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	-
	Sample ID:	1350232-09	1350232-10	1350232-11	-
	MDL/Units	Water	Water	Water	-
General Inorganics					
Alkalinity, total	5 mg/L	229	273	927	-
Ammonia as N	0.01 mg/L	0.06	0.05	0.15	-
BOD	2 mg/L	<2	<2	<2	-
Chemical Oxygen Demand	10 mg/L	<10	<10	19	-
Dissolved Organic Carbon	0.5 mg/L	3.8	2.5	4.1	-
Conductivity	5 uS/cm	707	686	2060	-
Hardness	1.0 mg/L	228	148	148	-
Total Kjeldahl Nitrogen	0.1 mg/L	0.3	0.3	0.6	-
Anions					
Chloride	1 mg/L	53	5	114	-
Nitrate as N	0.1 mg/L	0.1	<0.1	<0.1	-
Nitrite as N	0.05 mg/L	<0.05	<0.05	<0.05	-
Sulphate	1 mg/L	59	90	77	-
Metals					
Boron	10 ug/L	93	482	756	-
Magnesium	200 ug/L	20900	16800	24000	-
Manganese	5 ug/L	71	79	43	-
Potassium	100 ug/L	6300	2410	10300	-
Volatiles					
Acetone	5.0 ug/L	16.6	<5.0	<5.0	-
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Chloroethane	1.0 ug/L	<1.0	<1.0	<1.0	-
Chloroform	0.5 ug/L	0.5	<0.5	<0.5	-
Chloromethane	3.0 ug/L	<3.0	<3.0	<3.0	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	<0.2	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	MW7	MW9	MW11	-
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	-
	Sample ID:	1350232-09	1350232-10	1350232-11	-
	MDL/Units	Water	Water	Water	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethane	0.5 ug/L	0.5	<0.5	<0.5	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,2-Dichloroethylene	0.5 ug/L	0.6	<0.5	<0.5	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloroethylene, total	0.5 ug/L	0.6	<0.5	<0.5	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	<10.0	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	-
Methylene Chloride	5.0 ug/L	5.3	<5.0	<5.0	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichloroethylene	0.5 ug/L	5.6	<0.5	<0.5	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	-
4-Bromofluorobenzene	Surrogate	89.8%	95.9%	92.4%	-

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990

Project Description: PE2990

	Client ID:	MW7	MW9	MW11	-
	Sample Date:	11-Dec-13	11-Dec-13	11-Dec-13	-
	Sample ID:	1350232-09	1350232-10	1350232-11	-
	MDL/Units	Water	Water	Water	-
Dibromofluoromethane	Surrogate	109%	105%	103%	-
Toluene-d8	Surrogate	107%	111%	108%	-

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	1	mg/L						
Nitrate as N	ND	0.1	mg/L						
Nitrite as N	ND	0.05	mg/L						
Sulphate	ND	1	mg/L						
General Inorganics									
Alkalinity, total	ND	5	mg/L						
Ammonia as N	ND	0.01	mg/L						
BOD	ND	2	mg/L						
Chemical Oxygen Demand	ND	10	mg/L						
Dissolved Organic Carbon	ND	0.5	mg/L						
Conductivity	ND	5	uS/cm						
Total Kjeldahl Nitrogen	ND	0.1	mg/L						
Metals									
Boron	ND	10	ug/L						
Magnesium	ND	200	ug/L						
Manganese	ND	5	ug/L						
Potassium	ND	100	ug/L						
Volatiles									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroethane	ND	1.0	ug/L						
Chloroform	ND	0.5	ug/L						
Chloromethane	ND	3.0	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dibromoethane	ND	0.2	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloroethylene, total	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Toluene	ND	0.5	ug/L						
1,2,4-Trichlorobenzene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
1,3,5-Trimethylbenzene	ND	0.5	ug/L						
Vinyl chloride	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: 4-Bromofluorobenzene	*76.4*		*ug/L*		*95.5*	*50-140*			
Surrogate: Dibromofluoromethane	*78.0*		*ug/L*		*97.5*	*50-140*			
Surrogate: Toluene-d8	*86.5*		*ug/L*		*108*	*50-140*			

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	1110	10	mg/L	1110			0.1	10	
Nitrate as N	ND	0.1	mg/L	ND				20	
Nitrite as N	ND	0.05	mg/L	ND				20	
Sulphate	252	1	mg/L	254			0.7	10	
General Inorganics									
Alkalinity, total	601	5	mg/L	607			0.9	14	
Ammonia as N	25.3	1.00	mg/L	25.2			0.2	8	
BOD	333	2	mg/L	370			10.7	20	
Chemical Oxygen Demand	179	10	mg/L	189			5.4	12	
Dissolved Organic Carbon	22.7	0.5	mg/L	22.6			0.4	37	
Conductivity	1950	5	uS/cm	1940			0.4	11	
Total Kjeldahl Nitrogen	3.16	0.2	mg/L	3.10			2.1	10	
Metals									
Boron	29	10	ug/L	36			21.5	20	QR-01
Magnesium	10200	200	ug/L	10700			4.8	20	
Manganese	ND	5	ug/L	ND			0.0	20	
Potassium	1900	100	ug/L	1910			0.4	20	
Volatiles									
Acetone	145	5.0	ug/L	61.6			80.9	30	
Benzene	ND	0.5	ug/L	ND				30	
Bromodichloromethane	ND	0.5	ug/L	ND				30	
Bromoform	ND	0.5	ug/L	ND				30	
Bromomethane	ND	0.5	ug/L	ND				30	
Carbon Tetrachloride	ND	0.2	ug/L	ND				30	
Chlorobenzene	ND	0.5	ug/L	ND				30	
Chloroethane	ND	1.0	ug/L	ND				30	
Chloroform	ND	0.5	ug/L	ND				30	
Chloromethane	ND	3.0	ug/L	ND				30	
Dibromochloromethane	ND	0.5	ug/L	ND				30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND				30	
1,2-Dibromoethane	ND	0.2	ug/L	ND				30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,4-Dichlorobenzene	19.8	0.5	ug/L	19.2			3.1	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND				30	
1,2-Dichloroethane	ND	0.5	ug/L	ND				30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND				30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
1,2-Dichloropropane	ND	0.5	ug/L	ND				30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Hexane	ND	1.0	ug/L	ND				30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND				30	
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L	ND				30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND				30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND				30	
Methylene Chloride	ND	5.0	ug/L	ND				30	
Styrene	ND	0.5	ug/L	ND				30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
Tetrachloroethylene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,2,4-Trichlorobenzene	ND	0.5	ug/L	ND				30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND				30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND				30	
Trichloroethylene	ND	0.5	ug/L	ND				30	
Trichlorofluoromethane	ND	1.0	ug/L	ND				30	
1,3,5-Trimethylbenzene	ND	0.5	ug/L	ND				30	
Vinyl chloride	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: 4-Bromofluorobenzene	*72.3*		*ug/L*	*ND*	*90.3*	*50-140*			
Surrogate: Dibromofluoromethane	*87.9*		*ug/L*	*ND*	*110*	*50-140*			
Surrogate: Toluene-d8	*87.4*		*ug/L*	*ND*	*109*	*50-140*			

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	9.14	1	mg/L	ND	91.4	78-112			
Nitrate as N	0.96	0.1	mg/L	ND	96.5	81-112			
Nitrite as N	1.02	0.05	mg/L	ND	102	76-117			
Sulphate	69.3	1	mg/L	60.8	85.7	75-111			
General Inorganics									
Ammonia as N	0.244	0.01	mg/L	ND	97.8	81-124			
BOD	167		mg/L	ND	83.5	71-121			
Chemical Oxygen Demand	300	10	mg/L	189	55.5	85-111			QM-07
Dissolved Organic Carbon	32.1	0.5	mg/L	22.6	94.7	60-133			
Total Kjeldahl Nitrogen	2.04	0.1	mg/L	ND	102	81-126			
Metals									
Boron	77		ug/L	36	81.3	80-120			
Magnesium	1050		ug/L	ND	105	80-120			
Manganese	46.7		ug/L	0.8	91.8	80-120			
Potassium	2590		ug/L	1910	68.1	80-120			QM-07
Volatiles									
Acetone	63.0	5.0	ug/L	ND	63.0	50-140			
Benzene	44.6	0.5	ug/L	3.41	103	50-140			
Bromodichloromethane	40.0	0.5	ug/L	ND	99.9	50-140			
Bromoform	32.4	0.5	ug/L	ND	81.0	50-140			
Bromomethane	43.7	0.5	ug/L	ND	109	50-140			
Carbon Tetrachloride	25.3	0.2	ug/L	ND	63.2	50-140			
Chlorobenzene	39.4	0.5	ug/L	ND	98.6	50-140			
Chloroethane	36.8	1.0	ug/L	ND	92.1	50-140			
Chloroform	38.3	0.5	ug/L	ND	95.7	50-140			
Chloromethane	33.4	3.0	ug/L	ND	83.6	50-140			
Dibromochloromethane	37.6	0.5	ug/L	ND	94.0	50-140			
Dichlorodifluoromethane	32.4	1.0	ug/L	ND	81.1	50-140			
1,2-Dibromoethane	35.8	0.2	ug/L	ND	89.5	50-140			
1,2-Dichlorobenzene	40.9	0.5	ug/L	ND	102	50-140			
1,3-Dichlorobenzene	38.0	0.5	ug/L	ND	94.9	50-140			
1,4-Dichlorobenzene	38.0	0.5	ug/L	ND	95.0	50-140			
1,1-Dichloroethane	41.4	0.5	ug/L	ND	104	50-140			
1,2-Dichloroethane	32.0	0.5	ug/L	ND	79.9	50-140			
1,1-Dichloroethylene	36.2	0.5	ug/L	ND	90.4	50-140			
cis-1,2-Dichloroethylene	37.9	0.5	ug/L	ND	94.7	50-140			
trans-1,2-Dichloroethylene	51.8	0.5	ug/L	ND	130	50-140			
1,2-Dichloropropane	40.0	0.5	ug/L	ND	99.9	50-140			
cis-1,3-Dichloropropylene	35.6	0.5	ug/L	ND	89.0	50-140			
trans-1,3-Dichloropropylene	32.3	0.5	ug/L	ND	80.8	50-140			
Ethylbenzene	47.2	0.5	ug/L	10.2	92.4	50-140			
Hexane	34.6	1.0	ug/L	ND	86.4	50-140			
Methyl Ethyl Ketone (2-Butanone)	72.6	5.0	ug/L	ND	72.6	50-140			
Methyl Butyl Ketone (2-Hexanone)	87.6	10.0	ug/L	ND	87.6	50-140			
Methyl Isobutyl Ketone	85.6	5.0	ug/L	ND	85.6	50-140			
Methyl tert-butyl ether	113	2.0	ug/L	ND	113	50-140			
Methylene Chloride	30.2	5.0	ug/L	ND	75.4	50-140			
Styrene	36.6	0.5	ug/L	ND	91.6	50-140			

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	28.3	0.5	ug/L	ND	70.7	50-140			
1,1,2,2-Tetrachloroethane	35.6	0.5	ug/L	ND	88.9	50-140			
Tetrachloroethylene	39.7	0.5	ug/L	ND	99.2	50-140			
Toluene	44.3	0.5	ug/L	5.15	98.0	50-140			
1,2,4-Trichlorobenzene	40.4	0.5	ug/L	ND	101	50-140			
1,1,1-Trichloroethane	33.1	0.5	ug/L	ND	82.8	50-140			
1,1,2-Trichloroethane	39.8	0.5	ug/L	ND	99.5	50-140			
Trichloroethylene	33.0	0.5	ug/L	ND	82.4	50-140			
Trichlorofluoromethane	29.8	1.0	ug/L	ND	74.6	50-140			
1,3,5-Trimethylbenzene	37.5	0.5	ug/L	4.20	83.2	50-140			
Vinyl chloride	29.9	0.5	ug/L	ND	74.8	50-140			
m,p-Xylenes	90.7	0.5	ug/L	32.2	73.1	50-140			
o-Xylene	44.3	0.5	ug/L	8.85	88.6	50-140			
Surrogate: 4-Bromofluorobenzene	*71.0*		*ug/L*		*88.7*	*50-140*			

Certificate of Analysis

Report Date: 18-Dec-2013
Order Date:12-Dec-2013

Client: **Paterson Group Consulting Engineers**
Client PO: 14990 Project Description: PE2990

Qualifier Notes:

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.

QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

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.

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www.paracellabs.com

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Page 1 of 3

Client Name: PATERSON GROUP INC.
Contact Name: MARK D'ARCY
Address: 154 COLONNADE ROAD SOUTH
Telephone: (613) 226-7381

Project Reference: PE2990
Quote #
PO # 14990
Email Address: MDARCY@PATERSONGROUP.CA

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

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

Required Analyses

Paracel Order Number: 1350232

	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)	BOD	COD	TKN	NO_2	NO_3	DOC	Alkalinity
1	BH1-07	GW		8	Dec 11, 2013	pm		X						X	X	X	X	X	X	X
2	BH2-07					pm														
3	BH3-07					am														
4	BH10-08					pm														
5	BH12-08					am														
6	MW1					am														
7	MW3					am														
8	MW5					am														
9	MW7					am														
10	MW9					pm														
11	MW11					pm														

Comments: All metals Field Filtered.

Method of Delivery: Paracel Courier

Relinquished By (Sign):	Received by Driver/Depot: A Brouse	Received at Lab: SUNEEPORN	Verified By: MC
Relinquished By (Print): SEAN MAGGRIDGE	Date/Time: 12/12/13 10:20 AM	Date/Time: DEC 13, 2013 10:55	Date/Time: Dec 12/13 12:17
Date/Time: Dec 11, 2013 ~5:15 pm	Temperature: ____ °C	Temperature: 8.4 °C	pH Verified [ ] By: MC

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Page 2 of 3

Client Name: PATERSON GROUP INC.
Contact Name: MARK D'ARCY
Address: 154 COLONNADE ROAD SOUTH
Telephone: (613) 226-7381

Project Reference: PE2990
Quote #
PO # 14990
Email Address: MDARCY@PATERSONGROUP.CA

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

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

Paracel Order Number: 1350232

	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)	Ammonia	Boron	Chloride	Hardness	Magnesium	Manganese	Potassium
1	BH1-07	GW		8	Dec 1, 2013	pm								X	X	X	X	X	X	X
2	BH2-07					pm														
3	BH3-07					am														
4	BH6-08					pm														
5	BH12-08					am														
6	MW1					am														
7	MW3					am														
8	MW5					am														
9	MW7					am														
10	MW9					pm														
	MW11					pm														

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): SEAN MCGRIDLE	Date/Time: 12/12/13 10:20 AM	Date/Time: Dec 12 2013 10:59	Date/Time: Dec 12/13 12:17
Date/Time: Dec 11, 2013 ~5:15pm	Temperature: ____ °C	Temperature: 0.4 °C	pH Verified [ ] By:

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Page 3 of 3

Client Name: MARK D'ARCY
Contact Name: PATERSON GROUP INC.
Address: 154 COLONNADE ROAD SOUTH
Telephone: (613) 226-7381

Project Reference: PE 2990
Quote #
PO # 14990
Email Address: MDARCY@PATERSONGROUP.CA

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required: _____

Criteria: [ ] O. Reg. 153/04 (As Amended) Table __ [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: _____ [ ] Other: _____

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

Paracel Order Number: 1350232

	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)	Electrical Conductivity	Sulphate					
1	BH1-07	GW		8	Dec 11, 2013	pm								X	X					
2	BH2-07					pm														
3	BH3-07				am	am														
4	BH10-08					pm														
5	BH12-08					am														
6	MW1				am	am														
7	MW3				am	am														
8	MW5				am	am														
9	MW7				am	am														
10	MW9					pm														
11	MW11					pm														

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign):	Received by Driver/Depot: M. DEROSE	Received at Lab: SUMEDHA	Verified By: MC
Relinquished By (Print): SEAN MCGARRIGLE	Date/Time: 12/12/13 10:20 am	Date/Time: DEC 13, 2013 10:55	Date/Time: Dec 12/13 12:17
Date/Time: Dec 11, 2013 ~5:15 pm	Temperature: ____ °C	Temperature: 8.4 °C	pH Verified [ ] By: MC

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

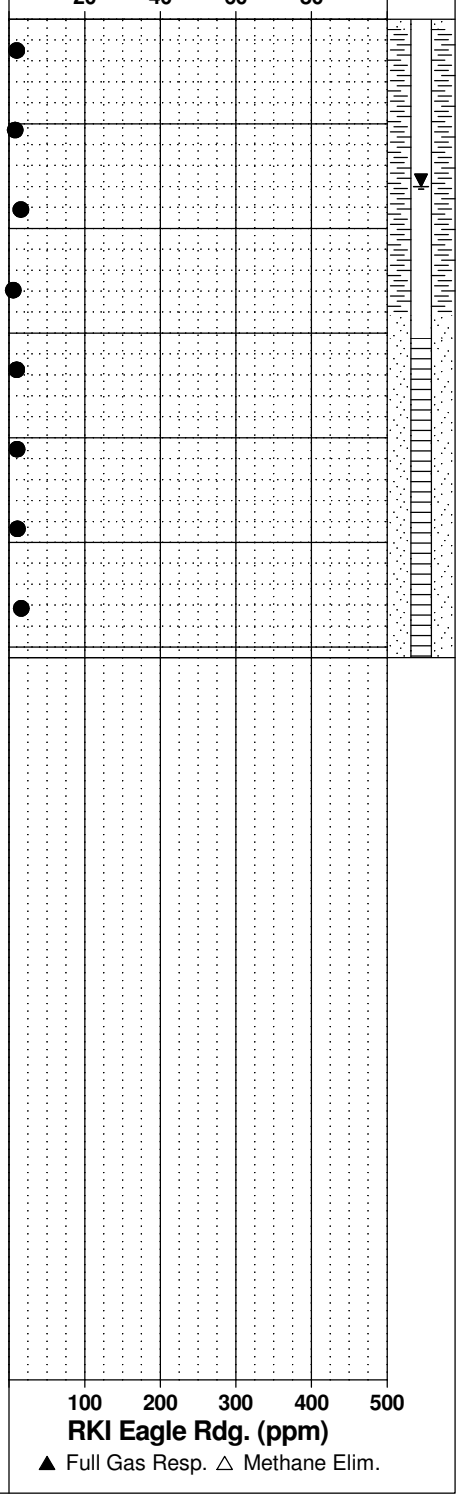
REMARKS

HOLE NO. BH 1

BORINGS BY CME 55 Power Auger **DATE** 2019 May 16

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING							
FILL: Brown silty sand with crushed stone and gravel		AU	1			0	85.78
0.51							
Brown **SILTY SAND**		SS	2	33	14	1	84.78
		SS	3	75	6	2	83.78
2.59		SS	4	100	6		
Brown **SILTY CLAY**		SS	5	100	4	3	82.78
- grey by 3.8m depth		SS	6	100	4	4	81.78
		SS	7	100	1	5	80.78
		SS	8	100	W		
6.10						6	79.78
End of Borehole							
(GWL @ 1.60m - May 31, 2019)							

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



Monitoring Well Construction

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SOIL PROFILE AND TEST DATA

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FILE NO. PE4588

REMARKS

HOLE NO. BH 2

BORINGS BY CME 55 Power Auger **DATE** 2019 May 16

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING						0	85.67
FILL: Brown silty sand, some gravel, trace clay		AU	1				
		SS	2	21	15	1	84.67
		SS	3	79	13	2	83.67
2.29							
		SS	4	46	7		
Brown **SILTY CLAY**		SS	5	100	5	3	82.67
- grey by 3.8m depth		SS	6	100	4	4	81.67
		SS	7	100	W	5	80.67
		SS	8	100	W		
6.10						6	79.67
End of Borehole							
(GWL @ 1.70m - May 30, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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FILE NO. PE4588

REMARKS

HOLE NO. BH 3

BORINGS BY CME 55 Power Auger **DATE** 2019 May 16

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING						0	84.01
FILL: Brown silty sand with gravel		AU	1				
		SS	2	71	18	1	83.01
1.52							
Brown **SILTY CLAY**		SS	3	83	7	2	82.01
		SS	4	100	3		
- grey by 2.3m depth		SS	5	100	3	3	81.01
		SS	6	100	1	4	80.01
4.57							
End of Borehole							
(MW damaged - May 30, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

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SOIL PROFILE AND TEST DATA

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FILE NO. PE4588

REMARKS

HOLE NO. BH 4

BORINGS BY CME 55 Power Auger **DATE** 2019 May 16

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING						0	79.10
FILL: Brown silty sand with gravel		AU	1				
0.60							
FILL: Brow nsilty sand with clay, gravel and sandstone, trace organics		SS	2	33	27	1	78.10
1.37		SS	3	58	9	2	77.10
		SS	4	88	7		
		SS	5	100	7	3	76.10
Brown **SILTY CLAY**		SS	6	100	9	4	75.10
		SS	7	100	7	5	74.10
		SS	8	100	4		
- grey by 6.1m depth		SS	9	100	2	6	73.10
		SS	10	100	2	7	72.10
		SS	11	100		8	71.10
8.38							
End of Borehole							
(GWL @ 3.40m - May 30, 2019)							

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
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REMARKS

HOLE NO. BH 5

BORINGS BY CME 55 Power Auger **DATE** 2019 May 17

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
UNDERSIDE OF FOOTING						0	82.34		
		AU	1						
		SS	2	33	8	1	81.34	113.8	
		SS	3	54	9	2	80.34		
FILL: Brown silty sand, some gravel and brick		SS	4	29	14	3	79.34		
		SS	5	58	5				
		SS	6	42	15	4	78.34		
		SS	7	38	6	5	77.34		
		SS	8	12	5				
6.10						6	76.34		
		SS	9	79	21				
		SS	10	100	15	7	75.34		
Brown **SILTY CLAY**		SS	11	100	8	8	74.34		
- grey by 8.4m depth		SS	12	88	4	9	73.34		
		SS	13	100	2				
		SS	14	100	1	10	72.34		
10.67									
End of Borehole									
(GWL @ 5.95m - May 30, 2019)									

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.

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
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DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH 6

BORINGS BY CME 55 Power Auger **DATE** 2019 May 17

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING						0	75.47
		AU	1				
		SS	2	58	16	1	74.47
		SS	3	33	7	2	73.47
		SS	4	71	7		
FILL: Brown silty sand with gravel, some clay, trace brick and topsoil		SS	5	62	8	3	72.47
		SS	6	75	22	4	71.47
		SS	7	71	8	5	70.47
		SS	8	67	20	6	69.47
		SS	9	46	8		
6.86							
		SS	10	88	15	7	68.47
Brown **SILTY CLAY**		SS	11	100	7	8	67.47
- grey by 8.4m depth		SS	12	100	5	9	66.47
		SS	13	100	2		
		SS	14	100	W	10	65.47
10.67							
End of Borehole							
(GWL @ 5.20m - May 30, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
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FILE NO. PE4588

REMARKS

HOLE NO. BH 7

BORINGS BY Portable Drill **DATE** 2019 May 22

SOIL DESCRIPTION		STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING								
TOPSOIL	0.30		SS	1	100		0	72.90
Brown **SILTY CLAY**	0.71		SS	2	100		1	71.90
Brown **SILTY CLAY**			SS	3	100		2	70.90
- grey by 1.8m depth			SS	4	100			
	3.05		SS	5	100		3	69.90
End of Borehole								
(GWL @ 0.60m - June 3, 2019)								

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
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FILE NO. PE4588

REMARKS

HOLE NO. BH 8

BORINGS BY Portable Drill **DATE** 2019 May 22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING							
TOPSOIL 0.28		SS	1	12		0	70.50
Grey **SILTY SAND** 0.91		SS	2	58		1	69.50
Brown **SILTY CLAY** - grey by 1.5m depth 1.83		SS	3	100			
End of Borehole							
(GWL @ 0.05m - June 3, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ **Lower Explosive Limit %**
20 40 60 80

Monitoring Well Construction

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

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH 9

BORINGS BY Portable Drill **DATE** 2019 May 22

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING							
TOPSOIL 0.15		SS	1	62		0	69.49
		SS	2	71		1	68.49
Brown **SILTY CLAY**		SS	3	100			
		SS	4	100		2	67.49
3.05		SS	5	100		3	66.49
End of Borehole							
(GWL @ 0.49m - June 3, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
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DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH10

BORINGS BY CME 55 Power Auger **DATE** 2019 September 5

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING							
FILL: Brown silty clay, trace sand and gravel						0	86.03
0.81							
		SS	1	75	10	1	85.03
Compact to loose, brown **SILTY SAND**		SS	2	88	24	2	84.03
2.82		SS	3	88	9		
Brown **SILTY CLAY**		SS	4	100	2	3	83.03
- grey by 3.3m depth		SS	5	100	W	4	82.03
5.18		SS	6	100	W	5	81.03
End of Borehole							
(GWL @ 1.92m - Sept. 9, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH11

BORINGS BY CME 55 Power Auger **DATE** 2019 September 5

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
UNDERSIDE OF FOOTING						0	85.53		
						1	84.53		
						2	83.53		
OVERBURDEN						3	82.53		
						4	81.53		
						5	80.53		
6.10						6	79.53		
		SS	1	100	1				
		SS	2	100		7	78.53		
		SS	3	100		8	77.53		
		SS	4	100					
						9	76.53		
Grey **SILTY CLAY**		SS	5	100					
		SS	6	100		10	75.53		
11.28		SS	7	100		11	74.53		
End of Borehole									
(GWL @ 2.84m - Sept. 9, 2019)									

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.

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH12

BORINGS BY CME 55 Power Auger **DATE** 2019 September 5

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING						0	85.14
FILL: Brown silty sand with gravel		SS	1	79	30	1	84.14
1.27							
Compact, grey **SILTY SAND**		SS	2	75	12	2	83.14
2.11							
		SS	3	100	1		
		SS	4	100	W	3	82.14
Brown to grey **SILTY CLAY**		SS	5	100	W	4	81.14
		SS	6	100	W	5	80.14
5.18							
End of Borehole							
(GWL @ 3.66m - Sept. 9, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3252 Navan Road
Ottawa, Ontario

DATUM Geodetic, provided by Annis O'Sullivan Vollebekk

FILE NO. PE4588

REMARKS

HOLE NO. BH13

BORINGS BY CME 55 Power Auger **DATE** 2019 September 5

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
UNDERSIDE OF FOOTING						0	85.37
FILL: Brown silty sand with gravel, trace cobbles and boulders		SS	1	58	24	1	84.37
1.52							
		SS	2	58	18	2	83.37
Compact, brown **SILTY SAND**		SS	3	17	42		
3.05						3	82.37
		SS	4	100	4		
Brown **SILTY SAND**		SS	5	100	3	4	81.37
- grey by 3.8m depth							
5.18		SS	6	100	W	5	80.37
End of Borehole							
(GWL @ 2.28m - Sept. 9, 2019)							

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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Certificate of Analysis

Paterson Group Consulting Engineers

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

Client PO: 27622
Project: PE4588
Custody: 123188

Report Date: 10-Sep-2019
Order Date: 6-Sep-2019

Order #: 1936482

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

Paracel ID	Client ID
1936482-01	BH10-SS2
1936482-02	BH11-SS1
1936482-03	BH12-SS2
1936482-04	BH13-SS2

Approved By:

Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 27622

Report Date: 10-Sep-2019
Order Date: 6-Sep-2019
Project Description: PE4588

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	6-Sep-19	9-Sep-19
Solids, %	Gravimetric, calculation	9-Sep-19	9-Sep-19

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 27622

Report Date: 10-Sep-2019

Order Date: 6-Sep-2019

Project Description: PE4588

	Client ID:	BH10-SS2	BH11-SS1	BH12-SS2	BH13-SS2
	Sample Date:	05-Sep-19 10:00	05-Sep-19 10:00	05-Sep-19 13:00	05-Sep-19 15:00
	Sample ID:	1936482-01	1936482-02	1936482-03	1936482-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	81.7	59.1	81.7	83.7
Volatiles					
Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylene dibromide (dibromoethan	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 27622

Report Date: 10-Sep-2019

Order Date: 6-Sep-2019

Project Description: PE4588

	Client ID:	BH10-SS2	BH11-SS1	BH12-SS2	BH13-SS2
	Sample Date:	05-Sep-19 10:00	05-Sep-19 10:00	05-Sep-19 13:00	05-Sep-19 15:00
	Sample ID:	1936482-01	1936482-02	1936482-03	1936482-04
	MDL/Units	Soil	Soil	Soil	Soil
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
4-Bromofluorobenzene	Surrogate	101%	101%	101%	100%
Dibromofluoromethane	Surrogate	113%	135%	129%	128%
Toluene-d8	Surrogate	63.9%	63.7%	64.3%	63.7%

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Ethylene dibromide (dibromoethane	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: 4-Bromofluorobenzene	*3.34*		*ug/g*		*104*	*50-140*			
Surrogate: Dibromofluoromethane	*3.02*		*ug/g*		*94.4*	*50-140*			
Surrogate: Toluene-d8	*2.59*		*ug/g*		*80.8*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Physical Characteristics									
% Solids	92.7	0.1	% by Wt.	93.2			0.6	25	
Volatiles									
Acetone	ND	0.50	ug/g dry	ND				50	
Benzene	ND	0.02	ug/g dry	ND				50	
Bromodichloromethane	ND	0.05	ug/g dry	ND				50	
Bromoform	ND	0.05	ug/g dry	ND				50	
Bromomethane	ND	0.05	ug/g dry	ND				50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND				50	
Chlorobenzene	ND	0.05	ug/g dry	ND				50	
Chloroform	ND	0.05	ug/g dry	ND				50	
Dibromochloromethane	ND	0.05	ug/g dry	ND				50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND				50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Ethylene dibromide (dibromoethane	ND	0.05	ug/g dry	ND				50	
Hexane	ND	0.05	ug/g dry	ND				50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND				50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND				50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND				50	
Methylene Chloride	ND	0.05	ug/g dry	ND				50	
Styrene	ND	0.05	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND				50	
Trichloroethylene	ND	0.05	ug/g dry	ND				50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND				50	
Vinyl chloride	ND	0.02	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: 4-Bromofluorobenzene	*4.36*		*ug/g dry*		*119*	*50-140*			
Surrogate: Dibromofluoromethane	*2.68*		*ug/g dry*		*73.3*	*50-140*			
Surrogate: Toluene-d8	*3.04*		*ug/g dry*		*83.2*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	12.4	0.50	ug/g		124	50-140			
Benzene	4.47	0.02	ug/g		112	60-130			
Bromodichloromethane	5.15	0.05	ug/g		129	60-130			
Bromoform	4.14	0.05	ug/g		104	60-130			
Bromomethane	3.91	0.05	ug/g		97.8	50-140			
Carbon Tetrachloride	4.66	0.05	ug/g		116	60-130			
Chlorobenzene	4.32	0.05	ug/g		108	60-130			
Chloroform	5.13	0.05	ug/g		128	60-130			
Dibromochloromethane	4.21	0.05	ug/g		105	60-130			
Dichlorodifluoromethane	3.02	0.05	ug/g		75.5	50-140			
1,2-Dichlorobenzene	3.83	0.05	ug/g		95.7	60-130			
1,3-Dichlorobenzene	3.86	0.05	ug/g		96.4	60-130			
1,4-Dichlorobenzene	3.88	0.05	ug/g		96.9	60-130			
1,1-Dichloroethane	4.77	0.05	ug/g		119	60-130			
1,2-Dichloroethane	4.98	0.05	ug/g		124	60-130			
1,1-Dichloroethylene	4.11	0.05	ug/g		103	60-130			
cis-1,2-Dichloroethylene	4.57	0.05	ug/g		114	60-130			
trans-1,2-Dichloroethylene	4.33	0.05	ug/g		108	60-130			
1,2-Dichloropropane	4.55	0.05	ug/g		114	60-130			
cis-1,3-Dichloropropylene	4.45	0.05	ug/g		111	60-130			
trans-1,3-Dichloropropylene	4.25	0.05	ug/g		106	60-130			
Ethylbenzene	4.32	0.05	ug/g		108	60-130			
Ethylene dibromide (dibromoethane	4.20	0.05	ug/g		105	60-130			
Hexane	3.48	0.05	ug/g		87.1	60-130			
Methyl Ethyl Ketone (2-Butanone)	12.1	0.50	ug/g		121	50-140			
Methyl Isobutyl Ketone	12.0	0.50	ug/g		120	50-140			
Methyl tert-butyl ether	11.9	0.05	ug/g		119	50-140			
Methylene Chloride	3.55	0.05	ug/g		88.7	60-130			
Styrene	4.17	0.05	ug/g		104	60-130			
1,1,1,2-Tetrachloroethane	4.46	0.05	ug/g		112	60-130			
1,1,2,2-Tetrachloroethane	4.15	0.05	ug/g		104	60-130			
Tetrachloroethylene	4.09	0.05	ug/g		102	60-130			
Toluene	4.21	0.05	ug/g		105	60-130			
1,1,1-Trichloroethane	4.64	0.05	ug/g		116	60-130			
1,1,2-Trichloroethane	4.77	0.05	ug/g		119	60-130			
Trichloroethylene	4.77	0.05	ug/g		119	60-130			
Trichlorofluoromethane	3.89	0.05	ug/g		97.2	50-140			
Vinyl chloride	3.05	0.02	ug/g		76.3	50-140			
m,p-Xylenes	8.60	0.05	ug/g		107	60-130			
o-Xylene	4.35	0.05	ug/g		109	60-130			
Surrogate: 4-Bromofluorobenzene	*2.77*		*ug/g*		*86.5*	*50-140*			

Qualifier Notes:

None

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.

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.

PARACEL LABORATORIES LTD.

Paracel ID: 1936482

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Chain of Custody
(Lab Use Only)
№ 123188

Page 1 of 1

Client Name: Paterson Group	Project Reference: PE 4588	**Turnaround Time:**
Contact Name: Mark D'Arcy	Quote #	☐ 1 Day ☐ 3 Day
Address: 154 Colonnade Rd, Nepean, Ontario	PO # 27622	☑ 2 Day ☐ Regular
Telephone: (613) 226-7381	Email Address: mdarcy@patersongroup.ca	Date Required:

Criteria: ☑ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

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

Required Analyses

Paracel Order Number: 1936482

	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	BH10-SS2	S		2	Sep5/19	10am		✓										250mL Jar		✓
2	BH11-SS1	S		2	Sep5/19	11:30		✓										↓		✓
3	BH12-SS2	S		2	Sep5/19	1:pm		✓												✓
4	BH13-SS2	S		2	Sep5/19	3pm		✓										↓		✓
5																				
6																				
7																				
8																				
9																				
10																				

Comments:

Method of Delivery: Paracel

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab: Stmeparm Rahmai	Verified By:
Relinquished By (Print): Nicholas Doucette	Date/Time: 06/09/19 4:00 pm	Date/Time: SEP 06 2019 04:50	Date/Time: 9-6-19 17:5
Date/Time:	Temperature: °C	Temperature: 18.4 °C	pH Verified [ ] By:

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Certificate of Analysis

Paterson Group Consulting Engineers

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

Client PO: 27622
Project: PE4588
Custody: 123205

Report Date: 10-Sep-2019
Order Date: 9-Sep-2019

Order #: 1937091

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

Paracel ID	Client ID
1937091-01	BH13-SS1

Approved By:

Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 27622

Report Date: 10-Sep-2019
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Project Description: PE4588

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	10-Sep-19	10-Sep-19
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	6-Sep-19	10-Sep-19
Solids, %	Gravimetric, calculation	9-Sep-19	10-Sep-19

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 27622

Report Date: 10-Sep-2019

Order Date: 9-Sep-2019

Project Description: PE4588

	Client ID:	BH13-SS1	-	-	-
	Sample Date:	05-Sep-19 14:30	-	-	-
	Sample ID:	1937091-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	85.8	-	-	-
Hydrocarbons					
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	33	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	-	-	-
Acenaphthylene	0.02 ug/g dry	<0.02	-	-	-
Anthracene	0.02 ug/g dry	<0.02	-	-	-
Benzo [a] anthracene	0.02 ug/g dry	<0.02	-	-	-
Benzo [a] pyrene	0.02 ug/g dry	<0.02	-	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	-	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	-	-	-
Chrysene	0.02 ug/g dry	<0.02	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	-	-	-
Fluoranthene	0.02 ug/g dry	<0.02	-	-	-
Fluorene	0.02 ug/g dry	<0.02	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	-	-	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	-	-	-
Naphthalene	0.01 ug/g dry	<0.01	-	-	-
Phenanthrene	0.02 ug/g dry	<0.02	-	-	-
Pyrene	0.02 ug/g dry	0.02	-	-	-
2-Fluorobiphenyl	Surrogate	85.0%	-	-	-
Terphenyl-d14	Surrogate	104%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	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	*0.769*		*ug/g*		*57.7*	*50-140*			
Surrogate: Terphenyl-d14	*1.58*		*ug/g*		*119*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Physical Characteristics									
% Solids	93.1	0.1	% by Wt.	92.3			0.9	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	74	4	ug/g		92.7	80-120			
F3 PHCs (C16-C34)	192	8	ug/g		98.2	80-120			
F4 PHCs (C34-C50)	111	6	ug/g		89.6	80-120			
Semi-Volatiles									
Acenaphthene	0.176	0.02	ug/g		106	50-140			
Acenaphthylene	0.151	0.02	ug/g		90.8	50-140			
Anthracene	0.164	0.02	ug/g		98.2	50-140			
Benzo [a] anthracene	0.179	0.02	ug/g		107	50-140			
Benzo [a] pyrene	0.143	0.02	ug/g		85.7	50-140			
Benzo [b] fluoranthene	0.208	0.02	ug/g		125	50-140			
Benzo [g,h,i] perylene	0.171	0.02	ug/g		102	50-140			
Benzo [k] fluoranthene	0.214	0.02	ug/g		129	50-140			
Chrysene	0.185	0.02	ug/g		111	50-140			
Dibenzo [a,h] anthracene	0.183	0.02	ug/g		110	50-140			
Fluoranthene	0.181	0.02	ug/g		108	50-140			
Fluorene	0.166	0.02	ug/g		99.6	50-140			
Indeno [1,2,3-cd] pyrene	0.160	0.02	ug/g		96.0	50-140			
1-Methylnaphthalene	0.118	0.02	ug/g		70.7	50-140			
2-Methylnaphthalene	0.134	0.02	ug/g		80.3	50-140			
Naphthalene	0.142	0.01	ug/g		85.2	50-140			
Phenanthrene	0.146	0.02	ug/g		87.7	50-140			
Pyrene	0.178	0.02	ug/g		107	50-140			
Surrogate: 2-Fluorobiphenyl	*1.31*		*ug/g*		*98.5*	*50-140*			

Qualifier Notes:

None

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.

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: 1937091

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Chain of Custody
(Lab Use Only)
№ 123205

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Client Name: Paterson	Project Reference: PE4588
Contact Name: Mark D'Arcy	Quote #
Address:	PO # 27622
Telephone: 226-7381	Email Address:

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

Criteria: ☑ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

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

Required Analyses

Paracel Order Number: 1937091

	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)	F2 - F4
1	BH13-SS1	S	-	1	Sept 5/19	2:30			✓					✓
2														
3														
4														
5														
6														
7														
8														
9														
10														

Comments:

Method of Delivery: Paracel

Relinquished By (Sign):	Received by Driver/Depot: T. Scrase	Received at Lab:	Verified By:
Relinquished By (Print): Nicholas Ouellette	Date/Time: 09/09/19 4:30 PM	Date/Time: 9-9-19 17:15	Date/Time: 9-9-19 17:15
Date/Time:	Temperature: °C	Temperature: 14.7 °C	pH Verified [ ] By: