

**Geotechnical
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Phase II - Environmental Site Assessment

70 Nicholas Street
Ottawa, Ontario

Prepared For

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Report: PE5267-2

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EXECUTIVE SUMMARY

Assessment

A Phase II ESA was conducted for the northeast portion of the property addressed 70 Nicholas Street, in the City of Ottawa, Ontario. The purpose of the Phase II ESA was to address potentially contaminating activities (PCAs) that were identified during the Phase I ESA and considered to result in areas of potential environmental concern (APECs) on the Phase II Property.

The Phase II ESA was carried out in conjunction with a geotechnical investigation and consisted of the placement of four boreholes and nine test pits. All boreholes were constructed with groundwater monitoring wells. The general soil profile encountered during the field program consisted of a silty sand fill layer, over a layer of clay followed by glacial till (on the southwest corner of the site only), followed by limestone bedrock. No unusual staining or odour was noted at the time of the field program. Deleterious material identified in the fill material consists of construction debris, coal, brick, concrete and a layer of asphalt in TP7-21.

A total of 17 soil samples were submitted for laboratory analysis of Metals (including methyl mercury), Volatile Organic Compounds (VOCs), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Petroleum Hydrocarbons (PHCs, Fractions F₁-F₄) and/or Polycyclic Aromatic Hydrocarbons (PAHs). No VOC or BTEX concentrations identified in the samples analysed. Concentrations of metals (including As, Sb, Se), Hg, PAH and/or PHC (F₃) parameters exceeding the MECP Table 3 standards were identified in soil Samples BH1-21-SS5/6, BH2-21-SS4, BH3-21-SS4/5 TP1-21-GS3, TP3-21-GS3, TP5-21-GS2 and TP6-21-GS5. Based on Hg results, MeHg was analyzed and determined to comply with the MECP Table 3 standards.

Groundwater samples from monitoring wells BH1-21, BH2-21, BH3-21 and BH4-21 were collected during the May 25, 2021 sampling event. No sheen, free product or odour was noted during the groundwater sampling event.

Groundwater samples were analyzed for Metals, BTEX, PHCs and/or PAHs. All groundwater results comply with the selected MECP Table 3 Residential Standards.

Recommendations

Soil

Based on the findings of the Phase II ESA, it is anticipated that fill material impacted with metals, mercury, PAHs and/or PHC (F₃) exceeding the MECP Table 3 standards is present across the Phase II Property at depths extending up to approximately 5.0m

below grade. It is our understanding that the Phase II Property will be redeveloped with a residential multi-story building with 2 levels of underground parking.

It is recommended that an environmental site remediation program, involving the removal of all impacted fill material be completed prior to site redevelopment. Prior to off-site disposal of the impacted soil at a licenced landfill site, a leachate analysis of a representative sample of contaminated soil must be conducted in accordance with Ontario Regulation 347/558.

It is also recommended that Paterson personnel be onsite during construction activities to direct the excavation and segregation of impacted soil and to conduct additional delineation or confirmatory sampling as required.

Any clean soil that requires removal from the Phase II Property for construction purposes must be handled in accordance with Ontario Regulation 406/19: On-Site and Excess Soil Management.

Groundwater

It is recommended that the monitoring wells installed on the Phase II Property remain viable for future monitoring, if required. It is expected that groundwater monitoring wells will be abandoned in accordance with O.Reg.903 at the time of the construction excavation.

1.0 INTRODUCTION

At the request of The Cadillac Fairview Corporation Limited, Paterson Group (Paterson) conducted a Phase II Environmental Site Assessment for the northeast portion of the property addressed 70 Nicholas Street, in the City of Ottawa, Ontario. The purpose of this Phase II ESA is to address areas of potential environmental concern (APECs) identified on the Phase II Property during the Phase I ESA conducted by Paterson in June of 2021.

1.1 Site Description

Address: 70 Nicholas Street, Ottawa, Ontario

Location: The Phase II Property is located on the west side of Nicholas Street between Daly Avenue and the Mackenzie King Bridge, in the City of Ottawa. The Phase I Property is shown on Figure 1 - Key Plan following the body of this report.

Latitude and Longitude: 45° 25' 30" N, 75° 41' 22" W

Site Description:

Configuration: Irregular

Site Area: 0.27 ha (approximate)

Zoning: Mixed Use Downtown Zone

1.2 Property Ownership

Paterson was engaged to conduct this Phase I ESA by Mr. Aaron Cameron of The Cadillac Fairview Corporation Limited. Mr. Cameron can be reached by telephone at 416-566-9200.

1.3 Current and Proposed Future Uses

The Phase II Property is currently occupied by a vacant building. It is our understanding that the Phase II Property redevelopment will consist of a residential high rise building with two underground parking levels. Associated access lanes, walkways and hardscaped areas are also anticipated as part of the development. It is expected that the proposed buildings 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 Environment, Conservation and Parks (MECP), April 2011. The MECP selected Table 3 Standards are based on the following considerations:

- ☐ Coarse-grained soil conditions
- ☐ Full depth generic site conditions
- ☐ Non-potable groundwater conditions
- ☐ Residential land use

Section 35 of O.Reg. 153/04 does apply to the Phase II Property in that the property relies upon municipal drinking water.

Section 41 of O.Reg. 153/04 does not apply to the Phase II Property, as the property is not within 30m of an environmentally sensitive area and the pH of the soil at the property is between 5 and 9 for surface soil and between 5 and 11 for sub-surface soil.

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

The intended use of the Phase II Property is residential; therefore, the Residential Standards have been selected for the purpose of this Phase II ESA.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

The Phase II Property is located on the west side of Nicholas Street, between Daly Avenue and the Mackenzie King Bridge, in the City of Ottawa, Ontario. The Phase II Property is situated in a mixed-use downtown zone consisting of primarily commercial with some residential land use. The setting of the Phase II Property is shown on Drawing PE5267-2 – Surrounding Land Use Plan.

At the time of the Phase II ESA, the Phase II Property was occupied by a vacant building on the east-central portion. The building was constructed circa 1878 with a stone foundation and consists of one storey with a small basement crawl space.

The remainder of the Phase II Property consists of an access road to a (off-site) truck loading area across the southeast portion and vacant grassed/treed land on the remaining areas.

Site topography slopes down to the east, in the direction of Nicholas Street. The regional topography in the general area of the Phase II Property slopes downward to the north-northwest, towards the Ottawa River. Site drainage consists primarily of infiltration and surface runoff to catch basins on site and along adjacent roadways. Multiple underground utilities were identified on the Phase I Property including electrical, gas, water, sewer and telecommunication lines.

2.2 Past Investigations

Paterson completed a Phase I ESA in June of 2021 for the Phase II Property. Based on the findings of the Phase I ESA, several on and off-site PCAs were considered to result in APECs on the Phase II Property as shown in Table 1.

| Table 1 Areas of Potential Environmental Concern | | | | | |
|---|---|---|--|--|--|
| Area of Potential Environmental Concern | Location of Area of Potential Environmental Concern with respect to Phase I Property | Potentially Contaminating Activity | Location of PCA (on-site or off-site) | Contaminants of Potential Concern | Media Potentially Impacted (Groundwater, Soil, and/or Sediment) |
| APEC 1 (former warehouse / workshop) | Northern portion of the Phase I Property | Other – associated with the former warehouse and workshop | On-site | BTEX PHCs (F ₁ -F ₄) | Soil Groundwater |
| APEC 2 (former coal storage) | Northeast portion of the Phase I Property | Other – former coal storage | On-site | Metals As, Sb, Se Hg, CrVI PAH | Soil Groundwater |
| APEC 3 (former coal storage – Canadian Granite Co.) | Northeast portion of the Phase I Property | Other – former coal storage | On-site | Metals As, Sb, Se Hg, CrVI PAH | Soil Groundwater |

Table 1 Continued

Areas of Potential Environmental Concern

| Area of Potential Environmental Concern | Location of Area of Potential Environmental Concern with respect to Phase I Property | Potentially Contaminating Activity | Location of PCA (on-site or off-site) | Contaminants of Potential Concern | Media Potentially Impacted (Groundwater, Soil, and/or Sediment) |
|--|--|--|---------------------------------------|--|---|
| APEC 4 (former garage) | Southwest portion of the Phase I Property | PCA 52 - Storage, maintenance, fuelling and repair of equipment, vehicles and material used to maintain transportation systems | On-site | BTEX PHCs (F ₁ -F ₄) VOCs | Soil Groundwater |
| APEC 5 ¹ (use of de-icing salt associated with on-site and adjacent roadways) | South portion of the Phase I Property | Other - use of salt for de-icing purposes | On-site | EC SAR | Soil |
| APEC 6 (former railway spur line) | Western portion of the Phase I Property | PCA 46 – Rail Yards, Tracks and Spurs | On-site | Metals As, Sb, Se Hg, CrVI PAH PHCs (F ₁ -F ₄) | Soil Groundwater |
| APEC 7 (fill material of unknown quality) | Potentially across the Phase I Property | PCA 30 - Importation of Fill Material of Unknown Quality | On-site | Metals As, Sb, Se Hg, CrVI PAHs PHCs (F ₁ -F ₄) | Soil (Fill Material) |
| APEC 8 (former rail yard and rail lines) | West portion of the Phase I Property | PCA 46 – Rail Yards, Tracks and Spurs | Off-site | Metals As, Sb, Se Hg, CrVI PAH PHCs (F ₁ -F ₄) | Groundwater |
| APEC 9 (former coal storage) | West portion of the Phase I Property | Other – former coal storage | Off-site | Metals As, Sb, Se Hg, CrVI PAH | Groundwater |
| <p>Notes:</p> <p>1 – In accordance with Section 49.1 of Ontario Regulation 153/04 standards are deemed to be met if an applicable site condition standard is exceeded at a property solely because the qualified person has determined, based on a phase two environmental site assessment, that a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both. As further discussed in the Phase II CSM, the exemption outlined in Section 49.1 is being relied upon with respect to the RSC Property.</p> | | | | | |

The rationale for identifying the above PCAs is based on fire insurance plans, city directories, aerial photographs, field observations, and personal interviews. A Phase II ESA was recommended to address the aforementioned APECs.

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The subsurface investigation was conducted during the interim of May 14 through May 17, 2021 and June 15, 2021, in conjunction with a Geotechnical Investigation. The field program consisted of drilling four boreholes to address the APECs identified on the Phase II Property. All four of the boreholes (BH1-21 through BH4-21) were instrumented with groundwater monitoring wells. Boreholes were drilled to a maximum depth of 10.62 m below the ground surface (mbgs).

Additionally, nine test pits were placed across the Phase I Property to assess the quality of the fill material.

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.

The contaminants of potential concern for the soil and groundwater on the subject site include the following:

- ☐ Metals (including Arsenic (As), Antimony (Sb) and Selenium);
- ☐ Mercury (Hg);
- ☐ Hexavalent Chromium;
- ☐ Volatile Organic Compounds (VOCs);
- ☐ Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX);
- ☐ Petroleum Hydrocarbons, fractions 1 - 4 (PHCs F₁-F₄); and
- ☐ Polycyclic Aromatic Hydrocarbons (PAHs).

3.3 Phase I Conceptual Site Model

Geological and Hydrogeological Setting

The Geological Survey of Canada website on the Urban Geology of the National Capital Area was consulted as part of this assessment. Based on this information, the bedrock in the area of the Phase I Property consists of interbedded limestone and shale of the Verulam Formation. Based on the maps, the thickness of the overburden ranges from 5 to 10 m and consists of plain till. Groundwater flow is expected to reflect regional topography and flow in a northwesterly direction toward the Ottawa River.

Buildings and Structures

The central portion of the Phase I Property is occupied by a vacant building. The building is storey and constructed with a stone foundation. A crawl space is present beneath the northwestern portion of the building. The exterior of the building is finished with brick, stone and a sloped shingle-style roof. The building was constructed circa 1878 and was most recently heated with electric baseboard heaters. No other buildings or structures are present on the Phase I Property.

Subsurface Structures and Utilities

A small basement crawl space is present beneath the northwestern portion of the building. Multiple underground utilities were identified on the Phase I Property including electrical, gas, water, sewer and telecommunication lines.

Water Bodies

No water bodies are present on the Phase I Property. The closest water body is the Rideau Canal, located approximately 200 m northwest of the Phase I Property.

Areas of Natural Significance

No areas of natural significance were identified on the Phase I Property or in the Phase I ESA Study Area.

Drinking Water Wells

No potable well records were identified for the Phase I Property or the Phase I Study Area.

Monitoring Well Records

No monitoring well records were identified on the Phase I Property. A total of 13 well records were identified for properties within the Phase I Study Area. All of the reported well records were dated between 2010 and 2018. A monitoring well record for the property addressed 2 Daly Avenue, approximately 15 m east of the Phase I Property was identified. Five monitoring well records were identified for the properties addressed 70 & 90 Waller Street, approximately 125 m northeast of the Phase I Property.

The monitoring well records identified within the Phase I Study Area are not considered to represent a concern to the Phase I Property based on their respective separation distances.

Neighbouring Land Use

Neighbouring land use in the Phase I Study Area is primarily commercial with some residential land use.

Potentially Contaminating Activities

As per section 7.1 of this report, seven PCAs were identified on the Phase I Property and pertain to a historical post office warehouse/workshop, two separate historical coal storage locations, a historical railway spur line, the use of de-icing salt (on the former roadway through the south portion of the Phase I Property and adjacent roadways), a former garage and fill material of unknown quality throughout the Phase I Property. The seven identified PCAs result in seven APECs for the Phase I Property.

Two off-site PCAs that result in APECs for the Phase I Property were identified within the Study Area. The PCAs include a historical rail yard with associated rail lines and coal storage located adjacent to the west of the Phase I Property. The remaining 42 off-site PCAs identified within the Phase I Study Area are not considered to result in APECs on the subject property due to their respective separation distances and/or cross/down gradient orientations with respect to the Phase I Property.

Areas of Potential Environmental Concern

Nine APECs were identified on the subject site, seven of which resulted from on-site activities including a historical post office warehouse/workshop, two separate historical coal storages, a historical railway spur line, the use of de-icing salt, a former garage and fill material of unknown quality throughout the Phase I

Property. The remaining two APECs are resultant of off-site activities and include a historical rail yard with associated rail lines and coal storage located adjacent to the west of the Phase I Property.

According to Section 49.1 of O.Reg. 153/04, if an applicable site condition standard is exceeded at a property solely because of the following reason, the applicable site condition standard is deemed not to be exceeded for the purpose of Part XV.1 of the Act: "The qualified person has determined, based on a phase one environmental site assessment or a phase two environmental site assessment, that a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both."

In accordance with Section 49.1 of O.Reg. 153/04, any EC and SAR concentrations on the RSC Property that exceed the MECP Table 3 standards for a residential/institutional land use are deemed not to be exceeded for the purpose of Part XV.1 of the Act. This exemption is being relied on for APEC 5.

Contaminants of Potential Concern

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

- ☐ Metals (including arsenic (As), antimony (Sb) and selenium (Se))
- ☐ Mercury (Hg)
- ☐ Hexavalent Chromium (Cr_{VI})
- ☐ Volatile Organic Compounds (VOCs)
- ☐ Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)
- ☐ Petroleum Hydrocarbons (PHCs, Fractions F₁-F₄)
- ☐ Polycyclic Aromatic Hydrocarbons (PAHs)

Assessment of Uncertainty and/or Absence of Information

The information available for review as part of the preparation of this Phase I-ESA is considered to be sufficient to conclude that there are APECs on the Phase I Property which may potentially have impacted the Phase I Property. The presence of PCAs was confirmed by a variety of independent sources, and as such, the conclusions of this report are not affected by uncertainty which may be present with respect to the individual sources.

3.4 Deviations from Sampling and Analysis Plan

The Sampling and Analysis Plan for this project is included in Appendix 1 of this report.

3.5 Impediments

The depth of the test pits was impeded by large boulders and concrete in the fill material; test pits were completed on practical refusal.

4.0 INVESTIGATION METHOD

4.1 Subsurface Investigation

The subsurface investigation was completed in conjunction with a Geotechnical Investigation during the interim of May 14 through May 17, 2021 and June 15, 2021. The field program consisted of drilling four boreholes (BH1-21 through BH4-21) and excavating nine test pits (TP1-21 through TP9-21) across the Phase II Property.

The boreholes were drilled to a maximum depth of 10.62 m below ground surface (mbgs). Three of the four boreholes were cored into the bedrock and all four were completed as groundwater monitoring wells to access.

The boreholes and test pits were placed to address the aforementioned APECs presented in Table 1, and to provide coverage of the proposed building footprint for geotechnical purposes. The boreholes were drilled using a low-clearance drill rig operated by George Downing Estate Drilling of Hawkesbury, Ontario, under full-time supervision of Paterson personnel. The borehole locations are indicated on the attached Drawing PE5267-3 - Test Hole Location Plan.

4.2 Soil Sampling

A total of 24 soil samples were obtained from the boreholes by means of grab sampling from shallow auger flights and split spoon sampling. Split spoon samples were taken at approximate 0.76 m intervals. The depths at which split spoon and auger samples were obtained from the boreholes are shown as “**SS**” and “**AU**” on the Soil Profile and Test Data Sheets.

Upon refusal of the augers, boreholes BH1-21, BH2-21 and BH4-21 were advanced into bedrock using a diamond coring system. An additional 14 rock core samples were recovered and are shown as “**RC**” on the Soil Profile and Test Data Sheets.

During the test pit program, a total of 38 soil samples were obtained from the test pits by means of grab sampling. The depths at which grab samples were

obtained from the test holes are shown as “G” on the Soil Profile and Test Data Sheets.

The site stratigraphy generally consists of a layer of topsoil (0.1 to 0.2m thick) or engineered fill over (up to 0.5m thick) over a thick layer of fill material extending to depths up to approximately 5.0m below grade. The fill material primarily consists of brown silty sand with some clay and gravel. Fragments of concrete, brick, wood and/or coal were identified at each test hole location. A thin layer of silty clay (from 4.27 to 5.18 mbgs) followed by a silty clay glacial till (from 5.18 to 7.01 mbgs) was encountered in BH3-21 below the fill material. A layer of asphalt was encountered in TP7-21 from 0.5 to 0.6 mbgs. Limestone bedrock was encountered beneath the fill material or glacial till at BH3-21, at depths ranging from approximately 2.6 to 7.0m below grade.

Borehole and test pit locations are shown on Drawing PE5267-3 – Test Hole Location Plan.

4.3 Field Screening Measurements

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

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

The organic vapour readings were generally below 20ppm and not considered to be indicative of potential contamination. A slightly elevated reading of 77.2ppm was identified for Sample BH2-21-SS2. These results were not considered to be indicative of potential significant contamination from volatile contaminants. Vapour readings are noted on the Soil Profile and Test Data Sheets in Appendix 1.

No olfactory indications of potential contamination were identified in the soil samples. Deleterious material identified in the fill material consists of construction debris, coal, brick, concrete and a layer of asphalt in TP7-21. The

results of the vapour survey are presented on the Soil Profile and Test Data sheets.

4.4 Groundwater Monitoring Well Installation

Four groundwater monitoring wells were installed on the Phase II Property as part of the subsurface investigation. The monitoring wells consisted of 32 mm diameter, Schedule 40 threaded PVC risers and screens. Monitoring well construction details are listed in Table 3 and are also presented on the Soil Profile and Test Data Sheets provided in Appendix 1.

Borehole locations and elevations were surveyed geodetically by Paterson personnel.

| TABLE 3 - 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 | 67.20 | 10.49 | 7.44-10.49 | 6.71-10.49 | 0.15-6.71 | Stick-Up |
| BH2-21 | 66.14 | 10.62 | 7.57-10.62 | 6.10-10.62 | 0.15-6.10 | Stick-Up |
| BH3-21 | 67.28 | 7.01 | 3.96-7.01 | 3.35-7.01 | 0.15-3.35 | Stick-Up |
| BH4-21 | 66.89 | 10.36 | 7.31-10.36 | 6.71-10.36 | 0.15-6.71 | Stick-Up |

4.5 Field Measurement of Water Quality Parameters

Groundwater samples were collected on May 25, 2021. Water quality parameters were measured in the field using a multi-parameter analyzer. Parameters measured in the field include temperature, pH and electrical conductivity.

Field parameters were measured after each well volume purged. Wells were purged prior to sampling until at least three well volumes had been removed, the field parameters were relatively stable or the well was dry. Stabilized field parameter values are summarized in Table 4.

| Table 4 - Field Measurement of Water Quality Parameters – May 25, 2021 | | | | |
|---|---------------|---------------|---------------|---------------|
| Parameter | BH1-21 | BH2-21 | BH3-21 | BH4-21 |
| Temperature (°C) | 22.3 | 20.7 | 20.0 | 21.7 |
| pH | 7.31 | 7.48 | 7.08 | 7.53 |
| Electrical Conductivity (µS/cm) | 1,980 | 2,010 | 2,450 | 2,380 |

4.6 Groundwater Sampling

Groundwater sampling protocols were followed using the MECP document entitled "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario", dated May 1996. Groundwater samples were obtained from each monitoring well, using dedicated sampling equipment. Standing water was purged from each well prior to sampling. Samples were stored in coolers to reduce analyte volatilization during transportation. Details of our standard operating procedure for groundwater sampling are provided in the Sampling and Analysis Plan in Appendix 1.

4.7 Analytical Testing

Based on the guidelines outlined in the Sampling and Analysis Plan appended to this report, the following soil and groundwater samples, as well as analyzed parameters are presented in Tables 5 and 6.

| Table 5 - Testing Parameters for Submitted Soil Samples | | | | | | | |
|---|--|---------------------|------|------|-------------------------------------|------|---|
| Sample ID | Sample Depth & Stratigraphic Unit | Parameters Analyzed | | | | | Rationale |
| | | Metals ¹ | VOCs | BTEX | PHCs F ₁ -F ₄ | PAHs | |
| May 14, 2021 | | | | | | | |
| BH1-21-SS3 | 1.52 - 2.13 m Brown Silty Sand (Fill Material) | | | X | X | | Assess potential soil impacts resulting from the historical on-site spur line and off-site rail yard and rail tracks. |
| BH1-21-SS5/6 | 3.05 - 4.42 m Brown Silty Sand (Fill Material) | X | | | | X | Assess potential soil impacts resulting from the historical on-site spur line and off-site rail yard and rail tracks. |
| May 17, 2021 | | | | | | | |
| BH2-21-SS4 | 2.29 - 2.62 m Brown Silty Sand (Fill Material) | X | | | | X | Assess potential soil impacts resulting from the presence of the historical on-site warehouse/workshop and coal storage. |
| BH3-21-SS2 | 0.76 – 1.37 m Brown Silty Sand (Fill Material) | | | X | X | | Assess potential soil impacts resulting from the presence of the historical on-site garage and coal storage yard and the off-site coal storage. |

| Table 5 Continued - Testing Parameters for Submitted Soil Samples | | | | | | | |
|--|--|----------------------------|-------------|-------------|---|-------------|---|
| Sample ID | Sample Depth & Stratigraphic Unit | Parameters Analyzed | | | | | Rationale |
| | | Metals¹ | VOCs | BTEX | PHCs F₁-F₄ | PAHs | |
| BH3-21-SS4/5 | 2.29 – 3.66 m Brown Silty Sand (Fill Material) | X | | | | X | Assess potential soil impacts resulting from the presence of the historical on-site garage and coal storage yard and the off-site coal storage. |
| BH4-21-SS2 | 0.76 – 1.37 m Brown Silty Sand (Fill Material) | X | | | | X | Assess potential soil impacts resulting from the presence of fill material. |
| DUP | 2.29 – 3.66 m Brown Silty Sand (Fill Material) | X | | | | X | Duplicate soil sample (BH3-21-SS4/5) for QA/QC purposes |
| June 25, 2021 | | | | | | | |
| TP1-21-GS3 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | | X | | X | | Delineation of previously identified impacts and further assessment of the fill material |
| TP1-21-GS4 | 2.3 – 2.5 m Brown Silty Sand (Fill Material) | X ² | | | | | Delineation of previously identified impacts and further assessment of the fill material |
| TP2-21-GS4 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | X | | X | X | X | Delineation of previously identified impacts and further assessment of the fill material |
| TP3-21-GS3 | 0.5 – 0.7 m Brown Silty Sand (Fill Material) | X | | | | X | Delineation of previously identified impacts and further assessment of the fill material |
| TP4-21-GS2 | 0.7 – 0.8 m Brown Silty Sand (Fill Material) | X | | | | | Delineation of previously identified impacts and further assessment of the fill material |
| TP5-21-GS2 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | | | | | X | Delineation of previously identified impacts and further assessment of the fill material |
| TP6-21-GS5 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | X | | | | X | Delineation of previously identified impacts and further assessment of the fill material |
| TP6-21-GS6 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | X ² | | | | | Delineation of previously identified impacts and further assessment of the fill material |
| TP7-21-GS6 | 2.7 – 3.0 m Brown Silty Sand (Fill Material) | X ² | | | | | Delineation of previously identified impacts and further assessment of the fill material |

| Table 5 Continued - Testing Parameters for Submitted Soil Samples | | | | | | |
|---|---|----------------|--|--|---|--|
| TP8-21-GS5 | 2.5-2.7 Brown Silty Sand (Fill Material) | X ² | | | | Delineation of previously identified impacts and further assessment of the fill material |
| DUP3 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | | | | X | Duplicate soil sample (TP3-21-GS3) for QA/QC purposes |
| DUP4 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | X | | | | Duplicate soil sample (TP4-21-GS2) for QA/QC purposes |
| Notes: ■ 1 – including As, Sb, Se, Hg and CrVI ■ 2 – tested specifically for methyl mercury | | | | | | |

| TABLE 6 - Testing Parameters for Submitted Groundwater Samples | | | | | | |
|--|------------------------------|---------------------|------|-------------------------------------|------|---|
| Sample ID | Screened Interval | Parameters Analyzed | | | | Rationale |
| | | Metals ¹ | BTEX | PHCs F ₁ -F ₄ | PAHs | |
| May 25, 2021 | | | | | | |
| MW1-21-GW1 | 7.44 - 10.49m Bedrock | X | | | X | Assess potential groundwater impacts resulting from the historical on-site spur line and off-site rail yard and rail tracks. |
| MW2-21-GW1 | 7.57 - 10.62m Bedrock | X | | | X | Assess potential groundwater impacts resulting from the historical on-site warehouse/workshop and coal storage. |
| MW3-21-GW1 | 3.96 - 7.01m Glacial Till | X | X | X | | Assess potential groundwater impacts resulting from the historical on-site garage and coal storage yard and the off-site coal storage.. |
| MW4-21-GW1 | 7.31 - 10.36m Bedrock | | | | X | Assess potential groundwater impacts resulting from the historical on-site roadway. |
| DUP1 | 7.31 - 10.36m Bedrock | | | | X | Duplicate groundwater sample (MW4-21-GW1) for QA/QC purposes. |
| DUP2 | 7.57 - 10.62m Bedrock | X | | | | Duplicate groundwater sample (MW2-21-GW1) for QA/QC purposes. |
| Notes: | | | | | | |
| ▪ 1 – including Hg and Cr _{VI} | | | | | | |

Paracel Laboratories (Paracel), of Ottawa, Ontario, performed the laboratory analysis on the samples submitted for analytical testing. Paracel is a member of the Standards Council of Canada/Canadian Association for Laboratory

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

4.8 Residue Management

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

4.9 Elevation Surveying

The ground surface elevations at each borehole location were surveyed 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 soils consist of a layer of topsoil (0.1 to 0.2m thick) or engineered fill over (up to 0.5m thick) a thick layer of fill material extending to depths up to approximately 5.0m below grade. The fill material primarily consists of brown silty sand with some clay and gravel. Fragments of concrete, brick, wood and/or coal were identified at each test hole location. A thin layer of silty clay (from 4.27 to 5.18 mbgs) followed by a silty clay glacial till (from 5.18 to 7.01 mbgs) was encountered in BH3-21 below the fill material. A layer of asphalt was encountered in TP7-21 from 0.5 to 0.6 mbgs. Limestone bedrock was encountered beneath the fill material or glacial till at BH3-21, at depths ranging from approximately 2.6 to 7.0m below grade. Groundwater was encountered within the bedrock at depths ranging from approximately 5.64 to 9.00 m below ground surface and within the overburden in BH3-21 at a depth of approximately 5.60m below ground surface.

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

5.2 Groundwater Elevations, Flow Direction, and Hydraulic Gradient

Groundwater levels were measured during the groundwater sampling event on May 25, 2021 using an electronic water level meter. Groundwater levels are summarized in Table 7.

| TABLE 7 - Groundwater Level Measurements | | | | |
|---|-------------------------------------|--|--------------------------------------|----------------------------|
| Borehole Location | Ground Surface Elevation (m) | Water Level Depth (m below grade) | Water Level Elevation (m ASL) | Date of Measurement |
| BH1-21 | 67.20 | 9.00 | 58.20 | May 25, 2021 |
| BH2-21 | 66.14 | 6.86 | 59.28 | May 25, 2021 |
| BH3-21 | 67.28 | 5.60 | 61.68 | May 25, 2021 |
| BH4-21 | 66.89 | 5.64 | 61.24 | May 25, 2021 |

Based on the groundwater elevations measured during the sampling event, groundwater contour mapping was completed. Groundwater contours are shown on Drawing PE5267-3 – Test Hole Location Plan. Based on the contour mapping, groundwater flow at the Phase II Property is in a northwestern direction. A horizontal hydraulic gradient of approximately 0.06 m/m was calculated.

It should be noted that groundwater levels are expected to fluctuate throughout the year with seasonal variations.

5.3 Fine-Coarse Soil Texture

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

5.4 Soil: Field Screening

The organic vapour readings were generally below 20ppm and not considered to be indicative of potential contamination. A slightly elevated reading of 77.2ppm was identified for Sample BH2-21-SS2. No olfactory indications of potential contamination were identified in the soil samples. Deleterious material identified in the fill material consists of construction debris, coal, brick, concrete and a layer of asphalt in TP7-21. The results of the vapour survey are presented on the Soil Profile and Test Data sheets.

The field screening results of each individual soil sample are provided on the Soil Profile and Test Data Sheets appended to this report.

5.5 Soil Quality

Based on the findings of the field screening in combination with sample depth and location, seven soil samples (including one duplicate) were submitted for analysis of metals (including As, Sb and Se), Hg, MeHg, CrVI, BTEX, PHC (F1-F4) and/or PAHs. The results of the analytical testing are presented in Tables 8 to 12. The laboratory certificate of analysis is provided in Appendix 1.

| TABLE 8 - Analytical Test Results – Soil Metals | | | | | | | |
|---|------------|---------------------|-------------------|-------------------|------------|-------------------|---|
| Parameter | MDL (µg/g) | Soil Samples (µg/g) | | | | | MECP Table 3 Residential Standards (µg/g) |
| | | May 14, 2021 | May 17, 2021 | | | | |
| | | BH1-21-SS5/6 | BH2-21-SS4 | BH3-21-SS4/5 | BH4-21-SS2 | DUP ¹ | |
| Antimony | 1.0 | 2.0 | 1.5 | nd | nd | nd | 7.5 |
| Arsenic | 1.0 | 4.5 | 7.4 | 6.2 | 2.7 | 5.2 | 18 |
| Barium | 1.0 | <u>584</u> | 159 | 150 | 106 | 132 | 390 |
| Beryllium | 0.5 | nd | nd | 0.5 | nd | 0.5 | 4 |
| Boron | 5.0 | 19.0 | 8.8 | 8.4 | 5.5 | 6.8 | 120 |
| Cadmium | 0.5 | nd | 0.8 | nd | nd | nd | 1.2 |
| Chromium | 5.0 | 22.6 | 24.1 | 25.7 | 16.0 | 24.2 | 160 |
| Chromium (VI) | 0.2 | nd | nd | nd | nd | nd | 8 |
| Cobalt | 1.0 | 5.2 | 6.0 | 5.7 | 5.4 | 5.2 | 22 |
| Copper | 5.0 | 17.3 | 43.2 | 16.3 | 20.9 | 15.9 | 140 |
| Lead | 1.0 | 61.9 | <u>212</u> | 72.4 | 21.8 | 78.1 | 120 |
| Mercury | 0.1 | 0.2 | <u>1.3</u> | <u>0.5</u> | nd | <u>0.4</u> | 0.27 |
| Molybdenum | 1.0 | 2.4 | 1.2 | 1.2 | nd | 1.0 | 6.9 |
| Nickel | 5.0 | 11.6 | 14.8 | 16.3 | 9.6 | 15.3 | 100 |
| Selenium | 1.0 | nd | nd | nd | nd | nd | 2.4 |
| Silver | 0.3 | nd | 0.3 | nd | nd | nd | 20 |
| Thallium | 1.0 | nd | nd | nd | nd | nd | 1 |
| Uranium | 1.0 | nd | nd | nd | nd | nd | 23 |
| Vanadium | 10.0 | 28.7 | 25.6 | 31.4 | 17.7 | 30.3 | 86 |
| Zinc | 20.0 | 261 | 271 | 67.4 | 103 | 69.3 | 340 |
| Notes: | | | | | | | |
| <ul style="list-style-type: none">MDL – Method Detection Limitnd – not detected above the MDL<u>Bold and underlined</u> – Results exceed selected MECP standard1 – Duplicate of sample BH3-21-SS4/5 | | | | | | | |

| TABLE 8 Continued - Analytical Test Results – Soil Metals | | | | | | | |
|---|------------|---------------------|-------------|------------|------------|-------------------|---|
| Parameter | MDL (µg/g) | Soil Samples (µg/g) | | | | | MECP Table 3 Residential Standards (µg/g) |
| | | June 15, 2021 | | | | | |
| | | TP2-21-GS4 | TP3-21-GS3 | TP4-21-GS2 | TP6-21-GS5 | DUP4 ² | |
| Antimony | 1.0 | nd | 2.1 | nd | 2.0 | nd | 7.5 |
| Arsenic | 1.0 | 3.2 | <u>22.3</u> | 3.9 | 5.0 | 3.2 | 18 |
| Barium | 1.0 | 190 | 181 | 149 | 90.9 | 121 | 390 |
| Beryllium | 0.5 | nd | 0.7 | nd | nd | nd | 4 |
| Boron | 5.0 | 8.7 | 6.9 | 7.1 | 9.3 | 5.5 | 120 |
| Cadmium | 0.5 | nd | <u>3.1</u> | nd | nd | nd | 1.2 |
| Chromium | 5.0 | 17.6 | 20.6 | 15.1 | 18.6 | 12.7 | 160 |
| Chromium (VI) | 0.2 | nd | nd | nd | nd | nd | 8 |
| Cobalt | 1.0 | 4.9 | 7.4 | 4.9 | 5.2 | 4.3 | 22 |
| Copper | 5.0 | 11.4 | 51.5 | 11.3 | 25.8 | 10.5 | 140 |
| Lead | 1.0 | 11.1 | <u>270</u> | 17.8 | <u>136</u> | 17.8 | 120 |
| Mercury | 0.1 | nd | <u>1.0</u> | 0.1 | 0.2 | 0.1 | 0.27 |
| Molybdenum | 1.0 | nd | 2.3 | nd | 2.3 | nd | 6.9 |
| Nickel | 5.0 | 12.4 | 17.8 | 10.9 | 12.8 | 9.7 | 100 |
| Selenium | 1.0 | nd | <u>4.3</u> | nd | nd | nd | 2.4 |
| Silver | 0.3 | nd | nd | nd | nd | nd | 20 |
| Thallium | 1.0 | nd | nd | nd | nd | nd | 1 |
| Uranium | 1.0 | nd | nd | nd | nd | nd | 23 |
| Vanadium | 10.0 | 20.1 | 26.4 | 22.5 | 24.3 | 18.0 | 86 |
| Zinc | 20.0 | 27.2 | <u>1680</u> | 48.6 | 161 | 47.7 | 340 |
| Notes: | | | | | | | |
| ▪ MDL – Method Detection Limit | | | | | | | |
| ▪ nd – not detected above the MDL | | | | | | | |
| ▪ <u>Bold and underlined</u> – Results exceed selected MECP standard | | | | | | | |
| ▪ 2 – Duplicate of sample TP4-21-GS2 | | | | | | | |

| TABLE 9 - Analytical Test Results – Soil Methyl Mercury | | | | | |
|---|------------|---------------------|------------|------------|---|
| Parameter | MDL (µg/g) | Soil Samples (µg/g) | | | MECP Table 3 Residential Standards (µg/g) |
| | | June 15, 2021 | | | |
| | | TP1-21-GS4 | TP7-21-GS6 | TP8-21-GS5 | |
| Methyl Mercury | 0.000050 | nd | 0.000176 | 0.000092 | 0.0084 |
| Notes: <ul style="list-style-type: none">MDL – Method Detection Limitnd – not detected above the MDL | | | | | |

Arsenic, barium, cadmium, lead, mercury, selenium and/or zinc concentrations in Samples BH1-21-SS5/6, BH2-21-SS4, BH3-21-SS4/5, TP3-21-GS3 and TP6-21-GS5 exceed the MECP Table 3 Standards. The remaining metal concentrations in the soil samples analysed are in compliance with the selected MECP Table 3 standards. The analytical results for metals tested in soil are shown on Drawing PE5267-4 – Analytical Testing Plan – Soil (Metals).

TABLE 10 - Analytical Test Results – Soil VOCs

| Parameter | MDL (µg/g) | Soil Sample (µg/g) June 15, 2021 | MECP Table 3 Residential Standards (µg/g) |
|---|---------------|-------------------------------------|---|
| | | TP1-21-GS3 | |
| Acetone | 0.50 | nd | 16 |
| Benzene | 0.02 | nd | 0.21 |
| Bromodichloromethane | 0.05 | nd | 13 |
| Bromoform | 0.05 | nd | 0.27 |
| Bromomethane | 0.05 | nd | 0.05 |
| Carbon Tetrachloride | 0.05 | nd | 0.05 |
| Chlorobenzene | 0.05 | nd | 2.4 |
| Chloroform | 0.05 | nd | 0.05 |
| Dibromochloromethane | 0.05 | nd | 9.4 |
| Dichlorodifluoromethane | 0.05 | nd | 16 |
| 1,2-Dichlorobenzene | 0.05 | nd | 3.4 |
| 1,3-Dichlorobenzene | 0.05 | nd | 4.8 |
| 1,4-Dichlorobenzene | 0.05 | nd | 0.083 |
| 1,1-Dichloroethane | 0.05 | nd | 3.5 |
| 1,2-Dichloroethane | 0.05 | nd | 0.05 |
| 1,1-Dichloroethylene | 0.05 | nd | 0.05 |
| cis-1,2-Dichloroethylene | 0.05 | nd | 3.4 |
| trans-1,2-Dichloroethylene | 0.05 | nd | 0.084 |
| 1,2-Dichloropropane | 0.05 | nd | 0.05 |
| 1,3-Dichloropropene, total | 0.05 | nd | 0.05 |
| Ethylbenzene | 0.05 | nd | 2 |
| Ethylene dibromide (dibromoethane, 1,2-) | 0.05 | nd | 0.05 |
| Hexane | 0.05 | nd | 2.8 |
| Methyl Ethyl Ketone (2-Butanone) | 0.50 | nd | 16 |
| Methyl Isobutyl Ketone | 0.50 | nd | 1.7 |
| Methyl tert-butyl ether | 0.05 | nd | 0.75 |
| Methylene Chloride | 0.05 | nd | 0.1 |
| Styrene | 0.05 | nd | 0.7 |
| 1,1,1,2-Tetrachloroethane | 0.05 | nd | 0.058 |
| 1,1,2,2-Tetrachloroethane | 0.05 | nd | 0.05 |
| Tetrachloroethylene | 0.05 | nd | 0.28 |
| Toluene | 0.05 | nd | 2.3 |
| 1,1,1-Trichloroethane | 0.05 | nd | 0.38 |
| 1,1,2-Trichloroethane | 0.05 | nd | 0.05 |
| Trichloroethylene | 0.05 | nd | 0.061 |
| Trichlorofluoromethane | 0.05 | nd | 4 |
| Vinyl Chloride | 0.02 | nd | 0.02 |
| Xylenes, total | 0.05 | nd | 3.1 |
| Notes: | | | |
| <ul style="list-style-type: none"> ▪ MDL – Method Detection Limit ▪ nd – not detected above the MDL | | | |

No VOC parameters were detected in the soil sample analyzed. The results are in compliance with the selected MECP Table 3 standards. The analytical results for VOCs tested in soil are shown on Drawing PE5267-5 – Analytical Testing Plan – Soil (VOCs and BTEX).

| TABLE 11 - Analytical Test Results – Soil BTEX | | | | | |
|---|------------|---------------------|--------------|---------------|---|
| Parameter | MDL (µg/g) | Soil Samples (µg/g) | | | MECP Table 3 Residential Standards (µg/g) |
| | | May 14, 2021 | May 17, 2021 | June 15, 2021 | |
| | | BH1-21-SS3 | BH3-21-SS2 | TP2-21-GS4 | |
| Benzene | 0.02 | nd | nd | nd | 0.21 |
| Toluene | 0.05 | nd | nd | nd | 2 |
| Ethylbenzene | 0.05 | nd | nd | nd | 2.3 |
| Xylenes | 0.05 | nd | nd | nd | 3.1 |
| Notes: | | | | | |
| <ul style="list-style-type: none"> MDL – Method Detection Limit nd – not detected above the MDL | | | | | |

No BTEX parameters were detected in the soil samples analyzed. The results are in compliance with the selected MECP Table 3 standards. The analytical results for BTEX tested in soil are shown on Drawing PE5267-5 – Analytical Testing Plan – Soil (VOCs and BTEX).

| TABLE 12 - Analytical Test Results – Soil PHCs F ₁ -F ₄ | | | | | | |
|--|------------|---------------------|--------------|-------------------|------------|---|
| Parameter | MDL (µg/g) | Soil Samples (µg/g) | | | | MECP Table 3 Residential Standards (µg/g) |
| | | May 14, 2021 | May 17, 2021 | June 15, 2021 | | |
| | | BH1-21-SS3 | BH3-21-SS2 | TP1-21-GS3 | TP2-21-GS4 | |
| PHC F ₁ | 7 | nd | nd | nd | nd | 55 |
| PHC F ₂ | 4 | nd | 7 | 5 | 5 | 98 |
| PHC F ₃ | 8 | 43 | 53 | <u>386</u> | 24 | 300 |
| PHC F ₄ | 6 | 29 | 37 | 134 | 15 | 2800 |
| Notes: | | | | | | |
| <ul style="list-style-type: none">MDL – Method Detection Limitnd – not detected above the MDL<u>Bold and underlined</u> – Results exceed selected MECP standard | | | | | | |

The PHC F₃ concentrations in sample TP1-21-GS3 exceeds the MECP Table 3 Standard. The remaining PHC concentrations in the soil samples analysed are in compliance with the selected MECP Table 3 standards. The analytical results for PHCs tested in soil are shown on Drawing PE5267-6 – Analytical Testing Plan – Soil (PHCs).

TABLE 13 - Analytical Test Results – Soil PAHs

| Parameter | MDL (µg/g) | Soil Sample (µg/g) | | | | | MECP Table 3 Residential Standards (µg/g) |
|---|---------------|----------------------|--------------------|----------------------|--------------------|------------------|--|
| | | May 14, 2021 | May 17, 2021 | | | | |
| | | BH1- 21- SS5/6 | BH2- 21- SS4 | BH3- 21- SS4/5 | BH4- 21- SS2 | DUP ¹ | |
| Acenaphthene | 0.02 | 0.27 | nd | nd | nd | 0.03 | 7.9 |
| Acenaphthylene | 0.02 | 0.23 | 0.15 | 0.02 | 0.14 | 0.04 | 0.15 |
| Anthracene | 0.02 | 0.75 | 0.11 | 0.04 | 0.09 | 0.09 | 0.67 |
| Benzo[a]anthracene | 0.02 | 1.50 | 0.24 | 0.12 | 0.18 | 0.21 | 0.5 |
| Benzo[a]pyrene | 0.02 | 1.38 | 0.35 | 0.15 | 0.23 | 0.20 | 0.3 |
| Benzo[b]fluoranthene | 0.02 | 1.29 | 0.31 | 0.16 | 0.26 | 0.24 | 0.78 |
| Benzo[g,h,i]perylene | 0.02 | 0.70 | 0.25 | 0.09 | 0.19 | 0.12 | 6.6 |
| Benzo[k]fluoranthene | 0.02 | 0.75 | 0.16 | 0.09 | 0.11 | 0.12 | 0.78 |
| Chrysene | 0.02 | 1.44 | 0.22 | 0.16 | 0.18 | 0.19 | 7 |
| Dibenzo[a,h]anthracene | 0.02 | 0.11 | 0.06 | nd | 0.04 | 0.03 | 0.1 |
| Fluoranthene | 0.02 | 2.89 | 0.39 | 0.24 | 0.24 | 0.44 | 0.69 |
| Fluorene | 0.02 | 0.26 | nd | nd | nd | 0.03 | 62 |
| Indeno[1,2,3-cd]pyrene | 0.02 | 0.66 | 0.22 | 0.08 | 0.15 | 0.11 | 0.38 |
| 1-Methylnaphthalene | 0.02 | 0.13 | nd | nd | 0.12 | nd | 0.99 |
| 2-Methylnaphthalene | 0.02 | 0.13 | 0.03 | nd | 0.17 | 0.03 | 0.99 |
| Methylnaphthalene (1&2) | 0.04 | 0.29 | nd | nd | 0.29 | 0.05 | 0.99 |
| Naphthalene | 0.01 | 0.21 | 0.04 | 0.02 | 0.11 | 0.03 | 0.6 |
| Phenanthrene | 0.02 | 2.78 | 0.23 | 0.17 | 0.13 | 0.35 | 6.2 |
| Pyrene | 0.02 | 2.32 | 0.36 | 0.21 | 0.22 | 0.38 | 78 |
| Notes: | | | | | | | |
| <ul style="list-style-type: none">MDL – Method Detection Limitnd – not detected above the MDL<u>Bold and underlined</u> – Results exceed selected MECP standard1 – Duplicate of sample BH3-21-SS4/5 | | | | | | | |

TABLE 13 Continued - Analytical Test Results – Soil PAHs

| Parameter | MDL (µg/g) | Soil Sample (µg/g) | | | | | MECP Table 3 Residential Standards (µg/g) |
|------------------------|---------------|--------------------|--------------------|--------------------|--------------------|-------------------|--|
| | | June 15, 2021 | | | | | |
| | | TP2- 21- GS4 | TP3- 21- GS3 | TP5- 21- GS2 | TP6- 21- GS5 | DUP3 ¹ | |
| Acenaphthene | 0.02 | nd | 15.5 | 1.42 | nd | 11.0 | 7.9 |
| Acenaphthylene | 0.02 | nd | 1.43 | 1.01 | 0.45 | 1.31 | 0.15 |
| Anthracene | 0.02 | nd | 34.0 | 2.40 | 0.59 | 32.9 | 0.67 |
| Benzo[a]anthracene | 0.02 | nd | 50.9 | 6.74 | 1.11 | 43.6 | 0.5 |
| Benzo[a]pyrene | 0.02 | nd | 48.5 | 7.22 | 1.25 | 38.9 | 0.3 |
| Benzo[b]fluoranthene | 0.02 | nd | 43.0 | 7.37 | 1.29 | 35.9 | 0.78 |
| Benzo[g,h,i]perylene | 0.02 | nd | 23.3 | 3.95 | 0.81 | 18.5 | 6.6 |
| Benzo[k]fluoranthene | 0.02 | nd | 23.6 | 4.47 | 0.59 | 19.2 | 0.78 |
| Chrysene | 0.02 | nd | 52.4 | 7.59 | 1.41 | 44.0 | 7 |
| Dibenzo[a,h]anthracene | 0.02 | nd | 6.01 | 1.07 | nd | 5.30 | 0.1 |
| Fluoranthene | 0.02 | nd | 123 | 18.7 | 2.49 | 105 | 0.69 |
| Fluorene | 0.02 | nd | 12.8 | 1.23 | nd | 15.7 | 62 |
| Indeno[1,2,3-cd]pyrene | 0.02 | nd | 21.1 | 3.61 | 0.67 | 17.0 | 0.38 |

| TABLE 13 Continued - Analytical Test Results – Soil PAHs | | | | | | | |
|--|------|----|-------------|-------------|------|-------------|------|
| 1-Methylnaphthalene | 0.02 | nd | <u>3.91</u> | <u>1.96</u> | nd | <u>3.72</u> | 0.99 |
| 2-Methylnaphthalene | 0.02 | nd | <u>5.39</u> | <u>2.43</u> | nd | <u>5.42</u> | 0.99 |
| Methylnaphthalene (1&2) | 0.04 | nd | <u>9.30</u> | <u>4.39</u> | nd | <u>9.15</u> | 0.99 |
| Naphthalene | 0.01 | nd | <u>9.72</u> | <u>3.10</u> | 0.36 | <u>10.1</u> | 0.6 |
| Phenanthrene | 0.02 | nd | <u>123</u> | <u>15.7</u> | 2.18 | <u>115</u> | 6.2 |
| Pyrene | 0.02 | nd | <u>97.6</u> | 15.2 | 2.07 | <u>78.9</u> | 78 |
| Notes: <ul style="list-style-type: none"> MDL – Method Detection Limit nd – not detected above the MDL <u>Bold and underlined</u> – Results exceed selected MECP standard 1 – Duplicate of sample TP3-21-GS3 | | | | | | | |

Various PAH parameter concentrations in Samples BH1-21-SS5/6, BH2-21-SS4, TP23-21-GS3, TP5-21-GS2 and TP6-21-GS5 exceed the MECP Table 3 Standards. The remaining PAH concentrations in the soil samples analysed are in compliance with the selected MECP Table 3 standards. The analytical results for PAHs tested in soil are shown on Drawing PE5267-7 – Analytical Testing Plan – Soil (PAHs).

The maximum concentrations of analyzed parameters in the soil at the Phase II Property are summarized in Table 14.

| TABLE 14 - Maximum Concentrations – Soil | | | |
|---|-------------------------------------|------------------|-------------------------------|
| Parameter | Maximum Concentration (µg/g) | Sample ID | Depth Interval (m BGS) |
| Antimony | 2.1 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Arsenic | <u>22.3</u> | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Barium | <u>584</u> | BH1-21-SS5/6 | 3.05 - 4.42; Fill Material |
| Beryllium | 0.7 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Boron | 19.0 | BH1-21-SS5/6 | 3.05 - 4.42; Fill Material |
| Cadmium | <u>3.1</u> | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Chromium | 25.7 | BH3-21-SS4/5 | 2.29 - 3.66; Fill Material |
| Cobalt | 7.4 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Copper | 51.5 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Lead | <u>270</u> | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Mercury | <u>1.3</u> | BH2-21-SS4 | 2.29 - 2.62; Fill Material |
| Molybdenum | 2.4 | BH1-21-SS5/6 | 3.05 - 4.42; Fill Material |
| Nickel | 17.8 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Selenium | <u>4.3</u> | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Silver | 0.3 | BH2-21-SS4 | 2.29 - 2.62; Fill Material |
| Vanadium | 31.4 | BH3-21-SS4/5 | 2.29 - 3.66; Fill Material |
| Zinc | <u>1680</u> | TP3-21-GS3 | 0.5-0.7; Fill Material |
| PHC F ₂ | 7 | BH3-21-SS2 | 0.76 - 1.37; Fill Material |
| PHC F ₃ | <u>386</u> | TP1-21-GS3 | 1.7-1.9; Fill Material |
| PHC F ₄ | 134 | TP1-21-GS3 | 1.7-1.9; Fill Material |
| Acenaphthene | 15.5 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Acenaphthylene | 1.43 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Anthracene | 34.0 | TP3-21-GS3 | 0.5-0.7; Fill Material |

| TABLE 14 - Maximum Concentrations – Soil | | | |
|---|------|-------------------|------------------------|
| Benzo[a]anthracene | 50.9 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Benzo[a]pyrene | 48.5 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Benzo[b]fluoranthene | 43.0 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Benzo[g,h,i]perylene | 23.3 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Benzo[k]fluoranthene | 23.6 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Chrysene | 52.4 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Dibenzo[a,h]anthracene | 6.01 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Fluoranthene | 123 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Fluorene | 15.7 | DUP3 (TP3-21-GS3) | 0.5-0.7; Fill Material |
| Indeno[1,2,3-cd]pyrene | 21.1 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| 1-Methylnaphthalene | 3.91 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| 2-Methylnaphthalene | 5.42 | DUP3 (TP3-21-GS3) | 0.5-0.7; Fill Material |
| Methylnaphthalene (1&2) | 9.30 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Naphthalene | 10.1 | DUP3 (TP3-21-GS3) | 0.5-0.7; Fill Material |
| Phenanthrene | 123 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Pyrene | 97.6 | TP3-21-GS3 | 0.5-0.7; Fill Material |

All remaining parameter results were non-detect. The laboratory Certificates of Analysis are provided in Appendix 1.

5.6 Groundwater Quality

Groundwater samples (including two duplicates) from monitoring wells installed in BH1 through BH4 were submitted for laboratory analysis of metals (including Hg and CrVI), BTEX, PHC (F1-F4) and/or PAHs. The groundwater samples were obtained from the screened intervals noted in Table 3.

The results of the analytical testing are presented in Tables 15 to 18. The laboratory certificates of analysis are provided in Appendix 1.

| TABLE 15 - Analytical Test Results – Groundwater Metals | | | | | | |
|---|------------|----------------------------|------------|------------|-------------------|---|
| Parameter | MDL (µg/g) | Groundwater Samples (µg/g) | | | | MECP Table 3 Residential Standards (µg/g) |
| | | May 25, 2021 | | | | |
| | | MW1-21-GW1 | MW2-21-GW1 | MW3-21-GW1 | DUP2 ¹ | |
| Antimony | 0.5 | nd | nd | nd | nd | 20,000 |
| Arsenic | 1 | nd | nd | nd | nd | 1,900 |
| Barium | 1 | 40 | 629 | 65 | 701 | 29,000 |
| Beryllium | 0.5 | nd | nd | nd | nd | 67 |
| Boron | 10 | 137 | 74 | 39 | 87 | 45,000 |
| Cadmium | 0.1 | nd | nd | nd | nd | 2.7 |
| Chromium | 1 | nd | nd | nd | nd | 810 |
| Chromium (VI) | 10 | nd | nd | nd | nd | 140 |
| Cobalt | 0.5 | 1.2 | 1.2 | 0.6 | nd | 66 |
| Copper | 0.5 | 3.3 | 4.9 | 3.5 | 4.8 | 87 |

| TABLE 15 - Analytical Test Results – Groundwater Metals | | | | | | |
|---|------------|----------------------------|------------|------------|-------------------|---|
| Parameter | MDL (µg/g) | Groundwater Samples (µg/g) | | | | MECP Table 3 Residential Standards (µg/g) |
| | | May 25, 2021 | | | | |
| | | MW1-21-GW1 | MW2-21-GW1 | MW3-21-GW1 | DUP2 ¹ | |
| Lead | 0.1 | nd | nd | nd | 0.1 | 25 |
| Mercury | 0.1 | nd | nd | nd | nd | 0.29 |
| Molybdenum | 0.5 | 4.1 | 2.9 | 0.9 | 3.2 | 9,200 |
| Nickel | 1 | 8 | 4 | 7 | 4 | 490 |
| Selenium | 1 | 6 | nd | 2 | nd | 63 |
| Silver | 0.1 | nd | nd | nd | nd | 1.5 |
| Sodium | 200 | 455,000 | 228,000 | 289,000 | 237,000 | 2,300,000 |
| Thallium | 0.1 | nd | 0.1 | nd | 0.2 | 510 |
| Uranium | 0.1 | 2.8 | 3.8 | 4.7 | 4.1 | 420 |
| Vanadium | 0.5 | nd | 0.5 | nd | 0.6 | 250 |
| Zinc | 5 | 10 | 17 | 9 | 9 | 1,100 |
| Notes: | | | | | | |
| <ul style="list-style-type: none">MDL – Method Detection Limitnd – not detected above the MDL1 – Duplicate of sample MW2-21-GW1 | | | | | | |

All detected metal concentrations in the groundwater samples analysed are in compliance with the selected MECP Table 3 standards. The analytical results for groundwater tested are shown on Drawing PE5267-8 – Analytical Testing Plan – Groundwater.

| TABLE 16 - Analytical Test Results – Groundwater BTEX | | | |
|---|------------|---------------------------|-------------------------------|
| Parameter | MDL (µg/L) | Groundwater Sample (µg/L) | MECP Table 3 Standards (µg/L) |
| | | May 25, 2021 | |
| | | MW3-21-GW1 | |
| Benzene | 0.5 | nd | 44 |
| Toluene | 0.5 | nd | 18,000 |
| Ethylbenzene | 0.5 | nd | 2,300 |
| Xylenes | 0.5 | nd | 4,200 |
| Notes: ■ MDL – Method Detection Limit ■ nd – not detected above the MDL | | | |

No detectable BTEX concentrations were identified in the groundwater sample analysed. As such, the results are in compliance with the selected MECP Table 3 standards. The analytical results for groundwater tested are shown on Drawing PE5267-8 – Analytical Testing Plan – Groundwater.

| TABLE 17 - Analytical Test Results – Groundwater PHCs | | | |
|---|---------------|---------------------------|--|
| Parameter | MDL (µg/L) | Groundwater Sample (µg/L) | MECP Table 3 Standards (µg/L) |
| | | May 25, 2021 | |
| | | MW3-21-GW1 | |
| PHC F ₁ | 25 | nd | 750 |
| PHC F ₂ | 100 | nd | 150 |
| PHC F ₃ | 100 | nd | 500 |
| PHC F ₄ | 100 | nd | 500 |
| Notes: | | | |
| <ul style="list-style-type: none"> MDL – Method Detection Limit nd – not detected above the MDL | | | |

No detectable PHC concentrations were identified in the groundwater sample analysed; the results comply with the MECP Table 3 standards. The analytical results for groundwater tested are shown on Drawing PE5267-8 – Analytical Testing Plan – Groundwater.

| TABLE 18 - Analytical Test Results – Groundwater PAHs | | | | | | |
|---|------------|----------------------------|------------|------------|-------------------|---|
| Parameter | MDL (µg/g) | Groundwater Samples (µg/g) | | | | MECP Table 3 Residential Standards (µg/g) |
| | | May 25, 2021 | | | | |
| | | MW1-21-GW1 | MW2-21-GW1 | MW4-21-GW1 | DUP1 ¹ | |
| Acenaphthene | 0.05 | nd | nd | nd | nd | 600 |
| Acenaphthylene | 0.05 | nd | nd | nd | nd | 1.8 |
| Anthracene | 0.01 | nd | nd | nd | nd | 2.4 |
| Benzo[a]anthracene | 0.01 | nd | nd | nd | nd | 4.7 |
| Benzo[a]pyrene | 0.01 | nd | nd | nd | nd | 0.81 |
| TABLE 18 - Analytical Test Results – Groundwater PAHs | | | | | | |
| Benzo[b]fluoranthene | 0.05 | nd | nd | nd | nd | 0.75 |
| Benzo[g,h,i]perylene | 0.05 | nd | nd | nd | nd | 0.2 |
| Benzo[k]fluoranthene | 0.05 | nd | nd | nd | nd | 0.4 |
| Chrysene | 0.05 | nd | nd | nd | nd | 1 |
| Dibenzo[a,h]anthracene | 0.05 | nd | nd | nd | nd | 0.52 |
| Fluoranthene | 0.01 | 0.04 | nd | nd | nd | 130 |
| Fluorene | 0.05 | nd | nd | nd | nd | 400 |
| Indeno[1,2,3-cd]pyrene | 0.05 | nd | nd | nd | nd | 0.2 |
| Methylnapthalene (1&2) | 0.10 | nd | nd | nd | nd | 1,800 |
| Naphthalene | 0.05 | 0.34 | nd | nd | nd | 1,400 |
| Phenanthrene | 0.05 | 0.08 | nd | nd | nd | 580 |
| Pyrene | 0.01 | 0.04 | nd | nd | nd | 68 |
| Notes: | | | | | | |
| <ul style="list-style-type: none">MDL – Method Detection Limitnd – not detected above the MDL1 – Duplicate of sample MW4-21-GW1 | | | | | | |

Several PAH parameters were identified in Sample MW1-21-GW1 at concentrations below the MECP Table 3 standards. Otherwise, no PAH parameters were detected in the groundwater samples analysed. The analytical results for groundwater tested are shown on Drawing PE5267-8 – Analytical Testing Plan – Groundwater.

5.7 Quality Assurance and Quality Control Results

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

Duplicate soil and groundwater samples from BH1-21-SS5, MW2-21-GW1 and MW4-21-GW1 were submitted for laboratory analysis of metals (including Hg and CrVI), BTEX, PHCs (F1-F4) and/or PAHs.

The duplicates were collected with the intent of calculating the relative percent difference (RPD) between duplicate sample values, as a way of assessing the quality of the analytical test results. Several parameter concentrations were not detected in either or both the original sample and duplicate. The RPD values are therefore considered to be 0% and therefore meet the 20% target.

The RPD calculations for the original soil and duplicate sample are provided in Tables 19 to 20.

Table 19 - QA/QC Calculations – Soil

| Parameter | MDL (µg/L) | BH3-21-SS4/5 | DUP (BH3-21-SS4/5) | RPD (%) | QA/QC Result |
|--|------------|-------------------|--------------------|---------|----------------------|
| Antimony | 1.0 | nd | nd | 0 | Meets Target |
| Arsenic | 1.0 | 6.2 | 5.2 | 17.5 | Meets Target |
| Barium | 1.0 | 150 | 132 | 12.8 | Meets Target |
| Beryllium | 0.5 | 0.5 | 0.5 | 0 | Meets Target |
| Boron | 5.0 | 8.4 | 6.8 | 21.0 | Does Not Meet Target |
| Cadmium | 0.5 | nd | nd | 0 | Meets Target |
| Chromium | 5.0 | 25.7 | 24.2 | 6.0 | Meets Target |
| Chromium (VI) | 0.2 | nd | nd | 0 | Meets Target |
| Cobalt | 1.0 | 5.7 | 5.2 | 9.2 | Meets Target |
| Copper | 5.0 | 16.3 | 15.9 | 2.5 | Meets Target |
| Lead | 1.0 | 72.4 | 78.1 | 7.6 | Meets Target |
| Mercury | 0.1 | <u>0.5</u> | <u>0.4</u> | 22.2 | Does Not Meet Target |
| Molybdenum | 1.0 | 1.2 | 1.0 | 18.2 | Meets Target |
| Nickel | 5.0 | 16.3 | 15.3 | 6.3 | Meets Target |
| Selenium | 1.0 | nd | nd | 0 | Meets Target |
| Silver | 0.3 | nd | nd | 0 | Meets Target |
| Thallium | 1.0 | nd | nd | 0 | Meets Target |
| Uranium | 1.0 | nd | nd | 0 | Meets Target |
| Vanadium | 10.0 | 31.4 | 30.3 | 3.6 | Meets Target |
| Zinc | 20.0 | 67.4 | 69.3 | 2.8 | Meets Target |
| Acenaphthene | 0.02 | nd | 0.03 | 40 | Does Not Meet Target |
| Acenaphthylene | 0.02 | 0.02 | 0.04 | 66.7 | Does Not Meet Target |
| Anthracene | 0.02 | 0.04 | 0.09 | 76.9 | Does Not Meet Target |
| Benzo[a]anthracene | 0.02 | 0.12 | 0.21 | 54.5 | Does Not Meet Target |
| Benzo[a]pyrene | 0.02 | 0.15 | 0.20 | 28.6 | Does Not Meet Target |
| Benzo[b]fluoranthene | 0.02 | 0.16 | 0.24 | 40 | Does Not Meet Target |
| Benzo[g,h,i]perylene | 0.02 | 0.09 | 0.12 | 28.6 | Does Not Meet Target |
| Benzo[k]fluoranthene | 0.02 | 0.09 | 0.12 | 28.6 | Does Not Meet Target |
| Chrysene | 0.02 | 0.16 | 0.19 | 17.7 | Meets Target |
| Dibenzo[a,h]anthracene | 0.02 | nd | 0.03 | 40 | Does Not Meet Target |
| Fluoranthene | 0.02 | 0.24 | 0.44 | 58.8 | Does Not Meet Target |
| Fluorene | 0.02 | nd | 0.03 | 0 | Meets Target |
| Indeno[1,2,3-cd]pyrene | 0.02 | 0.08 | 0.11 | 31.6 | Does Not Meet Target |
| 1-Methylnaphthalene | 0.02 | nd | nd | 0 | Meets Target |
| 2-Methylnaphthalene | 0.02 | nd | 0.03 | 0 | Meets Target |
| Methylnaphthalene(1&2) | 0.04 | nd | 0.05 | 0 | Meets Target |
| Naphthalene | 0.01 | 0.02 | 0.03 | 40 | Does Not Meet Target |
| Phenanthrene | 0.02 | 0.17 | 0.35 | 69.2 | Does Not Meet Target |
| Pyrene | 0.02 | 0.21 | 0.38 | 57.6 | Does Not Meet Target |
| Notes: <input type="checkbox"/> MDL – Method Detection Limit <input type="checkbox"/> nd – not detected above the MDL <input type="checkbox"/> <u>Bold and underlined</u> – Results exceed selected MECP standard | | | | | |

Table 19 Continued - QA/QC Calculations – Soil

| Parameter | MDL (µg/L) | TP3-21-GS3 | DUP3 (TP3-21-GS3) | RPD (%) | QA/QC Result |
|--|------------|-------------|-------------------|---------|----------------------|
| Acenaphthene | 0.02 | <u>15.5</u> | <u>11.0</u> | 40.0 | Does Not Meet Target |
| Acenaphthylene | 0.02 | <u>1.43</u> | <u>1.31</u> | 8.8 | Meets Target |
| Anthracene | 0.02 | <u>34.0</u> | <u>32.9</u> | 3.3 | Meets Target |
| Benzo[a]anthracene | 0.02 | <u>50.9</u> | <u>43.6</u> | 15.4 | Meets Target |
| Benzo[a]pyrene | 0.02 | <u>48.5</u> | <u>38.9</u> | 22.0 | Does Not Meet Target |
| Benzo[b]fluoranthene | 0.02 | <u>43.0</u> | <u>35.9</u> | 18.0 | Does Not Meet Target |
| Benzo[g,h,i]perylene | 0.02 | <u>23.3</u> | <u>18.5</u> | 23.0 | Meets Target |
| Benzo[k]fluoranthene | 0.02 | <u>23.6</u> | <u>19.2</u> | 20.6 | Meets Target |
| Chrysene | 0.02 | <u>52.4</u> | <u>44.0</u> | 17.4 | Meets Target |
| Dibenzo[a,h]anthracene | 0.02 | <u>6.01</u> | <u>5.30</u> | 12.6 | Meets Target |
| Fluoranthene | 0.02 | <u>123</u> | <u>105</u> | 15.8 | Meets Target |
| Fluorene | 0.02 | 12.8 | 15.7 | 20.4 | Meets Target |
| Indeno[1,2,3-cd]pyrene | 0.02 | <u>21.1</u> | <u>17.0</u> | 21.5 | Does Not Meet Target |
| 1-Methylnaphthalene | 0.02 | <u>3.91</u> | <u>3.72</u> | 5.0 | Meets Target |
| 2-Methylnaphthalene | 0.02 | <u>5.39</u> | <u>5.42</u> | 0.6 | Meets Target |
| Methylnaphthalene(1&2) | 0.04 | <u>9.30</u> | <u>9.15</u> | 1.6 | Meets Target |
| Naphthalene | 0.01 | <u>9.72</u> | <u>10.1</u> | 3.8 | Meets Target |
| Phenanthrene | 0.02 | <u>123</u> | <u>115</u> | 6.7 | Meets Target |
| Pyrene | 0.02 | <u>97.6</u> | <u>78.9</u> | 21.2 | Does Not Meet Target |
| Notes: <input type="checkbox"/> MDL – Method Detection Limit <input type="checkbox"/> nd – not detected above the MDL <input type="checkbox"/> <u>Bold and underlined</u> – Results exceed selected MECP standard | | | | | |

Table 19 Continued - QA/QC Calculations – Soil

| Parameter | MDL (µg/L) | TP4-21-GS2 | DUP4 (TP4-21-GS2) | RPD (%) | QA/QC Result |
|---------------|------------|------------|-------------------|---------|----------------------|
| Antimony | 1.0 | nd | nd | 0 | Meets Target |
| Arsenic | 1.0 | 3.9 | 3.2 | 19.7 | Meets Target |
| Barium | 1.0 | 149 | 121 | 20.7 | Does Not Meet Target |
| Beryllium | 0.5 | nd | nd | 0 | Meets Target |
| Boron | 5.0 | 7.1 | 5.5 | 25.4 | Does Not Meet Target |
| Cadmium | 0.5 | nd | nd | 0 | Meets Target |
| Chromium | 5.0 | 15.1 | 12.7 | 17.3 | Meets Target |
| Chromium (VI) | 0.2 | nd | nd | 0 | Meets Target |
| Cobalt | 1.0 | 4.9 | 4.3 | 13.0 | Meets Target |
| Copper | 5.0 | 11.3 | 10.5 | 7.3 | Meets Target |
| Lead | 1.0 | 17.8 | 17.8 | 0 | Meets Target |
| Mercury | 0.1 | 0.1 | 0.1 | 0 | Meets Target |
| Molybdenum | 1.0 | nd | nd | 0 | Meets Target |
| Nickel | 5.0 | 10.9 | 9.7 | 11.7 | Meets Target |
| Selenium | 1.0 | nd | nd | 0 | Meets Target |
| Silver | 0.3 | nd | nd | 0 | Meets Target |
| Thallium | 1.0 | nd | nd | 0 | Meets Target |
| Uranium | 1.0 | nd | nd | 0 | Meets Target |
| Vanadium | 10.0 | 22.5 | 18.0 | 22.2 | Does Not Meet Target |

Table 19 Continued - QA/QC Calculations – Soil

| Parameter | MDL (µg/L) | TP4-21-GS2 | DUP4 (TP4-21-GS2) | RPD (%) | QA/QC Result |
|--|------------|------------|-------------------|---------|--------------|
| Zinc | 20.0 | 48.6 | 47.7 | 1.9 | Meets Target |
| Notes: <input type="checkbox"/> MDL – Method Detection Limit <input type="checkbox"/> nd – not detected above the MDL <input type="checkbox"/> and underlined – Results exceed selected MECP standard | | | | | |

Table 20 - QA/QC Calculations – Groundwater

MW2-21-GW1

| Parameter | MDL (µg/L) | MW2-21-GW1 | DUP2 (MW2-21-GW1) | RPD (%) | QA/QC Result |
|---------------|------------|------------|-------------------|---------|----------------------|
| Antimony | 0.5 | nd | nd | 0 | Meets Target |
| Arsenic | 1 | nd | nd | 0 | Meets Target |
| Barium | 1 | 629 | 701 | 10.8 | Meets Target |
| Beryllium | 0.5 | nd | nd | 0 | Meets Target |
| Boron | 10 | 74 | 87 | 16.1 | Meets Target |
| Cadmium | 0.1 | nd | nd | 0 | Meets Target |
| Chromium | 1 | nd | nd | 0 | Meets Target |
| Chromium (VI) | 10 | nd | nd | 0 | Meets Target |
| Cobalt | 0.5 | 1.2 | nd | 0 | Meets Target |
| Copper | 0.5 | 4.9 | 4.8 | 2.06 | Meets Target |
| Lead | 0.1 | nd | 0.1 | 0 | Meets Target |
| Mercury | 0.1 | nd | nd | 0 | Meets Target |
| Molybdenum | 0.5 | 2.9 | 3.2 | 9.8 | Meets Target |
| Nickel | 1 | 4 | 4 | 0 | Meets Target |
| Selenium | 1 | nd | nd | 0 | Meets Target |
| Silver | 0.1 | nd | nd | 0 | Meets Target |
| Sodium | 200 | 228,000 | 237,000 | 3.9 | Meets Target |
| Thallium | 0.1 | 0.1 | 0.2 | 66.7 | Does Not Meet Target |
| Uranium | 0.1 | 3.8 | 4.1 | 7.6 | Meets Target |
| Vanadium | 0.5 | 0.5 | 0.6 | 18.2 | Meets Target |
| Zinc | 5 | 17 | 9 | 61.5 | Does Not Meet Target |

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

Table 20 Continued - QA/QC Calculations – Groundwater

| Parameter | MDL (µg/L) | MW4-21-GW1 | DUP1 (MW4-21-GW1) | RPD (%) | QA/QC Result |
|----------------------|------------|------------|-------------------|---------|--------------|
| Acenaphthene | 0.05 | nd | nd | 0 | Meets Target |
| Acenaphthylene | 0.05 | nd | nd | 0 | Meets Target |
| Anthracene | 0.01 | nd | nd | 0 | Meets Target |
| Benzo[a]anthracene | 0.01 | nd | nd | 0 | Meets Target |
| Benzo[a]pyrene | 0.01 | nd | nd | 0 | Meets Target |
| Benzo[b]fluoranthene | 0.05 | nd | nd | 0 | Meets Target |
| Benzo[g,h,i]perylene | 0.05 | nd | nd | 0 | Meets Target |

| Table 20 Continued - QA/QC Calculations – Groundwater | | | | | |
|--|-----------------------|------------------------|-----------------------------------|----------------|---------------------|
| Parameter | MDL (µg/L) | MW4-21- GW1 | DUP1 (MW4-21- GW1) | RPD (%) | QA/QC Result |
| Benzo[k]fluoranthene | 0.05 | nd | nd | 0 | Meets Target |
| Chrysene | 0.05 | nd | nd | 0 | Meets Target |
| Dibenzo[a,h]anthracene | 0.05 | nd | nd | 0 | Meets Target |
| Fluoranthene | 0.01 | nd | nd | 0 | Meets Target |
| Fluorene | 0.05 | nd | nd | 0 | Meets Target |
| Indeno[1,2,3-cd]pyrene | 0.05 | nd | nd | 0 | Meets Target |
| Methylnaphthalene(1&2) | 0.10 | nd | nd | 0 | Meets Target |
| Naphthalene | 0.05 | nd | nd | 0 | Meets Target |
| Phenanthrene | 0.05 | nd | nd | 0 | Meets Target |
| Pyrene | 0.01 | nd | nd | 0 | Meets Target |
| Notes: <input type="checkbox"/> MDL – Method Detection Limit <input type="checkbox"/> nd – not detected above the MDL | | | | | |

Typically, RPD values below 20% are considered to be of satisfactory quality. The relative percent difference (RPD) results calculated for several soil parameters fell outside of the acceptable range of 20%. It is not uncommon that very small concentrations or values will yield higher RPD values, and as such, the RPD value is not an accurate measure in these cases.

Despite the exceeded RPD values calculated for samples BH3-21-SS4/5, TP3-21-GS3, TP4-21-GS2 and MW2-21-GW1 between the original and duplicate samples, it should be noted that the individual metal and PAH parameters detected appear to be consistent between the two samples. Furthermore, the concentration of the majority of the detected metal and PAH parameters were well within the selected MECP Table 3 standards in both samples by a large margin (except for Mercury which was in excess of the standard). As a result, it is our opinion that the decision-making usefulness of the samples is not considered to be impaired, and thus the quality of the field data collected during this remediation is considered to be sufficient to meet the overall objectives of this assessment.

5.8 Phase II Conceptual Site Model

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

Potentially Contaminating Activity and Areas of Potential Environmental Concern

Based on the results of the Phase I ESA completed for the subject property, 51 PCAs were identified, nine of which represent APECs on the Phase II Property. The APECs on the Phase II Property are as follows:

- ☐ APEC 1: Resulting from the historical presence of an on-site warehouse/workshop (PCA #N/A);
- ☐ APEC 2: Resulting from the historical presence of on-site coal storage (PCA #N/A).
- ☐ APEC 3: Resulting from the historical presence of on-site coal storage (PCA #N/A).
- ☐ APEC 4: Resulting from the historical presence of an on-site garage (PCA #52).
- ☐ APEC 5: Resulting from the use of de-icing salt associated with on-site and adjacent roadways (PCA #N/A).
- ☐ APEC 6: Resulting from the historical presence of an on-site railway spur line (PCA #46).
- ☐ APEC 7: Resulting from the presence of fill material of unknown quality (PCA #30).
- ☐ APEC 8: Resulting from the historical presence of an off-site rail yard and rail lines (PCA #46).
- ☐ APEC 9: Resulting from the historical presence of off-site coal storage (PCA #N/A).

Contaminants of Potential Concern

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

- ☐ Metals (including Arsenic (As.), Antimony (Sb) and Selenium);
- ☐ Mercury (Hg);
- ☐ Hexavalent Chromium;
- ☐ Volatile Organic Compounds (VOCs);
- ☐ Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX);
- ☐ Petroleum Hydrocarbons, fractions 1 - 4 (PHCs F₁-F₄); and
- ☐ Polycyclic Aromatic Hydrocarbons (PAHs).

Subsurface Structures and Utilities

A small basement crawl space is present beneath the northwestern portion of the on-site vacant building. Multiple underground utilities were identified on the Phase I Property including electrical, gas, water, sewer and telecommunication lines.

Based on standard practice for subsurface utility installation, service trenches are expected to be present approximately 1 to 2 m below existing grade. In general, trench backfill may provide a preferential pathway for contaminant transport if the water table is at or above the base of the trenches. Based on the findings of the Phase II ESA, groundwater on the Phase II Property complies with the MECP Table 3 standards and is located within the bedrock, 5.6 to 9.0 m below ground surface. Therefore subsurface structures and utilities are not expected to have had the potential to impact contaminant distribution.

Physical Setting

Site Stratigraphy

The stratigraphy of the Phase II Property generally consists of:

- ☐ Topsoil, encountered at depths ranging from approximately 0.00 to 5.00 m below ground surface
- ☐ Fill material, consisting of brown silty sand with crushed stone, trace concrete, brick and clay; encountered at depths ranging from approximately 0.00 to 5.00 m below ground surface

- ☐ Very stiff to stiff, brown silty clay; encountered in BH3-21 from approximately 4.27 to 5.18 m below ground surface;
- ☐ Glacial till, consisting of brown to grey silty clay with sand, gravel, cobbles and boulders; encountered in BH3-21 from approximately 5.18 to 7.01 m below ground surface;
- ☐ Limestone bedrock, encountered at depths ranging from approximately 2.62 to 7.01 m below ground surface.

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

Hydrogeological Characteristics

Groundwater at the Phase II Property was encountered within the bedrock or the overburden in BH3-21. During the most recent groundwater monitoring event, groundwater flow was measured in a northwestern direction, with a hydraulic gradient of 0.06 m/m. Groundwater contours are shown on Drawing PE5267-3 – Groundwater Contour Plan.

Approximate Depth to Bedrock

Bedrock was confirmed within all four boreholes at depths ranging from approximately 2.62 to 7.01 m below ground surface, as determined by rock coring activities conducted in three of the boreholes at the time of the drilling program.

Approximate Depth to Water Table

The depth to the water table at the subject site varies between approximately 5.60 to 9.00 m below existing grade.

Sections 41 and 43.1 of the Regulation

Section 41 of the Regulation does not apply to the Phase II Property, in that the subject property is not within 30m of an environmentally sensitive area, and the pH of surface soil is between 5 and 9.

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

Fill Placement

Fill material, consisting of brown silty sand with crushed stone, trace concrete, brick and clay was identified throughout the entire Phase II Property.

Existing Buildings and Structures

The Phase II Property is currently occupied by a vacant building located on the southeastern portion of the subject site. The subject building was constructed as early as 1878.

Proposed Buildings and Other Structures

The proposed site development for the Phase II Property will consist of a residential high rise building with two underground parking levels. Associated access lanes, walkways and hardscaped areas are also anticipated as part of the development. It is expected that the proposed buildings will be municipally serviced.

Areas of Natural Scientific Interest and Water Bodies

There are no areas of natural and scientific interest or waterbodies on the Phase II Property or within the 250 m study area.

Environmental Condition

Areas Where Contaminants are Present

Based on the findings of this Phase II ESA, soil (fill material) impacted with metal parameters, arsenic and selenium, mercury, PAH parameters and/or PHC (F₃) concentrations exceeding the MECP Table 3 standards, was present on the northern, central and southwestern portions of the Phase II Property. Based on the non-homogenous nature of the fill material, it is expected that impacted soil is present in pockets across the entire Phase II Property.

Groundwater beneath the Phase II Property was determined to comply with the MECP Table 3 standards.

Types of Contaminants

Based on the findings of this Phase II ESA, soil contaminants at the Phase II Property include the following:

- ☐ Metals (barium, cadmium, lead and zinc);

- ☐ Arsenic and selenium;
- ☐ Mercury;
- ☐ PHCs (F₃); and
- ☐ PAHs (acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, fluoranthene, indeno[1,2,3-cd]pyrene, methyl naphthalene (1&2), naphthalene, phenanthrene, pyrene)

The groundwater at the Phase II Property complies with the MECP Table 3 standards.

Contaminated Media

The soil (fill material) across the Phase II Property is impacted with parameter concentrations exceeding the MECP Table 3 standards.

Groundwater beneath the Phase II Property complies with the MECP Table 3 standards.

What Is Known About Areas Where Contaminants Are Present

Based on the findings of this Phase II ESA, impacted soil was identified at test holes BH1-21, BH2-21, BH3-21, TP1-21-GS3, TP3-21-GS3, TP5-21-GS2 and TP6-21-GS5. Based on the nature of the fill material, pockets of metal (including As, Sb, Se), mercury, PHC and/or PAH impacts are anticipated to be present across the Phase II Property.

The impacted soil identified on the Phase II Property is interpreted to be associated with historical uses in combination with the historical importation of poor-quality fill material.

Distribution and Migration of Contaminants

A layer of impacted fill material was identified throughout the subject site. This layer was observed to range from approximately 2.62 to 5.00 m thick. Based on the observations made during the field program, in conjunction with analytical test results, it is expected that the majority of the fill material is impacted with metals and/or PAHs.

Based on the findings of the Phase II ESA, groundwater beneath the site was in compliance with the MECP Table 3 standards. Given the clean groundwater

results in combination with the low solubility of metal, mercury and PAH parameters, no significant distribution or migration of contaminants is considered to have occurred on the Phase II Property.

Discharge of Contaminants

The metals and PAH impacted fill material identified on the Phase II Property is considered to be the result of the historical uses of the property as a coal storage yard/area, on site railway spur line and road way or from the importation of fill material of a poor quality.

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 Phase II ESA, downward leaching may have affected contaminant distribution at the Phase II Property. However, given the low solubility of metal and PAH parameters, no significant distribution or migration of contaminants is considered to have occurred.

Site groundwater was in compliance with the MECP Table 3 standards; as such, migration of contaminants via groundwater levels and/or flow is not considered to have occurred on the Phase II Property.

Potential for Vapour Intrusion

Given the non-volatile nature of the impacts identified in the soil, the potential for vapour intrusion into the current site building is considered to be low.

As part of the site redevelopment for the proposed building, all impacted soil on the RSC Property will be excavated and disposed off-site. Given the groundwater beneath the site is clean, once the impacted soil is removed, there will be no anticipated potential for vapour intrusion into future subsurface structures and utilities at the Phase II Property.

6.0 CONCLUSIONS

Assessment

A Phase II ESA was conducted for the northeast portion of the property addressed 70 Nicholas Street, in the City of Ottawa, Ontario. The purpose of the Phase II ESA was to address potentially contaminating activities (PCAs) that were identified during the Phase I ESA and considered to result in areas of potential environmental concern (APECs) on the Phase II Property.

The Phase II ESA was carried out in conjunction with a geotechnical investigation and consisted of the placement of four boreholes and nine test pits. All boreholes were constructed with groundwater monitoring wells. The general soil profile encountered during the field program consisted of a silty sand fill layer, over a layer of clay followed by glacial till (on the southwest corner of the site only), followed by limestone bedrock. No unusual staining or odour was noted at the time of the field program. Deleterious material identified in the fill material consists of construction debris, coal, brick, concrete and a layer of asphalt in TP7-21.

A total of 17 soil samples were submitted for laboratory analysis of Metals (including methyl mercury), Volatile Organic Compounds (VOCs), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Petroleum Hydrocarbons (PHCs, Fractions F₁-F₄) and/or Polycyclic Aromatic Hydrocarbons (PAHs). No VOC or BTEX concentrations identified in the samples analysed. Concentrations of metals (including As, Sb, Se), Hg, PAH and/or PHC (F₃) parameters exceeding the MECP Table 3 standards were identified in soil Samples BH1-21-SS5/6, BH2-21-SS4, BH3-21-SS4/5 TP1-21-GS3, TP3-21-GS3, TP5-21-GS2 and TP6-21-GS5. Based on Hg results, MeHg was analyzed and determined to comply with the MECP Table 3 standards.

Groundwater samples from monitoring wells BH1-21, BH2-21, BH3-21 and BH4-21 were collected during the May 25, 2021 sampling event. No sheen, free product or odour was noted during the groundwater sampling event.

Groundwater samples were analyzed for Metals, BTEX, PHCs and/or PAHs. All groundwater results comply with the selected MECP Table 3 Residential Standards.

Recommendations

Soil

Based on the findings of the Phase II ESA, it is anticipated that fill material impacted with metals, mercury, PAHs and/or PHC (F₃) exceeding the MECP Table 3 standards is present across the Phase II Property at depths extending up to approximately 5.0m below grade. It is our understanding that the Phase II Property will be redeveloped with a residential multi-story building with 2 levels of underground parking.

It is recommended that an environmental site remediation program, involving the removal of all impacted fill material be completed prior to site redevelopment. Prior to off-site disposal of the impacted soil at a licenced landfill site, a leachate analysis of a representative sample of contaminated soil must be conducted in accordance with Ontario Regulation 347/558.

It is also recommended that Paterson personnel be onsite during construction activities to direct the excavation and segregation of impacted soil and to conduct additional delineation or confirmatory sampling as required.

Any clean soil that requires removal from the Phase II Property for construction purposes must be handled in accordance with Ontario Regulation 406/19: On-Site and Excess Soil Management.

Groundwater

It is recommended that the monitoring wells installed on the Phase II Property remain viable for future monitoring, if required. It is expected that groundwater monitoring wells will be abandoned in accordance with O.Reg.903 at the time of the construction excavation.

7.0 STATEMENT OF LIMITATIONS

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

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

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

This report was prepared for the sole use of The Cadillac Fairview Corporation Limited. Notification from The Cadillac Fairview Corporation Limited and Paterson Group will be required to release this report to any other party.

Paterson Group Inc.



Jeremy Camposarcone, B. Eng.



Karyn Munch, P.Eng., Q.P.ESA



Report Distribution:

- ☐ The Cadillac Fairview Corporation Limited
- ☐ Paterson Group

FIGURES

FIGURE 1 – KEY PLAN

DRAWING PE5267-1 – SITE PLAN

DRAWING PE5267-2 – SURROUNDING LAND USE PLAN

DRAWING PE5267-3 – TEST HOLE LOCATION PLAN

DRAWING PE5267-4 – ANALYTICAL TESTING PLAN – SOIL (METALS)

DRAWING PE5267-4A – CROSS SECTION A-A' – SOIL (METALS)

DRAWING PE5267-4B – CROSS SECTION B-B' – SOIL (METALS)

**DRAWING PE5267-5– ANALYTICAL TESTING PLAN – SOIL (VOCS
AND BTEX)**

**DRAWING PE5267-5A – CROSS SECTION A-A' – SOIL (VOCS AND
BTEX)**

**DRAWING PE5267-5B – CROSS SECTION B-B' – SOIL (VOCS AND
BTEX)**

DRAWING PE5267-6 – ANALYTICAL TESTING PLAN – SOIL (PHCS)

DRAWING PE5267-6A – CROSS SECTION A-A' – SOIL (PHCS)

DRAWING PE5267-6B – CROSS SECTION B-B' – SOIL (PHCS)

DRAWING PE5267-7 – ANALYTICAL TESTING PLAN – SOIL (PAHS)

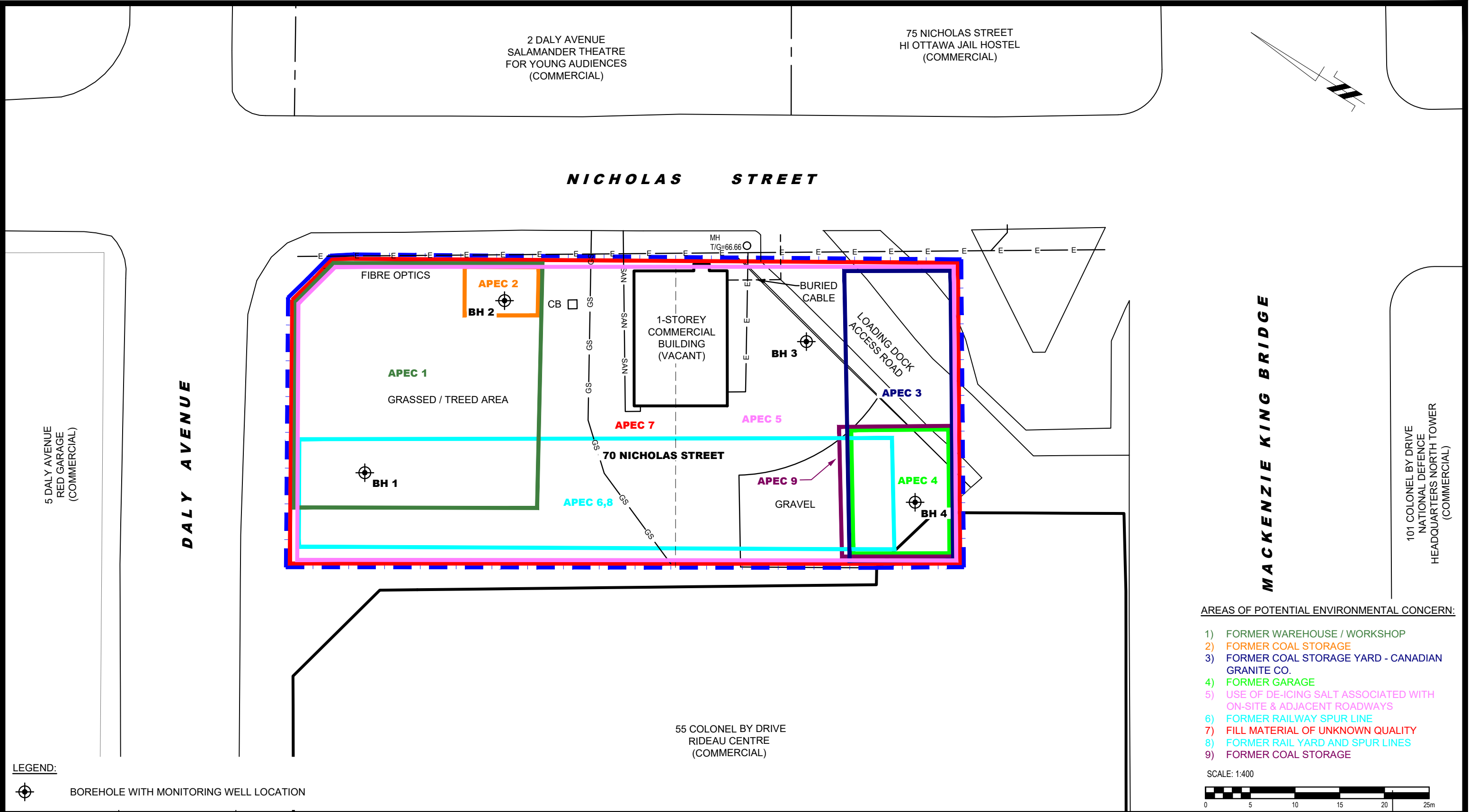
DRAWING PE5267-7A – CROSS SECTION A-A' – SOIL (PAHS)

DRAWING PE5267-7B – CROSS SECTION B-B' – SOIL (PAHS)

**DRAWING PE5267-8 – ANALYTICAL TESTING PLAN –
GROUNDWATER**

DRAWING PE5267-8A – CROSS-SECTION A – A' – GROUNDWATER

DRAWING PE5267-8B – CROSS-SECTION B – B' – GROUNDWATER



LEGEND:

 BOREHOLE WITH MONITORING WELL LOCATION

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN:

- 1) FORMER WAREHOUSE / WORKSHOP
- 2) FORMER COAL STORAGE
- 3) FORMER COAL STORAGE YARD - CANADIAN GRANITE CO.
- 4) FORMER GARAGE
- 5) USE OF DE-ICING SALT ASSOCIATED WITH ON-SITE & ADJACENT ROADWAYS
- 6) FORMER RAILWAY SPUR LINE
- 7) FILL MATERIAL OF UNKNOWN QUALITY
- 8) FORMER RAIL YARD AND SPUR LINES
- 9) FORMER COAL STORAGE

SCALE: 1:400



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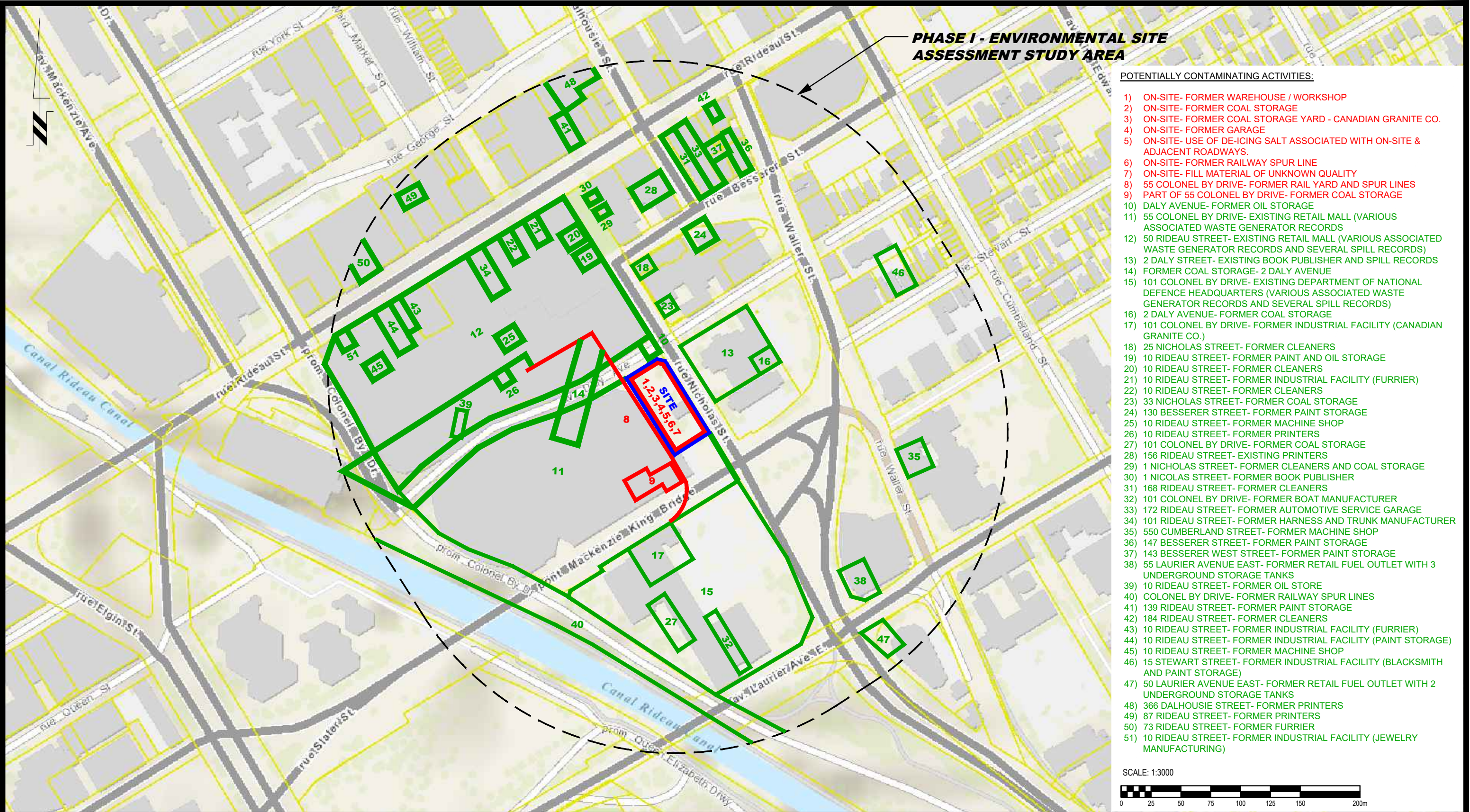
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THE CADILLAC FAIRVIEW CORPORATION LIMITED
PHASE I - ENVIRONMENTAL SITE ASSESSMENT
70 NICHOLAS STREET
OTTAWA, ONTARIO

Title: **SITE PLAN**

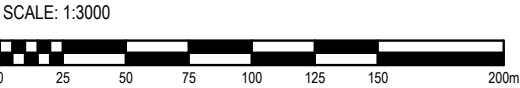
Scale: 1:400
Drawn by: YA
Checked by: JC
Approved by: KM

Date: 08/2021
Report No.: PE5267-1
Dwg. No.: **PE5267-1**
Revision No.:



**PHASE I - ENVIRONMENTAL SITE
ASSESSMENT STUDY AREA**

- POTENTIALLY CONTAMINATING ACTIVITIES:
- 1) ON-SITE- FORMER WAREHOUSE / WORKSHOP
 - 2) ON-SITE- FORMER COAL STORAGE
 - 3) ON-SITE- FORMER COAL STORAGE YARD - CANADIAN GRANITE CO.
 - 4) ON-SITE- FORMER GARAGE
 - 5) ON-SITE- USE OF DE-ICING SALT ASSOCIATED WITH ON-SITE & ADJACENT ROADWAYS.
 - 6) ON-SITE- FORMER RAILWAY SPUR LINE
 - 7) ON-SITE- FILL MATERIAL OF UNKNOWN QUALITY
 - 8) 55 COLONEL BY DRIVE- FORMER RAIL YARD AND SPUR LINES
 - 9) PART OF 55 COLONEL BY DRIVE- FORMER COAL STORAGE
 - 10) DALY AVENUE- FORMER OIL STORAGE
 - 11) 55 COLONEL BY DRIVE- EXISTING RETAIL MALL (VARIOUS ASSOCIATED WASTE GENERATOR RECORDS
 - 12) 50 RIDEAU STREET- EXISTING RETAIL MALL (VARIOUS ASSOCIATED WASTE GENERATOR RECORDS AND SEVERAL SPILL RECORDS)
 - 13) 2 DALY STREET- EXISTING BOOK PUBLISHER AND SPILL RECORDS
 - 14) FORMER COAL STORAGE- 2 DALY AVENUE
 - 15) 101 COLONEL BY DRIVE- EXISTING DEPARTMENT OF NATIONAL DEFENCE HEADQUARTERS (VARIOUS ASSOCIATED WASTE GENERATOR RECORDS AND SEVERAL SPILL RECORDS)
 - 16) 2 DALY AVENUE- FORMER COAL STORAGE
 - 17) 101 COLONEL BY DRIVE- FORMER INDUSTRIAL FACILITY (CANADIAN GRANITE CO.)
 - 18) 25 NICHOLAS STREET- FORMER CLEANERS
 - 19) 10 RIDEAU STREET- FORMER PAINT AND OIL STORAGE
 - 20) 10 RIDEAU STREET- FORMER CLEANERS
 - 21) 10 RIDEAU STREET- FORMER INDUSTRIAL FACILITY (FURRIER)
 - 22) 10 RIDEAU STREET- FORMER CLEANERS
 - 23) 33 NICHOLAS STREET- FORMER COAL STORAGE
 - 24) 130 BESSERER STREET- FORMER PAINT STORAGE
 - 25) 10 RIDEAU STREET- FORMER MACHINE SHOP
 - 26) 10 RIDEAU STREET- FORMER PRINTERS
 - 27) 101 COLONEL BY DRIVE- FORMER COAL STORAGE
 - 28) 156 RIDEAU STREET- EXISTING PRINTERS
 - 29) 1 NICHOLAS STREET- FORMER CLEANERS AND COAL STORAGE
 - 30) 1 NICOLAS STREET- FORMER BOOK PUBLISHER
 - 31) 168 RIDEAU STREET- FORMER CLEANERS
 - 32) 101 COLONEL BY DRIVE- FORMER BOAT MANUFACTURER
 - 33) 172 RIDEAU STREET- FORMER AUTOMOTIVE SERVICE GARAGE
 - 34) 101 RIDEAU STREET- FORMER HARNESS AND TRUNK MANUFACTURER
 - 35) 550 CUMBERLAND STREET- FORMER MACHINE SHOP
 - 36) 147 BESSERER STREET- FORMER PAINT STORAGE
 - 37) 143 BESSERER WEST STREET- FORMER PAINT STORAGE
 - 38) 55 LAURIER AVENUE EAST- FORMER RETAIL FUEL OUTLET WITH 3 UNDERGROUND STORAGE TANKS
 - 39) 10 RIDEAU STREET- FORMER OIL STORE
 - 40) COLONEL BY DRIVE- FORMER RAILWAY SPUR LINES
 - 41) 139 RIDEAU STREET- FORMER PAINT STORAGE
 - 42) 184 RIDEAU STREET- FORMER CLEANERS
 - 43) 10 RIDEAU STREET- FORMER INDUSTRIAL FACILITY (FURRIER)
 - 44) 10 RIDEAU STREET- FORMER INDUSTRIAL FACILITY (PAINT STORAGE)
 - 45) 10 RIDEAU STREET- FORMER MACHINE SHOP
 - 46) 15 STEWART STREET- FORMER INDUSTRIAL FACILITY (BLACKSMITH AND PAINT STORAGE)
 - 47) 50 LAURIER AVENUE EAST- FORMER RETAIL FUEL OUTLET WITH 2 UNDERGROUND STORAGE TANKS
 - 48) 366 DALHOUSIE STREET- FORMER PRINTERS
 - 49) 87 RIDEAU STREET- FORMER PRINTERS
 - 50) 73 RIDEAU STREET- FORMER FURRIER
 - 51) 10 RIDEAU STREET- FORMER INDUSTRIAL FACILITY (JEWELRY MANUFACTURING)



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THE CADILLAC FAIRVIEW CORPORATION LIMITED
PHASE I - ENVIRONMENTAL SITE ASSESSMENT
70 NICHOLAS STREET

OTTAWA, ONTARIO
Title:
SURROUNDING LAND USE PLAN

Scale: 1:3000

Drawn by: YA

Checked by: JC

Approved by: KM

Date: 08/2021

Report No.: PE5267-1

Dwg. No.: **PE5267-2**

Revision No.:

**Geotechnical
Engineering**

**Environmental
Engineering**

Hydrogeology

**Geological
Engineering**

Materials Testing

Building Science

patersongroup

Phase II - Environmental Site Assessment

70 Nicholas Street
Ottawa, Ontario

Prepared For

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November 9, 2021

Report: PE5267-2

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Drawing PE5267-3 – Test Hole Location Plan

Drawing PE5267-4 – Analytical Testing Plan – Soil (Metals)

Drawing PE5267-4A – Cross Section A-A' – Soil (Metals)

Drawing PE5267-4B – Cross Section B-B' – Soil (Metals)

Drawing PE5267-5 – Analytical Testing Plan – Soil (VOCs and BTEX)

Drawing PE5267-5A – Cross Section A-A' – Soil (VOCs and BTEX)

Drawing PE5267-5B – Cross Section B-B' – Soil (VOCs and BTEX)

Drawing PE5267-6 – Analytical Testing Plan – Soil PHCs

Drawing PE5267-6A – Cross Section A-A' – Soil (PHCs)

Drawing PE5267-6B – Cross Section B-B' – Soil (PHCs)

Drawing PE5267-7 – Analytical Testing Plan – Soil (PAHs)

Drawing PE5267-7A – Cross Section A-A' – Soil (PAHs)

Drawing PE5267-7B – Cross Section B-B' – Soil (PAHs)

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Drawing PE5267-8A – Cross-section A – A' – Groundwater

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List of Appendices

Appendix 1 Sampling and Analysis Plan

Soil Profile and Test Data Sheets

Symbols and Terms

Laboratory Certificates of Analysis

EXECUTIVE SUMMARY

Assessment

A Phase II ESA was conducted for the northeast portion of the property addressed 70 Nicholas Street, in the City of Ottawa, Ontario. The purpose of the Phase II ESA was to address potentially contaminating activities (PCAs) that were identified during the Phase I ESA and considered to result in areas of potential environmental concern (APECs) on the Phase II Property.

The Phase II ESA was carried out in conjunction with a geotechnical investigation and consisted of the placement of four boreholes and nine test pits. All boreholes were constructed with groundwater monitoring wells. The general soil profile encountered during the field program consisted of a silty sand fill layer, over a layer of clay followed by glacial till (on the southwest corner of the site only), followed by limestone bedrock. No unusual staining or odour was noted at the time of the field program. Deleterious material identified in the fill material consists of construction debris, coal, brick, concrete and a layer of asphalt in TP7-21.

A total of 17 soil samples were submitted for laboratory analysis of Metals (including methyl mercury), Volatile Organic Compounds (VOCs), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Petroleum Hydrocarbons (PHCs, Fractions F₁-F₄) and/or Polycyclic Aromatic Hydrocarbons (PAHs). No VOC or BTEX concentrations identified in the samples analysed. Concentrations of metals (including As, Sb, Se), Hg, PAH and/or PHC (F₃) parameters exceeding the MECP Table 3 standards were identified in soil Samples BH1-21-SS5/6, BH2-21-SS4, BH3-21-SS4/5 TP1-21-GS3, TP3-21-GS3, TP5-21-GS2 and TP6-21-GS5. Based on Hg results, MeHg was analyzed and determined to comply with the MECP Table 3 standards.

Groundwater samples from monitoring wells BH1-21, BH2-21, BH3-21 and BH4-21 were collected during the May 25, 2021 sampling event. No sheen, free product or odour was noted during the groundwater sampling event.

Groundwater samples were analyzed for Metals, BTEX, PHCs and/or PAHs. All groundwater results comply with the selected MECP Table 3 Residential Standards.

Recommendations

Soil

Based on the findings of the Phase II ESA, it is anticipated that fill material impacted with metals, mercury, PAHs and/or PHC (F₃) exceeding the MECP Table 3 standards is present across the Phase II Property at depths extending up to approximately 5.0m

below grade. It is our understanding that the Phase II Property will be redeveloped with a residential multi-story building with 2 levels of underground parking.

It is recommended that an environmental site remediation program, involving the removal of all impacted fill material be completed prior to site redevelopment. Prior to off-site disposal of the impacted soil at a licenced landfill site, a leachate analysis of a representative sample of contaminated soil must be conducted in accordance with Ontario Regulation 347/558.

It is also recommended that Paterson personnel be onsite during construction activities to direct the excavation and segregation of impacted soil and to conduct additional delineation or confirmatory sampling as required.

Any clean soil that requires removal from the Phase II Property for construction purposes must be handled in accordance with Ontario Regulation 406/19: On-Site and Excess Soil Management.

Groundwater

It is recommended that the monitoring wells installed on the Phase II Property remain viable for future monitoring, if required. It is expected that groundwater monitoring wells will be abandoned in accordance with O.Reg.903 at the time of the construction excavation.

1.0 INTRODUCTION

At the request of The Cadillac Fairview Corporation Limited, Paterson Group (Paterson) conducted a Phase II Environmental Site Assessment for the northeast portion of the property addressed 70 Nicholas Street, in the City of Ottawa, Ontario. The purpose of this Phase II ESA is to address areas of potential environmental concern (APECs) identified on the Phase II Property during the Phase I ESA conducted by Paterson in June of 2021.

1.1 Site Description

Address: 70 Nicholas Street, Ottawa, Ontario

Location: The Phase II Property is located on the west side of Nicholas Street between Daly Avenue and the Mackenzie King Bridge, in the City of Ottawa. The Phase I Property is shown on Figure 1 - Key Plan following the body of this report.

Latitude and Longitude: 45° 25' 30" N, 75° 41' 22" W

Site Description:

Configuration: Irregular

Site Area: 0.27 ha (approximate)

Zoning: Mixed Use Downtown Zone

1.2 Property Ownership

Paterson was engaged to conduct this Phase I ESA by Mr. Aaron Cameron of The Cadillac Fairview Corporation Limited. Mr. Cameron can be reached by telephone at 416-566-9200.

1.3 Current and Proposed Future Uses

The Phase II Property is currently occupied by a vacant building. It is our understanding that the Phase II Property redevelopment will consist of a residential high rise building with two underground parking levels. Associated access lanes, walkways and hardscaped areas are also anticipated as part of the development. It is expected that the proposed buildings 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 Environment, Conservation and Parks (MECP), April 2011. The MECP selected Table 3 Standards are based on the following considerations:

- ☐ Coarse-grained soil conditions
- ☐ Full depth generic site conditions
- ☐ Non-potable groundwater conditions
- ☐ Residential land use

Section 35 of O.Reg. 153/04 does apply to the Phase II Property in that the property relies upon municipal drinking water.

Section 41 of O.Reg. 153/04 does not apply to the Phase II Property, as the property is not within 30m of an environmentally sensitive area and the pH of the soil at the property is between 5 and 9 for surface soil and between 5 and 11 for sub-surface soil.

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

The intended use of the Phase II Property is residential; therefore, the Residential Standards have been selected for the purpose of this Phase II ESA.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

The Phase II Property is located on the west side of Nicholas Street, between Daly Avenue and the Mackenzie King Bridge, in the City of Ottawa, Ontario. The Phase II Property is situated in a mixed-use downtown zone consisting of primarily commercial with some residential land use. The setting of the Phase II Property is shown on Drawing PE5267-2 – Surrounding Land Use Plan.

At the time of the Phase II ESA, the Phase II Property was occupied by a vacant building on the east-central portion. The building was constructed circa 1878 with a stone foundation and consists of one storey with a small basement crawl space.

The remainder of the Phase II Property consists of an access road to a (off-site) truck loading area across the southeast portion and vacant grassed/treed land on the remaining areas.

Site topography slopes down to the east, in the direction of Nicholas Street. The regional topography in the general area of the Phase II Property slopes downward to the north-northwest, towards the Ottawa River. Site drainage consists primarily of infiltration and surface runoff to catch basins on site and along adjacent roadways. Multiple underground utilities were identified on the Phase I Property including electrical, gas, water, sewer and telecommunication lines.

2.2 Past Investigations

Paterson completed a Phase I ESA in June of 2021 for the Phase II Property. Based on the findings of the Phase I ESA, several on and off-site PCAs were considered to result in APECs on the Phase II Property as shown in Table 1.

| Table 1 Areas of Potential Environmental Concern | | | | | |
|---|---|---|--|--|--|
| Area of Potential Environmental Concern | Location of Area of Potential Environmental Concern with respect to Phase I Property | Potentially Contaminating Activity | Location of PCA (on-site or off-site) | Contaminants of Potential Concern | Media Potentially Impacted (Groundwater, Soil, and/or Sediment) |
| APEC 1 (former warehouse / workshop) | Northern portion of the Phase I Property | Other – associated with the former warehouse and workshop | On-site | BTEX PHCs (F ₁ -F ₄) | Soil Groundwater |
| APEC 2 (former coal storage) | Northeast portion of the Phase I Property | Other – former coal storage | On-site | Metals As, Sb, Se Hg, CrVI PAH | Soil Groundwater |
| APEC 3 (former coal storage – Canadian Granite Co.) | Northeast portion of the Phase I Property | Other – former coal storage | On-site | Metals As, Sb, Se Hg, CrVI PAH | Soil Groundwater |

Table 1 Continued

Areas of Potential Environmental Concern

| Area of Potential Environmental Concern | Location of Area of Potential Environmental Concern with respect to Phase I Property | Potentially Contaminating Activity | Location of PCA (on-site or off-site) | Contaminants of Potential Concern | Media Potentially Impacted (Groundwater, Soil, and/or Sediment) |
|--|--|--|---------------------------------------|--|---|
| APEC 4 (former garage) | Southwest portion of the Phase I Property | PCA 52 - Storage, maintenance, fuelling and repair of equipment, vehicles and material used to maintain transportation systems | On-site | BTEX PHCs (F ₁ -F ₄) VOCs | Soil Groundwater |
| APEC 5 ¹ (use of de-icing salt associated with on-site and adjacent roadways) | South portion of the Phase I Property | Other - use of salt for de-icing purposes | On-site | EC SAR | Soil |
| APEC 6 (former railway spur line) | Western portion of the Phase I Property | PCA 46 – Rail Yards, Tracks and Spurs | On-site | Metals As, Sb, Se Hg, CrVI PAH PHCs (F ₁ -F ₄) | Soil Groundwater |
| APEC 7 (fill material of unknown quality) | Potentially across the Phase I Property | PCA 30 - Importation of Fill Material of Unknown Quality | On-site | Metals As, Sb, Se Hg, CrVI PAHs PHCs (F ₁ -F ₄) | Soil (Fill Material) |
| APEC 8 (former rail yard and rail lines) | West portion of the Phase I Property | PCA 46 – Rail Yards, Tracks and Spurs | Off-site | Metals As, Sb, Se Hg, CrVI PAH PHCs (F ₁ -F ₄) | Groundwater |
| APEC 9 (former coal storage) | West portion of the Phase I Property | Other – former coal storage | Off-site | Metals As, Sb, Se Hg, CrVI PAH | Groundwater |
| <p>Notes:</p> <p>1 – In accordance with Section 49.1 of Ontario Regulation 153/04 standards are deemed to be met if an applicable site condition standard is exceeded at a property solely because the qualified person has determined, based on a phase two environmental site assessment, that a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both. As further discussed in the Phase II CSM, the exemption outlined in Section 49.1 is being relied upon with respect to the RSC Property.</p> | | | | | |

The rationale for identifying the above PCAs is based on fire insurance plans, city directories, aerial photographs, field observations, and personal interviews. A Phase II ESA was recommended to address the aforementioned APECs.

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The subsurface investigation was conducted during the interim of May 14 through May 17, 2021 and June 15, 2021, in conjunction with a Geotechnical Investigation. The field program consisted of drilling four boreholes to address the APECs identified on the Phase II Property. All four of the boreholes (BH1-21 through BH4-21) were instrumented with groundwater monitoring wells. Boreholes were drilled to a maximum depth of 10.62 m below the ground surface (mbgs).

Additionally, nine test pits were placed across the Phase I Property to assess the quality of the fill material.

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.

The contaminants of potential concern for the soil and groundwater on the subject site include the following:

- ☐ Metals (including Arsenic (As), Antimony (Sb) and Selenium);
- ☐ Mercury (Hg);
- ☐ Hexavalent Chromium;
- ☐ Volatile Organic Compounds (VOCs);
- ☐ Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX);
- ☐ Petroleum Hydrocarbons, fractions 1 - 4 (PHCs F₁-F₄); and
- ☐ Polycyclic Aromatic Hydrocarbons (PAHs).

3.3 Phase I Conceptual Site Model

Geological and Hydrogeological Setting

The Geological Survey of Canada website on the Urban Geology of the National Capital Area was consulted as part of this assessment. Based on this information, the bedrock in the area of the Phase I Property consists of interbedded limestone and shale of the Verulam Formation. Based on the maps, the thickness of the overburden ranges from 5 to 10 m and consists of plain till. Groundwater flow is expected to reflect regional topography and flow in a northwesterly direction toward the Ottawa River.

Buildings and Structures

The central portion of the Phase I Property is occupied by a vacant building. The building is storey and constructed with a stone foundation. A crawl space is present beneath the northwestern portion of the building. The exterior of the building is finished with brick, stone and a sloped shingle-style roof. The building was constructed circa 1878 and was most recently heated with electric baseboard heaters. No other buildings or structures are present on the Phase I Property.

Subsurface Structures and Utilities

A small basement crawl space is present beneath the northwestern portion of the building. Multiple underground utilities were identified on the Phase I Property including electrical, gas, water, sewer and telecommunication lines.

Water Bodies

No water bodies are present on the Phase I Property. The closest water body is the Rideau Canal, located approximately 200 m northwest of the Phase I Property.

Areas of Natural Significance

No areas of natural significance were identified on the Phase I Property or in the Phase I ESA Study Area.

Drinking Water Wells

No potable well records were identified for the Phase I Property or the Phase I Study Area.

Monitoring Well Records

No monitoring well records were identified on the Phase I Property. A total of 13 well records were identified for properties within the Phase I Study Area. All of the reported well records were dated between 2010 and 2018. A monitoring well record for the property addressed 2 Daly Avenue, approximately 15 m east of the Phase I Property was identified. Five monitoring well records were identified for the properties addressed 70 & 90 Waller Street, approximately 125 m northeast of the Phase I Property.

The monitoring well records identified within the Phase I Study Area are not considered to represent a concern to the Phase I Property based on their respective separation distances.

Neighbouring Land Use

Neighbouring land use in the Phase I Study Area is primarily commercial with some residential land use.

Potentially Contaminating Activities

As per section 7.1 of this report, seven PCAs were identified on the Phase I Property and pertain to a historical post office warehouse/workshop, two separate historical coal storage locations, a historical railway spur line, the use of de-icing salt (on the former roadway through the south portion of the Phase I Property and adjacent roadways), a former garage and fill material of unknown quality throughout the Phase I Property. The seven identified PCAs result in seven APECs for the Phase I Property.

Two off-site PCAs that result in APECs for the Phase I Property were identified within the Study Area. The PCAs include a historical rail yard with associated rail lines and coal storage located adjacent to the west of the Phase I Property. The remaining 42 off-site PCAs identified within the Phase I Study Area are not considered to result in APECs on the subject property due to their respective separation distances and/or cross/down gradient orientations with respect to the Phase I Property.

Areas of Potential Environmental Concern

Nine APECs were identified on the subject site, seven of which resulted from on-site activities including a historical post office warehouse/workshop, two separate historical coal storages, a historical railway spur line, the use of de-icing salt, a former garage and fill material of unknown quality throughout the Phase I

Property. The remaining two APECs are resultant of off-site activities and include a historical rail yard with associated rail lines and coal storage located adjacent to the west of the Phase I Property.

According to Section 49.1 of O.Reg. 153/04, if an applicable site condition standard is exceeded at a property solely because of the following reason, the applicable site condition standard is deemed not to be exceeded for the purpose of Part XV.1 of the Act: "The qualified person has determined, based on a phase one environmental site assessment or a phase two environmental site assessment, that a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both."

In accordance with Section 49.1 of O.Reg. 153/04, any EC and SAR concentrations on the RSC Property that exceed the MECP Table 3 standards for a residential/institutional land use are deemed not to be exceeded for the purpose of Part XV.1 of the Act. This exemption is being relied on for APEC 5.

Contaminants of Potential Concern

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

- ☐ Metals (including arsenic (As), antimony (Sb) and selenium (Se))
- ☐ Mercury (Hg)
- ☐ Hexavalent Chromium (Cr_{VI})
- ☐ Volatile Organic Compounds (VOCs)
- ☐ Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)
- ☐ Petroleum Hydrocarbons (PHCs, Fractions F₁-F₄)
- ☐ Polycyclic Aromatic Hydrocarbons (PAHs)

Assessment of Uncertainty and/or Absence of Information

The information available for review as part of the preparation of this Phase I-ESA is considered to be sufficient to conclude that there are APECs on the Phase I Property which may potentially have impacted the Phase I Property. The presence of PCAs was confirmed by a variety of independent sources, and as such, the conclusions of this report are not affected by uncertainty which may be present with respect to the individual sources.

3.4 Deviations from Sampling and Analysis Plan

The Sampling and Analysis Plan for this project is included in Appendix 1 of this report.

3.5 Impediments

The depth of the test pits was impeded by large boulders and concrete in the fill material; test pits were completed on practical refusal.

4.0 INVESTIGATION METHOD

4.1 Subsurface Investigation

The subsurface investigation was completed in conjunction with a Geotechnical Investigation during the interim of May 14 through May 17, 2021 and June 15, 2021. The field program consisted of drilling four boreholes (BH1-21 through BH4-21) and excavating nine test pits (TP1-21 through TP9-21) across the Phase II Property.

The boreholes were drilled to a maximum depth of 10.62 m below ground surface (mbgs). Three of the four boreholes were cored into the bedrock and all four were completed as groundwater monitoring wells to access.

The boreholes and test pits were placed to address the aforementioned APECs presented in Table 1, and to provide coverage of the proposed building footprint for geotechnical purposes. The boreholes were drilled using a low-clearance drill rig operated by George Downing Estate Drilling of Hawkesbury, Ontario, under full-time supervision of Paterson personnel. The borehole locations are indicated on the attached Drawing PE5267-3 - Test Hole Location Plan.

4.2 Soil Sampling

A total of 24 soil samples were obtained from the boreholes by means of grab sampling from shallow auger flights and split spoon sampling. Split spoon samples were taken at approximate 0.76 m intervals. The depths at which split spoon and auger samples were obtained from the boreholes are shown as “**SS**” and “**AU**” on the Soil Profile and Test Data Sheets.

Upon refusal of the augers, boreholes BH1-21, BH2-21 and BH4-21 were advanced into bedrock using a diamond coring system. An additional 14 rock core samples were recovered and are shown as “**RC**” on the Soil Profile and Test Data Sheets.

During the test pit program, a total of 38 soil samples were obtained from the test pits by means of grab sampling. The depths at which grab samples were

obtained from the test holes are shown as “G” on the Soil Profile and Test Data Sheets.

The site stratigraphy generally consists of a layer of topsoil (0.1 to 0.2m thick) or engineered fill over (up to 0.5m thick) over a thick layer of fill material extending to depths up to approximately 5.0m below grade. The fill material primarily consists of brown silty sand with some clay and gravel. Fragments of concrete, brick, wood and/or coal were identified at each test hole location. A thin layer of silty clay (from 4.27 to 5.18 mbgs) followed by a silty clay glacial till (from 5.18 to 7.01 mbgs) was encountered in BH3-21 below the fill material. A layer of asphalt was encountered in TP7-21 from 0.5 to 0.6 mbgs. Limestone bedrock was encountered beneath the fill material or glacial till at BH3-21, at depths ranging from approximately 2.6 to 7.0m below grade.

Borehole and test pit locations are shown on Drawing PE5267-3 – Test Hole Location Plan.

4.3 Field Screening Measurements

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

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

The organic vapour readings were generally below 20ppm and not considered to be indicative of potential contamination. A slightly elevated reading of 77.2ppm was identified for Sample BH2-21-SS2. These results were not considered to be indicative of potential significant contamination from volatile contaminants. Vapour readings are noted on the Soil Profile and Test Data Sheets in Appendix 1.

No olfactory indications of potential contamination were identified in the soil samples. Deleterious material identified in the fill material consists of construction debris, coal, brick, concrete and a layer of asphalt in TP7-21. The

results of the vapour survey are presented on the Soil Profile and Test Data sheets.

4.4 Groundwater Monitoring Well Installation

Four groundwater monitoring wells were installed on the Phase II Property as part of the subsurface investigation. The monitoring wells consisted of 32 mm diameter, Schedule 40 threaded PVC risers and screens. Monitoring well construction details are listed in Table 3 and are also presented on the Soil Profile and Test Data Sheets provided in Appendix 1.

Borehole locations and elevations were surveyed geodetically by Paterson personnel.

| TABLE 3 - 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 | 67.20 | 10.49 | 7.44-10.49 | 6.71-10.49 | 0.15-6.71 | Stick-Up |
| BH2-21 | 66.14 | 10.62 | 7.57-10.62 | 6.10-10.62 | 0.15-6.10 | Stick-Up |
| BH3-21 | 67.28 | 7.01 | 3.96-7.01 | 3.35-7.01 | 0.15-3.35 | Stick-Up |
| BH4-21 | 66.89 | 10.36 | 7.31-10.36 | 6.71-10.36 | 0.15-6.71 | Stick-Up |

4.5 Field Measurement of Water Quality Parameters

Groundwater samples were collected on May 25, 2021. Water quality parameters were measured in the field using a multi-parameter analyzer. Parameters measured in the field include temperature, pH and electrical conductivity.

Field parameters were measured after each well volume purged. Wells were purged prior to sampling until at least three well volumes had been removed, the field parameters were relatively stable or the well was dry. Stabilized field parameter values are summarized in Table 4.

| Table 4 - Field Measurement of Water Quality Parameters – May 25, 2021 | | | | |
|---|---------------|---------------|---------------|---------------|
| Parameter | BH1-21 | BH2-21 | BH3-21 | BH4-21 |
| Temperature (°C) | 22.3 | 20.7 | 20.0 | 21.7 |
| pH | 7.31 | 7.48 | 7.08 | 7.53 |
| Electrical Conductivity (µS/cm) | 1,980 | 2,010 | 2,450 | 2,380 |

4.6 Groundwater Sampling

Groundwater sampling protocols were followed using the MECP document entitled "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario", dated May 1996. Groundwater samples were obtained from each monitoring well, using dedicated sampling equipment. Standing water was purged from each well prior to sampling. Samples were stored in coolers to reduce analyte volatilization during transportation. Details of our standard operating procedure for groundwater sampling are provided in the Sampling and Analysis Plan in Appendix 1.

4.7 Analytical Testing

Based on the guidelines outlined in the Sampling and Analysis Plan appended to this report, the following soil and groundwater samples, as well as analyzed parameters are presented in Tables 5 and 6.

| Table 5 - Testing Parameters for Submitted Soil Samples | | | | | | | |
|---|--|---------------------|------|------|-------------------------------------|------|---|
| Sample ID | Sample Depth & Stratigraphic Unit | Parameters Analyzed | | | | | Rationale |
| | | Metals ¹ | VOCs | BTEX | PHCs F ₁ -F ₄ | PAHs | |
| May 14, 2021 | | | | | | | |
| BH1-21-SS3 | 1.52 - 2.13 m Brown Silty Sand (Fill Material) | | | X | X | | Assess potential soil impacts resulting from the historical on-site spur line and off-site rail yard and rail tracks. |
| BH1-21-SS5/6 | 3.05 - 4.42 m Brown Silty Sand (Fill Material) | X | | | | X | Assess potential soil impacts resulting from the historical on-site spur line and off-site rail yard and rail tracks. |
| May 17, 2021 | | | | | | | |
| BH2-21-SS4 | 2.29 - 2.62 m Brown Silty Sand (Fill Material) | X | | | | X | Assess potential soil impacts resulting from the presence of the historical on-site warehouse/workshop and coal storage. |
| BH3-21-SS2 | 0.76 – 1.37 m Brown Silty Sand (Fill Material) | | | X | X | | Assess potential soil impacts resulting from the presence of the historical on-site garage and coal storage yard and the off-site coal storage. |

| Table 5 Continued - Testing Parameters for Submitted Soil Samples | | | | | | | |
|--|--|----------------------------|-------------|-------------|---|-------------|---|
| Sample ID | Sample Depth & Stratigraphic Unit | Parameters Analyzed | | | | | Rationale |
| | | Metals¹ | VOCs | BTEX | PHCs F₁-F₄ | PAHs | |
| BH3-21-SS4/5 | 2.29 – 3.66 m Brown Silty Sand (Fill Material) | X | | | | X | Assess potential soil impacts resulting from the presence of the historical on-site garage and coal storage yard and the off-site coal storage. |
| BH4-21-SS2 | 0.76 – 1.37 m Brown Silty Sand (Fill Material) | X | | | | X | Assess potential soil impacts resulting from the presence of fill material. |
| DUP | 2.29 – 3.66 m Brown Silty Sand (Fill Material) | X | | | | X | Duplicate soil sample (BH3-21-SS4/5) for QA/QC purposes |
| June 25, 2021 | | | | | | | |
| TP1-21-GS3 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | | X | | X | | Delineation of previously identified impacts and further assessment of the fill material |
| TP1-21-GS4 | 2.3 – 2.5 m Brown Silty Sand (Fill Material) | X ² | | | | | Delineation of previously identified impacts and further assessment of the fill material |
| TP2-21-GS4 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | X | | X | X | X | Delineation of previously identified impacts and further assessment of the fill material |
| TP3-21-GS3 | 0.5 – 0.7 m Brown Silty Sand (Fill Material) | X | | | | X | Delineation of previously identified impacts and further assessment of the fill material |
| TP4-21-GS2 | 0.7 – 0.8 m Brown Silty Sand (Fill Material) | X | | | | | Delineation of previously identified impacts and further assessment of the fill material |
| TP5-21-GS2 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | | | | | X | Delineation of previously identified impacts and further assessment of the fill material |
| TP6-21-GS5 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | X | | | | X | Delineation of previously identified impacts and further assessment of the fill material |
| TP6-21-GS6 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | X ² | | | | | Delineation of previously identified impacts and further assessment of the fill material |
| TP7-21-GS6 | 2.7 – 3.0 m Brown Silty Sand (Fill Material) | X ² | | | | | Delineation of previously identified impacts and further assessment of the fill material |

| Table 5 Continued - Testing Parameters for Submitted Soil Samples | | | | | | |
|---|---|----------------|--|--|---|--|
| TP8-21-GS5 | 2.5-2.7 Brown Silty Sand (Fill Material) | X ² | | | | Delineation of previously identified impacts and further assessment of the fill material |
| DUP3 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | | | | X | Duplicate soil sample (TP3-21-GS3) for QA/QC purposes |
| DUP4 | 1.7 – 1.9 m Brown Silty Sand (Fill Material) | X | | | | Duplicate soil sample (TP4-21-GS2) for QA/QC purposes |
| Notes: ■ 1 – including As, Sb, Se, Hg and CrVI ■ 2 – tested specifically for methyl mercury | | | | | | |

| TABLE 6 - Testing Parameters for Submitted Groundwater Samples | | | | | | |
|--|------------------------------|---------------------|------|-------------------------------------|------|---|
| Sample ID | Screened Interval | Parameters Analyzed | | | | Rationale |
| | | Metals ¹ | BTEX | PHCs F ₁ -F ₄ | PAHs | |
| May 25, 2021 | | | | | | |
| MW1-21-GW1 | 7.44 - 10.49m Bedrock | X | | | X | Assess potential groundwater impacts resulting from the historical on-site spur line and off-site rail yard and rail tracks. |
| MW2-21-GW1 | 7.57 - 10.62m Bedrock | X | | | X | Assess potential groundwater impacts resulting from the historical on-site warehouse/workshop and coal storage. |
| MW3-21-GW1 | 3.96 - 7.01m Glacial Till | X | X | X | | Assess potential groundwater impacts resulting from the historical on-site garage and coal storage yard and the off-site coal storage.. |
| MW4-21-GW1 | 7.31 - 10.36m Bedrock | | | | X | Assess potential groundwater impacts resulting from the historical on-site roadway. |
| DUP1 | 7.31 - 10.36m Bedrock | | | | X | Duplicate groundwater sample (MW4-21-GW1) for QA/QC purposes. |
| DUP2 | 7.57 - 10.62m Bedrock | X | | | | Duplicate groundwater sample (MW2-21-GW1) for QA/QC purposes. |
| Notes: | | | | | | |
| ▪ 1 – including Hg and Cr _{VI} | | | | | | |

Paracel Laboratories (Paracel), of Ottawa, Ontario, performed the laboratory analysis on the samples submitted for analytical testing. Paracel is a member of the Standards Council of Canada/Canadian Association for Laboratory

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

4.8 Residue Management

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

4.9 Elevation Surveying

The ground surface elevations at each borehole location were surveyed 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 soils consist of a layer of topsoil (0.1 to 0.2m thick) or engineered fill over (up to 0.5m thick) a thick layer of fill material extending to depths up to approximately 5.0m below grade. The fill material primarily consists of brown silty sand with some clay and gravel. Fragments of concrete, brick, wood and/or coal were identified at each test hole location. A thin layer of silty clay (from 4.27 to 5.18 mbgs) followed by a silty clay glacial till (from 5.18 to 7.01 mbgs) was encountered in BH3-21 below the fill material. A layer of asphalt was encountered in TP7-21 from 0.5 to 0.6 mbgs. Limestone bedrock was encountered beneath the fill material or glacial till at BH3-21, at depths ranging from approximately 2.6 to 7.0m below grade. Groundwater was encountered within the bedrock at depths ranging from approximately 5.64 to 9.00 m below ground surface and within the overburden in BH3-21 at a depth of approximately 5.60m below ground surface.

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

5.2 Groundwater Elevations, Flow Direction, and Hydraulic Gradient

Groundwater levels were measured during the groundwater sampling event on May 25, 2021 using an electronic water level meter. Groundwater levels are summarized in Table 7.

| TABLE 7 - Groundwater Level Measurements | | | | |
|---|-------------------------------------|--|--------------------------------------|----------------------------|
| Borehole Location | Ground Surface Elevation (m) | Water Level Depth (m below grade) | Water Level Elevation (m ASL) | Date of Measurement |
| BH1-21 | 67.20 | 9.00 | 58.20 | May 25, 2021 |
| BH2-21 | 66.14 | 6.86 | 59.28 | May 25, 2021 |
| BH3-21 | 67.28 | 5.60 | 61.68 | May 25, 2021 |
| BH4-21 | 66.89 | 5.64 | 61.24 | May 25, 2021 |

Based on the groundwater elevations measured during the sampling event, groundwater contour mapping was completed. Groundwater contours are shown on Drawing PE5267-3 – Test Hole Location Plan. Based on the contour mapping, groundwater flow at the Phase II Property is in a northwestern direction. A horizontal hydraulic gradient of approximately 0.06 m/m was calculated.

It should be noted that groundwater levels are expected to fluctuate throughout the year with seasonal variations.

5.3 Fine-Coarse Soil Texture

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

5.4 Soil: Field Screening

The organic vapour readings were generally below 20ppm and not considered to be indicative of potential contamination. A slightly elevated reading of 77.2ppm was identified for Sample BH2-21-SS2. No olfactory indications of potential contamination were identified in the soil samples. Deleterious material identified in the fill material consists of construction debris, coal, brick, concrete and a layer of asphalt in TP7-21. The results of the vapour survey are presented on the Soil Profile and Test Data sheets.

The field screening results of each individual soil sample are provided on the Soil Profile and Test Data Sheets appended to this report.

5.5 Soil Quality

Based on the findings of the field screening in combination with sample depth and location, seven soil samples (including one duplicate) were submitted for analysis of metals (including As, Sb and Se), Hg, MeHg, CrVI, BTEX, PHC (F1-F4) and/or PAHs. The results of the analytical testing are presented in Tables 8 to 12. The laboratory certificate of analysis is provided in Appendix 1.

| TABLE 8 - Analytical Test Results – Soil Metals | | | | | | | |
|---|------------|---------------------|--------------|--------------|------------|------------------|---|
| Parameter | MDL (µg/g) | Soil Samples (µg/g) | | | | | MECP Table 3 Residential Standards (µg/g) |
| | | May 14, 2021 | May 17, 2021 | | | | |
| | | BH1-21-SS5/6 | BH2-21-SS4 | BH3-21-SS4/5 | BH4-21-SS2 | DUP ¹ | |
| Antimony | 1.0 | 2.0 | 1.5 | nd | nd | nd | 7.5 |
| Arsenic | 1.0 | 4.5 | 7.4 | 6.2 | 2.7 | 5.2 | 18 |
| Barium | 1.0 | 584 | 159 | 150 | 106 | 132 | 390 |
| Beryllium | 0.5 | nd | nd | 0.5 | nd | 0.5 | 4 |
| Boron | 5.0 | 19.0 | 8.8 | 8.4 | 5.5 | 6.8 | 120 |
| Cadmium | 0.5 | nd | 0.8 | nd | nd | nd | 1.2 |
| Chromium | 5.0 | 22.6 | 24.1 | 25.7 | 16.0 | 24.2 | 160 |
| Chromium (VI) | 0.2 | nd | nd | nd | nd | nd | 8 |
| Cobalt | 1.0 | 5.2 | 6.0 | 5.7 | 5.4 | 5.2 | 22 |
| Copper | 5.0 | 17.3 | 43.2 | 16.3 | 20.9 | 15.9 | 140 |
| Lead | 1.0 | 61.9 | 212 | 72.4 | 21.8 | 78.1 | 120 |
| Mercury | 0.1 | 0.2 | 1.3 | 0.5 | nd | 0.4 | 0.27 |
| Molybdenum | 1.0 | 2.4 | 1.2 | 1.2 | nd | 1.0 | 6.9 |
| Nickel | 5.0 | 11.6 | 14.8 | 16.3 | 9.6 | 15.3 | 100 |
| Selenium | 1.0 | nd | nd | nd | nd | nd | 2.4 |
| Silver | 0.3 | nd | 0.3 | nd | nd | nd | 20 |
| Thallium | 1.0 | nd | nd | nd | nd | nd | 1 |
| Uranium | 1.0 | nd | nd | nd | nd | nd | 23 |
| Vanadium | 10.0 | 28.7 | 25.6 | 31.4 | 17.7 | 30.3 | 86 |
| Zinc | 20.0 | 261 | 271 | 67.4 | 103 | 69.3 | 340 |
| Notes: | | | | | | | |
| <ul style="list-style-type: none">MDL – Method Detection Limitnd – not detected above the MDL<u>Bold and underlined</u> – Results exceed selected MECP standard1 – Duplicate of sample BH3-21-SS4/5 | | | | | | | |

| TABLE 8 Continued - Analytical Test Results – Soil Metals | | | | | | | |
|---|------------|---------------------|-------------|------------|------------|-------------------|---|
| Parameter | MDL (µg/g) | Soil Samples (µg/g) | | | | | MECP Table 3 Residential Standards (µg/g) |
| | | June 15, 2021 | | | | | |
| | | TP2-21-GS4 | TP3-21-GS3 | TP4-21-GS2 | TP6-21-GS5 | DUP4 ² | |
| Antimony | 1.0 | nd | 2.1 | nd | 2.0 | nd | 7.5 |
| Arsenic | 1.0 | 3.2 | <u>22.3</u> | 3.9 | 5.0 | 3.2 | 18 |
| Barium | 1.0 | 190 | 181 | 149 | 90.9 | 121 | 390 |
| Beryllium | 0.5 | nd | 0.7 | nd | nd | nd | 4 |
| Boron | 5.0 | 8.7 | 6.9 | 7.1 | 9.3 | 5.5 | 120 |
| Cadmium | 0.5 | nd | <u>3.1</u> | nd | nd | nd | 1.2 |
| Chromium | 5.0 | 17.6 | 20.6 | 15.1 | 18.6 | 12.7 | 160 |
| Chromium (VI) | 0.2 | nd | nd | nd | nd | nd | 8 |
| Cobalt | 1.0 | 4.9 | 7.4 | 4.9 | 5.2 | 4.3 | 22 |
| Copper | 5.0 | 11.4 | 51.5 | 11.3 | 25.8 | 10.5 | 140 |
| Lead | 1.0 | 11.1 | <u>270</u> | 17.8 | <u>136</u> | 17.8 | 120 |
| Mercury | 0.1 | nd | <u>1.0</u> | 0.1 | 0.2 | 0.1 | 0.27 |
| Molybdenum | 1.0 | nd | 2.3 | nd | 2.3 | nd | 6.9 |
| Nickel | 5.0 | 12.4 | 17.8 | 10.9 | 12.8 | 9.7 | 100 |
| Selenium | 1.0 | nd | <u>4.3</u> | nd | nd | nd | 2.4 |
| Silver | 0.3 | nd | nd | nd | nd | nd | 20 |
| Thallium | 1.0 | nd | nd | nd | nd | nd | 1 |
| Uranium | 1.0 | nd | nd | nd | nd | nd | 23 |
| Vanadium | 10.0 | 20.1 | 26.4 | 22.5 | 24.3 | 18.0 | 86 |
| Zinc | 20.0 | 27.2 | <u>1680</u> | 48.6 | 161 | 47.7 | 340 |
| Notes: | | | | | | | |
| ▪ MDL – Method Detection Limit | | | | | | | |
| ▪ nd – not detected above the MDL | | | | | | | |
| ▪ <u>Bold and underlined</u> – Results exceed selected MECP standard | | | | | | | |
| ▪ 2 – Duplicate of sample TP4-21-GS2 | | | | | | | |

| TABLE 9 - Analytical Test Results – Soil Methyl Mercury | | | | | |
|---|------------|---------------------|------------|------------|---|
| Parameter | MDL (µg/g) | Soil Samples (µg/g) | | | MECP Table 3 Residential Standards (µg/g) |
| | | June 15, 2021 | | | |
| | | TP1-21-GS4 | TP7-21-GS6 | TP8-21-GS5 | |
| Methyl Mercury | 0.000050 | nd | 0.000176 | 0.000092 | 0.0084 |
| Notes: <ul style="list-style-type: none">MDL – Method Detection Limitnd – not detected above the MDL | | | | | |

Arsenic, barium, cadmium, lead, mercury, selenium and/or zinc concentrations in Samples BH1-21-SS5/6, BH2-21-SS4, BH3-21-SS4/5, TP3-21-GS3 and TP6-21-GS5 exceed the MECP Table 3 Standards. The remaining metal concentrations in the soil samples analysed are in compliance with the selected MECP Table 3 standards. The analytical results for metals tested in soil are shown on Drawing PE5267-4 – Analytical Testing Plan – Soil (Metals).

TABLE 10 - Analytical Test Results – Soil VOCs

| Parameter | MDL (µg/g) | Soil Sample (µg/g) June 15, 2021 | MECP Table 3 Residential Standards (µg/g) |
|---|---------------|-------------------------------------|---|
| | | TP1-21-GS3 | |
| Acetone | 0.50 | nd | 16 |
| Benzene | 0.02 | nd | 0.21 |
| Bromodichloromethane | 0.05 | nd | 13 |
| Bromoform | 0.05 | nd | 0.27 |
| Bromomethane | 0.05 | nd | 0.05 |
| Carbon Tetrachloride | 0.05 | nd | 0.05 |
| Chlorobenzene | 0.05 | nd | 2.4 |
| Chloroform | 0.05 | nd | 0.05 |
| Dibromochloromethane | 0.05 | nd | 9.4 |
| Dichlorodifluoromethane | 0.05 | nd | 16 |
| 1,2-Dichlorobenzene | 0.05 | nd | 3.4 |
| 1,3-Dichlorobenzene | 0.05 | nd | 4.8 |
| 1,4-Dichlorobenzene | 0.05 | nd | 0.083 |
| 1,1-Dichloroethane | 0.05 | nd | 3.5 |
| 1,2-Dichloroethane | 0.05 | nd | 0.05 |
| 1,1-Dichloroethylene | 0.05 | nd | 0.05 |
| cis-1,2-Dichloroethylene | 0.05 | nd | 3.4 |
| trans-1,2-Dichloroethylene | 0.05 | nd | 0.084 |
| 1,2-Dichloropropane | 0.05 | nd | 0.05 |
| 1,3-Dichloropropene, total | 0.05 | nd | 0.05 |
| Ethylbenzene | 0.05 | nd | 2 |
| Ethylene dibromide (dibromoethane, 1,2-) | 0.05 | nd | 0.05 |
| Hexane | 0.05 | nd | 2.8 |
| Methyl Ethyl Ketone (2-Butanone) | 0.50 | nd | 16 |
| Methyl Isobutyl Ketone | 0.50 | nd | 1.7 |
| Methyl tert-butyl ether | 0.05 | nd | 0.75 |
| Methylene Chloride | 0.05 | nd | 0.1 |
| Styrene | 0.05 | nd | 0.7 |
| 1,1,1,2-Tetrachloroethane | 0.05 | nd | 0.058 |
| 1,1,2,2-Tetrachloroethane | 0.05 | nd | 0.05 |
| Tetrachloroethylene | 0.05 | nd | 0.28 |
| Toluene | 0.05 | nd | 2.3 |
| 1,1,1-Trichloroethane | 0.05 | nd | 0.38 |
| 1,1,2-Trichloroethane | 0.05 | nd | 0.05 |
| Trichloroethylene | 0.05 | nd | 0.061 |
| Trichlorofluoromethane | 0.05 | nd | 4 |
| Vinyl Chloride | 0.02 | nd | 0.02 |
| Xylenes, total | 0.05 | nd | 3.1 |
| Notes: | | | |
| <ul style="list-style-type: none"> ▪ MDL – Method Detection Limit ▪ nd – not detected above the MDL | | | |

No VOC parameters were detected in the soil sample analyzed. The results are in compliance with the selected MECP Table 3 standards. The analytical results for VOCs tested in soil are shown on Drawing PE5267-5 – Analytical Testing Plan – Soil (VOCs and BTEX).

| TABLE 11 - Analytical Test Results – Soil BTEX | | | | | |
|---|------------|---------------------|--------------|---------------|---|
| Parameter | MDL (µg/g) | Soil Samples (µg/g) | | | MECP Table 3 Residential Standards (µg/g) |
| | | May 14, 2021 | May 17, 2021 | June 15, 2021 | |
| | | BH1-21-SS3 | BH3-21-SS2 | TP2-21-GS4 | |
| Benzene | 0.02 | nd | nd | nd | 0.21 |
| Toluene | 0.05 | nd | nd | nd | 2 |
| Ethylbenzene | 0.05 | nd | nd | nd | 2.3 |
| Xylenes | 0.05 | nd | nd | nd | 3.1 |
| Notes: | | | | | |
| <ul style="list-style-type: none"> MDL – Method Detection Limit nd – not detected above the MDL | | | | | |

No BTEX parameters were detected in the soil samples analyzed. The results are in compliance with the selected MECP Table 3 standards. The analytical results for BTEX tested in soil are shown on Drawing PE5267-5 – Analytical Testing Plan – Soil (VOCs and BTEX).

| TABLE 12 - Analytical Test Results – Soil PHCs F ₁ -F ₄ | | | | | | |
|--|---------------|---------------------|-----------------|-------------------|----------------|---|
| Parameter | MDL (µg/g) | Soil Samples (µg/g) | | | | MECP Table 3 Residential Standards (µg/g) |
| | | May 14, 2021 | May 17, 2021 | June 15, 2021 | | |
| | | BH1-21- SS3 | BH3-21- SS2 | TP1-21- GS3 | TP2-21- GS4 | |
| PHC F ₁ | 7 | nd | nd | nd | nd | 55 |
| PHC F ₂ | 4 | nd | 7 | 5 | 5 | 98 |
| PHC F ₃ | 8 | 43 | 53 | <u>386</u> | 24 | 300 |
| PHC F ₄ | 6 | 29 | 37 | 134 | 15 | 2800 |
| Notes: | | | | | | |
| <ul style="list-style-type: none">MDL – Method Detection Limitnd – not detected above the MDL<u>Bold and underlined</u> – Results exceed selected MECP standard | | | | | | |

The PHC F₃ concentrations in sample TP1-21-GS3 exceeds the MECP Table 3 Standard. The remaining PHC concentrations in the soil samples analysed are in compliance with the selected MECP Table 3 standards. The analytical results for PHCs tested in soil are shown on Drawing PE5267-6 – Analytical Testing Plan – Soil (PHCs).

TABLE 13 - Analytical Test Results – Soil PAHs

| Parameter | MDL (µg/g) | Soil Sample (µg/g) | | | | | MECP Table 3 Residential Standards (µg/g) |
|---|---------------|----------------------|--------------------|----------------------|--------------------|------------------|--|
| | | May 14, 2021 | May 17, 2021 | | | | |
| | | BH1- 21- SS5/6 | BH2- 21- SS4 | BH3- 21- SS4/5 | BH4- 21- SS2 | DUP ¹ | |
| Acenaphthene | 0.02 | 0.27 | nd | nd | nd | 0.03 | 7.9 |
| Acenaphthylene | 0.02 | 0.23 | 0.15 | 0.02 | 0.14 | 0.04 | 0.15 |
| Anthracene | 0.02 | 0.75 | 0.11 | 0.04 | 0.09 | 0.09 | 0.67 |
| Benzo[a]anthracene | 0.02 | 1.50 | 0.24 | 0.12 | 0.18 | 0.21 | 0.5 |
| Benzo[a]pyrene | 0.02 | 1.38 | 0.35 | 0.15 | 0.23 | 0.20 | 0.3 |
| Benzo[b]fluoranthene | 0.02 | 1.29 | 0.31 | 0.16 | 0.26 | 0.24 | 0.78 |
| Benzo[g,h,i]perylene | 0.02 | 0.70 | 0.25 | 0.09 | 0.19 | 0.12 | 6.6 |
| Benzo[k]fluoranthene | 0.02 | 0.75 | 0.16 | 0.09 | 0.11 | 0.12 | 0.78 |
| Chrysene | 0.02 | 1.44 | 0.22 | 0.16 | 0.18 | 0.19 | 7 |
| Dibenzo[a,h]anthracene | 0.02 | 0.11 | 0.06 | nd | 0.04 | 0.03 | 0.1 |
| Fluoranthene | 0.02 | 2.89 | 0.39 | 0.24 | 0.24 | 0.44 | 0.69 |
| Fluorene | 0.02 | 0.26 | nd | nd | nd | 0.03 | 62 |
| Indeno[1,2,3-cd]pyrene | 0.02 | 0.66 | 0.22 | 0.08 | 0.15 | 0.11 | 0.38 |
| 1-Methylnaphthalene | 0.02 | 0.13 | nd | nd | 0.12 | nd | 0.99 |
| 2-Methylnaphthalene | 0.02 | 0.13 | 0.03 | nd | 0.17 | 0.03 | 0.99 |
| Methylnaphthalene (1&2) | 0.04 | 0.29 | nd | nd | 0.29 | 0.05 | 0.99 |
| Naphthalene | 0.01 | 0.21 | 0.04 | 0.02 | 0.11 | 0.03 | 0.6 |
| Phenanthrene | 0.02 | 2.78 | 0.23 | 0.17 | 0.13 | 0.35 | 6.2 |
| Pyrene | 0.02 | 2.32 | 0.36 | 0.21 | 0.22 | 0.38 | 78 |
| Notes: | | | | | | | |
| <ul style="list-style-type: none">MDL – Method Detection Limitnd – not detected above the MDL<u>Bold and underlined</u> – Results exceed selected MECP standard1 – Duplicate of sample BH3-21-SS4/5 | | | | | | | |

TABLE 13 Continued - Analytical Test Results – Soil PAHs

| Parameter | MDL (µg/g) | Soil Sample (µg/g) | | | | | MECP Table 3 Residential Standards (µg/g) |
|------------------------|---------------|--------------------|--------------------|--------------------|--------------------|-------------------|--|
| | | June 15, 2021 | | | | | |
| | | TP2- 21- GS4 | TP3- 21- GS3 | TP5- 21- GS2 | TP6- 21- GS5 | DUP3 ¹ | |
| Acenaphthene | 0.02 | nd | 15.5 | 1.42 | nd | 11.0 | 7.9 |
| Acenaphthylene | 0.02 | nd | 1.43 | 1.01 | 0.45 | 1.31 | 0.15 |
| Anthracene | 0.02 | nd | 34.0 | 2.40 | 0.59 | 32.9 | 0.67 |
| Benzo[a]anthracene | 0.02 | nd | 50.9 | 6.74 | 1.11 | 43.6 | 0.5 |
| Benzo[a]pyrene | 0.02 | nd | 48.5 | 7.22 | 1.25 | 38.9 | 0.3 |
| Benzo[b]fluoranthene | 0.02 | nd | 43.0 | 7.37 | 1.29 | 35.9 | 0.78 |
| Benzo[g,h,i]perylene | 0.02 | nd | 23.3 | 3.95 | 0.81 | 18.5 | 6.6 |
| Benzo[k]fluoranthene | 0.02 | nd | 23.6 | 4.47 | 0.59 | 19.2 | 0.78 |
| Chrysene | 0.02 | nd | 52.4 | 7.59 | 1.41 | 44.0 | 7 |
| Dibenzo[a,h]anthracene | 0.02 | nd | 6.01 | 1.07 | nd | 5.30 | 0.1 |
| Fluoranthene | 0.02 | nd | 123 | 18.7 | 2.49 | 105 | 0.69 |
| Fluorene | 0.02 | nd | 12.8 | 1.23 | nd | 15.7 | 62 |
| Indeno[1,2,3-cd]pyrene | 0.02 | nd | 21.1 | 3.61 | 0.67 | 17.0 | 0.38 |

| TABLE 13 Continued - Analytical Test Results – Soil PAHs | | | | | | | |
|--|------|----|-------------|-------------|------|-------------|------|
| 1-Methylnaphthalene | 0.02 | nd | <u>3.91</u> | <u>1.96</u> | nd | <u>3.72</u> | 0.99 |
| 2-Methylnaphthalene | 0.02 | nd | <u>5.39</u> | <u>2.43</u> | nd | <u>5.42</u> | 0.99 |
| Methylnaphthalene (1&2) | 0.04 | nd | <u>9.30</u> | <u>4.39</u> | nd | <u>9.15</u> | 0.99 |
| Naphthalene | 0.01 | nd | <u>9.72</u> | <u>3.10</u> | 0.36 | <u>10.1</u> | 0.6 |
| Phenanthrene | 0.02 | nd | <u>123</u> | <u>15.7</u> | 2.18 | <u>115</u> | 6.2 |
| Pyrene | 0.02 | nd | <u>97.6</u> | 15.2 | 2.07 | <u>78.9</u> | 78 |
| Notes: <ul style="list-style-type: none"> MDL – Method Detection Limit nd – not detected above the MDL <u>Bold and underlined</u> – Results exceed selected MECP standard 1 – Duplicate of sample TP3-21-GS3 | | | | | | | |

Various PAH parameter concentrations in Samples BH1-21-SS5/6, BH2-21-SS4, TP23-21-GS3, TP5-21-GS2 and TP6-21-GS5 exceed the MECP Table 3 Standards. The remaining PAH concentrations in the soil samples analysed are in compliance with the selected MECP Table 3 standards. The analytical results for PAHs tested in soil are shown on Drawing PE5267-7 – Analytical Testing Plan – Soil (PAHs).

The maximum concentrations of analyzed parameters in the soil at the Phase II Property are summarized in Table 14.

| TABLE 14 - Maximum Concentrations – Soil | | | |
|---|-------------------------------------|------------------|-------------------------------|
| Parameter | Maximum Concentration (µg/g) | Sample ID | Depth Interval (m BGS) |
| Antimony | 2.1 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Arsenic | <u>22.3</u> | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Barium | <u>584</u> | BH1-21-SS5/6 | 3.05 - 4.42; Fill Material |
| Beryllium | 0.7 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Boron | 19.0 | BH1-21-SS5/6 | 3.05 - 4.42; Fill Material |
| Cadmium | <u>3.1</u> | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Chromium | 25.7 | BH3-21-SS4/5 | 2.29 - 3.66; Fill Material |
| Cobalt | 7.4 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Copper | 51.5 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Lead | <u>270</u> | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Mercury | <u>1.3</u> | BH2-21-SS4 | 2.29 - 2.62; Fill Material |
| Molybdenum | 2.4 | BH1-21-SS5/6 | 3.05 - 4.42; Fill Material |
| Nickel | 17.8 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Selenium | <u>4.3</u> | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Silver | 0.3 | BH2-21-SS4 | 2.29 - 2.62; Fill Material |
| Vanadium | 31.4 | BH3-21-SS4/5 | 2.29 - 3.66; Fill Material |
| Zinc | <u>1680</u> | TP3-21-GS3 | 0.5-0.7; Fill Material |
| PHC F ₂ | 7 | BH3-21-SS2 | 0.76 - 1.37; Fill Material |
| PHC F ₃ | <u>386</u> | TP1-21-GS3 | 1.7-1.9; Fill Material |
| PHC F ₄ | 134 | TP1-21-GS3 | 1.7-1.9; Fill Material |
| Acenaphthene | 15.5 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Acenaphthylene | 1.43 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Anthracene | 34.0 | TP3-21-GS3 | 0.5-0.7; Fill Material |

| TABLE 14 - Maximum Concentrations – Soil | | | |
|---|------|-------------------|------------------------|
| Benzo[a]anthracene | 50.9 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Benzo[a]pyrene | 48.5 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Benzo[b]fluoranthene | 43.0 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Benzo[g,h,i]perylene | 23.3 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Benzo[k]fluoranthene | 23.6 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Chrysene | 52.4 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Dibenzo[a,h]anthracene | 6.01 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Fluoranthene | 123 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Fluorene | 15.7 | DUP3 (TP3-21-GS3) | 0.5-0.7; Fill Material |
| Indeno[1,2,3-cd]pyrene | 21.1 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| 1-Methylnaphthalene | 3.91 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| 2-Methylnaphthalene | 5.42 | DUP3 (TP3-21-GS3) | 0.5-0.7; Fill Material |
| Methylnaphthalene (1&2) | 9.30 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Naphthalene | 10.1 | DUP3 (TP3-21-GS3) | 0.5-0.7; Fill Material |
| Phenanthrene | 123 | TP3-21-GS3 | 0.5-0.7; Fill Material |
| Pyrene | 97.6 | TP3-21-GS3 | 0.5-0.7; Fill Material |

All remaining parameter results were non-detect. The laboratory Certificates of Analysis are provided in Appendix 1.

5.6 Groundwater Quality

Groundwater samples (including two duplicates) from monitoring wells installed in BH1 through BH4 were submitted for laboratory analysis of metals (including Hg and CrVI), BTEX, PHC (F1-F4) and/or PAHs. The groundwater samples were obtained from the screened intervals noted in Table 3.

The results of the analytical testing are presented in Tables 15 to 18. The laboratory certificates of analysis are provided in Appendix 1.

| TABLE 15 - Analytical Test Results – Groundwater Metals | | | | | | |
|---|------------|----------------------------|------------|------------|-------------------|---|
| Parameter | MDL (µg/g) | Groundwater Samples (µg/g) | | | | MECP Table 3 Residential Standards (µg/g) |
| | | May 25, 2021 | | | | |
| | | MW1-21-GW1 | MW2-21-GW1 | MW3-21-GW1 | DUP2 ¹ | |
| Antimony | 0.5 | nd | nd | nd | nd | 20,000 |
| Arsenic | 1 | nd | nd | nd | nd | 1,900 |
| Barium | 1 | 40 | 629 | 65 | 701 | 29,000 |
| Beryllium | 0.5 | nd | nd | nd | nd | 67 |
| Boron | 10 | 137 | 74 | 39 | 87 | 45,000 |
| Cadmium | 0.1 | nd | nd | nd | nd | 2.7 |
| Chromium | 1 | nd | nd | nd | nd | 810 |
| Chromium (VI) | 10 | nd | nd | nd | nd | 140 |
| Cobalt | 0.5 | 1.2 | 1.2 | 0.6 | nd | 66 |
| Copper | 0.5 | 3.3 | 4.9 | 3.5 | 4.8 | 87 |

| TABLE 15 - Analytical Test Results – Groundwater Metals | | | | | | |
|---|------------|----------------------------|------------|------------|-------------------|---|
| Parameter | MDL (µg/g) | Groundwater Samples (µg/g) | | | | MECP Table 3 Residential Standards (µg/g) |
| | | May 25, 2021 | | | | |
| | | MW1-21-GW1 | MW2-21-GW1 | MW3-21-GW1 | DUP2 ¹ | |
| Lead | 0.1 | nd | nd | nd | 0.1 | 25 |
| Mercury | 0.1 | nd | nd | nd | nd | 0.29 |
| Molybdenum | 0.5 | 4.1 | 2.9 | 0.9 | 3.2 | 9,200 |
| Nickel | 1 | 8 | 4 | 7 | 4 | 490 |
| Selenium | 1 | 6 | nd | 2 | nd | 63 |
| Silver | 0.1 | nd | nd | nd | nd | 1.5 |
| Sodium | 200 | 455,000 | 228,000 | 289,000 | 237,000 | 2,300,000 |
| Thallium | 0.1 | nd | 0.1 | nd | 0.2 | 510 |
| Uranium | 0.1 | 2.8 | 3.8 | 4.7 | 4.1 | 420 |
| Vanadium | 0.5 | nd | 0.5 | nd | 0.6 | 250 |
| Zinc | 5 | 10 | 17 | 9 | 9 | 1,100 |
| Notes: | | | | | | |
| <ul style="list-style-type: none">MDL – Method Detection Limitnd – not detected above the MDL1 – Duplicate of sample MW2-21-GW1 | | | | | | |

All detected metal concentrations in the groundwater samples analysed are in compliance with the selected MECP Table 3 standards. The analytical results for groundwater tested are shown on Drawing PE5267-8 – Analytical Testing Plan – Groundwater.

| TABLE 16 - Analytical Test Results – Groundwater BTEX | | | |
|--|------------|---------------------------|-------------------------------|
| Parameter | MDL (µg/L) | Groundwater Sample (µg/L) | MECP Table 3 Standards (µg/L) |
| | | May 25, 2021 | |
| | | MW3-21-GW1 | |
| Benzene | 0.5 | nd | 44 |
| Toluene | 0.5 | nd | 18,000 |
| Ethylbenzene | 0.5 | nd | 2,300 |
| Xylenes | 0.5 | nd | 4,200 |
| Notes: <ul style="list-style-type: none"> MDL – Method Detection Limit nd – not detected above the MDL | | | |

No detectable BTEX concentrations were identified in the groundwater sample analysed. As such, the results are in compliance with the selected MECP Table 3 standards. The analytical results for groundwater tested are shown on Drawing PE5267-8 – Analytical Testing Plan – Groundwater.

| TABLE 17 - Analytical Test Results – Groundwater PHCs | | | |
|---|---------------|---------------------------|--|
| Parameter | MDL (µg/L) | Groundwater Sample (µg/L) | MECP Table 3 Standards (µg/L) |
| | | May 25, 2021 | |
| | | MW3-21-GW1 | |
| PHC F ₁ | 25 | nd | 750 |
| PHC F ₂ | 100 | nd | 150 |
| PHC F ₃ | 100 | nd | 500 |
| PHC F ₄ | 100 | nd | 500 |
| Notes: | | | |
| <ul style="list-style-type: none"> MDL – Method Detection Limit nd – not detected above the MDL | | | |

No detectable PHC concentrations were identified in the groundwater sample analysed; the results comply with the MECP Table 3 standards. The analytical results for groundwater tested are shown on Drawing PE5267-8 – Analytical Testing Plan – Groundwater.

| TABLE 18 - Analytical Test Results – Groundwater PAHs | | | | | | |
|---|------------|----------------------------|------------|------------|-------------------|---|
| Parameter | MDL (µg/g) | Groundwater Samples (µg/g) | | | | MECP Table 3 Residential Standards (µg/g) |
| | | May 25, 2021 | | | | |
| | | MW1-21-GW1 | MW2-21-GW1 | MW4-21-GW1 | DUP1 ¹ | |
| Acenaphthene | 0.05 | nd | nd | nd | nd | 600 |
| Acenaphthylene | 0.05 | nd | nd | nd | nd | 1.8 |
| Anthracene | 0.01 | nd | nd | nd | nd | 2.4 |
| Benzo[a]anthracene | 0.01 | nd | nd | nd | nd | 4.7 |
| Benzo[a]pyrene | 0.01 | nd | nd | nd | nd | 0.81 |
| TABLE 18 - Analytical Test Results – Groundwater PAHs | | | | | | |
| Benzo[b]fluoranthene | 0.05 | nd | nd | nd | nd | 0.75 |
| Benzo[g,h,i]perylene | 0.05 | nd | nd | nd | nd | 0.2 |
| Benzo[k]fluoranthene | 0.05 | nd | nd | nd | nd | 0.4 |
| Chrysene | 0.05 | nd | nd | nd | nd | 1 |
| Dibenzo[a,h]anthracene | 0.05 | nd | nd | nd | nd | 0.52 |
| Fluoranthene | 0.01 | 0.04 | nd | nd | nd | 130 |
| Fluorene | 0.05 | nd | nd | nd | nd | 400 |
| Indeno[1,2,3-cd]pyrene | 0.05 | nd | nd | nd | nd | 0.2 |
| Methylnapthalene (1&2) | 0.10 | nd | nd | nd | nd | 1,800 |
| Naphthalene | 0.05 | 0.34 | nd | nd | nd | 1,400 |
| Phenanthrene | 0.05 | 0.08 | nd | nd | nd | 580 |
| Pyrene | 0.01 | 0.04 | nd | nd | nd | 68 |
| Notes: | | | | | | |
| <ul style="list-style-type: none">MDL – Method Detection Limitnd – not detected above the MDL1 – Duplicate of sample MW4-21-GW1 | | | | | | |

Several PAH parameters were identified in Sample MW1-21-GW1 at concentrations below the MECP Table 3 standards. Otherwise, no PAH parameters were detected in the groundwater samples analysed. The analytical results for groundwater tested are shown on Drawing PE5267-8 – Analytical Testing Plan – Groundwater.

5.7 Quality Assurance and Quality Control Results

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

Duplicate soil and groundwater samples from BH1-21-SS5, MW2-21-GW1 and MW4-21-GW1 were submitted for laboratory analysis of metals (including Hg and CrVI), BTEX, PHCs (F1-F4) and/or PAHs.

The duplicates were collected with the intent of calculating the relative percent difference (RPD) between duplicate sample values, as a way of assessing the quality of the analytical test results. Several parameter concentrations were not detected in either or both the original sample and duplicate. The RPD values are therefore considered to be 0% and therefore meet the 20% target.

The RPD calculations for the original soil and duplicate sample are provided in Tables 19 to 20.

Table 19 - QA/QC Calculations – Soil

| Parameter | MDL (µg/L) | BH3-21-SS4/5 | DUP (BH3-21-SS4/5) | RPD (%) | QA/QC Result |
|--|------------|-------------------|--------------------|---------|----------------------|
| Antimony | 1.0 | nd | nd | 0 | Meets Target |
| Arsenic | 1.0 | 6.2 | 5.2 | 17.5 | Meets Target |
| Barium | 1.0 | 150 | 132 | 12.8 | Meets Target |
| Beryllium | 0.5 | 0.5 | 0.5 | 0 | Meets Target |
| Boron | 5.0 | 8.4 | 6.8 | 21.0 | Does Not Meet Target |
| Cadmium | 0.5 | nd | nd | 0 | Meets Target |
| Chromium | 5.0 | 25.7 | 24.2 | 6.0 | Meets Target |
| Chromium (VI) | 0.2 | nd | nd | 0 | Meets Target |
| Cobalt | 1.0 | 5.7 | 5.2 | 9.2 | Meets Target |
| Copper | 5.0 | 16.3 | 15.9 | 2.5 | Meets Target |
| Lead | 1.0 | 72.4 | 78.1 | 7.6 | Meets Target |
| Mercury | 0.1 | <u>0.5</u> | <u>0.4</u> | 22.2 | Does Not Meet Target |
| Molybdenum | 1.0 | 1.2 | 1.0 | 18.2 | Meets Target |
| Nickel | 5.0 | 16.3 | 15.3 | 6.3 | Meets Target |
| Selenium | 1.0 | nd | nd | 0 | Meets Target |
| Silver | 0.3 | nd | nd | 0 | Meets Target |
| Thallium | 1.0 | nd | nd | 0 | Meets Target |
| Uranium | 1.0 | nd | nd | 0 | Meets Target |
| Vanadium | 10.0 | 31.4 | 30.3 | 3.6 | Meets Target |
| Zinc | 20.0 | 67.4 | 69.3 | 2.8 | Meets Target |
| Acenaphthene | 0.02 | nd | 0.03 | 40 | Does Not Meet Target |
| Acenaphthylene | 0.02 | 0.02 | 0.04 | 66.7 | Does Not Meet Target |
| Anthracene | 0.02 | 0.04 | 0.09 | 76.9 | Does Not Meet Target |
| Benzo[a]anthracene | 0.02 | 0.12 | 0.21 | 54.5 | Does Not Meet Target |
| Benzo[a]pyrene | 0.02 | 0.15 | 0.20 | 28.6 | Does Not Meet Target |
| Benzo[b]fluoranthene | 0.02 | 0.16 | 0.24 | 40 | Does Not Meet Target |
| Benzo[g,h,i]perylene | 0.02 | 0.09 | 0.12 | 28.6 | Does Not Meet Target |
| Benzo[k]fluoranthene | 0.02 | 0.09 | 0.12 | 28.6 | Does Not Meet Target |
| Chrysene | 0.02 | 0.16 | 0.19 | 17.7 | Meets Target |
| Dibenzo[a,h]anthracene | 0.02 | nd | 0.03 | 40 | Does Not Meet Target |
| Fluoranthene | 0.02 | 0.24 | 0.44 | 58.8 | Does Not Meet Target |
| Fluorene | 0.02 | nd | 0.03 | 0 | Meets Target |
| Indeno[1,2,3-cd]pyrene | 0.02 | 0.08 | 0.11 | 31.6 | Does Not Meet Target |
| 1-Methylnaphthalene | 0.02 | nd | nd | 0 | Meets Target |
| 2-Methylnaphthalene | 0.02 | nd | 0.03 | 0 | Meets Target |
| Methylnaphthalene(1&2) | 0.04 | nd | 0.05 | 0 | Meets Target |
| Naphthalene | 0.01 | 0.02 | 0.03 | 40 | Does Not Meet Target |
| Phenanthrene | 0.02 | 0.17 | 0.35 | 69.2 | Does Not Meet Target |
| Pyrene | 0.02 | 0.21 | 0.38 | 57.6 | Does Not Meet Target |
| Notes: <input type="checkbox"/> MDL – Method Detection Limit <input type="checkbox"/> nd – not detected above the MDL <input type="checkbox"/> <u>Bold and underlined</u> – Results exceed selected MECP standard | | | | | |

Table 19 Continued - QA/QC Calculations – Soil

| Parameter | MDL (µg/L) | TP3-21-GS3 | DUP3 (TP3-21-GS3) | RPD (%) | QA/QC Result |
|--|------------|-------------|-------------------|---------|----------------------|
| Acenaphthene | 0.02 | <u>15.5</u> | <u>11.0</u> | 40.0 | Does Not Meet Target |
| Acenaphthylene | 0.02 | <u>1.43</u> | <u>1.31</u> | 8.8 | Meets Target |
| Anthracene | 0.02 | <u>34.0</u> | <u>32.9</u> | 3.3 | Meets Target |
| Benzo[a]anthracene | 0.02 | <u>50.9</u> | <u>43.6</u> | 15.4 | Meets Target |
| Benzo[a]pyrene | 0.02 | <u>48.5</u> | <u>38.9</u> | 22.0 | Does Not Meet Target |
| Benzo[b]fluoranthene | 0.02 | <u>43.0</u> | <u>35.9</u> | 18.0 | Does Not Meet Target |
| Benzo[g,h,i]perylene | 0.02 | <u>23.3</u> | <u>18.5</u> | 23.0 | Meets Target |
| Benzo[k]fluoranthene | 0.02 | <u>23.6</u> | <u>19.2</u> | 20.6 | Meets Target |
| Chrysene | 0.02 | <u>52.4</u> | <u>44.0</u> | 17.4 | Meets Target |
| Dibenzo[a,h]anthracene | 0.02 | <u>6.01</u> | <u>5.30</u> | 12.6 | Meets Target |
| Fluoranthene | 0.02 | <u>123</u> | <u>105</u> | 15.8 | Meets Target |
| Fluorene | 0.02 | 12.8 | 15.7 | 20.4 | Meets Target |
| Indeno[1,2,3-cd]pyrene | 0.02 | <u>21.1</u> | <u>17.0</u> | 21.5 | Does Not Meet Target |
| 1-Methylnaphthalene | 0.02 | <u>3.91</u> | <u>3.72</u> | 5.0 | Meets Target |
| 2-Methylnaphthalene | 0.02 | <u>5.39</u> | <u>5.42</u> | 0.6 | Meets Target |
| Methylnaphthalene(1&2) | 0.04 | <u>9.30</u> | <u>9.15</u> | 1.6 | Meets Target |
| Naphthalene | 0.01 | <u>9.72</u> | <u>10.1</u> | 3.8 | Meets Target |
| Phenanthrene | 0.02 | <u>123</u> | <u>115</u> | 6.7 | Meets Target |
| Pyrene | 0.02 | <u>97.6</u> | <u>78.9</u> | 21.2 | Does Not Meet Target |
| Notes: <input type="checkbox"/> MDL – Method Detection Limit <input type="checkbox"/> nd – not detected above the MDL <input type="checkbox"/> <u>Bold and underlined</u> – Results exceed selected MECP standard | | | | | |

Table 19 Continued - QA/QC Calculations – Soil

| Parameter | MDL (µg/L) | TP4-21-GS2 | DUP4 (TP4-21-GS2) | RPD (%) | QA/QC Result |
|---------------|------------|------------|-------------------|---------|----------------------|
| Antimony | 1.0 | nd | nd | 0 | Meets Target |
| Arsenic | 1.0 | 3.9 | 3.2 | 19.7 | Meets Target |
| Barium | 1.0 | 149 | 121 | 20.7 | Does Not Meet Target |
| Beryllium | 0.5 | nd | nd | 0 | Meets Target |
| Boron | 5.0 | 7.1 | 5.5 | 25.4 | Does Not Meet Target |
| Cadmium | 0.5 | nd | nd | 0 | Meets Target |
| Chromium | 5.0 | 15.1 | 12.7 | 17.3 | Meets Target |
| Chromium (VI) | 0.2 | nd | nd | 0 | Meets Target |
| Cobalt | 1.0 | 4.9 | 4.3 | 13.0 | Meets Target |
| Copper | 5.0 | 11.3 | 10.5 | 7.3 | Meets Target |
| Lead | 1.0 | 17.8 | 17.8 | 0 | Meets Target |
| Mercury | 0.1 | 0.1 | 0.1 | 0 | Meets Target |
| Molybdenum | 1.0 | nd | nd | 0 | Meets Target |
| Nickel | 5.0 | 10.9 | 9.7 | 11.7 | Meets Target |
| Selenium | 1.0 | nd | nd | 0 | Meets Target |
| Silver | 0.3 | nd | nd | 0 | Meets Target |
| Thallium | 1.0 | nd | nd | 0 | Meets Target |
| Uranium | 1.0 | nd | nd | 0 | Meets Target |
| Vanadium | 10.0 | 22.5 | 18.0 | 22.2 | Does Not Meet Target |

Table 19 Continued - QA/QC Calculations – Soil

| Parameter | MDL (µg/L) | TP4-21-GS2 | DUP4 (TP4-21-GS2) | RPD (%) | QA/QC Result |
|--|------------|------------|-------------------|---------|--------------|
| Zinc | 20.0 | 48.6 | 47.7 | 1.9 | Meets Target |
| Notes: <input type="checkbox"/> MDL – Method Detection Limit <input type="checkbox"/> nd – not detected above the MDL <input type="checkbox"/> and underlined – Results exceed selected MECP standard | | | | | |

Table 20 - QA/QC Calculations – Groundwater

MW2-21-GW1

| Parameter | MDL (µg/L) | MW2-21-GW1 | DUP2 (MW2-21-GW1) | RPD (%) | QA/QC Result |
|---------------|------------|------------|-------------------|---------|----------------------|
| Antimony | 0.5 | nd | nd | 0 | Meets Target |
| Arsenic | 1 | nd | nd | 0 | Meets Target |
| Barium | 1 | 629 | 701 | 10.8 | Meets Target |
| Beryllium | 0.5 | nd | nd | 0 | Meets Target |
| Boron | 10 | 74 | 87 | 16.1 | Meets Target |
| Cadmium | 0.1 | nd | nd | 0 | Meets Target |
| Chromium | 1 | nd | nd | 0 | Meets Target |
| Chromium (VI) | 10 | nd | nd | 0 | Meets Target |
| Cobalt | 0.5 | 1.2 | nd | 0 | Meets Target |
| Copper | 0.5 | 4.9 | 4.8 | 2.06 | Meets Target |
| Lead | 0.1 | nd | 0.1 | 0 | Meets Target |
| Mercury | 0.1 | nd | nd | 0 | Meets Target |
| Molybdenum | 0.5 | 2.9 | 3.2 | 9.8 | Meets Target |
| Nickel | 1 | 4 | 4 | 0 | Meets Target |
| Selenium | 1 | nd | nd | 0 | Meets Target |
| Silver | 0.1 | nd | nd | 0 | Meets Target |
| Sodium | 200 | 228,000 | 237,000 | 3.9 | Meets Target |
| Thallium | 0.1 | 0.1 | 0.2 | 66.7 | Does Not Meet Target |
| Uranium | 0.1 | 3.8 | 4.1 | 7.6 | Meets Target |
| Vanadium | 0.5 | 0.5 | 0.6 | 18.2 | Meets Target |
| Zinc | 5 | 17 | 9 | 61.5 | Does Not Meet Target |

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

Table 20 Continued - QA/QC Calculations – Groundwater

| Parameter | MDL (µg/L) | MW4-21-GW1 | DUP1 (MW4-21-GW1) | RPD (%) | QA/QC Result |
|----------------------|------------|------------|-------------------|---------|--------------|
| Acenaphthene | 0.05 | nd | nd | 0 | Meets Target |
| Acenaphthylene | 0.05 | nd | nd | 0 | Meets Target |
| Anthracene | 0.01 | nd | nd | 0 | Meets Target |
| Benzo[a]anthracene | 0.01 | nd | nd | 0 | Meets Target |
| Benzo[a]pyrene | 0.01 | nd | nd | 0 | Meets Target |
| Benzo[b]fluoranthene | 0.05 | nd | nd | 0 | Meets Target |
| Benzo[g,h,i]perylene | 0.05 | nd | nd | 0 | Meets Target |

| Table 20 Continued - QA/QC Calculations – Groundwater | | | | | |
|--|-----------------------|------------------------|-----------------------------------|----------------|---------------------|
| Parameter | MDL (µg/L) | MW4-21- GW1 | DUP1 (MW4-21- GW1) | RPD (%) | QA/QC Result |
| Benzo[k]fluoranthene | 0.05 | nd | nd | 0 | Meets Target |
| Chrysene | 0.05 | nd | nd | 0 | Meets Target |
| Dibenzo[a,h]anthracene | 0.05 | nd | nd | 0 | Meets Target |
| Fluoranthene | 0.01 | nd | nd | 0 | Meets Target |
| Fluorene | 0.05 | nd | nd | 0 | Meets Target |
| Indeno[1,2,3-cd]pyrene | 0.05 | nd | nd | 0 | Meets Target |
| Methylnaphthalene(1&2) | 0.10 | nd | nd | 0 | Meets Target |
| Naphthalene | 0.05 | nd | nd | 0 | Meets Target |
| Phenanthrene | 0.05 | nd | nd | 0 | Meets Target |
| Pyrene | 0.01 | nd | nd | 0 | Meets Target |
| Notes: <input type="checkbox"/> MDL – Method Detection Limit <input type="checkbox"/> nd – not detected above the MDL | | | | | |

Typically, RPD values below 20% are considered to be of satisfactory quality. The relative percent difference (RPD) results calculated for several soil parameters fell outside of the acceptable range of 20%. It is not uncommon that very small concentrations or values will yield higher RPD values, and as such, the RPD value is not an accurate measure in these cases.

Despite the exceeded RPD values calculated for samples BH3-21-SS4/5, TP3-21-GS3, TP4-21-GS2 and MW2-21-GW1 between the original and duplicate samples, it should be noted that the individual metal and PAH parameters detected appear to be consistent between the two samples. Furthermore, the concentration of the majority of the detected metal and PAH parameters were well within the selected MECP Table 3 standards in both samples by a large margin (except for Mercury which was in excess of the standard). As a result, it is our opinion that the decision-making usefulness of the samples is not considered to be impaired, and thus the quality of the field data collected during this remediation is considered to be sufficient to meet the overall objectives of this assessment.

5.8 Phase II Conceptual Site Model

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

Potentially Contaminating Activity and Areas of Potential Environmental Concern

Based on the results of the Phase I ESA completed for the subject property, 51 PCAs were identified, nine of which represent APECs on the Phase II Property. The APECs on the Phase II Property are as follows:

- ☐ APEC 1: Resulting from the historical presence of an on-site warehouse/workshop (PCA #N/A);
- ☐ APEC 2: Resulting from the historical presence of on-site coal storage (PCA #N/A).
- ☐ APEC 3: Resulting from the historical presence of on-site coal storage (PCA #N/A).
- ☐ APEC 4: Resulting from the historical presence of an on-site garage (PCA #52).
- ☐ APEC 5: Resulting from the use of de-icing salt associated with on-site and adjacent roadways (PCA #N/A).
- ☐ APEC 6: Resulting from the historical presence of an on-site railway spur line (PCA #46).
- ☐ APEC 7: Resulting from the presence of fill material of unknown quality (PCA #30).
- ☐ APEC 8: Resulting from the historical presence of an off-site rail yard and rail lines (PCA #46).
- ☐ APEC 9: Resulting from the historical presence of off-site coal storage (PCA #N/A).

Contaminants of Potential Concern

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

- ☐ Metals (including Arsenic (As.), Antimony (Sb) and Selenium);
- ☐ Mercury (Hg);
- ☐ Hexavalent Chromium;
- ☐ Volatile Organic Compounds (VOCs);
- ☐ Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX);
- ☐ Petroleum Hydrocarbons, fractions 1 - 4 (PHCs F₁-F₄); and
- ☐ Polycyclic Aromatic Hydrocarbons (PAHs).

Subsurface Structures and Utilities

A small basement crawl space is present beneath the northwestern portion of the on-site vacant building. Multiple underground utilities were identified on the Phase I Property including electrical, gas, water, sewer and telecommunication lines.

Based on standard practice for subsurface utility installation, service trenches are expected to be present approximately 1 to 2 m below existing grade. In general, trench backfill may provide a preferential pathway for contaminant transport if the water table is at or above the base of the trenches. Based on the findings of the Phase II ESA, groundwater on the Phase II Property complies with the MECP Table 3 standards and is located within the bedrock, 5.6 to 9.0 m below ground surface. Therefore subsurface structures and utilities are not expected to have had the potential to impact contaminant distribution.

Physical Setting

Site Stratigraphy

The stratigraphy of the Phase II Property generally consists of:

- ☐ Topsoil, encountered at depths ranging from approximately 0.00 to 5.00 m below ground surface
- ☐ Fill material, consisting of brown silty sand with crushed stone, trace concrete, brick and clay; encountered at depths ranging from approximately 0.00 to 5.00 m below ground surface

- ☐ Very stiff to stiff, brown silty clay; encountered in BH3-21 from approximately 4.27 to 5.18 m below ground surface;
- ☐ Glacial till, consisting of brown to grey silty clay with sand, gravel, cobbles and boulders; encountered in BH3-21 from approximately 5.18 to 7.01 m below ground surface;
- ☐ Limestone bedrock, encountered at depths ranging from approximately 2.62 to 7.01 m below ground surface.

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

Hydrogeological Characteristics

Groundwater at the Phase II Property was encountered within the bedrock or the overburden in BH3-21. During the most recent groundwater monitoring event, groundwater flow was measured in a northwestern direction, with a hydraulic gradient of 0.06 m/m. Groundwater contours are shown on Drawing PE5267-3 – Groundwater Contour Plan.

Approximate Depth to Bedrock

Bedrock was confirmed within all four boreholes at depths ranging from approximately 2.62 to 7.01 m below ground surface, as determined by rock coring activities conducted in three of the boreholes at the time of the drilling program.

Approximate Depth to Water Table

The depth to the water table at the subject site varies between approximately 5.60 to 9.00 m below existing grade.

Sections 41 and 43.1 of the Regulation

Section 41 of the Regulation does not apply to the Phase II Property, in that the subject property is not within 30m of an environmentally sensitive area, and the pH of surface soil is between 5 and 9.

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

Fill Placement

Fill material, consisting of brown silty sand with crushed stone, trace concrete, brick and clay was identified throughout the entire Phase II Property.

Existing Buildings and Structures

The Phase II Property is currently occupied by a vacant building located on the southeastern portion of the subject site. The subject building was constructed as early as 1878.

Proposed Buildings and Other Structures

The proposed site development for the Phase II Property will consist of a residential high rise building with two underground parking levels. Associated access lanes, walkways and hardscaped areas are also anticipated as part of the development. It is expected that the proposed buildings will be municipally serviced.

Areas of Natural Scientific Interest and Water Bodies

There are no areas of natural and scientific interest or waterbodies on the Phase II Property or within the 250 m study area.

Environmental Condition

Areas Where Contaminants are Present

Based on the findings of this Phase II ESA, soil (fill material) impacted with metal parameters, arsenic and selenium, mercury, PAH parameters and/or PHC (F₃) concentrations exceeding the MECP Table 3 standards, was present on the northern, central and southwestern portions of the Phase II Property. Based on the non-homogenous nature of the fill material, it is expected that impacted soil is present in pockets across the entire Phase II Property.

Groundwater beneath the Phase II Property was determined to comply with the MECP Table 3 standards.

Types of Contaminants

Based on the findings of this Phase II ESA, soil contaminants at the Phase II Property include the following:

- ☐ Metals (barium, cadmium, lead and zinc);

- ☐ Arsenic and selenium;
- ☐ Mercury;
- ☐ PHCs (F₃); and
- ☐ PAHs (acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, fluoranthene, indeno[1,2,3-cd]pyrene, methyl naphthalene (1&2), naphthalene, phenanthrene, pyrene)

The groundwater at the Phase II Property complies with the MECP Table 3 standards.

Contaminated Media

The soil (fill material) across the Phase II Property is impacted with parameter concentrations exceeding the MECP Table 3 standards.

Groundwater beneath the Phase II Property complies with the MECP Table 3 standards.

What Is Known About Areas Where Contaminants Are Present

Based on the findings of this Phase II ESA, impacted soil was identified at test holes BH1-21, BH2-21, BH3-21, TP1-21-GS3, TP3-21-GS3, TP5-21-GS2 and TP6-21-GS5. Based on the nature of the fill material, pockets of metal (including As, Sb, Se), mercury, PHC and/or PAH impacts are anticipated to be present across the Phase II Property.

The impacted soil identified on the Phase II Property is interpreted to be associated with historical uses in combination with the historical importation of poor-quality fill material.

Distribution and Migration of Contaminants

A layer of impacted fill material was identified throughout the subject site. This layer was observed to range from approximately 2.62 to 5.00 m thick. Based on the observations made during the field program, in conjunction with analytical test results, it is expected that the majority of the fill material is impacted with metals and/or PAHs.

Based on the findings of the Phase II ESA, groundwater beneath the site was in compliance with the MECP Table 3 standards. Given the clean groundwater

results in combination with the low solubility of metal, mercury and PAH parameters, no significant distribution or migration of contaminants is considered to have occurred on the Phase II Property.

Discharge of Contaminants

The metals and PAH impacted fill material identified on the Phase II Property is considered to be the result of the historical uses of the property as a coal storage yard/area, on site railway spur line and road way or from the importation of fill material of a poor quality.

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 Phase II ESA, downward leaching may have affected contaminant distribution at the Phase II Property. However, given the low solubility of metal and PAH parameters, no significant distribution or migration of contaminants is considered to have occurred.

Site groundwater was in compliance with the MECP Table 3 standards; as such, migration of contaminants via groundwater levels and/or flow is not considered to have occurred on the Phase II Property.

Potential for Vapour Intrusion

Given the non-volatile nature of the impacts identified in the soil, the potential for vapour intrusion into the current site building is considered to be low.

As part of the site redevelopment for the proposed building, all impacted soil on the RSC Property will be excavated and disposed off-site. Given the groundwater beneath the site is clean, once the impacted soil is removed, there will be no anticipated potential for vapour intrusion into future subsurface structures and utilities at the Phase II Property.

6.0 CONCLUSIONS

Assessment

A Phase II ESA was conducted for the northeast portion of the property addressed 70 Nicholas Street, in the City of Ottawa, Ontario. The purpose of the Phase II ESA was to address potentially contaminating activities (PCAs) that were identified during the Phase I ESA and considered to result in areas of potential environmental concern (APECs) on the Phase II Property.

The Phase II ESA was carried out in conjunction with a geotechnical investigation and consisted of the placement of four boreholes and nine test pits. All boreholes were constructed with groundwater monitoring wells. The general soil profile encountered during the field program consisted of a silty sand fill layer, over a layer of clay followed by glacial till (on the southwest corner of the site only), followed by limestone bedrock. No unusual staining or odour was noted at the time of the field program. Deleterious material identified in the fill material consists of construction debris, coal, brick, concrete and a layer of asphalt in TP7-21.

A total of 17 soil samples were submitted for laboratory analysis of Metals (including methyl mercury), Volatile Organic Compounds (VOCs), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Petroleum Hydrocarbons (PHCs, Fractions F₁-F₄) and/or Polycyclic Aromatic Hydrocarbons (PAHs). No VOC or BTEX concentrations identified in the samples analysed. Concentrations of metals (including As, Sb, Se), Hg, PAH and/or PHC (F₃) parameters exceeding the MECP Table 3 standards were identified in soil Samples BH1-21-SS5/6, BH2-21-SS4, BH3-21-SS4/5 TP1-21-GS3, TP3-21-GS3, TP5-21-GS2 and TP6-21-GS5. Based on Hg results, MeHg was analyzed and determined to comply with the MECP Table 3 standards.

Groundwater samples from monitoring wells BH1-21, BH2-21, BH3-21 and BH4-21 were collected during the May 25, 2021 sampling event. No sheen, free product or odour was noted during the groundwater sampling event.

Groundwater samples were analyzed for Metals, BTEX, PHCs and/or PAHs. All groundwater results comply with the selected MECP Table 3 Residential Standards.

Recommendations

Soil

Based on the findings of the Phase II ESA, it is anticipated that fill material impacted with metals, mercury, PAHs and/or PHC (F₃) exceeding the MECP Table 3 standards is present across the Phase II Property at depths extending up to approximately 5.0m below grade. It is our understanding that the Phase II Property will be redeveloped with a residential multi-story building with 2 levels of underground parking.

It is recommended that an environmental site remediation program, involving the removal of all impacted fill material be completed prior to site redevelopment. Prior to off-site disposal of the impacted soil at a licenced landfill site, a leachate analysis of a representative sample of contaminated soil must be conducted in accordance with Ontario Regulation 347/558.

It is also recommended that Paterson personnel be onsite during construction activities to direct the excavation and segregation of impacted soil and to conduct additional delineation or confirmatory sampling as required.

Any clean soil that requires removal from the Phase II Property for construction purposes must be handled in accordance with Ontario Regulation 406/19: On-Site and Excess Soil Management.

Groundwater

It is recommended that the monitoring wells installed on the Phase II Property remain viable for future monitoring, if required. It is expected that groundwater monitoring wells will be abandoned in accordance with O.Reg.903 at the time of the construction excavation.

7.0 STATEMENT OF LIMITATIONS

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

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

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

This report was prepared for the sole use of The Cadillac Fairview Corporation Limited. Notification from The Cadillac Fairview Corporation Limited and Paterson Group will be required to release this report to any other party.

Paterson Group Inc.



Jeremy Camposarcone, B. Eng.



Karyn Munch, P.Eng., Q.P.E.SA



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- ☐ Paterson Group

FIGURES

FIGURE 1 – KEY PLAN

DRAWING PE5267-1 – SITE PLAN

DRAWING PE5267-2 – SURROUNDING LAND USE PLAN

DRAWING PE5267-3 – TEST HOLE LOCATION PLAN

DRAWING PE5267-4 – ANALYTICAL TESTING PLAN – SOIL (METALS)

DRAWING PE5267-4A – CROSS SECTION A-A' – SOIL (METALS)

DRAWING PE5267-4B – CROSS SECTION B-B' – SOIL (METALS)

**DRAWING PE5267-5– ANALYTICAL TESTING PLAN – SOIL (VOCS
AND BTEX)**

**DRAWING PE5267-5A – CROSS SECTION A-A' – SOIL (VOCS AND
BTEX)**

**DRAWING PE5267-5B – CROSS SECTION B-B' – SOIL (VOCS AND
BTEX)**

DRAWING PE5267-6 – ANALYTICAL TESTING PLAN – SOIL (PHCS)

DRAWING PE5267-6A – CROSS SECTION A-A' – SOIL (PHCS)

DRAWING PE5267-6B – CROSS SECTION B-B' – SOIL (PHCS)

DRAWING PE5267-7 – ANALYTICAL TESTING PLAN – SOIL (PAHS)

DRAWING PE5267-7A – CROSS SECTION A-A' – SOIL (PAHS)

DRAWING PE5267-7B – CROSS SECTION B-B' – SOIL (PAHS)

**DRAWING PE5267-8 – ANALYTICAL TESTING PLAN –
GROUNDWATER**

DRAWING PE5267-8A – CROSS-SECTION A – A' – GROUNDWATER

DRAWING PE5267-8B – CROSS-SECTION B – B' – GROUNDWATER

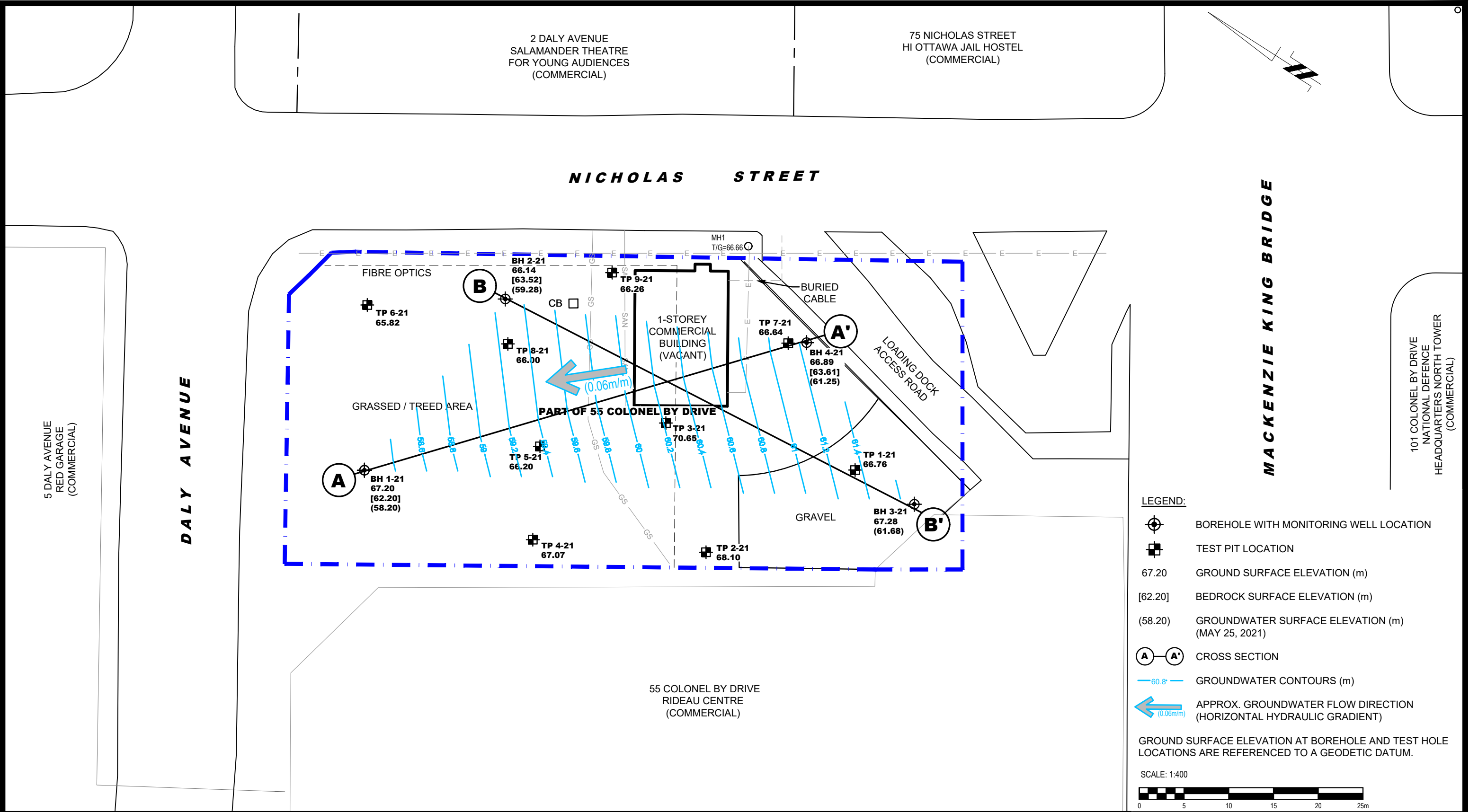
APPENDIX 1

SAMPLING AND ANALYSIS PLAN

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

LABORATORY CERTIFICATES OF ANALYSIS



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PHASE II - ENVIRONMENTAL SITE ASSESSMENT
70 NICHOLAS STREET

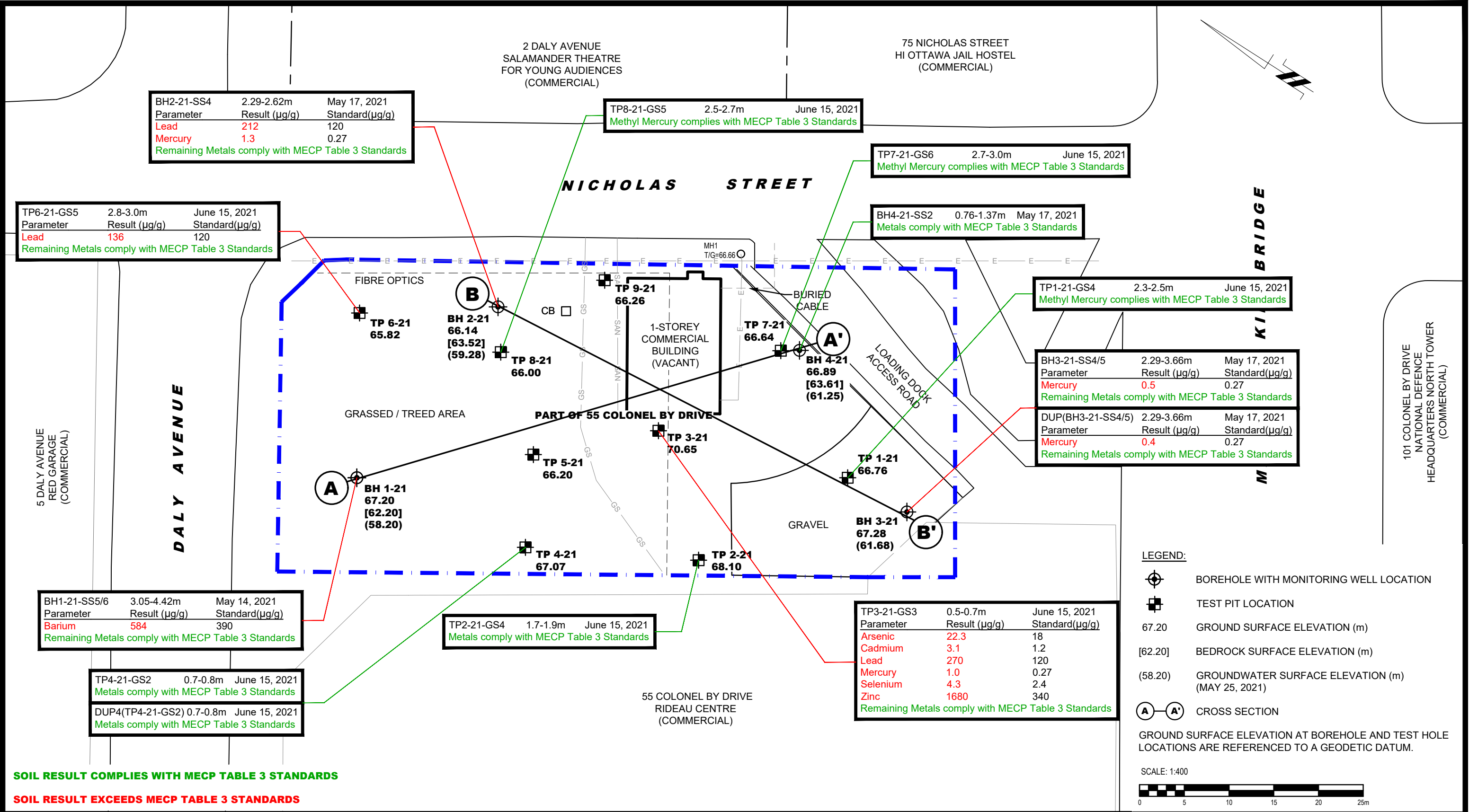
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TEST HOLE LOCATION PLAN

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| Checked by: | JC | Dwg. No.: | PE5267-3 |
| 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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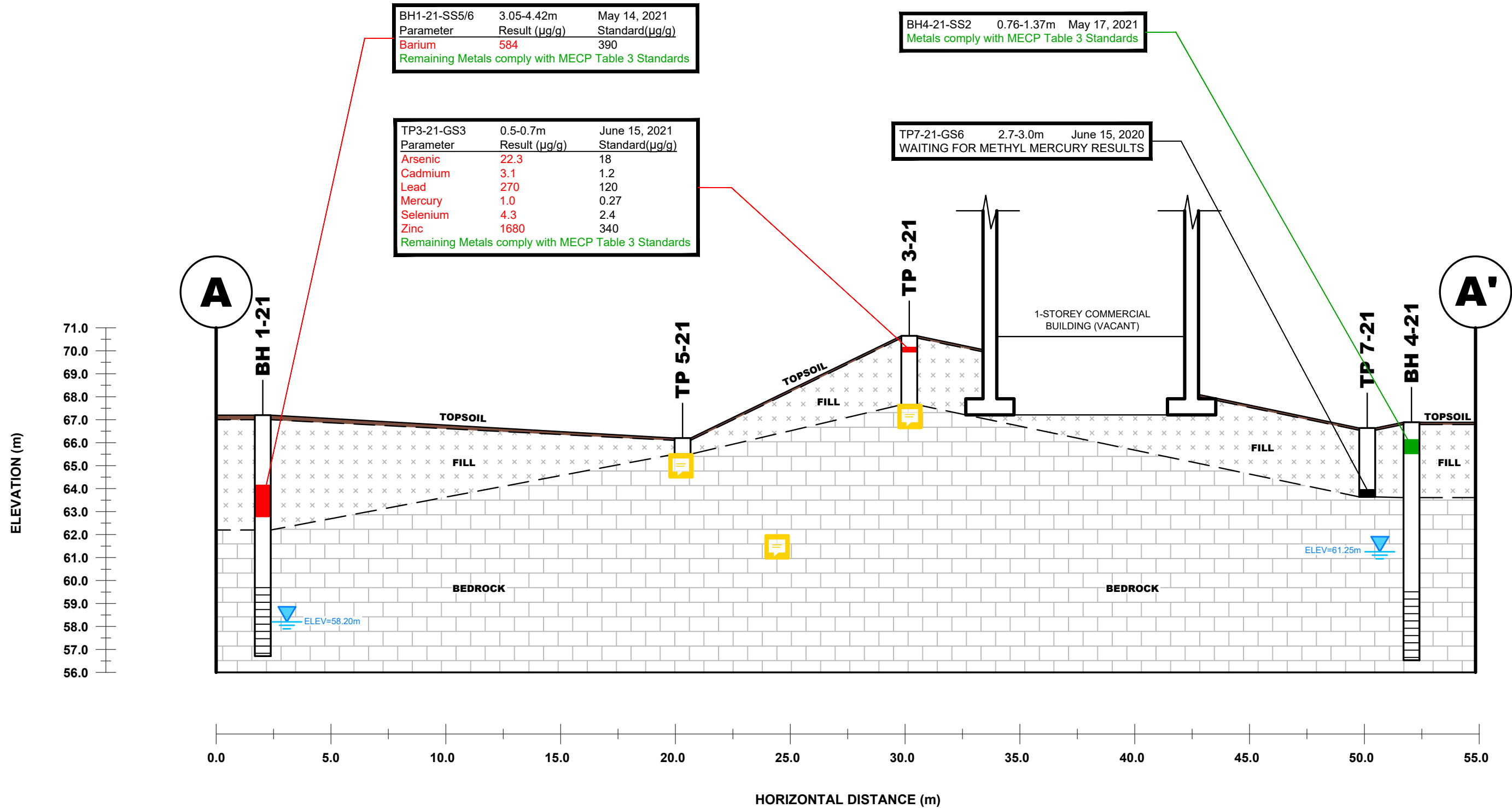
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ANALYTICAL TESTING PLAN - SOIL (METALS)

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THE CADILLAC FAIRVIEW CORPORATION LIMITED
PHASE II - ENVIRONMENTAL SITE ASSESSMENT
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OTTAWA, ONTARIO

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

Scale: AS SHOWN

Drawn by: YA

Checked by: JC

Approved by: MSD

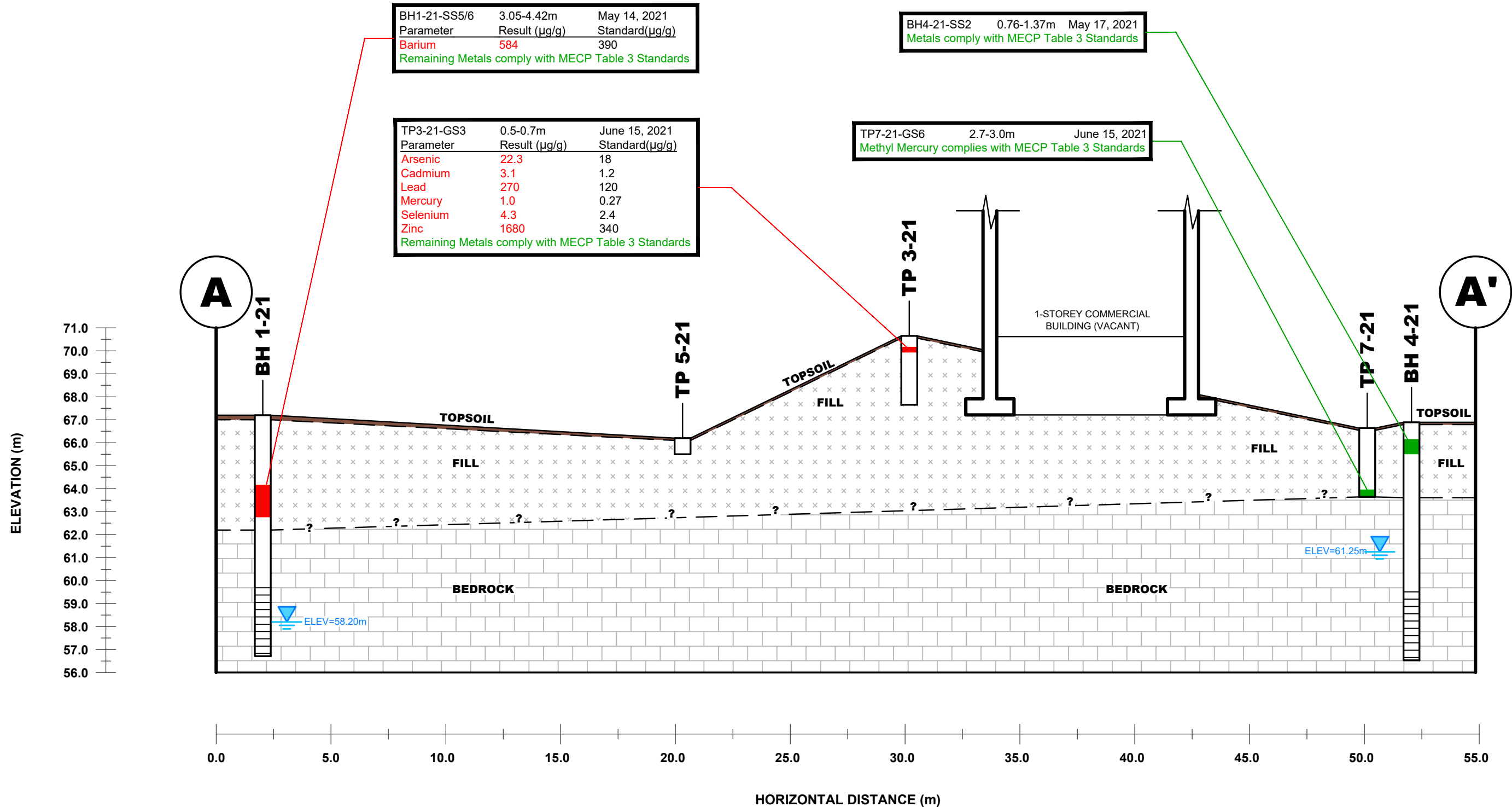
Date: 07/2021

Report No.: PE5267-2

Dwg. No.: **PE5267-4A**

Revision No.:

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70 NICHOLAS STREET
OTTAWA, ONTARIO
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| Checked by: | JC | Dwg. No.: | PE5267-4A |
| Approved by: | MSD | Revision No.: | |

| | | |
|---|---------------|----------------|
| BH2-21-SS4 | 2.29-2.62m | May 17, 2021 |
| Parameter | Result (µg/g) | Standard(µg/g) |
| Lead | 212 | 120 |
| Mercury | 1.3 | 0.27 |
| Remaining Metals comply with MECP Table 3 Standards | | |

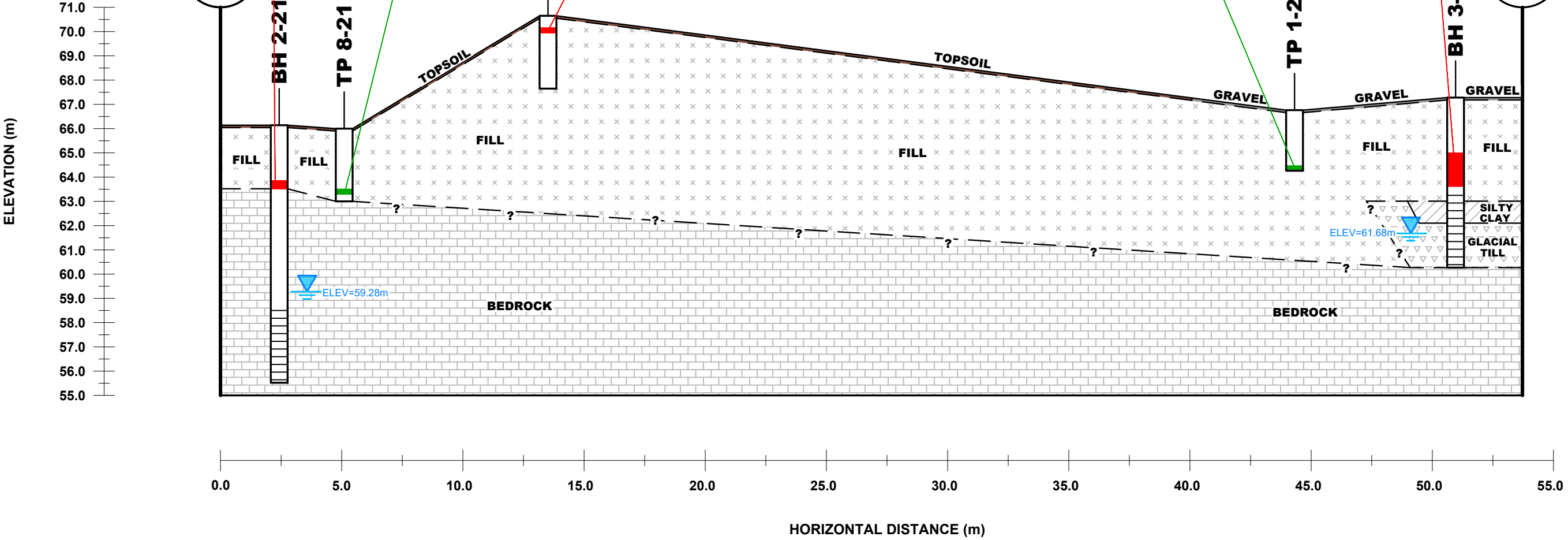
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| TP8-21-GS5 | 2.5-2.7m | June 15, 2021 |
| Methyl Mercury complies with MECP Table 3 Standards | | |

| | | |
|---|---------------|----------------|
| TP3-21-GS3 | 0.5-0.7m | June 15, 2021 |
| Parameter | Result (µg/g) | Standard(µg/g) |
| Arsenic | 22.3 | 18 |
| Cadmium | 3.1 | 1.2 |
| Lead | 270 | 120 |
| Mercury | 1.0 | 0.27 |
| Selenium | 4.3 | 2.4 |
| Zinc | 1680 | 340 |
| Remaining Metals comply with MECP Table 3 Standards | | |

| | | |
|---|---------------|----------------|
| BH3-21-SS4/5 | 2.29-3.66m | May 17, 2021 |
| Parameter | Result (µg/g) | Standard(µg/g) |
| Mercury | 0.5 | 0.27 |
| Remaining Metals comply with MECP Table 3 Standards | | |

| | | |
|---|---------------|----------------|
| DUP(BH3-21-SS4/5) | 2.29-3.66m | May 17, 2021 |
| Parameter | Result (µg/g) | Standard(µg/g) |
| Mercury | 0.4 | 0.27 |
| Remaining Metals comply with MECP Table 3 Standards | | |

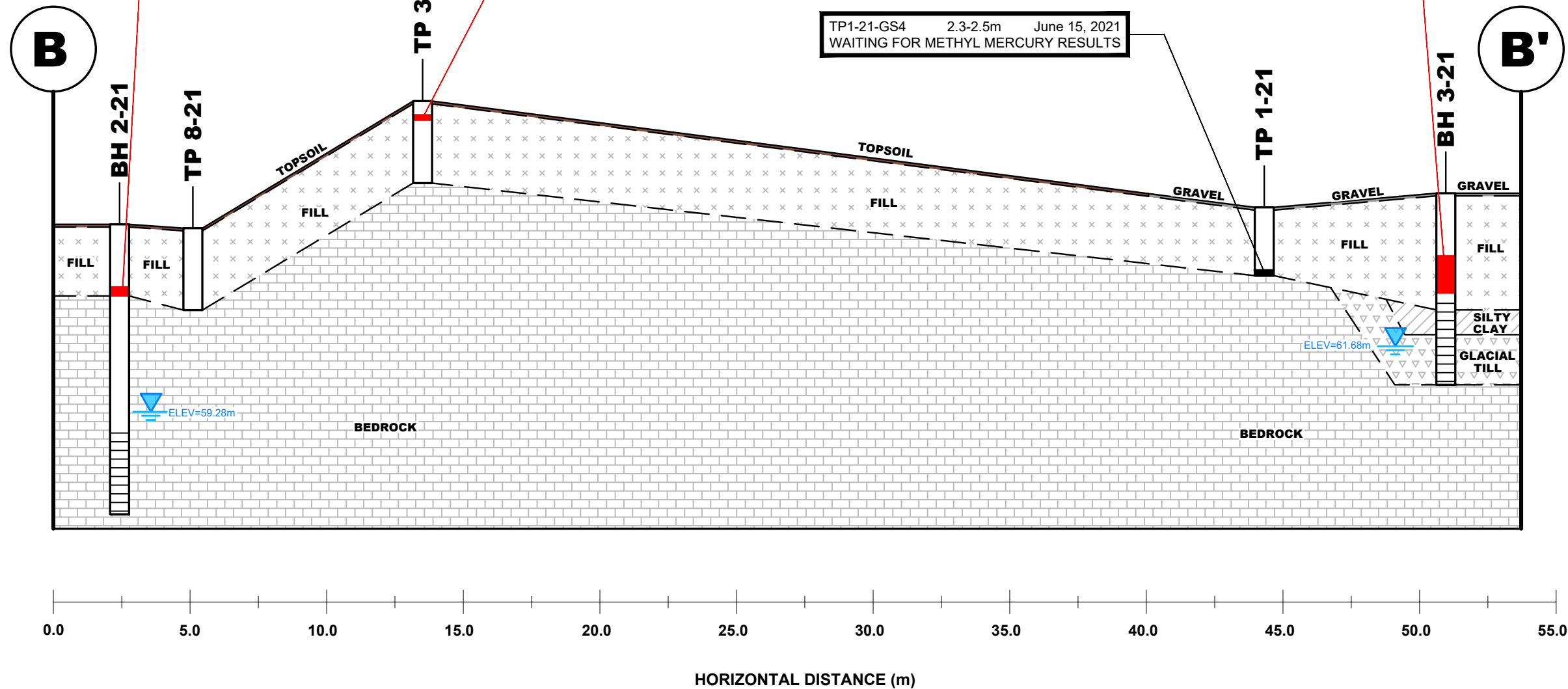
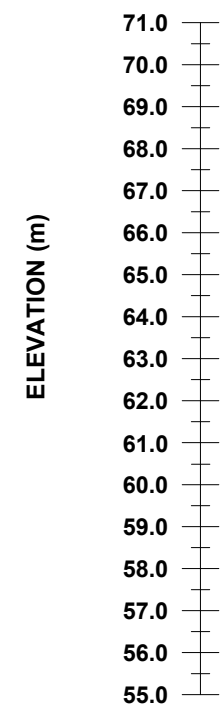
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|---|----------|---------------|
| TP1-21-GS4 | 2.3-2.5m | June 15, 2021 |
| Methyl Mercury complies with MECP Table 3 Standards | | |



SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL RESULT EXCEEDS MECP TABLE 3 STANDARDS

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| patersongroup consulting engineers 154 Colonnade Road South Ottawa, Ontario K2E 7J5 Tel: (613) 226-7381 Fax: (613) 226-6344 | | | | THE CADILLAC FAIRVIEW CORPORATION LIMITED PHASE II - ENVIRONMENTAL SITE ASSESSMENT 70 NICHOLAS STREET OTTAWA, ONTARIO | | | Scale: AS SHOWN | Date: 08/2021 |
| | | | | CROSS SECTION B-B' - SOIL (METALS) | | | Drawn by: YA | Report No.: PE5267-2 |
| | | | | | | | Checked by: JC | Dwg. No.: PE5267-4B |
| | | | | | | | Approved by: MSD | Revision No.: |
| | NO. | REVISIONS | DATE | INITIAL | | | | |



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|---|---------------|----------------|
| BH2-21-SS4 | 2.29-2.62m | May 17, 2021 |
| Parameter | Result (µg/g) | Standard(µg/g) |
| Lead | 212 | 120 |
| Mercury | 1.3 | 0.27 |
| Remaining Metals comply with MECP Table 3 Standards | | |

| | | |
|---|---------------|----------------|
| TP3-21-GS3 | 0.5-0.7m | June 15, 2021 |
| Parameter | Result (µg/g) | Standard(µg/g) |
| Arsenic | 22.3 | 18 |
| Cadmium | 3.1 | 1.2 |
| Lead | 270 | 120 |
| Mercury | 1.0 | 0.27 |
| Selenium | 4.3 | 2.4 |
| Zinc | 1680 | 340 |
| Remaining Metals comply with MECP Table 3 Standards | | |

TP1-21-GS4 2.3-2.5m June 15, 2021
WAITING FOR METHYL MERCURY RESULTS

| | | |
|---|---------------|----------------|
| BH3-21-SS4/5 | 2.29-3.66m | May 17, 2021 |
| Parameter | Result (µg/g) | Standard(µg/g) |
| Mercury | 0.5 | 0.27 |
| Remaining Metals comply with MECP Table 3 Standards | | |
| DUP(BH3-21-SS4/5) | 2.29-3.66m | May 17, 2021 |
| Parameter | Result (µg/g) | Standard(µg/g) |
| Mercury | 0.4 | 0.27 |
| Remaining Metals comply with MECP Table 3 Standards | | |

SOIL RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

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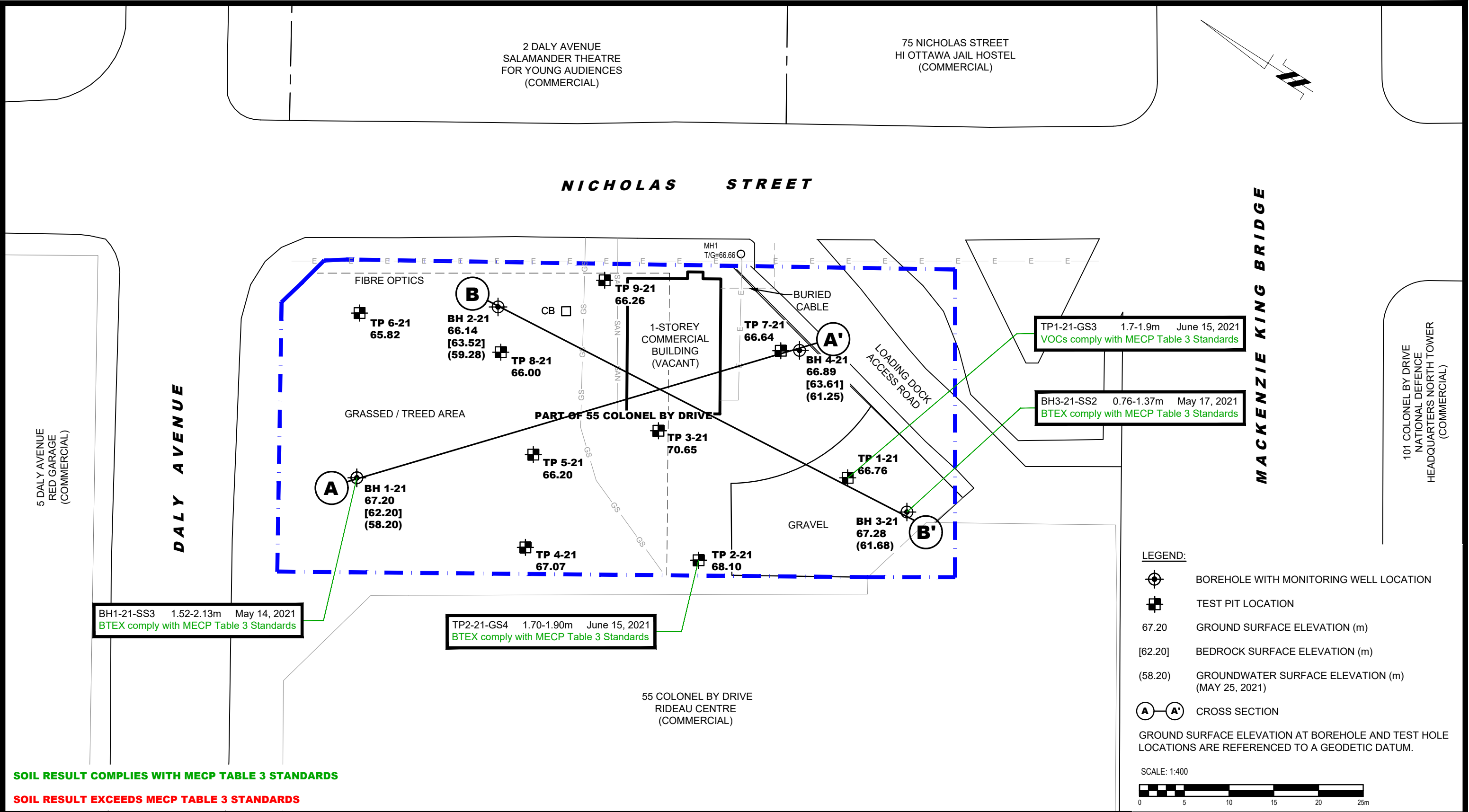
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PART OF 55 COLONEL BY DRIVE

OTTAWA, ONTARIO

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CROSS SECTION B-B' - SOIL (METALS)

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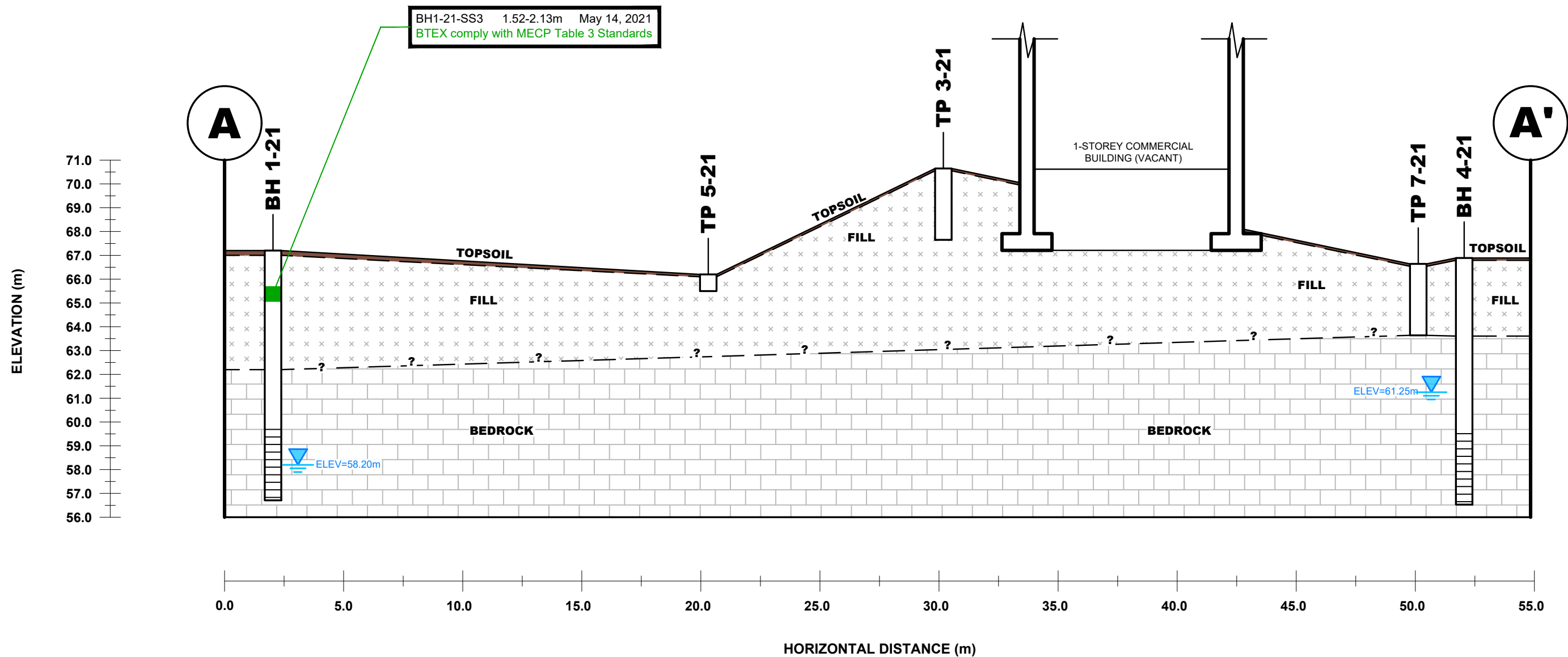
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PHASE II - ENVIRONMENTAL SITE ASSESSMENT
70 NICHOLAS STREET

OTTAWA, ONTARIO

ANALYTICAL TESTING PLAN - SOIL (BTEX, VOCs)

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| Checked by: | JC | Dwg. No.: | PE5267-5 |
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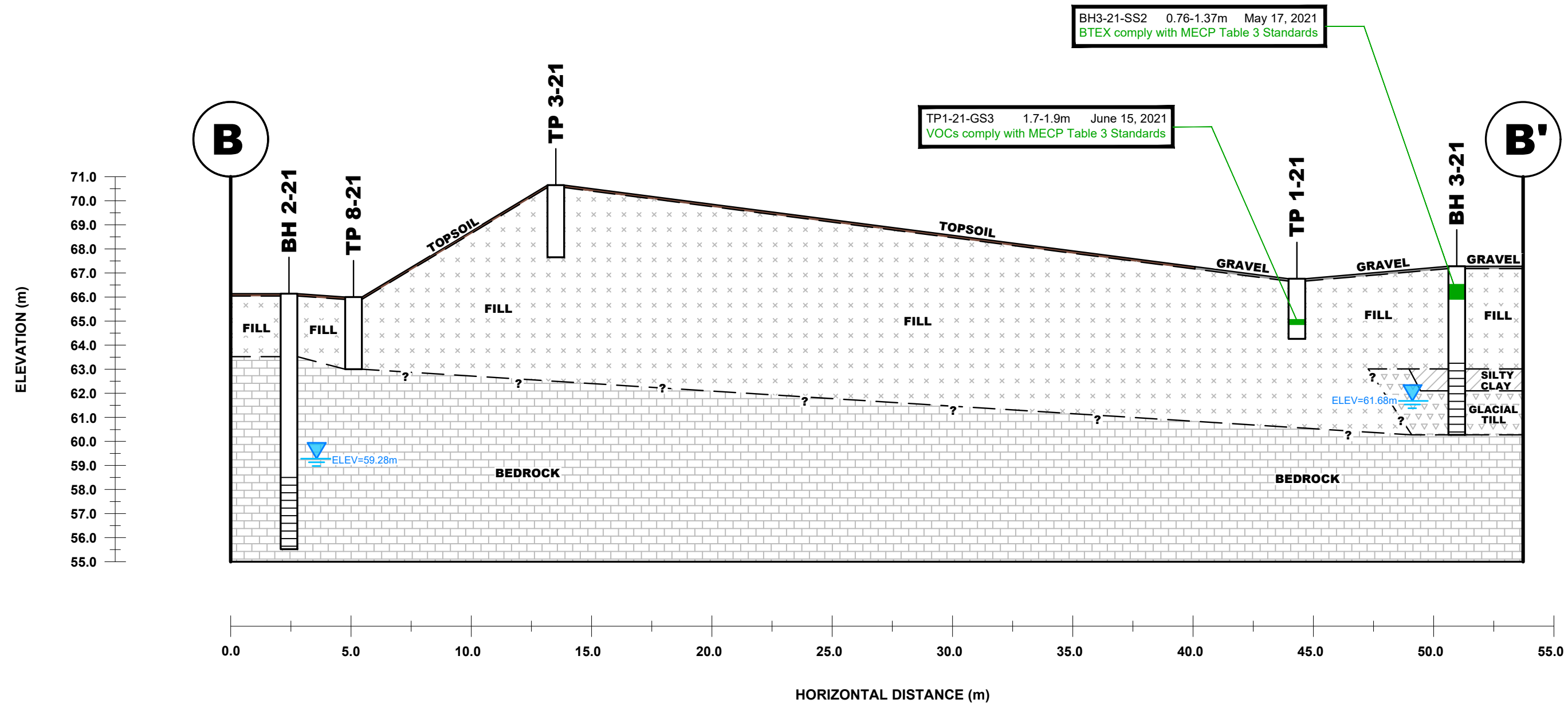
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| 70 NICHOLAS STREET | |
| OTTAWA, | ONTARIO |
| Title: CROSS SECTION A-A' - SOIL (BTEX, VOCs) | |

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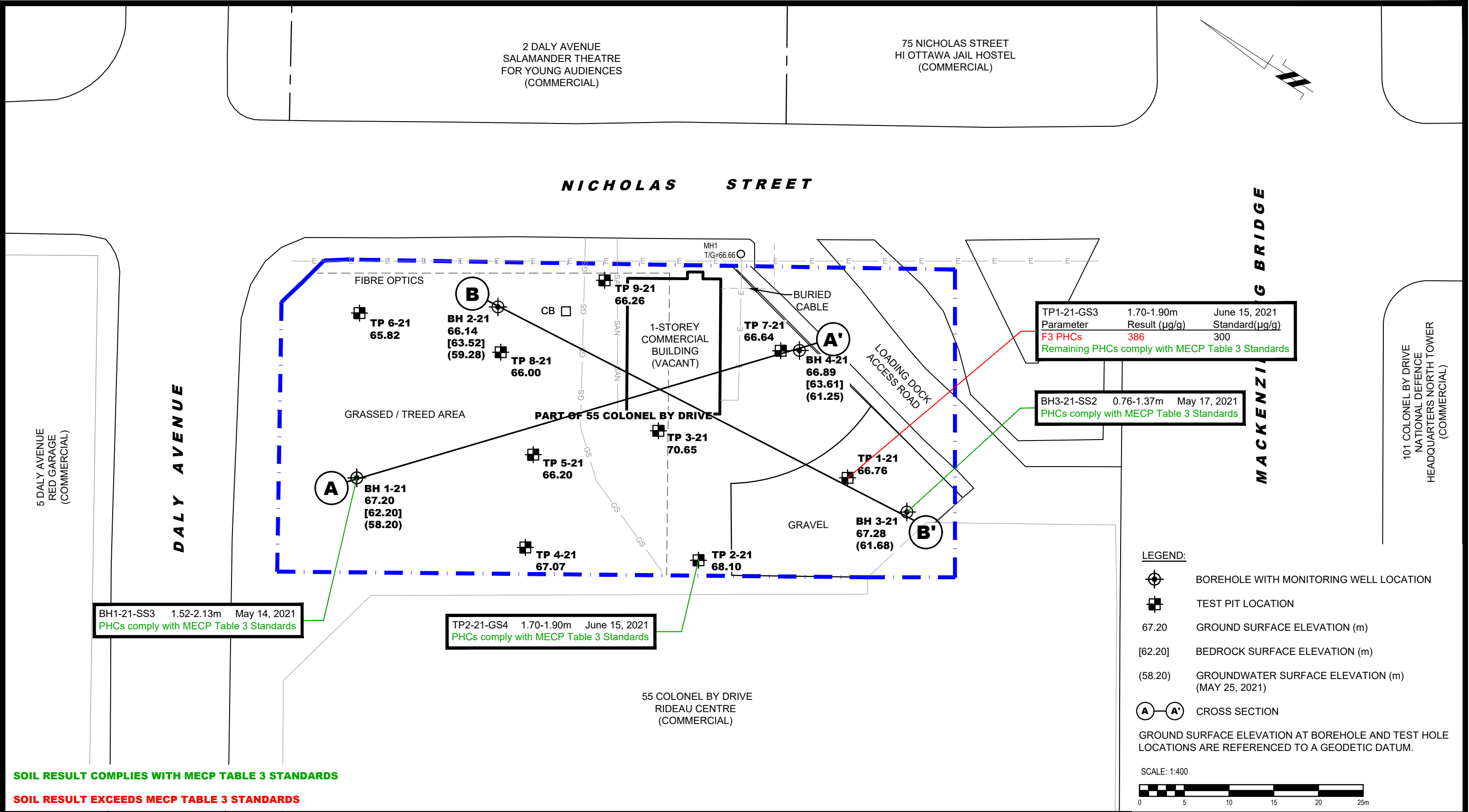
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PHASE II - ENVIRONMENTAL SITE ASSESSMENT
70 NICHOLAS STREET
OTTAWA, ONTARIO
Title: **CROSS SECTION B-B' - SOIL (BTEX, VOCs)**

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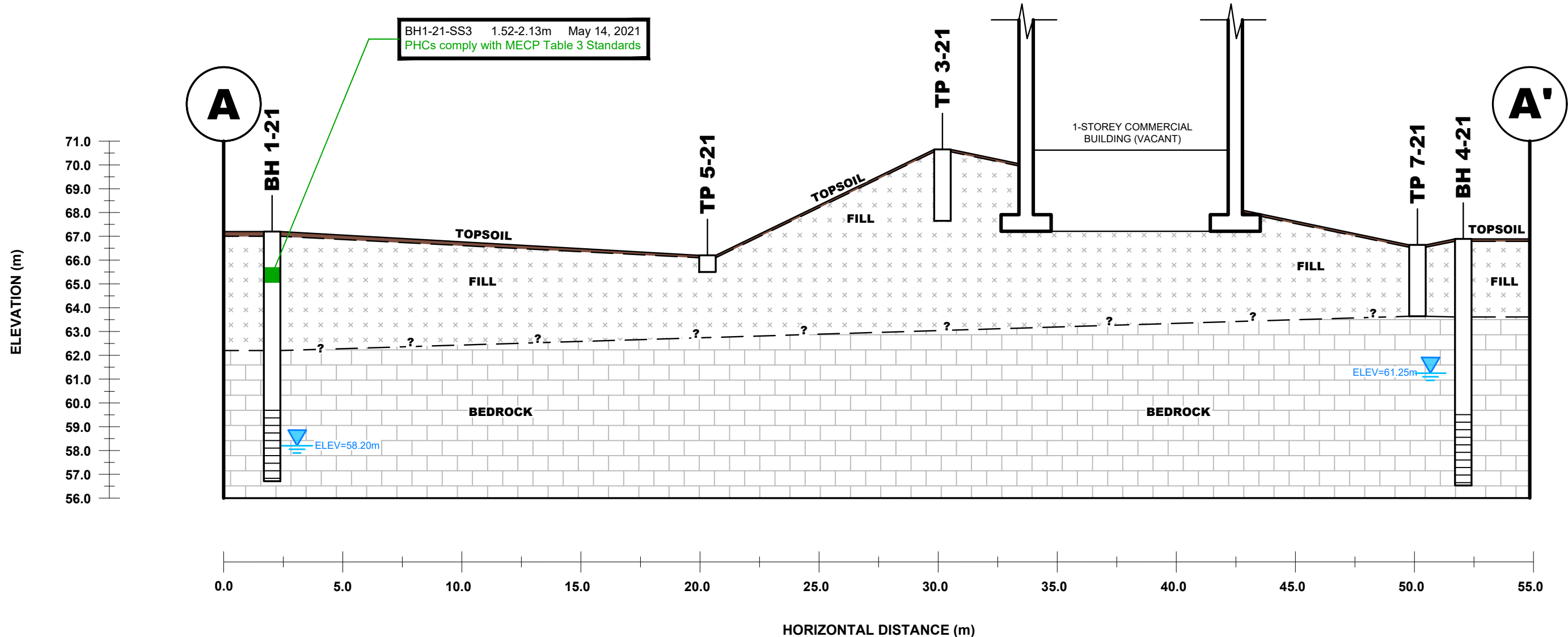
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PHASE II - ENVIRONMENTAL SITE ASSESSMENT
70 NICHOLAS STREET

OTTAWA, ONTARIO

Title:
ANALYTICAL TESTING PLAN - SOIL (PHCs)

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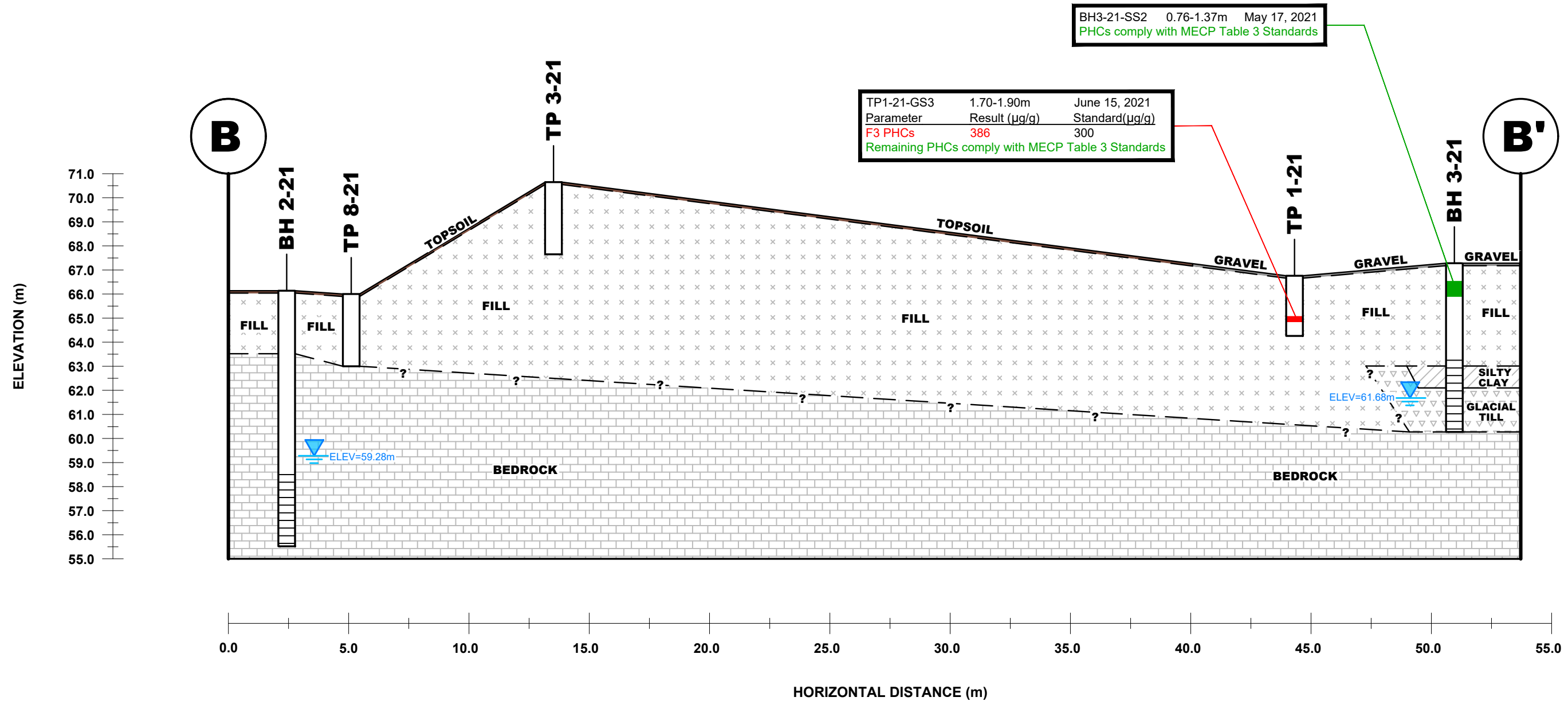
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| 70 NICHOLAS STREET | |
| OTTAWA, | ONTARIO |
| Title: CROSS SECTION A-A' - SOIL (PHCs) | |

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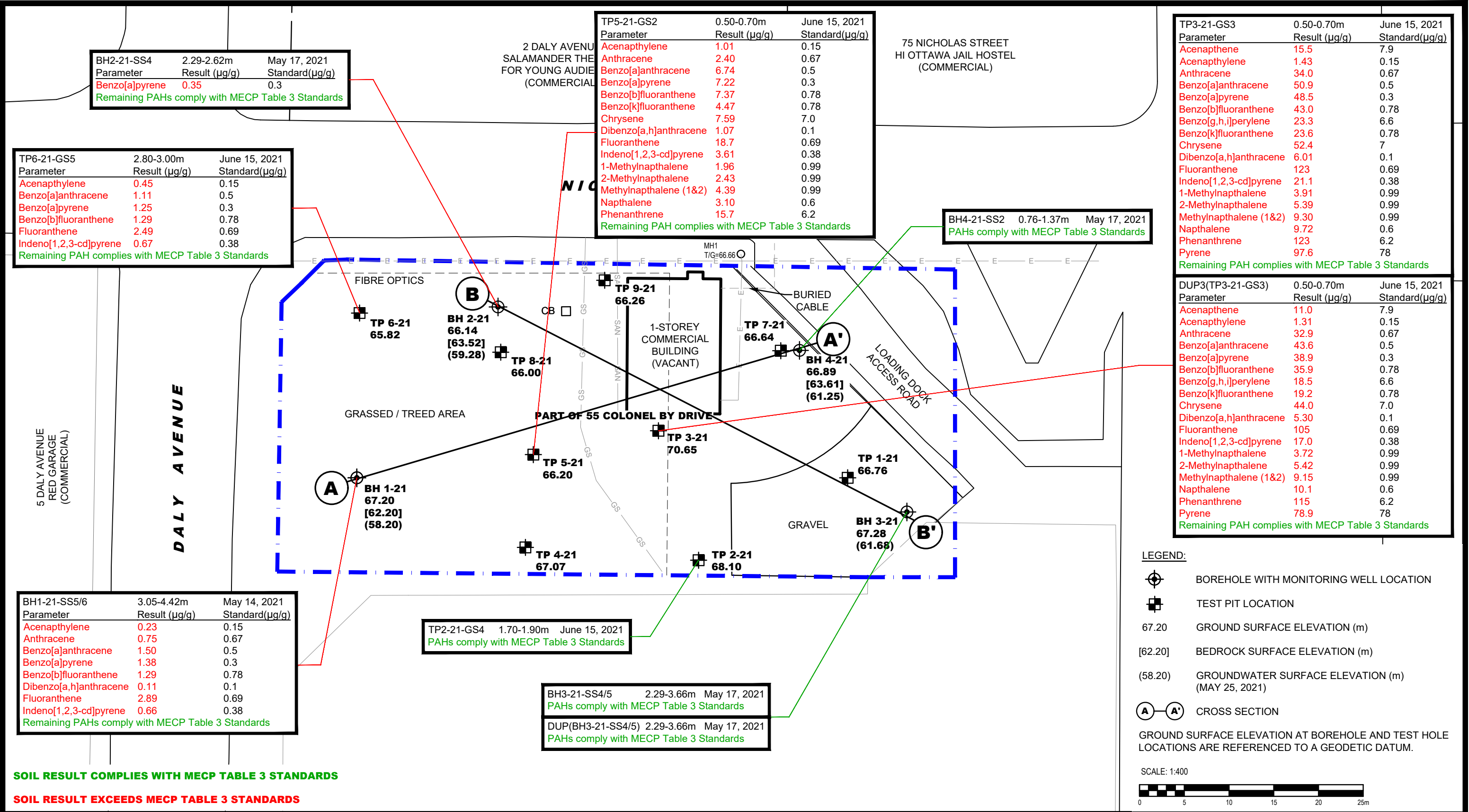


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| | | | | | | Drawn by: YA | Report No.: PE5267-2 |
| | | | | | | Checked by: JC | Dwg. No.: PE5267-6B |
| | | | | | | Approved by: MSD | Revision No.: |
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| | NO. | REVISIONS | DATE | INITIAL | CROSS SECTION B-B' - SOIL (PHCs) | | |
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THE CADILLAC FAIRVIEW CORPORATION LIMITED
PHASE II - ENVIRONMENTAL SITE ASSESSMENT
70 NICHOLAS STREET

OTTAWA, ONTARIO

Title: **ANALYTICAL TESTING PLAN - SOIL (PAHs)**

Scale: 1:400

Drawn by: YA

Checked by: JC

Approved by: MSD

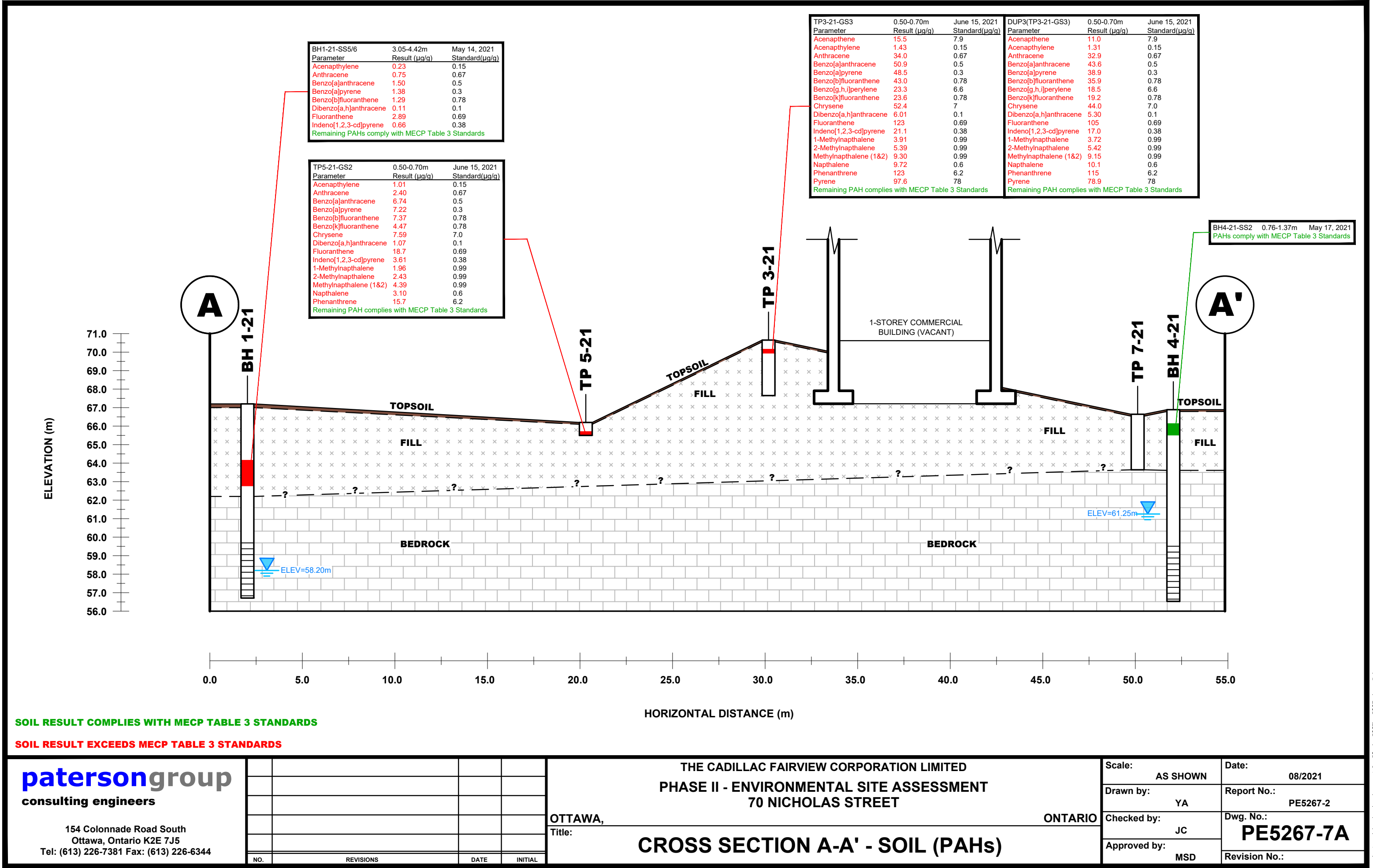
Date: 08/2021

Report No.: PE5267-2

Dwg. No.: **PE5267-7**

Revision No.:

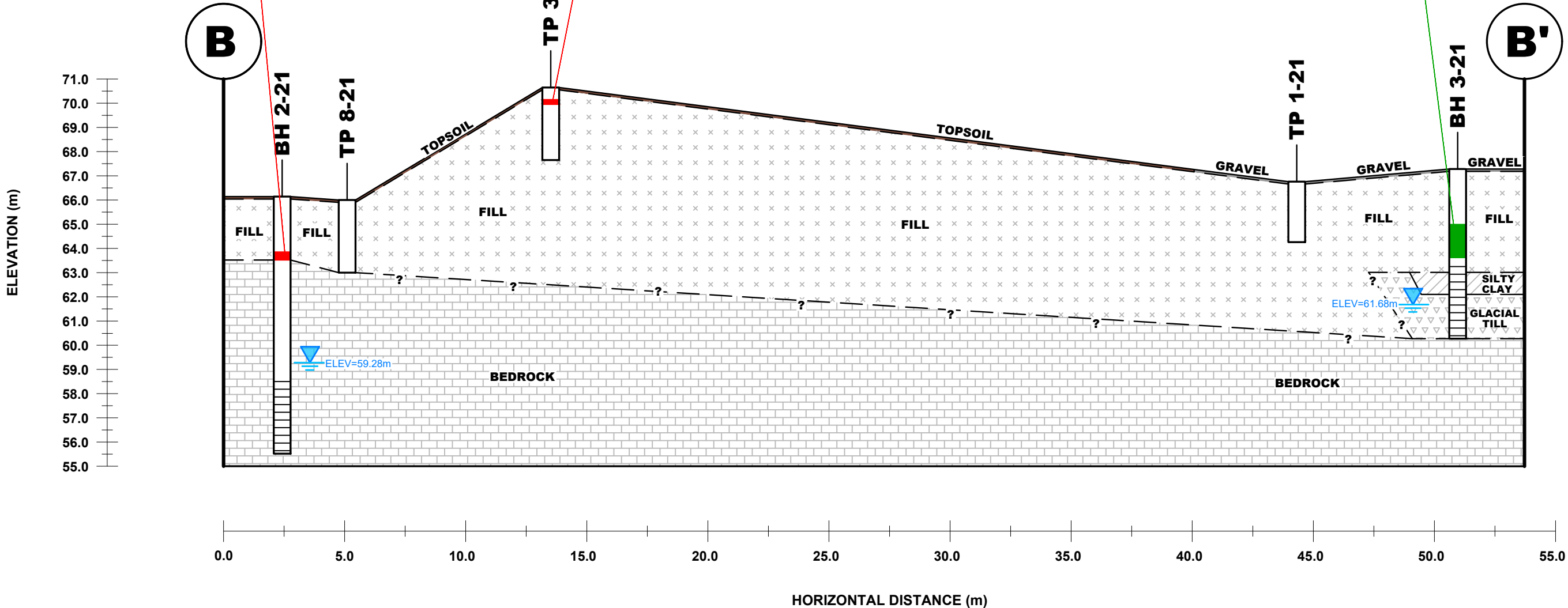
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| | | |
|---|---------------|----------------|
| BH2-21-SS4 | 2.29-2.62m | May 17, 2021 |
| Parameter | Result (µg/g) | Standard(µg/g) |
| Benzo[a]pyrene | 0.35 | 0.3 |
| Remaining PAHs comply with MECP Table 3 Standards | | |

| | | | | | |
|--|---------------|----------------|--|---------------|----------------|
| TP3-21-GS3 | 0.50-0.70m | June 15, 2021 | DUP3(TP3-21-GS3) | 0.50-0.70m | June 15, 2021 |
| Parameter | Result (µg/g) | Standard(µg/g) | Parameter | Result (µg/g) | Standard(µg/g) |
| Acenaphthene | 15.5 | 7.9 | Acenaphthene | 11.0 | 7.9 |
| Acenaphthylene | 1.43 | 0.15 | Acenaphthylene | 1.31 | 0.15 |
| Anthracene | 34.0 | 0.67 | Anthracene | 32.9 | 0.67 |
| Benzo[a]anthracene | 50.9 | 0.5 | Benzo[a]anthracene | 43.6 | 0.5 |
| Benzo[a]pyrene | 48.5 | 0.3 | Benzo[a]pyrene | 38.9 | 0.3 |
| Benzo[b]fluoranthene | 43.0 | 0.78 | Benzo[b]fluoranthene | 35.9 | 0.78 |
| Benzo[g,h,i]perylene | 23.3 | 6.6 | Benzo[g,h,i]perylene | 18.5 | 6.6 |
| Benzo[k]fluoranthene | 23.6 | 0.78 | Benzo[k]fluoranthene | 19.2 | 0.78 |
| Chrysene | 52.4 | 7 | Chrysene | 44.0 | 7.0 |
| Dibenzo[a,h]anthracene | 6.01 | 0.1 | Dibenzo[a,h]anthracene | 5.30 | 0.1 |
| Fluoranthene | 123 | 0.69 | Fluoranthene | 105 | 0.69 |
| Indeno[1,2,3-cd]pyrene | 21.1 | 0.38 | Indeno[1,2,3-cd]pyrene | 17.0 | 0.38 |
| 1-Methylnaphthalene | 3.91 | 0.99 | 1-Methylnaphthalene | 3.72 | 0.99 |
| 2-Methylnaphthalene | 5.39 | 0.99 | 2-Methylnaphthalene | 5.42 | 0.99 |
| Methylnaphthalene (1&2) | 9.30 | 0.99 | Methylnaphthalene (1&2) | 9.15 | 0.99 |
| Naphthalene | 9.72 | 0.6 | Naphthalene | 10.1 | 0.6 |
| Phenanthrene | 123 | 6.2 | Phenanthrene | 115 | 6.2 |
| Pyrene | 97.6 | 78 | Pyrene | 78.9 | 78 |
| Remaining PAH complies with MECP Table 3 Standards | | | Remaining PAH complies with MECP Table 3 Standards | | |

| | | |
|---|------------|--------------|
| BH3-21-SS4/5 | 2.29-3.66m | May 17, 2021 |
| PAHs comply with MECP Table 3 Standards | | |
| DUP(BH3-21-SS4/5) | 2.29-3.66m | May 17, 2021 |
| PAHs comply with MECP Table 3 Standards | | |



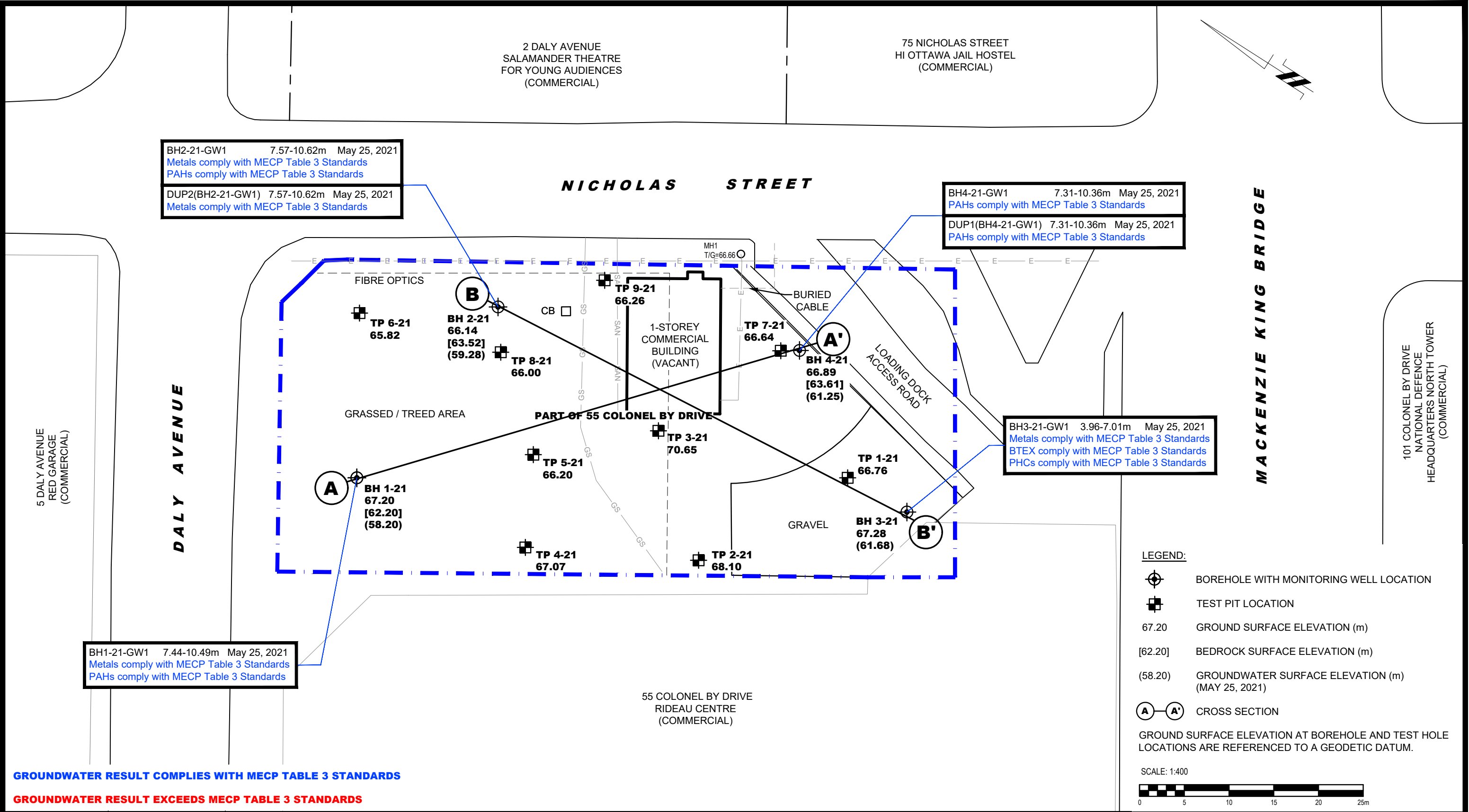
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| NO. | REVISIONS | DATE | INITIAL |

THE CADILLAC FAIRVIEW CORPORATION LIMITED
PHASE II - ENVIRONMENTAL SITE ASSESSMENT
70 NICHOLAS STREET
OTTAWA, ONTARIO
Title: **CROSS SECTION B-B' - SOIL (PAHs)**

| | | | |
|--------------|----------|---------------|------------------|
| Scale: | AS SHOWN | Date: | 08/2021 |
| Drawn by: | YA | Report No.: | PE5267-2 |
| Checked by: | JC | Dwg. No.: | PE5267-7B |
| Approved by: | MSD | Revision No.: | |



GROUNDWATER RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

GROUNDWATER RESULT EXCEEDS MECP TABLE 3 STANDARDS

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THE CADILLAC FAIRVIEW CORPORATION LIMITED
PHASE II - ENVIRONMENTAL SITE ASSESSMENT
70 NICHOLAS STREET

OTTAWA, ONTARIO

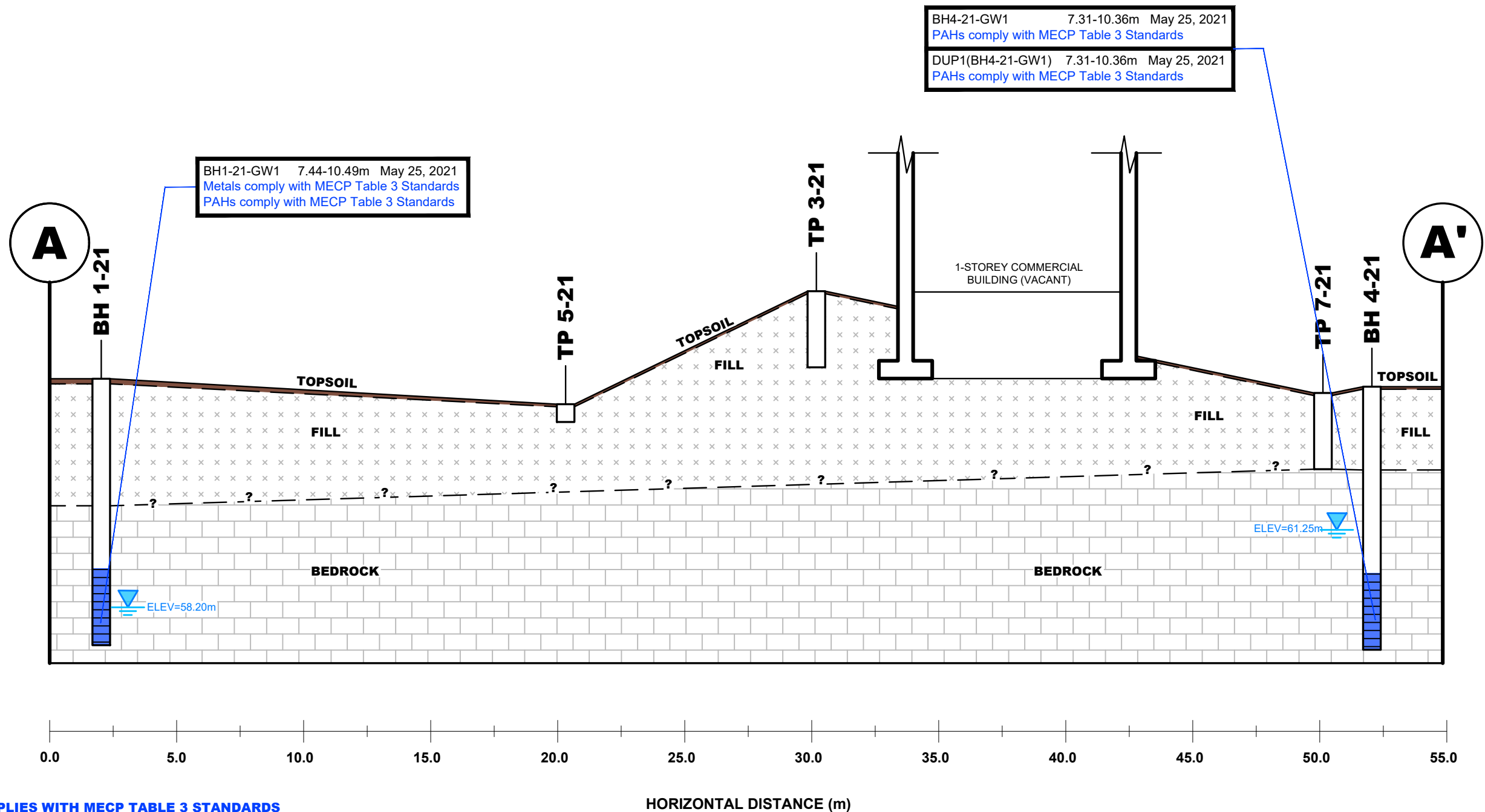
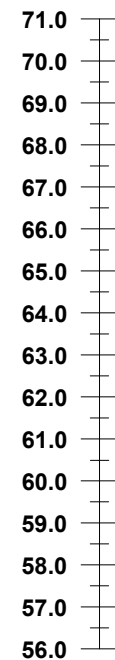
Title:
ANALYTICAL TESTING PLAN - GROUNDWATER (METALS, VOCs, BTEX, PHCs, PAHs)

Scale: 1:400
Drawn by: YA
Checked by: JC
Approved by: MSD

Date: 08/2021
Report No.: PE5267-2
Dwg. No.: **PE5267-8**
Revision No.:

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ELEVATION (m)



GROUNDWATER RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

GROUNDWATER RESULT EXCEEDS MECP TABLE 3 STANDARDS

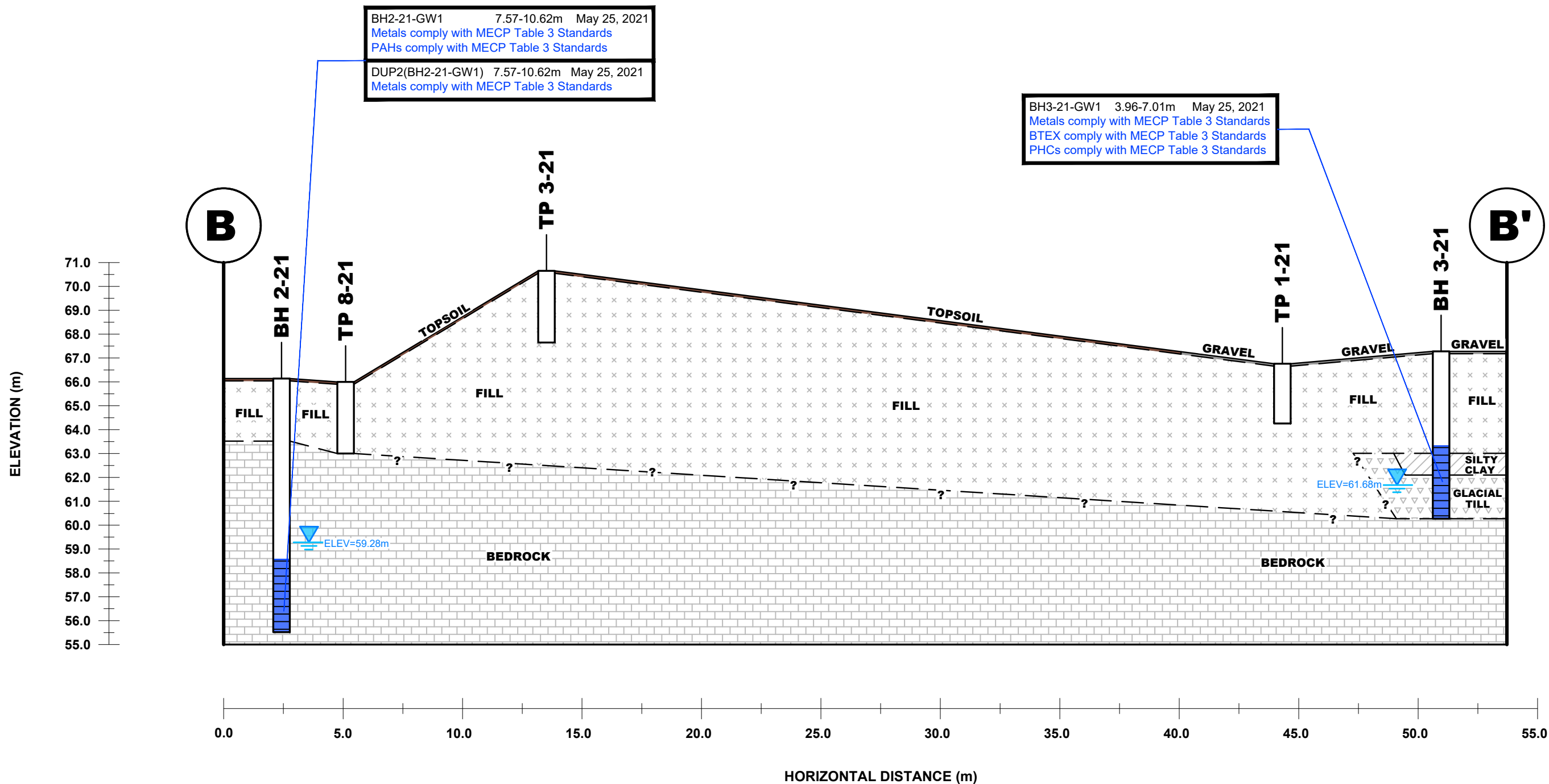
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| NO. | REVISIONS | DATE | INITIAL |

THE CADILLAC FAIRVIEW CORPORATION LIMITED
PHASE II - ENVIRONMENTAL SITE ASSESSMENT
70 NICHOLAS STREET
OTTAWA, ONTARIO
Title:
CROSS SECTION A-A' - GROUNDWATER (METALS, VOCs, BTEX, PHCs, PAHs)

| | | | |
|--------------|----------|---------------|------------------|
| Scale: | AS SHOWN | Date: | 08/2021 |
| Drawn by: | YA | Report No.: | PE5267-2 |
| Checked by: | JC | Dwg. No.: | PE5267-8A |
| Approved by: | MSD | Revision No.: | |



GROUNDWATER RESULT COMPLIES WITH MECP TABLE 3 STANDARDS

GROUNDWATER RESULT EXCEEDS MECP TABLE 3 STANDARDS

| | | | | | | | | | |
|---|-----|-----------|------|---------|--|--------------|----------|---------------|-----------|
| <div><div>patersongroup</div><div>consulting engineers</div><div>154 Colonnade Road South Ottawa, Ontario K2E 7J5 Tel: (613) 226-7381 Fax: (613) 226-6344</div></div> | | | | | <div>THE CADILLAC FAIRVIEW CORPORATION LIMITED</div> <div>PHASE II - ENVIRONMENTAL SITE ASSESSMENT</div> <div>70 NICHOLAS STREET</div> <div>OTTAWA, ONTARIO</div> <div>Title:</div> <div>CROSS SECTION B-B' - GROUNDWATER (METALS, VOCs, BTEX, PHCs, PAHs)</div> | Scale: | AS SHOWN | Date: | 08/2021 |
| | | | | | | Drawn by: | YA | Report No.: | PE5267-2 |
| | | | | | | Checked by: | JC | Dwg. No.: | PE5267-8B |
| | | | | | | Approved by: | MSD | Revision No.: | |
| | NO. | REVISIONS | DATE | INITIAL | | | | | |

APPENDIX 1

SAMPLING AND ANALYSIS PLAN

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

LABORATORY CERTIFICATES OF ANALYSIS

**Geotechnical
Engineering**

**Environmental
Engineering**

Hydrogeology

**Geological
Engineering**

Materials Testing

Building Science

patersongroup

Sampling & Analysis Plan

Phase II Environmental Site Assessment
70 Nicholas Street
Ottawa, Ontario

Prepared For

The Cadillac Fairview Corporation Limited

Paterson Group Inc.

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May 12, 2021

Report: PE5267-SAP

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1.0 SAMPLING PROGRAM

Paterson was retained by Mr. Peter Nikolakakos of The Cadillac Fairview Corporation Limited, to conduct a Phase II Environmental Site Assessment (ESA) for the property addressed 70 Nicholas Street, in the City of Ottawa, Ontario.

The Phase II ESA was carried out to address the areas of potential environmental concern on the Phase II Property. The following subsurface investigation program was developed. A Geotechnical Investigation was conducted concurrently with the environmental subsurface investigation.

| Borehole | Location & Rationale | Proposed Depth & Rationale |
|------------------|--|--|
| BH1 | Place on the northwest portion of the Phase II Property to assess the potential impact due to APECs 1, 5, 6, 7 and 8. | Borehole to be advanced to approximately 10 mbgs to install monitoring well. |
| BH2 | Place on the northeast portion of the Phase II Property to assess the potential impact due to APECs 1, 2, 5 and 7. | Borehole to be advanced to approximately 10 mbgs to install monitoring well. |
| BH3 | Place on the southeast portion of the Phase II Property to assess the potential impact due to APECs 5 and 7. | Borehole to be advanced to approximately 7 mbgs to install monitoring well. |
| BH4 | Place on the southwest portion of the Phase II Property to assess the potential impact due to APECs 3, 4, 7 and 9. | Borehole to be advanced to approximately 10 mbgs to install monitoring well. |
| TP1-21 to TP9-21 | Place to provide general coverage of the Phase II Property ; to laterally delineate soil exceedances identified in the boreholes and to further assess the quality of the fill material. | Test Pit to be advanced to native soil or bedrock to assess the full depth of the fill material. |

Borehole and test pit locations are shown on Drawing PE5267-3-Test Hole Location Plan, appended to the main report.

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

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.

Nine test pits will be placed across the entire Phase II Property for delineation purposes and to obtain broader coverage to assess the quality of the fill material (APEC 7). At each test pit location, samples will be collected at approximate 0.5 to 1.0m intervals. Samples will also be collected from potentially contaminated layers and different soil strata. Test pits should be placed through the full depth of the fill material to the native layer and/or bedrock, whichever is encountered first.

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 or test pit should be submitted, in order to delineate the horizontal extent of contamination across the site.
- ☐ At least one sample from each stratigraphic unit should be submitted, in order to delineate the vertical extent of contamination at the site.
- ☐ In boreholes and test pits where there is visual or olfactory evidence of contamination, or where organic vapour meter or photoionization detector readings indicate the presence of contamination, the 'worst-case' sample from each borehole should be submitted for comparison with MECP site condition standards.
- ☐ In boreholes and test pits 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 and test pits is to identify and/or delineate contamination within the soil and/or to install groundwater monitoring wells in order to identify contamination within the groundwater.

Equipment

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

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

Determining Borehole and Test Pit 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 and/or excavation of test pits is completed, a plan with the test hole locations must be provided. Distances should be measured using a measuring tape or wheel or located with a GPS unit.

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.

Test Pit Excavation

Nine test pits will be placed across the entire Phase II Property for delineation purposes and to obtain broader coverage to assess the quality of the fill material (APEC 7). At each test pit location, samples will be collected at approximate 0.5 to 1.0m intervals. Samples will also be collected from potentially contaminated layers

and different soil strata. Test pits should be placed through the full depth of the fill material to the native layer and/or bedrock, whichever is encountered first.

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 1/4" [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 1/4" [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.
- ☐ Only one monitoring well should be installed per borehole.
- ☐ Monitoring wells should not be screened across more than one stratigraphic unit to prevent potential migration of contaminants between units.
- ☐ Where LNAPLs are the suspected contaminants of concern, monitoring wells should be screened straddling the water table in order to capture any free product floating on top of the water table.
- ☐ Thread the end cap onto a section of screen. Thread second section of screen if required. Thread risers onto screen. Lower into borehole to required depth. Ensure slip-cap or J-plug is inserted to prevent backfill materials entering well.

- ☐ As drillers remove augers, backfill borehole annulus with silica sand until the level of sand is approximately 0.3 m above the top of the screen.
- ☐ Backfill with holeplug until at least 0.3 m of holeplug is present above the top of the silica sand.
- ☐ Backfill remainder of borehole with holeplug or with auger cuttings (if contamination is not suspected).
- ☐ Install flushmount casing. Seal space between flushmount and borehole annulus with concrete, cold patch, or holeplug to match surrounding ground surface.

3.3 Monitoring Well Sampling Procedure

Equipment

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

Sampling Procedure

- ☐ Locate well and use socket wrench or Allan key to open metal flush mount protector cap. Remove plastic well cap.
- ☐ Measure water level, with respect to existing ground surface, using water level meter or interface probe. If using interface probe on suspected NAPL site, measure the thickness of free product.
- ☐ Measure total depth of well.
- ☐ Clean water level tape or interface probe using methanol and water. Change gloves between wells.
- ☐ Calculate volume of standing water within well and record.
- ☐ Insert polyethylene tubing into well and attach to peristaltic pump. Turn on peristaltic pump and purge into graduated bucket. Purge at least three well volumes of water from the well. Measure and record field chemistry. Continue

- to purge, measuring field chemistry after every well volume purged, until appearance or field chemistry stabilizes.
- ☐ Note appearance of purge water, including colour, opacity (clear, cloudy, silty), sheen, presence of LNAPL, and odour. Note any other unusual features (particulate matter, effervescence (bubbling) of dissolved gas, etc.).
 - ☐ Fill required sample bottles. If sampling for metals, attach 75-micron filter to discharge tube and filter metals sample. If sampling for VOCs, use low flow rate to ensure continuous stream of non-turbulent flow into sample bottles. Ensure no headspace is present in VOC vials.
 - ☐ Replace well cap and flushmount casing cap.

4.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

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

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

5.0 DATA QUALITY OBJECTIVES

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

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

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

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

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

DATUM Geodetic

REMARKS

BORINGS BY CME-55 Low Clearance Drill

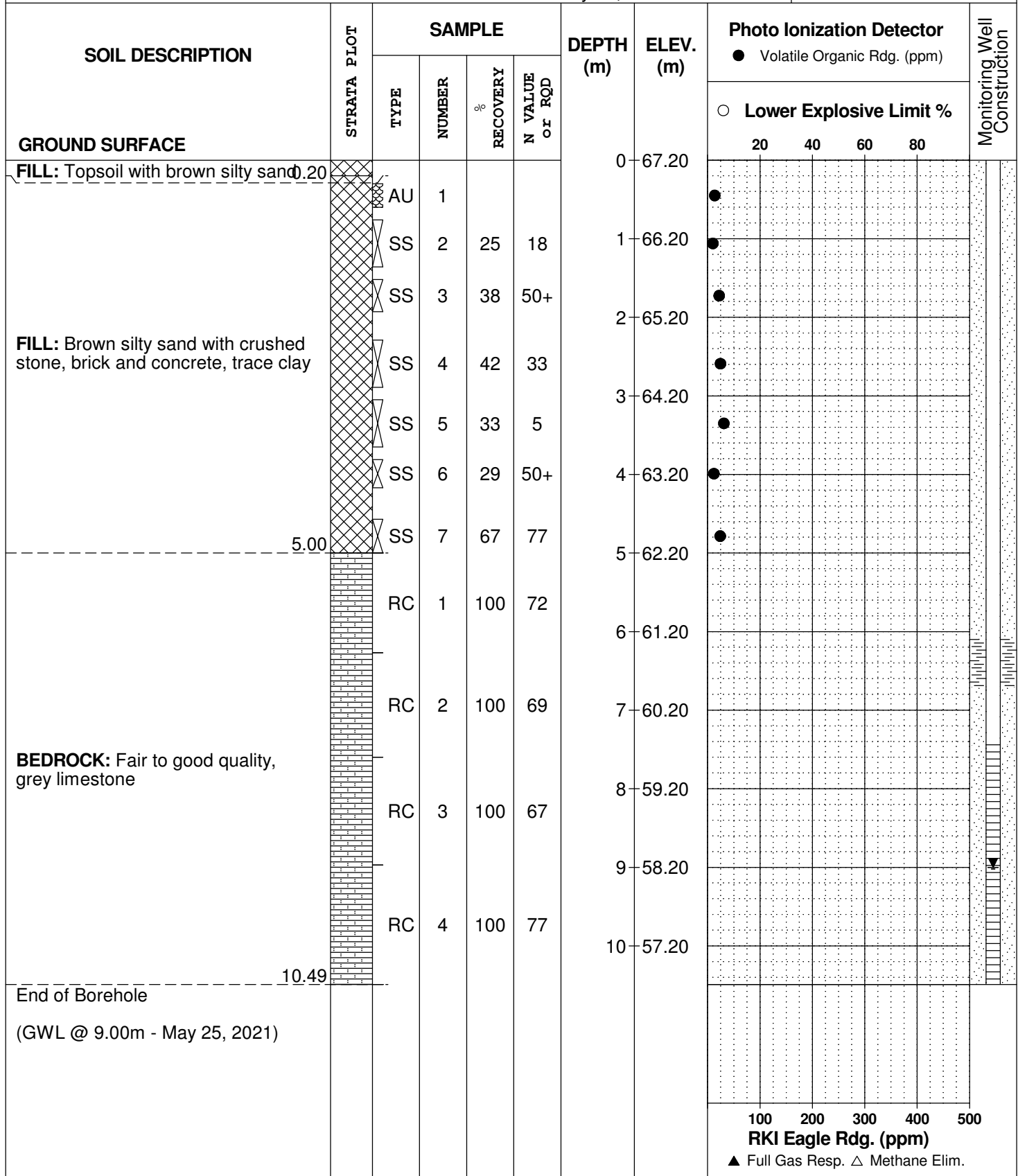
DATE May 14, 2021

FILE NO.

PE5267

HOLE NO.

BH 1-21



| | |
|-------|----------|
| DATUM | Geodetic |
|-------|----------|

REMARKS

BORINGS BY CME-55 Low Clearance Drill

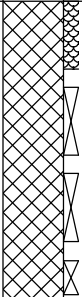


DATE May 17, 2021

FILE NO.

PE5267

HOLE NO.

BH 2-21

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE | | | | DEPTH (m) | ELEV. (m) | Photo Ionization Detector | | Monitoring Well Construction |
|---|--|--------|--------|----------|-------------------|--------------|--------------|----------------------------------|---------------------------|--|
| | | TYPE | NUMBER | RECOVERY | N VALUE or RQD | | | ● Volatile Organic Rdg. (ppm) | ○ Lower Explosive Limit % | |
| GROUND SURFACE | | | | | | | | 20406080 | | |
| FILL: Brown silty sand with crushed stone and organics, trace topsoil and brick |  | AU | 1 | | | 0 | 66.14 | ● | |  |
| | | SS | 2 | | 23 | 1 | 65.14 | | ● | |
| | | SS | 3 | | 37 | 2 | 64.14 | ● | | |
| | | SS | 4 | | 50+ | | | ● | | |
| BEDROCK: Fair to good quality, grey limestone |  | RC | 1 | 100 | 64 | 3 | 63.14 | | | |
| | | | | | | 4 | 62.14 | | | |
| | | RC | 2 | 100 | 55 | 5 | 61.14 | | | |
| | | | | | | 6 | 60.14 | | | |
| | | RC | 3 | 100 | 66 | 7 | 59.14 | | | |
| | | | | | | 8 | 58.14 | | | |
| | | RC | 4 | 100 | 70 | 9 | 57.14 | | | |
| | | | | | | 10 | 56.14 | | | |
| End of Borehole | | | | | | | | | | |
| (GWL @ 6.86m - May 25, 2021) | | | | | | | | | | |
| | | | | | | | | 100200300400500 | | |
| | | | | | | | | RKI Eagle Rdg. (ppm) | | |
| | | | | | | | | ▲ Full Gas Resp. △ Methane Elim. | | |

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
55 Colonel By Drive
Ottawa, Ontario

DATUM Geodetic

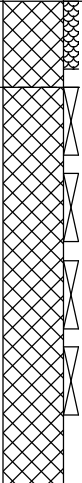
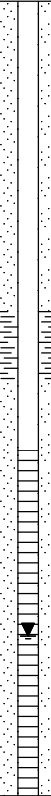
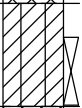
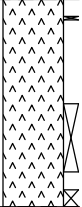
REMARKS

BORINGS BY CME-55 Low Clearance Drill

DATE May 17, 2021

FILE NO. **PE5267**

HOLE NO. **BH 3-21**

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE | | | | DEPTH (m) | ELEV. (m) | Photo Ionization Detector | | | | Monitoring Well Construction | |
|--|---|--------|--------|------------|----------------|-----------|-----------|-------------------------------|----------------------------------|-----|-----|------------------------------|--|
| | | TYPE | NUMBER | RECOVERY % | N VALUE or RQD | | | ● Volatile Organic Rdg. (ppm) | ○ Lower Explosive Limit % | | | | |
| GROUND SURFACE | | | | | | | | | 20 | 40 | 60 | 80 | |
| FILL: Brown silty sand with organics |  | AU | 1 | | | 0 | 67.28 | ● | | | | |  |
| 0.76 | | | | | | | | | | | | | |
| FILL: Brown silty sand with organics and crushed stone, trace concrete and brick | | SS | 2 | 42 | 33 | 1 | 66.28 | ● | | | | | |
| | | SS | 3 | 42 | 20 | 2 | 65.28 | ● | | | | | |
| | | SS | 4 | 33 | 35 | 3 | 64.28 | ● | | | | | |
| | SS | 5 | 33 | 25 | 4 | 63.28 | ● | | | | | | |
| 4.27 | | | | | | | | | | | | | |
| Very stiff to stiff, brown SILTY CLAY |  | SS | 6 | 83 | 7 | 5 | 62.28 | ● | | | | | |
| 5.18 | | | | | | | | | | | | | |
| GLACIAL TILL: Brown to grey silty clay with sand, gravel, cobbles and boulders |  | SS | 7 | 0 | 50+ | 6 | 61.28 | ● | | | | | |
| | | SS | 8 | 83 | 6 | 7 | 60.28 | ● | | | | | |
| | | SS | 9 | 17 | 50+ | | | | | | | | |
| 7.01 | | | | | | | | | | | | | |
| End of Borehole | | | | | | | | | | | | | |
| Practical refusal to augering at 7.01m depth. | | | | | | | | | | | | | |
| (GWL @ 5.60m - May 25, 2021) | | | | | | | | | | | | | |
| | | | | | | | | | 100 | 200 | 300 | 400 | 500 |
| | | | | | | | | | RKI Eagle Rdg. (ppm) | | | | |
| | | | | | | | | | ▲ Full Gas Resp. △ Methane Elim. | | | | |

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
55 Colonel By Drive
Ottawa, Ontario

DATUM Geodetic

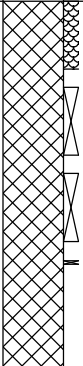

REMARKS

BORINGS BY CME-55 Low Clearance Drill

DATE May 17, 2021

FILE NO. **PE5267**

HOLE NO. **BH 4-21**

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE | | | | DEPTH (m) | ELEV. (m) | Photo Ionization Detector | | | | Monitoring Well Construction |
|--|--|--------|--------|---------------|-------------------|--------------|--------------|----------------------------------|---------------------------|-----|-----|---------------------------------|
| | | TYPE | NUMBER | RECOVERY % | N VALUE or RQD | | | ● Volatile Organic Rdg. (ppm) | ○ Lower Explosive Limit % | | | |
| GROUND SURFACE | | | | | | | | 20 | 40 | 60 | 80 | |
| FILL: Brown silty sand with crushed stone, gravel, trace concrete and topsoil |  | AU | 1 | | | 0 | 66.89 | ● | | | | |
| | | SS | 2 | 33 | 42 | 1 | 65.89 | ● | | | | |
| | | SS | 3 | 33 | 11 | 2 | 64.89 | ● | | | | |
| | | SS | 4 | 0 | 50+ | | | | | | | |
| | 3.28 | | | | | 3 | 63.89 | | | | | |
| BEDROCK: Poor to good quality, grey limestone |  | RC | 1 | 100 | 28 | 4 | 62.89 | | | | | |
| | | RC | 2 | 100 | 69 | 5 | 61.89 | | | | | |
| | | RC | 3 | 100 | 85 | 6 | 60.89 | | | | | |
| | | RC | 4 | 100 | 68 | 8 | 58.89 | | | | | |
| | | RC | 5 | 100 | 75 | 9 | 57.89 | | | | | |
| | 10.36 | | | | | 10 | 56.89 | | | | | |
| End of Borehole | | | | | | | | | | | | |
| (GWL @ 5.64m - May 25, 2021) | | | | | | | | | | | | |
| | | | | | | | | 100 | 200 | 300 | 400 | 500 |
| | | | | | | | | RKI Eagle Rdg. (ppm) | | | | |
| | | | | | | | | ▲ Full Gas Resp. △ Methane Elim. | | | | |

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
55 Colonel By Drive
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Backhoe


DATE June 15, 2021

FILE NO.

PE5267

HOLE NO.

TP 1-21

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE | | | | DEPTH (m) | ELEV. (m) | Photo Ionization Detector | | | | Monitoring Well Construction |
|--|--|--------|--------|---------------|-------------------|--------------|--------------|-------------------------------|----|----|----|---------------------------------|
| | | TYPE | NUMBER | RECOVERY % | N VALUE or RQD | | | ● Volatile Organic Rdg. (ppm) | | | | |
| | | | | | | | | ○ Lower Explosive Limit % | | | | |
| GROUND SURFACE | | | | | | | | 20 | 40 | 60 | 80 | |
| FILL: Crushed stone with brown silty sand |  | | | | | 0 | 66.76 | | | | | |
| | | | | | | | | | | | | |
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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
55 Colonel By Drive
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Backhoe

DATE June 15, 2021

FILE NO. **PE5267**

HOLE NO. **TP 2-21**

| SOIL DESCRIPTION | | STRATA PLOT | SAMPLE | | | | DEPTH (m) | ELEV. (m) | Photo Ionization Detector | | | | | Monitoring Well Construction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | TYPE | NUMBER | RECOVERY % | N VALUE or RQD | | | ● Volatile Organic Rdg. (ppm) | ○ Lower Explosive Limit % | 20 | 40 | 60 | | 80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GROUND SURFACE | 0.10 | | | | | | G | 1 | | | 0 | 68.10 | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

DATUM Geodetic

REMARKS

BORINGS BY Backhoe

DATE June 15, 2021

FILE NO.

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HOLE NO.

TP 3-21

[illegible]

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
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TP 4-21

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE | | | | DEPTH (m) | ELEV. (m) | Photo Ionization Detector | | | | | Monitoring Well Construction | | |
|---|-------------|--------|--------|----------|----------------|-----------|-----------|-------------------------------|---------------------------|----|----|----|------------------------------|----|--|
| | | TYPE | NUMBER | RECOVERY | N VALUE or RQD | | | ● Volatile Organic Rdg. (ppm) | ○ Lower Explosive Limit % | 20 | 40 | 60 | | 80 | |
| GROUND SURFACE | | | | | | | | | | | | | | | |
| TOPSOIL | 0.10 | G | 1 | | | 0 | 67.07 | ● | | | | | | | |
| FILL: Brown silty sand with crushed stone, trace concrete and brick | | | | | | | | | | | | | | | |
| | 0.80 | G | 2 | | | | | ● | | | | | | | |
| End of Test Pit | | | | | | | | | | | | | | | |
| Practical refusal to excavation on concrete at 0.80m depth. | | | | | | | | | | | | | | | |
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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
55 Colonel By Drive
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Backhoe

DATE June 15, 2021

FILE NO.

PE5267

HOLE NO.

TP 5-21

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE | | | | DEPTH (m) | ELEV. (m) | Photo Ionization Detector | | Monitoring Well Construction |
|---|-------------|--------|--------|------------|----------------|-----------|-----------|-------------------------------|---------------------------|------------------------------|
| | | TYPE | NUMBER | RECOVERY % | N VALUE or RQD | | | ● Volatile Organic Rdg. (ppm) | ○ Lower Explosive Limit % | |
| GROUND SURFACE | | | | | | | | | | |
| TOPSOIL | 0.10 | G | 1 | | | 0 | 66.20 | | | |
| FILL: Brown silty sand with crushed stone, trace brick and coal | | | | | | | | | | |
| | 0.70 | G | 2 | | | | | | | |
| End of Test Pit | | | | | | | | | | |
| Practical refusal to excavation on concrete at 0.70m depth. | | | | | | | | | | |

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
55 Colonel By Drive
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Backhoe

DATE June 15, 2021

FILE NO.

PE5267

HOLE NO.

TP 6-21

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE | | | | DEPTH (m) | ELEV. (m) | Photo Ionization Detector | | | | Monitoring Well Construction | |
|--|-------------|--------|--------|---------------|-------------------|--------------|--------------|----------------------------------|---------------------------|-----|-----|---------------------------------|-----|
| | | TYPE | NUMBER | RECOVERY % | N VALUE or RQD | | | ● Volatile Organic Rdg. (ppm) | ○ Lower Explosive Limit % | | | | |
| GROUND SURFACE | | | | | | | | | 20 | 40 | 60 | 80 | |
| TOPSOIL | 0.10 | G | 1 | | | 0 | 65.82 | ● | | | | | |
| FILL: Brown silty sand with crushed stone, gravel, concrete, trace brick | | G | 2 | | | 1 | 64.82 | ● | | | | | |
| | | G | 3 | | | 2 | 63.82 | ● | | | | | |
| | | G | 4 | | | | | ● | | | | | |
| | | G | 5 | | | 3 | 62.82 | ● | | | | | |
| End of Test Pit | 3.00 | | | | | | | | 100 | 200 | 300 | 400 | 500 |
| | | | | | | | | RKI Eagle Rdg. (ppm) | | | | | |
| | | | | | | | | ▲ Full Gas Resp. △ Methane Elim. | | | | | |

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
55 Colonel By Drive
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Backhoe

DATE June 15, 2021

FILE NO.

PE5267

HOLE NO.

TP 7-21

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE | | | | DEPTH (m) | ELEV. (m) | Photo Ionization Detector | | | | Monitoring Well Construction | | | |
|---|-------------|--------|--------|---------------|-------------------|--------------|--------------|-------------------------------|---------------------------|----|----|---------------------------------|----|----|--|
| | | TYPE | NUMBER | RECOVERY % | N VALUE or RQD | | | ● Volatile Organic Rdg. (ppm) | ○ Lower Explosive Limit % | 20 | 40 | | 60 | 80 | |
| GROUND SURFACE | | | | | | | | | | | | | | | |
| TOPSOIL | 0.10 | | G | 1 | | | 0 | 66.64 | ● | | | | | | |
| FILL: Brown silty sand with crushed stone, trace brick and concrete | | | | | | | | | | | | | | | |
| | 0.50 | | G | 2 | | | | | ● | | | | | | |
| Asphalt | 0.60 | | | | | | | | | | | | | | |
| | | | G | 3 | | | | | ● | | | | | | |
| | | | | | | | 1 | 65.64 | | | | | | | |
| | | | G | 4 | | | | | ● | | | | | | |
| FILL: Brown silty sand with blast rock, crushed stone, trace brick, clay and coal | | | | | | | | | | | | | | | |
| | | | G | 5 | | | 2 | 64.64 | | | | | | | |
| | | | | | | | | | ● | | | | | | |
| | | | G | 6 | | | | | ● | | | | | | |
| | 3.00 | | | | | | 3 | 63.64 | | | | | | | |
| End of Test Pit | | | | | | | | | | | | | | | |
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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
55 Colonel By Drive
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Backhoe

DATE June 15, 2021

FILE NO. **PE5267**

HOLE NO. **TP 8-21**

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE | | | | DEPTH (m) | ELEV. (m) | Photo Ionization Detector | | | | Monitoring Well Construction | |
|---|-------------|--------|--------|---------------|-------------------|--------------|--------------|----------------------------------|---------------------------|----|----|---------------------------------|--|
| | | TYPE | NUMBER | RECOVERY % | N VALUE or RQD | | | ● Volatile Organic Rdg. (ppm) | ○ Lower Explosive Limit % | | | | |
| GROUND SURFACE | | | | | | | | | 20 | 40 | 60 | 80 | |
| TOPSOIL | 0.10 | G | 1 | | | 0 | 66.00 | ● | | | | | |
| FILL: Brown silty sand with crushed stone, gravel, boulders, cobbles and concrete, trace brick and wood | | G | 2 | | | | | ● | | | | | |
| | | G | 3 | | | 1 | 65.00 | ● | | | | | |
| | 1.80 | | | | | | | | | | | | |
| FILL: Brown silty sand with clay, some brick and crushed stone | | G | 4 | | | 2 | 64.00 | ● | | | | | |
| | | G | 5 | | | | | ● | | | | | |
| | | G | 6 | | | | | ● | | | | | |
| End of Test Pit | 3.00 | | | | | 3 | 63.00 | | | | | | |
| | | | | | | | | 100 200 300 400 500 | | | | RKI Eagle Rdg. (ppm) | |
| | | | | | | | | ▲ Full Gas Resp. △ Methane Elim. | | | | | |

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
55 Colonel By Drive
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Backhoe

DATE June 15, 2021

FILE NO.

PE5267

HOLE NO.

TP 9-21

| SOIL DESCRIPTION | STRATA PLOT | SAMPLE | | | | DEPTH (m) | ELEV. (m) | Photo Ionization Detector | | | | Monitoring Well Construction |
|---|-------------|--------|--------|------------|----------------|-----------|-----------|-------------------------------|---------------------------|--|--|------------------------------|
| | | TYPE | NUMBER | RECOVERY % | N VALUE or RQD | | | ● Volatile Organic Rdg. (ppm) | ○ Lower Explosive Limit % | | | |
| GROUND SURFACE | | | | | | 0 | 66.26 | | | | | |
| TOPSOIL | 0.10 | | | | | | | | | | | |
| FILL: Brown silty sand with crushed stone, gravel, concrete, cobbles and boulders | | G | 1 | | | | | | | | | |
| | | G | 2 | | | 1 | 65.26 | | | | | |
| | | G | 3 | | | | | | | | | |
| End of Test Pit | 1.50 | | | | | | | | | | | |
| Practical refusal to excavation on concrete at 1.50m depth. | | | | | | | | | | | | |

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

SYMBOLS AND TERMS

SOIL DESCRIPTION

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

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

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

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

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

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

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

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

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

ROCK DESCRIPTION

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

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

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

SAMPLE TYPES

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

SYMBOLS AND TERMS (continued)

PLASTICITY LIMITS AND GRAIN SIZE DISTRIBUTION

| | | |
|-----|---|---|
| WC% | - | Natural water content or water content of sample, % |
| LL | - | Liquid Limit, % (water content above which soil behaves as a liquid) |
| PL | - | Plastic Limit, % (water content above which soil behaves plastically) |
| PI | - | Plasticity Index, % (difference between LL and PL) |
| Dxx | - | Grain size at which xx% of the soil, by weight, is of finer grain sizes These grain size descriptions are not used below 0.075 mm grain size |
| D10 | - | Grain size at which 10% of the soil is finer (effective grain size) |
| D60 | - | Grain size at which 60% of the soil is finer |
| Cc | - | Concavity coefficient = $(D_{30})^2 / (D_{10} \times D_{60})$ |
| Cu | - | Uniformity coefficient = D_{60} / D_{10} |

Cc and Cu are used to assess the grading of sands and gravels:

Well-graded gravels have: $1 < Cc < 3$ and $Cu > 4$

Well-graded sands have: $1 < Cc < 3$ and $Cu > 6$

Sands and gravels not meeting the above requirements are poorly-graded or uniformly-graded.

Cc and Cu are not applicable for the description of soils with more than 10% silt and clay
(more than 10% finer than 0.075 mm or the #200 sieve)

CONSOLIDATION TEST

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

PERMEABILITY TEST

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

SYMBOLS AND TERMS (continued)

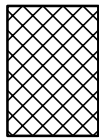
STRATA PLOT



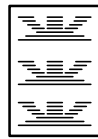
Topsoil



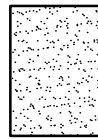
Asphalt



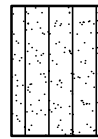
Fill



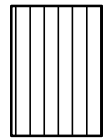
Peat



Sand



Silty Sand



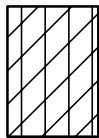
Silt



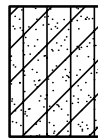
Sandy Silt



Clay



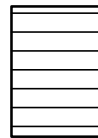
Silty Clay



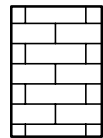
Clayey Silty Sand



Glacial Till



Shale



Bedrock

MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION



Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Karyn Munch

Client PO: 33033
Project: PE5267
Custody: 126670

Report Date: 4-Jun-2021
Order Date: 28-May-2021

Order #: 2122570

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

| Paracel ID | Client ID |
|------------|------------|
| 2122570-01 | MW1-21-GW1 |
| 2122570-02 | MW2-21-GW1 |
| 2122570-03 | MW3-21-GW1 |
| 2122570-04 | MW4-21-GW1 |
| 2122570-05 | DUP1 |

Approved By:



Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 33033

Report Date: 04-Jun-2021

Order Date: 28-May-2021

Project Description: PE5267

Analysis Summary Table

| Analysis | Method Reference/Description | Extraction Date | Analysis Date |
|------------------------------|---------------------------------|-----------------|---------------|
| BTEX by P&T GC-MS | EPA 624 - P&T GC-MS | 1-Jun-21 | 1-Jun-21 |
| Chromium, hexavalent - water | MOE E3056 - colourimetric | 31-May-21 | 31-May-21 |
| Mercury by CVAA | EPA 245.2 - Cold Vapour AA | 31-May-21 | 3-Jun-21 |
| Metals, ICP-MS | EPA 200.8 - ICP-MS | 31-May-21 | 31-May-21 |
| PHC F1 | CWS Tier 1 - P&T GC-FID | 31-May-21 | 1-Jun-21 |
| PHCs F2 to F4 | CWS Tier 1 - GC-FID, extraction | 2-Jun-21 | 4-Jun-21 |
| REG 153: PAHs by GC-MS | EPA 625 - GC-MS, extraction | 2-Jun-21 | 3-Jun-21 |

Certificate of Analysis

Report Date: 04-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 28-May-2021

Client PO: 33033

Project Description: PE5267

| Client ID: | MW1-21-GW1 | MW2-21-GW1 | MW3-21-GW1 | MW4-21-GW1 |
|--------------|-----------------|-----------------|-----------------|-----------------|
| Sample Date: | 25-May-21 09:00 | 25-May-21 09:00 | 25-May-21 09:00 | 25-May-21 09:00 |
| Sample ID: | 2122570-01 | 2122570-02 | 2122570-03 | 2122570-04 |
| MDL/Units | Water | Water | Water | Water |

Metals

| | | | | | |
|---------------|----------|--------|--------|--------|---|
| Mercury | 0.1 ug/L | <0.1 | <0.1 | <0.1 | - |
| Antimony | 0.5 ug/L | <0.5 | <0.5 | <0.5 | - |
| Arsenic | 1 ug/L | <1 | <1 | <1 | - |
| Barium | 1 ug/L | 40 | 629 | 65 | - |
| Beryllium | 0.5 ug/L | <0.5 | <0.5 | <0.5 | - |
| Boron | 10 ug/L | 137 | 74 | 39 | - |
| Cadmium | 0.1 ug/L | <0.1 | <0.1 | <0.1 | - |
| Chromium | 1 ug/L | <1 | <1 | <1 | - |
| Chromium (VI) | 10 ug/L | <10 | <10 | <10 | - |
| Cobalt | 0.5 ug/L | 1.2 | 1.2 | 0.6 | - |
| Copper | 0.5 ug/L | 3.3 | 4.9 | 3.5 | - |
| Lead | 0.1 ug/L | <0.1 | <0.1 | <0.1 | - |
| Molybdenum | 0.5 ug/L | 4.1 | 2.9 | 0.9 | - |
| Nickel | 1 ug/L | 8 | 4 | 7 | - |
| Selenium | 1 ug/L | 6 | <1 | 2 | - |
| Silver | 0.1 ug/L | <0.1 | <0.1 | <0.1 | - |
| Sodium | 200 ug/L | 455000 | 228000 | 289000 | - |
| Thallium | 0.1 ug/L | <0.1 | 0.1 | <0.1 | - |
| Uranium | 0.1 ug/L | 2.8 | 3.8 | 4.7 | - |
| Vanadium | 0.5 ug/L | <0.5 | 0.5 | <0.5 | - |
| Zinc | 5 ug/L | 10 | 17 | 9 | - |

Volatiles

| | | | | | |
|----------------|-----------|---|---|------|---|
| 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 | - | - | 120% | - |

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 | - |

Semi-Volatiles

Certificate of Analysis

Report Date: 04-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 28-May-2021

Client PO: 33033

Project Description: PE5267

| | Client ID: Sample Date: Sample ID: | | MW1-21-GW1 25-May-21 09:00 2122570-01 | MW2-21-GW1 25-May-21 09:00 2122570-02 | MW3-21-GW1 25-May-21 09:00 2122570-03 | MW4-21-GW1 25-May-21 09:00 2122570-04 |
|--------------------------|--|--|---|---|---|---|
| | MDL/Units | | Water | Water | Water | Water |
| Acenaphthene | 0.05 ug/L | | <0.05 | <0.05 | - | <0.05 |
| Acenaphthylene | 0.05 ug/L | | <0.05 | <0.05 | - | <0.05 |
| Anthracene | 0.01 ug/L | | <0.01 | <0.01 | - | <0.01 |
| Benzo [a] anthracene | 0.01 ug/L | | <0.01 | <0.01 | - | <0.01 |
| Benzo [a] pyrene | 0.01 ug/L | | <0.01 | <0.01 | - | <0.01 |
| Benzo [b] fluoranthene | 0.05 ug/L | | <0.05 | <0.05 | - | <0.05 |
| Benzo [g,h,i] perylene | 0.05 ug/L | | <0.05 | <0.05 | - | <0.05 |
| Benzo [k] fluoranthene | 0.05 ug/L | | <0.05 | <0.05 | - | <0.05 |
| Chrysene | 0.05 ug/L | | <0.05 | <0.05 | - | <0.05 |
| Dibenzo [a,h] anthracene | 0.05 ug/L | | <0.05 | <0.05 | - | <0.05 |
| Fluoranthene | 0.01 ug/L | | 0.04 | <0.01 | - | <0.01 |
| Fluorene | 0.05 ug/L | | <0.05 | <0.05 | - | <0.05 |
| Indeno [1,2,3-cd] pyrene | 0.05 ug/L | | <0.05 | <0.05 | - | <0.05 |
| 1-Methylnaphthalene | 0.05 ug/L | | <0.05 | <0.05 | - | <0.05 |
| 2-Methylnaphthalene | 0.05 ug/L | | <0.05 | <0.05 | - | <0.05 |
| Methylnaphthalene (1&2) | 0.10 ug/L | | <0.10 | <0.10 | - | <0.10 |
| Naphthalene | 0.05 ug/L | | 0.34 | <0.05 | - | <0.05 |
| Phenanthrene | 0.05 ug/L | | 0.08 | <0.05 | - | <0.05 |
| Pyrene | 0.01 ug/L | | 0.04 | <0.01 | - | <0.01 |
| 2-Fluorobiphenyl | Surrogate | | 80.4% | 93.9% | - | 92.9% |
| Terphenyl-d14 | Surrogate | | 90.4% | 117% | - | 119% |

Certificate of Analysis

Report Date: 04-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 28-May-2021

Client PO: 33033

Project Description: PE5267

| | | | | |
|--------------|-----------------|---|---|---|
| Client ID: | DUP1 | - | - | - |
| Sample Date: | 25-May-21 09:00 | - | - | - |
| Sample ID: | 2122570-05 | - | - | - |
| MDL/Units | Water | - | - | - |

Metals

| | | | | | |
|---------------|----------|--------|---|---|---|
| Antimony | 0.5 ug/L | <0.5 | - | - | - |
| Arsenic | 1 ug/L | <1 | - | - | - |
| Barium | 1 ug/L | 73 | - | - | - |
| Beryllium | 0.5 ug/L | <0.5 | - | - | - |
| Boron | 10 ug/L | 30 | - | - | - |
| Cadmium | 0.1 ug/L | <0.1 | - | - | - |
| Chromium | 1 ug/L | <1 | - | - | - |
| Chromium (VI) | 10 ug/L | <10 | - | - | - |
| Cobalt | 0.5 ug/L | <0.5 | - | - | - |
| Copper | 0.5 ug/L | 1.4 | - | - | - |
| Lead | 0.1 ug/L | <0.1 | - | - | - |
| Molybdenum | 0.5 ug/L | 4.4 | - | - | - |
| Nickel | 1 ug/L | 2 | - | - | - |
| Selenium | 1 ug/L | 4 | - | - | - |
| Silver | 0.1 ug/L | <0.1 | - | - | - |
| Sodium | 200 ug/L | 328000 | - | - | - |
| Thallium | 0.1 ug/L | <0.1 | - | - | - |
| Uranium | 0.1 ug/L | 2.3 | - | - | - |
| Vanadium | 0.5 ug/L | <0.5 | - | - | - |
| Zinc | 5 ug/L | <5 | - | - | - |

Semi-Volatiles

| | | | | | |
|--------------------------|-----------|-------|---|---|---|
| Acenaphthene | 0.05 ug/L | <0.05 | - | - | - |
| Acenaphthylene | 0.05 ug/L | <0.05 | - | - | - |
| Anthracene | 0.01 ug/L | <0.01 | - | - | - |
| Benzo [a] anthracene | 0.01 ug/L | <0.01 | - | - | - |
| Benzo [a] pyrene | 0.01 ug/L | <0.01 | - | - | - |
| Benzo [b] fluoranthene | 0.05 ug/L | <0.05 | - | - | - |
| Benzo [g,h,i] perylene | 0.05 ug/L | <0.05 | - | - | - |
| Benzo [k] fluoranthene | 0.05 ug/L | <0.05 | - | - | - |
| Chrysene | 0.05 ug/L | <0.05 | - | - | - |
| Dibenzo [a,h] anthracene | 0.05 ug/L | <0.05 | - | - | - |
| Fluoranthene | 0.01 ug/L | <0.01 | - | - | - |
| Fluorene | 0.05 ug/L | <0.05 | - | - | - |
| Indeno [1,2,3-cd] pyrene | 0.05 ug/L | <0.05 | - | - | - |

Certificate of Analysis

Report Date: 04-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 28-May-2021

Client PO: 33033

Project Description: PE5267

| | | | | | |
|-------------------------|--------------|-----------------|---|---|---|
| | Client ID: | DUP1 | - | - | - |
| | Sample Date: | 25-May-21 09:00 | - | - | - |
| | Sample ID: | 2122570-05 | - | - | - |
| | MDL/Units | Water | - | - | - |
| 1-Methylnaphthalene | 0.05 ug/L | <0.05 | - | - | - |
| 2-Methylnaphthalene | 0.05 ug/L | <0.05 | - | - | - |
| Methylnaphthalene (1&2) | 0.10 ug/L | <0.10 | - | - | - |
| Naphthalene | 0.05 ug/L | <0.05 | - | - | - |
| Phenanthrene | 0.05 ug/L | <0.05 | - | - | - |
| Pyrene | 0.01 ug/L | <0.01 | - | - | - |
| 2-Fluorobiphenyl | Surrogate | 92.3% | - | - | - |
| Terphenyl-d14 | Surrogate | 114% | - | - | - |

Certificate of Analysis

Report Date: 04-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 28-May-2021

Client PO: 33033

Project Description: PE5267

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 | | | | | | |
| Metals | | | | | | | | | |
| Mercury | ND | 0.1 | ug/L | | | | | | |
| Antimony | ND | 0.5 | ug/L | | | | | | |
| Arsenic | ND | 1 | ug/L | | | | | | |
| Barium | ND | 1 | ug/L | | | | | | |
| Beryllium | ND | 0.5 | ug/L | | | | | | |
| Boron | ND | 10 | ug/L | | | | | | |
| Cadmium | ND | 0.1 | ug/L | | | | | | |
| Chromium (VI) | ND | 10 | ug/L | | | | | | |
| Chromium | ND | 1 | ug/L | | | | | | |
| Cobalt | ND | 0.5 | ug/L | | | | | | |
| Copper | ND | 0.5 | ug/L | | | | | | |
| Lead | ND | 0.1 | ug/L | | | | | | |
| Molybdenum | ND | 0.5 | ug/L | | | | | | |
| Nickel | ND | 1 | ug/L | | | | | | |
| Selenium | ND | 1 | ug/L | | | | | | |
| Silver | ND | 0.1 | ug/L | | | | | | |
| Sodium | ND | 200 | ug/L | | | | | | |
| Thallium | ND | 0.1 | ug/L | | | | | | |
| Uranium | ND | 0.1 | ug/L | | | | | | |
| Vanadium | ND | 0.5 | ug/L | | | | | | |
| Zinc | ND | 5 | ug/L | | | | | | |
| Semi-Volatiles | | | | | | | | | |
| Acenaphthene | ND | 0.05 | ug/L | | | | | | |
| Acenaphthylene | ND | 0.05 | ug/L | | | | | | |
| Anthracene | ND | 0.01 | ug/L | | | | | | |
| Benzo [a] anthracene | ND | 0.01 | ug/L | | | | | | |
| Benzo [a] pyrene | ND | 0.01 | ug/L | | | | | | |
| Benzo [b] fluoranthene | ND | 0.05 | ug/L | | | | | | |
| Benzo [g,h,i] perylene | ND | 0.05 | ug/L | | | | | | |
| Benzo [k] fluoranthene | ND | 0.05 | ug/L | | | | | | |
| Chrysene | ND | 0.05 | ug/L | | | | | | |
| Dibenzo [a,h] anthracene | ND | 0.05 | ug/L | | | | | | |
| Fluoranthene | ND | 0.01 | ug/L | | | | | | |
| Fluorene | ND | 0.05 | ug/L | | | | | | |
| Indeno [1,2,3-cd] pyrene | ND | 0.05 | ug/L | | | | | | |
| 1-Methylnaphthalene | ND | 0.05 | ug/L | | | | | | |
| 2-Methylnaphthalene | ND | 0.05 | ug/L | | | | | | |
| Methylnaphthalene (1&2) | ND | 0.10 | ug/L | | | | | | |
| Naphthalene | ND | 0.05 | ug/L | | | | | | |
| Phenanthrene | ND | 0.05 | ug/L | | | | | | |
| Pyrene | ND | 0.01 | ug/L | | | | | | |
| Surrogate: 2-Fluorobiphenyl | 16.8 | | ug/L | | 84.2 | 50-140 | | | |
| Surrogate: Terphenyl-d14 | 23.0 | | ug/L | | 115 | 50-140 | | | |
| Volatiles | | | | | | | | | |
| Benzene | ND | 0.5 | ug/L | | | | | | |
| Ethylbenzene | ND | 0.5 | ug/L | | | | | | |
| Toluene | ND | 0.5 | ug/L | | | | | | |
| m,p-Xylenes | ND | 0.5 | ug/L | | | | | | |
| o-Xylene | ND | 0.5 | ug/L | | | | | | |
| Xylenes, total | ND | 0.5 | ug/L | | | | | | |
| Surrogate: Toluene-d8 | 99.7 | | ug/L | | 125 | 50-140 | | | |

Certificate of Analysis

Report Date: 04-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 28-May-2021

Client PO: 33033

Project Description: PE5267

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 | |
| Metals | | | | | | | | | |
| Mercury | ND | 0.1 | ug/L | ND | | | NC | 20 | |
| Antimony | 1.09 | 0.5 | ug/L | ND | | | NC | 20 | |
| Arsenic | ND | 1 | ug/L | ND | | | NC | 20 | |
| Barium | 81.7 | 1 | ug/L | 81.7 | | | 0.0 | 20 | |
| Beryllium | ND | 0.5 | ug/L | ND | | | NC | 20 | |
| Boron | 148 | 10 | ug/L | 150 | | | 1.6 | 20 | |
| Cadmium | ND | 0.1 | ug/L | ND | | | NC | 20 | |
| Chromium (VI) | ND | 10 | ug/L | ND | | | NC | 20 | |
| Chromium | ND | 1 | ug/L | ND | | | NC | 20 | |
| Cobalt | ND | 0.5 | ug/L | ND | | | NC | 20 | |
| Copper | 20.9 | 0.5 | ug/L | 21.1 | | | 0.9 | 20 | |
| Lead | 0.13 | 0.1 | ug/L | 0.14 | | | 3.7 | 20 | |
| Molybdenum | 2.07 | 0.5 | ug/L | 1.99 | | | NC | 20 | |
| Nickel | ND | 1 | ug/L | ND | | | NC | 20 | |
| Selenium | ND | 1 | ug/L | ND | | | NC | 20 | |
| Silver | ND | 0.1 | ug/L | ND | | | NC | 20 | |
| Sodium | 58400 | 200 | ug/L | 59600 | | | 2.1 | 20 | |
| Thallium | ND | 0.1 | ug/L | ND | | | NC | 20 | |
| Uranium | 1.9 | 0.1 | ug/L | 1.9 | | | 1.6 | 20 | |
| Vanadium | 0.78 | 0.5 | ug/L | 0.79 | | | 1.1 | 20 | |
| Zinc | 12 | 5 | ug/L | ND | | | NC | 20 | |
| Volatiles | | | | | | | | | |
| Benzene | ND | 0.5 | ug/L | ND | | | NC | 30 | |
| Ethylbenzene | ND | 0.5 | ug/L | ND | | | NC | 30 | |
| Toluene | ND | 0.5 | ug/L | ND | | | NC | 30 | |
| m,p-Xylenes | ND | 0.5 | ug/L | ND | | | NC | 30 | |
| o-Xylene | ND | 0.5 | ug/L | ND | | | NC | 30 | |
| Surrogate: Toluene-d8 | 95.2 | | ug/L | | 119 | 50-140 | | | |

Certificate of Analysis

Report Date: 04-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 28-May-2021

Client PO: 33033

Project Description: PE5267

Method Quality Control: Spike

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|-----------------------------|--------|-----------------|-------|---------------|------|------------|-----|-----------|-------|
| Hydrocarbons | | | | | | | | | |
| F1 PHCs (C6-C10) | 1830 | 25 | ug/L | ND | 91.3 | 68-117 | | | |
| F2 PHCs (C10-C16) | 1310 | 100 | ug/L | ND | 81.7 | 60-140 | | | |
| F3 PHCs (C16-C34) | 3510 | 100 | ug/L | ND | 89.4 | 60-140 | | | |
| F4 PHCs (C34-C50) | 2270 | 100 | ug/L | ND | 91.7 | 60-140 | | | |
| Metals | | | | | | | | | |
| Mercury | 3.42 | 0.1 | ug/L | ND | 114 | 70-130 | | | |
| Antimony | 43.2 | 0.5 | ug/L | ND | 85.5 | 80-120 | | | |
| Arsenic | 43.4 | 1 | ug/L | ND | 86.1 | 80-120 | | | |
| Barium | 45.7 | 1 | ug/L | ND | 91.3 | 80-120 | | | |
| Beryllium | 40.5 | 0.5 | ug/L | ND | 80.9 | 80-120 | | | |
| Boron | 44 | 10 | ug/L | ND | 86.2 | 80-120 | | | |
| Cadmium | 38.3 | 0.1 | ug/L | ND | 76.6 | 80-120 | | | QM-07 |
| Chromium (VI) | 195 | 10 | ug/L | ND | 97.5 | 70-130 | | | |
| Chromium | 52.5 | 1 | ug/L | ND | 104 | 80-120 | | | |
| Cobalt | 50.9 | 0.5 | ug/L | ND | 102 | 80-120 | | | |
| Copper | 47.4 | 0.5 | ug/L | ND | 94.8 | 80-120 | | | |
| Lead | 42.8 | 0.1 | ug/L | 0.14 | 85.3 | 80-120 | | | |
| Molybdenum | 51.8 | 0.5 | ug/L | 1.99 | 99.7 | 80-120 | | | |
| Nickel | 47.5 | 1 | ug/L | ND | 93.6 | 80-120 | | | |
| Selenium | 33.3 | 1 | ug/L | ND | 66.2 | 80-120 | | | QM-07 |
| Silver | 41.3 | 0.1 | ug/L | ND | 82.6 | 80-120 | | | |
| Sodium | 8490 | 200 | ug/L | ND | 84.8 | 80-120 | | | |
| Thallium | 40.4 | 0.1 | ug/L | ND | 80.8 | 80-120 | | | |
| Uranium | 45.6 | 0.1 | ug/L | 1.9 | 87.3 | 80-120 | | | |
| Vanadium | 54.5 | 0.5 | ug/L | 0.79 | 107 | 80-120 | | | |
| Zinc | 49 | 5 | ug/L | ND | 91.8 | 80-120 | | | QM-07 |
| Semi-Volatiles | | | | | | | | | |
| Acenaphthene | 4.82 | 0.05 | ug/L | ND | 96.3 | 50-140 | | | |
| Acenaphthylene | 3.84 | 0.05 | ug/L | ND | 76.8 | 50-140 | | | |
| Anthracene | 4.49 | 0.01 | ug/L | ND | 89.8 | 50-140 | | | |
| Benzo [a] anthracene | 4.10 | 0.01 | ug/L | ND | 82.0 | 50-140 | | | |
| Benzo [a] pyrene | 5.14 | 0.01 | ug/L | ND | 103 | 50-140 | | | |
| Benzo [b] fluoranthene | 5.71 | 0.05 | ug/L | ND | 114 | 50-140 | | | |
| Benzo [g,h,i] perylene | 4.30 | 0.05 | ug/L | ND | 86.0 | 50-140 | | | |
| Benzo [k] fluoranthene | 5.48 | 0.05 | ug/L | ND | 110 | 50-140 | | | |
| Chrysene | 5.18 | 0.05 | ug/L | ND | 104 | 50-140 | | | |
| Dibenzo [a,h] anthracene | 4.64 | 0.05 | ug/L | ND | 92.7 | 50-140 | | | |
| Fluoranthene | 4.59 | 0.01 | ug/L | ND | 91.9 | 50-140 | | | |
| Fluorene | 4.11 | 0.05 | ug/L | ND | 82.1 | 50-140 | | | |
| Indeno [1,2,3-cd] pyrene | 4.42 | 0.05 | ug/L | ND | 88.5 | 50-140 | | | |
| 1-Methylnaphthalene | 3.85 | 0.05 | ug/L | ND | 77.1 | 50-140 | | | |
| 2-Methylnaphthalene | 4.23 | 0.05 | ug/L | ND | 84.6 | 50-140 | | | |
| Naphthalene | 4.25 | 0.05 | ug/L | ND | 84.9 | 50-140 | | | |
| Phenanthrene | 4.49 | 0.05 | ug/L | ND | 89.9 | 50-140 | | | |
| Pyrene | 4.45 | 0.01 | ug/L | ND | 89.0 | 50-140 | | | |
| Surrogate: 2-Fluorobiphenyl | 15.3 | | ug/L | | 76.3 | 50-140 | | | |
| Surrogate: Terphenyl-d14 | 24.5 | | ug/L | | 122 | 50-140 | | | |

Volatiles

Certificate of Analysis

Report Date: 04-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 28-May-2021

Client PO: 33033

Project Description: PE5267

Method Quality Control: Spike

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|-----------------------|--------|-----------------|-------|---------------|------|------------|-----|-----------|-------|
| Benzene | 31.4 | 0.5 | ug/L | ND | 78.4 | 60-130 | | | |
| Ethylbenzene | 35.8 | 0.5 | ug/L | ND | 89.4 | 60-130 | | | |
| Toluene | 35.5 | 0.5 | ug/L | ND | 88.6 | 60-130 | | | |
| m,p-Xylenes | 70.7 | 0.5 | ug/L | ND | 88.4 | 60-130 | | | |
| o-Xylene | 34.5 | 0.5 | ug/L | ND | 86.4 | 60-130 | | | |
| Surrogate: Toluene-d8 | 80.9 | | ug/L | | 101 | 50-140 | | | |

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 33033

Report Date: 04-Jun-2021

Order Date: 28-May-2021

Project Description: PE5267

Qualifier Notes:

QC Qualifiers :

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

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

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.



| | | |
|----------------------------------|---|---|
| Client Name: <u>Paterson</u> | Project Ref: <u>PES267</u> | Page <u>1</u> of <u>1</u> |
| Contact Name: <u>Kiara Munch</u> | Quote #: | Turnaround Time <input type="checkbox"/> 1 day <input type="checkbox"/> 3 day <input type="checkbox"/> 2 day <input checked="" type="checkbox"/> Regular |
| Address: <u>154 Colonnade Rd</u> | PO #: <u>33033</u> | |
| Telephone: <u>613-226-7381</u> | E-mail: <u>kmunch@patersongroup.ca</u> <u>j.composarone@patersongroup.ca</u> | |
| Date Required: _____ | | |

| Regulation 153/04 | | Other Regulation | | Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other) | | Required Analysis | | | | | | | | | | | | | | | | | |
|---|---|------------------------------------|-------------------------------------|---|------------|-------------------|--------------|------|------|-----------------|------|------|---------------|----|------|---------|--|--|--|--|--|--|--|
| <input type="checkbox"/> Table 1 | <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/Fine | <input type="checkbox"/> REG 558 | <input type="checkbox"/> PWQO | Matrix | Air Volume | # of Containers | Sample Taken | Date | Time | PHCs F1-F4+BTEX | VOCs | PAHs | Metals by ICP | Hg | CrVI | B (HWS) | | | | | | | |
| <input type="checkbox"/> Table 2 | <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse | <input type="checkbox"/> CCME | <input type="checkbox"/> MISA | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> Table 3 | <input type="checkbox"/> Agri/Other | <input type="checkbox"/> SU - Sani | <input type="checkbox"/> SU - Storm | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> Table _____ For RSC: <input type="checkbox"/> Yes <input type="checkbox"/> No | | | | Mun: _____ | | | | | | | | | | | | | | | | | | | |
| Sample ID/Location Name | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | MW1-21-GW1 | GW | 4 | 5/25/2021 | | | | | | | | | | | | | | | | | | | |
| 2 | MW2-21-GW1 | | 3 | | | | | | | | | | | | | | | | | | | | |
| 3 | MW3-21-GW1 | | 7 | | | | | | | | | | | | | | | | | | | | |
| 4 | MW4-21-GW1 | | 1 | | | | | | | | | | | | | | | | | | | | |
| 5 | DUP1 | | 4 | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | |

| | | | |
|--|---|--|--|
| Comments: | | Method of Delivery: <u>PARACEL COURIER</u> | |
| Relinquished By (Sign): <u>[Signature]</u> | Received By Driver/Depot: <u>A. J. LOUISE</u> | Received at Lab: <u>[Signature]</u> | Verified By: <u>[Signature]</u> |
| Relinquished By (Print): <u>Jeremy Composarone</u> | Date/Time: <u>28/05/21 3:10</u> | Date/Time: <u>May 28, 2021 17:25</u> | Date/Time: <u>May 29, 2021 11:24</u> |
| Date/Time: <u>May 28 2021</u> | Temperature: <u>9.6 °C</u> | Temperature: <u>9.6 °C</u> | pH Verified: <input checked="" type="checkbox"/> By: <u>BS</u> |

Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Karyn Munch

Client PO: 33034
Project: PE5267
Custody: 126671

Report Date: 7-Jun-2021
Order Date: 1-Jun-2021

Order #: 2123228

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

| Paracel ID | Client ID |
|------------|-----------|
| 2123228-01 | DUP2 |

Approved By:



Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 07-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 1-Jun-2021

Client PO: 33034

Project Description: PE5267

Analysis Summary Table

| Analysis | Method Reference/Description | Extraction Date | Analysis Date |
|------------------------------|------------------------------|-----------------|---------------|
| Chromium, hexavalent - water | MOE E3056 - colourimetric | 1-Jun-21 | 2-Jun-21 |
| Mercury by CVAA | EPA 245.2 - Cold Vapour AA | 7-Jun-21 | 7-Jun-21 |
| Metals, ICP-MS | EPA 200.8 - ICP-MS | 3-Jun-21 | 4-Jun-21 |

Certificate of Analysis

Report Date: 07-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 1-Jun-2021

Client PO: 33034

Project Description: PE5267

| | | | | |
|--------------|-----------------|---|---|---|
| Client ID: | DUP2 | - | - | - |
| Sample Date: | 25-May-21 09:00 | - | - | - |
| Sample ID: | 2123228-01 | - | - | - |
| MDL/Units | Water | - | - | - |

Metals

| | | | | | |
|---------------|----------|--------|---|---|---|
| Mercury | 0.1 ug/L | <0.1 | - | - | - |
| Antimony | 0.5 ug/L | <0.5 | - | - | - |
| Arsenic | 1 ug/L | <1 | - | - | - |
| Barium | 1 ug/L | 701 | - | - | - |
| Beryllium | 0.5 ug/L | <0.5 | - | - | - |
| Boron | 10 ug/L | 87 | - | - | - |
| Cadmium | 0.1 ug/L | <0.1 | - | - | - |
| Chromium | 1 ug/L | <1 | - | - | - |
| Chromium (VI) | 10 ug/L | <10 | - | - | - |
| Cobalt | 0.5 ug/L | <0.5 | - | - | - |
| Copper | 0.5 ug/L | 4.8 | - | - | - |
| Lead | 0.1 ug/L | 0.1 | - | - | - |
| Molybdenum | 0.5 ug/L | 3.2 | - | - | - |
| Nickel | 1 ug/L | 4 | - | - | - |
| Selenium | 1 ug/L | <1 | - | - | - |
| Silver | 0.1 ug/L | <0.1 | - | - | - |
| Sodium | 200 ug/L | 237000 | - | - | - |
| Thallium | 0.1 ug/L | 0.2 | - | - | - |
| Uranium | 0.1 ug/L | 4.1 | - | - | - |
| Vanadium | 0.5 ug/L | 0.6 | - | - | - |
| Zinc | 5 ug/L | 9 | - | - | - |

Certificate of Analysis

Report Date: 07-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 1-Jun-2021

Client PO: 33034

Project Description: PE5267

Method Quality Control: Blank

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

Certificate of Analysis

Report Date: 07-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 1-Jun-2021

Client PO: 33034

Project Description: PE5267

Method Quality Control: Duplicate

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---------------|--------|-----------------|-------|---------------|------|------------|-----|-----------|-------|
| Metals | | | | | | | | | |
| Mercury | 0.12 | 0.1 | ug/L | ND | | | NC | 20 | |
| Antimony | 0.55 | 0.5 | ug/L | ND | | | NC | 20 | |
| Arsenic | ND | 1 | ug/L | ND | | | NC | 20 | |
| Barium | 235 | 1 | ug/L | 228 | | | 2.9 | 20 | |
| Beryllium | ND | 0.5 | ug/L | ND | | | NC | 20 | |
| Boron | 32 | 10 | ug/L | 31 | | | 4.1 | 20 | |
| Cadmium | ND | 0.1 | ug/L | ND | | | NC | 20 | |
| Chromium (VI) | 63 | 10 | ug/L | 64 | | | 1.6 | 20 | |
| Chromium | ND | 1 | ug/L | ND | | | NC | 20 | |
| Cobalt | 7.74 | 0.5 | ug/L | 7.85 | | | 1.4 | 20 | |
| Copper | 2.11 | 0.5 | ug/L | 2.18 | | | 3.2 | 20 | |
| Lead | 0.17 | 0.1 | ug/L | ND | | | NC | 20 | |
| Molybdenum | 5.18 | 0.5 | ug/L | 5.10 | | | 1.5 | 20 | |
| Nickel | 6.5 | 1 | ug/L | 6.8 | | | 3.6 | 20 | |
| Selenium | ND | 1 | ug/L | ND | | | NC | 20 | |
| Silver | ND | 0.1 | ug/L | ND | | | NC | 20 | |
| Sodium | 354000 | 200 | ug/L | 380000 | | | 7.1 | 20 | |
| Thallium | 0.21 | 0.1 | ug/L | 0.15 | | | NC | 20 | |
| Uranium | 0.8 | 0.1 | ug/L | 0.8 | | | 1.2 | 20 | |
| Vanadium | ND | 0.5 | ug/L | ND | | | NC | 20 | |
| Zinc | ND | 5 | ug/L | ND | | | NC | 20 | |

Certificate of Analysis

Report Date: 07-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 1-Jun-2021

Client PO: 33034

Project Description: PE5267

Method Quality Control: Spike

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---------------|--------|-----------------|-------|---------------|------|------------|-----|-----------|-------|
| Metals | | | | | | | | | |
| Mercury | 3.31 | 0.1 | ug/L | ND | 110 | 70-130 | | | |
| Antimony | 52.1 | 0.5 | ug/L | ND | 104 | 80-120 | | | |
| Arsenic | 53.2 | 1 | ug/L | ND | 106 | 80-120 | | | |
| Barium | 272 | 1 | ug/L | 228 | 88.9 | 80-120 | | | |
| Beryllium | 42.9 | 0.5 | ug/L | ND | 85.8 | 80-120 | | | |
| Boron | 66 | 10 | ug/L | 31 | 71.2 | 80-120 | | | QM-07 |
| Cadmium | 45.7 | 0.1 | ug/L | ND | 91.3 | 80-120 | | | |
| Chromium (VI) | 257 | 10 | ug/L | 64 | 96.5 | 70-130 | | | |
| Chromium | 57.3 | 1 | ug/L | ND | 114 | 80-120 | | | |
| Cobalt | 60.7 | 0.5 | ug/L | 7.85 | 106 | 80-120 | | | |
| Copper | 51.0 | 0.5 | ug/L | 2.18 | 97.7 | 80-120 | | | |
| Lead | 39.1 | 0.1 | ug/L | ND | 78.1 | 80-120 | | | QM-07 |
| Molybdenum | 52.8 | 0.5 | ug/L | 5.10 | 95.4 | 80-120 | | | |
| Nickel | 56.8 | 1 | ug/L | 6.8 | 100 | 80-120 | | | |
| Selenium | 44.4 | 1 | ug/L | ND | 87.1 | 80-120 | | | |
| Silver | 45.7 | 0.1 | ug/L | ND | 91.5 | 80-120 | | | |
| Sodium | 8990 | 200 | ug/L | ND | 89.9 | 80-120 | | | |
| Thallium | 46.3 | 0.1 | ug/L | 0.15 | 92.3 | 80-120 | | | |
| Uranium | 44.1 | 0.1 | ug/L | 0.8 | 86.7 | 80-120 | | | |
| Vanadium | 59.1 | 0.5 | ug/L | ND | 118 | 80-120 | | | |
| Zinc | 45 | 5 | ug/L | ND | 82.9 | 80-120 | | | |

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 33034

Report Date: 07-Jun-2021

Order Date: 1-Jun-2021

Project Description: PE5267

Qualifier Notes:

QC Qualifiers :

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

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated



2123228

Nº 126671

| | | |
|----------------------------------|---|--|
| Client Name: <u>Paterson</u> | Project Ref: <u>PE5267</u> | Page <u>1</u> of <u>1</u> |
| Contact Name: <u>Karyn Munch</u> | Quote #: | Turnaround Time <input type="checkbox"/> 1 day <input type="checkbox"/> 3 day <input type="checkbox"/> 2 day <input checked="" type="checkbox"/> Regular |
| Address: <u>154 Colonnade Rd</u> | PO #: <u>33034</u> | |
| Telephone: <u>613-226-7381</u> | E-mail: <u>jcamposarcone@patersongroup.ca</u> <u>Kmunch@patersongroup.ca</u> | |
| | | Date Required: _____ |

| Regulation 153/04 | | Other Regulation | | Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other) | | Required Analysis | | | | | | | | | | | | | | | | | | | |
|---|---|------------------------------------|-------------------------------------|---|------------|-------------------|------------------|------|------|-----------------|------|------|---------------|----|------|---------|--|--|--|--|--|--|--|--|--|
| <input type="checkbox"/> Table 1 | <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/Fine | <input type="checkbox"/> REG 558 | <input type="checkbox"/> PWQO | Matrix | Air Volume | # of Containers | Sample Taken | Date | Time | PHCs F1-F4+BTEX | VOCs | PAHs | Metals by ICP | Hg | CrVI | B (HWS) | | | | | | | | | |
| <input type="checkbox"/> Table 2 | <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse | <input type="checkbox"/> CCME | <input type="checkbox"/> MISA | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> Table 3 | <input type="checkbox"/> Agri/Other | <input type="checkbox"/> SU - Sani | <input type="checkbox"/> SU - Storm | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> Table _____ For RSC: <input type="checkbox"/> Yes <input type="checkbox"/> No | | | | Mun: _____ | | Other: _____ | | | | | | | | | | | | | | | | | | | |
| Sample ID/Location Name | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | <u>DUP2</u> | | | <u>GW</u> | | <u>3</u> | <u>5/25/2021</u> | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | |
|---|---|--|--|
| Comments: | | Method of Delivery: <u>PARACEL COURIER</u> | |
| Relinquished By (Sign): <u>[Signature]</u> | Received By Driver/Depot: <u>A. DELOUSE</u> | Received at Lab: <u>Sinegorn</u> | Verified By: <u>[Signature]</u> |
| Relinquished By (Print): <u>Jeromy Camposarcone</u> | Date/Time: <u>01/06/21 3:20 PM</u> | Date/Time: <u>Jun 01, 2021 04:05</u> | Date/Time: <u>Jun 14, 2021 17:01</u> |
| Date/Time: <u>5/31/2021</u> | Temperature: _____ °C | Temperature: <u>13.6</u> °C | pH Verified: <input checked="" type="checkbox"/> By: <u>BS</u> |

Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Karyn Munch

Client PO: 32202
Project: PE5267
Custody: 131141

Report Date: 22-Jun-2021
Order Date: 16-Jun-2021

Order #: 2125366

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

| Paracel ID | Client ID |
|------------|------------|
| 2125366-01 | TP1-21-GS3 |
| 2125366-02 | TP2-21-GS4 |
| 2125366-03 | TP3-21-GS3 |
| 2125366-04 | TP4-21-GS2 |
| 2125366-05 | TP5-21-GS2 |
| 2125366-06 | TP6-21-GS5 |
| 2125366-09 | DUP3 |
| 2125366-10 | DUP4 |

Approved By:



Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 32202

Report Date: 22-Jun-2021

Order Date: 16-Jun-2021

Project Description: PE5267

Analysis Summary Table

| Analysis | Method Reference/Description | Extraction Date | Analysis Date |
|---------------------------------|---------------------------------------|-----------------|---------------|
| BTEX by P&T GC-MS | EPA 8260 - P&T GC-MS | 17-Jun-21 | 17-Jun-21 |
| Chromium, hexavalent - soil | MOE E3056 - Extraction, colourimetric | 17-Jun-21 | 18-Jun-21 |
| Mercury by CVAA | EPA 7471B - CVAA, digestion | 21-Jun-21 | 22-Jun-21 |
| PHC F1 | CWS Tier 1 - P&T GC-FID | 17-Jun-21 | 17-Jun-21 |
| PHCs F2 to F4 | CWS Tier 1 - GC-FID, extraction | 16-Jun-21 | 17-Jun-21 |
| REG 153: Metals by ICP/MS, soil | EPA 6020 - Digestion - ICP-MS | 18-Jun-21 | 18-Jun-21 |
| REG 153: PAHs by GC-MS | EPA 8270 - GC-MS, extraction | 17-Jun-21 | 21-Jun-21 |
| REG 153: VOCs by P&T GC/MS | EPA 8260 - P&T GC-MS | 17-Jun-21 | 17-Jun-21 |
| Solids, % | Gravimetric, calculation | 17-Jun-21 | 18-Jun-21 |

Certificate of Analysis

Report Date: 22-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Jun-2021

Client PO: 32202

Project Description: PE5267

| | | | | |
|---------------------|-----------------|-----------------|-----------------|-----------------|
| Client ID: | TP1-21-GS3 | TP2-21-GS4 | TP3-21-GS3 | TP4-21-GS2 |
| Sample Date: | 15-Jun-21 09:00 | 15-Jun-21 09:00 | 15-Jun-21 09:00 | 15-Jun-21 09:00 |
| Sample ID: | 2125366-01 | 2125366-02 | 2125366-03 | 2125366-04 |
| MDL/Units | Soil | Soil | Soil | Soil |

Physical Characteristics

| | | | | | |
|----------|--------------|------|------|------|------|
| % Solids | 0.1 % by Wt. | 93.3 | 90.3 | 87.7 | 94.9 |
|----------|--------------|------|------|------|------|

Metals

| | | | | | |
|---------------|---------------|---|------|------|------|
| Antimony | 1.0 ug/g dry | - | <1.0 | 2.1 | <1.0 |
| Arsenic | 1.0 ug/g dry | - | 3.2 | 22.3 | 3.9 |
| Barium | 1.0 ug/g dry | - | 190 | 181 | 149 |
| Beryllium | 0.5 ug/g dry | - | <0.5 | 0.7 | <0.5 |
| Boron | 5.0 ug/g dry | - | 8.7 | 6.9 | 7.1 |
| Cadmium | 0.5 ug/g dry | - | <0.5 | 3.1 | <0.5 |
| Chromium | 5.0 ug/g dry | - | 17.6 | 20.6 | 15.1 |
| Chromium (VI) | 0.2 ug/g dry | - | <0.2 | <0.2 | <0.2 |
| Cobalt | 1.0 ug/g dry | - | 4.9 | 7.4 | 4.9 |
| Copper | 5.0 ug/g dry | - | 11.4 | 51.5 | 11.3 |
| Lead | 1.0 ug/g dry | - | 11.1 | 270 | 17.8 |
| Mercury | 0.1 ug/g dry | - | <0.1 | 1.0 | 0.1 |
| Molybdenum | 1.0 ug/g dry | - | <1.0 | 2.3 | <1.0 |
| Nickel | 5.0 ug/g dry | - | 12.4 | 17.8 | 10.9 |
| Selenium | 1.0 ug/g dry | - | <1.0 | 4.3 | <1.0 |
| Silver | 0.3 ug/g dry | - | <0.3 | <0.3 | <0.3 |
| Thallium | 1.0 ug/g dry | - | <1.0 | <1.0 | <1.0 |
| Uranium | 1.0 ug/g dry | - | <1.0 | <1.0 | <1.0 |
| Vanadium | 10.0 ug/g dry | - | 20.1 | 26.4 | 22.5 |
| Zinc | 20.0 ug/g dry | - | 27.2 | 1680 | 48.6 |

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 | - | - | - |
| 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 | - | - | - |

Certificate of Analysis

Report Date: 22-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Jun-2021

Client PO: 32202

Project Description: PE5267

| | Client ID: | TP1-21-GS3 | TP2-21-GS4 | TP3-21-GS3 | TP4-21-GS2 |
|--|---------------|-----------------|-----------------|-----------------|-----------------|
| | Sample Date: | 15-Jun-21 09:00 | 15-Jun-21 09:00 | 15-Jun-21 09:00 | 15-Jun-21 09:00 |
| | Sample ID: | 2125366-01 | 2125366-02 | 2125366-03 | 2125366-04 |
| | MDL/Units | Soil | Soil | Soil | Soil |
| 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 | 118% | - | - | - |
| Dibromofluoromethane | Surrogate | 102% | - | - | - |
| Toluene-d8 | Surrogate | 118% | - | - | - |
| Benzene | 0.02 ug/g dry | - | <0.02 | - | - |
| Ethylbenzene | 0.05 ug/g dry | - | <0.05 | - | - |
| Toluene | 0.05 ug/g dry | - | <0.05 | - | - |

Certificate of Analysis

Report Date: 22-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Jun-2021

Client PO: 32202

Project Description: PE5267

| | Client ID: | TP1-21-GS3 | TP2-21-GS4 | TP3-21-GS3 | TP4-21-GS2 |
|----------------|---------------|-----------------|-----------------|-----------------|-----------------|
| | Sample Date: | 15-Jun-21 09:00 | 15-Jun-21 09:00 | 15-Jun-21 09:00 | 15-Jun-21 09:00 |
| | Sample ID: | 2125366-01 | 2125366-02 | 2125366-03 | 2125366-04 |
| | MDL/Units | Soil | Soil | Soil | Soil |
| 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 | - | 115% | - | - |

Hydrocarbons

| | | | | | |
|-------------------|------------|-----|----|---|---|
| F1 PHCs (C6-C10) | 7 ug/g dry | <7 | <7 | - | - |
| F2 PHCs (C10-C16) | 4 ug/g dry | 5 | 5 | - | - |
| F3 PHCs (C16-C34) | 8 ug/g dry | 386 | 24 | - | - |
| F4 PHCs (C34-C50) | 6 ug/g dry | 134 | 15 | - | - |

Semi-Volatiles

| | | | | | |
|--------------------------|---------------|---|-------|----------|---|
| Acenaphthene | 0.02 ug/g dry | - | <0.02 | 15.5 | - |
| Acenaphthylene | 0.02 ug/g dry | - | <0.02 | 1.43 | - |
| Anthracene | 0.02 ug/g dry | - | <0.02 | 34.0 | - |
| Benzo [a] anthracene | 0.02 ug/g dry | - | <0.02 | 50.9 | - |
| Benzo [a] pyrene | 0.02 ug/g dry | - | <0.02 | 48.5 | - |
| Benzo [b] fluoranthene | 0.02 ug/g dry | - | <0.02 | 43.0 | - |
| Benzo [g,h,i] perylene | 0.02 ug/g dry | - | <0.02 | 23.3 | - |
| Benzo [k] fluoranthene | 0.02 ug/g dry | - | <0.02 | 23.6 | - |
| Chrysene | 0.02 ug/g dry | - | <0.02 | 52.4 | - |
| Dibenzo [a,h] anthracene | 0.02 ug/g dry | - | <0.02 | 6.01 | - |
| Fluoranthene | 0.02 ug/g dry | - | <0.02 | 123 | - |
| Fluorene | 0.02 ug/g dry | - | <0.02 | 12.8 | - |
| Indeno [1,2,3-cd] pyrene | 0.02 ug/g dry | - | <0.02 | 21.1 | - |
| 1-Methylnaphthalene | 0.02 ug/g dry | - | <0.02 | 3.91 | - |
| 2-Methylnaphthalene | 0.02 ug/g dry | - | <0.02 | 5.39 | - |
| Methylnaphthalene (1&2) | 0.04 ug/g dry | - | <0.04 | 9.30 | - |
| Naphthalene | 0.01 ug/g dry | - | <0.01 | 9.72 | - |
| Phenanthrene | 0.02 ug/g dry | - | <0.02 | 123 | - |
| Pyrene | 0.02 ug/g dry | - | <0.02 | 97.6 | - |
| 2-Fluorobiphenyl | Surrogate | - | 72.1% | 114% | - |
| Terphenyl-d14 | Surrogate | - | 89.1% | 168% [5] | - |

Certificate of Analysis

Report Date: 22-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Jun-2021

Client PO: 32202

Project Description: PE5267

| | Client ID: | TP5-21-GS2 | TP6-21-GS5 | DUP3 | DUP4 |
|---------------------------------|---------------|-----------------|-----------------|-----------------|-----------------|
| | Sample Date: | 15-Jun-21 09:00 | 15-Jun-21 09:00 | 15-Jun-21 09:00 | 15-Jun-21 09:00 |
| | Sample ID: | 2125366-05 | 2125366-06 | 2125366-09 | 2125366-10 |
| | MDL/Units | Soil | Soil | Soil | Soil |
| Physical Characteristics | | | | | |
| % Solids | 0.1 % by Wt. | 90.4 | 90.5 | 89.0 | 93.4 |
| Metals | | | | | |
| Antimony | 1.0 ug/g dry | - | 2.0 | - | <1.0 |
| Arsenic | 1.0 ug/g dry | - | 5.0 | - | 3.2 |
| Barium | 1.0 ug/g dry | - | 90.9 | - | 121 |
| Beryllium | 0.5 ug/g dry | - | <0.5 | - | <0.5 |
| Boron | 5.0 ug/g dry | - | 9.3 | - | 5.5 |
| Cadmium | 0.5 ug/g dry | - | <0.5 | - | <0.5 |
| Chromium | 5.0 ug/g dry | - | 18.6 | - | 12.7 |
| Chromium (VI) | 0.2 ug/g dry | - | <0.2 | - | <0.2 |
| Cobalt | 1.0 ug/g dry | - | 5.2 | - | 4.3 |
| Copper | 5.0 ug/g dry | - | 25.8 | - | 10.5 |
| Lead | 1.0 ug/g dry | - | 136 | - | 17.8 |
| Mercury | 0.1 ug/g dry | - | 0.2 | - | 0.1 |
| Molybdenum | 1.0 ug/g dry | - | 2.3 | - | <1.0 |
| Nickel | 5.0 ug/g dry | - | 12.8 | - | 9.7 |
| 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 | - | 24.3 | - | 18.0 |
| Zinc | 20.0 ug/g dry | - | 161 | - | 47.7 |
| Semi-Volatiles | | | | | |
| Acenaphthene | 0.02 ug/g dry | 1.42 | <0.40 [1] | 11.0 | - |
| Acenaphthylene | 0.02 ug/g dry | 1.01 | 0.45 | 1.31 | - |
| Anthracene | 0.02 ug/g dry | 2.40 | 0.59 | 32.9 | - |
| Benzo [a] anthracene | 0.02 ug/g dry | 6.74 | 1.11 | 43.6 | - |
| Benzo [a] pyrene | 0.02 ug/g dry | 7.22 | 1.25 | 38.9 | - |
| Benzo [b] fluoranthene | 0.02 ug/g dry | 7.37 | 1.29 | 35.9 | - |
| Benzo [g,h,i] perylene | 0.02 ug/g dry | 3.95 | 0.81 | 18.5 | - |
| Benzo [k] fluoranthene | 0.02 ug/g dry | 4.47 | 0.59 | 19.2 | - |
| Chrysene | 0.02 ug/g dry | 7.59 | 1.41 | 44.0 | - |
| Dibenzo [a,h] anthracene | 0.02 ug/g dry | 1.07 | <0.40 [1] | 5.30 | - |
| Fluoranthene | 0.02 ug/g dry | 18.7 | 2.49 | 105 | - |
| Fluorene | 0.02 ug/g dry | 1.23 | <0.40 [1] | 15.7 | - |

Certificate of Analysis

Report Date: 22-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Jun-2021

Client PO: 32202

Project Description: PE5267

| | MDL/Units | Client ID: | TP5-21-GS2 | TP6-21-GS5 | DUP3 | DUP4 |
|--------------------------|---------------|--------------|-----------------|-----------------|-----------------|-----------------|
| | | Sample Date: | 15-Jun-21 09:00 | 15-Jun-21 09:00 | 15-Jun-21 09:00 | 15-Jun-21 09:00 |
| | | Sample ID: | 2125366-05 | 2125366-06 | 2125366-09 | 2125366-10 |
| | | | Soil | Soil | Soil | Soil |
| Indeno [1,2,3-cd] pyrene | 0.02 ug/g dry | | 3.61 | 0.67 | 17.0 | - |
| 1-Methylnaphthalene | 0.02 ug/g dry | | 1.96 | <0.40 [1] | 3.72 | - |
| 2-Methylnaphthalene | 0.02 ug/g dry | | 2.43 | <0.40 [1] | 5.42 | - |
| Methylnaphthalene (1&2) | 0.04 ug/g dry | | 4.39 | <0.80 [1] | 9.15 | - |
| Naphthalene | 0.01 ug/g dry | | 3.10 | 0.36 | 10.1 | - |
| Phenanthrene | 0.02 ug/g dry | | 15.7 | 2.18 | 115 | - |
| Pyrene | 0.02 ug/g dry | | 15.2 | 2.07 | 78.9 | - |
| 2-Fluorobiphenyl | Surrogate | | 85.1% | 88.5% | 70.5% | - |
| Terphenyl-d14 | Surrogate | | 103% | 122% | 87.1% | - |

Certificate of Analysis

Report Date: 22-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Jun-2021

Client PO: 32202

Project Description: PE5267

Method Quality Control: Blank

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|-----------------------------|--------|-----------------|-------|---------------|------|------------|-----|-----------|-------|
| Hydrocarbons | | | | | | | | | |
| F1 PHCs (C6-C10) | ND | 7 | ug/g | | | | | | |
| F2 PHCs (C10-C16) | ND | 4 | ug/g | | | | | | |
| F3 PHCs (C16-C34) | ND | 8 | ug/g | | | | | | |
| F4 PHCs (C34-C50) | ND | 6 | ug/g | | | | | | |
| Metals | | | | | | | | | |
| Antimony | ND | 1.0 | ug/g | | | | | | |
| Arsenic | ND | 1.0 | ug/g | | | | | | |
| Barium | ND | 1.0 | ug/g | | | | | | |
| Beryllium | ND | 0.5 | ug/g | | | | | | |
| Boron | ND | 5.0 | ug/g | | | | | | |
| Cadmium | ND | 0.5 | ug/g | | | | | | |
| Chromium (VI) | ND | 0.2 | ug/g | | | | | | |
| Chromium | ND | 5.0 | ug/g | | | | | | |
| Cobalt | ND | 1.0 | ug/g | | | | | | |
| Copper | ND | 5.0 | ug/g | | | | | | |
| Lead | ND | 1.0 | ug/g | | | | | | |
| Mercury | ND | 0.1 | ug/g | | | | | | |
| Molybdenum | ND | 1.0 | ug/g | | | | | | |
| Nickel | ND | 5.0 | ug/g | | | | | | |
| Selenium | ND | 1.0 | ug/g | | | | | | |
| Silver | ND | 0.3 | ug/g | | | | | | |
| Thallium | ND | 1.0 | ug/g | | | | | | |
| Uranium | ND | 1.0 | ug/g | | | | | | |
| Vanadium | ND | 10.0 | ug/g | | | | | | |
| Zinc | ND | 20.0 | ug/g | | | | | | |
| Semi-Volatiles | | | | | | | | | |
| Acenaphthene | ND | 0.02 | ug/g | | | | | | |
| Acenaphthylene | ND | 0.02 | ug/g | | | | | | |
| Anthracene | ND | 0.02 | ug/g | | | | | | |
| Benzo [a] anthracene | ND | 0.02 | ug/g | | | | | | |
| Benzo [a] pyrene | ND | 0.02 | ug/g | | | | | | |
| Benzo [b] fluoranthene | ND | 0.02 | ug/g | | | | | | |
| Benzo [g,h,i] perylene | ND | 0.02 | ug/g | | | | | | |
| Benzo [k] fluoranthene | ND | 0.02 | ug/g | | | | | | |
| Chrysene | ND | 0.02 | ug/g | | | | | | |
| Dibenzo [a,h] anthracene | ND | 0.02 | ug/g | | | | | | |
| Fluoranthene | ND | 0.02 | ug/g | | | | | | |
| Fluorene | ND | 0.02 | ug/g | | | | | | |
| Indeno [1,2,3-cd] pyrene | ND | 0.02 | ug/g | | | | | | |
| 1-Methylnaphthalene | ND | 0.02 | ug/g | | | | | | |
| 2-Methylnaphthalene | ND | 0.02 | ug/g | | | | | | |
| Methylnaphthalene (1&2) | ND | 0.04 | ug/g | | | | | | |
| Naphthalene | ND | 0.01 | ug/g | | | | | | |
| Phenanthrene | ND | 0.02 | ug/g | | | | | | |
| Pyrene | ND | 0.02 | ug/g | | | | | | |
| Surrogate: 2-Fluorobiphenyl | 1.23 | | ug/g | | 92.1 | 50-140 | | | |
| Surrogate: Terphenyl-d14 | 1.45 | | ug/g | | 109 | 50-140 | | | |
| Volatiles | | | | | | | | | |
| Acetone | ND | 0.50 | ug/g | | | | | | |
| Benzene | ND | 0.02 | ug/g | | | | | | |
| Bromodichloromethane | ND | 0.05 | ug/g | | | | | | |
| Bromoform | ND | 0.05 | ug/g | | | | | | |
| 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 | | | | | | |

Certificate of Analysis

Report Date: 22-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Jun-2021

Client PO: 32202

Project Description: PE5267

Method Quality Control: Blank

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---|--------|-----------------|-------|---------------|------|------------|-----|-----------|-------|
| 1,2-Dichlorobenzene | ND | 0.05 | ug/g | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.05 | ug/g | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.05 | ug/g | | | | | | |
| 1,1-Dichloroethane | ND | 0.05 | ug/g | | | | | | |
| 1,2-Dichloroethane | ND | 0.05 | ug/g | | | | | | |
| 1,1-Dichloroethylene | ND | 0.05 | ug/g | | | | | | |
| cis-1,2-Dichloroethylene | ND | 0.05 | ug/g | | | | | | |
| trans-1,2-Dichloroethylene | ND | 0.05 | ug/g | | | | | | |
| 1,2-Dichloropropane | ND | 0.05 | ug/g | | | | | | |
| cis-1,3-Dichloropropylene | ND | 0.05 | ug/g | | | | | | |
| trans-1,3-Dichloropropylene | ND | 0.05 | ug/g | | | | | | |
| 1,3-Dichloropropene, total | ND | 0.05 | ug/g | | | | | | |
| Ethylbenzene | ND | 0.05 | ug/g | | | | | | |
| Ethylene dibromide (dibromoethane, 1,2- | ND | 0.05 | ug/g | | | | | | |
| Hexane | ND | 0.05 | ug/g | | | | | | |
| Methyl Ethyl Ketone (2-Butanone) | ND | 0.50 | ug/g | | | | | | |
| Methyl Isobutyl Ketone | ND | 0.50 | ug/g | | | | | | |
| Methyl tert-butyl ether | ND | 0.05 | ug/g | | | | | | |
| Methylene Chloride | ND | 0.05 | ug/g | | | | | | |
| Styrene | ND | 0.05 | ug/g | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 0.05 | ug/g | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.05 | ug/g | | | | | | |
| Tetrachloroethylene | ND | 0.05 | ug/g | | | | | | |
| Toluene | ND | 0.05 | ug/g | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.05 | ug/g | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.05 | ug/g | | | | | | |
| Trichloroethylene | ND | 0.05 | ug/g | | | | | | |
| Trichlorofluoromethane | ND | 0.05 | ug/g | | | | | | |
| Vinyl chloride | ND | 0.02 | ug/g | | | | | | |
| m,p-Xylenes | ND | 0.05 | ug/g | | | | | | |
| o-Xylene | ND | 0.05 | ug/g | | | | | | |
| Xylenes, total | ND | 0.05 | ug/g | | | | | | |
| Surrogate: 4-Bromofluorobenzene | 9.26 | | ug/g | | 116 | 50-140 | | | |
| Surrogate: Dibromofluoromethane | 8.21 | | ug/g | | 103 | 50-140 | | | |
| Surrogate: Toluene-d8 | 9.27 | | ug/g | | 116 | 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 | 9.27 | | ug/g | | 116 | 50-140 | | | |

Certificate of Analysis

Report Date: 22-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Jun-2021

Client PO: 32202

Project Description: PE5267

Method Quality Control: Duplicate

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---------------------------------|--------|-----------------|----------|---------------|------|------------|------|-----------|-------|
| Hydrocarbons | | | | | | | | | |
| F1 PHCs (C6-C10) | ND | 7 | ug/g dry | ND | | | NC | 40 | |
| F2 PHCs (C10-C16) | ND | 4 | ug/g dry | ND | | | NC | 30 | |
| F3 PHCs (C16-C34) | 11 | 8 | ug/g dry | 14 | | | 27.8 | 30 | |
| F4 PHCs (C34-C50) | 15 | 6 | ug/g dry | 35 | | | NC | 30 | |
| Metals | | | | | | | | | |
| Antimony | ND | 1.0 | ug/g dry | ND | | | NC | 30 | |
| Arsenic | 3.1 | 1.0 | ug/g dry | 3.2 | | | 3.8 | 30 | |
| Barium | 295 | 1.0 | ug/g dry | 301 | | | 2.2 | 30 | |
| Beryllium | 1.1 | 0.5 | ug/g dry | 1.1 | | | 2.5 | 30 | |
| Boron | 13.4 | 5.0 | ug/g dry | 13.4 | | | 0.5 | 30 | |
| Cadmium | ND | 0.5 | ug/g dry | ND | | | NC | 30 | |
| Chromium (VI) | ND | 0.2 | ug/g dry | ND | | | NC | 35 | |
| Chromium | 49.8 | 5.0 | ug/g dry | 50.0 | | | 0.3 | 30 | |
| Cobalt | 15.5 | 1.0 | ug/g dry | 15.5 | | | 0.1 | 30 | |
| Copper | 27.4 | 5.0 | ug/g dry | 28.2 | | | 2.7 | 30 | |
| Lead | 10.3 | 1.0 | ug/g dry | 10.7 | | | 4.4 | 30 | |
| Mercury | ND | 0.1 | ug/g dry | ND | | | NC | 30 | |
| Molybdenum | ND | 1.0 | ug/g dry | ND | | | NC | 30 | |
| Nickel | 32.3 | 5.0 | ug/g dry | 32.5 | | | 0.7 | 30 | |
| Selenium | ND | 1.0 | ug/g dry | ND | | | NC | 30 | |
| Silver | ND | 0.3 | ug/g dry | ND | | | NC | 30 | |
| Thallium | ND | 1.0 | ug/g dry | ND | | | NC | 30 | |
| Uranium | ND | 1.0 | ug/g dry | ND | | | NC | 30 | |
| Vanadium | 63.7 | 10.0 | ug/g dry | 64.2 | | | 0.8 | 30 | |
| Zinc | 86.0 | 20.0 | ug/g dry | 89.6 | | | 4.1 | 30 | |
| Physical Characteristics | | | | | | | | | |
| % Solids | 83.7 | 0.1 | % by Wt. | 83.4 | | | 0.4 | 25 | |
| Semi-Volatiles | | | | | | | | | |
| Acenaphthene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| Acenaphthylene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| Anthracene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| Benzo [a] anthracene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| Benzo [a] pyrene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| Benzo [b] fluoranthene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| Benzo [g,h,i] perylene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| Benzo [k] fluoranthene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| Chrysene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| Dibenzo [a,h] anthracene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| Fluoranthene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| Fluorene | 0.068 | 0.02 | ug/g dry | 0.070 | | | 2.2 | 40 | |
| Indeno [1,2,3-cd] pyrene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| 1-Methylnaphthalene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| 2-Methylnaphthalene | ND | 0.02 | ug/g dry | ND | | | NC | 40 | |
| Naphthalene | ND | 0.01 | ug/g dry | ND | | | NC | 40 | |
| Phenanthrene | 0.088 | 0.02 | ug/g dry | 0.143 | | | NC | 40 | |
| Pyrene | 0.021 | 0.02 | ug/g dry | 0.020 | | | 1.1 | 40 | |
| Surrogate: 2-Fluorobiphenyl | 1.13 | | ug/g dry | | 67.8 | 50-140 | | | |
| Surrogate: Terphenyl-d14 | 1.49 | | ug/g dry | | 89.3 | 50-140 | | | |
| 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 | |

Certificate of Analysis

Report Date: 22-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Jun-2021

Client PO: 32202

Project Description: PE5267

Method Quality Control: Duplicate

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---|--------|-----------------|----------|---------------|------|------------|-----|-----------|-------|
| 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 | |
| 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 | 9.64 | | ug/g dry | | 112 | 50-140 | | | |
| Surrogate: Dibromofluoromethane | 9.03 | | ug/g dry | | 105 | 50-140 | | | |
| Surrogate: Toluene-d8 | 9.92 | | ug/g dry | | 115 | 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 | 9.92 | | ug/g dry | | 115 | 50-140 | | | |

Certificate of Analysis

Report Date: 22-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Jun-2021

Client PO: 32202

Project Description: PE5267

Method Quality Control: Spike

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|-----------------------------|--------|-----------------|-------|---------------|------|------------|-----|-----------|-------|
| Hydrocarbons | | | | | | | | | |
| F1 PHCs (C6-C10) | 192 | 7 | ug/g | ND | 96.0 | 80-120 | | | |
| F2 PHCs (C10-C16) | 75 | 4 | ug/g | ND | 80.4 | 60-140 | | | |
| F3 PHCs (C16-C34) | 249 | 8 | ug/g | 14 | 102 | 60-140 | | | |
| F4 PHCs (C34-C50) | 222 | 6 | ug/g | 35 | 128 | 60-140 | | | |
| Metals | | | | | | | | | |
| Antimony | 52.3 | 1.0 | ug/g | ND | 104 | 70-130 | | | |
| Arsenic | 53.3 | 1.0 | ug/g | 1.3 | 104 | 70-130 | | | |
| Barium | 181 | 1.0 | ug/g | 121 | 122 | 70-130 | | | |
| Beryllium | 54.4 | 0.5 | ug/g | 0.5 | 108 | 70-130 | | | |
| Boron | 53.5 | 5.0 | ug/g | 5.4 | 96.3 | 70-130 | | | |
| Cadmium | 51.1 | 0.5 | ug/g | ND | 102 | 70-130 | | | |
| Chromium (VI) | 0.1 | 0.2 | ug/g | ND | 67.0 | 70-130 | | | QM-05 |
| Chromium | 74.5 | 5.0 | ug/g | 20.0 | 109 | 70-130 | | | |
| Cobalt | 59.0 | 1.0 | ug/g | 6.2 | 106 | 70-130 | | | |
| Copper | 62.3 | 5.0 | ug/g | 11.3 | 102 | 70-130 | | | |
| Lead | 46.6 | 1.0 | ug/g | 4.3 | 84.7 | 70-130 | | | |
| Mercury | 1.62 | 0.1 | ug/g | ND | 108 | 70-130 | | | |
| Molybdenum | 52.8 | 1.0 | ug/g | ND | 105 | 70-130 | | | |
| Nickel | 65.1 | 5.0 | ug/g | 13.0 | 104 | 70-130 | | | |
| Selenium | 49.9 | 1.0 | ug/g | ND | 99.4 | 70-130 | | | |
| Silver | 39.4 | 0.3 | ug/g | ND | 78.8 | 70-130 | | | |
| Thallium | 52.0 | 1.0 | ug/g | ND | 104 | 70-130 | | | |
| Uranium | 46.5 | 1.0 | ug/g | ND | 92.5 | 70-130 | | | |
| Vanadium | 81.0 | 10.0 | ug/g | 25.7 | 111 | 70-130 | | | |
| Zinc | 85.4 | 20.0 | ug/g | 35.8 | 99.1 | 70-130 | | | |
| Semi-Volatiles | | | | | | | | | |
| Acenaphthene | 0.117 | 0.02 | ug/g | ND | 56.4 | 50-140 | | | |
| Acenaphthylene | 0.107 | 0.02 | ug/g | ND | 51.3 | 50-140 | | | |
| Anthracene | 0.122 | 0.02 | ug/g | ND | 58.6 | 50-140 | | | |
| Benzo [a] anthracene | 0.118 | 0.02 | ug/g | ND | 56.7 | 50-140 | | | |
| Benzo [a] pyrene | 0.149 | 0.02 | ug/g | ND | 89.5 | 50-140 | | | |
| Benzo [b] fluoranthene | 0.113 | 0.02 | ug/g | ND | 54.2 | 50-140 | | | |
| Benzo [g,h,i] perylene | 0.109 | 0.02 | ug/g | ND | 52.2 | 50-140 | | | |
| Benzo [k] fluoranthene | 0.115 | 0.02 | ug/g | ND | 55.2 | 50-140 | | | |
| Chrysene | 0.128 | 0.02 | ug/g | ND | 61.5 | 50-140 | | | |
| Dibenzo [a,h] anthracene | 0.128 | 0.02 | ug/g | ND | 61.6 | 50-140 | | | |
| Fluoranthene | 0.112 | 0.02 | ug/g | ND | 53.9 | 50-140 | | | |
| Fluorene | 0.181 | 0.02 | ug/g | 0.070 | 53.6 | 50-140 | | | |
| Indeno [1,2,3-cd] pyrene | 0.106 | 0.02 | ug/g | ND | 50.7 | 50-140 | | | |
| 1-Methylnaphthalene | 0.145 | 0.02 | ug/g | ND | 69.5 | 50-140 | | | |
| 2-Methylnaphthalene | 0.140 | 0.02 | ug/g | ND | 67.2 | 50-140 | | | |
| Naphthalene | 0.156 | 0.01 | ug/g | ND | 74.8 | 50-140 | | | |
| Phenanthrene | 0.276 | 0.02 | ug/g | 0.143 | 63.5 | 50-140 | | | |
| Pyrene | 0.127 | 0.02 | ug/g | 0.020 | 51.0 | 50-140 | | | |
| Surrogate: 2-Fluorobiphenyl | 1.07 | | ug/g | | 64.0 | 50-140 | | | |
| Surrogate: Terphenyl-d14 | 1.33 | | ug/g | | 79.6 | 50-140 | | | |
| Volatiles | | | | | | | | | |
| Acetone | 9.56 | 0.50 | ug/g | ND | 95.6 | 50-140 | | | |

Certificate of Analysis

Report Date: 22-Jun-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Jun-2021

Client PO: 32202

Project Description: PE5267

Method Quality Control: Spike

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---|--------|-----------------|-------|---------------|------|------------|-----|-----------|-------|
| Benzene | 4.49 | 0.02 | ug/g | ND | 112 | 60-130 | | | |
| Bromodichloromethane | 4.37 | 0.05 | ug/g | ND | 109 | 60-130 | | | |
| Bromoform | 4.42 | 0.05 | ug/g | ND | 110 | 60-130 | | | |
| Bromomethane | 4.66 | 0.05 | ug/g | ND | 117 | 50-140 | | | |
| Carbon Tetrachloride | 4.31 | 0.05 | ug/g | ND | 108 | 60-130 | | | |
| Chlorobenzene | 4.07 | 0.05 | ug/g | ND | 102 | 60-130 | | | |
| Chloroform | 4.56 | 0.05 | ug/g | ND | 114 | 60-130 | | | |
| Dibromochloromethane | 4.23 | 0.05 | ug/g | ND | 106 | 60-130 | | | |
| Dichlorodifluoromethane | 4.66 | 0.05 | ug/g | ND | 116 | 50-140 | | | |
| 1,2-Dichlorobenzene | 3.93 | 0.05 | ug/g | ND | 98.3 | 60-130 | | | |
| 1,3-Dichlorobenzene | 4.10 | 0.05 | ug/g | ND | 102 | 60-130 | | | |
| 1,4-Dichlorobenzene | 4.08 | 0.05 | ug/g | ND | 102 | 60-130 | | | |
| 1,1-Dichloroethane | 4.56 | 0.05 | ug/g | ND | 114 | 60-130 | | | |
| 1,2-Dichloroethane | 4.45 | 0.05 | ug/g | ND | 111 | 60-130 | | | |
| 1,1-Dichloroethylene | 4.60 | 0.05 | ug/g | ND | 115 | 60-130 | | | |
| cis-1,2-Dichloroethylene | 4.25 | 0.05 | ug/g | ND | 106 | 60-130 | | | |
| trans-1,2-Dichloroethylene | 4.40 | 0.05 | ug/g | ND | 110 | 60-130 | | | |
| 1,2-Dichloropropane | 4.42 | 0.05 | ug/g | ND | 110 | 60-130 | | | |
| cis-1,3-Dichloropropylene | 3.96 | 0.05 | ug/g | ND | 98.9 | 60-130 | | | |
| trans-1,3-Dichloropropylene | 3.88 | 0.05 | ug/g | ND | 97.1 | 60-130 | | | |
| Ethylbenzene | 4.56 | 0.05 | ug/g | ND | 114 | 60-130 | | | |
| Ethylene dibromide (dibromoethane, 1,2- | 4.36 | 0.05 | ug/g | ND | 109 | 60-130 | | | |
| Hexane | 4.85 | 0.05 | ug/g | ND | 121 | 60-130 | | | |
| Methyl Ethyl Ketone (2-Butanone) | 10.2 | 0.50 | ug/g | ND | 102 | 50-140 | | | |
| Methyl Isobutyl Ketone | 10.4 | 0.50 | ug/g | ND | 104 | 50-140 | | | |
| Methyl tert-butyl ether | 10.9 | 0.05 | ug/g | ND | 109 | 50-140 | | | |
| Methylene Chloride | 4.50 | 0.05 | ug/g | ND | 113 | 60-130 | | | |
| Styrene | 4.39 | 0.05 | ug/g | ND | 110 | 60-130 | | | |
| 1,1,1,2-Tetrachloroethane | 4.57 | 0.05 | ug/g | ND | 114 | 60-130 | | | |
| 1,1,2,2-Tetrachloroethane | 4.34 | 0.05 | ug/g | ND | 109 | 60-130 | | | |
| Tetrachloroethylene | 4.23 | 0.05 | ug/g | ND | 106 | 60-130 | | | |
| Toluene | 4.50 | 0.05 | ug/g | ND | 112 | 60-130 | | | |
| 1,1,1-Trichloroethane | 4.72 | 0.05 | ug/g | ND | 118 | 60-130 | | | |
| 1,1,2-Trichloroethane | 4.34 | 0.05 | ug/g | ND | 108 | 60-130 | | | |
| Trichloroethylene | 4.55 | 0.05 | ug/g | ND | 114 | 60-130 | | | |
| Trichlorofluoromethane | 4.25 | 0.05 | ug/g | ND | 106 | 50-140 | | | |
| Vinyl chloride | 4.24 | 0.02 | ug/g | ND | 106 | 50-140 | | | |
| m,p-Xylenes | 8.96 | 0.05 | ug/g | ND | 112 | 60-130 | | | |
| o-Xylene | 4.20 | 0.05 | ug/g | ND | 105 | 60-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 7.93 | | ug/g | | 99.2 | 50-140 | | | |
| Surrogate: Dibromofluoromethane | 8.46 | | ug/g | | 106 | 50-140 | | | |
| Surrogate: Toluene-d8 | 7.83 | | ug/g | | 97.9 | 50-140 | | | |
| Benzene | 4.49 | 0.02 | ug/g | ND | 112 | 60-130 | | | |
| Ethylbenzene | 4.56 | 0.05 | ug/g | ND | 114 | 60-130 | | | |
| Toluene | 4.50 | 0.05 | ug/g | ND | 112 | 60-130 | | | |
| m,p-Xylenes | 8.96 | 0.05 | ug/g | ND | 112 | 60-130 | | | |
| o-Xylene | 4.20 | 0.05 | ug/g | ND | 105 | 60-130 | | | |
| Surrogate: Toluene-d8 | 7.83 | | ug/g | | 97.9 | 50-140 | | | |

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 32202

Report Date: 22-Jun-2021

Order Date: 16-Jun-2021

Project Description: PE5267

Qualifier Notes:

Sample Qualifiers :

- 1 : Elevated detection limits due to the nature of the sample matrix.
- 5 : The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference's.

QC Qualifiers :

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

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.

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

CCME PHC additional information:

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



Subcontracted Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Karyn Munch

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

Paracel Report No **2125366**

Client Project(s): **PE5267**

Client PO: **32202**

Reference: **Standing Offer**

CoC Number: **131141**

Order Date: 16-Jun-21
Report Date: 22-Jun-21

Sample(s) from this project were subcontracted for the listed parameters. A copy of the subcontractor's report is attached

| Paracel ID | Client ID | Analysis |
|------------|------------|-----------------------|
| 2125366-07 | TP7-21-GS6 | Methyl Mercury - soil |
| 2125366-08 | TP8-21-GS5 | Methyl Mercury - soil |



PARACEL LABORATORIES LTD (Ottawa-
London-Kingston)
ATTN: Mark Foto
360 York Road, Unit 16B
Niagara-on-the-lake ON K1G 4J8

Date Received: 17-JUN-21
Report Date: 09-JUL-21 08:10 (MT)
Version: FINAL

Client Phone: 905-682-9300

Certificate of Analysis

Lab Work Order #: L2603660
Project P.O. #: NOT SUBMITTED
Job Reference: 2125366
C of C Numbers:
Legal Site Desc:

Costas Farassoglou
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 190 Colonnade Road, Unit 7, Ottawa, ON K2E 7J5 Canada | Phone: +1 613 225 8279 | Fax: +1 613 225 2801
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|--------|--------------------------------|---------------------------------|
| MEHG-GCAF-VA | Soil | Methylmercury in Soil by GCAFS | DeWild et al. (2004) |
| This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes. The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolyzed to elemental Hg and quantified by cold vapour atomic fluorescence spectroscopy. Results are reported "as MeHg". | | | |
| MOISTURE-VA | Soil | Moisture content | CCME PHC in Soil - Tier 1 (mod) |
| This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of two hours. | | | |

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

| Laboratory Definition Code | Laboratory Location |
|----------------------------|---|
| VA | ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA |

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS
Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg ww - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2603660

Report Date: 09-JUL-21

Page 1 of 2

Client: PARACEL LABORATORIES LTD (Ottawa-London-Kingston)
360 York Road, Unit 16B
Niagara-on-the-lake ON K1G 4J8

Contact: Mark Foto

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|-------------------------|-----------------|--------------------|-----------|-----------|-----------|-----|---------|-----------|
| MEHG-GCAF-VA | | Soil | | | | | | |
| Batch | R5516044 | | | | | | | |
| WG3569426-2 CRM | | SQC-MEHG-RM | | | | | | |
| Methylmercury (as MeHg) | | | 108.1 | | % | | 70-130 | 07-JUL-21 |
| WG3569426-4 DUP | | L2603537-1 | | | | | | |
| Methylmercury (as MeHg) | | <0.000050 | <0.000050 | RPD-NA | mg/kg | N/A | 30 | 07-JUL-21 |
| WG3569426-3 LCS | | | | | | | | |
| Methylmercury (as MeHg) | | | 90.3 | | % | | 70-130 | 07-JUL-21 |
| WG3569426-1 MB | | | | | | | | |
| Methylmercury (as MeHg) | | | <0.000050 | | mg/kg wwt | | 0.00005 | 07-JUL-21 |
| MOISTURE-VA | | Soil | | | | | | |
| Batch | R5513422 | | | | | | | |
| WG3569897-3 DUP | | L2603537-1 | | | | | | |
| Moisture | | 23.2 | 23.0 | | % | 0.7 | 20 | 06-JUL-21 |
| WG3569897-2 LCS | | | | | | | | |
| Moisture | | | 100.1 | | % | | 90-110 | 06-JUL-21 |
| WG3569897-1 MB | | | | | | | | |
| Moisture | | | <0.25 | | % | | 0.25 | 06-JUL-21 |

Quality Control Report

Workorder: L2603660

Report Date: 09-JUL-21

Client: PARACEL LABORATORIES LTD (Ottawa-London-Kingston)
360 York Road, Unit 16B
Niagara-on-the-lake ON K1G 4J8
Contact: Mark Foto

Page 2 of 2

Legend:

| | |
|-------|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

Sample Parameter Qualifier Definitions:

| Qualifier | Description |
|-----------|---|
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Subcontract Order

L2603660-8

SENDING LABORATORY:

Paracel Laboratories Ltd.
300-2319 St. Laurent Blvd.
Ottawa, ON K1G 4J8
Phone: 613-731-9577
Fax: 613-731-9064

RECEIVING LABORATORY:

ALS Laboratory Group (Ottawa)
7-190 Colonnade Rd
Ottawa, ON K2E7J5
Phone: (613) 225-8279
Fax: (613) 225-2801

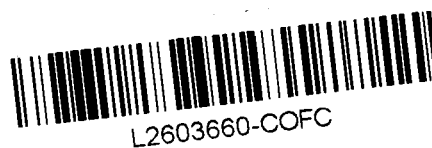
INVOICE TO:

Paracel Laboratories Ltd.
300-2319 St. Laurent Blvd.
Ottawa, ON K1G 4J8
Phone: 613-731-9577
Fax: 613-731-9064

Date Requested: **16-Jun-21**
Project Number: **2125366**
Submitted By: **Bernice Samuel**

| | |
|---------------------|-----------|
| Required Regulation | Reg 153/3 |
| Turnaround Time | Standard |

| Sample ID | Matrix | Analyses Requested: | Sampled | Comments |
|------------|--------|------------------------------------|-----------------|----------|
| TP7-21-GS6 | Soil | Solids, % Methyl Mercury - soil | 15-Jun-21 09:00 | |
| TP8-21-GS5 | Soil | Solids, % Methyl Mercury - soil | 15-Jun-21 09:00 | |



Please email all results to mfoto@paracellabs.com, dbloom@paracellabs.com, drobertson@paracellabs.com

Released By: [Signature] Date / Time: Jun 17 2021 18:40
Received By: Costa F. Date: 6/17/21
Temperature prior to Shipping: 7.1°C
10.0°C
→ ICE PACK
10:30 AM

Subcontracted Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Karyn Munch

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

Paracel Report No. **2126129**

Client Project(s): **PE5267**

Client PO: **32203**

Reference: **Standing Offer**

CoC Number: **131142**

Order Date: 21-Jun-21
Report Date: 21-Jul-21

Sample(s) from this project were subcontracted for the listed parameters. A copy of the subcontractor's report is attached

| Paracel ID | Client ID | Analysis |
|------------|------------|-----------------------|
| 2126129-01 | TP1-21-GS4 | Methyl Mercury - soil |



PARACEL LABORATORIES LTD (Ottawa-
London-Kingston)
ATTN: Mark Foto
360 York Road, Unit 16B
Niagara-on-the-lake ON K1G 4J8

Date Received: 22-JUN-21
Report Date: 21-JUL-21 07:09 (MT)
Version: FINAL

Client Phone: 905-682-9300

Certificate of Analysis

Lab Work Order #: L2604653
Project P.O. #: NOT SUBMITTED
Job Reference: 2126129
C of C Numbers:
Legal Site Desc:

Costas Farassoglou
Account Manager

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ADDRESS: 190 Colonnade Road, Unit 7, Ottawa, ON K2E 7J5 Canada | Phone: +1 613 225 8279 | Fax: +1 613 225 2801
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Reference Information

Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|--------|--------------------------------|---------------------------------|
| MEHG-GCAF-VA | Soil | Methylmercury in Soil by GCAFS | DeWild et al. (2004) |
| This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes. The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolyzed to elemental Hg and quantified by cold vapour atomic fluorescence spectroscopy. Results are reported "as MeHg". | | | |
| MOISTURE-VA | Soil | Moisture content | CCME PHC in Soil - Tier 1 (mod) |
| This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of two hours. | | | |

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

| Laboratory Definition Code | Laboratory Location |
|----------------------------|---|
| VA | ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA |

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS
Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg ww - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2604653

Report Date: 21-JUL-21

Page 1 of 3

Client: PARACEL LABORATORIES LTD (Ottawa-London-Kingston)
360 York Road, Unit 16B
Niagara-on-the-lake ON K1G 4J8

Contact: Mark Foto

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|-------------------------|-----------------|--------------------|-----------|-----------|-----------|-----|---------|-----------|
| MEHG-GCAF-VA | | Soil | | | | | | |
| Batch | R5525345 | | | | | | | |
| WG3577033-2 | CRM | SQC-MEHG-RM | | | | | | |
| Methylmercury (as MeHg) | | | 111.1 | | % | | 70-130 | 19-JUL-21 |
| WG3577033-3 | LCS | | | | | | | |
| Methylmercury (as MeHg) | | | 94.5 | | % | | 70-130 | 16-JUL-21 |
| WG3577033-1 | MB | | | | | | | |
| Methylmercury (as MeHg) | | | <0.000050 | | mg/kg wwt | | 0.00005 | 16-JUL-21 |
| MOISTURE-VA | | Soil | | | | | | |
| Batch | R5513422 | | | | | | | |
| WG3569897-3 | DUP | L2603537-1 | | | | | | |
| Moisture | | 23.2 | 23.0 | | % | 0.7 | 20 | 06-JUL-21 |
| WG3569897-2 | LCS | | | | | | | |
| Moisture | | | 100.1 | | % | | 90-110 | 06-JUL-21 |
| WG3569897-1 | MB | | | | | | | |
| Moisture | | | <0.25 | | % | | 0.25 | 06-JUL-21 |

Quality Control Report

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360 York Road, Unit 16B
Niagara-on-the-lake ON K1G 4J8

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Contact: Mark Foto

Legend:

| | |
|-------|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

Quality Control Report

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Report Date: 21-JUL-21

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360 York Road, Unit 16B
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Contact: Mark Foto

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Hold Time Exceedances:

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|--------------------------------|-----------|-----------------|-----------------|---------|-----------|-------|-----------|
| Speciated Metals | | | | | | | |
| Methylmercury in Soil by GCAFS | 1 | 15-JUN-21 09:00 | 15-JUL-21 17:00 | 28 | 30 | days | EHT |

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2604653 were received on 22-JUN-21 14:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Subcontract Order

SENDING LABORATORY:

Paracel Laboratories Ltd.
300-2319 St. Laurent Blvd.
Ottawa, ON K1G 4J8
Phone: 613-731-9577
Fax: 613-731-9064

RECEIVING LABORATORY:

ALS Laboratory Group (Vancouver)
8081 Lougheed Highway
Burnaby, BC V5A 1W9
Phone: (604) 253-4188
Fax:

INVOICE TO:

Paracel Laboratories Ltd.
300-2319 St. Laurent Blvd.
Ottawa, ON K1G 4J8
Phone: 613-731-9577
Fax: 613-731-9064

Date Requested: **22-Jun-21**
Project Number: **2126129**
Submitted By: **Donna Garner**

| | |
|---------------------|---------|
| Required Regulation | RG153 |
| Turnaround Time | Regular |

| Sample ID | Matrix | Analyses Requested: | Sampled | Comments |
|------------|--------|-----------------------|-----------------|----------|
| TP1-21-GS4 | Soil | Methyl Mercury - soil | 15-Jun-21 09:00 | |

L2604653



L2604653-COFC

HL 06/23/21 9am 11.7 melted ice packs

Please email all results to mfoto@paracellabs.com, dbloom@paracellabs.com, drobertson@paracellabs.com

Released By: *[Signature]* Date / Time: Jun 22 2021 11:50 Received By: *[Signature]* Date: 6/22/21
Temperature prior to Shipping: 7.6°C 10.1°C 14:00

Certificate of Analysis

Paterson Group Consulting Engineers

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

Client PO: 32061
Project: PE5267
Custody: 131493

Report Date: 27-May-2021
Order Date: 20-May-2021

Order #: 2121586

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

| Paracel ID | Client ID |
|------------|--------------|
| 2121586-01 | BH1-21-SS3 |
| 2121586-02 | BH1-21-SS5/6 |
| 2121586-03 | BH2-21-SS4 |
| 2121586-04 | BH3-21-SS2 |
| 2121586-05 | BH3-21-SS4/5 |
| 2121586-06 | BH4-21-SS2 |
| 2121586-07 | DUP |

Approved By:



Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Client: **Paterson Group Consulting Engineers**

Client PO: **32061**

Report Date: 27-May-2021

Order Date: 20-May-2021

Project Description: **PE5267**

Analysis Summary Table

| Analysis | Method Reference/Description | Extraction Date | Analysis Date |
|---------------------------------|--|-----------------|---------------|
| BTEX by P&T GC-MS | EPA 8260 - P&T GC-MS | 21-May-21 | 22-May-21 |
| Chromium, hexavalent - soil | MOE E3056 - Extraction, colourimetric | 21-May-21 | 26-May-21 |
| Mercury by CVAA | EPA 7471B - CVAA, digestion | 27-May-21 | 27-May-21 |
| pH, soil | EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext. | 21-May-21 | 25-May-21 |
| PHC F1 | CWS Tier 1 - P&T GC-FID | 21-May-21 | 22-May-21 |
| PHCs F2 to F4 | CWS Tier 1 - GC-FID, extraction | 21-May-21 | 22-May-21 |
| REG 153: Metals by ICP/MS, soil | EPA 6020 - Digestion - ICP-MS | 25-May-21 | 25-May-21 |
| REG 153: PAHs by GC-MS | EPA 8270 - GC-MS, extraction | 22-May-21 | 26-May-21 |
| Solids, % | Gravimetric, calculation | 25-May-21 | 25-May-21 |

Certificate of Analysis

Report Date: 27-May-2021

Client: Paterson Group Consulting Engineers

Order Date: 20-May-2021

Client PO: 32061

Project Description: PE5267

| | | | | | |
|--|---------------------|-----------------|-----------------|-----------------|-----------------|
| | Client ID: | BH1-21-SS3 | BH1-21-SS5/6 | BH2-21-SS4 | BH3-21-SS2 |
| | Sample Date: | 14-May-21 09:00 | 14-May-21 09:00 | 17-May-21 09:00 | 17-May-21 09:00 |
| | Sample ID: | 2121586-01 | 2121586-02 | 2121586-03 | 2121586-04 |
| | MDL/Units | Soil | Soil | Soil | Soil |

Physical Characteristics

| | | | | | |
|----------|--------------|------|------|------|------|
| % Solids | 0.1 % by Wt. | 91.9 | 89.4 | 83.8 | 92.5 |
|----------|--------------|------|------|------|------|

General Inorganics

| | | | | | |
|----|---------------|---|---|---|------|
| pH | 0.05 pH Units | - | - | - | 8.57 |
|----|---------------|---|---|---|------|

Metals

| | | | | | |
|---------------|---------------|---|------|------|---|
| Antimony | 1.0 ug/g dry | - | 2.0 | 1.5 | - |
| Arsenic | 1.0 ug/g dry | - | 4.5 | 7.4 | - |
| Barium | 1.0 ug/g dry | - | 584 | 159 | - |
| Beryllium | 0.5 ug/g dry | - | <0.5 | <0.5 | - |
| Boron | 5.0 ug/g dry | - | 19.0 | 8.8 | - |
| Cadmium | 0.5 ug/g dry | - | <0.5 | 0.8 | - |
| Chromium | 5.0 ug/g dry | - | 22.6 | 24.1 | - |
| Chromium (VI) | 0.2 ug/g dry | - | <0.2 | <0.2 | - |
| Cobalt | 1.0 ug/g dry | - | 5.2 | 6.0 | - |
| Copper | 5.0 ug/g dry | - | 17.3 | 43.2 | - |
| Lead | 1.0 ug/g dry | - | 61.9 | 212 | - |
| Mercury | 0.1 ug/g dry | - | 0.2 | 1.3 | - |
| Molybdenum | 1.0 ug/g dry | - | 2.4 | 1.2 | - |
| Nickel | 5.0 ug/g dry | - | 11.6 | 14.8 | - |
| 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 | - | 28.7 | 25.6 | - |
| Zinc | 20.0 ug/g dry | - | 261 | 271 | - |

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 | 116% | - | - | 116% |

Hydrocarbons

| | | | | | |
|-------------------|------------|----|---|---|----|
| F1 PHCs (C6-C10) | 7 ug/g dry | <7 | - | - | <7 |
| F2 PHCs (C10-C16) | 4 ug/g dry | <4 | - | - | 7 |

Certificate of Analysis

Report Date: 27-May-2021

Client: Paterson Group Consulting Engineers

Order Date: 20-May-2021

Client PO: 32061

Project Description: PE5267

| | Client ID: | BH1-21-SS3 | BH1-21-SS5/6 | BH2-21-SS4 | BH3-21-SS2 |
|-------------------|--------------|-----------------|-----------------|-----------------|-----------------|
| | Sample Date: | 14-May-21 09:00 | 14-May-21 09:00 | 17-May-21 09:00 | 17-May-21 09:00 |
| | Sample ID: | 2121586-01 | 2121586-02 | 2121586-03 | 2121586-04 |
| | MDL/Units | Soil | Soil | Soil | Soil |
| F3 PHCs (C16-C34) | 8 ug/g dry | 43 | - | - | 53 |
| F4 PHCs (C34-C50) | 6 ug/g dry | 29 | - | - | 37 |

Semi-Volatiles

| | | | | | |
|--------------------------|---------------|---|-------|-------|---|
| Acenaphthene | 0.02 ug/g dry | - | 0.27 | <0.02 | - |
| Acenaphthylene | 0.02 ug/g dry | - | 0.23 | 0.15 | - |
| Anthracene | 0.02 ug/g dry | - | 0.75 | 0.11 | - |
| Benzo [a] anthracene | 0.02 ug/g dry | - | 1.50 | 0.24 | - |
| Benzo [a] pyrene | 0.02 ug/g dry | - | 1.38 | 0.35 | - |
| Benzo [b] fluoranthene | 0.02 ug/g dry | - | 1.29 | 0.31 | - |
| Benzo [g,h,i] perylene | 0.02 ug/g dry | - | 0.70 | 0.25 | - |
| Benzo [k] fluoranthene | 0.02 ug/g dry | - | 0.75 | 0.16 | - |
| Chrysene | 0.02 ug/g dry | - | 1.44 | 0.22 | - |
| Dibenzo [a,h] anthracene | 0.02 ug/g dry | - | 0.11 | 0.06 | - |
| Fluoranthene | 0.02 ug/g dry | - | 2.89 | 0.39 | - |
| Fluorene | 0.02 ug/g dry | - | 0.26 | <0.02 | - |
| Indeno [1,2,3-cd] pyrene | 0.02 ug/g dry | - | 0.66 | 0.22 | - |
| 1-Methylnaphthalene | 0.02 ug/g dry | - | 0.13 | <0.02 | - |
| 2-Methylnaphthalene | 0.02 ug/g dry | - | 0.16 | 0.03 | - |
| Methylnaphthalene (1&2) | 0.04 ug/g dry | - | 0.29 | <0.04 | - |
| Naphthalene | 0.01 ug/g dry | - | 0.21 | 0.04 | - |
| Phenanthrene | 0.02 ug/g dry | - | 2.78 | 0.23 | - |
| Pyrene | 0.02 ug/g dry | - | 2.32 | 0.36 | - |
| 2-Fluorobiphenyl | Surrogate | - | 97.7% | 78.9% | - |
| Terphenyl-d14 | Surrogate | - | 121% | 103% | - |

Certificate of Analysis

Report Date: 27-May-2021

Client: Paterson Group Consulting Engineers

Order Date: 20-May-2021

Client PO: 32061

Project Description: PE5267

| | | | | |
|--------------|-----------------|-----------------|-----------------|---|
| Client ID: | BH3-21-SS4/5 | BH4-21-SS2 | DUP | - |
| Sample Date: | 17-May-21 09:00 | 17-May-21 09:00 | 17-May-21 09:00 | - |
| Sample ID: | 2121586-05 | 2121586-06 | 2121586-07 | - |
| MDL/Units | Soil | Soil | Soil | - |

Physical Characteristics

| | | | | | |
|----------|--------------|------|------|------|---|
| % Solids | 0.1 % by Wt. | 84.9 | 93.1 | 84.9 | - |
|----------|--------------|------|------|------|---|

Metals

| | | | | | |
|---------------|---------------|------|------|------|---|
| Antimony | 1.0 ug/g dry | <1.0 | <1.0 | <1.0 | - |
| Arsenic | 1.0 ug/g dry | 6.2 | 2.7 | 5.2 | - |
| Barium | 1.0 ug/g dry | 150 | 106 | 132 | - |
| Beryllium | 0.5 ug/g dry | 0.5 | <0.5 | 0.5 | - |
| Boron | 5.0 ug/g dry | 8.4 | 5.5 | 6.8 | - |
| Cadmium | 0.5 ug/g dry | <0.5 | <0.5 | <0.5 | - |
| Chromium | 5.0 ug/g dry | 25.7 | 16.0 | 24.2 | - |
| Chromium (VI) | 0.2 ug/g dry | <0.2 | <0.2 | <0.2 | - |
| Cobalt | 1.0 ug/g dry | 5.7 | 5.4 | 5.2 | - |
| Copper | 5.0 ug/g dry | 16.3 | 20.9 | 15.9 | - |
| Lead | 1.0 ug/g dry | 72.4 | 21.8 | 78.1 | - |
| Mercury | 0.1 ug/g dry | 0.5 | <0.1 | 0.4 | - |
| Molybdenum | 1.0 ug/g dry | 1.2 | <1.0 | 1.0 | - |
| Nickel | 5.0 ug/g dry | 16.3 | 9.6 | 15.3 | - |
| Selenium | 1.0 ug/g dry | <1.0 | <1.0 | <1.0 | - |
| Silver | 0.3 ug/g dry | <0.3 | <0.3 | <0.3 | - |
| Thallium | 1.0 ug/g dry | <1.0 | <1.0 | <1.0 | - |
| Uranium | 1.0 ug/g dry | <1.0 | <1.0 | <1.0 | - |
| Vanadium | 10.0 ug/g dry | 31.4 | 17.7 | 30.3 | - |
| Zinc | 20.0 ug/g dry | 67.4 | 103 | 69.3 | - |

Semi-Volatiles

| | | | | | |
|--------------------------|---------------|-------|-------|------|---|
| Acenaphthene | 0.02 ug/g dry | <0.02 | <0.02 | 0.03 | - |
| Acenaphthylene | 0.02 ug/g dry | 0.02 | 0.14 | 0.04 | - |
| Anthracene | 0.02 ug/g dry | 0.04 | 0.09 | 0.09 | - |
| Benzo [a] anthracene | 0.02 ug/g dry | 0.12 | 0.18 | 0.21 | - |
| Benzo [a] pyrene | 0.02 ug/g dry | 0.15 | 0.23 | 0.20 | - |
| Benzo [b] fluoranthene | 0.02 ug/g dry | 0.16 | 0.26 | 0.24 | - |
| Benzo [g,h,i] perylene | 0.02 ug/g dry | 0.09 | 0.19 | 0.12 | - |
| Benzo [k] fluoranthene | 0.02 ug/g dry | 0.09 | 0.11 | 0.12 | - |
| Chrysene | 0.02 ug/g dry | 0.16 | 0.18 | 0.19 | - |
| Dibenzo [a,h] anthracene | 0.02 ug/g dry | <0.02 | 0.04 | 0.03 | - |
| Fluoranthene | 0.02 ug/g dry | 0.24 | 0.24 | 0.44 | - |
| Fluorene | 0.02 ug/g dry | <0.02 | <0.02 | 0.03 | - |

Certificate of Analysis

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Client: Paterson Group Consulting Engineers

Order Date: 20-May-2021

Client PO: 32061

Project Description: PE5267

| | Client ID: | BH3-21-SS4/5 | BH4-21-SS2 | DUP | |
|--------------------------|---------------|-----------------|-----------------|-----------------|---|
| | Sample Date: | 17-May-21 09:00 | 17-May-21 09:00 | 17-May-21 09:00 | - |
| | Sample ID: | 2121586-05 | 2121586-06 | 2121586-07 | - |
| | MDL/Units | Soil | Soil | Soil | - |
| Indeno [1,2,3-cd] pyrene | 0.02 ug/g dry | 0.08 | 0.15 | 0.11 | - |
| 1-Methylnaphthalene | 0.02 ug/g dry | <0.02 | 0.12 | <0.02 | - |
| 2-Methylnaphthalene | 0.02 ug/g dry | <0.02 | 0.17 | 0.03 | - |
| Methylnaphthalene (1&2) | 0.04 ug/g dry | <0.04 | 0.29 | 0.05 | - |
| Naphthalene | 0.01 ug/g dry | 0.02 | 0.11 | 0.03 | - |
| Phenanthrene | 0.02 ug/g dry | 0.17 | 0.13 | 0.35 | - |
| Pyrene | 0.02 ug/g dry | 0.21 | 0.22 | 0.38 | - |
| 2-Fluorobiphenyl | Surrogate | 55.9% | 97.6% | 101% | - |
| Terphenyl-d14 | Surrogate | 90.3% | 104% | 124% | - |

Certificate of Analysis

Report Date: 27-May-2021

Client: Paterson Group Consulting Engineers

Order Date: 20-May-2021

Client PO: 32061

Project Description: PE5267

Method Quality Control: Blank

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|-----------------------------|--------|-----------------|-------|---------------|------|------------|-----|-----------|-------|
| Hydrocarbons | | | | | | | | | |
| F1 PHCs (C6-C10) | ND | 7 | ug/g | | | | | | |
| F2 PHCs (C10-C16) | ND | 4 | ug/g | | | | | | |
| F3 PHCs (C16-C34) | ND | 8 | ug/g | | | | | | |
| F4 PHCs (C34-C50) | ND | 6 | ug/g | | | | | | |
| Metals | | | | | | | | | |
| Antimony | ND | 1.0 | ug/g | | | | | | |
| Arsenic | ND | 1.0 | ug/g | | | | | | |
| Barium | ND | 1.0 | ug/g | | | | | | |
| Beryllium | ND | 0.5 | ug/g | | | | | | |
| Boron | ND | 5.0 | ug/g | | | | | | |
| Cadmium | ND | 0.5 | ug/g | | | | | | |
| Chromium (VI) | ND | 0.2 | ug/g | | | | | | |
| Chromium | ND | 5.0 | ug/g | | | | | | |
| Cobalt | ND | 1.0 | ug/g | | | | | | |
| Copper | ND | 5.0 | ug/g | | | | | | |
| Lead | ND | 1.0 | ug/g | | | | | | |
| Mercury | ND | 0.1 | ug/g | | | | | | |
| Molybdenum | ND | 1.0 | ug/g | | | | | | |
| Nickel | ND | 5.0 | ug/g | | | | | | |
| Selenium | ND | 1.0 | ug/g | | | | | | |
| Silver | ND | 0.3 | ug/g | | | | | | |
| Thallium | ND | 1.0 | ug/g | | | | | | |
| Uranium | ND | 1.0 | ug/g | | | | | | |
| Vanadium | ND | 10.0 | ug/g | | | | | | |
| Zinc | ND | 20.0 | ug/g | | | | | | |
| Semi-Volatiles | | | | | | | | | |
| Acenaphthene | ND | 0.02 | ug/g | | | | | | |
| Acenaphthylene | ND | 0.02 | ug/g | | | | | | |
| Anthracene | ND | 0.02 | ug/g | | | | | | |
| Benzo [a] anthracene | ND | 0.02 | ug/g | | | | | | |
| Benzo [a] pyrene | ND | 0.02 | ug/g | | | | | | |
| Benzo [b] fluoranthene | ND | 0.02 | ug/g | | | | | | |
| Benzo [g,h,i] perylene | ND | 0.02 | ug/g | | | | | | |
| Benzo [k] fluoranthene | ND | 0.02 | ug/g | | | | | | |
| Chrysene | ND | 0.02 | ug/g | | | | | | |
| Dibenzo [a,h] anthracene | ND | 0.02 | ug/g | | | | | | |
| Fluoranthene | ND | 0.02 | ug/g | | | | | | |
| Fluorene | ND | 0.02 | ug/g | | | | | | |
| Indeno [1,2,3-cd] pyrene | ND | 0.02 | ug/g | | | | | | |
| 1-Methylnaphthalene | ND | 0.02 | ug/g | | | | | | |
| 2-Methylnaphthalene | ND | 0.02 | ug/g | | | | | | |
| Methylnaphthalene (1&2) | ND | 0.04 | ug/g | | | | | | |
| Naphthalene | ND | 0.01 | ug/g | | | | | | |
| Phenanthrene | ND | 0.02 | ug/g | | | | | | |
| Pyrene | ND | 0.02 | ug/g | | | | | | |
| Surrogate: 2-Fluorobiphenyl | 1.36 | | ug/g | | 102 | 50-140 | | | |
| Surrogate: Terphenyl-d14 | 1.86 | | ug/g | | 140 | 50-140 | | | |
| Volatiles | | | | | | | | | |
| Benzene | ND | 0.02 | ug/g | | | | | | |
| Ethylbenzene | ND | 0.05 | ug/g | | | | | | |
| Toluene | ND | 0.05 | ug/g | | | | | | |
| m,p-Xylenes | ND | 0.05 | ug/g | | | | | | |
| o-Xylene | ND | 0.05 | ug/g | | | | | | |
| Xylenes, total | ND | 0.05 | ug/g | | | | | | |
| Surrogate: Toluene-d8 | 9.41 | | ug/g | | 118 | 50-140 | | | |

Certificate of Analysis

Report Date: 27-May-2021

Client: Paterson Group Consulting Engineers

Order Date: 20-May-2021

Client PO: 32061

Project Description: PE5267

Method Quality Control: Duplicate

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---------------------------------|--------|-----------------|----------|---------------|------|------------|------|-----------|-------|
| General Inorganics | | | | | | | | | |
| pH | 7.80 | 0.05 | pH Units | 7.67 | | | 1.7 | 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 | 18 | | | NC | 30 | |
| F4 PHCs (C34-C50) | ND | 6 | ug/g dry | 15 | | | NC | 30 | |
| Metals | | | | | | | | | |
| Antimony | 3.0 | 1.0 | ug/g dry | 2.0 | | | NC | 30 | |
| Arsenic | 4.6 | 1.0 | ug/g dry | 4.5 | | | 1.2 | 30 | |
| Barium | 610 | 1.0 | ug/g dry | 584 | | | 4.4 | 30 | |
| Beryllium | ND | 0.5 | ug/g dry | ND | | | NC | 30 | |
| Boron | 18.4 | 5.0 | ug/g dry | 19.0 | | | 3.4 | 30 | |
| Cadmium | ND | 0.5 | ug/g dry | ND | | | NC | 30 | |
| Chromium (VI) | ND | 0.2 | ug/g dry | ND | | | NC | 35 | |
| Chromium | 24.1 | 5.0 | ug/g dry | 22.6 | | | 6.5 | 30 | |
| Cobalt | 5.7 | 1.0 | ug/g dry | 5.2 | | | 8.3 | 30 | |
| Copper | 18.0 | 5.0 | ug/g dry | 17.3 | | | 3.8 | 30 | |
| Mercury | 0.144 | 0.1 | ug/g dry | 0.152 | | | 5.0 | 30 | |
| Molybdenum | 3.0 | 1.0 | ug/g dry | 2.4 | | | 20.7 | 30 | |
| Nickel | 12.3 | 5.0 | ug/g dry | 11.6 | | | 5.4 | 30 | |
| Selenium | ND | 1.0 | ug/g dry | ND | | | NC | 30 | |
| Silver | ND | 0.3 | ug/g dry | ND | | | NC | 30 | |
| Thallium | ND | 1.0 | ug/g dry | ND | | | NC | 30 | |
| Uranium | ND | 1.0 | ug/g dry | ND | | | NC | 30 | |
| Vanadium | 31.5 | 10.0 | ug/g dry | 28.7 | | | 9.1 | 30 | |
| Zinc | 279 | 20.0 | ug/g dry | 261 | | | 6.7 | 30 | |
| Physical Characteristics | | | | | | | | | |
| % Solids | 77.5 | 0.1 | % by Wt. | 78.3 | | | 1.0 | 25 | |
| Semi-Volatiles | | | | | | | | | |
| Acenaphthene | 0.208 | 0.02 | ug/g dry | 0.272 | | | 26.7 | 40 | |
| Acenaphthylene | 0.159 | 0.02 | ug/g dry | 0.226 | | | 34.9 | 40 | |
| Anthracene | 0.551 | 0.02 | ug/g dry | 0.753 | | | 31.0 | 40 | |
| Benzo [a] anthracene | 1.14 | 0.02 | ug/g dry | 1.50 | | | 27.4 | 40 | |
| Benzo [a] pyrene | 1.15 | 0.02 | ug/g dry | 1.38 | | | 18.6 | 40 | |
| Benzo [b] fluoranthene | 1.03 | 0.02 | ug/g dry | 1.29 | | | 22.2 | 40 | |
| Benzo [g,h,i] perylene | 0.526 | 0.02 | ug/g dry | 0.695 | | | 27.7 | 40 | |
| Benzo [k] fluoranthene | 0.672 | 0.02 | ug/g dry | 0.745 | | | 10.3 | 40 | |
| Chrysene | 1.10 | 0.02 | ug/g dry | 1.44 | | | 26.8 | 40 | |
| Dibenzo [a,h] anthracene | 0.156 | 0.02 | ug/g dry | 0.106 | | | 38.5 | 40 | |
| Fluoranthene | 2.39 | 0.02 | ug/g dry | 2.89 | | | 18.9 | 40 | |
| Fluorene | 0.216 | 0.02 | ug/g dry | 0.262 | | | 19.5 | 40 | |
| Indeno [1,2,3-cd] pyrene | 0.516 | 0.02 | ug/g dry | 0.664 | | | 25.0 | 40 | |
| 1-Methylnaphthalene | 0.061 | 0.02 | ug/g dry | 0.130 | | | 71.5 | 40 | QR-05 |
| 2-Methylnaphthalene | 0.080 | 0.02 | ug/g dry | 0.161 | | | 67.0 | 40 | QR-05 |
| Naphthalene | 0.112 | 0.01 | ug/g dry | 0.212 | | | 61.8 | 40 | QR-05 |
| Phenanthrene | 2.16 | 0.02 | ug/g dry | 2.78 | | | 24.9 | 40 | |
| Pyrene | 1.94 | 0.02 | ug/g dry | 2.32 | | | 18.0 | 40 | |
| Surrogate: 2-Fluorobiphenyl | 0.749 | | ug/g dry | | 50.2 | 50-140 | | | |
| Surrogate: Terphenyl-d14 | 1.46 | | ug/g dry | | 97.9 | 50-140 | | | |
| Volatiles | | | | | | | | | |
| 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 | |

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 32061

Report Date: 27-May-2021

Order Date: 20-May-2021

Project Description: PE5267

Method Quality Control: Duplicate

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|-----------------------|--------|--------------------|----------|------------------|------|---------------|-----|--------------|-------|
| Surrogate: Toluene-d8 | 10.5 | | ug/g dry | | 117 | 50-140 | | | |

Certificate of Analysis

Report Date: 27-May-2021

Client: Paterson Group Consulting Engineers

Order Date: 20-May-2021

Client PO: 32061

Project Description: PE5267

Method Quality Control: Spike

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|-----------------------------|--------|-----------------|-------|---------------|------|------------|-----|-----------|-------|
| Hydrocarbons | | | | | | | | | |
| F1 PHCs (C6-C10) | 230 | 7 | ug/g | ND | 115 | 80-120 | | | |
| F2 PHCs (C10-C16) | 73 | 4 | ug/g | ND | 82.9 | 60-140 | | | |
| F3 PHCs (C16-C34) | 247 | 8 | ug/g | 18 | 106 | 60-140 | | | |
| F4 PHCs (C34-C50) | 163 | 6 | ug/g | 15 | 108 | 60-140 | | | |
| Metals | | | | | | | | | |
| Antimony | 56.2 | 1.0 | ug/g | ND | 111 | 70-130 | | | |
| Arsenic | 61.6 | 1.0 | ug/g | 1.8 | 120 | 70-130 | | | |
| Barium | 53.7 | 1.0 | ug/g | ND | 107 | 70-130 | | | |
| Beryllium | 52.9 | 0.5 | ug/g | ND | 106 | 70-130 | | | |
| Boron | 55.9 | 5.0 | ug/g | 7.6 | 96.5 | 70-130 | | | |
| Cadmium | 54.3 | 0.5 | ug/g | ND | 108 | 70-130 | | | |
| Chromium (VI) | 0.1 | 0.2 | ug/g | ND | 49.5 | 70-130 | | | QM-05 |
| Chromium | 68.8 | 5.0 | ug/g | 9.0 | 120 | 70-130 | | | |
| Cobalt | 59.4 | 1.0 | ug/g | 2.1 | 115 | 70-130 | | | |
| Copper | 61.9 | 5.0 | ug/g | 6.9 | 110 | 70-130 | | | |
| Lead | 53.8 | 1.0 | ug/g | ND | 108 | 70-130 | | | |
| Mercury | 1.53 | 0.1 | ug/g | 0.152 | 92.2 | 70-130 | | | |
| Molybdenum | 59.1 | 1.0 | ug/g | 1.0 | 116 | 70-130 | | | |
| Nickel | 60.4 | 5.0 | ug/g | ND | 112 | 70-130 | | | |
| Selenium | 54.3 | 1.0 | ug/g | ND | 108 | 70-130 | | | |
| Silver | 54.9 | 0.3 | ug/g | ND | 110 | 70-130 | | | |
| Thallium | 53.9 | 1.0 | ug/g | ND | 108 | 70-130 | | | |
| Uranium | 60.2 | 1.0 | ug/g | ND | 120 | 70-130 | | | |
| Vanadium | 73.3 | 10.0 | ug/g | 11.5 | 124 | 70-130 | | | |
| Zinc | 164 | 20.0 | ug/g | 104 | 119 | 70-130 | | | |
| Semi-Volatiles | | | | | | | | | |
| Acenaphthene | 0.165 | 0.02 | ug/g | ND | 98.9 | 50-140 | | | |
| Acenaphthylene | 0.101 | 0.02 | ug/g | ND | 60.6 | 50-140 | | | |
| Anthracene | 0.125 | 0.02 | ug/g | ND | 74.7 | 50-140 | | | |
| Benzo [a] anthracene | 0.116 | 0.02 | ug/g | ND | 69.8 | 50-140 | | | |
| Benzo [a] pyrene | 0.132 | 0.02 | ug/g | ND | 78.9 | 50-140 | | | |
| Benzo [b] fluoranthene | 0.149 | 0.02 | ug/g | ND | 89.2 | 50-140 | | | |
| Benzo [g,h,i] perylene | 0.143 | 0.02 | ug/g | ND | 86.1 | 50-140 | | | |
| Benzo [k] fluoranthene | 0.138 | 0.02 | ug/g | ND | 83.0 | 50-140 | | | |
| Chrysene | 0.141 | 0.02 | ug/g | ND | 84.4 | 50-140 | | | |
| Dibenzo [a,h] anthracene | 0.137 | 0.02 | ug/g | ND | 82.0 | 50-140 | | | |
| Fluoranthene | 0.116 | 0.02 | ug/g | ND | 69.6 | 50-140 | | | |
| Fluorene | 0.115 | 0.02 | ug/g | ND | 69.1 | 50-140 | | | |
| Indeno [1,2,3-cd] pyrene | 0.128 | 0.02 | ug/g | ND | 76.7 | 50-140 | | | |
| 1-Methylnaphthalene | 0.142 | 0.02 | ug/g | ND | 85.4 | 50-140 | | | |
| 2-Methylnaphthalene | 0.149 | 0.02 | ug/g | ND | 89.5 | 50-140 | | | |
| Naphthalene | 0.164 | 0.01 | ug/g | ND | 98.3 | 50-140 | | | |
| Phenanthrene | 0.132 | 0.02 | ug/g | ND | 79.1 | 50-140 | | | |
| Pyrene | 0.118 | 0.02 | ug/g | ND | 70.7 | 50-140 | | | |
| Surrogate: 2-Fluorobiphenyl | 1.06 | | ug/g | | 79.4 | 50-140 | | | |
| Surrogate: Terphenyl-d14 | 1.67 | | ug/g | | 125 | 50-140 | | | |
| Volatiles | | | | | | | | | |
| Benzene | 4.57 | 0.02 | ug/g | ND | 114 | 60-130 | | | |

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 32061

Report Date: 27-May-2021

Order Date: 20-May-2021

Project Description: PE5267

Method Quality Control: Spike

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|-----------------------|--------|-----------------|-------|---------------|------|------------|-----|-----------|-------|
| Ethylbenzene | 5.04 | 0.05 | ug/g | ND | 126 | 60-130 | | | |
| Toluene | 4.65 | 0.05 | ug/g | ND | 116 | 60-130 | | | |
| m,p-Xylenes | 9.64 | 0.05 | ug/g | ND | 120 | 60-130 | | | |
| o-Xylene | 4.99 | 0.05 | ug/g | ND | 125 | 60-130 | | | |
| Surrogate: Toluene-d8 | 8.19 | | ug/g | | 102 | 50-140 | | | |

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 32061

Report Date: 27-May-2021

Order Date: 20-May-2021

Project Description: PE5267

Qualifier Notes:

QC Qualifiers :

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

QR-05 : Duplicate RPDs higher than normally accepted. Remaining batch QA\QC was acceptable. May be sample effect.

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.



2121586

No 131493

| | | |
|-------------------------------------|---|--|
| Client Name: Paterson Group | Project Ref: PE5267 | Page 1 of 1 |
| Contact Name: Mark D'Arcy | Quote #: | Turnaround Time <input type="checkbox"/> 1 day <input type="checkbox"/> 3 day <input type="checkbox"/> 2 day <input checked="" type="checkbox"/> Regular |
| Address: 154 Colonnade Rd, S | PO #: 32061 | |
| Telephone: 613-226-7381 | E-mail: mdarcy@patersongroup.ca jandrecek@ | |
| Date Required: | | |

| Regulation 153/04 | | | Other Regulation | | Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other) | | | | Required Analysis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|--|--|----------------------------------|-------------------------------|---|--------|------------|-----------------|-------------------------------|-------------------------------|------------------------------------|-------------------------------------|------------|---------------------------------------|----|------|---------|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <input type="checkbox"/> Table 1 | <input checked="" type="checkbox"/> Res/Park | <input type="checkbox"/> Med/Fine | <input type="checkbox"/> REG 558 | <input type="checkbox"/> PWQO | | | | | <input type="checkbox"/> CCME | <input type="checkbox"/> MISA | <input type="checkbox"/> SU - Sani | <input type="checkbox"/> SU - Storm | Mun: _____ | <input type="checkbox"/> Other: _____ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> Table 2 | <input type="checkbox"/> Ind/Comm | <input checked="" type="checkbox"/> Coarse | | | | Matrix | Air Volume | # of Containers | Sample Taken | | PHCs F1-F4+BTEX | VOCs | PAHs | Metals by ICP | Hg | CrVI | B (HWS) | H pH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Comments:

| | | | | | | | |
|--|--|--|--|------------------------------------|--|---|--|
| Relinquished By (Sign): <i>[Signature]</i> | | Received By Driver/Depot: <i>[Signature]</i> | | Received at: <i>[Signature]</i> | | Method of Delivery: PARACEL CARRIER | |
| Relinquished By (Print): Jesse Andrecek | | Date/Time: 20/05/21 3:34 | | Date/Time: May 20/21 4:28pm | | Date/Time: May 21/21 10:56 | |
| Date/Time: 20-MAY-21 12 PM | | Temperature: °C PAH | | Temperature: 11.0 °C | | pH Verified: <input type="checkbox"/> NA | |