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Phase II Environmental Site Assessment

359 Kent Street
436 and 444 MacLaren Street
Ottawa, Ontario

Prepared For

Taggart Realty Management

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Report: PE5204-2

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EXECUTIVE SUMMARY

Assessment

A Phase II ESA was conducted for the properties at 359 Kent Street, 436 and 444 MacLaren Street, Ottawa, Ontario. The purpose of the Phase II ESA was to address areas of potential environmental concern identified during the Phase I ESA, in particular the former presence of an AST and UST, the subject site's past use as a commercial print shop and publication, the use of road salt on the commercial parking area, the presence of an interior transformer, fill material of unknown quality, as well as the presence of former retail fuel outlets and an auto repair garage to the northwest (off-site). The Phase II ESA also incorporates the findings of a previous subsurface investigation at the site, completed in 2005.

This previous Phase II ESA identified two test locations where petroleum hydrocarbons exceeded the site standards. These were situated within the former UST nest, to the northwest of the building at 359 Kent Street. No exceedances to groundwater were identified in that report.

Soil samples obtained from the boreholes and the excavation were screened using visual observations and organic vapour measurements. A total of six soil samples were submitted for laboratory analysis for a combination of BTEX, PHC, VOC, EC/SAR, PCB, and metals parameters.

Two of the soil samples exceeded MECP Table 3 standards for EC/SAR and metals parameters, with the area of soil contamination generally present in the south and southeastern portion of the site (fill material). Metals exceedances were also identified in the native silty clay, with levels of barium, vanadium and cobalt consistent with post-glacial Champlain Sea clay deposits characterizing much of the Ottawa area. The EC/SAR exceedances are considered to be a result of the use of road salt during times of snow and/or ice, and therefore, as per O.Reg. 153/04, are deemed to meet the site standard.

Groundwater samples were obtained from the monitoring wells at BH1-21, BH3S-21, BH3D-21, and BH5-21 and analyzed for a combination of BTEX and PHC, VOC and PCB parameters. All groundwater samples were in compliance with MECP Table 3 site condition standards.

Recommendations

It is our understanding that the Phase II ESA Property will be redeveloped with a multi-storey residential and commercial mixed-use building. Due to the change in land use to a more sensitive land use (commercial to residential), a record of site condition (RSC) will be required as per O.Reg 154/03.

Fill material identified as exceeding MECP Table 3 standards will need to be removed and disposed of at a licensed waste disposal site. This includes petroleum hydrocarbon impacted soil from within the former UST nest, as well as metals-impacted fill material within the parking area. This can be done at the time of site redevelopment activities. It is recommended that Paterson personnel be present on-site at the time of site redevelopment to monitor the removal of any obviously stained soils.

Prior to off-site disposal at a licenced landfill site, a leachate analysis of a representative sample of this soil must be conducted in accordance with Ontario Regulation 347/558.

Additionally, soil that does not require disposal at a licensed landfill site must be managed in accordance with Ontario Regulation 406/19 – On-Site and Excess Soil Management. Silty clay with naturally elevated metals levels can be taken to a re-use site with similar or higher levels of natural metals levels, provided it is used for a beneficial purpose.

If the monitoring wells installed on the Phase II ESA Property are not going to be used in the future, or will be destroyed during site redevelopment, they should be abandoned according to Ontario Regulation 903. The wells will be registered with the MECP under this regulation. It is our recommendation that these wells be preserved for future groundwater monitoring.

1.0 INTRODUCTION

At the request of Taggart Realty Management, Paterson Group (Paterson) conducted a Phase II Environmental Site Assessment of the properties addressed as 359 Kent Street, 436 and 444 MacLaren Street, in the City of Ottawa, Ontario. The purpose of this Phase II ESA was to address concerns identified in the Phase I ESA, including the historical presence of an underground storage tank, aboveground storage tank and oil furnace, print shop and publication, off-site retail fuel outlets (located at 328 Kent Street, and 430 Somerset Street West), as well as the presence of fill material, use of road salt, and presence of a potentially PCB containing interior transformer.

1.1 Site Description

Addresses:	359 Kent Street, Ottawa, Ontario; 436 MacLaren Street, Ottawa, Ontario; 444 MacLaren Street, Ottawa, Ontario;
Legal Description:	Lots 32, 33 South MacLaren Street and Lots 32, 33, 34, 35 North Gilmour Street, Registered Plan 27292, City of Ottawa, Ontario.
Property Identification Numbers:	04119-0075 04119-0302 04119-0303
Location:	The subject property is located east of Kent Street, between MacLaren Street and Gilmour Street, in the City of Ottawa, Ontario. Refer to Figure 1 - Key Plan for the site location.
Latitude and Longitude:	45° 24' 49" N, 75° 41' 51" W
Configuration:	Irregular
Site Area:	3603 m^2 (approximate)

1.2 Property Ownership

The subject property addressed 359 Kent Street, 436 and 444 MacLaren Street, in the City of Ottawa, is currently owned by Taggart Realty Management. Paterson was retained to complete this Phase II ESA by Mr. Derek Howe of Taggart Group of Companies. Their office is located at 225 Metcalfe Street, Suite 708, in the City of Ottawa. Mr. Howe can be reached by phone at 613-883-2059.

1.3 Current and Proposed Future Uses

The subject site is currently occupied by a multi-tenant six storey commercial office building (359 Kent Street), a two-storey commercial office building (444 MacLaren Street), and a three-storey commercial office building (436 MacLaren Street). Based on the historical records and site reconnaissance, the six-storey commercial building (addressed 359 Kent Street) was constructed in approximately 1955, while the two residential buildings converted to offices (addressed 436 MacLaren Street and 444 MacLaren Street) were constructed in approximately the mid-1890s.

It is our understanding based on preliminary concept options that the proposed development consists of mixed-use commercial and residential buildings consisting of either of a high-rise building connected to a mid-rise building, a high-rise building and a separate mid-rise building, or two separate high-rise buildings. The buildings are expected to be constructed over several levels of underground parking encompassing the majority of the subject site. Associated roadways, walkways, and landscaped margins are also anticipated as part of the development. It is further understood that the proposed development will be municipally serviced.

1.4 Applicable Site Condition Standard

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

- Coarse-grained soil conditions
- Non-potable groundwater conditions
- Residential land use

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

The subject site is currently occupied by three commercial buildings and associated parking areas; 359 Kent Street (six-storey commercial building), 436 MacLaren Street (three-storey office building), and 444 MacLaren Street (two-storey commercial office building). Site topography is generally flat, while regional topography sloped gently downward towards the north. Drainage consisted of primarily of sheet flow to catch basins in the parking lot of 359 Kent Street, as well as along Gilmour Street to the south and MacLaren Street to the north.

No areas of stressed vegetation were noted on the subject site. No water wells or private sewage systems were observed on the subject property at the time of the site visit. No rail lines or loading areas were observed at the subject site. No unidentified substances were observed on-site. No water bodies are present on the subject site. The nearest significant water body is The Rideau Canal, located approximately one kilometre east of the site. No Areas of Natural or Scientific Interest (ANSIs) are present on or within 250 m of the subject site.

2.2 Past Investigations

Paterson has completed a Phase I ESA for the subject site, provided under separate cover. Paterson also completed a geotechnical subsurface investigation in conjunction with the Phase II ESA detailed in this report. This report incorporates the findings of the current environmental and geotechnical subsurface investigation in order to meet the requirements of O.Reg. 153/04 as amended by O.Reg. 269/11.

In addition to a Phase I-ESA prepared for 359 Kent Street in December 2017 (Paterson Group), a Phase I-ESA for 436 and 444 Maclaren Street in October 2017 (Paterson Group), as well as a designated substance survey for the building at 359 Kent Street in December 2005 (Jacques Whitford Ltd.), a combined Phase I and II-ESA was prepared for the property at 359 Kent Street by Jacques Whitford Ltd. In September 2005.

Historical information collected as part of the report indicated that an underground storage tank (UST) was located near the northeast corner of the building at 359 Kent Street. Nine boreholes were drilled in that area, seven of

which were fitted with groundwater monitoring wells in the immediately surrounding area of the former UST.

Analytical testing in 2005 showed that two soil samples from directly under the former UST location fail the current MECP environmental site standards (MECP Table 3) for petroleum hydrocarbons (PHC - F2 and F3 fractions). A comparison of 2005 MECP Table 3 standards to present-day standards indicate that one soil sample identified as having an exceedance in PHC F3 fractions in 2005 also exceeded present day PHC F2 fractions. The remainder of the results are in compliance with present-day standards.

Monitoring wells installed to the immediate north, south, east, and west of the former UST location were analyzed for benzene, toluenbe, ethylbenzene, xylenes (BTEX) and PHC (fractions F1 to F4) concentrations. A comparison to present-day MECP Table 3 standards for residential use showed that groundwater samples are in compliance with site standards.

Jacques Whitford estimated in 2005 that between 10 and 20 cubic metres of PHC contaminated soil remained on site. It was recommended that the soil be excavated and removed during future redevelopment or construction activities on the site.

As part of this investigation, it was recommended that groundwater in the vicinity of the former UST be resampled, however, the seven (7) monitoring wells were decommissioned. As such, the former presence of the UST represents an APEC on the Phase I property.

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The subsurface investigation conducted as a component of this Phase II ESA consisted of collecting 58 soil samples and 17 rock core samples during site drilling operations.

Boreholes were drilled through overburden soils to a maximum depth of 11.81 metres below ground surface. Bedrock was cored in four boreholes to a maximum depth of 18.04 metres. Groundwater monitoring wells were installed in three of the boreholes, one of which (BH3-21) was completed as a nested well, with deep and shallow well installations.

3.2 Media Investigated

During the subsurface investigation, soil samples and groundwater samples were obtained and submitted for laboratory analysis. The rationale for sampling and analyzing these media is based on the Contaminants of Potential Concern identified in the Phase I ESA. Contaminants of concern for soil and groundwater are PHCs, VOCs (including BTEX compounds), polychlorinated biphenyls (PCBs), metals (including mercury and hexavalent chromium), and general inorganics (EC, SAR, sodium, chlorides).

3.3 Phase I Conceptual Site Model

Geological and Hydrogeological Setting

The Geological Survey of Canada website on the Urban Geology of the National Capital Area was consulted as part of this assessment. Based on this information, bedrock in the area of the site consists of Paleozoic shale of the Billings Formation, whereas the surficial geology consists of till and offshore marine sediments (clay and silt), with an overburden thickness ranging from 10 to 15 metres. This information is generally consistent with the current subsurface investigation completed at the subject site.

Contaminants of Potential Concern

The following CPCs were identified with respect to the subject site:

- Petroleum Hydrocarbons Fractions 1 through 4 (PHCs F1-F4) – this suite of parameters encompasses gasoline (Fraction 1), diesel and fuel oil (Fraction 2), and heavy oils (Fractions 3 and 4). PHCs F1-F4 were selected as CPCs for the Phase I property based on the former presence of an on-site UST, the former presence of an on-site AST and oil furnace, and the proximity to former retail fuel outlets (RFOs) and auto repair garage identified during the historical review. Gasoline and diesel are commonly used motor vehicle fuels, and diesel-fraction hydrocarbons were commonly used as heating oil. Heavy oils may be present in the form of lubricants and transmission or hydraulic fluids. PHCs may be present in the soil matrix, sorbed to soil particles, as well as in free or dissolved phase in the groundwater system. PHCs are generally considered to be LNAPLs – light non-aqueous phase liquids, indicating that when present in sufficient concentrations above the solubility limit, they will partition into a separate phase above the water table, due to their lower density.

- BTEX – this suite of parameters includes Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), associated with gasoline. These parameters were selected as CPCs for the subject site based on the proximity to former retail fuel outlets (RFOs) and auto repair garage identified during the historical review. BTEX may be present in the soil matrix as well as in the dissolved phase in the groundwater system.

- Volatile Organic Compounds (VOCs) – In addition to the BTEX group, this suite of parameters includes ink solvents and petroleum distillates associated with printing and publishing. These parameters were selected as CPCs for the subject site due to the subject site's past commercial printing and publishing activity. VOCs may be present in the dissolved phase in the groundwater system.

- Metals – this suite of parameters encompasses various metals for which MECP standards exist, and include hydride-forming metals, chromium VI and mercury. Metals may be present in the soil matrix or dissolved in site groundwater. Metals were selected as CPCs for the subject site based on the presence of fill material identified during the previous Phase I-II ESA by Paterson.

- Polychlorinated Biphenyls (PCBs) – this synthetic compound was commonly used prior to 1979 as an insulating fluid for electrical equipment such as transformers, capacitors, bushings, and circuit breakers. As a result of an on-site interior transformer, PCBs may be present in the soil matrix as well as in the dissolved phase in the groundwater system.

The mechanisms of contaminant transport within the site soils include physical transportation and leaching. Physical transportation includes any intentional or unintentional movement or distribution of soil by physical means. Contamination arising from localized spills or runoff from previous on-site printing and publishing may be physically transported by vehicle movement or site grading. Leaching may occur in areas where the ground surface consists of gravel or where asphalt quality is poor; precipitation infiltrating in these areas may transport surficial contaminants into lower strata. Leaching and physical transport as contaminant transport mechanisms are considered to be limited at the subject site due to the presence of asphaltic concrete pavement over much of the site.

The mechanisms of contaminant transport within the groundwater system include advection, dispersion, and diffusion. Advection and dispersion will be the dominant mechanisms of contaminant transport in soils with higher hydraulic conductivities, such as sands, gravels, silts, and some glacial till soils, whereas diffusion will dominate in soils with lower hydraulic conductivity, such as clays.

Existing Buildings and Structures

The subject site is occupied by the following buildings:

- 359 Kent Street - a six-storey commercial brick and stone block clad building, constructed in approximately 1955.
- 436 MacLaren Street - three-storey brick and block exterior office building, constructed in approximately the mid 1890s.
- 444 MacLaren Street - two-storey cement parging clad office building, constructed in approximately the mid 1890s.

Water Bodies

There are no water bodies on the subject site or within the Phase I study area. The nearest significant water body is The Rideau Canal, located approximately one kilometre east of the site.

Areas of Natural Significance

No areas of natural significance were identified on the site or in the Phase I study area.

Drinking Water Wells

No drinking water wells are located at the subject site or within the Phase I study area.

Neighbouring Land Use

Neighbouring land use in the Phase I study area is commercial and residential.

Potentially Contaminating Activities

Potentially contaminating activities (PCAs) identified on the subject site during the Phase I ESA included:

- ❒ A former fuel oil UST, located on the Phase I property near the northeast corner of the 359 Kent Street commercial building;
- ❒ An interior transformer, located on the Phase I property in the basement against the north wall of the 359 Kent Street commercial building;
- ❒ Fill material of unknown quality, located across the 359 Kent Street property (part of the Phase I property);

- A former commercial print shop and publication, located on the Phase I property in the 359 Kent Street commercial building;
- A former fuel oil AST and oil furnace, with associated oil staining, located on the Phase I property against the north building face of the 359 Kent Street commercial building;
- The use of road salt on the 359 Kent Street commercial parking area.

All on-site PCAs were determined to create areas of potential environmental concern on the subject site, and are described later in this report.

PCAs identified offsite included current or former: automotive service garages and/or retail fuel outlets, commercial dry cleaners, commercial printers and publishers, commercial paint shops, commercial photography stations, and electrical and glass works.

Two of the former retail fuel outlets (one of which was also a former automotive service garage), located to the north of the site, were considered to have created areas of potential environmental concern on the subject site, due to their close proximity to the subject site. Remaining PCAs identified within the Phase I study area are not considered to represent APECs on the subject site due to their separation distance and/or downgradient or cross-gradient orientation to the subject site.

Areas of Potential Environmental Concern

Areas of potential environmental concern (APEC) on the subject site are as follows:

APEC1: A former fuel oil UST

APEC2: An interior transformer

APEC3: Fill material of unknown quality

APEC4: A former commercial print shop and publication

APEC5: A former fuel oil AST and oil furnace, with associated oil staining

APEC6: The use of road salt

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 areas of potential environmental concern on the subject site and neighbouring properties which have the potential to have impacted the subject site. The presence of potentially contaminating activities was confirmed by a variety of independent sources, including, in some cases, observations made during the Phase I site visit. As such, the conclusions of this report are not affected by uncertainty which may be present with respect to the individual sources.

3.4 Deviations from Sampling and Analysis Plan

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

3.5 Impediments

No physical impediments or denial of access were encountered during the Phase II Environmental Site Assessment.

4.0 INVESTIGATION METHOD

4.1 Subsurface Investigation

The subsurface investigation conducted for this Phase II ESA consisted of drilling five boreholes (BH1-21 through BH5-21) across the Phase II property. The boreholes were drilled to a maximum depth of 18.04 metres below ground surface (bgs) to intercept groundwater.

The boreholes were drilled using a track mounted drill rig operated by George Downing Estate Drilling of Hawkesbury, Ontario, under full-time supervision of Paterson personnel. Sample locations are depicted on the attached Drawing PE5204-3 - Test Hole Location Plan in the Figures section of this report.

4.2 Soil Sampling

A total of 58 soil samples were obtained from the boreholes by means of split spoon sampling and the sampling of shallow soils directly from auger flights. Split

spoon samples were taken at approximate 0.76 m intervals. The depths at which split spoon and auger flight samples were obtained from the boreholes are shown as "**SS**" and "**AU**" respectively on the Soil Profile and Test Data Sheets, in Appendix 2 of this report.

Upon refusal of the augers, four boreholes were advanced into bedrock using a diamond coring system. Rock core samples were recovered and are shown as "**RC**" on the Soil Profile and Test Data Sheets.

Site soils consist of fill material underlain by silty clay and glacial till over shale bedrock. Practical refusal to augering was encountered at depths varying from 8.81 metres to 11.81 metres below existing grade.

4.3 Field Screening Measurements

All soil samples collected underwent a preliminary screening procedure, which included visual screening for colour and evidence of deleterious fill, as well as screening with a RKI Eagle combustible gas detector. The detection limit is 5 ppm, with a precision of +/- 5 ppm.

The soil vapours were measured by inserting the analyzer probe into the nominal headspace above the soil sample. Samples were then agitated, and the peak readings recorded. The combustible vapour readings ranged from 5 to 55 parts per million (ppm). Combustible vapour readings are noted on the Soil Profile and Test Data Sheets in Appendix 1.

Soil samples were selected for analysis based on visual appearance, location, and vapour readings.

4.4 Groundwater Monitoring Well Installation

Four groundwater monitoring wells were installed by George Downing Estate Drilling of Hawkesbury, Ontario, under full-time supervision by Paterson personnel. The monitoring wells consisted of 32 mm (1¼") diameter or 50mm (2") diameter Schedule 40 threaded PVC risers and screens. A sand pack consisting of silica sand was placed around the screen, and a bentonite seal was placed above the screen to minimize cross-contamination. Monitoring well construction details are provided on the Soil Profile and Test Data Sheets in Appendix 1. A summary of monitoring well construction details is provided below in Table 1.

The groundwater monitoring wells were developed upon completion using a dedicated inertial lift pump. A minimum of three well volumes were removed from the wells.

Note that the borehole advanced at BH3-21 was instrumented with two groundwater monitoring wells, a deep well installed at a final depth of 15.04 m (BH3D-21), and a shallow well, installed at a final depth of 6.11 m below grade (BH3S-21). The screened intervals were sealed between the two wells using bentonite.

Table 1: Monitoring Well Construction Details

Well ID	Ground Surface Elevation	Total Depth (m BGS)	Screened Interval (m BGS)	Sand Pack (m BGS)	Bentonite Seal (m BGS)	Casing Type
BH1-21	73.15	6.21	3.16 – 6.21	2.74 – 6.21	0.00 – 2.74	Flushmount
BH3S-21	66.61	6.11	3.06 – 6.11	2.74 – 6.11	0.00 – 2.74	Flushmount
BH3D-21	65.92	15.04	11.99 – 15.04	9.55 – 15.04	6.10 – 9.55	Flushmount
BH5-21	66.38	6.17	3.12 – 6.17	2.82 – 6.17	0.00 – 2.82	Flushmount

4.5 Field Measurement of Water Quality Parameters

Water quality parameters were measured in the field during the time of sampling 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.

Table 2: Field Measurement of Water Quality Parameters, April 19, 2021

Parameter	BH1-21	BH3S-21	BH3D-21	BH5-21
Temperature (°C)	10.8	10.4	14.8	10.7
Electrical Conductivity (µS/cm)	2236	2365	1041	3999
pH	7.28	7.93	8.00	6.98

4.6 Groundwater Sampling

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

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

4.7 Analytical Testing

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

Table 2: Soil Samples Submitted

Sample ID	Sample Depth/ Stratigraphic Unit	Parameters Analyzed							Rationale
		VOCs	PHCs	BTEX	PCBs	Metals[1]	EC & SAR	pH	
BH1-21 – SS5	2.29 – 2.90 m; Silty clay, brown		X	X					Upper water table, near to former RFOs / garage
BH2-21 – AU2	0.48 – 0.76 m; Fill, silty clay, some sand, trace brick and topsoil					X	X		Fill material, in commercial parking area
BH3-21 – SS7	3.81 – 4.42 m; Silty clay, brown	X	X	X					Upper water table, below former UST, and adjacent to former printing operation.
BH4-21 – SS4	1.52 – 2.13 m; Silty clay, brown					X	X		Upper low permeability native material
BH4-21 – SS7	3.81 – 4.42 m; Silty clay, brown							X	Upper water table
BH5-21 – SS8	4.58 – 5.18 m; Silty clay, brown		X	X	X				Upper water table, near interior transformer, former AST, and printing operation
BH105-21	4.58 – 5.18 m; Silty clay, brown			X					Duplicate of BH5-21 – SS8 for QA/QC purposes

Notes:
1 – includes hydride-forming metals, Hg and Cr_{VI}

Table 3: Groundwater Samples Submitted

Sample ID	Screened Interval/ Stratigraphic Unit	Parameters Analyzed				Rationale
		PHCs F_1-F_4	BTEX	VOCs	PCBs	
BH1-21 – GW1	3.16 – 6.21 m; Silty clay	X	X			Address concerns related to former uses of nearby properties.
BH3S-21 – GW1	3.06 – 6.11 m; Silty clay	X	X	X		Address former on-site UST and on-site printing and publishing
BH3D-21 – GW1	11.99 – 15.04 m; Shale bedrock	X	X	X		Address former on-site UST and on-site printing and publishing
BH5-21 – GW1	3.12 – 6.17 m; Silty clay	X	X	X	X	Address former AST and oil furnace, interior transformer, and on-site printing and publishing
BH103-GW1	3.06 – 6.11 m; Silty clay	X	X	X		Duplicate of BH3-21 – GW1 for QA/QC purposes

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

4.8 Residue Management

Soil cuttings, purge water and fluids from equipment cleaning were retained on-site and stored in sealed drums. All drums were later removed by a licensed hauling company and disposed of at a local waste disposal facility.

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 quality assurance and quality control (QA/QC) measures, including sampling containers, preservation, labelling, handling, and custody, equipment

cleaning procedures, and field quality control measurements is provided in the Sampling and Analysis Plan in Appendix 1.

5.0 REVIEW AND EVALUATION

5.1 Geology

Site geology details are provided in the Soil Profile and Test Data Sheets in Appendix 1. Site soils consist of fill, underlain by silty clay and glacial till. The fill material varied in thickness between 0.6 and 2.8 m, and consisted of sand and crushed stone (asphalt subbase) and a silty sand / sandy silt material with some brick, cobbles and organics noted in various boreholes. No visual or olfactory evidence of contamination was noted in the fill material.

The glacial till material, encountered in BH1-21 to BH4-21 varied in thickness between 0.7 and 2.7 metres, and consisted of a silty sand to silty clay matrix with gravel, cobbles, and shale fragments. Bedrock was cored in four borehole locations, with bedrock surface ranging from 8.8 to 11.8 mbgs. Bedrock at the site consisted of black shale.

Groundwater monitoring wells were installed in the silty clay layer in BH1-21, BH3S-21, and BH5-21 (upper unconfined aquifer/water table) and in the bedrock at BH3D-21. Site stratigraphy is shown on cross-sections A-A' and B-B'.

5.2 Groundwater Elevations, Flow Direction, and Hydraulic Gradient

Groundwater levels were measured during the groundwater sampling event on April 19, 2021, using an electronic water level meter. Groundwater levels are summarized below in Table 4. All measurements are referenced to a geodetic datum based on the topographic ground surface elevations.

Table 4: Groundwater Level Measurements

Borehole Location	Ground Surface Elevation (m)	Water Level Depth (m below grade)	Water Level Elevation (m ASL)	Date of Measurement
Overburden				
BH1-21	73.15	3.07	70.08	April 19, 2021
BH3S-21	72.61	1.91	70.70	
BH5-21	73.21	2.75	70.46	
Bedrock				
BH3D-21	72.61	8.96	63.65	April 19, 2021

The water levels in BH1-21, BH3S-21, and BH5-21 represent the water level in the upper silty clay layer, while the water levels in BH6, BH1-13, and BH3-13 represent the water levels in the shale bedrock aquifer. Seasonal variations in groundwater levels are expected to occur.

Based on the groundwater elevations from April 2021, groundwater contour mapping was completed for the overburden aquifer. Based on the contour mapping, groundwater flow at the subject site appears to be in a northwesterly direction. A horizontal hydraulic gradient of approximately 0.016 m/m was calculated. This groundwater flow appears to be consistent with the anticipated regional flow direction, predominantly headed in a northwestern direction towards the Ottawa River.

No free product was observed in any monitoring wells sampled at the subject site.

5.3 Fine-Coarse Soil Texture

Grain-size analysis was not completed for the Phase II ESA Property. As such, the more stringent coarse-grained soil standards were used.

5.4 Soil Field Screening

Field screening of the soil samples collected during drilling resulted in vapour readings ranging from 5 to 55 ppm. The field screening results of each individual soil sample are provided on the Soil Profile and Test Data Sheets appended to this report.

5.5 Soil Quality

A total of 6 soil samples, and one duplicate sample, were submitted for laboratory analysis for a combination of BTEX, PHC, VOC, PAH, pH, EC, SAR, and metals parameters. Metals parameters included hydride-forming metals, mercury and hexavalent chromium. The results of the analytical testing are presented in the Appendix. The laboratory certificates of analysis are provided in Appendix 1.

Two of the soil samples exceeded MECP Table 3 standards for EC/SAR and metals parameters.

The EC and SAR exceedances are considered to be a result of the use of salt, or similar substance, which was applied to the parking areas, walkways, and other surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both. As a result, the detected concentrations are deemed to have met the site standards.

The maximum concentrations of analyzed parameters in the soil at the site are summarized below in Table 6.

Table 6: Maximum Concentrations – Soil

Parameter	Maximum Concentration (µg/g)	Sample ID	Depth Interval (m BGS)
Antimony	ND (1.0)	BH2-21-AU2	0.48 – 0.76m; fill
Arsenic	3.7	BH2-21-AU2	0.48 – 0.76m; fill
Barium	**428**	BH4-21-SS4	1.52 – 2.13m; silty clay
Beryllium	0.8	BH2-21-AU2	0.48 – 0.76m; fill
Boron	ND (5.0)	BH2-21-AU2	0.48 – 0.76m; fill
Cadmium	ND (5.0)	BH2-21-AU2	0.48 – 0.76m; fill
Chromium	133	BH4-21-SS4	1.52 – 2.13m; silty clay
Chromium (VI)	0.4	BH2-21-AU2	0.48 – 0.76m; fill
Cobalt	**27.3**	BH4-21-SS4	1.52 – 2.13m; silty clay
Copper	60.1	BH4-21-SS4	1.52 – 2.13m; silty clay
Lead	**174**	BH2-21-AU2	0.48 – 0.76m; fill
Mercury	0.1	BH2-21-AU2	0.48 – 0.76m; fill
Molybdenum	ND (1.0)	BH2-21-AU2	0.48 – 0.76m; fill
Nickel	73.8	BH4-21-SS4	1.52 – 2.13m; silty clay
Vanadium	**128**	BH4-21-SS4	1.52 – 2.13m; silty clay
Zinc	155	BH2-21-AU2	0.48 – 0.76m; fill
Acetone	ND (0.50)	BH3-21-SS7	3.81 – 4.42m; silty clay
Benzene	ND (0.02)	BH3-21-SS7	3.81 – 4.42m; silty clay
Bromodichloromethane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Bromoform	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Bromomethane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Carbon Tetrachloride	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Chlorobenzene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Chloroform	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Dibromochloromethane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Dichlorodifluoromethane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
1,2-Dichlorobenzene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
1,3-Dichlorobenzene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
1,4-Dichlorobenzene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
1,1-Dichloroethane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
1,2-Dichloroethane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
1,1-Dichloroethylene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
cis-1,2-Dichloroethylene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
trans-1,2-Dichloroethylene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
1,2-Dichloropropane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay

cis-1,3-Dichloropropylene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
trans-1,3-Dichloropropylene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
1,3-Dichloropropene, total	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Ethylbenzene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Ethylene dibromide (dibromoethane, 1,2-)	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Hexane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Methyl Ethyl Ketone (2-Butanone)	ND (0.50)	BH3-21-SS7	3.81 – 4.42m; silty clay
Methyl Isobutyl Ketone	ND (0.50)	BH3-21-SS7	3.81 – 4.42m; silty clay
Methyl tert-butyl ether	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Methylene Chloride	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Styrene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
1,1,1,2-Tetrachloroethane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
1,1,2,2-Tetrachloroethane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Tetrachloroethylene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Toluene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
1,1,1-Trichloroethane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
1,1,2-Trichloroethane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Trichloroethylene	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Trichlorofluoromethane	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
Vinyl Chloride	ND (0.02)	BH3-21-SS7	3.81 – 4.42m; silty clay
Xylenes	ND (0.05)	BH3-21-SS7	3.81 – 4.42m; silty clay
F1 PHCs (C6-C10)	ND (7)	BH3-21-SS7	3.81 – 4.42m; silty clay
F2 PHCs (C10-C16)	ND (4)	BH3-21-SS7	3.81 – 4.42m; silty clay
F3 PHCs (C16-C34)	ND (8)	BH3-21-SS7	3.81 – 4.42m; silty clay
F4 PHCs (C34-C50)	ND (6)	BH3-21-SS7	3.81 – 4.42m; silty clay
PCBs	ND (0.05)	BH5-21-SS8	4.58 – 5.18m; silty clay
SAR	**6.54***	BH2-21-AU2	0.48 – 0.76m; fill
Conductivity	**3230***	BH2-21-AU2	0.48 – 0.76m; fill
pH	7.57	BH4-21-SS7	3.81 – 4.42m; silty clay

Notes:
- **Bold and Underlined** – Value exceeds MECP Table 3 standards
- * - Value deemed to meet MECP Table 3 standards

5.6 Groundwater Quality

Groundwater samples from the monitoring wells at BH1-21, BH3S-21, BH3D-21, and BH5-21 were submitted for laboratory analysis of a combination of BTEX, PHCs, VOCs, and PCBs. The groundwater samples were obtained from the screened intervals noted on Table 1 in Section 5.4 above. The results of the analytical testing are presented in the appendix. The laboratory certificates of analysis are provided in Appendix 1.

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

Table 7: Maximum Concentrations – Groundwater

Parameter	Maximum Concentration (µg/g)	Borehole	Depth Interval (m BGS)
Acetone	ND (5.0)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Benzene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Bromodichloromethane	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Bromoform	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Bromomethane	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Carbon Tetrachloride	ND (0.2)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Chlorobenzene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Chloroform	1.2	BH3S-21-GW1	3.06 – 6.21m; silty clay
Dibromochloromethane	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Dichlorodifluoromethane	ND (1.0)	BH3S-21-GW1	3.06 – 6.21m; silty clay
1,2-Dichlorobenzene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
1,3-Dichlorobenzene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
1,4-Dichlorobenzene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
1,1-Dichloroethane	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
1,2-Dichloroethane	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
1,1-Dichloroethylene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
cis-1,2-Dichloroethylene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
trans-1,2-Dichloroethylene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
1,2-Dichloropropane	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
cis-1,3-Dichloropropylene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
trans-1,3-Dichloropropylene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
1,3-Dichloropropene, total	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Ethylbenzene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Ethylene dibromide (dibromoethane, 1,2-)	ND (0.2)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Hexane	ND (1.0)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Methyl Ethyl Ketone (2-Butanone)	ND (5.0)	BH3S-21-GW1	3.06 – 6.21m; silty clay

Methyl Isobutyl Ketone	ND (5.0)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Methyl tert-butyl ether	ND (2.0)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Methylene Chloride	ND (5.0)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Styrene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
1,1,1,2-Tetrachloroethane	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
1,1,2,2-Tetrachloroethane	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Tetrachloroethylene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Toluene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
1,1,1-Trichloroethane	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
1,1,2-Trichloroethane	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Trichloroethylene	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Trichlorofluoromethane	ND (1.0)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Vinyl Chloride	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
Xylenes	ND (0.5)	BH3S-21-GW1	3.06 – 6.21m; silty clay
F1 PHCs (C6-C10)	ND (25)	BH3S-21-GW1	3.06 – 6.21m; silty clay
F2 PHCs (C10-C16)	ND (100)	BH3S-21-GW1	3.06 – 6.21m; silty clay
F3 PHCs (C16-C34)	ND (100)	BH3S-21-GW1	3.06 – 6.21m; silty clay
F4 PHCs (C34-C50)	ND (100)	BH3S-21-GW1	3.06 – 6.21m; silty clay
PCBs	ND (0.05)	BH5-21-GW1	3.12 – 6.17m; silty clay

Notes:
- **Bold and Underlined** – Value exceeds MECP Table 3 standards

5.7 Quality Assurance and Quality Control Results

As per the Sampling and Analysis Plan, a duplicate soil sample was obtained at BH5-21-SS8 and submitted for BTEX parameters. All BTEX parameter concentrations were below laboratory detection limits for both BH5-21-SS8 and the duplicate sample (BH105-21), and as such, are within acceptable QA/QC parameters. A duplicate groundwater sample was obtained at BH3S-21 during the sampling event and analyzed for VOCs and PHCs. The relative percent difference (RPD) calculations for the original and duplicate sample are provided below.

Table 8: QA/QC Calculations – Groundwater

Parameter	MDL (µg/L)	BH3S-21 - GW1	DUP	RPD (%)	QA/QC Result
Chloroform	0.5	1.2	1.2	0.0	Within the acceptable range

Notes:
* All other parameter concentrations were below laboratory detection limits for both BH3S-21-GW1 and Duplicate, and as such, are within acceptable QA/QC parameters.

All calculated RPD values meet the target value of 20%.

As per Subsection 47(3) of O.Reg. 153/04 as amended by O.Reg. 269/11, a Certificate of Analysis has been received for each sample submitted for analysis, and all Certificates of Analysis are appended to this report.

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

5.8 Phase II Conceptual Site Model

The following section has been prepared in accordance with the requirements of O.Reg. 269/11 amending O.Reg. 153/04 - Record of Site Condition regulation, made under the Environmental Protection Act. Conclusions and recommendations are discussed in a subsequent section.

Site Description

Potentially Contaminating Activity and Areas of Potential Environmental Concern

Based on the results of the Phase I and Phase II ESAs completed for the subject site, potentially contaminating activities (PCAs) resulting in areas of potential environmental concern (APECs) and the associated contaminants of potential concern (CPCs) are presented in the table below. The rationale for identifying these PCAs is based on a review of city directories, fire insurance plans, aerial photographs and previous reports, as well as field observations and personal interviews.

The APECs are presented on Drawing PE5204-1 – Site Plan.

Table 9: Areas of Potential Environmental Concern
359 Kent Street, 436 and 444 MacLaren Street

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern	Potentially Contaminating Activity	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil, and/or Sediment)
APEC #1 Former Fuel Oil UST	Central portion of subject site	*"Item 28: Gasoline and associated product storage in fixed tanks"*	On-Site	BTEX PHCs (F_1-F_4)	Soil and Groundwater
APEC #2 Interior Transformer	Western-Central portion of subject site	*"Item 55: Transformer Manufacturing, Processing, and Use"*	On-Site	PCBs	Soil and Groundwater
APEC #3 Fill Material of Unknown Quality	Eastern and northern portion of subject site	*"Item 30: Importation of Fill Material of Unknown Quality"*	On-Site	Metals EC SAR	Soil
APEC #4 Former Print Shop and Publication	Southwest corner of subject site	*"Item 31: Ink Manufacturing, Processing and Bulk Storage"*	On-Site	VOCs	Soil and Groundwater
APEC #5 Former Aboveground Storage Tank and Oil Furnace	Western-Central portion of subject site	*"Item 28: Gasoline and associated product storage in fixed tanks"*	On-Site	BTEX PHCs (F_1-F_4)	Soil and Groundwater
APEC #6 Use of Road Salt on Commercial Parking Area	Southeast portion of subject site	*N/A: Use of a s*ubstance applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both	On-Site	EC SAR	Soil
APEC #7A Former Retail Fuel Outlet	Northwest portion of subject site	*"Item 28: Gasoline and associated product storage in fixed tanks"*	55 metres northwest of the Phase I Property	BTEX PHCs (F_1-F_4)	Soil and Groundwater
APEC #7B Automotive Service Garage	Northwest portion of subject site	*"Item 27: Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles."*	55 metres northwest of the Phase I Property	BTEX PHCs (F_1-F_4)	Soil and Groundwater
APEC #8 Former Retail Fuel Outlet	Northwest portion of subject site	*"Item 28: Gasoline and associated product storage in fixed tanks"*	50 metres north of the Phase I Property	BTEX PHCs (F_1-F_4)	Soil and Groundwater

APEC 1 – Former on-site fuel oil UST: Based on the findings of the Phase I ESA, a UST was previously located on the Phase I property near the northeast corner of the 359 Kent Street commercial building. The former UST is considered to represent an APEC in the central portion of the subject site. Associated chemicals of potential concern (CPCs) are PHC F1-F4 and BTEX in soil and groundwater.

APEC 2 – On-site interior transformer: Based on the findings of the Phase I ESA, an interior transformer vault is present in the basement level of the 359 Kent Street commercial building. The transformer vault is considered to represent an APEC on the western-central portion of the subject site. Associated chemicals of potential concern (CPCs) are PCBs in soil and groundwater.

APEC 3 – Fill material of unknown quality: Fill material was identified in the 359 Kent Street commercial parking lot. The fill material is considered to have been imported for construction purposes and consisted predominantly of silty sand with gravel, with some building debris noted. The importation of fill material of unknown quality is considered to be a PCA resulting in an APEC in the southeast portion of the subject site. CPCs associated within the fill material include EC, SAR, and metals (including mercury and hexavalent chromium) in the soil.

APEC 4 – Former print shop and publication: Based on the findings of the Phase I ESA, a print shop and commercial publication was formerly present on-site. On-site commercial printing and publishing is considered to be a PCA resulting in an APEC in the southwest portion of the subject site. Associated chemicals of potential concern (CPCs) are VOCs in soil and groundwater.

APEC 5 – Former aboveground storage tank and oil furnace: Based on the findings of the Phase I ESA, a heating oil AST and oil furnace were formerly used on site, and some oil staining was noted in the vicinity of the former tank location. On-site historical oil heating is considered to be a PCA resulting in an APEC in the western-central portion of the subject site. Associated chemicals of potential concern (CPCs) are PHC F1-F4 and BTEX in soil and groundwater.

APEC 6 – Use of Road Salt on Commercial Parking Area: Based on the findings of the Phase I ESA, the commercial parking lot at 359 Kent Street has had road salt applied to the asphaltic concrete surface for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both. On-site use of road salt is considered to be a PCA resulting in an APEC in the southeast portion of

the subject site. Associated chemicals of potential concern (CPCs) are EC and SAR in soil.

APEC 7A – Former retail fuel outlet: Based on the findings of the Phase I ESA, the property addressed 328 Kent Street was formerly used as a retail fuel outlet. This off-site PCA is considered to have created an APEC on the northwest portion of the Phase II subject site. Associated chemicals of potential concern (CPCs) are PHC F1-F4, and BTEX in the soil and groundwater.

APEC 7B – Former automotive service garage: Based on the findings of the Phase I ESA, the property addressed 328 Kent Street was formerly used as an automotive service garage. This off-site PCA is considered to have created an APEC on the northwest portion of the Phase II subject site. Associated chemicals of potential concern (CPCs) are PHC F1-F4, and BTEX in the soil and groundwater.

APEC 8 – Former retail fuel outlet: Based on the findings of the Phase I ESA, the property addressed 430 Somerset Street West was formerly used as a retail fuel outlet. This off-site PCA is considered to have created an APEC on the northwest portion of the Phase II subject site. Associated chemicals of potential concern (CPCs) are PHC F1-F4, and BTEX in the soil and groundwater.

Contaminants of Potential Concern

- ❒ Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX);
- ❒ Petroleum hydrocarbons (PHCs, Fractions F1-F4);
- ❒ Volatile organic compounds (VOCs);
- ❒ Polychlorinated Biphenyls (PCBs);
- ❒ Electrical Conductivity (EC);
- ❒ Sodium Absorption Rate (SAR);
- ❒ Metals (including hydride-forming metals, mercury and hexavalent chromium).

Subsurface Structures and Utilities

Public and private underground service locates were completed as part of a geotechnical and Phase II ESA investigation conducted for the subject site in tandem with this assessment. According to the locates, underground gas is present to the north of the property running east-west and connecting south to 436 and 444 MacLaren, as well as extending north from Gilmour Street along the east side of the 359 Kent Street building. Hydro is present extending south from MacLaren Street and running east-west on the southern portion of the property.

Underground wires and conduits are also present running south of MacLaren Street and north-south on the east side of the subject site. Storm sewers are also present beneath the 359 Kent Street parking area, connecting to the municipal system to the south.

Physical Setting

Site Stratigraphy

The site stratigraphy, from ground surface to the deepest aquifer or aquitard investigated, is illustrated on cross-sections A-A' and B-B'. Stratigraphy consists of:

- An asphaltic concrete structure 0.05 to 0.10 metres thick overlies fill material consisting primarily of sand and crushed stone, with some clay, brick and concrete noted in some of the boreholes. The fill material extended to depths ranging from 0.6 to 2.8 mbgs. Groundwater was not encountered in this layer.
- Silty clay was encountered in all of the boreholes, extending to depths of approximately 7.3 to 8.5 mbgs. Groundwater was encountered in this layer in all boreholes, ranging from 3.7 to 5.2 mbgs. Monitoring wells, with the exception of BH3D-21 (deep well) were screened in this layer, which is considered to be an unconfined aquifer.
- An intermittent layer of clayey silt, approximately 0.9 metres thick was encountered in BH3-21, underlying the silty clay deposit.
- A layer of glacial till, consisting of a silty sand to silty clay matrix with gravel, cobbles, boulders and shale fragments. This layer varied in thickness from 0.8 m to 3.2 m.
- Shale bedrock of the Billings Formation, encountered at depths ranging from 8.8 to 11.8 mbgs. Groundwater was encountered in the upper fractured bedrock, and the monitoring well at BH3D-21 was screened in the bedrock unit. The upper fractured bedrock is considered to function as an aquifer at the subject site. This is the deepest unit investigated.

Hydrogeological Characteristics

Water levels were measured at the subject site on April 19, 2021. Water levels are summarized above in Section 6.2 of this report and are shown on Drawing PE5204-3 and PE5204-7.

Based on the groundwater elevations, groundwater contour mapping was completed and the horizontal hydraulic gradient for the subject site was calculated. Groundwater flow at the subject site was interpreted to flow in a northwestern direction, towards the Ottawa River, which is consistent with the anticipated regional flow direction. A hydraulic gradient of 0.016 m/m was calculated.

Depth to Bedrock

Bedrock was cored at four borehole locations, with bedrock surface encountered at depths ranging from 8.8 to 11.8 m below ground surface.

Approximate Depth to Water Table

Based on the recovered water levels from monitoring wells installed on the subject site, depth to the water table at the subject site is approximately 1.9 to 3.1 m below existing grade.

Section 35 of the Regulation

Section 35 of the Regulation applies to the Phase II subject site as follows:

- ❒ The property, and all other properties located, in whole or in part, within 250 metres of the boundaries of the property, are supplied by a municipal drinking water system, as defined in the Safe Drinking Water Act, 2002.

- ❒ The subject site does not specify agricultural or other use as the type of property use for which the record of site condition is filed.

- ❒ The Phase II subject site is not located in an area designated in the municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of groundwater.

- ❒ Neither the Phase II subject site nor any of the properties in the phase one study area has a well used or intended for use as a source of water for human consumption or agriculture.

- ❒ The QP has given the clerk of the municipality written notice of intention to apply the standards in preparing a record of site condition for the property, and the municipality has given written notice to the QP that it does not object to the application of the standards, within 30 days of receiving the notice.

Sections 41 and 43.1 of the Regulation

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

Section 43.1 of the Regulation does not apply to the subject site in that the subject site is not a Shallow Soil Property or within 30 m of a water body.

Proposed Buildings and Other Structures

The subject property will be redeveloped with a multi-storey mixed use development, consisting of commercial tenants on the ground floor, and residential dwellings above.

Existing Buildings and Structures

359 Kent Street

The property addressed 359 Kent Street is occupied by a six-storey brick and stone block clad commercial office building. Based on the historical information, the building was constructed in approximately 1955. The building has a flat membrane roof and a concrete foundation. The building is heated with natural gas fired boilers located in the basement and cooled with rooftop air conditioning units, as well as supplemental air conditioning units located on the ground floor.

436 MacLaren Street

The property addressed 436 MacLaren Street is occupied by a three-storey brick and block exterior office building. The building features a stone foundation, and a primarily sloped and shingled roof, with a small flat bitumen style portion. Based on the previous property owner (2017), the building was built in 1896 for residential purposes, and has since been repurposed for commercial office use. The building is heated with a natural gas fired boiler.

444 MacLaren Street

The property addressed 444 MacLaren Street is occupied by a two-storey cement parging clad office building. The building features a stone foundation, and a sloped and shingled roof. Based on the historical data, the building was built in the mid 1890s for residential purposes, and has since been repurposed for commercial office use. The building is heated with a natural gas fired boiler.

Water Bodies

No creeks, rivers, streams, lakes or any other water body was identified on the subject site. The Rideau Canal is the closest significant water body, and is present approximately 1.0 km east of the site.

Areas of Natural Significance

No areas of natural significance are present on the subject site.

Environmental Condition

Areas Where Contaminants are Present

- Petroleum Hydrocarbons

Petroleum hydrocarbons were previously identified in the soil within APEC1 (Jacques Whitford, 2005). Soil samples BH05-1 SS-3 and BH05-2 SS-4, collected at 1.37-1.98 m and 2.53-2.69 m respectively, exceed Table 3 standards for PHC F2 and F3 fractions.

Analytical testing conducted as part of the current Phase II ESA did not identify any hydrocarbon impacts below those identified by Jacques Whitford, nor were any impacts identified in the groundwater within the bedrock.

- Metals

Lead and vanadium were identified in soil sample BH2-21-AU2, located within APEC3 (fill material). Barium, cobalt and vanadium levels above the MECP site condition standards were identified in BH4-21-SS4 (native silty clay).

Note that EC and SAR exceedances were identified in soil sample BH2-21-AU2 (fill material) within APEC3 and APEC6. EC exceedances were also identified in BH4-21-SS4 (native silty clay) within APEC6. The EC and SAR exceedances are considered to be present due to the application of salt (or a similar substance) within the parking areas, for safety purposes during times of snow or ice or both. As a result, the EC and SAR exceedances are deemed to meet the site standard.

Types of Contaminants

Based on the findings of the Phase II ESA, as well as previous investigations on the Phase II Property, the following contaminants of concern (CPCs) are present in soil on the RSC Property:

- PHCs
  - PHC F2
  - PHC F3
- Metals
  - Lead
  - Vanadium
  - Cobalt
  - Barium

Contaminated Media

Based on the results of the Phase II ESA, soil was found to contain contaminants of concern as listed above. No contaminants were identified in the groundwater.

What Is Known About Areas Where Contaminants Are Present

- Petroleum Hydrocarbons

Based on the Phase II ESA by Jacques Whitford (2005), an estimated 10 to 20 cubic metres of PHC F2 and F3 soil was identified in the vicinity of the former UST. No PHC contaminated soil or groundwater were identified in the 2021 investigation.

- Metals

Lead and vanadium exceedances were identified in soil sample BH2-21-AU2, located within APEC3, specifically within the southern-central portion of the subject site. This sample was collected from the fill material underlying the asphaltic concrete surface. Fill material of poor quality could have been imported over the course of the development or past redevelopments of the subject site.

Vanadium, cobalt and barium exceedances were also identified in the native silty clay (BH4-21-SS4) in the eastern portion of the subject site. These levels are consistent with post-glacial Champlain Sea clay deposits which characterize much of the Ottawa region, and are considered to be native occurrences. It is considered likely that silty clay throughout the subject site will contain elevated metals background level.

- EC and SAR

Fill material beneath the asphaltic concrete in the commercial parking area (BH2-21-AU2) located within APEC3 and APEC6 was identified as containing EC and SAR exceedances. Silty clay below the fill layer (BH4-21-SS4) was identified as containing an EC exceedance, located within APEC6. It is considered likely that this will extend throughout the commercial parking area associated with the 359 Kent Street building and is considered a result of de-icing agents (road salt) applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both.

Distribution of Contaminants

- Petroleum Hydrocarbons

Based on the Phase II ESA by Jacques Whitford (2005), an estimated 10 to 20 cubic metres of PHC F2 and F3 soil was identified in the vicinity of the former UST. Hydrocarbon impacts were identified between 1.37 m and 2.69 m below surrounding grade. No impacts were identified within the overburden groundwater.

Analytical testing conducted as part of the current Phase II ESA did not identify any hydrocarbon impacts within the former UST area. A soil sample was selected from Borehole BH3-21 for PHC analysis, to determine the distribution of the impacts identified by Jacques Whitford. Based on both analysis, hydrocarbon impacts are not expected to extend beyond 3.81 m, the upper limit of the clean delineation sample.

Additionally, no impacts to the groundwater were identified within the soil impacted area within the overburden, however, to confirm that PHCs have not migrated, groundwater was analysed from a deep monitoring well screened within the bedrock. No PHCs were detected in this stratigraphic unit.

- Metals

Lead and vanadium exceedances were identified in soil sample BH2-21-AU2, located within APEC3, specifically within the southern-central portion of the subject site. This sample was collected from the fill material underlying the asphaltic concrete surface. Fill material of poor quality could have been imported over the course of the development or past redevelopments of the subject site.

Vanadium, cobalt and barium exceedances were also identified in the native silty clay (BH4-21-SS4) in the eastern portion of the subject site. These levels are consistent with post-glacial Champlain Sea clay deposits which characterize much of the Ottawa region, and are considered to be native occurrences. It is considered likely that silty clay throughout the subject site will contain elevated metals background level.

- EC and SAR

Fill material beneath the asphaltic concrete in the commercial parking area (BH2-21-AU2) located within APEC3 and APEC6 was identified as containing EC and SAR exceedances. Silty clay below the fill layer (BH4-21-SS4) was identified as containing an EC exceedance, located within APEC6. It is considered likely that this will extend throughout the commercial parking area associated with the 359 Kent Street building and is considered a result of de-icing agents (road salt) applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both.

Discharge of Contaminants

It is our interpretation that the presence of contaminants on-site is a result of:

- Historical leaks and spills associated with historic heating methods (petroleum hydrocarbon impacted soil);
- Use of road salt on commercial parking area;
- Imported fill material of poor quality (metals impacted soil);
- Naturally elevated background metals concentrations associated with post-glacial Champlain Sea clay deposits.

Migration of Contaminants

Based on the results of the Phase II ESA, it is our interpretation that migration of contaminants within site soils is limited, and areas of impacted soil are generally localized to the fill layer below the asphaltic concrete across the 359 Kent Street property. Specifically, hydrocarbon impacted soils in the area of the former underground storage tank do not appear to have migrated any significant distance, and have not impacted the groundwater.

Climatic and Meteorological Conditions

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

Based on the results of the subsurface investigation, contaminants are limited to the soil at the subject site. As a result, contaminants are not considered to have the potential to significantly migrate at the subject site.

Potential for Vapour Intrusion

Given the proposed depths of the future development (which will occupy the majority of the subject site), and the removal of all impacted soil, there is negligible risk for vapour intrusion within the proposed building. Currently, there is little risk of vapour intrusion to the existing buildings due to the separation distance between the hydrocarbon impacted soil and the nearest building (359 Kent Street). Metals do not readily volatilize, and therefore metal-impacted fill are not a concern to existing buildings.

6.0 CONCLUSIONS

Assessment

A Phase II ESA was conducted for the properties at 359 Kent Street, 436 and 444 MacLaren Street, Ottawa, Ontario. The purpose of the Phase II ESA was to address areas of potential environmental concern identified during the Phase I ESA, in particular the former presence of an AST and UST, the subject site's past use as a commercial print shop and publication, the use of road salt on the commercial parking area, the presence of an interior transformer, fill material of unknown quality, as well as the presence of former retail fuel outlets and an auto repair garage to the northwest (off-site). The Phase II ESA also incorporates the findings of a previous subsurface investigation at the site, completed in 2005.

This previous Phase II ESA identified two test locations where petroleum hydrocarbons exceeded the site standards. These were situated within the former UST nest, to the northwest of the building at 359 Kent Street. No exceedances to groundwater were identified in that report.

Soil samples obtained from the boreholes and the excavation were screened using visual observations and organic vapour measurements. A total of six soil samples were submitted for laboratory analysis for a combination of BTEX, PHC, VOC, EC/SAR, PCB, and metals parameters.

Two of the soil samples exceeded MECP Table 3 standards for EC/SAR and metals parameters, with the area of soil contamination generally present in the south and southeastern portion of the site (fill material). Metals exceedances were also identified in the native silty clay, with levels of barium, vanadium and cobalt consistent with post-glacial Champlain Sea clay deposits characterizing much of the Ottawa area. The EC/SAR exceedances are considered to be a result of the use of road salt during times of snow and/or ice, and therefore, as per O.Reg. 153/04, are deemed to meet the site standard.

Groundwater samples were obtained from the monitoring wells at BH1-21, BH3S-21, BH3D-21, and BH5-21 and analyzed for a combination of BTEX and PHC, VOC and PCB parameters. All groundwater samples were in compliance with MECP Table 3 site condition standards.

Recommendations

It is our understanding that the Phase II ESA Property will be redeveloped with a multi-storey residential and commercial mixed-use building. Due to the change in land use to a more sensitive land use (commercial to residential), a record of site condition (RSC) will be required as per O.Reg 154/03.

Fill material identified as exceeding MECP Table 3 standards will need to be removed and disposed of at a licensed waste disposal site. This includes petroleum hydrocarbon impacted soil from within the former UST nest, as well as metals-impacted fill material within the parking area. This can be done at the time of site redevelopment activities. It is recommended that Paterson personnel be present on-site at the time of site redevelopment to monitor the removal of any obviously stained soils.

Prior to off-site disposal at a licenced landfill site, a leachate analysis of a representative sample of this soil must be conducted in accordance with Ontario Regulation 347/558.

Additionally, soil that does not require disposal at a licensed landfill site must be managed in accordance with Ontario Regulation 406/19 – On-Site and Excess Soil Management. Silty clay with naturally elevated metals levels can be taken to a re-use site with similar or higher levels of natural metals levels, provided it is used for a beneficial purpose.

If the monitoring wells installed on the Phase II ESA Property are not going to be used in the future, or will be destroyed during site redevelopment, they should be abandoned according to Ontario Regulation 903. The wells will be registered with the MECP under this regulation. It is our recommendation that these wells be preserved for future groundwater monitoring.

7.0 STATEMENT OF LIMITATIONS

This Phase II - Environmental Site Assessment report has been prepared in general accordance with the agreed scope-of-work, in compliance with O.Reg. 153/04 as amended by O.Reg. 269/11, and meets the requirements of CSA Z769-00. The conclusions presented herein are based on information gathered from a limited sampling and testing program. The test results represent conditions at specific test locations at the time of the field program.

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

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

This report was prepared for the sole use of Taggart Realty Management. Permission and notification from Taggart Realty Management and Paterson Group will be required to release this report to any other party.

Paterson Group Inc.

Jesse Andrechek, BASc

Adrian Menyhart, P.Eng. QP_{esa}

Report Distribution:

- Taggart Realty Management
- Paterson Group

FIGURES

FIGURE 1 – KEY PLAN

DRAWING PE5204-2 – SITE PLAN

DRAWING PE5204-3 – SURROUNDING LAND USE PLAN

DRAWING PE5204-3 – TEST HOLE LOCATION PLAN

DRAWING PE5204-4 – ANALYTICAL TESTING PLAN – SOIL (BTEX, PHC, VOC, PCB)

DRAWING PE5204-4A – CROSS SECTION A-A' – SOIL (BTEX, PHC, VOC, PCB)

DRAWING PE5204-4B – CROSS SECTION B-B' – SOIL (BTEX, PHC, VOC, PCB)

DRAWING PE5204-5 – ANALYTICAL TESTING PLAN – SOIL (METALS)

DRAWING PE5204-5A – CROSS SECTION A-A' – SOIL (METALS)

DRAWING PE5204-5B – CROSS SECTION B-B' – SOIL (METALS)

DRAWING PE5204-6 – ANALYTICAL TESTING PLAN – SOIL (EC, SAR, PH)

DRAWING PE5204-6A – CROSS SECTION A-A' – SOIL (EC, SAR, PH)

DRAWING PE5204-6B – CROSS SECTION B-B' – SOIL (EC, SAR, PH)

DRAWING PE5204-7 – ANALYTICAL TESTING PLAN – SOIL (PHC)

DRAWING PE5204-7A – CROSS SECTION A-A' – SOIL (PHC)

DRAWING PE5204-7B – CROSS SECTION B-B' – SOIL (PHC)

DRAWING PE5204-8 – ANALYTICAL TESTING PLAN – GROUNDWATER

DRAWING PE5204-8A – CROSS SECTION A-A' – GROUNDWATER

DRAWING PE5204-8B – CROSS SECTION B-B' – GROUNDWATER

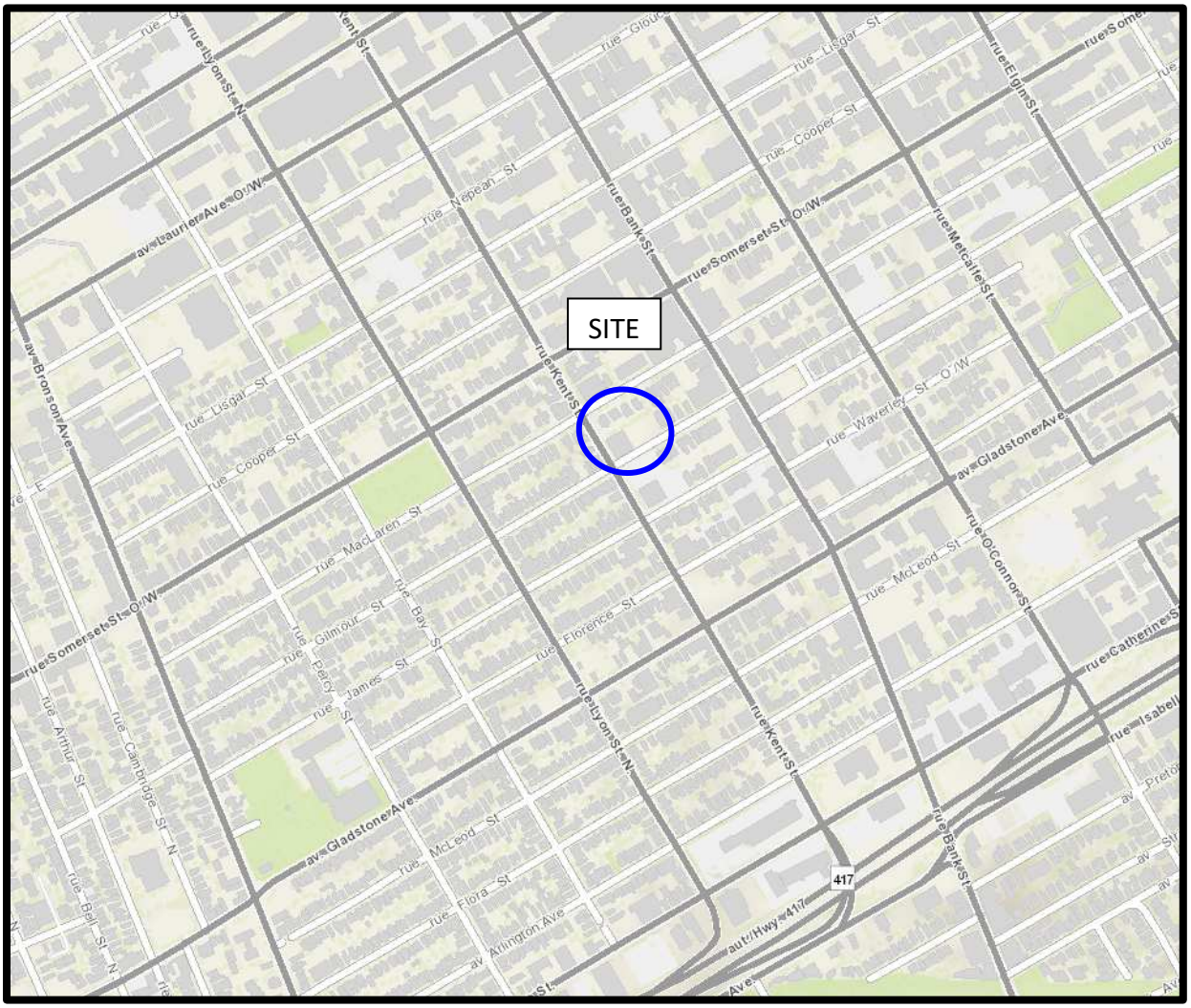
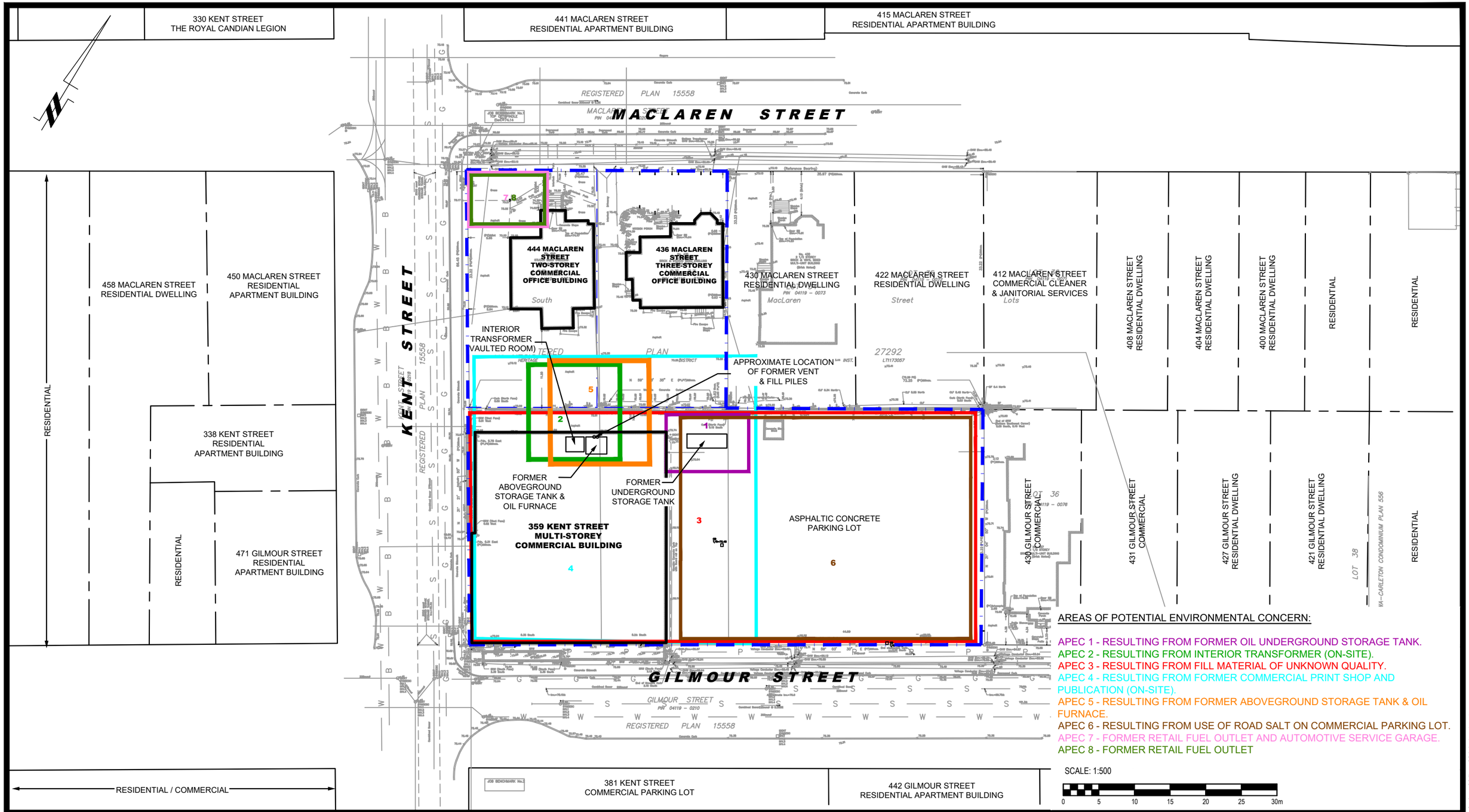


Figure 1:

KEY PLAN



AREAS OF POTENTIAL ENVIRONMENTAL CONCERN:

APEC 1 - RESULTING FROM FORMER OIL UNDERGROUND STORAGE TANK.
APEC 2 - RESULTING FROM INTERIOR TRANSFORMER (ON-SITE).
APEC 3 - RESULTING FROM FILL MATERIAL OF UNKNOWN QUALITY.
APEC 4 - RESULTING FROM FORMER COMMERCIAL PRINT SHOP AND PUBLICATION (ON-SITE).
APEC 5 - RESULTING FROM FORMER ABOVEGROUND STORAGE TANK & OIL FURNACE.
APEC 6 - RESULTING FROM USE OF ROAD SALT ON COMMERCIAL PARKING LOT.
APEC 7 - FORMER RETAIL FUEL OUTLET AND AUTOMOTIVE SERVICE GARAGE.
APEC 8 - FORMER RETAIL FUEL OUTLET

SCALE: 1:500

0 5 10 15 20 25 30m

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NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

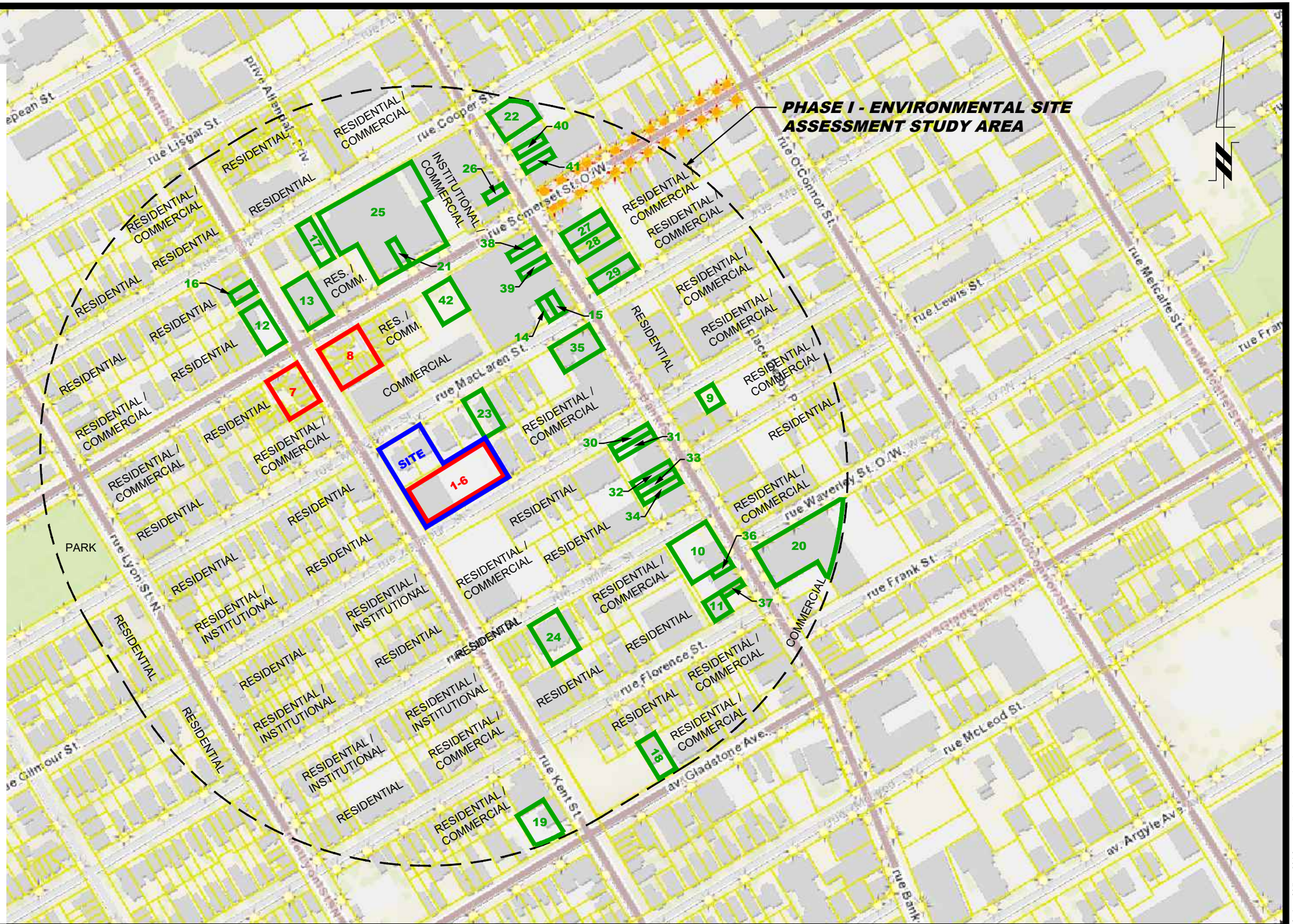
SITE PLAN

Scale: 1:500	Date: 06/2021
Drawn by: JM	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-1
Approved by: MSD	Revision No.:

p:\autocad drawings\environmental\pe52xx\pe5204\pe5204-1 site plan.dwg

POTENTIALLY CONTAMINATING ACTIVITIES:

1) ON-SITE - RESULTING FROM FORMER OIL UNDERGROUND STORAGE TANK.
2) ON-SITE - RESULTING FROM INTERIOR TRANSFORMER.
3) ON-SITE - RESULTING FROM FILL MATERIAL OF UNKNOWN QUALITY.
4) ON-SITE - RESULTING FROM FORMER COMMERCIAL PRINT SHOP.
5) ON-SITE - RESULTING FROM FORMER ABOVEGROUND STORAGE TANK & OIL FURNACE.
6) ON-SITE - RESULTING FROM USE OF ROAD SALT ON COMMERICAL PARKING LOT.
7) 328 KENT STREET - RESULTING FROM FORMER RETAIL FUEL OUTLET & AUTOMOTIVE SERVICE GARAGE.
8) 430 SOMERSET STREET WEST - RESULTING FROM FORMER RETAIL FUEL OUTLET.
9) 384 GILMOUR STREET - FORMER AUTOMOTIVE REPAIR GARAGE.
10) 394-396 BANK STREET - FORMER RETAIL FUEL OUTLET.
11) 7 FLORENCE STREET - FORMER AUTOMOTIVE REPAIR GARAGE.
12) 298 KENT STREET / 443 SOMERSET STREET WEST - FORMER RETAIL FUEL OUTLET & PRIVATE FUEL OUTLET.
13) 429 SOMERSET STREET WEST - FORMER RETAIL FUEL OUTLET & CAR RENTAL.
14) 389 MACLAREN STREET / 310 BANK STREET - FORMER DRY CLEANERS & COMMERCIAL CLEANERS.
15) 387 MACLAREN STREET - FORMER AUTOMOTIVE REPAIR GARAGE.
16) 290 KENT STREET - FORMER DRY CLEANERS.
17) 448 COOPER STREET - FORMER DRY CLEANERS.
18) 417 GLADSTONE AVENUE - AUTOMOTIVE REPAIR GARAGE.
19) 449 GLADSTONE AVENUE - COMMERCIAL CAR RENTAL.
20) 403 BANK STREET - COMMERCIAL PRINT SHOP.
21) 395 SOMERSET STREET WEST - COMMERCIAL DRY CLEANERS.
22) 263 BANK STREET - COMMERCIAL PHOTOGRAPHY SHOP.
23) 412 MACLAREN STREET - COMMERCIAL CLEANER & JANITORIAL SERVICES.
24) 50 JAMES STREET - FORMER UNDERGROUND STORAGE TANK LEAK.
25) 420-438 COOPER STREET - FORMER BORDEN DAIRY CO. (TRUCKS & STORAGE), PAINT & TRUCKS REPAIR.
26) 286 BANK STREET - FORMER PHOTOGRAPHY STATION.
27) 297 BANK STREET - FORMER PRINT SHOP.
28) 301 BANK STREET - FORMER PAINT SHOP.
29) 305 BANK STREET - FORMER PRINT SHOP.
30) 366 BANK STREET - FORMER SIGN PRINTING.
31) 370 BANK STREET - FORMER PHOTOGRAPHERS.
32) 374 BANK STREET - FORMER PAINT SHOP.
33) 378-380 BANK STREET - FORMER ELECTRICAL WORKS.
34) 384 BANK STREET - FORMER GLASS WORKS.
35) 316 BANK STREET - FORMER DRY CLEANERS.
36) 404 BANK STREET - FORMER PAINT SHOP.
37) 406 BANK STREET - FORMER PAINT SHOP.
38) 298 BANK STREET - FORMER PAINT SHOP.
39) 302 BANK STREET - FORMER PAINT SHOP.
40) 273 BANK STREET - FORMER PAINT SHOP.
41) 287 BANK STREET - FORMER CLEANERS & DRYERS.
42) 396 SOMERSET STREET WEST - FORMER RETAIL FUEL OUTLET.



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NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
359 KENT STREET, 436 AND 444 MACLAREN STREET
OTTAWA, ONTARIO

Title:
SURROUNDING LAND USE PLAN

Scale: 1:3000	Date: 06/2021
Drawn by: JM	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-2
Approved by: MSD	Revision No.:

p:\autocad drawings\environmental\pe52xx\pe5204\pe5204-2 surrounding land use plan.dwg

330 KENT STREET
THE ROYAL CANDIAN LEGION

441 MACLAREN STREET
RESIDENTIAL APARTMENT BUILDING

415 MACLAREN STREET
RESIDENTIAL APARTMENT BUILDING

REGISTERED PLAN 15558

MACLAREN STREET

BH1-21-SS5 2.29-2.90 m 12-April-2021
BTEX comply with MECP Table 3 Standards

458 MACLAREN STREET
RESIDENTIAL DWELLING

450 MACLAREN STREET
RESIDENTIAL
APARTMENT BUILDING

BH5-21-SS8 3.81-4.42 m 9-APR-2021
BTEX and PCBs comply with MECP Table 3 Standards

DUP (BH5-21-SS8) 3.81-4.42 m 9-APR-2021
BTEX complies with MECP Table 3 Standards

RESIDENTIAL

KENT STREET

REGISTERED PLAN 15558

A

BH 1-21
73.15
[62.28]
(70.08)

444 MACLAREN STREET
TWO-STOREY
COMMERCIAL
OFFICE BUILDING

436 MACLAREN STREET
THREE-STOREY
COMMERCIAL
OFFICE BUILDING

422 MACLAREN STREET
RESIDENTIAL DWELLING

408 MACLAREN STREET
RESIDENTIAL DWELLING

404 MACLAREN STREET
RESIDENTIAL DWELLING

400 MACLAREN STREET
RESIDENTIAL DWELLING

RESIDENTIAL

RESIDENTIAL

MW05-1 SS-7 3.05-3.66 m 24-Sept-2005
BTEX comply with MECP Table 3 standards

BH05-2 SS-4 2.53-2.69 m 7-Oct-2005
BTEX comply with MECP Table 3 standards

BH 5-21
73.21
(70.46)

APPROXIMATE LOCATION
OF FORMER VENT
& FILL PIPES

FORMER
ABOVEGROUND
STORAGE TANK &
OIL FURNACE

B'

BH 3S-21
72.61
[63.62]
(70.70)

BH 3D-21
72.61
[63.62]
(63.65)

BH3-21-SS7 3.81–4.42 m 9-April-2021
VOCs comply with MECP Table 3 Standards

MW05-6 SS-4 1.83-2.44 m 11-Oct-2005
BTEX comply with MECP Table 3 standards

MW05-6 SS-5 2.44-2.70 m 11-Oct-2005
BTEX comply with MECP Table 3 standards

BH05-1 SS-3 1.37-1.98 m 7-Oct-2005
BTEX comply with MECP Table 3 standards

MW05-5 SS-6 3.05-3.66 m 24-Sept-2005
BTEX comply with MECP Table 3 standards

MW05-2 SS-6 3.05-3.66 m 24-Sept-2005
BTEX comply with MECP Table 3 standards

MW05-7 SS-4 1.83-2.44 m 11-Oct-2005
BTEX comply with MECP Table 3 standards

MW05-7 SS-5 2.44-2.70 m 11-Oct-2005
BTEX comply with MECP Table 3 standards

MW05-4 SS-6 3.05-3.66 m 24-Sept-2005
BTEX comply with MECP Table 3 standards

MW05-3 SS-7 3.66-4.27 m 24-Sept-2005
BTEX comply with MECP Table 3 standards

INTERIOR
TRANSFORMER
(VAULTED ROOM)

MW 05-1
MW 05-7
MW 05-6
BH 05-2
BH 05-1
MW 05-5
MW 05-4
MW 05-2
MW 05-3

FORMER
UNDERGROUND
STORAGE TANK

APPROX. LOCATION OF
SUSPECTED HEATING OIL
UNDERGROUND STORAGE
TANK BASED ON 1955 SITE PLAN

359 KENT STREET
MULTI-STOREY
COMMERCIAL BUILDING

BH 4-21
72.64
[60.83]

BH 2-21
72.67
[63.86]

A'

B

GILMOUR STREET

REGISTERED PLAN 15558

LEGEND:

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- MULTI LEVEL MONITORING WELL LOCATION
- BOREHOLE BY OTHERS LOCATION (JACQUES WHITFORD, 2005)
- MONITORING WELL BY OTHERS LOCATION (JACQUES WHITFORD, 2005)
- 72.61 GROUND SURFACE ELEVATION (m)
- [63.62] BEDROCK SURFACE ELEVATION (m)
- (63.65) GROUNDWATER SURFACE ELEVATION (m) (APRIL 19, 2021)
- A—A' CROSS SECTION

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

0 5 10 15 20 25 30m

SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

381 KENT STREET
COMMERCIAL PARKING LOT

442 GILMOUR STREET
RESIDENTIAL APARTMENT BUILDING

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NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - SOIL (BTEX, VOCs, PCBs)

Scale: 1:500	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-4
Approved by: MSD	Revision No.:

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BH1-21-SS5 2.29-2.90 m 12-April-2021
BTEX and PHC(F1-F4) comply with MECP Table 3 Standards

BH3-21-SS7 3.81–4.42 m 9-April-2021
VOCs and PHC(F1-F4) comply with MECP Table 3 Standards

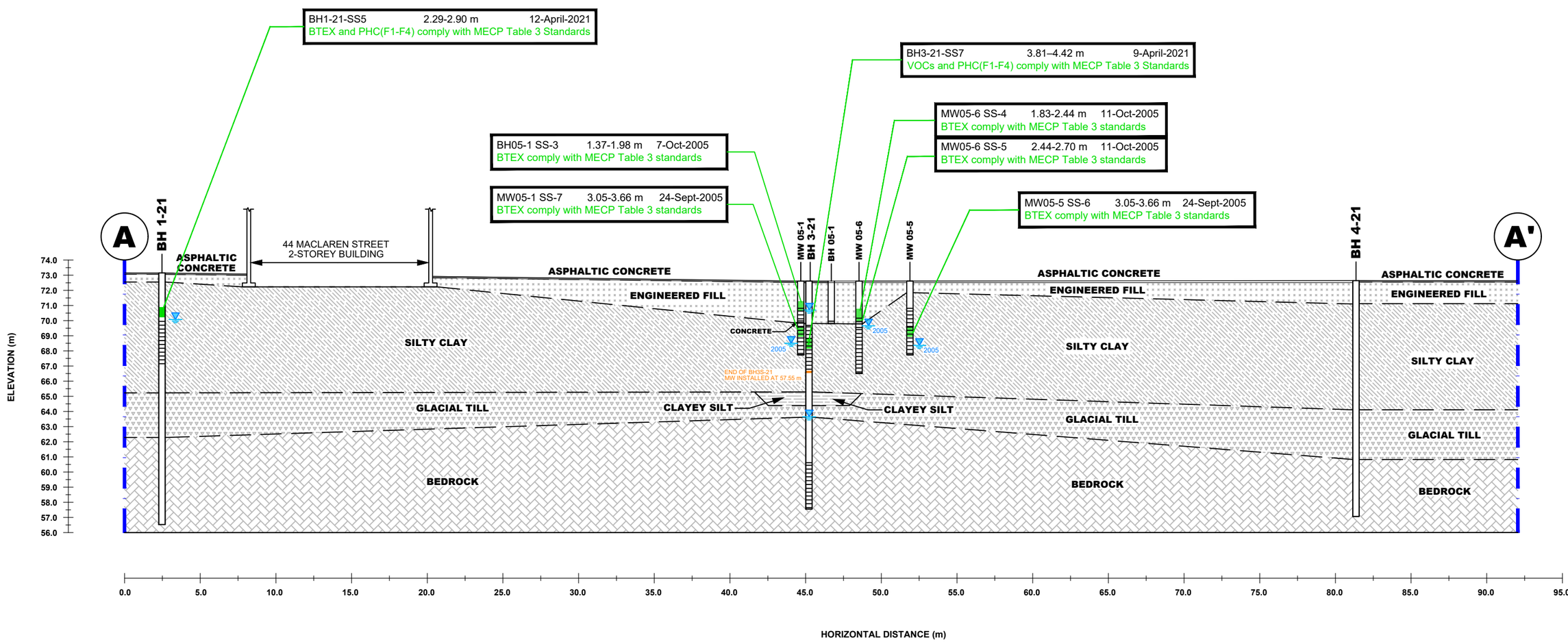
MW05-6 SS-4 1.83-2.44 m 11-Oct-2005
BTEX comply with MECP Table 3 standards

MW05-6 SS-5 2.44-2.70 m 11-Oct-2005
BTEX comply with MECP Table 3 standards

BH05-1 SS-3 1.37-1.98 m 7-Oct-2005
BTEX comply with MECP Table 3 standards

MW05-1 SS-7 3.05-3.66 m 24-Sept-2005
BTEX comply with MECP Table 3 standards

MW05-5 SS-6 3.05-3.66 m 24-Sept-2005
BTEX comply with MECP Table 3 standards



SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT

359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL (BTEX, VOCs, PCBs)

Scale: AS SHOWN	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-4A
Approved by: MSD	Revision No.:

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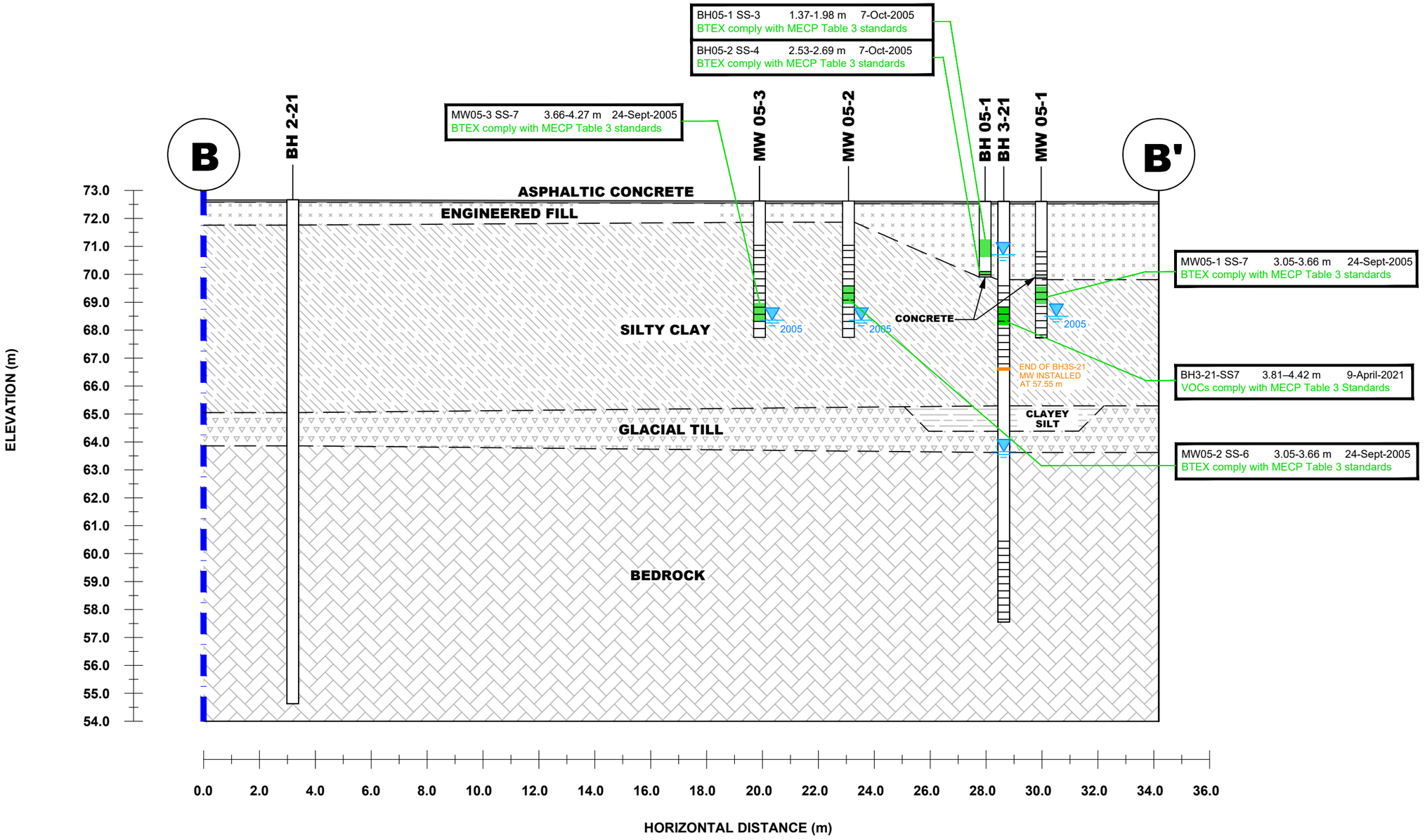

SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT

359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION B-B' - SOIL (BTEX, VOCs, PCBs)

Scale: AS SHOWN	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-4B
Approved by: MSD	Revision No.:

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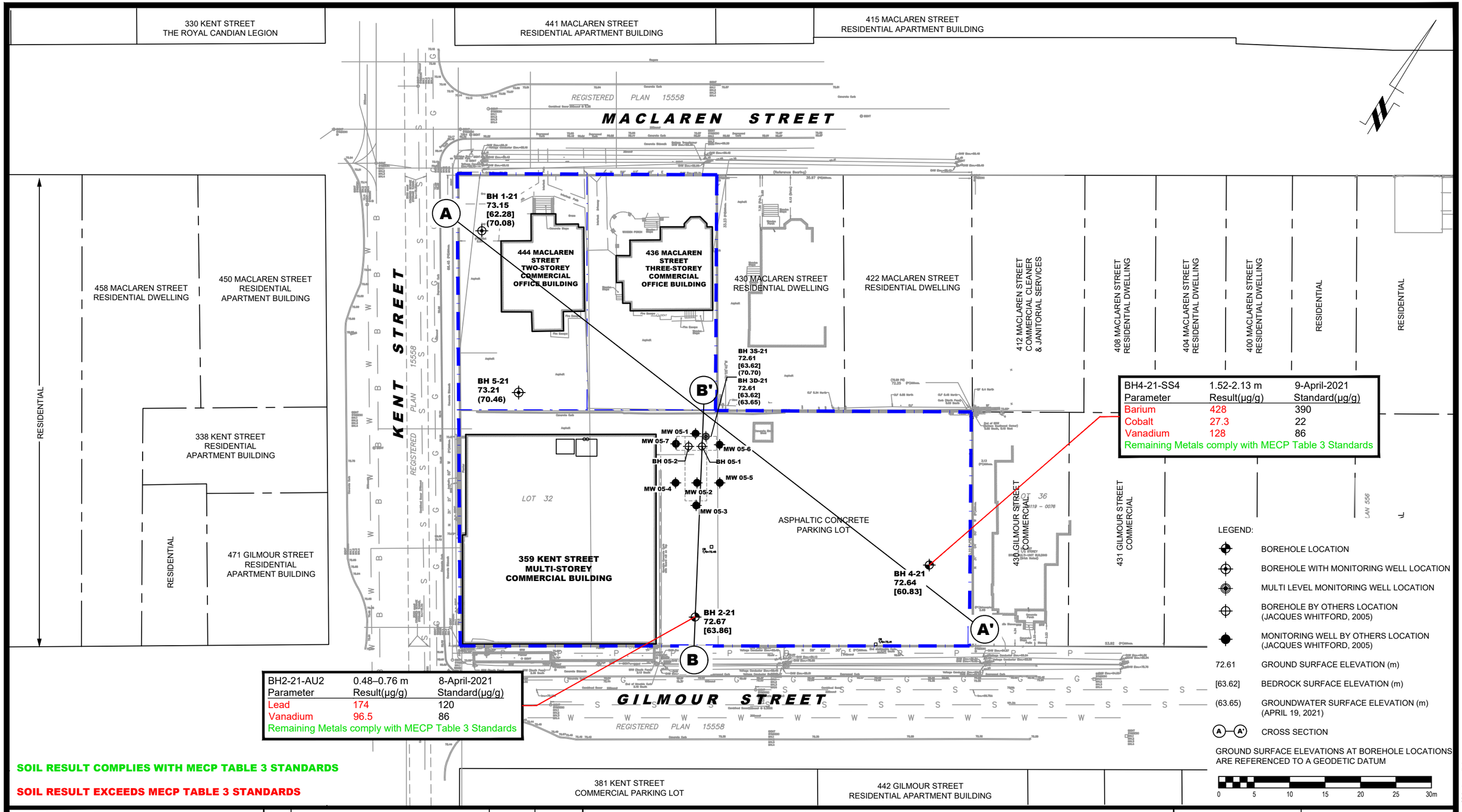

BH4-21-SS4	1.52-2.13 m	9-April-2021
Parameter	Result(µg/g)	Standard(µg/g)
Barium	428	390
Cobalt	27.3	22
Vanadium	128	86
Remaining Metals comply with MECP Table 3 Standards		

BH2-21-AU2	0.48–0.76 m	8-April-2021
Parameter	Result(µg/g)	Standard(µg/g)
Lead	174	120
Vanadium	96.5	86
Remaining Metals comply with MECP Table 3 Standards		

LEGEND:

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- MULTI LEVEL MONITORING WELL LOCATION
- BOREHOLE BY OTHERS LOCATION (JACQUES WHITFORD, 2005)
- MONITORING WELL BY OTHERS LOCATION (JACQUES WHITFORD, 2005)
- 72.61 GROUND SURFACE ELEVATION (m)
- [63.62] BEDROCK SURFACE ELEVATION (m)
- (63.65) GROUNDWATER SURFACE ELEVATION (m) (APRIL 19, 2021)
- A—A' CROSS SECTION

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

0 5 10 15 20 25 30m

SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

patersongroup
consulting engineers

154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT

359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - SOIL (METALS)

Scale: 1:500	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-5
Approved by: MSD	Revision No.:

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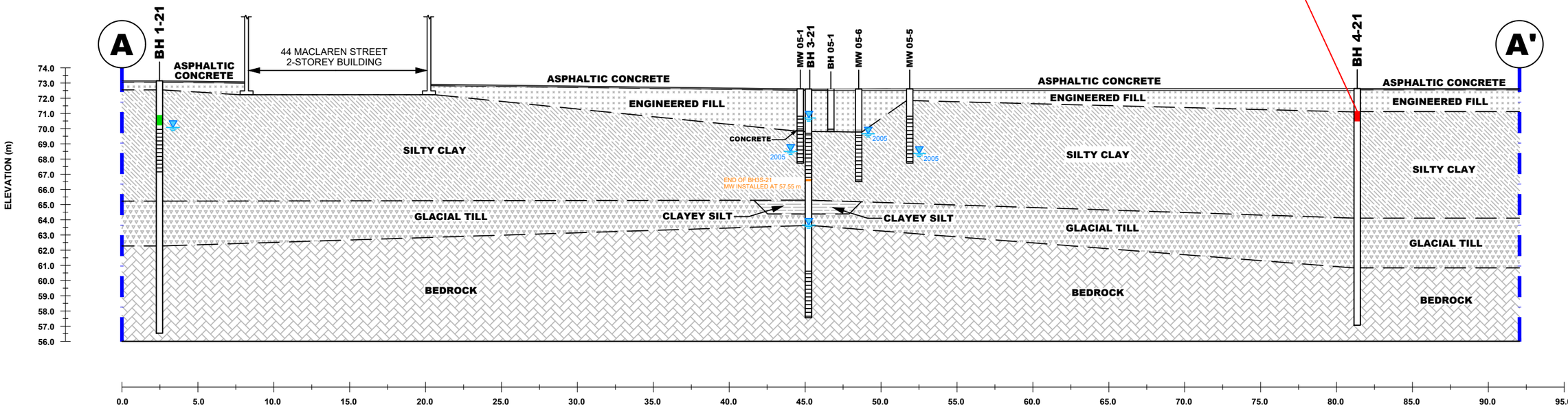
BH4-21-SS4	1.52-2.13 m	9-April-2021
Parameter	Result(µg/g)	Standard(µg/g)
Barium	428	390
Cobalt	27.3	22
Vanadium	128	86
Remaining Metals comply with MECP Table 3 Standards		



SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

patersongroup
consulting engineers

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Ottawa, Ontario K2E 7J5
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NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT

359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL (METALS)

Scale: AS SHOWN	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-5A
Approved by: MSD	Revision No.:

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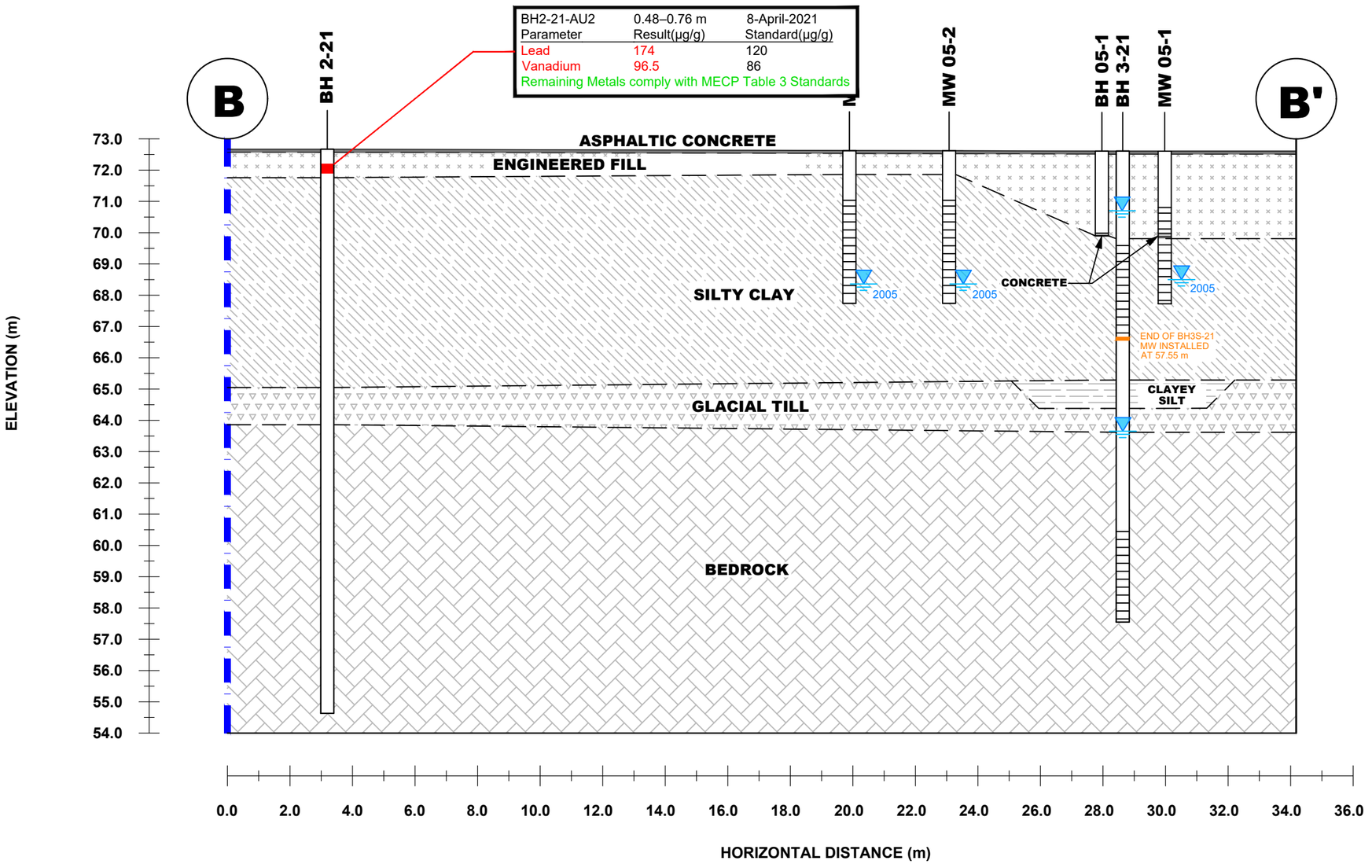

SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

patersongroup
consulting engineers

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NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT

359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION B-B' - SOIL (METALS)

Scale: AS SHOWN	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-5B
Approved by: MSD	Revision No.:

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330 KENT STREET
THE ROYAL CANDIAN LEGION

441 MACLAREN STREET
RESIDENTIAL APARTMENT BUILDING

415 MACLAREN STREET
RESIDENTIAL APARTMENT BUILDING

458 MACLAREN STREET
RESIDENTIAL DWELLING

450 MACLAREN STREET
RESIDENTIAL
APARTMENT BUILDING

RESIDENTIAL

RESIDENTIAL

REGISTERED PLAN 15558

MACLAREN STREET

KENT STREET

REGISTERED PLAN 15558

A

A'

B

B'

BH 1-21
73.15
[62.28]
(70.08)

444 MACLAREN STREET
TWO-STOREY
COMMERCIAL
OFFICE BUILDING

436 MACLAREN STREET
THREE-STOREY
COMMERCIAL
OFFICE BUILDING

430 MACLAREN STREET
RESIDENTIAL DWELLING

BH 3S-21
72.61
[63.62]
(70.70)

BH 3D-21
72.61
[63.62]
(63.65)

BH 5-21
73.21
(70.46)

MW 05-1
MW 05-7
MW 05-6
BH 05-2
BH 05-1
MW 05-5
MW 05-4
MW 05-2
MW 05-3

LOT 32

LOT 36
PIN 04119 – 0076

ASPHALTIC CONCRETE
PARKING LOT

359 KENT STREET
MULTI-STOREY
COMMERCIAL BUILDING

BH 4-21
72.64
[60.83]

BH 2-21
72.67
[63.86]

GILMOUR STREET

REGISTERED PLAN 15558

408 MACLAREN STREET
RESIDENTIAL DWELLING

404 MACLAREN STREET
RESIDENTIAL DWELLING

400 MACLAREN STREET
RESIDENTIAL DWELLING

RESIDENTIAL

RESIDENTIAL

BH4-21-SS4	1.52-2.13 m	9-April-2021
Parameter	Result(µS/cm)	Standard(µS/cm)
EC	1020	700
BH4-21-SS4	1.52-2.13 m	9-APR-2021
SAR complies with MECP Table 3 Standards		
BH4-21-SS7	3.81-4.42 m	9-APR-2021
pH complies with MECP Table 3 Standards		

BH2-21-AU2	0.48–0.76 m	8-April-2021
Parameter	Result(µg/g)	Standard(µg/g)
SAR	6.54	5.0
BH2-21-AU2	0.48–0.76 m	8-April-2021
Parameter	Result(µS/cm)	Standard(µS/cm)
EC	3230	700

SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

LEGEND:

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- MULTI LEVEL MONITORING WELL LOCATION
- BOREHOLE BY OTHERS LOCATION (JACQUES WHITFORD, 2005)
- MONITORING WELL BY OTHERS LOCATION (JACQUES WHITFORD, 2005)
- 72.61 GROUND SURFACE ELEVATION (m)
- [63.62] BEDROCK SURFACE ELEVATION (m)
- (63.65) GROUNDWATER SURFACE ELEVATION (m) (APRIL 19, 2021)
- A—A' CROSS SECTION

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

0 5 10 15 20 25 30m

381 KENT STREET
COMMERCIAL PARKING LOT

442 GILMOUR STREET
RESIDENTIAL APARTMENT BUILDING

patersongroup
consulting engineers

154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT

359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - SOIL (EC, SAR, pH)

Scale: 1:500	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-6
Approved by: MSD	Revision No.:

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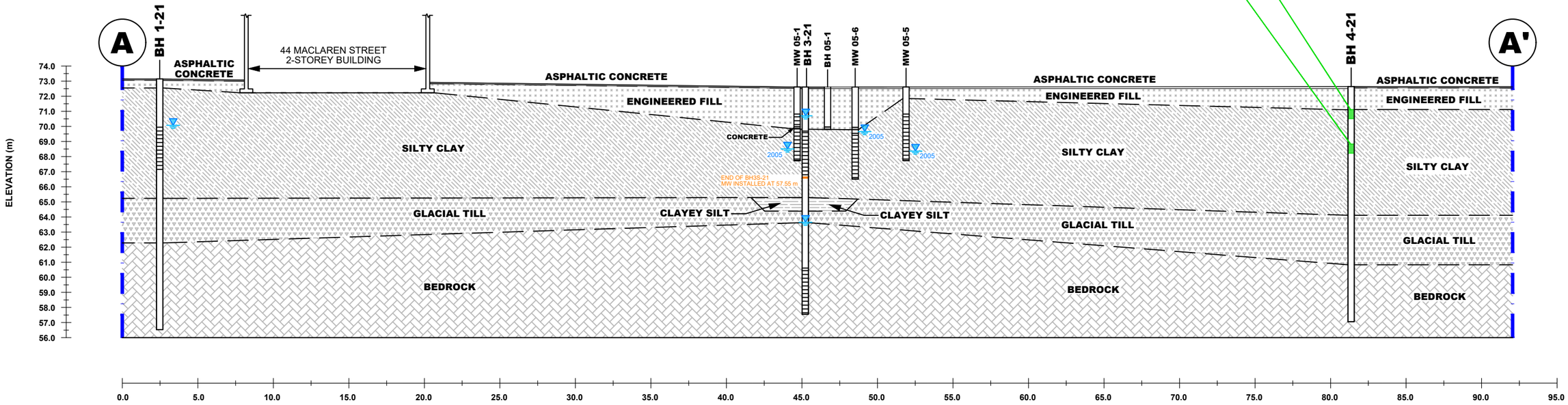
BH4-21-SS4	1.52-2.13 m	9-April-2021
Parameter	Result(µS/cm)	Standard(µS/cm)
EC	1020	700
BH4-21-SS4	1.52-2.13 m	9-APR-2021
SAR complies with MECP Table 3 Standards		
BH4-21-SS7	3.81-4.42 m	9-APR-2021
pH complies with MECP Table 3 Standards		



SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

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consulting engineers

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NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT

359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL (EC, SAR, pH)

Scale: AS SHOWN	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-6A
Approved by: MSD	Revision No.:

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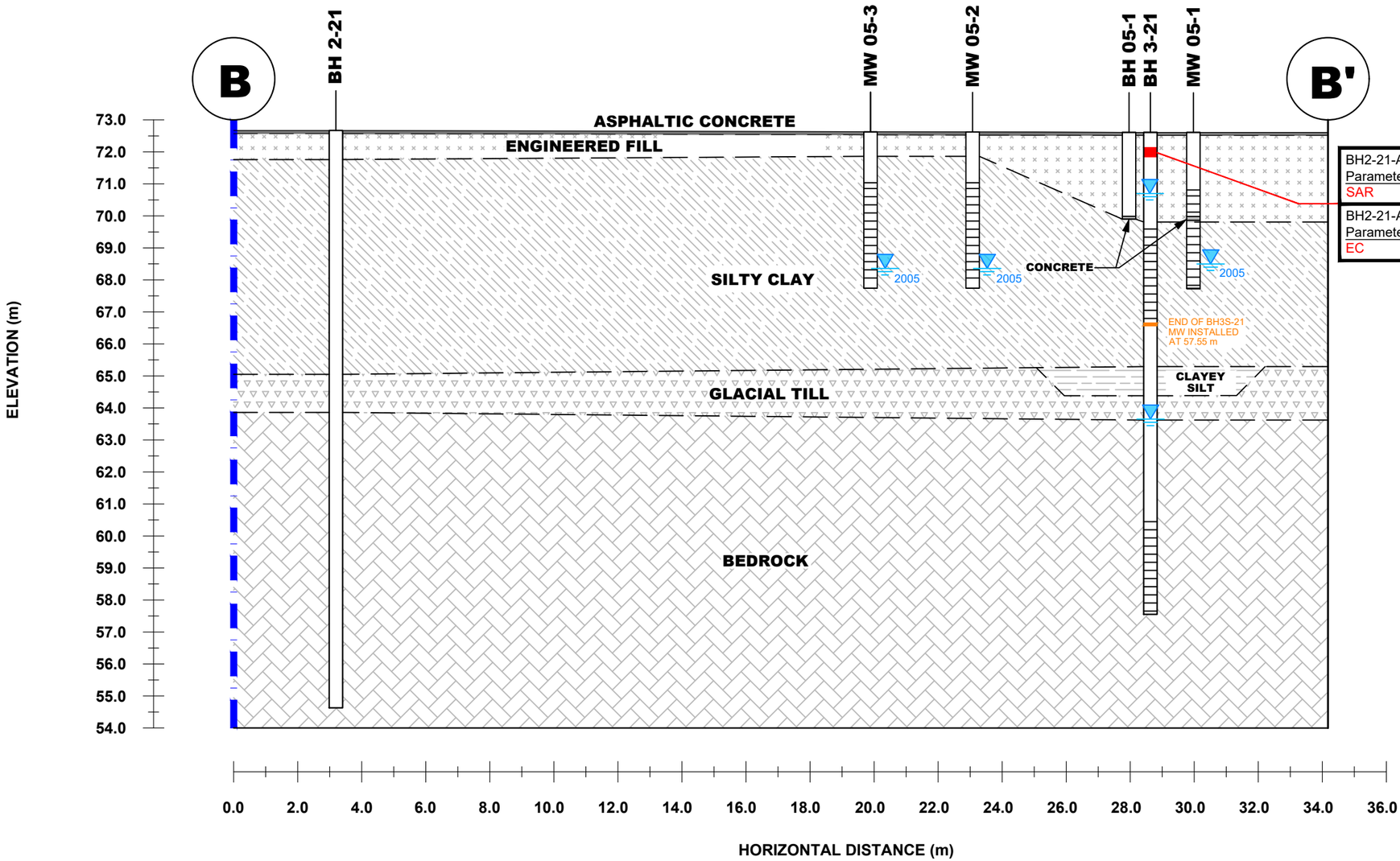

BH2-21-AU2	0.48–0.76 m	8-April-2021
Parameter	Result(µg/g)	Standard(µg/g)
SAR	6.54	5.0

BH2-21-AU2	0.48–0.76 m	8-April-2021
Parameter	Result(µS/cm)	Standard(µS/cm)
EC	3230	700

SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

patersongroup
consulting engineers

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NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT

359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION B-B' - SOIL (EC, SAR, pH)

Scale: AS SHOWN	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-6B
Approved by: MSD	Revision No.:

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330 KENT STREET
THE ROYAL CANDIAN LEGION

441 MACLAREN STREET
RESIDENTIAL APARTMENT BUILDING

415 MACLAREN STREET
RESIDENTIAL APARTMENT BUILDING

MACLAREN STREET

REGISTERED PLAN 15558

BH1-21-SS5 2.29-2.90 m 12-April-2021
PHC(F1-F4) comply with MECP Table 3 Standards

458 MACLAREN STREET
RESIDENTIAL DWELLING

450 MACLAREN STREET
RESIDENTIAL
APARTMENT BUILDING

BH5-21-SS8 3.81-4.42 m 9-APR-2021
PHC(F1-F4) comply with MECP Table 3 Standards

RESIDENTIAL

KENT STREET

REGISTERED PLAN 15558

MW05-7 SS-4 1.83-2.44 m 11-Oct-2005
PHC(F1-F4) comply with MECP Table 3 standards

MW05-7 SS-5 2.44-2.70 m 11-Oct-2005
PHC(F1-F4) comply with MECP Table 3 standards

MW05-4 SS-6 3.05-3.66 m 24-Sept-2005
PHC(F1-F4) comply with MECP Table 3 standards

MW05-2 SS-6 3.05-3.66 m 24-Sept-2005
PHC(F1-F4) comply with MECP Table 3 standards

MW05-3 SS-7 3.66-4.27 m 24-Sept-2005
PHC(F1-F4) comply with MECP Table 3 standards

RESIDENTIAL

A

B

B'

A'

BH 1-21
73.15
[62.28]
(70.08)

444 MACLAREN STREET
TWO-STOREY
COMMERCIAL
OFFICE BUILDING

436 MACLAREN STREET
THREE-STOREY
COMMERCIAL
OFFICE BUILDING

BH 5-21
73.21
(70.46)

APPROXIMATE LOCATION OF FORMER VENT & FILL PIPES

FORMER ABOVEGROUND STORAGE TANK & OIL FURNACE

INTERIOR TRANSFORMER (VAULTED ROOM)

359 KENT STREET
MULTI-STOREY
COMMERCIAL BUILDING

BH 3S-21
72.61
[63.62]
(70.70)

BH 3D-21
72.61
[63.62]
(63.65)

MW 05-1
MW 05-7
MW 05-6
BH 05-2
BH 05-1
MW 05-5
MW 05-4
MW 05-2
MW 05-3

FORMER UNDERGROUND STORAGE TANK

APPROX. LOCATION OF SUSPECTED HEATING OIL UNDERGROUND STORAGE TANK BASED ON 1955 SITE PLAN

BH 4-21
72.64
[60.83]

BH 2-21
72.67
[63.86]

MW05-1 SS-7 3.05-3.66 m 24-Sept-2005
PHC(F1-F4) comply with MECP Table 3 standards

BH3-21-SS7 3.81–4.42 m 9-April-2021
PHC(F1-F4) comply with MECP Table 3 Standards

BH05-1 SS-3	1.37-1.98 m	7-Oct-2005
Parameter	Result (µg/g)	Standard (µg/g)
PHC F2	290	98
PHC F3	770	300

PHC(F1,F4) comply with MECP Table 3 standards

MW05-6 SS-4 1.83-2.44 m 11-Oct-2005
PHC(F1-F4) comply with MECP Table 3 standards

MW05-6 SS-5 2.44-2.70 m 11-Oct-2005
PHC(F1-F4) comply with MECP Table 3 standards

MW05-5 SS-6 3.05-3.66 m 24-Sept-2005
PHC(F1-F4) comply with MECP Table 3 standards

BH05-2 SS-4	2.53-2.69 m	7-Oct-2005
Parameter	Result (µg/g)	Standard (µg/g)
PHC F2	140	98
PHC F3	560	300

PHC(F1,F4) comply with MECP Table 3 standards

408 MACLAREN STREET
RESIDENTIAL DWELLING

404 MACLAREN STREET
RESIDENTIAL DWELLING

400 MACLAREN STREET
RESIDENTIAL DWELLING

RESIDENTIAL

RESIDENTIAL

LOT 36

PLAN 556

GILMOUR STREET

REGISTERED PLAN 15558

LEGEND:

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- MULTI LEVEL MONITORING WELL LOCATION
- BOREHOLE BY OTHERS LOCATION (JACQUES WHITFORD, 2005)
- MONITORING WELL BY OTHERS LOCATION (JACQUES WHITFORD, 2005)
- 72.61 GROUND SURFACE ELEVATION (m)
- [63.62] BEDROCK SURFACE ELEVATION (m)
- (63.65) GROUNDWATER SURFACE ELEVATION (m) (APRIL 19, 2021)
- A—A' CROSS SECTION

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

0 5 10 15 20 25 30m

SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

381 KENT STREET
COMMERCIAL PARKING LOT

442 GILMOUR STREET
RESIDENTIAL APARTMENT BUILDING

patersongroup
consulting engineers

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Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - SOIL (PHCs)

Scale: 1:500	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-7
Approved by: MSD	Revision No.:

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BH1-21-SS5 2.29-2.90 m 12-April-2021
PHC(F1-F4) comply with MECP Table 3 Standards

BH3-21-SS7 3.81–4.42 m 9-April-2021
PHC(F1-F4) comply with MECP Table 3 Standards

BH05-1 SS-3 1.37-1.98 m 7-Oct-2005

Parameter	Result (µg/g)	Standard (µg/g)
PHC F2	290	98
PHC F3	770	300

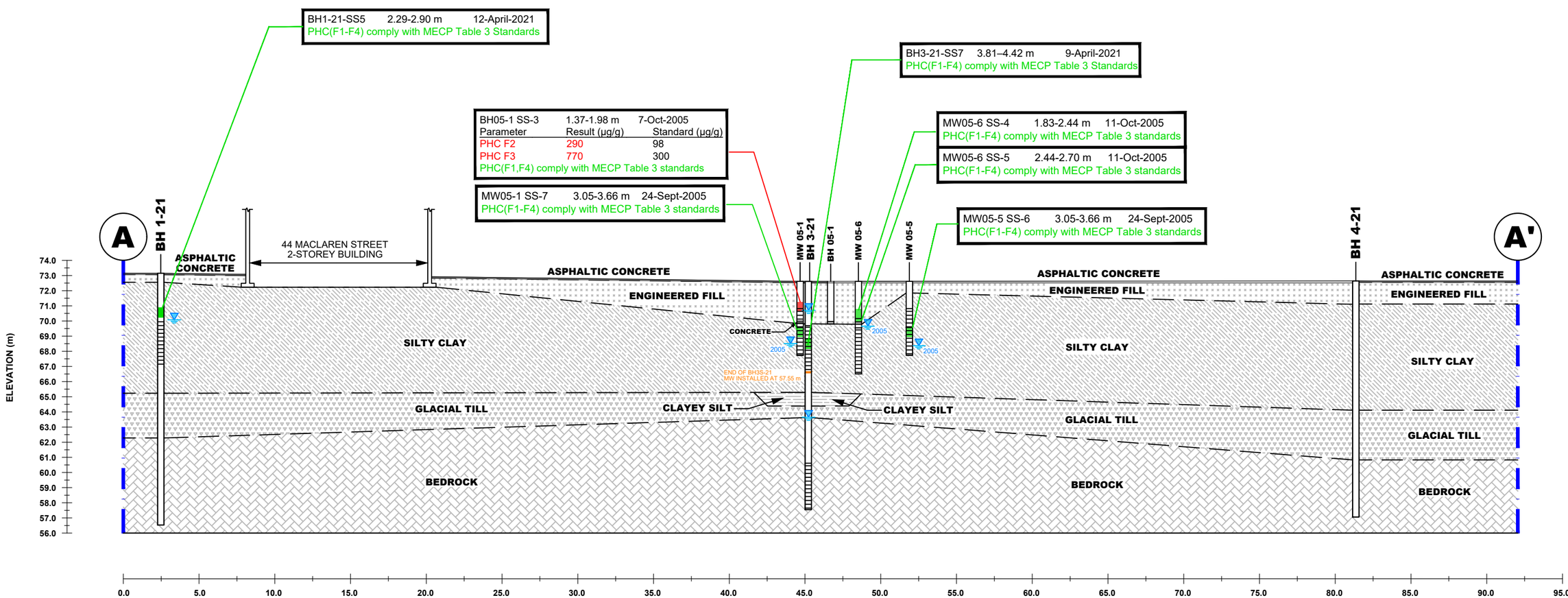
PHC(F1,F4) comply with MECP Table 3 standards

MW05-6 SS-4 1.83-2.44 m 11-Oct-2005
PHC(F1-F4) comply with MECP Table 3 standards

MW05-6 SS-5 2.44-2.70 m 11-Oct-2005
PHC(F1-F4) comply with MECP Table 3 standards

MW05-1 SS-7 3.05-3.66 m 24-Sept-2005
PHC(F1-F4) comply with MECP Table 3 standards

MW05-5 SS-6 3.05-3.66 m 24-Sept-2005
PHC(F1-F4) comply with MECP Table 3 standards



SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

patersongroup
consulting engineers
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Ottawa, Ontario K2E 7J5
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NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT

359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL (PHCs)

Scale: AS SHOWN	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-7A
Approved by: MSD	Revision No.:

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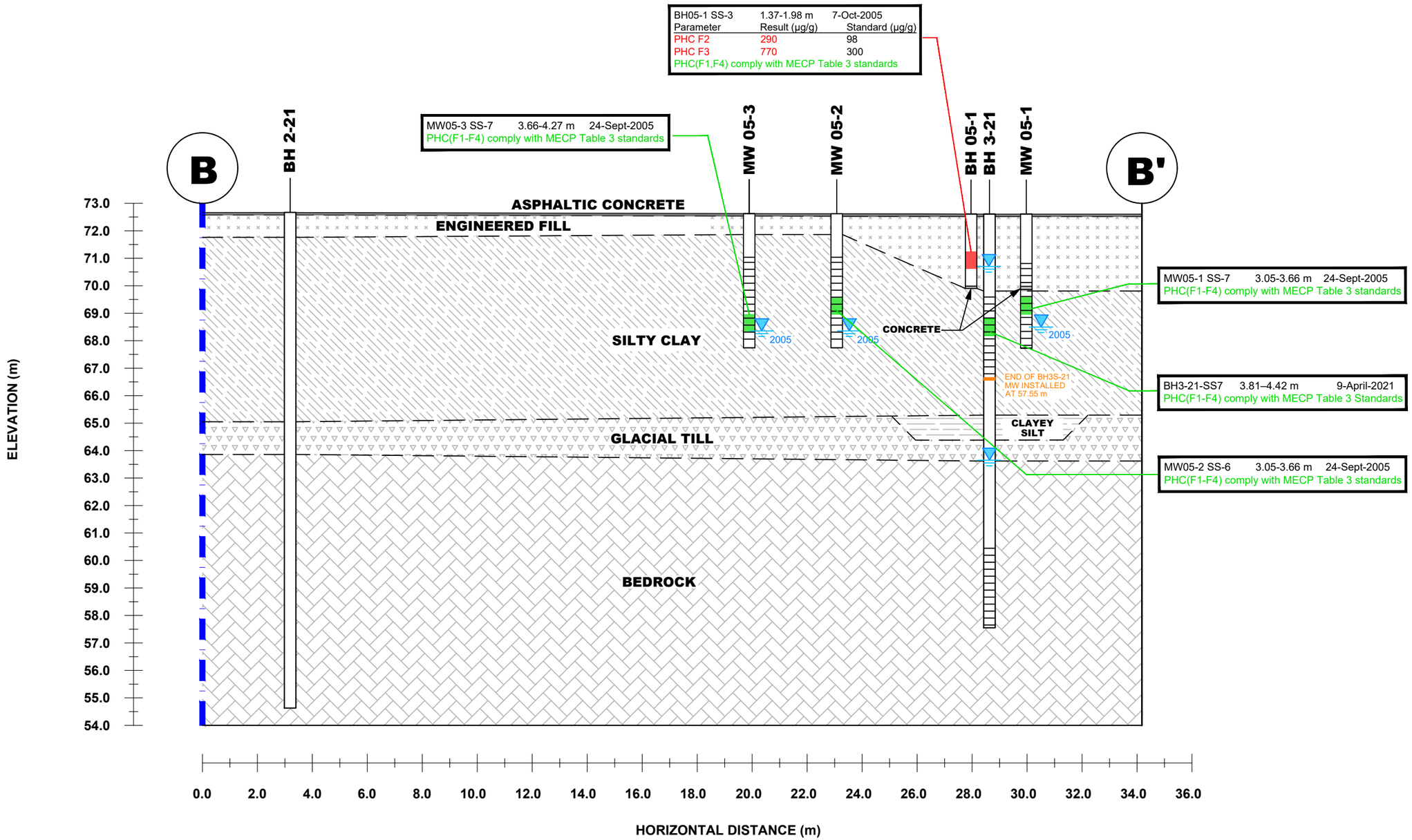

SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT

359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

CROSS SECTION B-B' - SOIL (PHCs)

Scale: AS SHOWN	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-7B
Approved by: MSD	Revision No.:

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330 KENT STREET
THE ROYAL CANDIAN LEGION

441 MACLAREN STREET
RESIDENTIAL APARTMENT BUILDING

415 MACLAREN STREET
RESIDENTIAL APARTMENT BUILDING

REGISTERED PLAN 15558

MACLAREN STREET

KENT STREET

BH1-21-GW1 3.16–6.21 m 19-April-2021
BTEX and PHC(F1-F4) comply with MECP Table 3 Standards

BH 1-21
73.15
[62.28]
(70.08)

444 MACLAREN STREET
TWO-STOREY
COMMERCIAL
OFFICE BUILDING

436 MACLAREN STREET
THREE-STOREY
COMMERCIAL
OFFICE BUILDING

430 MACLAREN STREET
RESIDENTIAL DWELLING

458 MACLAREN STREET
RESIDENTIAL DWELLING

450 MACLAREN STREET
RESIDENTIAL
APARTMENT BUILDING

RESIDENTIAL

MW05-1 1.40-4.45 m 28-Sept-2005
BTEX and PHC(F1-F4) comply with MECP Table 3 standards

BH3S-21-GW1 3.06–6.11 m 19-April-2021
VOCs and PHC(F1-F4) comply with MECP Table 3 Standards

DUP (BH3S-21-GW1) 3.06–6.11 m 19-April-2021
VOCs and PHC(F1-F4) comply with MECP Table 3 Standards

BH3D-21-GW1 11.99–15.04 m 19-April-2021
VOCs and PHC(F1-F4) comply with MECP Table 3 Standards

408 MACLAREN STREET
RESIDENTIAL DWELLING

404 MACLAREN STREET
RESIDENTIAL DWELLING

400 MACLAREN STREET
RESIDENTIAL DWELLING

RESIDENTIAL

RESIDENTIAL

BH 3S-21
72.61
[63.62]
(70.70)

BH 3D-21
72.61
[63.62]
(63.65)

B'

BH 5-21
73.21
(70.46)

BH5-21-GW1 3.12–6.17 m 19-April-2021
VOCs, PHC(F1-F4) and PCBs comply with MECP Table 3 Standards

MW05-7 2.68-5.73 m 13-Oct-2005
BTEX and PHC(F1-F4) comply with MECP Table 3 standards

MW05-2 1.56-4.61 m 28-Sept-2005
BTEX and PHC(F1-F4) comply with MECP Table 3 standards

MW05-4 1.48-4.53 m 28-Sept-2005
BTEX and PHC(F1-F4) comply with MECP Table 3 standards

MW05-3 1.56-4.61 m 28-Sept-2005
BTEX and PHC(F1-F4) comply with MECP Table 3 standards

MW 05-1
MW 05-7
MW 05-6
BH 05-2
BH 05-1
MW 05-5
MW 05-4
MW 05-2
MW 05-3

MW05-6 3.16-6.21 m 13-Oct-2005
BTEX and PHC(F1-F4) comply with MECP Table 3 standards

MW05-5 1.56-4.61 m 28-Sept-2005
BTEX and PHC(F1-F4) comply with MECP Table 3 standards

LOT 32

ASPHALTIC CONCRETE
PARKING LOT

359 KENT STREET
MULTI-STOREY
COMMERCIAL BUILDING

BH 4-21
72.64
[60.83]

BH 2-21
72.67
[63.86]

A

A'

B

GILMOUR STREET

REGISTERED PLAN 15558

LEGEND:

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- MULTI LEVEL MONITORING WELL LOCATION
- BOREHOLE BY OTHERS LOCATION (JACQUES WHITFORD, 2005)
- MONITORING WELL BY OTHERS LOCATION (JACQUES WHITFORD, 2005)
- 72.61 GROUND SURFACE ELEVATION (m)
- [63.62] BEDROCK SURFACE ELEVATION (m)
- (63.65) GROUNDWATER SURFACE ELEVATION (m) (APRIL 19, 2021)
- A—A' CROSS SECTION

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

0 5 10 15 20 25 30m

GROUNDWATER RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

GROUNDWATER RESULT EXCEEDS MECP TABLE 3 STANDARDS

381 KENT STREET
COMMERCIAL PARKING LOT

442 GILMOUR STREET
RESIDENTIAL APARTMENT BUILDING

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Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
359 KENT STREET, 436 AND 444 MACLAREN STREET
OTTAWA, ONTARIO

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

Scale: 1:500	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-8
Approved by: MSD	Revision No.:

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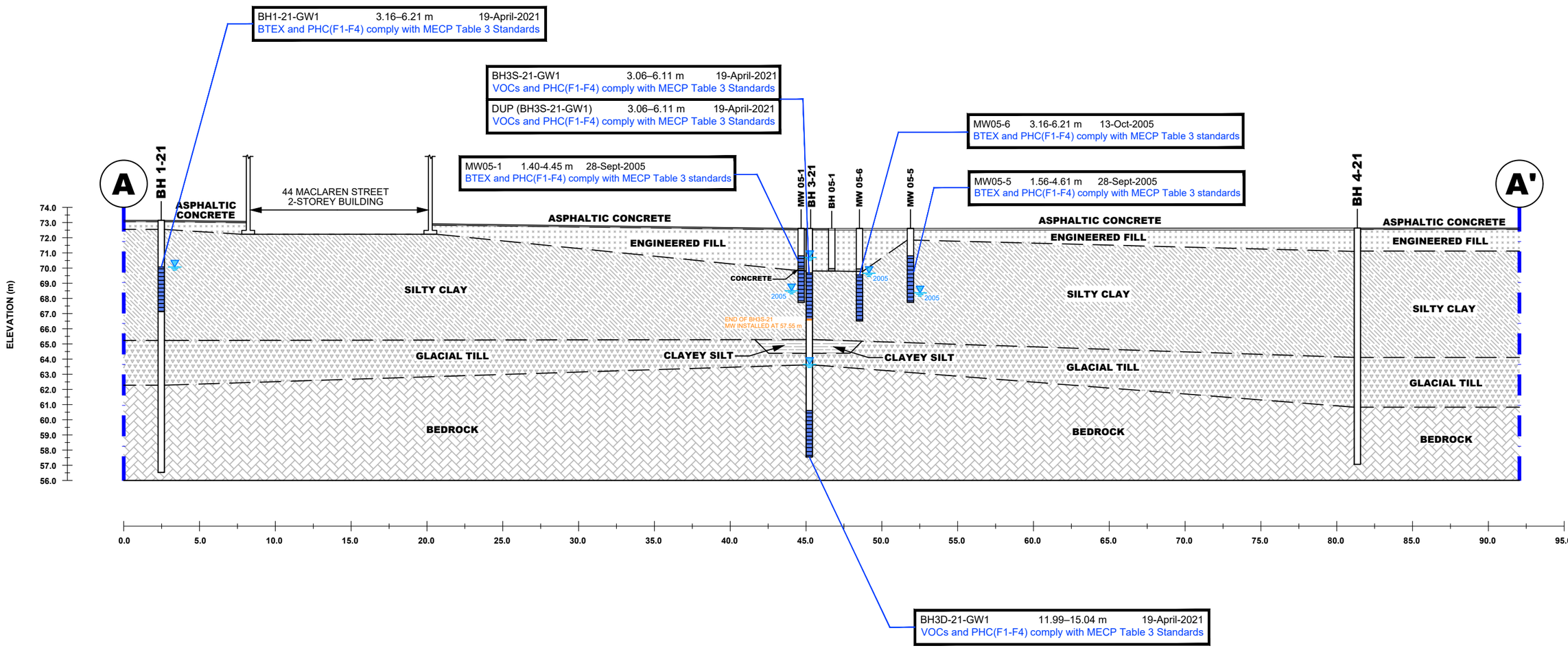

GROUNDWATER RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

GROUNDWATER RESULT EXCEEDS MECP TABLE 3 STANDARDS

patersongroup
consulting engineers

154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT

359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

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

Scale: AS SHOWN	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-8A
Approved by: MSD	Revision No.:

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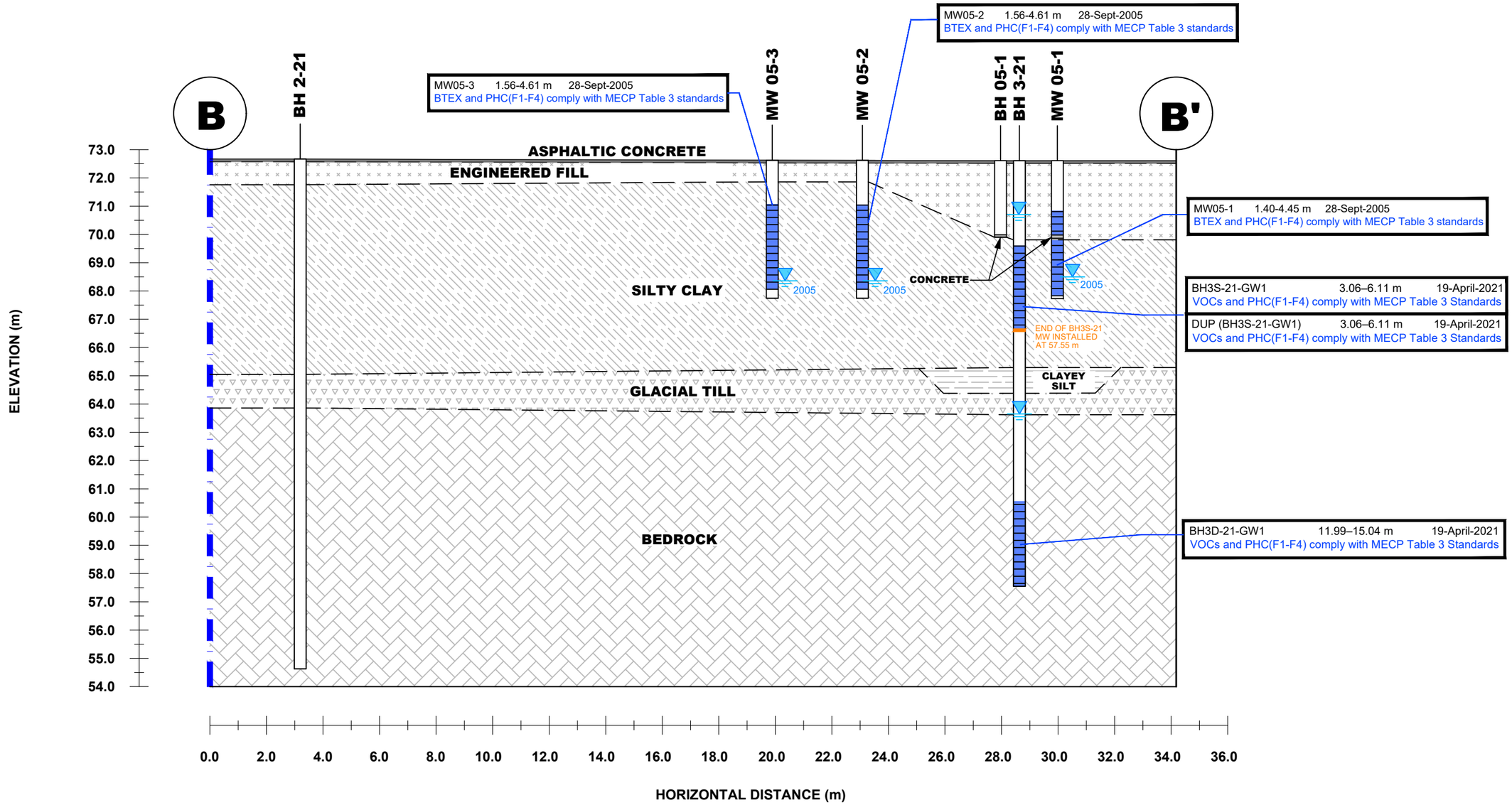

GROUNDWATER RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

TAGGART REALTY MANAGEMENT

PHASE II - ENVIRONMENTAL SITE ASSESSMENT

359 KENT STREET, 436 AND 444 MACLAREN STREET

OTTAWA, ONTARIO

Title:

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

Scale: AS SHOWN	Date: 06/2021
Drawn by: YA	Report No.: PE5204-1
Checked by: JA	Dwg No.: PE5204-8B
Approved by: MSD	Revision No.:

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APPENDIX 1

ANALYTICAL TEST RESULTS

TABLE 1		CLIENT: Paterson Group Consulting Engineers							
PARACEL LABORATORIES LTD.		ATTENTION: Adrian Menyhart							
WORKORDER: 2116255		PROJECT: PE5204							
REPORT DATE: 04/19/2021		REFERENCE: Standing Offer							
Parameter	**Units**	**MDL**	**Regulation**	**Sample**					
				BH1-21-SS5 2116255-01	**BH2-21-AU2 2116255-02**	**BH3-21-SS7 2116255-03**	**BH4-21-SS4 2116255-04**	**BH4-21-SS7 2116255-05**	**BH5-21-SS8 2116255-06**	**BH105-21 2116255-07**
Sample Date (m/d/y)			**Reg 153/04 (2011)-Table 3 Residential, coarse**	**04/12/2021 09:00 AM**	**04/08/2021 09:00 AM**	**04/09/2021 09:00 AM**	**04/09/2021 09:00 AM**	**04/09/2021 09:00 AM**	**04/12/2021 09:00 AM**	**04/12/2021 09:00 AM**
Physical Characteristics										
% Solids	% by Wt.	0.1		68.8	81.7	57.8	71.7	N/A	60.3	67.8
General Inorganics										
SAR	N/A	0.01	5 N/A	N/A	6.54	N/A	1.20	N/A	N/A	N/A
Conductivity	uS/cm	5	0.7 mS/cm (700 uS/cm)	N/A	3230	N/A	1020	N/A	N/A	N/A
pH	pH Units	0.05		N/A	N/A	N/A	N/A	7.57	N/A	N/A
Metals										
Chromium (VI)	ug/g dry	0.2	8 ug/g dry	N/A	0.4	N/A	0.4	N/A	N/A	N/A
Mercury	ug/g dry	0.1	0.27 ug/g dry	N/A	0.1	N/A	ND (0.1)	N/A	N/A	N/A
Antimony	ug/g dry	1.0	7.5 ug/g dry	N/A	ND (1.0)	N/A	ND (1.0)	N/A	N/A	N/A
Arsenic	ug/g dry	1.0	18 ug/g dry	N/A	3.7	N/A	2.9	N/A	N/A	N/A
Barium	ug/g dry	1.0	390 ug/g dry	N/A	349	N/A	428	N/A	N/A	N/A
Beryllium	ug/g dry	0.5	4 ug/g dry	N/A	0.8	N/A	0.8	N/A	N/A	N/A
Boron	ug/g dry	5.0	120 ug/g dry	N/A	ND (5.0)	N/A	ND (5.0)	N/A	N/A	N/A
Cadmium	ug/g dry	0.5	1.2 ug/g dry	N/A	ND (0.5)	N/A	ND (0.5)	N/A	N/A	N/A
Chromium	ug/g dry	5.0	160 ug/g dry	N/A	101	N/A	133	N/A	N/A	N/A
Cobalt	ug/g dry	1.0	22 ug/g dry	N/A	20.5	N/A	27.3	N/A	N/A	N/A
Copper	ug/g dry	5.0	140 ug/g dry	N/A	48.3	N/A	60.1	N/A	N/A	N/A
Lead	ug/g dry	1.0	120 ug/g dry	N/A	174	N/A	8.3	N/A	N/A	N/A
Molybdenum	ug/g dry	1.0	6.9 ug/g dry	N/A	ND (1.0)	N/A	ND (1.0)	N/A	N/A	N/A
Nickel	ug/g dry	5.0	100 ug/g dry	N/A	54.9	N/A	73.8	N/A	N/A	N/A
Selenium	ug/g dry	1.0	2.4 ug/g dry	N/A	ND (1.0)	N/A	ND (1.0)	N/A	N/A	N/A
Silver	ug/g dry	0.3	20 ug/g dry	N/A	ND (0.3)	N/A	ND (0.3)	N/A	N/A	N/A
Thallium	ug/g dry	1.0	1 ug/g dry	N/A	ND (1.0)	N/A	ND (1.0)	N/A	N/A	N/A
Uranium	ug/g dry	1.0	23 ug/g dry	N/A	ND (1.0)	N/A	ND (1.0)	N/A	N/A	N/A
Vanadium	ug/g dry	10.0	86 ug/g dry	N/A	96.5	N/A	128	N/A	N/A	N/A
Zinc	ug/g dry	20.0	340 ug/g dry	N/A	155	N/A	147	N/A	N/A	N/A
Volatiles										
Acetone	ug/g dry	0.50	16 ug/g dry	N/A	N/A	ND (0.50)	N/A	N/A	N/A	N/A
Benzene	ug/g dry	0.02	0.21 ug/g dry	N/A	N/A	ND (0.02)	N/A	N/A	N/A	N/A
Bromodichloromethane	ug/g dry	0.05	13 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Bromoform	ug/g dry	0.05	0.27 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Bromomethane	ug/g dry	0.05	0.05 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Carbon Tetrachloride	ug/g dry	0.05	0.05 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Chlorobenzene	ug/g dry	0.05	2.4 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Chloroform	ug/g dry	0.05	0.05 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Dibromochloromethane	ug/g dry	0.05	9.4 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Dichlorodifluoromethane	ug/g dry	0.05	16 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
1,2-Dichlorobenzene	ug/g dry	0.05	3.4 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
1,3-Dichlorobenzene	ug/g dry	0.05	4.8 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	ug/g dry	0.05	0.083 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
1,1-Dichloroethane	ug/g dry	0.05	3.5 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
1,2-Dichloroethane	ug/g dry	0.05	0.05 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
1,1-Dichloroethylene	ug/g dry	0.05	0.05 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethylene	ug/g dry	0.05	3.4 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
trans-1,2-Dichloroethylene	ug/g dry	0.05	0.084 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
1,2-Dichloropropane	ug/g dry	0.05	0.05 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
cis-1,3-Dichloropropylene	ug/g dry	0.05		N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
trans-1,3-Dichloropropylene	ug/g dry	0.05		N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
1,3-Dichloropropene, total	ug/g dry	0.05	0.05 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Ethylbenzene	ug/g dry	0.05	2 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Ethylene dibromide (dibromoethan	ug/g dry	0.05	0.05 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Hexane	ug/g dry	0.05	2.8 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Methyl Ethyl Ketone (2-Butanone)	ug/g dry	0.50	16 ug/g dry	N/A	N/A	ND (0.50)	N/A	N/A	N/A	N/A
Methyl Isobutyl Ketone	ug/g dry	0.50	1.7 ug/g dry	N/A	N/A	ND (0.50)	N/A	N/A	N/A	N/A
Methyl tert-butyl ether	ug/g dry	0.05	0.75 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Methylene Chloride	ug/g dry	0.05	0.1 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Styrene	ug/g dry	0.05	0.7 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
1,1,1,2-Tetrachloroethane	ug/g dry	0.05	0.058 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
1,1,2,2-Tetrachloroethane	ug/g dry	0.05	0.05 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Tetrachloroethylene	ug/g dry	0.05	0.28 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Toluene	ug/g dry	0.05	2.3 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
1,1,1-Trichloroethane	ug/g dry	0.05	0.38 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
1,1,2-Trichloroethane	ug/g dry	0.05	0.05 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Trichloroethylene	ug/g dry	0.05	0.061 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Trichlorofluoromethane	ug/g dry	0.05	4 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Vinyl Chloride	ug/g dry	0.02	0.02 ug/g dry	N/A	N/A	ND (0.02)	N/A	N/A	N/A	N/A
m/p-Xylene	ug/g dry	0.05		N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
o-Xylene	ug/g dry	0.05		N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Xylenes, total	ug/g dry	0.05	3.1 ug/g dry	N/A	N/A	ND (0.05)	N/A	N/A	N/A	N/A
Benzene	ug/g dry	0.02	0.21 ug/g dry	ND (0.02)	N/A	N/A	N/A	N/A	ND (0.02)	ND (0.02)
Ethylbenzene	ug/g dry	0.05	2 ug/g dry	ND (0.05)	N/A	N/A	N/A	N/A	ND (0.05)	ND (0.05)
Toluene	ug/g dry	0.05	2.3 ug/g dry	ND (0.05)	N/A	N/A	N/A	N/A	ND (0.05)	ND (0.05)
m/p-Xylene	ug/g dry	0.05		ND (0.05)	N/A	N/A	N/A	N/A	ND (0.05)	ND (0.05)
o-Xylene	ug/g dry	0.05		ND (0.05)	N/A	N/A	N/A	N/A	ND (0.05)	ND (0.05)
Xylenes, total	ug/g dry	0.05	3.1 ug/g dry	ND (0.05)	N/A	N/A	N/A	N/A	ND (0.05)	ND (0.05)
Hydrocarbons										
F1 PHCs (C6-C10)	ug/g dry	7	55 ug/g dry	ND (7)	N/A	ND (7)	N/A	N/A	ND (7)	N/A
F2 PHCs (C10-C16)	ug/g dry	4	98 ug/g dry	ND (4)	N/A	ND (4)	N/A	N/A	ND (4)	N/A
F3 PHCs (C16-C34)	ug/g dry	8	300 ug/g dry	ND (8)	N/A	ND (8)	N/A	N/A	ND (8)	N/A
F4 PHCs (C34-C50)	ug/g dry	6	2800 ug/g dry	ND (6)	N/A	ND (6)	N/A	N/A	ND (6)	N/A
PCBs										
PCBs, total	ug/g dry	0.05	0.35 ug/g dry	N/A	N/A	N/A	N/A	N/A	ND (0.05)	N/A

TABLE 1		CLIENT: Paterson Group Consulting Engineers					
PARACEL LABORATORIES LTD.		ATTENTION: Adrian Menyhart					
WORKORDER: 2117112		PROJECT: PE5204					
REPORT DATE: 04/23/2021		REFERENCE: Standing Offer					

Parameter	Units	MDL	Regulation	Sample				
				BH1-GW1 2117112-01	BH3S-GW1 2117112-02	BH3D-GW1 2117112-03	BH5-GW1 2117112-04	BH103-GW1 2117112-05
Sample Date (m/d/y)			Reg 153/04 (2011)-Table 3 Non-Potable Groundwater, coarse	04/19/2021 09:30 AM	04/19/2021 11:30 AM	04/19/2021 12:30 PM	04/19/2021 10:30 AM	04/19/2021 09:00 AM
Volatiles								
Acetone	ug/L	5.0	130000 ug/L	N/A	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Benzene	ug/L	0.5	44 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Bromodichloromethane	ug/L	0.5	85000 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Bromoform	ug/L	0.5	380 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Bromomethane	ug/L	0.5	5.6 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Carbon Tetrachloride	ug/L	0.2	0.79 ug/L	N/A	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Chlorobenzene	ug/L	0.5	630 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Chloroform	ug/L	0.5	2.4 ug/L	N/A	1.2	0.6	ND (0.5)	1.2
Dibromochloromethane	ug/L	0.5	82000 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Dichlorodifluoromethane	ug/L	1.0	4400 ug/L	N/A	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichlorobenzene	ug/L	0.5	4600 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,3-Dichlorobenzene	ug/L	0.5	9600 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,4-Dichlorobenzene	ug/L	0.5	8 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1-Dichloroethane	ug/L	0.5	320 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,2-Dichloroethane	ug/L	0.5	1.6 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1-Dichloroethylene	ug/L	0.5	1.6 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
cis-1,2-Dichloroethylene	ug/L	0.5	1.6 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
trans-1,2-Dichloroethylene	ug/L	0.5	1.6 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,2-Dichloropropane	ug/L	0.5	16 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
cis-1,3-Dichloropropylene	ug/L	0.5		N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
trans-1,3-Dichloropropylene	ug/L	0.5		N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,3-Dichloropropene, total	ug/L	0.5	5.2 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Ethylbenzene	ug/L	0.5	2300 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Ethylene dibromide (dibromoethan	ug/L	0.2	0.25 ug/L	N/A	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Hexane	ug/L	1.0	51 ug/L	N/A	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Methyl Ethyl Ketone (2-Butanone)	ug/L	5.0	470000 ug/L	N/A	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Methyl Isobutyl Ketone	ug/L	5.0	140000 ug/L	N/A	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Methyl tert-butyl ether	ug/L	2.0	190 ug/L	N/A	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Methylene Chloride	ug/L	5.0	610 ug/L	N/A	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Styrene	ug/L	0.5	1300 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1,1,2-Tetrachloroethane	ug/L	0.5	3.3 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1,2,2-Tetrachloroethane	ug/L	0.5	3.2 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Tetrachloroethylene	ug/L	0.5	1.6 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Toluene	ug/L	0.5	18000 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1,1-Trichloroethane	ug/L	0.5	640 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1,2-Trichloroethane	ug/L	0.5	4.7 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Trichloroethylene	ug/L	0.5	1.6 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Trichlorofluoromethane	ug/L	1.0	2500 ug/L	N/A	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Vinyl Chloride	ug/L	0.5	0.5 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
m/p-Xylene	ug/L	0.5		N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
o-Xylene	ug/L	0.5		N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Xylenes, total	ug/L	0.5	4200 ug/L	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Benzene	ug/L	0.5	44 ug/L	ND (0.5)	N/A	N/A	N/A	N/A
Ethylbenzene	ug/L	0.5	2300 ug/L	ND (0.5)	N/A	N/A	N/A	N/A
Toluene	ug/L	0.5	18000 ug/L	ND (0.5)	N/A	N/A	N/A	N/A
m/p-Xylene	ug/L	0.5		ND (0.5)	N/A	N/A	N/A	N/A
o-Xylene	ug/L	0.5		ND (0.5)	N/A	N/A	N/A	N/A
Xylenes, total	ug/L	0.5	4200 ug/L	ND (0.5)	N/A	N/A	N/A	N/A
Hydrocarbons								
F1 PHCs (C6-C10)	ug/L	25	750 ug/L	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)
F2 PHCs (C10-C16)	ug/L	100	150 ug/L	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
F3 PHCs (C16-C34)	ug/L	100	500 ug/L	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
F4 PHCs (C34-C50)	ug/L	100	500 ug/L	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
PCBs								
PCBs, total	ug/L	0.05	7.8 ug/L	N/A	N/A	N/A	ND (0.05)	N/A

APPENDIX 2

SAMPLING AND ANALYSIS PLAN

SOIL PROFILE AND TEST DATA SHEETS

LABORATORY CERTIFICATES OF ANALYSIS

Geotechnical Engineering

Environmental Engineering

Hydrogeology

Geological Engineering

Materials Testing

Building Science

Paterson Group Inc.

Consulting Engineers
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patersongroup

Sampling & Analysis Plan

Phase II Environmental Site Assessment
359 Kent Street
436 and 444 MacLaren Street
Ottawa, Ontario

Prepared For

Taggart Realty Management

April 2021

Report: PE5204-SAP

TABLE OF CONTENTS

1.0 SAMPLING PROGRAM

Paterson Group Inc. (Paterson) was commissioned by Mr. Derek Howe of Taggart Corporation Limited to conduct a Phase II Environmental Site Assessment (ESA) for the Phase II ESA Property addressed 359 Kent Street, 436 and 444 MacLaren Street, Ottawa, Ontario.

The Phase II ESA was carried out to address the APECs identified in the Paterson Phase I ESA, dated June 2021. The following subsurface investigation program was developed to identify and delineate potential environmental concerns.

Borehole	Location & Rationale	Proposed Depth & Rationale
BH1-21	Assess soil and/or groundwater conditions on and beneath the Phase I Property due to APECs 7 and 8.	Boreholes to be advanced to a minimum of 3.0m bgs to intercept the water table to install groundwater monitoring wells.
BH2-21	Assess soil and groundwater conditions on and beneath the Phase I Property due to APECs 3, 4, and 6.	
BH3-21	Assess soil and groundwater conditions on and beneath the Phase I Property due to APECs 1, 3, 4, and 6.	
BH4-21	Assess soil and groundwater conditions on and beneath the Phase I Property due to APECs 3 and 6.	
BH5-21	Assess soil and groundwater conditions on and beneath the Phase I Property due to APECs 2, 3, 4, 5.	

At each borehole, split-spoon samples of overburden soils will be obtained at 0.76 m (2'6") intervals until groundwater was intercepted. Four boreholes (BH1-21 to BH4-21) will be further extended into bedrock by means of split spoon sampling, shear vanes, and bedrock coring for geotechnical purposes. All soil samples will be retained, and samples will be selected for submission following a preliminary screening analysis.

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 upper 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's 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 and methanol vials
- ❒ cleaning brush
- ❒ wash buckets
- ❒ dish detergent
- ❒ methyl hydrate
- ❒ water
- ❒ 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 should be measured using a measuring tape or wheel rather than paced off. Elevations were surveyed at geodetic elevations by Paterson personnel.

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 vertical extent of contamination is delineated.
- ❒ As a general rule, environmental boreholes should be deep enough to intercept the groundwater table (unless this is impossible/impractical - call project manager to discuss).
- ❒ If at all possible, soil samples should be submitted to a preliminary screening procedure on site, either using a RKI Eagle, PID, etc. depending on type of suspected contamination.

Spoon Washing Procedure

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

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

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

Screening Procedure

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

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

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

3.2 Monitoring Well Installation Procedure

Equipment

- ❒ 5’ x 2” [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 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 cored hole in bedrock)
- ❒ Threaded end-cap
- ❒ Slip-cap or J-plug
- ❒ Asphalt cold patch or concrete
- ❒ Silica Sand
- ❒ Bentonite chips (Holeplug)
- ❒ Steel flushmount casing

Procedure

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

3.3 Monitoring Well Sampling Procedure

Equipment

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

Sampling Procedure

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

4.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

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

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

5.0 DATA QUALITY OBJECTIVES

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

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

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

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

For the purpose of calculating the RPD, it is desirable to select field duplicates from samples for which parameters are present in concentrations above laboratory detection limits, i.e. samples which are expected to be contaminated. If parameters are below laboratory detection limits for selected samples or duplicates, the RPD may be calculated using a concentration equal to one half (0.5 x) the laboratory detection limit.

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

These considerations are discussed in the body of the report.

6.0 PHYSICAL IMPEDIMENTS TO SAMPLING & ANALYSIS PLAN

Physical impediments to the Sampling and Analysis plan may include:

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

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

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
359 Kent Street, 436 & 444 MacLaren Street
Ottawa, Ontario

DATUM Geodetic

FILE NO. PE5204

REMARKS

HOLE NO. BH 1-21

BORINGS BY Track-Mount Power Auger **DATE** April 13, 2021

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	73.15
Asphaltic concrete 0.05		AU	1				
FILL: Brown silty sand with crushed stone 0.60		AU	2				
		SS	3	71	11	1	72.15
		SS	4	100	14	2	71.15
		SS	5	92	6		
Very stiff to stiff, brown **SILTY CLAY**		SS	6	96	3	3	70.15
		SS	7	96	1	4	69.15
- grey by 4.3m depth		SS	8	96	1		
		SS	9	96	1	5	68.15
						6	67.15
		SS	10	92	1	7	66.15
7.92						8	65.15
GLACIAL TILL: Compact to dense, dark brown to black silty sand with clay, gravel, cobbles, boulders and shale fragments		SS	11	25	20		
		SS	12	42	19	9	64.15
- shale fragments increasing with depth		SS	13	25	38	10	63.15
10.87						11	62.15
		RC	1	53	33	12	61.15
		RC	2	100	75	13	60.15
BEDROCK: Poor to good quality, black shale						14	59.15
		RC	3	100	82	15	58.15
		RC	4	100	78	16	57.15
16.61							
End of Borehole							
(GWL @ 3.07m - April 19, 2021)							

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
359 Kent Street, 436 & 444 MacLaren Street
Ottawa, Ontario

DATUM Geodetic

FILE NO. PE5204

REMARKS

HOLE NO. BH 2-21

BORINGS BY Track-Mount Power Auger **DATE** April 8, 2021

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	72.67
Asphaltic concrete 0.10		AU	1				
FILL: Brown silty sand with crushed stone 0.48		AU	2				
		SS	3	67	13	1	71.67
FILL: Brown silty clay, some sand, trace brick and organics 0.91		SS	4	100	13	2	70.67
		SS	5	96	8		
Very stiff to stiff, brown **SILTY CLAY**		SS	6	96	4	3	69.67
- grey by 4.4m depth						4	68.67
		SS	7		1	5	67.67
7.62						6	66.67
GLACIAL TILL: Dense, black silty clay with sand, gravel, cobbles, boulders and shale fragments		SS	8	38	45	7	65.67
8.81		SS	9	21	50+	8	64.67
		RC	1	100	0	9	63.67
		RC	2	57	42	10	62.67
		RC	3	68	47	11	61.67
BEDROCK: Very poor to good quality, black shale		RC	4	100	68	12	60.67
		RC	5	100	82	13	59.67
		RC	6	100	87	14	58.67
		RC	7	100	81	15	57.67
18.04						16	56.67
End of Borehole						17	55.67
						18	54.67

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
359 Kent Street, 436 & 444 MacLaren Street
Ottawa, Ontario

DATUM Geodetic

FILE NO. PE5204

REMARKS

HOLE NO. BH 3D-21

BORINGS BY Track-Mount Power Auger **DATE** April 12, 2021

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	72.61
Asphaltic concrete 0.10		AU	1				
FILL: Crushed stone with silty sand 0.30		AU	2				
FILL: Brown silty sand with gravel, some brick, concrete and boulders - concrete pad from 2.4 to 2.8m depth		SS	3	0	50+	1	71.61
		SS	4	42	9	2	70.61
2.80		SS	5	56	50+		
Stiff, brown **SILTY CLAY**		SS	6	83	5	3	69.61
		SS	7	100	1	4	68.61
- grey by 3.7m depth		SS	8	96	P	5	67.61
		SS	9	100	1		
		SS	10	100	1	6	66.61
7.32						7	65.61
Stiff, grey **CLAYEY SILT,** trace gravel 8.23		SS	11	100	3	8	64.61
GLACIAL TILL: Brown silty clay with sand, gravel, cobbles, boulders and shale fragments 8.99		SS	12	27	20	9	63.61
		RC	1	48	22	10	62.61
		RC	2	80	57	11	61.61
BEDROCK: Very poor to good quality, black shale						12	60.61
		RC	3	97	72	13	59.61
		RC	4	100	80	14	58.61
15.06						15	57.61
End of Borehole							
(GWL @ 8.96m - April 19, 2021)							

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
359 Kent Street, 436 & 444 MacLaren Street
Ottawa, Ontario

DATUM Geodetic

FILE NO. PE5204

REMARKS

HOLE NO. BH 3S-21

BORINGS BY Track-Mount Power Auger **DATE** April 12, 2021

SOIL DESCRIPTION		STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							0	72.61
Asphaltic concrete	0.10							
FILL: Crushed stone with silty sand	0.30							
FILL: Brown silty sand with gravel, some brick, concrete and boulders - concrete pad from 2.4 to 2.8m depth	2.80						1	71.61
							2	70.61
Stiff, brown **SILTY CLAY**							3	69.61
							4	68.61
- grey by 3.7m depth							5	67.61
							6	66.61
	7.32						7	65.61
Stiff, grey **CLAYEY SILT,** trace gravel	8.23						8	64.61
GLACIAL TILL: Brown silty clay with sand, gravel, cobbles, boulders and shale fragments	8.99						9	63.61
							10	62.61
							11	61.61
BEDROCK: Very poor to good quality, black shale							12	60.61
							13	59.61
							14	58.61
	15.06						15	57.61
End of Borehole								
(GWL @ 1.91m - April 19, 2021)								

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
359 Kent Street, 436 & 444 MacLaren Street
Ottawa, Ontario

DATUM Geodetic

FILE NO. PE5204

REMARKS

HOLE NO. BH 4-21

BORINGS BY Track-Mount Power Auger **DATE** April 9, 2021

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	72.64
Asphaltic concrete 0.10		AU	1				
		AU	2				
FILL: Brown silty sand with crushed stone		SS	3	21	18	1	71.64
- some cobbles by 0.9m depth 1.52		SS	4	79	11	2	70.64
		SS	5	92	9	3	69.64
		SS	6	92	4		
Very stiff to stiff, brown **SILTY CLAY**		SS	7	83	2	4	68.64
- grey by 4.6m depth		SS	8	100	1	5	67.64
		SS	9	92	1	6	66.64
		SS	10	17	7	7	65.64
8.53		SS	11	42	19	8	64.64
GLACIAL TILL: Compact, black silty sand with clay, gravel, cobbles, boulders and shale fragments		SS	12	42	22	9	63.64
		SS	13	50	22	10	62.64
		SS	14	50	39	11	61.64
11.81						12	60.64
		RC	1	100	38	13	59.64
BEDROCK: Poor to good quality, black shale						14	58.64
		RC	2	100	80	15	57.64
15.04							
End of Borehole							

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

20 40 60 80

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

Monitoring Well Construction

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
359 Kent Street, 436 & 444 MacLaren Street
Ottawa, Ontario

DATUM Geodetic

FILE NO. PE5204

REMARKS

HOLE NO. BH 5-21

BORINGS BY Track-Mount Power Auger **DATE** April 12, 2021

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	73.21
Asphaltic concrete 0.05		AU	1				
FILL: Crushed stone with silty sand, trace clay 0.60		AU	2				
FILL: Brown silty sand 1.37		SS	3	42	11	1	72.21
		SS	4	92	16	2	71.21
		SS	5	92	12		
		SS	6	96	6	3	70.21
Very stiff to stiff, brown **SILTY CLAY**		SS	7	92	1	4	69.21
		SS	8	92	1	5	68.21
- grey by 5.2m depth		SS	9	96	P		
6.70		SS	10	92	P	6	67.21
End of Borehole							
(GWL @ 2.75m - April 19, 2021)							

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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Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Adrian Menyhart

Client PO: 31348
Project: PE5204
Custody: 131473

Report Date: 19-Apr-2021
Order Date: 13-Apr-2021

Order #: 2116255

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

Paracel ID	Client ID
2116255-01	BH1-21-SS5
2116255-02	BH2-21-AU2
2116255-03	BH3-21-SS7
2116255-04	BH4-21-SS4
2116255-05	BH4-21-SS7
2116255-06	BH5-21-SS8
2116255-07	BH105-21

Approved By:

Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Report Date: 19-Apr-2021

Client: Paterson Group Consulting Engineers

Order Date: 13-Apr-2021

Client PO: 31348

Project Description: PE5204

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	16-Apr-21	17-Apr-21
Chromium, hexavalent - soil	MOE E3056 - Extraction, colourimetric	14-Apr-21	16-Apr-21
Conductivity	MOE E3138 - probe @25 °C, water ext	16-Apr-21	16-Apr-21
Mercury by CVAA	EPA 7471B - CVAA, digestion	16-Apr-21	16-Apr-21
PCBs, total	SW846 8082A - GC-ECD	14-Apr-21	15-Apr-21
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	14-Apr-21	14-Apr-21
PHC F1	CWS Tier 1 - P&T GC-FID	15-Apr-21	16-Apr-21
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	14-Apr-21	17-Apr-21
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	16-Apr-21	16-Apr-21
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	15-Apr-21	16-Apr-21
SAR	Calculated	16-Apr-21	19-Apr-21
Solids, %	Gravimetric, calculation	15-Apr-21	15-Apr-21

Certificate of Analysis

Report Date: 19-Apr-2021

Client: Paterson Group Consulting Engineers

Order Date: 13-Apr-2021

Client PO: 31348

Project Description: PE5204

	Client ID:	BH1-21-SS5	BH2-21-AU2	BH3-21-SS7	BH4-21-SS4
	Sample Date:	12-Apr-21 09:00	08-Apr-21 09:00	09-Apr-21 09:00	09-Apr-21 09:00
	Sample ID:	2116255-01	2116255-02	2116255-03	2116255-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	68.8	81.7	57.8	71.7
General Inorganics					
SAR	0.01 N/A	-	6.54	-	1.20
Conductivity	5 uS/cm	-	3230	-	1020
Metals					
Antimony	1.0 ug/g dry	-	<1.0	-	<1.0
Arsenic	1.0 ug/g dry	-	3.7	-	2.9
Barium	1.0 ug/g dry	-	349	-	428
Beryllium	0.5 ug/g dry	-	0.8	-	0.8
Boron	5.0 ug/g dry	-	<5.0	-	<5.0
Cadmium	0.5 ug/g dry	-	<0.5	-	<0.5
Chromium	5.0 ug/g dry	-	101	-	133
Chromium (VI)	0.2 ug/g dry	-	0.4	-	0.4
Cobalt	1.0 ug/g dry	-	20.5	-	27.3
Copper	5.0 ug/g dry	-	48.3	-	60.1
Lead	1.0 ug/g dry	-	174	-	8.3
Mercury	0.1 ug/g dry	-	0.1	-	<0.1
Molybdenum	1.0 ug/g dry	-	<1.0	-	<1.0
Nickel	5.0 ug/g dry	-	54.9	-	73.8
Selenium	1.0 ug/g dry	-	<1.0	-	<1.0
Silver	0.3 ug/g dry	-	<0.3	-	<0.3
Thallium	1.0 ug/g dry	-	<1.0	-	<1.0
Uranium	1.0 ug/g dry	-	<1.0	-	<1.0
Vanadium	10.0 ug/g dry	-	96.5	-	128
Zinc	20.0 ug/g dry	-	155	-	147
Volatiles					
Acetone	0.50 ug/g dry	-	-	<0.50	-
Benzene	0.02 ug/g dry	-	-	<0.02	-
Bromodichloromethane	0.05 ug/g dry	-	-	<0.05	-
Bromoform	0.05 ug/g dry	-	-	<0.05	-
Bromomethane	0.05 ug/g dry	-	-	<0.05	-
Carbon Tetrachloride	0.05 ug/g dry	-	-	<0.05	-
Chlorobenzene	0.05 ug/g dry	-	-	<0.05	-
Chloroform	0.05 ug/g dry	-	-	<0.05	-
Dibromochloromethane	0.05 ug/g dry	-	-	<0.05	-

Certificate of Analysis

Report Date: 19-Apr-2021

Client: Paterson Group Consulting Engineers

Order Date: 13-Apr-2021

Client PO: 31348

Project Description: PE5204

	Client ID:	BH1-21-SS5	BH2-21-AU2	BH3-21-SS7	BH4-21-SS4
	Sample Date:	12-Apr-21 09:00	08-Apr-21 09:00	09-Apr-21 09:00	09-Apr-21 09:00
	Sample ID:	2116255-01	2116255-02	2116255-03	2116255-04
	MDL/Units	Soil	Soil	Soil	Soil
Dichlorodifluoromethane	0.05 ug/g dry	-	-	<0.05	-
1,2-Dichlorobenzene	0.05 ug/g dry	-	-	<0.05	-
1,3-Dichlorobenzene	0.05 ug/g dry	-	-	<0.05	-
1,4-Dichlorobenzene	0.05 ug/g dry	-	-	<0.05	-
1,1-Dichloroethane	0.05 ug/g dry	-	-	<0.05	-
1,2-Dichloroethane	0.05 ug/g dry	-	-	<0.05	-
1,1-Dichloroethylene	0.05 ug/g dry	-	-	<0.05	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	-	-	<0.05	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	-	-	<0.05	-
1,2-Dichloropropane	0.05 ug/g dry	-	-	<0.05	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	-	-	<0.05	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	-	-	<0.05	-
1,3-Dichloropropene, total	0.05 ug/g dry	-	-	<0.05	-
Ethylbenzene	0.05 ug/g dry	-	-	<0.05	-
Ethylene dibromide (dibromoethane, 1,2-)	0.05 ug/g dry	-	-	<0.05	-
Hexane	0.05 ug/g dry	-	-	<0.05	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	-	-	<0.50	-
Methyl Isobutyl Ketone	0.50 ug/g dry	-	-	<0.50	-
Methyl tert-butyl ether	0.05 ug/g dry	-	-	<0.05	-
Methylene Chloride	0.05 ug/g dry	-	-	<0.05	-
Styrene	0.05 ug/g dry	-	-	<0.05	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	-	-	<0.05	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	-	-	<0.05	-
Tetrachloroethylene	0.05 ug/g dry	-	-	<0.05	-
Toluene	0.05 ug/g dry	-	-	<0.05	-
1,1,1-Trichloroethane	0.05 ug/g dry	-	-	<0.05	-
1,1,2-Trichloroethane	0.05 ug/g dry	-	-	<0.05	-
Trichloroethylene	0.05 ug/g dry	-	-	<0.05	-
Trichlorofluoromethane	0.05 ug/g dry	-	-	<0.05	-
Vinyl chloride	0.02 ug/g dry	-	-	<0.02	-
m,p-Xylenes	0.05 ug/g dry	-	-	<0.05	-
o-Xylene	0.05 ug/g dry	-	-	<0.05	-
Xylenes, total	0.05 ug/g dry	-	-	<0.05	-
4-Bromofluorobenzene	Surrogate	-	-	115%	-
Dibromofluoromethane	Surrogate	-	-	106%	-
Toluene-d8	Surrogate	-	-	114%	-

Certificate of Analysis

Report Date: 19-Apr-2021

Client: Paterson Group Consulting Engineers

Order Date: 13-Apr-2021

Client PO: 31348

Project Description: PE5204

	Client ID:	BH1-21-SS5	BH2-21-AU2	BH3-21-SS7	BH4-21-SS4
	Sample Date:	12-Apr-21 09:00	08-Apr-21 09:00	09-Apr-21 09:00	09-Apr-21 09:00
	Sample ID:	2116255-01	2116255-02	2116255-03	2116255-04
	MDL/Units	Soil	Soil	Soil	Soil
Benzene	0.02 ug/g dry	<0.02	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
Toluene-d8	Surrogate	107%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	-	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	<6	-

	Client ID:	BH4-21-SS7	BH5-21-SS8	BH105-21	-
	Sample Date:	09-Apr-21 09:00	12-Apr-21 09:00	12-Apr-21 09:00	-
	Sample ID:	2116255-05	2116255-06	2116255-07	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	-	60.3	67.8	-
General Inorganics					
pH	0.05 pH Units	7.57	-	-	-
Volatiles					
Benzene	0.02 ug/g dry	-	<0.02	<0.02	-
Ethylbenzene	0.05 ug/g dry	-	<0.05	<0.05	-
Toluene	0.05 ug/g dry	-	<0.05	<0.05	-
m,p-Xylenes	0.05 ug/g dry	-	<0.05	<0.05	-
o-Xylene	0.05 ug/g dry	-	<0.05	<0.05	-
Xylenes, total	0.05 ug/g dry	-	<0.05	<0.05	-
Toluene-d8	Surrogate	-	109%	111%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	-	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	-	<4	-	-
F3 PHCs (C16-C34)	8 ug/g dry	-	<8	-	-
F4 PHCs (C34-C50)	6 ug/g dry	-	<6	-	-
PCBs					
PCBs, total	0.05 ug/g dry	-	<0.05	-	-
Decachlorobiphenyl	Surrogate	-	112%	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Conductivity	ND	5	uS/cm						
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						
PCBs									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	*0.101*		*ug/g*		*101*	*60-140*			
Volatiles									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Ethylene dibromide (dibromoethane, 1,2-	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*3.77*		*ug/g*		*118*	*50-140*			
Surrogate: Dibromofluoromethane	*3.17*		*ug/g*		*98.9*	*50-140*			
Surrogate: Toluene-d8	*4.18*		*ug/g*		*130*	*50-140*			
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*4.18*		*ug/g*		*130*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
SAR	6.59	0.01	N/A	6.54			0.8	30	
Conductivity	3150	5	uS/cm	3230			2.5	5	
pH	7.26	0.05	pH Units	7.23			0.4	2.3	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND			NC	30	
Metals									
Antimony	ND	1.0	ug/g dry	ND			NC	30	
Arsenic	6.3	1.0	ug/g dry	6.3			0.1	30	
Barium	66.7	1.0	ug/g dry	67.2			0.7	30	
Beryllium	0.6	0.5	ug/g dry	0.6			7.7	30	
Boron	5.2	5.0	ug/g dry	5.9			11.9	30	
Cadmium	ND	0.5	ug/g dry	ND			NC	30	
Chromium (VI)	ND	0.2	ug/g dry	ND			NC	35	
Chromium	17.9	5.0	ug/g dry	18.4			2.7	30	
Cobalt	6.0	1.0	ug/g dry	6.0			0.8	30	
Copper	13.4	5.0	ug/g dry	13.4			0.3	30	
Lead	47.4	1.0	ug/g dry	47.1			0.6	30	
Mercury	ND	0.1	ug/g dry	ND			NC	30	
Molybdenum	1.6	1.0	ug/g dry	1.7			4.1	30	
Nickel	15.6	5.0	ug/g dry	15.8			1.8	30	
Selenium	ND	1.0	ug/g dry	ND			NC	30	
Silver	ND	0.3	ug/g dry	ND			NC	30	
Thallium	ND	1.0	ug/g dry	ND			NC	30	
Uranium	1.4	1.0	ug/g dry	1.5			4.7	30	
Vanadium	27.9	10.0	ug/g dry	29.8			6.6	30	
Zinc	56.7	20.0	ug/g dry	57.5			1.4	30	
PCBs									
PCBs, total	ND	0.05	ug/g dry	ND			NC	40	
Surrogate: Decachlorobiphenyl	*0.110*		*ug/g dry*		*101*	*60-140*			
Physical Characteristics									
% Solids	90.4	0.1	% by Wt.	91.6			1.4	25	
Volatiles									
Acetone	ND	0.50	ug/g dry	ND			NC	50	
Benzene	ND	0.02	ug/g dry	ND			NC	50	
Bromodichloromethane	ND	0.05	ug/g dry	ND			NC	50	
Bromoform	ND	0.05	ug/g dry	ND			NC	50	
Bromomethane	ND	0.05	ug/g dry	ND			NC	50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND			NC	50	
Chlorobenzene	ND	0.05	ug/g dry	ND			NC	50	
Chloroform	ND	0.05	ug/g dry	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g dry	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND			NC	50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND			NC	50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND			NC	50	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g dry	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2	ND	0.05	ug/g dry	ND			NC	50	
Hexane	ND	0.05	ug/g dry	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g dry	ND			NC	50	
Styrene	ND	0.05	ug/g dry	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND			NC	50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND			NC	50	
Toluene	ND	0.05	ug/g dry	ND			NC	50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g dry	ND			NC	50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND			NC	50	
Vinyl chloride	ND	0.02	ug/g dry	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g dry	ND			NC	50	
o-Xylene	ND	0.05	ug/g dry	ND			NC	50	
Surrogate: 4-Bromofluorobenzene	*3.53*		*ug/g dry*		*97.3*	*50-140*			
Surrogate: Dibromofluoromethane	*3.67*		*ug/g dry*		*101*	*50-140*			
Surrogate: Toluene-d8	*3.99*		*ug/g dry*		*110*	*50-140*			
Benzene	ND	0.02	ug/g dry	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g dry	ND			NC	50	
Toluene	ND	0.05	ug/g dry	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g dry	ND			NC	50	
o-Xylene	ND	0.05	ug/g dry	ND			NC	50	
Surrogate: Toluene-d8	*3.99*		*ug/g dry*		*110*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	167	7	ug/g	ND	83.5	80-120			
F2 PHCs (C10-C16)	77	4	ug/g	ND	88.8	60-140			
F3 PHCs (C16-C34)	219	8	ug/g	ND	103	60-140			
F4 PHCs (C34-C50)	143	6	ug/g	ND	106	60-140			
Metals									
Antimony	46.8	1.0	ug/g	ND	93.3	70-130			
Arsenic	50.8	1.0	ug/g	2.5	96.5	70-130			
Barium	72.3	1.0	ug/g	26.9	90.9	70-130			
Beryllium	49.3	0.5	ug/g	ND	98.1	70-130			
Boron	48.5	5.0	ug/g	ND	92.2	70-130			
Cadmium	45.2	0.5	ug/g	ND	90.0	70-130			
Chromium (VI)	0.1	0.2	ug/g	ND	72.0	70-130			
Chromium	55.3	5.0	ug/g	7.3	95.8	70-130			
Cobalt	50.2	1.0	ug/g	2.4	95.6	70-130			
Copper	51.0	5.0	ug/g	5.3	91.4	70-130			
Lead	64.2	1.0	ug/g	18.8	90.8	70-130			
Mercury	1.40	0.1	ug/g	ND	93.0	70-130			
Molybdenum	49.1	1.0	ug/g	ND	96.9	70-130			
Nickel	52.1	5.0	ug/g	6.3	91.5	70-130			
Selenium	46.2	1.0	ug/g	ND	92.0	70-130			
Silver	37.6	0.3	ug/g	ND	75.2	70-130			
Thallium	46.2	1.0	ug/g	ND	92.2	70-130			
Uranium	48.5	1.0	ug/g	ND	95.9	70-130			
Vanadium	58.5	10.0	ug/g	11.9	93.2	70-130			
Zinc	67.3	20.0	ug/g	23.0	88.6	70-130			
PCBs									
PCBs, total	0.471	0.05	ug/g	ND	108	60-140			
Surrogate: Decachlorobiphenyl	*0.124*		*ug/g*		*114*	*60-140*			
Volatiles									
Acetone	10.8	0.50	ug/g	ND	108	50-140			
Benzene	3.85	0.02	ug/g	ND	96.3	60-130			
Bromodichloromethane	3.81	0.05	ug/g	ND	95.2	60-130			
Bromoform	4.18	0.05	ug/g	ND	104	60-130			
Bromomethane	3.74	0.05	ug/g	ND	93.5	50-140			
Carbon Tetrachloride	3.87	0.05	ug/g	ND	96.8	60-130			
Chlorobenzene	3.82	0.05	ug/g	ND	95.5	60-130			
Chloroform	3.81	0.05	ug/g	ND	95.3	60-130			
Dibromochloromethane	4.07	0.05	ug/g	ND	102	60-130			
Dichlorodifluoromethane	3.76	0.05	ug/g	ND	94.0	50-140			
1,2-Dichlorobenzene	3.92	0.05	ug/g	ND	98.0	60-130			
1,3-Dichlorobenzene	3.80	0.05	ug/g	ND	95.0	60-130			
1,4-Dichlorobenzene	3.77	0.05	ug/g	ND	94.3	60-130			
1,1-Dichloroethane	3.82	0.05	ug/g	ND	95.6	60-130			
1,2-Dichloroethane	3.92	0.05	ug/g	ND	97.9	60-130			
1,1-Dichloroethylene	3.63	0.05	ug/g	ND	90.7	60-130			
cis-1,2-Dichloroethylene	3.71	0.05	ug/g	ND	92.7	60-130			
trans-1,2-Dichloroethylene	3.75	0.05	ug/g	ND	93.8	60-130			
1,2-Dichloropropane	3.87	0.05	ug/g	ND	96.7	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
cis-1,3-Dichloropropylene	3.71	0.05	ug/g	ND	92.7	60-130			
trans-1,3-Dichloropropylene	3.70	0.05	ug/g	ND	92.5	60-130			
Ethylbenzene	3.92	0.05	ug/g	ND	98.0	60-130			
Ethylene dibromide (dibromoethane, 1,2-	3.99	0.05	ug/g	ND	99.6	60-130			
Hexane	3.77	0.05	ug/g	ND	94.2	60-130			
Methyl Ethyl Ketone (2-Butanone)	9.38	0.50	ug/g	ND	93.8	50-140			
Methyl Isobutyl Ketone	9.90	0.50	ug/g	ND	99.0	50-140			
Methyl tert-butyl ether	10.0	0.05	ug/g	ND	100	50-140			
Methylene Chloride	4.08	0.05	ug/g	ND	102	60-130			
Styrene	3.62	0.05	ug/g	ND	90.4	60-130			
1,1,1,2-Tetrachloroethane	4.18	0.05	ug/g	ND	105	60-130			
1,1,2,2-Tetrachloroethane	3.89	0.05	ug/g	ND	97.1	60-130			
Tetrachloroethylene	4.01	0.05	ug/g	ND	100	60-130			
Toluene	4.05	0.05	ug/g	ND	101	60-130			
1,1,1-Trichloroethane	3.94	0.05	ug/g	ND	98.6	60-130			
1,1,2-Trichloroethane	3.92	0.05	ug/g	ND	98.0	60-130			
Trichloroethylene	3.83	0.05	ug/g	ND	95.7	60-130			
Trichlorofluoromethane	3.81	0.05	ug/g	ND	95.3	50-140			
Vinyl chloride	3.54	0.02	ug/g	ND	88.6	50-140			
m,p-Xylenes	7.75	0.05	ug/g	ND	96.9	60-130			
o-Xylene	4.08	0.05	ug/g	ND	102	60-130			
Surrogate: 4-Bromofluorobenzene	*2.92*		*ug/g*		*91.2*	*50-140*			
Surrogate: Dibromofluoromethane	*3.21*		*ug/g*		*100*	*50-140*			
Surrogate: Toluene-d8	*3.08*		*ug/g*		*96.3*	*50-140*			
Benzene	3.85	0.02	ug/g	ND	96.3	60-130			
Ethylbenzene	3.92	0.05	ug/g	ND	98.0	60-130			
Toluene	4.05	0.05	ug/g	ND	101	60-130			
m,p-Xylenes	7.75	0.05	ug/g	ND	96.9	60-130			
o-Xylene	4.08	0.05	ug/g	ND	102	60-130			
Surrogate: Toluene-d8	*3.08*		*ug/g*		*96.3*	*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.
NC: Not Calculated

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

CCME PHC additional information:

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

Paracel ID: 2116255

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Paracel Order Number (Lab Use Only): 2116255

Chain Of Custody (Lab Use Only)
№ 131473

Client Name: Paterson Group
Contact Name: Adrian Menyhart
Address: 154 Colonnade Rd, S
Telephone: 613-226-7381

Project Ref: PE5204
Quote #:
PO #: 31348
E-mail: jandrechek@patersongroup.ca
amenyhart@ " " "

Page 1 of 1

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

Regulation 153/04: ☐ Table 1 ☒ Res/Park ☐ Med/Fine ☐ Table 2 ☐ Ind/Comm ☒ Coarse ☒ Table 3 ☐ Agri/Other ☐ Table — For RSC: ☒ Yes ☐ No

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

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

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	BTEX	MOE METALS + HWS SUBSURFACE SOILS	EC/SAR	pH	PCBs
1	BH1-21-SS5	S		2	12-APR-21		X											
2	BH2-21-AU2	S	1	~~2~~	8-APR-21										X	X		
3	BH3-21-SS7	S		2	9-APR-21		X	X										
4	BH4-21-SS4	S		1	9-APR-21										X	X		
5	BH4-21-SS7	S		1	9-APR-21												X	
6	BH5-21-SS8	S		2	12-APR-21		X											X
7	BH105-21	S		1	12-APR-21									X				
8																		
9																		
10																		

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign):
Relinquished By (Print): Jesse Andrechek
Date/Time: 13-APR-21 4PM

Received By Driver/Depot:
Date/Time:
Temperature: °C

Received at Lab: Sureepam Rahman
Date/Time: APR 13, 2021 04.55
Temperature: 20.8 °C

Verified: Apr 19 2021 9:16
pH Verified ☐ By: NA

Chain of Custody (Env.) xlsx

Revision 3.0

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Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Adrian Menyhart

Client PO: 32962
Project: PE5204
Custody: 131476

Report Date: 23-Apr-2021
Order Date: 19-Apr-2021

Order #: 2117112

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

Paracel ID	Client ID
2117112-01	BH1-GW1
2117112-02	BH3S-GW1
2117112-03	BH3D-GW1
2117112-04	BH5-GW1
2117112-05	BH103-GW1

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 23-Apr-2021

Client: Paterson Group Consulting Engineers

Order Date: 19-Apr-2021

Client PO: 32962

Project Description: PE5204

Analysis Summary Table

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

Certificate of Analysis

Report Date: 23-Apr-2021

Client: Paterson Group Consulting Engineers

Order Date: 19-Apr-2021

Client PO: 32962

Project Description: PE5204

	Client ID:	BH1-GW1	BH3S-GW1	BH3D-GW1	BH5-GW1
	Sample Date:	19-Apr-21 09:30	19-Apr-21 11:30	19-Apr-21 12:30	19-Apr-21 10:30
	Sample ID:	2117112-01	2117112-02	2117112-03	2117112-04
	MDL/Units	Water	Water	Water	Water
Volatiles					
Acetone	5.0 ug/L	-	<5.0	<5.0	<5.0
Benzene	0.5 ug/L	-	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	-	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	-	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	-	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	-	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	-	<0.5	<0.5	<0.5
Chloroform	0.5 ug/L	-	1.2	0.6	<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 (dibromoethane, 1,2-)	0.2 ug/L	-	<0.2	<0.2	<0.2
Hexane	1.0 ug/L	-	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	-	<5.0	<5.0	<5.0
Methyl Isobutyl Ketone	5.0 ug/L	-	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	-	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	-	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	-	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	-	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	-	<0.5	<0.5	<0.5
Tetrachloroethylene	0.5 ug/L	-	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	-	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5 ug/L	-	<0.5	<0.5	<0.5

Certificate of Analysis

Report Date: 23-Apr-2021

Client: Paterson Group Consulting Engineers

Order Date: 19-Apr-2021

Client PO: 32962

Project Description: PE5204

	Client ID:	BH1-GW1	BH3S-GW1	BH3D-GW1	BH5-GW1
	Sample Date:	19-Apr-21 09:30	19-Apr-21 11:30	19-Apr-21 12:30	19-Apr-21 10:30
	Sample ID:	2117112-01	2117112-02	2117112-03	2117112-04
	MDL/Units	Water	Water	Water	Water
1,1,2-Trichloroethane	0.5 ug/L	-	<0.5	<0.5	<0.5
Trichloroethylene	0.5 ug/L	-	<0.5	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	-	<1.0	<1.0	<1.0
Vinyl chloride	0.5 ug/L	-	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	-	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	-	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	-	<0.5	<0.5	<0.5
4-Bromofluorobenzene	Surrogate	-	91.4%	93.4%	88.6%
Dibromofluoromethane	Surrogate	-	91.4%	91.4%	91.7%
Toluene-d8	Surrogate	-	104%	103%	103%
Benzene	0.5 ug/L	<0.5	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	-	-	-
Toluene	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	-	-	-
Toluene-d8	Surrogate	104%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100
PCBs					
PCBs, total	0.05 ug/L	-	-	-	<0.05
Decachlorobiphenyl	Surrogate	-	-	-	77.6%

Certificate of Analysis

Report Date: 23-Apr-2021

Client: Paterson Group Consulting Engineers

Order Date: 19-Apr-2021

Client PO: 32962

Project Description: PE5204

	Client ID:	BH103-GW1	-	-	-
	Sample Date:	19-Apr-21 09:00	-	-	-
	Sample ID:	2117112-05	-	-	-
	MDL/Units	Water	-	-	-
Volatiles					
Acetone	5.0 ug/L	<5.0	-	-	-
Benzene	0.5 ug/L	<0.5	-	-	-
Bromodichloromethane	0.5 ug/L	<0.5	-	-	-
Bromoform	0.5 ug/L	<0.5	-	-	-
Bromomethane	0.5 ug/L	<0.5	-	-	-
Carbon Tetrachloride	0.2 ug/L	<0.2	-	-	-
Chlorobenzene	0.5 ug/L	<0.5	-	-	-
Chloroform	0.5 ug/L	1.2	-	-	-
Dibromochloromethane	0.5 ug/L	<0.5	-	-	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	-	-	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-
1,1-Dichloroethane	0.5 ug/L	<0.5	-	-	-
1,2-Dichloroethane	0.5 ug/L	<0.5	-	-	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	-	-	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	-	-	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	-	-	-
1,2-Dichloropropane	0.5 ug/L	<0.5	-	-	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	-	-	-
Ethylene dibromide (dibromoethane, 1	0.2 ug/L	<0.2	-	-	-
Hexane	1.0 ug/L	<1.0	-	-	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	-	-	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	-	-	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	-	-	-
Methylene Chloride	5.0 ug/L	<5.0	-	-	-
Styrene	0.5 ug/L	<0.5	-	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	-	-	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	-	-	-
Tetrachloroethylene	0.5 ug/L	<0.5	-	-	-
Toluene	0.5 ug/L	<0.5	-	-	-

Certificate of Analysis

Report Date: 23-Apr-2021

Client: Paterson Group Consulting Engineers

Order Date: 19-Apr-2021

Client PO: 32962

Project Description: PE5204

	Client ID:	BH103-GW1	-	-	-
	Sample Date:	19-Apr-21 09:00	-	-	-
	Sample ID:	2117112-05	-	-	-
	MDL/Units	Water	-	-	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	-	-	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	-	-	-
Trichloroethylene	0.5 ug/L	<0.5	-	-	-
Trichlorofluoromethane	1.0 ug/L	<1.0	-	-	-
Vinyl chloride	0.5 ug/L	<0.5	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	-	-	-
o-Xylene	0.5 ug/L	<0.5	-	-	-
Xylenes, total	0.5 ug/L	<0.5	-	-	-
4-Bromofluorobenzene	Surrogate	91.2%	-	-	-
Dibromofluoromethane	Surrogate	91.0%	-	-	-
Toluene-d8	Surrogate	104%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	-	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	-	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	-	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
PCBs									
PCBs, total	ND	0.05	ug/L						
Surrogate: Decachlorobiphenyl	*0.409*		*ug/L*		*81.8*	*60-140*			
Volatiles									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroform	ND	0.5	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Ethylene dibromide (dibromoethane, 1,2-	ND	0.2	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
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	*73.9*		*ug/L*		*92.4*	*50-140*			
Surrogate: Dibromofluoromethane	*71.8*		*ug/L*		*89.7*	*50-140*			
Surrogate: Toluene-d8	*84.8*		*ug/L*		*106*	*50-140*			
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Xylenes, total	ND	0.5	ug/L						
Surrogate: Toluene-d8	*84.8*		*ug/L*		*106*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	ND	0.5	ug/L	ND			NC	30	
Bromoform	ND	0.5	ug/L	ND			NC	30	
Bromomethane	ND	0.5	ug/L	ND			NC	30	
Carbon Tetrachloride	ND	0.2	ug/L	ND			NC	30	
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroform	1.16	0.5	ug/L	1.16			0.0	30	
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Ethylene dibromide (dibromoethane, 1,2-	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND			NC	30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND			NC	30	
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	
Styrene	ND	0.5	ug/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
Tetrachloroethylene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
Trichloroethylene	ND	0.5	ug/L	ND			NC	30	
Trichlorofluoromethane	ND	1.0	ug/L	ND			NC	30	
Vinyl chloride	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*72.4*		*ug/L*		*90.5*	*50-140*			
Surrogate: Dibromofluoromethane	*73.0*		*ug/L*		*91.3*	*50-140*			
Surrogate: Toluene-d8	*82.8*		*ug/L*		*104*	*50-140*			
Benzene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: Toluene-d8	*82.8*		*ug/L*		*104*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	2130	25	ug/L	ND	107	68-117			
F2 PHCs (C10-C16)	1190	100	ug/L	ND	74.6	60-140			
F3 PHCs (C16-C34)	3900	100	ug/L	ND	99.5	60-140			
F4 PHCs (C34-C50)	2660	100	ug/L	ND	107	60-140			
PCBs									
PCBs, total	1.20	0.05	ug/L	ND	120	60-140			
Surrogate: Decachlorobiphenyl	*0.493*		*ug/L*		*98.6*	*60-140*			
Volatiles									
Acetone	112	5.0	ug/L	ND	112	50-140			
Benzene	33.6	0.5	ug/L	ND	84.1	60-130			
Bromodichloromethane	31.8	0.5	ug/L	ND	79.6	60-130			
Bromoform	40.9	0.5	ug/L	ND	102	60-130			
Bromomethane	40.7	0.5	ug/L	ND	102	50-140			
Carbon Tetrachloride	36.0	0.2	ug/L	ND	90.1	60-130			
Chlorobenzene	39.2	0.5	ug/L	ND	98.0	60-130			
Chloroform	35.5	0.5	ug/L	ND	88.8	60-130			
Dibromochloromethane	35.0	0.5	ug/L	ND	87.6	60-130			
Dichlorodifluoromethane	44.0	1.0	ug/L	ND	110	50-140			
1,2-Dichlorobenzene	35.1	0.5	ug/L	ND	87.7	60-130			
1,3-Dichlorobenzene	35.3	0.5	ug/L	ND	88.2	60-130			
1,4-Dichlorobenzene	35.5	0.5	ug/L	ND	88.6	60-130			
1,1-Dichloroethane	33.1	0.5	ug/L	ND	82.8	60-130			
1,2-Dichloroethane	40.0	0.5	ug/L	ND	100	60-130			
1,1-Dichloroethylene	35.7	0.5	ug/L	ND	89.3	60-130			
cis-1,2-Dichloroethylene	29.9	0.5	ug/L	ND	74.8	60-130			
trans-1,2-Dichloroethylene	29.5	0.5	ug/L	ND	73.7	60-130			
1,2-Dichloropropane	31.6	0.5	ug/L	ND	79.1	60-130			
cis-1,3-Dichloropropylene	28.6	0.5	ug/L	ND	71.4	60-130			
trans-1,3-Dichloropropylene	35.0	0.5	ug/L	ND	87.4	60-130			
Ethylbenzene	41.0	0.5	ug/L	ND	103	60-130			
Ethylene dibromide (dibromoethane, 1,2-	32.0	0.2	ug/L	ND	80.1	60-130			
Hexane	34.9	1.0	ug/L	ND	87.2	60-130			
Methyl Ethyl Ketone (2-Butanone)	76.8	5.0	ug/L	ND	76.8	50-140			
Methyl Isobutyl Ketone	69.8	5.0	ug/L	ND	69.8	50-140			
Methyl tert-butyl ether	82.6	2.0	ug/L	ND	82.6	50-140			
Methylene Chloride	35.4	5.0	ug/L	ND	88.5	60-130			
Styrene	36.4	0.5	ug/L	ND	91.1	60-130			
1,1,1,2-Tetrachloroethane	35.9	0.5	ug/L	ND	89.8	60-130			
1,1,2,2-Tetrachloroethane	30.8	0.5	ug/L	ND	77.0	60-130			
Tetrachloroethylene	40.9	0.5	ug/L	ND	102	60-130			
Toluene	38.7	0.5	ug/L	ND	96.8	60-130			
1,1,1-Trichloroethane	35.6	0.5	ug/L	ND	89.0	60-130			
1,1,2-Trichloroethane	31.0	0.5	ug/L	ND	77.5	60-130			
Trichloroethylene	33.8	0.5	ug/L	ND	84.5	60-130			
Trichlorofluoromethane	44.8	1.0	ug/L	ND	112	60-130			
Vinyl chloride	44.6	0.5	ug/L	ND	112	50-140			
m,p-Xylenes	76.0	0.5	ug/L	ND	95.0	60-130			
o-Xylene	40.7	0.5	ug/L	ND	102	60-130			

Certificate of Analysis

Report Date: 23-Apr-2021

Client: Paterson Group Consulting Engineers

Order Date: 19-Apr-2021

Client PO: 32962

Project Description: PE5204

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Surrogate: 4-Bromofluorobenzene	*78.2*		*ug/L*		*97.8*	*50-140*			
Surrogate: Dibromofluoromethane	*80.9*		*ug/L*		*101*	*50-140*			
Surrogate: Toluene-d8	*80.8*		*ug/L*		*101*	*50-140*			
Benzene	33.6	0.5	ug/L	ND	84.1	60-130			
Ethylbenzene	41.0	0.5	ug/L	ND	103	60-130			
Toluene	38.7	0.5	ug/L	ND	96.8	60-130			
m,p-Xylenes	76.0	0.5	ug/L	ND	95.0	60-130			
o-Xylene	40.7	0.5	ug/L	ND	102	60-130			
Surrogate: Toluene-d8	*80.8*		*ug/L*		*101*	*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.
NC: Not Calculated

CCME PHC additional information:

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

PARA LABORATORI

Paracel ID: 2117112

L. Laurent Blvd.
tario K1G 4J8
9-1947
paracellabs.com
llabs.com

Paracel Order Number
(Lab Use Only)

Chain Of Custody
(Lab Use Only)
№ 131476

Client Name: PATERSON
Project Ref: PE5204
Page 1 of 1

Contact Name: ADRIAN MENYHART
Quote #:

Address: 154 COLONNADE Rd S. OTTAWA, ONT.
PO #: 32962

Telephone: 613 226 - 7381
E-mail: AMENYHART@PATERSONGROUP.ca

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

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

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

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	PCB
1	BH1-GW1	GW		3	APR 19/21	9:30A	✓							
2	BH3S-GW1			3		11:30A	✓	✓						
3	BH3D-GW1			3		12:30P	✓	✓						
4	BH5-GW1			4		10:30A	✓	✓						✓
5	BH103-GW1	↓	↓	3	↓	—	✓	✓						
6														
7														
8														
9														
10														

Comments:

Method of Delivery: D/B

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Dominic LANDRY	Date/Time:	Date/Time: APR 19 2021 16:12	Date/Time: APR 20 2021 9:11
Date/Time: APR 19/2021	Temperature: °C	Temperature: 13.3 °C	pH Verified: ☐ By: