



**PHASE TWO  
ENVIRONMENTAL SITE ASSESSMENT  
975 GLADSTONE AVENUE  
OTTAWA, ONTARIO**

Submitted to:



**Canadian Bank Note Company, Limited**  
145 Richmond Road  
Ottawa, ON K1Z 1A1

Prepared by:

**BluMetric Environmental Inc.**  
3108 Carp Road, Box 430  
Ottawa, ON K0A 1L0

Project Number: 190625  
31 October 2019

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## 1. EXECUTIVE SUMMARY

In September 2019, BluMetric Environmental Inc. (BluMetric™) was retained by Canadian Bank Note Company, Limited (CBN) to prepare a Phase Two Environmental Site Assessment (ESA) of the property at 975 Gladstone Avenue in Ottawa, Ontario (referred to herein as the “Phase Two Property” or “Site”). The Phase Two ESA was performed in support of a Site Plan Approval application for the construction of a building addition. As per the requirements of the City of Ottawa Site Plan Approval process, the Phase Two ESA was completed in general accordance with Ontario Regulation (O. Reg.) 153/04. However, the filing for a Record of Site Condition (RSC) is not required for the Phase Two Property. The Phase Two ESA work program focused on those areas of potential environmental concern (APEC) that are not currently monitored through an existing Contaminant Management Plan (CMP) for the Phase Two Property that includes annual groundwater monitoring/sampling. Findings from the CMP are reported to the City of Ottawa’s Environmental Remediation Unit (Corporate Real Estate Office - Planning, Infrastructure and Economic Development Department) on an annual basis.

The Phase Two Property consists of a rectangular-shaped parcel of land, occupying a total area of approximately 4.46 acres, with a frontage of approximately 85 m along each of Gladstone Avenue to the south and Laurel Street to the north, and a frontage of approximately 210 m along each of Breezehill Avenue North to the west and Loretta Avenue North to the east. The CBN building has a footprint of approximately 2.4 acres. The employee parking lot is located at the north end of the property. The Phase Two Property itself and all land immediately east and north are occupied by light industrial/commercial land uses. Land use immediately west and south of the Phase Two Property is residential. Based on site conditions and potential future property use the O. Reg. 153/04 Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non Potable Ground Water Condition: Industrial/Commercial/Community Property Use, Fine and Medium Textured Soils were considered appropriate for use at the Phase Two Property.

The Phase 2 ESA work program was determined based on the findings from a Phase One ESA (BluMetric, July 2019) and in consideration that the CMP for the Phase Two Property already includes annual groundwater monitoring and reporting for **APECs A and B** to the City of Ottawa. Consequently, the Phase Two ESA investigation program focused primarily on **APECs C, D, E, and F**, not currently monitored through the CMP. The Phase Two ESA work program included; advancement of 16 boreholes for soil sampling; the installation of monitoring wells for groundwater sampling at four borehole locations; and groundwater sampling at two existing monitoring wells located on/near the Phase Two Property.



Fill material was encountered at all borehole locations on the Phase Two Property and ranged in maximum depth from 1.22 m below ground surface (bgs) to 2.44 mbgs. A thin topsoil layer, inferred to be the original grade for the Phase Two Property, was identified beneath the fill material at depths ranging from 1.8 to 2.5 mbgs. The fill and/or topsoil layer is underlain by silty clay that extends to approximately 5.0 mbgs. The silty clay layer is underlain by a silty sand till with trace of clay. Auger refusal (potentially bedrock) was encountered at 5.94 mbgs at MW9-19. MW8-19, MW10-19 and MW11-19 were advanced to maximum depth of 6.10 mbgs and did not encounter auger refusal.

The APECs and PCAs for the Phase Two Property were assessed as follows:

APEC ID	Location of Area of Potential Environmental Concern on Phase One Property	PCA(s)	Contaminants of Concern (COC): Media	Phase Two ESA Investigation Locations	Media: COC Exceeding O. Reg. 153/04 Table 3 SCS (location)
A	Vicinity of former Bunker C oil UST located at Loretta Avenue North entrance: Documented soil and groundwater impacts at former UST location and extending beneath boiler room in the northeastern portion of the building.	28. Gasoline and Associated Products Storage in Fixed Tanks (Former Bunker C Oil Tank)	PAHs, BTEX, PHCs: soil, groundwater	MW11-19 installed 15 m North of PCA.  Area monitored through Contaminant Management Plan (CMP) Annual Groundwater Monitoring Program. PAHs assessed for groundwater in 2015 (BluMetric, 2015b).	<u>Soil</u> : <b>Benzo(a)pyrene</b> (Buried topsoil layer: 1.8 m to 2.4 mbgs) and <b>chloroform</b> (Silty clay: 4.6 to 5.2 mbgs) at MW11-19. Known PHC and PAH impacts to soil (MW6-18 and MW7-18: ~3.0 to 5.0 mbgs) at former Bunker C Oil UST location.  <u>Groundwater</u> : None identified



APEC ID	Location of Area of Potential Environmental Concern on Phase One Property	PCA(s)	Contaminants of Concern (COC): Media	Phase Two ESA Investigation Locations	Media: COC Exceeding O. Reg. 153/04 Table 3 SCS (location)
B	Ink mixing room and solvent storage room in the northeastern portion of the building on the Phase One Property: Documented PHC impact extending on to City of Ottawa right of way.	31. Ink Manufacturing, Processing and Bulk Storage 51. Solvent Manufacturing, Processing and Bulk Storage (Former Solvent Storage Tanks)	VOCs, BTEX, PHCs: soil, groundwater	Area monitored through CMP Annual Groundwater Monitoring Program.	<u>Soil</u> : Known <b>PHC F1-F2</b> impact to soil at depth at BH7 (>3.0 m depth) and BH12 (>4.5 depth).  <u>Groundwater</u> : Known <b>PHC F1-F2, acetone, benzene, and ethylbenzene</b> impact to groundwater (BH7). Free phase PHC monitored off property (BH12).
C	Southeast portion of the building on the Phase One Property: Documented metals and PAH impacts to soils at former nickel/chrome plating location in east end of cafeteria. Second former nickel/ chrome plating location located north of cafeteria.	33. Metal Treatment, Coating, Plating and Finishing	Metals, PAHs: groundwater	BH6-6 (located on City property immediately down gradient of former PCA)	<u>Soil</u> : Potential localized soil impacts for <b>chromium, nickel and benzo(a)pyrene</b> (BluMetric. 2015a)  <u>Groundwater</u> : None identified
D	East end of Boiler Room: Diesel fuel storage in above ground storage tank. Location of two transformers without documented history of PCB oil testing.	28. Gasoline and Associated Products Storage in Fixed Tanks (Diesel Fuel for Backup Generator) 55. Transformer Manufacturing Processing and Use.	PHCs/BTEX, PCBs: groundwater	MW4 (City property immediately down gradient of transformers) groundwater sampled for PCBs.  PHCs/BTEX monitored through CMP Annual Groundwater Monitoring Program.	<u>Groundwater</u> : None identified



APEC ID	Location of Area of Potential Environmental Concern on Phase One Property	PCA(s)	Contaminants of Concern (COC): Media	Phase Two ESA Investigation Locations	Media: COC Exceeding O. Reg. 153/04 Table 3 SCS (location)
E	North End of Building and South End of Parking Lot: Former location of ink effluent treatment system #1 that used in-ground open concrete tank and discharged to sanitary sewer. Potential leakage from concrete tank and sanitary sewer system.	1. Acid and Alkali Manufacturing, Processing and Bulk Storage (Operation of Effluent System)	Metals (used in inks), PAHs, PHCs/BTEX and VOCs potentially used in processes: soil, groundwater	MW8-19, MW9-19, MW10-19, MW11-19	<p><u>Soil:</u>  <b>Arsenic</b> for MW10-19 SS4 (Fill: 1.8 to 2.4 mbgs),  <b>Arsenic</b> and <b>Benzo(a)pyrene</b> for MW11-19 SS4 (Buried topsoil layer: 1.8 to 2.4 mbgs), and <b>Chloroform</b> for MW11-19 SS8 (silty clay: 4.6 to 5.2 mbgs)</p> <p><u>Groundwater:</u> None identified</p>
F	North Parking Lot: Potential presence of fill material of poor environmental quality beneath north parking lot. Documented presence of shallow fill material adjacent to parking lot at Laurel Street exceeding O. Reg. 153/04 Table 3 SCS for arsenic and lead (HCE, 2017).	30. Importation of Fill Material of Unknown Quality	Metals, PAHs: soil, groundwater	BH1-19 to BH12-19, MW8-19, MW9-19, MW10-19	<p><u>Soil:</u>  <b>Arsenic</b> for MW10-19 SS4 (Fill: 1.8 to 2.4 mbgs),  <b>Benzo(a)pyrene</b> for BH4-19 SS2 (Fill: 0.6 to 1.2 mbgs), BH6-19 SS4 (topsoil), BH10-19 SS4 (topsoil layer: 1.8 to 2.4 mbgs),  <b>Vanadium</b> for BH7-19 SS2 (Fill: 0.6 to 1.2 mbgs), BH8-19 SS4, (Fill/topsoil: 1.8 to 2.4 mbgs) BH10-19 SS4 (topsoil &amp; silty clay: 1.8 to 2.4 mbgs),  <b>Chromium (Total)</b> for BH7-SS4 (silty clay: 1.8 to 2.4 mbgs).  <b>Vanadium</b> for nine (9) native silty clay soil samples (1.8 to 3.0 mbgs).</p> <p><u>Groundwater:</u> None identified</p>





The contaminants of concern (COC) identified for the Phase Two Property are summarized as follows:

### Soils

Vanadium – Twelve of the 31 soil samples analyzed for metals exceeded the O. Reg. 153/04 Table 3 SCS for vanadium ( $86 \mu\text{g/g}$ ). Nine of the 12 samples consisted entirely of native silty clay, one consisted of native silty clay and buried topsoil layer, 1 sample consisted of fill material and 1 sample consisted of fill material and buried topsoil layer. The O. Reg. 153/04 Table 3 SCS for vanadium is based on Ontario Background Concentrations. A recent assessment presented at the GeoOttawa2017 Conference identified vanadium concentrations ranging from 10 to  $136 \mu\text{g/g}$  in Ottawa Region Champlain Sea Clay. A proposed geo-regional background concentration of  $123 \mu\text{g/g}$  has been submitted to MECP. Only two soil samples analyzed for the Phase Two Property exceed the proposed geo-regional standard ( $125 \mu\text{g/g}$  for BH7-19 SS2: Fill Material, and  $127 \mu\text{g/g}$  for BH7-19 SS4: Silty clay). In BluMetric's professional opinion the native silty clay is the primary source for vanadium exceedances at Phase Two Property; poor quality fill material (**APEC F**) may also be contributing to elevated levels of vanadium for two fill material samples.

Benzo(a)pyrene – Four of 31 soil samples analyzed for PAHs exceeded the O. Reg. 153/04 Table 3 SCS for benzo(a)pyrene ( $0.3 \mu\text{g/g}$ ). All 4 samples contained buried topsoil layer and/or fill material. The maximum measured benzo(a)pyrene concentration was  $0.56 \mu\text{g/g}$  for BH10-19 SS4 consisting of the buried topsoil layer and silty clay. No other PAH parameter exceeded the O. Reg. 153/04 Table 3 SCS. Elevated benzo(a)pyrene concentrations are typical for coal cinders which were commonly used as a fill material (**APEC F**) up until the end of the coal age (i.e. 1950s). Cinders were noted for soil sample BH3-19 SS2 ( $0.6$  to  $1.2 \text{ mbgs}$ ), but laboratory analysis did not exceed the O. Reg. 153/04 Table 3 SCS.

Arsenic – Two of the 31 soil samples analyzed for metals exceeded the O. Reg. 153/04 Table 3 SCS for arsenic ( $18 \mu\text{g/g}$ ). Sample MW10-19 SS4 (arsenic measured at  $27 \mu\text{g/g}$ ) consisted of fill material and was collected between 1.8 and 2.4 m depth. Sample MW11-19 SS4 (arsenic measured at  $27 \mu\text{g/g}$ ) consisted of buried topsoil layer and silty sand and was collected between 1.8 and 2.4 m depth. Both sample locations are adjacent to the northeast corner of the building. Based on the absence of any arsenic in groundwater samples and the sample depths located above the water table (i.e. above  $3.5 \text{ mbgs}$ ) the source of arsenic is inferred to be either the placed fill material (**APEC F**), or a historic surface spill of liquid waste containing arsenic.

Chromium (Total) – One of 31 soil samples analyzed for metals (BH7-19 SS4: 1.8 to 2.4 m depth) exceeded the O. Reg. 153/04 Table 3 SCS for total chromium ( $160 \mu\text{g/g}$ ). The detected total chromium concentration,  $162 \mu\text{g/g}$ , marginally exceeds the O. Reg. 153/04 Table 3 SCS. The source of total chromium is inferred to be either the placed fill material, or a historical spill of liquid waste containing chromium.



Chloroform – One of the 4 soil samples analyzed for VOCs (MW11-19 SS8: 4.6 to 5.2 m depth) exceeded the O. Reg. 153/04 Table 3 SCS for chloroform (0.18  $\mu\text{g/g}$ ). The detected chloroform concentration, 0.21  $\mu\text{g/g}$ , marginally exceeds the O. Reg. 153/04 Table 3 SCS. Chloroform is a volatile organic compound typically formed through the chlorination of drinking water or wastewater, but was not detected in the VOC analysis of groundwater at MW11-19.

Of the 15 soil samples analyzed and containing fill material (APEC F), 4 soil samples (27% of all samples) exceeded the O. Reg. 153/04 Table 3 SCS for either arsenic, benzo(a)pyrene, or vanadium. Three additional soil samples that contained a portion of the buried topsoil layer also exceeded the O. Reg. 153/04 Table 3 SCS for either arsenic, vanadium and/or benzo(a)pyrene. Based on the Phase Two ESA results the distribution of fill material/buried topsoil layer exceeding O. Reg.153/04 Table 3SCS (See Figure 4) appears to be focused at the center of the north parking lot (BH4-19, BH6-19, BH7-19, BH8-19, and BH10-19) and adjacent to the northeast corner of the CBN building (MW10-19 and MW11-19). The depth of identified impact at these borehole locations ranges from 0.6 m to 2.4 m. As reported in HCE, 2017, both arsenic and lead exceeded the O. Reg. 153/04 Table 3 SCS for a fill material sample (0 to 0.5 mbgs) at City of Ottawa monitoring well BH6-2 at Laurel Street. Of note, no fill material samples on the Phase Two Property exceeded the O. Reg. 153/04 Table 3 SCS for lead.

## Groundwater

No groundwater sample locations produced results exceeding the O. Reg. 153/04 Table 3 SCS. The groundwater analyses for Metals and PAHs at BH6-6 did not identify an environmental impact to groundwater from **APEC C** (two former nickel/chrome plating areas located up gradient of this off site monitoring well location). The groundwater analysis for PCBs at MW4 did not identify an environmental impact to groundwater from **APEC D** (two hydro transformers located up gradient of this off site monitoring well location). The groundwater analyses for MW8-19, MW9-19, MW10-19, and MW11-19 for Metals, PAHs, PHC/BTEX and VOCs did not identify an environmental impact to groundwater from **APEC E** (former wastewater treatment system in north end of CBN building) or **APEC F** (Imported fill material of unknown quality).

Known impacts to soil and groundwater at the Phase Two Property are monitored through a Contaminant Management Plan (CMP) that includes annual groundwater sampling and annual reporting to the City of Ottawa. Remediation of the identified impacts or completion of a risk assessment would be necessary in support of filing for a Record of Site Condition for the Phase Two Property.



## 2. INTRODUCTION

In September 2019, BluMetric Environmental Inc. (BluMetric™) was retained by Canadian Bank Note Company, Limited (CBN) to prepare a Phase Two Environmental Site Assessment (ESA) for the property at 975 Gladstone Avenue in Ottawa, Ontario (subsequently referred to as the “Phase Two Property”). The Phase Two ESA was performed in support of a Site Plan Approval application for the construction of a building addition. As per the requirements of the City of Ottawa Site Plan Approval process, the Phase Two ESA was completed in general accordance with Ontario Regulation (O. Reg.) 153/04. However, filing for a Record of Site Condition (RSC) is not required for the Phase Two Property. The Phase Two ESA focuses on those areas of potential environmental concern (APEC) that are not currently monitored through the existing contaminant management plan (CMP) and groundwater monitoring program. Findings from this program are provided to the City of Ottawa’s Environmental Remediation Unit (Planning, Infrastructure and Economic Development Department) on an annual basis. The location of the Phase Two Property is shown in Figure 1.

### 2.1 SITE DESCRIPTION

#### Municipal Address and Property Identifier

The Phase Two Property is comprised of the following (City of Ottawa, 2019):

Legal Description	PIN	Current Legal Municipal Address
PLAN 92 LOTS 15 TO 28; LORETTA W & BREEZEHILL E; PLAN 92 LANE CLSD BY CRT; ORDER CR259601	041070009, 041070010 & 041070011	975 Gladstone Avenue, Ottawa, Ontario

#### Size and Property Boundaries

The Phase Two Property consists of a rectangular-shaped parcel of land at 975 Gladstone Avenue in the City of Ottawa, Ontario (Figure 2). The Phase Two Property occupies a total area of approximately 4.46 acres, with a frontage of approximately 85 m along each of Gladstone Avenue to the south and Laurel Street to the north, and a frontage of approximately 210 m along each of Breezehill Avenue North to the west and Loretta Avenue North to the east.

The Phase Two Property itself and all land immediately east and north are occupied by light industrial/commercial establishments. Lands immediately west and south are residential. Current zoning of the Phase Two Property is identified as General Industrial Zone (IG1 H(11)).



## Property Description

The Phase Two Property is comprised mostly of the Canadian Bank Note Company, Limited (CBN) building, with a footprint of approximately 2.4 acres (9,600 m<sup>2</sup>), and an employee parking lot at the north end of the property. The general location of the Phase Two Property is shown in Figure 2.

Based on historical air photos (BluMetric, July 2019), the first developed use of the Phase Two Property pre-dates a 1928 air photo which indicates property use for community garden plots. The community garden plots are evident up to and including a 1945 air photo. Past environmental reports indicate that the building on the Phase Two Property was first constructed in 1947, with additions constructed in 1968, 1978, and 1989. The building is primarily brick construction on a concrete slab approximately 0.2 m thick.

## 2.2 PROPERTY OWNERSHIP

At the time of the investigation, the Phase Two Property was owned by Canadian Bank Note Company, Limited who purchased the property in 2013. Ms. Rosana Bianchini, Environmental Compliance Manager was the designated contact for the Phase Two Property. The principal client contact information is as follows:

Ms. Rosana Bianchini, Environmental Compliance Manager  
Canadian Bank Note Company, Limited  
145 Richmond Road, Ottawa, ON K1Z 1A1  
613-722-3422 ext 1122  
[rbianchi@cbnco.com](mailto:rbianchi@cbnco.com)

## 2.3 CURRENT AND PROPOSED FUTURE USES

The building on the Phase Two Property has reportedly been used for printing and plating activities since 1948. British American Bank Note (also previously operating as B A Bank Note, B A International Facility, and British American Bank Note Company) originally operated on site. Operations on site have included the manufacturing of inks, electroplating, etching, photo processing, printing and wastewater treatment related to banknote paper printing and brand protection. B A International Facility leased the facility from Quebecor Inc. until 2008, at which point the property was purchased by 975 Gladstone (Ottawa) Capital Inc. After operations were shut down in 2012, the property was acquired by Canadian Bank Note Company, Limited (CBN) in 2013. The property is used for the production of high level security document-related products and no changes in property use are proposed by CBN.



## 2.4 APPLICABLE SITE CONDITION STANDARD

Generic standards for soil and groundwater quality are prescribed through Ontario Regulation (O.Reg.) 153/04, as amended. Selection of applicable site condition standards (SCS) for comparison to soil and groundwater quality at the Phase Two Property was determined based on the following:

- 'Industrial/Commercial/Community Property Use' represents the current property use and future use of the Phase Two Property.
- The Site is not considered a 'Shallow Soil Property' with the depth of bedrock confirmed to be in excess of 2 m.
- The Site is in a 'Non-Potable Ground Water Condition'. No neighbouring properties within 250 m of the Phase Two Property boundary rely on water supply wells for potable water (subject to municipal approval).
- The Site is not located within 30 m of a permanent water body.
- Soil gradation analysis completed in this study identified the soil texture as 'Fine to Medium Textured Soils'.

Based on site conditions the following standards under O.Reg. 153/04 (Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011) were considered appropriate for comparison to the laboratory analytical results for soil and groundwater quality:

- O. Reg. 153/04 Table 3 - Full Depth Generic Site Condition Standards (SCS) in a Non-Potable Ground Water Condition: Industrial/Commercial/Community Property Use, Fine to Medium Textured Soils.

## 3. BACKGROUND INFORMATION

### 3.1 PHYSICAL SETTING

#### Water Bodies and Areas of Natural Significance

The nearest surface water feature is the Ottawa River, located approximately 890 m north of the Phase Two Property. The BluMetric, July 2019 Phase One ESA did not identify any 'areas of natural significance' within 250 m of the property.



## Topography and Surface Water Drainage Features

The Phase Two Property is located within the Ottawa River watershed. The groundwater flow direction on the Phase Two property is to the northeast, as documented in previous site assessments (see Section 3.2). Regional groundwater flow is inferred to be to the north towards the Ottawa River.

Site drainage is primarily through runoff to adjacent roadways or collected in on-site storm water catch-basins. Surface infiltration occurs in grassed areas which cover approximately 10% of the property. On-site catch-basins in the paved parking lot and at the truck bay discharge to the municipal storm sewer system beneath Loretta Avenue North. The municipal storm sewer drains to the north along Loretta Avenue North, west along Laurel Street and then north along Breezehill Avenue North.

## Hydrogeological Setting

Based on available mapping of surficial materials and terrain features (Ontario Geological Survey, 2010), and logs for boreholes completed in the vicinity of Loretta Avenue North and Laurel Street the geological setting is characterized by 0.9 to 4.6 m of fill material over silty clay and/or a stone-poor, carbonate-derived silty to sandy till, with sandy and silty compact diamicton, grey at depth but brown where oxidized; calcareous where derived from sedimentary rocks and not leached. Boreholes completed along Loretta Avenue North and on Laurel Street (HCE, 2017) indicate a depth to bedrock ranging from 6.0 to 7.3 m. Bedrock is exposed along the railway cut that is located <50 northeast of the intersection of Loretta Avenue North with Laurel Street.

Previous static groundwater level monitoring for the Phase Two Property indicates a groundwater flow direction in the overburden towards the northeast. Annual groundwater monitoring by BluMetric has indicated a water table near Loretta Avenue North that is ~5.0 mbgs and approximately 0.5 m above the 54-inch diameter storm sewer trunk. A steep groundwater gradient between the Phase Two Property and Loretta Avenue North storm sewer has been indicated. Since storm sewer systems are typically 'leaky' it is likely that groundwater is entering the storm sewer system and is influencing local groundwater flow. The HCE, 2017 investigation for the City of Ottawa also determined a northeast groundwater flow direction based on static water levels collected along Loretta Avenue North and Laurel Street.



## 3.2 PAST INVESTIGATIONS

### Previous and On-going Environmental Site Investigations

The BluMetric, July 2019 Phase One ESA report identified previous and on-going environmental site investigations for the Phase Two Property dating back to 1993. These investigations identified and assessed the following areas of potential environmental concern on the Phase Two Property:

- A former 5,000 imperial gallon Bunker C heating oil underground storage tank (UST), located at the Loretta Avenue North Loading Dock. The UST and its associated product lines and vent pipes were removed in 1994;
- Two former solvent USTs, with capacities of 750 L and 1,900 L, formerly located inside the east wall of the plant. The USTs are reported to have been removed during construction of a plant addition in 1979. The tanks were used to store benzene and other solvents of unknown composition;
- Four former 1,900 L USTs located under the concrete floor slab in the ink mixing room. The USTs were formerly used to store solvents, and per AGRA, 1999, were decommissioned in-situ in 1993.
- During a cafeteria renovation project in 2015 (near southeast corner of building), a chemical odour was noted and a tar-based sealant was observed during concrete floor removal. Two concrete vaults from the former nickel and chrome plating process were uncovered during the excavation (BluMetric, 2015a).

Further details on the environmental conditions found for each of the above areas is provided as follows.

#### Former 5,000 Imperial Gallon Bunker C Heating Oil UST at Loretta Avenue North Loading Dock (APEC A herein)

This former UST was used to contain heating fuel products including Bunker C fuel and No. 2 fuel at different times in the past and was reported to be inactive for at least ten years prior to its removal in 1994. Subsurface remediation was carried out at the time of UST removal. However, the southern and western limits of the excavation were limited by concerns with excavation near/beneath the building foundation and a natural gas main running along the southern wall. Subsurface impacts extending beneath the building foundation to the south (area identified as the boiler room) were left in place. Since 1994 a semiliquid petroleum hydrocarbon (PHC) has been observed in monitoring wells in the vicinity of the former UST and boiler room. The petroleum hydrocarbon has been observed as a viscous black highly weathered oil/sludge and the groundwater monitoring wells near the former UST location have



become fouled over time (BluMetric, 2015b). The affected monitoring wells were sealed and abandoned in May 2018 (BluMetric, 2018a) and two new replacement monitoring wells, MW6-18 and MW7-18, were installed at the former Bunker C oil UST location in the fall of 2018 (BluMetric, 2018b) and are discussed further below.

As of July 2018 (BluMetric, 2018a), groundwater sampling completed down gradient (to the east) of the former Bunker C oil UST location included monitoring wells MW2 and MW3 located on City of Ottawa property and BHD-06 located on CBN property near the east property line. The 2015, 2016, 2017, and 2018 groundwater sampling results for these well locations did not identify petroleum hydrocarbon (PHC) impacts to groundwater, with the exception of a PHC F3 detection (144  $\mu\text{g/L}$ ) for a blind duplicate sample obtained at BHD-06 during the July 2018 sampling event. The PHC F3 detection was marginally above the laboratory detection limit of 100  $\mu\text{g/L}$ . The 2015 groundwater sampling event for these wells (BluMetric, 2015b) included polycyclic aromatic hydrocarbon (PAH) analyses and the results did not identify PAHs as a contaminant of concern for local groundwater.

In October 2018, two new boreholes / monitoring wells, MW6-18 and MW7-18, were installed at/near the former Bunker C oil UST location (BluMetric, 2018b). MW7-18 is located in the proximity of the former UST location, while MW6-18 is located 7 m down gradient (to the east) of the former UST location. Soil analytical results at MW7-18, located closest to the former UST location, indicated PHC and PAH impacts from 2.4 to 4.3 m depth. For MW6-18 (7 m to the east of MW7-18), only PHC impacts to soil were indicated and extend from 3.7 to 5.5 m depth. The absence of PAH impacts at MW6-18 were considered an indication that PAH impacts to soil are localized to the former UST location. Analytical results for groundwater samples from MW6-18 and MW7-18 were below the applicable comparison standards (O. Reg. 153/04, Table 3) for all PHC and PAH parameters, indicating groundwater quality impacts originating from the former Bunk C oil UST location do not extend off property. Of note, a small quantity of heavily weathered oil was observed at MW6-18 immediately after well installation, but was no longer apparent after groundwater purging and well development. Based on the presence of weathered oil within some fissures in the soil intersected by the borehole followed by acceptable groundwater quality sampling results for MW6-18, it was concluded that the residual oil present is trapped/immobile and does not influence local groundwater quality. Excavation was deemed the only possible means for removing the oil trapped in soils. However, excavation remains not possible at the current time due to concerns for structural impacts to the building foundation and the presence of subsurface utilities.





Groundwater quality monitoring is conducted on an annual basis for the former Bunker C oil UST location as part of a Contaminant Management Plan (CMP) implemented for the 975 Gladstone Avenue Property. Monitoring wells MW6-18 and MW7-18 were added to the annual groundwater monitoring/sampling for 2019. The annual groundwater monitoring report for 975 Gladstone Avenue is provided to the City of Ottawa's Environmental Remediation Unit (Planning, Infrastructure and Economic Development Department).

#### Former Solvent Storage Tank(s) (APEC B herein)

As per AGRA, 1999, a total of six (6) solvent USTs were historically present in the eastern portion of the building. Two solvent storage tanks, located along the east side of the plant and with capacities of 750 L and 1,900 L, were removed during construction of the eastern plant addition in 1979. The tanks were reportedly used to store benzene and other carrier solvents. Four additional USTs, with capacities of 1,900 L each, were located approximately 10 m southwest of the tanks removed in 1979. These USTs were located in the ink mixing room under the concrete floor slab. The four USTs were decommissioned in-situ (filled with concrete) in 1993 by B A Bank Note. Contents of these former USTs are reported to have included linseed oil, benzene and various different carrier solvents used in the mixing of inks.

Since 1994, liquid phase hydrocarbon (LPH) has been observed in monitoring wells installed near the east building wall. The LPH is described as brown in colour and is less viscous compared to the LPH observed near the former Bunker C UST. Findings from soil sampling and groundwater sampling at both former UST locations attribute the presence of LPH to the USTs removed in 1979 and not to the four USTs in the mixing room and decommissioned in-situ in 1993 (BluMetric, 2015b).

Groundwater impacts in this site area are detected primarily as PHCs in the F1 and F2 fractions. Low levels of acetone, benzene, and ethylbenzene were also detected for a sample collected at BH7 (located at the 1979 UST removal location) in 2015 (BluMetric, 2015b). LPH was observed at monitoring well BH7 during monitoring events between 1994 and 2010. However, LPH has not been detected for BH7 since 2010 (BluMetric, 2018a). The east property line is situated at/near the exterior east building wall. Down gradient (to the east) of BH7, LPH has been observed at BH12 (located on the Loretta Avenue North right-of-way) since 1999 and a hydrophobic bailer used for collection of oil product is installed at this well location. As of July 2018 (BluMetric, 2018a) LPH continues to be observed at BH12 and groundwater impact exceeding O.Reg. 153/04 O. Reg. 153/04 Table 3 SCS for PHC F1 and F2 is present at monitoring well BH7. Previously in 2015, 1 mm of LPH was measured in the newly installed monitoring well MW5 located on the Loretta Avenue North right-of-way southeast of BH12. However, no LPH was found at this location in 2016, 2017, and 2018 and groundwater sampling results for MW5 have not identified any PHC impact. The lateral extent of groundwater impact towards



the northeast of BH12 has not been delineated further due to the presence of a main water trunk, and sanitary and storm sewer trunks beneath Loretta Avenue North. The low static groundwater levels (>4.5 m below ground surface) for nearby monitoring wells indicate that groundwater impacts are at a significant depth and any overlying soil impact due to upward vapour intrusion are likely to be limited. The City of Ottawa has informed CBN of plans for road and municipal servicing upgrades to Loretta Avenue North. The scope of the upgrade program and whether any excavation will extend below 4.5 m depth and encounter potential environmental impacts is unknown. CBN has communicated to the City of Ottawa its desire to be informed of the work schedule for Loretta Avenue North so that it can participate in the removal/disposal of any subsurface impacts encountered during the work program.

Groundwater quality monitoring is conducted on an annual basis for the former solvent storage UST location as part of the CMP implemented for the Phase Two Property. The CMP includes the inspection of BH12 in the spring, summer and fall for LPH removal. The annual monitoring reports are provided to the City of Ottawa.

#### Cafeteria Renovation Project (BluMetric, 2015a) (APEC C herein)

In January 2015, soil and concrete was excavated inside the southeast corner of the CBN building as part of a cafeteria renovation project. Green staining was noted for the concrete which was directly underlain by a tar-based sealant. The location was identified as a former location for nickel and chrome plating operations. Two concrete vaults from the former chrome plating process were uncovered during the excavation; the vaults were found to be filled in with waste concrete and gravel. Concrete sample analyses for visibly stained concrete exceeded O.Reg. 553 Schedule 4 for chromium while concrete without staining tested as a non-hazardous waste. Soil samples collected beneath the concrete slab and analysed for PAHs, volatile organic compounds (VOCs) and metals identified a number of PAH parameters and several metals parameters at levels exceeding O. Reg. 153/04 Table 3 SCS.

Excavation activities were limited to the eastern portion of the cafeteria. A cast iron storm drain was observed running west to east through the northeast portion of the cafeteria. Drainage tiles were also observed running south to north in the excavation area, approximately 1.0 m below grade. A total of 21.73 metric tonnes of 'stained' concrete material was managed and disposed as hazardous material. A total of 12.62 metric tonnes of concrete material that was not stained was disposed as nonhazardous waste. A total of 178.9 metric tonnes of soil was excavated from the cafeteria, and disposed as non-hazardous waste.



Water was encountered and required removal during excavation activities. Water was derived from the drainage tiles encountered in the excavation along with groundwater infiltration. Laboratory analytical results for the excavation water indicated that the water quality was in compliance with the Sewer Use By-Law standards. Less than 5,000 L of excavation water was discharged to the municipal combined sewer system during the course of excavation activities.

The O. Reg. 153/04 Table 3: Full Depth Generic SCS in a Non-Potable Ground Water Condition for industrial property use (medium to fine textured soils) were selected for comparison to the soil quality verification sampling results. After three sampling events and additional soil removal based on findings from the first two events, the soil samples from the final extents of the remedial excavation were below the O. Reg. 153/04 Table 3 SCS at thirteen of sixteen sampling locations. Three sample locations had measured concentrations exceeding the SCS for one or more PAH or metals parameters. The contaminants of concern (COCs) identified included chromium VI (one soil sample exceedance), chromium (two soil sample exceedances), nickel (two soil sample exceedances), and benzo(a)pyrene (one soil sample exceedance). Based on the observed magnitude of analytical results exceeding the O. Reg. 153/04 Table 3 SCS, the depth of remaining impacted soils (1.5 m or greater below the concrete floor) and the unstable excavation conditions present due to groundwater saturation, it was advised by BluMetric that no further soil removal be conducted.

BluMetric, 2015a provides a risk opinion on worker/human exposure for the COCs. No concern/risk for worker/human exposure to chromium VI and chromium in soil based on the analytical results for the cafeteria was identified. Since the excavation was backfilled with clean imported fill and the concrete floor reinstated, an effective barrier was in place for any potential contact with soils at depth. Based on the risk opinion assessment for nickel and benzo(a)pyrene, it was recommended that CBN implement a soil management plan that documents the potential presence of these contaminants in soils near the cafeteria. The soil management plan would implement enhanced health and safety protocols for any activity that might require the excavation/disturbance of this soil. It was recommended the soil management plan include the western portion of the cafeteria (which was not excavated) and areas beyond the north, east, and south limits of the soil excavation where soil testing has not yet been conducted to confirm soil quality conditions.

### **Former Dual Phase Extraction (DPE) Remediation System**

A dual phase extraction (DPE) soil/groundwater remediation system was designed and installed by AGRA in 2001. The system operated at the Phase Two Property from 2001 to 2007. The system included eight extraction wells located on the City of Ottawa right-of-way and four wells located on the 975 Gladstone Avenue Property near the former Bunker C Heating Oil UST location;



the wells were advanced to approximately 6 m below ground surface, and terminated on bedrock. The DPE system was shut down in 2007 due to the fouling of the extraction wells. Replacement of the extraction wells and re-commissioning of the DPE system was not recommended in subsequent years because subsurface impacts were assessed as generally immobile and the low permeability soil conditions hindered any benefit from DPE system operation (Franz Environmental, 2010, 2011 and 2012). The full decommissioning of the DPE system and former extraction wells was completed in May 2018 under the supervision of BluMetric (BluMetric, 2018a).

### **Monitoring Well Network**

More than 30 monitoring wells have been constructed at the Site since 1993 with some wells having been paved or concreted over and lost over time. A monitoring well network inventory was completed in 2015 and only 15 wells (including 5 new wells constructed in 2015) were deemed potentially suitable for on-going groundwater monitoring and sampling. Monitoring well repairs and well decommissioning recommendations were completed in May 2018 (BluMetric, 2018a). At this time, it was identified by the City of Ottawa that the sidewalks along the west side of Loretta Avenue would be replaced in combination with planned road and sewer upgrades and that all monitoring wells located on the sidewalk (includes BH11, BH12, and BH13) would require sealing and abandonment. However, the City of Ottawa requested that the decommissioning of these wells not occur until the sidewalk upgrades are scheduled. This request was based on concerns that the decommissioned well locations could present a potential slip/trip hazard for pedestrians.

### **City of Ottawa Investigations for Loretta Avenue North Reconstruction (HCE, 2016 and 2017)**

In 2016, a subsurface investigation was carried out for the proposed reconstruction of Loretta Avenue, the purpose of which was to identify the general subsurface conditions by means of a limited number of boreholes and monitoring wells installed along the Loretta Avenue North right of way (HCE, 2016). The subsurface investigation report was followed by a Limited Phase II ESA report where soil and groundwater quality conditions were assessed at the same borehole/monitoring well locations, as compared to applicable provincial and municipal standards (HCE, 2017).

Seven (7) of the boreholes that were advanced as part of the subsurface investigation, BH16-1 to BH16-7, were located adjacent to the 975 Gladstone Avenue Property, along the northern and eastern property boundaries (i.e. along Laurel Street and Loretta Avenue North, respectively). Fill material with a reported thickness of between 0.9 and 4.6 m was encountered in the seven boreholes; the fill material was generally composed of grey, crushed sand and gravel, brown sand, brown sand and gravel, brown silty sand, and grey brown silty sand.



Four (4) of the boreholes along the northern and eastern boundaries of the 975 Gladstone Avenue property were completed as monitoring wells, and soil and groundwater samples were submitted for laboratory analysis of selected parameters. Groundwater levels measured for the monitoring wells along Laurel Street and Loretta Avenue North indicated a groundwater flow direction to the north-northeast. The soil and groundwater analyses completed for the boreholes yielded the following salient information:

- At the borehole on Laurel Street, near the middle of the northern boundary of the Phase Two Property, concentrations of arsenic and lead exceeding O.Reg. 153/04 Table 1 and Table 3 site condition standards (SCS), and concentrations of fluoranthene exceeding O.Reg. 153/04 Table 1 SCS, were identified within the shallow fill material at depths of 0 to 0.51 m below ground surface (bgs);
- Among the other soil samples analyzed for PAHs and metals, or for PHCs and VOCs, no other O.Reg. 153/04 Table 1 or Table 3 exceedances were identified;
- Groundwater samples from the four monitoring wells were analyzed for PHCs, metals, PAHs and VOCs. None of the analyzed groundwater quality parameters exceeded O.Reg. 153/04 O. Reg. 153/04 Table 3 SCS. Of note, no metals or PAH exceedances were identified at monitoring well BH16-6E located northeast of the southeast corner of the CBN building, near the location of the former nickel and chrome plating operations.

### **Phase One Environmental Site Assessment (BluMetric, July 2019)**

This Phase One ESA was performed in support of a City of Ottawa Site Plan Approval application for the construction of a building addition. The Phase One ESA was completed in general accordance with O. Reg. 153/04. The PCAs and APECs identified for the Phase One ESA are discussed in Section 4.3, herein.

It was the opinion of the Qualified Person (QP) that the APECs identified from the Phase One Study pose a potential environmental risk and/or liability to the Phase One Property. Consequently, a Phase Two ESA of the Phase One Property was recommended.

### **Confirmation of Quality of Past Investigations**

The BluMetric, July 2019 Phase One ESA report was completed within the last twelve months and the information in the report was deemed adequate. The PCAs and APECs described in the Phase One ESA report were used as the basis for the Phase Two ESA investigation program. The scope of work and results from the CMP groundwater monitoring/sampling program (BluMetric 2018a, and 2018b) were considered by the QP in the development of the Phase Two ESA investigation program herein.



## 4. SCOPE OF THE INVESTIGATION

### 4.1 OVERVIEW OF THE SITE INVESTIGATION

The Phase Two ESA involved soil and ground water sampling across the Phase Two Property. The following tasks were undertaken in September and October 2019:

- A sampling plan was developed and permission was obtained from the City of Ottawa to use their monitoring well BH16-6E for groundwater sampling;
- Prior to subsurface activities, all buried utilities were located at the Phase Two Property by local utility providers;
- A site-specific health and safety plan (HASP) and communications plan was prepared;
- Sixteen boreholes were advanced on the Phase Two Property on September 30, October 1 and October 2, 2019;
- Soil samples were collected from each borehole;
- Selected soil samples were submitted for the analysis of metals, polycyclic aromatic hydrocarbons (PAHs), pH, petroleum hydrocarbons (PHCs), BTEX (benzene, toluene, ethylbenzene and xylene) and/or volatile organic compounds (VOCs), and soil texture analysis.
- Borehole cuttings were collected in UN-approved drums and a composite soil sample was submitted for O.Reg. 558 TCLP analyses.
- Soil samples were submitted to Eurofins Environment Testing Canada Inc. in Ottawa on October 2, 2019;
- Groundwater monitoring wells were installed at four of the sixteen borehole locations;
- An elevation survey and purging of the monitoring wells was completed on October 4, 2019.
- Groundwater levels were measured on October 4, 2019 and October 7, 2019;
- Groundwater samples, including a blind duplicate and an equipment blank, were collected from the four new monitoring wells installed by BluMetric and from two pre-existing monitoring wells and were analyzed depending on the APEC in which the monitoring well was located for polychlorinated biphenyl (PCB), metals, PAH, PHC and BTEX and/or VOC.
- Groundwater samples were submitted to Eurofins Environment Testing Canada Inc. in Ottawa on October 7, 2019;
- The preparation of this report for CBN.



## 4.2 MEDIA INVESTIGATED

The media investigated for this Phase Two ESA included soil and groundwater. Four new monitoring wells were installed and two existing monitoring wells were utilized in the investigation. Selected borehole/monitoring well locations were determined based on proximity to the relevant APEC, the inferred direction for groundwater flow, drilling equipment access, and limitations posed by the presence of underground utilities. Sediment is not present on the Phase Two Property and was not included in the media sampling program.

## 4.3 PHASE ONE CONCEPTUAL SITE MODEL

A Phase One Conceptual Site Model (CSM) was completed by BluMetric (BluMetric, July, 2019) and is reproduced as Figures 3a and 3b herein. The Phase One CSM shows:

- The location of buildings and structures;
- water bodies (if present) located in whole or in part on the Phase One Study Area;
- roads within the Phase One Study Area;
- uses of properties adjacent to the Phase One Property;
- areas where any PCA has occurred, and;
- identified APECs.

Some types of information that can appear in a CSM were not needed in the CSM:

- There is no figure which illustrates areas of natural significance in the Phase One Study Area because there are no areas of natural significance in the Phase One Study Area.
- There is no figure which illustrates the locations of water supply wells on the Phase One Property because there are no water supply wells on the Phase One Property.

Through records review, interviews and a site reconnaissance visit, the following Potentially Contaminating Activities (PCAs), as defined under O. Reg. 153/04, were identified at the Phase One Property:

Item	Potentially Contaminating Activity	Area Associated with Potentially Contaminating Activity
1.	Acid and Alkali Manufacturing, Processing and Bulk Storage	Acids and Alkalis were used in bulk as part of the ink effluent treatment process. Former effluent system #1 (i.e. original system) was located in the north end of the building and included use of a former open in-ground concrete tank and treated water discharge to the sanitary sewer system. The integrity of the former in-ground concrete tank is not known. Also, accidental discharges of acidic/alkali process water may have affected the integrity of the sanitary sewer system in this area.



Item	Potentially Contaminating Activity	Area Associated with Potentially Contaminating Activity
28.	Gasoline and Associated Products Storage in Fixed Tanks	Former 5,000 imperial gallon Bunker C heating oil UST, at the Loretta Avenue North Loading Dock. Documented soil and groundwater quality impact in this area.  Above-ground diesel fuel storage tank for backup generator in east end of boiler room.
30.	Importation of Fill Material of Unknown Quality	Potential presence of fill material of poor environmental quality beneath north parking lot. The presence of fill material of poor environmental quality has been documented immediately north of the parking lot at Laurel Street (HCE, 2017).
31.	Ink Manufacturing, Processing and Bulk Storage	Ink mixing room in the northeastern portion of the building. Storage and handling of inks and carrier solvents.
33.	Metal Treatment, Coating, Plating and Finishing	Southeast end of the building (former nickel and chrome plating activities at two locations). Documented concrete and soil impact in east end of cafeteria.
51.	Solvent Manufacturing, Processing and Bulk Storage	Six former solvent USTs in the ink mixing room and solvent storage room in the northeastern portion of the building. Documented groundwater quality impact in this area. Current storage of oil, solvents and waste solvents in drums.
55.	Transformer Manufacturing, Processing and Use	Two transformers are located in the east end of the Boiler room. Existing or former presence of PCB oil in transformers could not be confirmed. No surface staining near transformers was noted.

Source: Table 2, Schedule D, O. Reg. 153/04

The following PCAs were identified within the Phase One Study Area:

Item	Potentially Contaminating Activity	Area Associated with Potentially Contaminating Activity
28.	Gasoline and Associated Products Storage in Fixed Tanks	Expired gasoline station at 971 Gladstone Avenue (18.9 m southeast to 44.8 m east-southeast of the Phase One Property).
		A private self-serve fuel outlet with two USTs at 175 Loretta Avenue North (144.5 m southeast of the Phase One Property).
		Gasoline UST at 131 Loretta Avenue North (20 m east of the Phase One Property)
		Gasoline UST at 145 Loretta Avenue North (20 m east of the Phase One Property)
		Fuel oil UST at 155 Loretta Avenue North (20 m east of the Phase One Property)
		Gasoline UST at 952 Gladstone Avenue (29 m southeast of the Phase One Property).
30.	Importation of Fill Material of Unknown Quality	Documented presence of fill material in the Phase One Study Area. Fill quality exceeding O. Reg. 153/04 Table 3 SCS identified on Laurel Street (HCE, 2017).
32.	Iron and Steel Manufacturing and Processing	Iron foundries company at 949 Gladstone Avenue (20 m east of the Phase One Property).





Item	Potentially Contaminating Activity	Area Associated with Potentially Contaminating Activity
33.	Metal Treatment, Coating, Plating and Finishing	Coating of metal products at 1040 Somerset Street West (208.1 m north-northwest of the Phase One Property).
		Coating, engraving and heat treating of metal products at 35 Laurel Street (71.7 m north-northwest of the Phase One Property).
37.	Operation of Dry Cleaning Equipment (where chemicals are used)	Historical presence of a dry cleaning company at 950 Gladstone Avenue (located 28 m southeast of the Phase One Property).
39.	Paints Manufacturing, Processing and Bulk Storage	Auto paint supply at 35 Laurel Street (71.1 m north-northwest of the Phase One Property)
46.	Rail yards, Tracks and Spurs	Rail line crossing through the northern and eastern portions of the Phase One Study Area.
52.	Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	Vehicle repairs at 1050 Somerset Street West (214.7 m northwest of the Phase One Property).
		Vehicle repairs at 111 Breezehill Avenue North (32 m north of the Phase One Property)
		Historical vehicle repairs at 950 Gladstone Avenue (28 m southeast of the Phase One Property).
--	Spills	Spill of 5 L of transformer oil to the grass and soil in August 1995 at 99 Breezehill Avenue (74.9 m north-northwest of the Phase One Property). Soil contamination was noted to be possible.
		Spill of an unknown quantity of oil was spilled to the floor and drain of a private residence at 189 Breezehill Avenue North (93.8 m south-southeast of the Phase One Property) on March 1, 2002. Environmental impact to a water course or lake was noted to be possible.
		Spill of 8 L of hydraulic oil to the ground and storm sewer on July 11, 2002, at 933 Gladstone Avenue (137.3 m north of the Phase One Property). Environmental impact to a water course or lake was noted to be possible.
		Spill of 85 L of fuel to the ground on November 12, 1992, at 108 Spadina Avenue (250.9 m southwest of the Phase One Property). Environmental impact in the form of soil contamination was noted to be possible.

*Source: Table 2, Schedule D, O. Reg. 153/04*

Based on an inferred direction of local groundwater flow to the north-northeast and a regional groundwater flow to the north, the majority of the PCAs in the Phase One Study Area are located cross-gradient or downgradient to the Phase One Property, and are therefore not considered PCAs that may contribute to areas of potential environmental concern (APECs) at the Phase One Property. In addition, it is anticipated that groundwater impacts resulting from PCAs on properties located on the east side of Loretta Avenue North are cross-gradient from the Phase One Property and/or are being intercepted at Loretta Avenue North through leakage into the storm sewer trunk beneath this road.



The following APECs and contaminants of potential concern were identified at the Phase One Property; current/previous environmental assessment of each APEC is indicated:

APEC ID	Location of Area of Potential Environmental Concern on Phase One Property	PCA(s)*	Contaminants of Potential Concern	Potentially Affected Media	Current/ Previous Assessment?
A	Vicinity of former Bunker C oil UST located at Loretta Avenue North entrance: Documented soil and groundwater impacts at former UST location and extending beneath boiler room in the northeastern portion of the building.	28. Gasoline and Associated Products Storage in Fixed Tanks (Former Bunker C Oil Tank)	PAHs, BTEX, PHCs	Soil and groundwater	Monitored through Contaminant Management Plan (CMP) Annual Groundwater Monitoring Program. PAHs assessed for groundwater in 2015 (BluMetric, 2015b).
B	Ink mixing room and solvent storage room in the northeastern portion of the building on the Phase One Property: Documented PHC impact extending on to City of Ottawa right of way.	31. Ink Manufacturing, Processing and Bulk Storage 51. Solvent Manufacturing, Processing and Bulk Storage (Former Solvent Storage Tanks)	VOCs, BTEX, PHCs	Soil and groundwater	Monitored through CMP. VOCs assessed for groundwater in 2015 (BluMetric, 2015b).
C	Southeast portion of the building on the Phase One Property: Documented metals and PAH impacts to soils at former nickel/chrome plating location in east end of cafeteria. Second nickel/ chrome plating location located north of cafeteria.	33. Metal Treatment, Coating, Plating and Finishing	Metals, PAHs	Soil and groundwater	No (Note: HCE. 2017 monitoring well BH16-6E located immediately to east. Groundwater sampled in September 2016 with no metals or PAH impacts identified).
D	East end of Boiler Room: Diesel fuel storage in above ground storage tank. Location of two transformers without documented history of PCB oil testing.	28. Gasoline and Associated Products Storage in Fixed Tanks (Diesel Fuel for Backup Generator) 55. Transformer Manufacturing Processing and Use.	PHCs, PCBs	Soil and Groundwater	PHCs Monitored through CMP.



APEC ID	Location of Area of Potential Environmental Concern on Phase One Property	PCA(s)*	Contaminants of Potential Concern	Potentially Affected Media	Current/ Previous Assessment?
E	North End of Building and South End of Parking Lot: Former location of ink effluent treatment system #1 that used in-ground open concrete tank and discharged to sanitary sewer. Potential leakage from concrete tank and sanitary sewer system.	1. Acid and Alkali Manufacturing, Processing and Bulk Storage (Operation of Effluent System)	Metals (used in inks), PHCs/BTEX and VOCs potentially used in processes	Soil and Groundwater	No
F	North Parking Lot: Potential presence of fill material of poor environmental quality beneath north parking lot. Documented presence of fill material adjacent to parking lot at Laurel Street exceeding O. Reg. 153/04 Table 3 SCS for arsenic and lead.	30. Importation of Fill Material of Unknown Quality	Metals, PAHs	Soil and groundwater	No

*\*Source: Table 2, Schedule D, O. Reg. 153/04*

#### 4.4 DEVIATIONS FROM SAMPLING AND ANALYSIS PLAN

The sampling and analysis plan is provided in Appendix 10.1. The only deviation from this plan is that a shallow soil sample was not obtained at BH9-19 due to insufficient soil recovery with the split spoon soil sampler.

#### 4.5 IMPEDIMENTS

No denial of access to the Phase Two Property was encountered during the Phase Two ESA. No physical impediments were encountered during the drilling investigation program.



## 5. INVESTIGATION METHOD

### 5.1 GENERAL

All field investigation and compliance verification sampling conducted by BluMetric followed the general protocols outlined in the Ministry of the Environment, Conservation and Parks (MECP) “Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, June 1996 and addenda” as well as the requirements of O. Reg. 153/04, as amended. Detailed descriptions of the investigation methods used are provided throughout this section.

Prior to the subsurface investigation activities all investigation areas were cleared for subsurface utilities by USL-1 Underground Service Locators Inc. of Ottawa, Ontario. Locate reports are included in Appendix 10.5.

### 5.2 DRILLING AND EXCAVATING

Sixteen boreholes were drilled on the Phase Two Property on September 30, 2019, October 1, 2019 and October 2, 2019 by GET Drilling Limited of Napanee, Ontario (Well Contractor License No. 7085). Four boreholes were completed as monitoring wells (MW8-19, MW9-19, MW10-19, and MW11-19) while twelve boreholes (BH1-19 to BH12-19) were used for soil sample collection only. Drilling supervision was provided by BluMetric. Soil samples were collected from each borehole using a CME 55 truck-mounted drill rig and a standard 0.6 m long, 0.05 m diameter split spoon sampler. Standard 1.30 m (5 feet) long and 0.15 m (6 inch) wide hollow stem augers were used to advance the boreholes. The boreholes completed as monitoring wells on the Phase Two Property were drilled to the following depths:

- MW8-19 – 6.10 m below ground surface (bgs)
- MW9-19 – 5.94 mbgs (auger refusal)
- MW10-19 – 6.10 mbgs
- MW11-19 – 6.10 mbgs

Boreholes BH1-19 to BH12-19 were all completed to a depth of 3.05 mbgs.

Borehole logs are provided in Appendix 10.2 and borehole/monitoring well locations are illustrated in Figure 4.

No excavation was completed as part of the Phase Two ESA investigation.



### 5.3 SOIL SAMPLING

Throughout the soil sampling program, BluMetric maintained a continuous, descriptive geological and hydrogeological log of the soil stratigraphy, fill material identification, moisture content, colour, appearance, and odour of the soil encountered at the Phase Two Property. This data is provided in the borehole logs in Appendix 10.2.

Soil samples were collected continuously from grade to borehole termination. All drilling locations were in paved areas and near surface soil samples were obtained from the auger flights. All other investigation samples were collected using standard split spoon sampling equipment. Upon recovery, the soil was removed from the spoon using a stainless steel putty knife, and placed in the appropriate sample containers and a re-sealable polyethylene bag for field screening. The putty knife was washed with dish detergent and rinsed with clean water between each sample collected. A total of 99 soil samples were collected from the boreholes for field screening.

Soil samples from each borehole location were selected for laboratory analysis based on field observations, olfactory detection of potential impacts and the results of the field combustible vapour screening. For each borehole sample interval, the soil sample was split in the field into a re-sealable plastic bag for field screening and the appropriate, laboratory supplied sample containers for possible laboratory analysis. Samples for PHC F1/BTEX analysis were collected immediately upon recovery using a disposable volumetric sampling device to extract approximately 10 mL of soil. Each sample was extruded into laboratory prepared 40 mL vials (2 per sample) containing a known weight of methanol preservative. Samples for PHCs F2 to F4 fraction and TCLP analysis were collected in 250 mL glass jars (one per sample) with a Teflon lined lid. Each sample jar was labelled with the project name and number, date, collector's name, sample location identification, and type of analyses required.

The jarred samples were packed in a cooler with ice at approximately 4°C, pending analysis and shipment to the laboratory. The bagged samples were allowed to equilibrate to room temperature, prior to combustible vapour screening, described in Section 5.4.

A summary of the soil samples submitted for laboratory analysis is provided below in Table 1:



**Table 1: Soil Samples Submitted for Chemical Analysis**

Borehole ID	Borehole/Sample Location on Phase Two Property	Sample ID	Interval Represented (m bgs)	Description	Types of Analysis
MW8-19	Immediately north of building, west side	MW8-19 SS3	1.5 – 2.1	Silty Sand Fill – brown, moist to wet, trace clay	PHC, BTEX, VOC, M, PAHs
		MW8-19 SS8	4.6 – 5.2	Silty Clay – grey, moist to wet, high plasticity, trace sand	PHC, BTEX, M, PAHs
		MW8-19 SS9	5.2 – 5.8	Silty Sand Till – Very loose, grey, wet, trace to some clay	Soil Texture
MW9-19	Immediately north of building, center	MW9-19 SS2	0.6 – 1.2	Silty Sand Fill – Compact, brown, damp, some gravel	PHC, BTEX, M, PAHs
		MW9-19 SS7	3.7 – 4.3	Silty Clay – stiff, brown-grey, moist, trace fissures	PHC, BTEX, VOC, M, PAHs
MW10-19	Immediately north of building, east side	MW10-19 SS4	1.8 – 2.4	Silty Sand Fill – grey, wet, trace gravel	PHC, BTEX, VOC, M, PAHs
		MW10-19 SS9	5.2 – 5.8	Silty Clay – grey, wet, plastic, some sand	PHC, BTEX, M, PAHs
MW11-19	East of Truck Bay	MW11-19 SS4	1.8 – 2.4	Topsoil Layer and Silty Sand – loose, grey, moist to wet	PHC, BTEX, M, PAHs
		MW11-19 SS8	4.6 – 5.2	Silty Clay – grey, wet, plastic, some sand	PHC, BTEX, VOC, M, PAHs
BH1-19	Employee Parking Lot - West Side	BH1-19 SS2	0.6 – 1.2	Silty Sand Fill – Dense, grey, damp, some gravel	M, PAHs
		BH1-19 SS5	2.4 – 3.0	Silty Clay – Stiff, grey-brown, damp, non-plastic	M, PAHs
BH2-19	Employee Parking Lot - West Side	BH2-19 SS3	1.2 – 1.8	Silty Sand Fill – Compact, grey-brown, damp, some gravel, underlain by topsoil	M, PAHs, pH
		BH2-19 SS5	2.4 – 3.0	Silty Clay – Stiff, grey-brown, damp, non-plastic	M, PAHs
BH3-19	Employee Parking Lot - West Side	BH3-19 SS2	0.6 – 1.2	Sand Fill – brown, damp, some cinders	M, PAHs
		BH3-19 SS5	2.4 – 3.0	Silty Clay – Stiff, grey-brown, damp, non-plastic	M, PAHs
BH4-19	Employee Parking Lot - West Side	BH4-19 SS2	0.6 – 1.2	Sand Fill – dark brown, moist, trace cinders	M, PAHs
		BH4-19 SS4	1.8 – 2.4	Silty Clay – Stiff, grey-brown, damp, non-plastic	M, PAHs
BH5-19	Employee Parking Lot - West Side	BH5-19 AS1	0.3 – 0.6	Silty Sand Fill – Compact, grey, moist, trace cobbles	PHC, BTEX, M, PAH
		BH5-19 SS4	1.8 – 2.4	Silty Clay – Stiff, grey-brown, damp, non-plastic	M, PAH, pH
		BH5-19 SS5	2.4 – 3.0	Silty Clay – Stiff, grey-brown, damp, non-plastic	Soil Texture
BH6-19	Employee Parking Lot - West Side	BH6-19 SS2	0.6 – 1.2	Silty Sand Fill – Compact, light brown, moist, some gravel, trace clay	M, PAH
		BH6-19 SS4	1.8 – 2.4	Topsoil – Black, moist, trace root fibers	M, PAH
BH7-19	Employee Parking Lot – Centre North	BH7-19 SS2	0.6 – 1.2	Silty Sand Fill – Compact, light brown, damp, some gravel	M, PAH
		BH7-19 SS4	1.8 – 2.4	Silty Clay – Stiff, grey-brown, damp, non-plastic	M, PAH



Borehole ID	Borehole/Sample Location on Phase Two Property	Sample ID	Interval Represented (m bgs)	Description	Types of Analysis
BH8-19	Employee Parking Lot – Centre South	BH8-19 AS1	0.3 – 0.6	Silty Sand Fill – Compact, grey-brown, damp, some gravel, trace clay	M, PAH
		BH8-19 SS4	1.8 – 2.4	Silty Sand Fill and Topsoil – Compact, grey-brown, moist, some silt	M, PAH
BH9-19	Employee Parking Lot - East Side	BH9-19 SS4	1.8 – 2.4	Silty Clay – Stiff, grey-brown, damp, non-plastic	M, PAH
BH10-19	Employee Parking Lot - East Side	BH10-19 SS2	0.6 – 1.2	Silty Sand Fill – Compact, grey-brown, damp, some gravel, trace clay	M, PAH
		BH10-19 SS4	1.8 – 2.4	Topsoil & Silty Clay– Loose, dark brown, damp, trace root fibers	M, PAH
BH11-19	Employee Parking Lot - East Side	BH11-19 SS3	1.2 – 1.8	Silty Sand Fill – Compact, light brown, moist, some gravel, trace clay	M, PAH
		BH11-19 SS5	2.4 – 3.0	Silty Clay – Stiff, grey-brown, damp, non-plastic	M, PAH
BH12-19	Employee Parking Lot - East Side	BH12-19 SS2	0.6 – 1.2	Silty Sand Fill – Loose, light brown, moist to wet	PHC, BTEX, M, PAH, pH
		BH12-19 SS4	1.8 – 2.4	Silty Clay – Stiff, grey-brown, damp, non-plastic	M, PAH, pH

Notes: M – metals; PHC – petroleum hydrocarbons; BTEX – benzene, toluene, ethylbenzene, xylenes; VOC – volatile organic compounds; PAH – polycyclic aromatic hydrocarbons; pH – pH

#### 5.4 FIELD SCREENING MEASUREMENTS

As described above, each borehole sample was split in the field with a portion placed in a re-sealable polyethylene bag for field screening including visual or olfactory inspection for petroleum hydrocarbon impacts and headspace combustible vapour analysis. The initial visual and olfactory screening was completed at the time of collection and headspace vapour measurements were taken after the bagged soil samples were allowed to equilibrate to room temperature.

A RKI Eagle 2 combustible gas monitor was calibrated as per manufacturer specifications and used to measure the headspace vapour concentration of each sample. Vapour measurement and operation of the combustible gas monitor was conducted according to manufacturer's recommendations and the manufacturer's reported accuracy is  $\pm 5\%$  in the range of 0 to 500 ppm. The headspace readings are included on the borehole logs (Appendix 10.2).

The results of the field screening were used in the selection of soil samples for laboratory analysis.



## 5.5 GROUNDWATER MONITORING WELL INSTALLATION

Groundwater monitoring wells were installed at four borehole locations (MW8-19 to MW11-19) on the Phase Two Property. Well installation was completed by GET Drilling Limited under the supervision of BluMetric. The monitoring wells were constructed with 50 mm inside diameter (ID) Schedule 40 polyvinyl chloride (PVC) solid riser pipe and well screen with a factory machined Slot 10 well screen intake area. All pipe and screen sections were transported to the Site in plastic wrap that was removed just prior to installation to minimize potential for contamination.

All monitoring wells were installed with a screen interval of 3.05 m. Clean silica sand supplied in bags was placed adjacent to the well screen to approximately 1 m above the screen intake interval. A bentonite seal was installed above the sand pack and extending to approximately 0.5 mbgs. Granular 'A' was used in the installation of manholes with asphalt placed around each manhole to a depth of 0.15 mbgs. All monitoring wells were constructed in compliance with O. Reg. 903, as amended, and a Well Record for Well Cluster (Well Tag No. A268556) was submitted to the MECP. Each monitoring well was completed at surface with a metal flush mount manhole cover with locking bolts.

## 5.6 GROUND WATER: FIELD MEASUREMENT OF WATER QUALITY PARAMETERS

For the October 7, 2019 monitoring event, static water levels along with the presence and thickness of light non-aqueous phase liquid (LNAPL) were measured and recorded for all 6 monitoring well locations using a Solinst® oil/water interface probe. Prior to use, and between well locations, the probe was decontaminated using a combination of methanol and de-ionized water. Monitoring well standpipe headspace vapour levels (HSVL) were recorded at approximately 0.5 m depth within each monitoring well standpipe using an RKI Eagle 2 portable gas monitor operated in methane elimination mode. Prior to use, the gas monitor was calibrated as per manufacturer specifications. Following collection of the above data, each monitoring well was purged dry a minimum of three times using dedicated low density polyethylene tubing fitted with an inertial lift foot-valve. All purge water was transferred into UN-approved containers for temporary on-Site storage pending laboratory analysis for appropriate disposal.

All groundwater samples were collected using dedicated tubing and using low flow sampling methods. Field measurements for DO, temperature, pH, conductivity and ORP were conducted using a flow cell to ensure parameter stabilization prior to the collection of groundwater samples.





## 5.7 GROUNDWATER: SAMPLING

Groundwater samples were collected on October 7, 2019 from monitoring wells MW4, MW8-19, MW9-19, MW10-19, MW11-19 and BH16-6/BH16-6E (City of Ottawa monitoring well). Monitoring well sampling was conducted using the 'U.S. EPA Region 1 Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells. Revised: September 19, 2017' to minimize sediment disturbance during sample collection and laboratory analysis. Dedicated ¼ inch outside diameter (OD) LDPE sample tubing was used in conjunction with a peristaltic pump and a short section of dedicated ¼ inch inside diameter (ID) silicone tubing for the pump head. The outlet from the peristaltic pump was connected to an in-line flow-through cell system for monitoring select geochemical groundwater parameters using a YSI Pro Plus multi-parameter meter. The YSI Pro Plus multi-parameter meter was calibrated prior to use. All purge water was transferred into UN-approved containers for temporary on-site storage pending laboratory analysis for appropriate disposal.

Groundwater was pumped at each location at a flow rate of 200 mL/min or less to achieve minimal drawdown until stabilization of indicator parameters was reached. Indicator parameters included temperature, dissolved oxygen (DO), oxidation-reduction potential (ORP), electrical conductivity (EC), pH, and water level. The parameter stabilization field logs are provided in Appendix 10.2. Upon reaching parameter stabilization, samples were collected in clean sample bottles provided by the laboratory and subsequently placed in a cooler at approximately 4°C. Sample bottles were separated from each other using a combination of bubble wrap and plastic bags to prevent any potential cross-contamination within the cooler.

A summary of the groundwater samples submitted for laboratory analysis is provided below in Table 2:

**Table 2: Groundwater Samples Submitted for Chemical Analysis**

Monitoring Well ID	Monitoring Well Location on Phase Two Property	Types of Analysis
MW8-19	Immediately north of building, west side	Metals, VOC, PAH, PHC/BTEX
MW9-19	Immediately north of building, center	Metals, VOC, PAH, PHC/BTEX
MW10-19	Immediately north of building, east side	Metals, VOC, PAH, PHC/BTEX
MW11-19	East of Truck Bay	Metals, VOC, PAH, PHC/BTEX
MW4	On City of Ottawa easement for Loretta Avenue North – East of CBN Boiler Room with transformers	PCBs
BH16-6	On City of Ottawa easement for Loretta Avenue North – East of south east corner of building and former nickel/chrome plating areas	Metals, PAH

*Notes: VOC – volatile organic compounds; PAH – polycyclic aromatic hydrocarbons; PHC – petroleum hydrocarbons; BTEX – benzene, toluene, ethylbenzene, xylenes;*



## 5.8 SEDIMENT SAMPLING

Sediment was not present in the areas of investigation at the Phase Two Property. Therefore, the sampling and analysis of sediment at the Phase Two Property was not conducted as part of this investigation.

## 5.9 ANALYTICAL TESTING

Analytical soil and groundwater testing for the Phase Two ESA was completed by Eurofins Environment Testing Canada Inc. (Eurofins) of Ottawa, Ontario, a Canadian Association for Laboratory Accreditation Inc. (CALA) accredited laboratory.

## 5.10 RESIDUE MANAGEMENT PROCEDURES

Residues generated during the Phase Two investigation were limited to soil cuttings from drilling of the boreholes. A total of three 200-Litre UN-approved drums were filled with excess soil cuttings. An O. Reg. 558 TCLP analysis was completed for the drummed soil. Soil drums were removed from the Phase Two Property on October 25, 2016 by Veolia. Based on the acceptable laboratory analytical results for all groundwater samples the groundwater purge water was poured on an impermeable surface (i.e. asphalt), and allowed to evaporate.

## 5.11 ELEVATION SURVEYING

An elevation/location survey for the new monitoring wells and investigation boreholes was completed by BluMetric on October 4, 2019 using a survey level. The survey method has an accuracy of <1 cm for vertical and <1 m for horizontal. Elevation survey and static groundwater elevation data is provided in Table 3.

## 5.12 QUALITY ASSURANCE AND QUALITY CONTROL MEASURES

The quality assurance and quality control (QA/QC) program implemented for this project followed the general outline of subsection 3 (3) of O. Reg. 153/04, as amended. In preparing the QA/QC program, BluMetric also followed the Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario (MOE, 1996). Specific attention was given to the guidance on QA/QC measures and sampling frequency. The general QA/QC procedures included, but were not limited to:

- Clean, laboratory prepared sample containers were procured from the laboratory prior to field deployment;



- Samples were placed in the appropriate sample container for the selected analyses, following specific protocols (i.e. soil sample for BTEX, PHC F1 analysis methanol preservation in pre-prepared vials);
- Immediately following collection, all jarred samples were stored in laboratory supplied coolers with the appropriate packing materials (i.e. bubble wrap) and ice packs, pending shipment to the laboratory. All samples were shipped to the laboratory in the most expedient manner possible (i.e. hand delivery or by courier);
- During sampling, equipment was dedicated to the sampling location (single use) where possible. Multi-use sampling equipment (split spoon, putty knife, etc.) was cleaned with laboratory grade detergent and distilled water between uses to avoid cross contamination; and,
- A new pair of disposable nitrile gloves was used for each sample.
- A ‘trip blank’ prepared by the laboratory with purified water was shipped with the sampling containers to the field and returned unopened to the laboratory for BTEX/VOC analysis to assess for any potential contamination of water samples/containers during sample bottle handling and shipment.
- An ‘equipment blank’ was collected in the field using purified water supplied by the laboratory and analyzed for metals to assess for any potential influence on analytical results due to the sample tubing and in-line filter batch used for water sample collection.

All samples collected by BluMetric were given unique sample identification. BluMetric field staff maintained field notebooks and log sheets, which were used to record the location and identification of each sample collected. BluMetric personnel filled out Chain of Custody (COC) forms that travelled with all samples placed in coolers and shipped to the laboratory for analysis. Each shipment was sent with a COC with the following information: date sampled, sample matrix, number and type of containers, and requested analyses. Samples were immediately placed in a cooler containing ice to ensure the sample temperature was maintained near 4°C. Samples were submitted to Eurofins under strict chain of custody protocol, on the same day as sample collection.

### Sampling QA/QC – Blind Field Duplicates

BluMetric collected blind field duplicate (BFD) samples to demonstrate that the field sampling techniques utilized by BluMetric personnel are capable of yielding reproducible results. Blind field duplicates were collected from the same location and at the same time as the original sample, and submitted to the laboratory under “blind label” for the same analyses as the original sample. The number of duplicates collected was approximately 10% for each media type collected. Sampling precision was determined by calculating the relative percentage difference (RPD) for the duplicate samples as follows:

$$\text{RPD (\%)} = [(\text{Dup1} - \text{Dup2}) / (\text{average of Dup1+Dup2})] \times 100$$



An RPD was calculated for duplicate samples returning contaminant concentrations greater than 5 times the reportable detection limit (RDL). Concentrations less than 5 times the RDL become increasingly imprecise and, in these cases, the results were not considered sufficiently reliable and an RPD was not calculated. When the analytical result for one or both of a duplicate pair were less than the RDL (i.e. non-detect), an RPD cannot be calculated. BluMetric evaluated the results of the QA/QC analyses using the Recommended Alert Criteria specified in “Environmental QA/QC Interpretation Guide”, Maxxam Analytics. Inc. (COR FCD-00097/5). An RPD below the Alert Criteria was considered acceptable and confirmed that the sampling methodology was capable of producing repeatable results.

Parameter	Media	Recommended* Alert Criteria** for RPD
Metals	Soil	25%
	Water	35%
General Chemistry	Soil	25%
	Water	35%
VOCs / PHCs / PAHs	Soil	50%
	Water	40%

Note(s): \* Reference: “Environmental QA/QC Interpretation Guide”, Maxxam Analytics. Inc.

\*\* Where both the original and the duplicate samples results are greater than 5X RDL.

## Laboratory QA/QC

All samples were analyzed by Eurofins, is a Canadian Association for Laboratory Accreditation Inc. (CALA) accredited laboratory that uses MECP recognized methods to conduct laboratory analyses. As conveyed by the laboratory, method blanks, control standards samples, certified reference material standards, method spikes, replicates, duplicates and instrument blanks are routinely analyzed as part of their internal QA/QC programs. As an internal quality control measure, the project laboratory routinely reports the results of laboratory prepared QA/QC analyses. The results of the laboratory QA/QC are reported in the laboratory certificates. If these criteria are not met, the laboratory is asked to either re-analyze the affected samples or qualify the results.

## 6. REVIEW AND EVALUATION

### 6.1 GEOLOGY

As described in Section 3.1, the geological setting is characterized by fill material over silty clay and/or a stone-poor, carbonate-derived silty to sandy till over limestone bedrock at 6 to ~8 m depth. Boreholes completed as part of this investigation identified onsite geology consistent with



the geological setting described above. Fill material was encountered at all borehole locations and ranged in thickness from a minimum of 1.22 m at BH7-19 to a maximum of 2.44 m at BH3-19. A buried topsoil layer, inferred to be the original grade for the Phase Two Property, was observed for most borehole locations, at depths ranging from 1.8 to 2.5 mbgs. The fill and topsoil layer are underlain by silty clay that extends to approximately 5.0 mbgs (at MW8-19 to MW11-19). The silty clay layer is underlain by a silty sand till with trace of clay. Auger refusal (potentially bedrock) was encountered at 5.94 mbgs at MW9-19. MW8-19, MW10-19 and MW11-19 were advanced to maximum depth of 6.10 mbgs and did not encounter auger refusal.

## 6.2 GROUND WATER: ELEVATIONS AND FLOW DIRECTION

Static groundwater elevation data for October 4, 2017 and October 7, 2019 is provided in Table 3. Static groundwater elevations for October 7, 2017 are provided on Figure 4. In the north parking lot area the static water level depths ranged between 3.74 to 3.93 mbgs, placing the water table within the silty clay unit. As shown on Figure 4, a groundwater flow direction to the northeast is indicated based on the October 7, 2019 static groundwater elevation data. This is consistent with previous assessments as indicated in Section 3.1.

## 6.3 GROUND WATER: HYDRAULIC GRADIENTS

The October 7, 2019 static water level data as shown on Figure 4 indicates an approximate 0.4 m drop in potentiometric elevation between monitoring well MW8-19 and monitoring well MW10-19, located approximately 40 m to the east-northeast. The calculated horizontal hydraulic gradient based on the limited static groundwater elevation data is approximately 0.01 to the northeast for the overburden unit.

## 6.4 SOIL TEXTURE

Soil textural analysis was conducted for two soil samples: MW8-19 SS9 (5.2 to 5.8 m depth, silty sand till with trace of clay) and BH5-19 SS5 (2.4 to 3.0 m depth, silty clay). The soil gradation data is included in Table 4 and indicates that both samples are considered 'fine to medium textured soil', containing less than 50 per cent by mass of particles that are 75  $\mu\text{m}$  or larger in mean diameter. Based on the completed soil texture analysis and borehole logs, the QP has determined that the native soil at the property consists of fine to medium textured soil and the SCS for 'medium/fine textured soil' applies to the Phase Two Property.



## 6.5 SOIL: FIELD SCREENING

The borehole soil sample combustible vapour headspace readings using an RKI Eagle 2 combustible gas monitor are provided on the borehole logs in Appendix 10.2.

Combustible vapour readings were less than 20 ppm for all samples collected, with the following exception: 95 ppm for MW9-19 SS7 (submitted for laboratory analysis), 20 ppm for MW9-19 SS8, and 25 ppm for MW9-19 SS8. No organic odours were evident for these three soil samples. For MW11-19,a maximum soil vapour reading of 15 ppm was obtained, though a discernable hydrocarbon odour was evident for sample MW11-19 SS8, which was submitted for laboratory analysis.

## 6.6 SOIL QUALITY

Soil samples were collected from boreholes on the Phase Two Property on September 30 through October 2, 2019, and submitted to Eurofins. Samples were submitted for soil texture, metals, PAH, PHC, BTEX and/or VOC analysis.

Laboratory analytical results are summarized in Table 4 (Metals and PAHs) and Table 5 (PHCs/BTEX and VOCs). The soil texture data in Table 4 is discussed in Section 6.4. All soil quality data is compared to the O. Reg. 153/04 Table 3 SCS for Industrial/Commercial/Community Property Use, for fine to medium textured soil conditions.

Results of the O. Reg. 558 TCLP analyses of the drummed borehole cuttings are provided in Table 7 in comparison to Schedule 4 of O. Reg. 347. The O. Reg. 558 TCLP results confirmed that the drummed soil could be disposed as a non-hazardous solid waste. The TCLP results also suggest that the site fill material can be disposed as a non-hazardous solid waste.

Copies of the laboratory reports are included in Section 10.4.

Soil quality analytical results exceeding the O. Reg. 153/04 Table 3 SCS are provided on Figure 5. Seventeen soil samples had analytical results exceeding the O. Reg. 153/04 Table 3 SCS for Industrial/Commercial/Community Property Use. The soil results are discussed below in relation to the indicated findings for each APEC.



#### APEC A: Vicinity of Former Bunker C Oil UST

**MW11-19:** At MW11-19, located along the east side of the truck bay, PAH and VOC impacts exceeding the O. Reg. 153/04 Table 3 SCS for soil were detected. PAH impact to soil (Benzo(a)pyrene: 0.32  $\mu\text{g/g}$ ) was obtained at a depth of 1.8 to 2.4 m for sample MW11-19 SS4, marginally exceeding the O. Reg. 153/04 Table 3 SCS of 0.30  $\mu\text{g/g}$ . Twelve other PAH parameters were also detected, but all below the respective O. Reg. 153/04 Table 3 SCS. VOC impact to soil (Chloroform: 0.21  $\mu\text{g/g}$ ) was obtained at a depth of 4.6 to 5.2 m for sample MW11-19 SS8, exceeding the O. Reg. 153/04 Table 3 SCS of 0.18  $\mu\text{g/g}$ . 1,1-Dichloroethylene and 1,1,1-Trichloroethane were detected in the same soil sample but at levels well below the O. Reg. 153/04 Table 3 SCS. MW11-19 is located approximately 15 m north of the former Bunker C Oil UST location at the Loretta Avenue North building entrance.

#### APEC E: Former Location of Ink Effluent Treatment System

**MW10-19:** At MW10-19, located near the northeast corner of the onsite building, metals impact exceeding the O. Reg. 153/04 Table 3 SCS for soil was detected. Arsenic, measured at 27  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 18  $\mu\text{g/g}$ ) was obtained at a depth of 1.8 to 2.4 m for sample MW10-19 SS4. MW10-19 is located north/northeast of the reported former location of an ink effluent treatment system that used in-ground concrete tanks within the building and discharged to the sanitary sewer system.

**MW11-19:** At MW11-19, located along the east truck bay, metals impact exceeding the O. Reg. 153/04 Table 3 SCS for soil was detected. Arsenic, measured at 27  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 18  $\mu\text{g/g}$ ) was obtained at a depth of 1.8 to 2.4 m for sample MW11-19 SS4. MW10-19 is located north/northeast of the former location of ink effluent treatment system #1, which used in-ground open concrete tanks and discharged to the sanitary sewer. MW11-19 is located east of the reported former location of an ink effluent treatment system in the building.

#### APEC F: North Parking Lot – Fill Material of Unknown Quality

**BH1-19:** At BH1-19, located along the western side of the parking lot, metals impact exceeding the O. Reg. 153/04 Table 3 SCS for soil was detected. Vanadium, measured at 88  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 86  $\mu\text{g/g}$ ) was obtained at a depth of 2.4 to 3.0 m for sample BH1-19 SS5. This soil sample was obtained from the underlying native silty clay unit, not the fill material.



**BH2-19:** At BH2-19, located along the western side of the parking lot, metals impact exceeding the O. Reg. 153/04 Table 3 SCS for soil was detected. Vanadium, measured at 102  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 86  $\mu\text{g/g}$ ) was obtained at a depth of 2.4 to 3.0 m for sample BH2-19 SS5. This soil sample was obtained from the native silty clay unit.

**BH3-19:** At BH3-19, located along the western side of the parking lot, metals impact exceeding the O. Reg. 153/04 Table 3 SCS for soil was detected. Vanadium, measured at 101  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 86  $\mu\text{g/g}$ ) was obtained at a depth of 2.4 to 3.0 m for sample BH3-19 SS5. This soil sample was obtained from the native silty clay unit.

**BH4-19:** At BH4-19, located along the western side of the parking lot, metals and PAH impact exceeding the O. Reg. 153/04 Table 3 SCS for soil were detected. Vanadium, measured at 95  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 86  $\mu\text{g/g}$ ) was obtained at a depth of 1.8 to 2.4 m for sample BH4-19 SS4. Benzo(a)pyrene, measured at 0.4  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 0.3  $\mu\text{g/g}$ ) was obtained at a depth of 0.6 to 1.2 m for sample BH4-19 SS2. The O. Reg. 153/04 Table 3 SCS exceedance for vanadium was obtained for the native silty clay unit, while the benzo(a)pyrene impact was obtained for a sample of the fill material.

**BH5-19:** At BH5-19, located along the western side of the parking lot, metals impact exceeding the O. Reg. 153/04 Table 3 SCS for soil was detected. Vanadium, measured at 119  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 86  $\mu\text{g/g}$ ) was obtained at a depth of 1.8 to 2.4 m for sample BH5-19 SS4. This soil sample was obtained from the native silty clay unit.

**BH6-19:** At BH6-19, located along the western side of the parking lot, PAH impact exceeding the O. Reg. 153/04 Table 3 SCS for soil was detected. Benzo(a)pyrene measured at 0.32  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 0.3  $\mu\text{g/g}$ ) was obtained at a depth of 1.8 to 2.4 m for sample BH6-19 SS4. This soil sample was obtained from a topsoil layer encountered immediately beneath the fill material.

**BH7-19:** At BH7-19, located within the center north portion of the parking lot, metals impacts exceeding the O. Reg. 153/04 Table 3 SCS for soil were detected. Vanadium, measured at 127  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 86  $\mu\text{g/g}$ ) and arsenic, measured at 162  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 18  $\mu\text{g/g}$ ) was obtained at a depth of 1.8 to 2.4 m for sample BH7-19 SS4. Also, vanadium, measured at 125  $\mu\text{g/g}$  was obtained at a depth of 0.6 to 1.2 m for sample BH7-19 SS2. Sample BH7-19 SS2 was obtained from the fill material while sample BH7-19 SS4 was obtained from the native silty clay unit.





**BH8-19:** At BH8-19, located along the center south portion of the parking lot, metals impact exceeding the O. Reg. 153/04 Table 3 SCS for soil was detected. Vanadium, measured at 87  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 86  $\mu\text{g/g}$ ) was obtained at a depth of 1.8 to 2.4 m for sample BH8-19 SS4. This soil sample was obtained from the native silty clay unit.

**BH9-19:** At BH9-19, located along the eastern side of the parking lot, metals impact exceeding the O. Reg. 153/04 Table 3 SCS for soil was detected. Vanadium, measured at 104  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 86  $\mu\text{g/g}$ ) was obtained at a depth of 1.8 to 2.4 m for sample BH9-19 SS4. This soil sample was obtained from the native silty clay unit.

**BH10-19:** At BH10-19, located along the eastern side of the parking lot, metals and PAH impacts exceeding the O. Reg. 153/04 Table 3 SCS for soils were detected. Vanadium, measured at 92  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 86  $\mu\text{g/g}$ ) was obtained at a depth of 1.8 to 2.4 m for sample BH10-19 SS4. Benzo(a)pyrene measured at 0.562  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 0.3  $\mu\text{g/g}$ ) was also obtained for the same soil sample. This soil sample was obtained from a topsoil layer encountered immediately beneath the fill material.

**BH11-19:** At BH11-19, located along the eastern side of the parking lot, metals impact exceeding the O. Reg. 153/04 Table 3 SCS for soil was detected. Vanadium, measured at 101  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 86  $\mu\text{g/g}$ ) was obtained at a depth of 2.4 to 3.0 m for sample BH11-19 SS5. This soil sample was obtained from the native silty clay unit.

**BH12-19:** At BH12-19, located along the eastern side of the parking lot, metals impact exceeding the O. Reg. 153/04 Table 3 SCS for soil was detected. Vanadium, measured at 122  $\mu\text{g/g}$  (O. Reg. 153/04 Table 3 SCS of 86  $\mu\text{g/g}$ ) was obtained at a depth of 1.8 to 2.4 m for sample BH12-19. This soil sample was obtained from the native silty clay unit.

## 6.7 GROUNDWATER QUALITY

Groundwater samples for laboratory analysis were collected on October 7, 2019. Groundwater samples were submitted for metals, PAH, PHC, BTEX and/or VOC analysis.

Analytical results are shown in Table 8 (Metals and PAHs), Table 9 (PHCs/BTEX and VOCs) and Table 10 (PCBs). All groundwater quality data is compared to the O. Reg. 153/04 Table 3 SCS for All Property Uses, for fine to medium textured soil conditions. One blind duplicate sample (GW Blind Dup) was collected from MW11-19 for metals, PAH, PHC/BTEX, and VOC analyses. A trip blank was supplied by Eurofins to be analyzed for VOC. An equipment blank (Equipment Blank) was collected using purified water supplied by Eurofins and analyzed for metals.

Copies of laboratory reports are included in Section 10.4.



No groundwater analyses completed as part of the Phase Two ESA exceeded the comparison standards. PAH and VOC results were below laboratory method detection limits for all groundwater samples. MW8 was the only monitoring well location with PHC detections (50 µg/L for PHC F3 and 70 µg/L for PHC F4).

## 6.8 SEDIMENT QUALITY

Sediment was not present in the areas of investigation at the Phase Two Property. Therefore, the sampling and analysis of sediment at the Phase Two Property was not conducted as part of this investigation.

## 6.9 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

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

BluMetric received a certificate of analysis for each sample submitted to the laboratory. Copies of the certificates are included in Section 10.4.

### Duplicate Samples

“Blind” duplicates are samples labelled in such a way that it is not obvious to the lab that the sample is a duplicate. For soils, blind duplicate samples were collected for MW11-19 SS8 (DUP 1), BH10-19 SS2 (DUP 2), and BH12-19 SS2 (DUP 3), respectively. The blind duplicate sample collected at MW11-19 SS8 was submitted for metals, PAH, PHC, and BTEX analysis. The blind duplicate samples collected at BH10-19 SS2 and BH12-19 SS2 were submitted for metals and PAH analysis. For groundwater, one blind duplicate sample (GW Blind Dup) was collected for sample MW11 and analyzed for metals, PAH, PHC/BTEX, and VOCs.

### *Soil Analyses*

RPD calculations for the soil duplicate samples are provided in Table 7. No PAH, PHC or VOC results met the RPD qualification criteria for further assessment. For Metals, all RPD assessment results for BH10-19 SS2 / DUP2 were within the recommended Alert Criteria. For MW11-19 SS8 / DUP1 the RPD Value for lead (28.6 %) marginally exceeded the Alert Criteria of 25%. For MW12-19 SS2 / DUP3 the RPD Value for total chromium (29.2 %) marginally exceeded the Alert Criteria of 25%. Despite the two marginal Alert Criteria exceedances, the reproducibility of the Metals results for soils is considered acceptable.



### *Groundwater Analyses*

No PAH, PHC or VOC results for MW11 / Blind DUP met the RPD qualification criteria for further assessment. For metals analyses, only barium, boron and cobalt met the RPD qualification criteria and the boron results for MW11 / Blind DUP were identical. The RPD for barium is 3.8 % and the RPD for cobalt is 10.5 %. Consequently, all RPD assessment results are well within the recommended Alert Criteria of 35% for metals.

### Trip Blank

One trip blank, supplied by Eurofins, was analyzed for PHC F1 and BTEX/VOCs. Results for the trip blank are included in Table 9. All results were below laboratory detection limits for the trip blank sample.

### Equipment Blank

One equipment blank sample was collected using polyethylene tubing, and in-line metals filter from bottles of purified water supplied by Eurofins. This sample was submitted for metals analysis. Results for the equipment blank sample are included in Table 8. Metals results were below lab detection limits for all parameters with the exception of antimony at 0.6 µg/L (O. Reg. 153/04 Table 3 SCS of 20,000 µg/L) and chromium (total) at 1 µg/L (O. Reg. 153/04 Table 3 SCS of 810 µg/L). The equipment blank results indicate that investigation results for metals in groundwater were generally unaffected by the sampling method.

### Procedures Used in the Laboratory

Laboratories implement additional QA/QC procedures. These include analyzing selected samples twice (as described above), but also include analyzing surrogate chemicals or “spiked blanks” (to show that the analytical equipment is operating within the desired tolerances of accuracy), and analyzing method blanks (to show that analytical equipment is not contaminated). The reports received from laboratories thoroughly document these procedures as well as describe the methodology and instrumentation used for the analysis. The ‘qualifier notes’ provided in the lab reports for this Phase Two ESA did not raise concerns about the data quality. During this Phase Two ESA, there were no deviations from the sample holding times, preservation methods, storage requirements, or sample container types stipulated by the laboratory. Overall, the quality of the laboratory data produced by the soil and ground water quality investigations is adequate to meet the objectives of the Phase Two ESA investigation and there are no aspects of the laboratory data that have restricted decision-making or characterizing soil and ground water quality on the Phase Two Property.



## 6.10 PHASE TWO CONCEPTUAL SITE MODEL

### Description of the Phase Two Property

The Phase Two Property occupies a total area of approximately 4.46 acres, with a frontage of approximately 85 m along each of Gladstone Avenue to the south and Laurel Street to the north, and a frontage of approximately 210 m along each of Breezehill Avenue North to the west and Loretta Avenue North to the east. The Phase Two Property itself and all land immediately east and north are occupied by light industrial/commercial establishments. Lands immediately west and south are residential. Current zoning of the Phase Two Property is identified as General Industrial Zone (IG1 H(11)). The Phase Two Property is comprised mostly of the Canadian Bank Note Company, Limited (CBN) building, with a footprint of approximately 2.4 acres (9,600 m<sup>2</sup>), and an employee parking lot at the north end of the property. The building is primarily brick construction on a concrete slab approximately 0.2 m thick.

### Physical Setting of the Phase Two Property

The physical setting of the Phase Two Property is discussed throughout this report and is summarized below.

### Hydrological Conditions

The Phase Two Property is located within the Ottawa River watershed. Site drainage is primarily through runoff to adjacent roadways or collected in on-site storm water catch-basins. Surface infiltration occurs in grassed areas which cover approximately 10% of the property. On-site catch-basins in the paved parking lot and at the truck bay discharge to the municipal storm sewer system beneath Loretta Avenue North. The municipal storm sewer drains to the north along Loretta Avenue North, west along Laurel Street and then north along Breezehill Avenue North.

### Hydrogeological Setting

The geological setting is characterized by fill material over silty clay and/or a stone-poor, carbonate-derived silty to sandy till over limestone bedrock at 6 to ~8 m depth. Fill material was encountered at all borehole locations on the Phase Two Property and ranged in thickness from 1.22 m to 2.44 m. A thin topsoil unit, inferred to be the original grade for the Phase Two Property, was identified at most borehole locations at depths ranging from 1.8 to 2.5 mbgs. The fill and/or topsoil layer is underlain by silty clay that extends to approximately 5.0 mbgs. The silty clay layer is underlain by a silty sand till with trace of clay. Auger refusal (potentially bedrock) was encountered at 5.94 mbgs at MW9-19. MW8-19, MW10-19 and MW11-19 were advanced to maximum depth of 6.10 mbgs and did not encounter auger refusal.



Static groundwater elevations for October 7, 2017 (for north parking lot area) ranged between 3.74 to 3.93 mbgs, placing the water table within the silty clay unit. A groundwater flow direction to the northeast is indicated and a groundwater flow gradient of approximately 0.01 was estimated based on the October 7, 2019 static groundwater elevation data for the north parking lot. Previous site assessments have identified the storm sewer system beneath Loretta Avenue North as leaky and having an influence on local groundwater flow gradients.

Two cross sections aligned south- north (A-A') and west-east (B-B') through the Phase Two ESA boreholes in the north parking lot are provided as Figure 7 and Figure 8, respectively. The line of cross-sections are indicated on Figure 6. As shown in Figure 7 and Figure 8, the encountered fill material and buried topsoil layer does not extend more than 2.5 mbgs. As indicated for MW8-19 in Figure 8, the fill material is situated approximately 1 m above the measured static water table (October 7, 2019 data) in this site area.

### **Subsurface Structures and Utilities on Phase Two Property**

Available utility connection drawings for the Phase Two Property are limited. The onsite building is constructed slab on grade and associated structures (i.e. footings) are unlikely to extend beyond 3.0 m in depth. The site structure does not intersect the measured water table which was observed at greater than 3.5 m in depth.

On-site catch-basins in the paved parking lot and at the truck bay discharge to the municipal storm sewer system beneath Loretta Avenue North. The site utilities are unlikely to intersect the measured water table which was observed at greater than 3.5 m in depth.

### **Assessment of APECs and PCAs**

The APECs and PCAs assessed for the Phase Two Property were identified through a Phase One ESA (BluMetric, July 2019). The APECs and PCAs were assessed as follows:



APEC ID	Location of Area of Potential Environmental Concern on Phase One Property	PCA(s)	Contaminants of Concern (COC): Media	Phase Two ESA Investigation Locations	Media: COC Exceeding O. Reg. 153/04 Table 3 SCS* (location)
A	Vicinity of former Bunker C oil UST located at Loretta Avenue North entrance: Documented soil and groundwater impacts at former UST location and extending beneath boiler room in the northeastern portion of the building.	28. Gasoline and Associated Products Storage in Fixed Tanks (Former Bunker C Oil Tank)	PAHs, BTEX, PHCs: soil, groundwater	MW11-19 installed 15 m North of PCA.  Area monitored through Contaminant Management Plan (CMP) Annual Groundwater Monitoring Program. PAHs assessed for groundwater in 2015 (BluMetric, 2015b).	<u>Soil</u> : <b>Benzo(a)pyrene</b> (Buried topsoil layer: 1.8 m to 2.4 mbgs) and <b>chloroform</b> (Silty clay: 4.6 to 5.2 mbgs) at MW11-19. Known PHC and PAH impacts to soil (MW6-18 and MW7-18: ~3.0 to 5.0 mbgs) at former Bunker C Oil UST location.  <u>Groundwater</u> : None identified
B	Ink mixing room and solvent storage room in the northeastern portion of the building on the Phase One Property: Documented PHC impact extending on to City of Ottawa right of way.	31. Ink Manufacturing, Processing and Bulk Storage 51. Solvent Manufacturing, Processing and Bulk Storage (Former Solvent Storage Tanks)	VOCs, BTEX, PHCs: soil, groundwater	Area monitored through CMP Annual Groundwater Monitoring Program.	<u>Soil</u> : Known <b>PHC F1-F2</b> impact to soil at depth at BH7 (>3.0 m depth) and BH12 (>4.5 depth).  <u>Groundwater</u> : Known <b>PHC F1-F2, acetone, benzene, and ethylbenzene</b> impact to groundwater (BH7). Free phase PHC monitored off property (BH12).
C	Southeast portion of the building on the Phase One Property: Documented metals and PAH impacts to soils at former nickel/chrome plating location in east end of cafeteria. Second former nickel/ chrome plating location located north of cafeteria.	33. Metal Treatment, Coating, Plating and Finishing	Metals, PAHs: groundwater	BH6-6 (located on City property immediately down gradient of former PCA)	<u>Soil</u> : Potential localized soil impacts for <b>chromium, nickel</b> and <b>benzo(a)pyrene</b> (BluMetric, 2015a)  <u>Groundwater</u> : None identified



APEC ID	Location of Area of Potential Environmental Concern on Phase One Property	PCA(s)	Contaminants of Concern (COC): Media	Phase Two ESA Investigation Locations	Media: COC Exceeding O. Reg. 153/04 Table 3 SCS* (location)
D	East end of Boiler Room: Diesel fuel storage in above ground storage tank. Location of two transformers without documented history of PCB oil testing.	28. Gasoline and Associated Products Storage in Fixed Tanks (Diesel Fuel for Backup Generator) 55. Transformer Manufacturing Processing and Use.	PHCs/BTEX, PCBs: groundwater	MW4 (City property immediately down gradient of transformers) groundwater sampled for PCBs.  PHCs/BTEX monitored through CMP Annual Groundwater Monitoring Program.	<u>Groundwater</u> : None identified
E	North End of Building and South End of Parking Lot: Former location of ink effluent treatment system #1 that used in-ground open concrete tank and discharged to sanitary sewer. Potential leakage from concrete tank and sanitary sewer system.	1. Acid and Alkali Manufacturing, Processing and Bulk Storage (Operation of Effluent System)	Metals (used in inks), PAHs, PHCs/BTEX and VOCs potentially used in processes: soil, groundwater	MW8-19, MW9-19, MW10-19, MW11-19	<u>Soil</u> : <b>Arsenic</b> for MW10-19 SS4 (Fill: 1.8 to 2.4 mbgs), <b>Arsenic</b> and <b>Benzo(a)pyrene</b> for MW11-19 SS4 (Buried topsoil layer: 1.8 to 2.4 mbgs), and <b>Chloroform</b> for MW11-19 SS8 (silty clay: 4.6 to 5.2 mbgs)  <u>Groundwater</u> : None identified



APEC ID	Location of Area of Potential Environmental Concern on Phase One Property	PCA(s)	Contaminants of Concern (COC): Media	Phase Two ESA Investigation Locations	Media: COC Exceeding O. Reg. 153/04 Table 3 SCS* (location)
F	North Parking Lot: Potential presence of fill material of poor environmental quality beneath north parking lot. Documented presence of shallow fill material adjacent to parking lot at Laurel Street exceeding O. Reg. 153/04 Table 3 SCS for arsenic and lead (HCE, 2017).	30. Importation of Fill Material of Unknown Quality	Metals, PAHs: soil, groundwater	BH1-19 to BH12-19, MW8-19, MW9-19, MW10-19	<p><u>Soil:</u>  <b>Arsenic</b> for MW10-19 SS4 (Fill: 1.8 to 2.4 mbgs), <b>Benzo(a)pyrene</b> for BH4-19 SS2 (Fill: 0.6 to 1.2 mbgs), BH6-19 SS4 (topsoil), BH10-19 SS4 (topsoil layer: 1.8 to 2.4 mbgs), <b>Vanadium</b> for BH7-19 SS2 (Fill: 0.6 to 1.2 mbgs), BH8-19 SS4, (Fill/topsoil: 1.8 to 2.4 mbgs) BH10-19 SS4 (topsoil &amp; silty clay: 1.8 to 2.4 mbgs), <b>Chromium (Total)</b> for BH7-SS4 (silty clay: 1.8 to 2.4 mbgs). <b>Vanadium</b> for nine (9) native silty clay soil samples (1.8 to 3.0 mbgs).</p> <p><u>Groundwater:</u> None identified</p>

Soil samples were successfully obtained and assessed for all contaminants of concern (COCs) for the APECs assessed within the Phase Two ESA. Groundwater samples were successfully obtained and assessed for all COCs at MW8-19, MW9-19, MW10-19, MW11-19, MW4 and BH16-6.

### Contaminants Present on the Phase Two Property

#### Soils

Results of the soil analyses are described in Section 6.6. Seventeen soil samples submitted for laboratory analysis produced results exceeding the comparison quality standards. These results are summarized below in Table 11 and their locations are shown on Figure 5.





**Table 11: Laboratory Results for Soil Exceeding Comparison Standards**

Sample ID	Sample Depth (m)	APEC	Soil Type	Parameter	Result	O.Reg. 153/04 Table 3
						Industrial/ Commercial/ Community Property Use
MW10-19 SS4	1.8 – 2.4	E, F	Fill	Arsenic ( $\mu\text{g/g}$ dry)	27	18
MW11-19 SS4	1.8 – 2.4	A, E	Topsoil & Silty sand	Arsenic ( $\mu\text{g/g}$ dry)	27	18
				Benzo(a)pyrene ( $\mu\text{g/g}$ dry)	0.32	0.3
MW11-19 SS8	4.6 - 5.2	A, E	Silty clay	Chloroform ( $\mu\text{g/g}$ dry)	0.21	0.18
BH1-19 SS5	2.4 – 3.0	F	Silty clay	Vanadium ( $\mu\text{g/g}$ dry)	88	86
BH2-19 SS5	2.4 – 3.0	F	Silty clay	Vanadium ( $\mu\text{g/g}$ dry)	102	86
BH3-19 SS5	2.4 – 3.0	F	Silty clay	Vanadium ( $\mu\text{g/g}$ dry)	101	86
BH4-19 SS2	0.6 – 1.2	F	Fill	Benzo(a)pyrene ( $\mu\text{g/g}$ dry)	0.4	0.3
BH4-19 SS4	1.8 – 2.4	F	Silty clay	Vanadium ( $\mu\text{g/g}$ dry)	95	86
BH5-19 SS4	1.8 – 2.4	F	Silty clay	Vanadium ( $\mu\text{g/g}$ dry)	119	86
BH6-19 SS4	1.8 – 2.4	F	Topsoil	Benzo(a)pyrene ( $\mu\text{g/g}$ dry)	0.32	0.3
BH7-19 SS2	0.6 – 1.2	F	Fill	Vanadium ( $\mu\text{g/g}$ dry)	125	86
BH7-19 SS4	1.8 – 2.4	F	Silty clay	Chromium (Total) ( $\mu\text{g/g}$ dry)	162	160
				Vanadium ( $\mu\text{g/g}$ dry)	127	86
BH8-19 SS4	1.8 – 2.4	F	Fill, Topsoil	Vanadium ( $\mu\text{g/g}$ dry)	87	86
BH9-19 SS4	1.8 – 2.4	F	Silty clay	Vanadium ( $\mu\text{g/g}$ dry)	104	86
BH10-19 SS4	1.8 – 2.4	F	Topsoil & Silty clay	Vanadium ( $\mu\text{g/g}$ dry)	92	86
				Benzo(a)pyrene ( $\mu\text{g/g}$ dry)	0.56	0.3
BH11-19 SS5	2.4 – 3.0	F	Silty clay	Vanadium ( $\mu\text{g/g}$ dry)	101	86
BH12-19 SS4	1.8 – 2.4	F	Silty clay	Vanadium ( $\mu\text{g/g}$ dry)	122	86

A discussion of each COC for soil is provided as follows.

**Vanadium** – Twelve of the 31 soil samples analyzed for metals exceeded the O. Reg. 153/04 Table 3 SCS for vanadium ( $86 \mu\text{g/g}$ ). Nine (9) of the 12 samples consisted entirely of native silty clay, one consisted of native silty clay and buried topsoil layer, one consisted of fill material and one consisted of fill material and buried topsoil layer. The GeoOttawa2017 Conference Paper “Elevated Background Metals Concentrations in Champlain Sea Clay - Ottawa Region” identified vanadium concentrations ranging from 10 to  $136 \mu\text{g/g}$  in Ottawa Region Champlain Sea Clay. The paper proposes a geo-regional background value for vanadium of  $123 \mu\text{g/g}$ . Only 2 of the 31 soil samples analyzed for the Phase Two Property exceed the proposed geo-regional standard of  $123 \mu\text{g/g}$  ( $125 \mu\text{g/g}$  for BH7-19 SS2: Fill Material, and  $127 \mu\text{g/g}$  for BH7-19 SS4: Silty clay). In BluMetric’s professional opinion the primary source for vanadium exceeding the O.Reg. 153/04 O. Reg. 153/04 Table 3 SCS is the native silty clay soil; poor quality fill material may also be contributing to elevated levels of vanadium for two fill material samples.



Benzo(a)pyrene – Four of 31 soil samples analyzed for PAHs exceeded the O. Reg. 153/04 Table 3 SCS for benzo(a)pyrene ( $0.3 \mu\text{g/g}$ ). All 4 samples contained buried topsoil layer and/or fill material. The maximum measured benzo(a)pyrene concentration was  $0.56 \mu\text{g/g}$  for BH10-19 SS4 consisting of the buried topsoil layer and silty clay. No other PAH parameter exceeded the O. Reg. 153/04 Table 3 SCS. Elevated benzo(a)pyrene concentrations are typical for coal cinders which were commonly used as a fill material (**APEC F**) up until the end of the coal age (i.e. 1950s). Cinders were noted for soil sample BH3-19 SS2 (0.6 to 1.2 mbgs), but laboratory analysis did not exceed the O. Reg. 153/04 Table 3 SCS.

Arsenic – Two of 31 soil samples analyzed for metals exceeded the O. Reg. 153/04 Table 3 SCS for arsenic ( $18 \mu\text{g/g}$ ). Arsenic was measured at  $27 \mu\text{g/g}$  for both samples. Sample MW10-19 SS4 consisted of fill material and was collected between 1.8 and 2.4 m depth. Sample MW11-19 SS4 consisted of buried topsoil layer and silty sand and was collected between 1.8 and 2.4 m depth. Both sample locations are adjacent to the northeast corner of the building. Based on the absence of any arsenic in groundwater samples and the sample depths located above the water table (i.e. above 3.5 mbgs) the source of arsenic is inferred to be either the placed fill material (**APEC F**), or a historical spill of liquid waste containing arsenic.

Chromium (Total) - Of the 31 soil samples analyzed for metals, 1 sample (BH7-19 SS4: 1.8 to 2.4 m depth) exceeded the O. Reg. 153/04 Table 3 SCS for total chromium ( $160 \mu\text{g/g}$ ). The detected total chromium concentration,  $162 \mu\text{g/g}$ , marginally exceeds the O. Reg. 153/04 Table 3 SCS. The source of total chromium is inferred to be either the placed fill material, or a historical spill of liquid waste containing chromium.

Chloroform – One of the 4 soil samples analyzed for VOCs (MW11-19 SS8: 4.6 to 5.2 m depth) exceeded the O. Reg. 153/04 Table 3 SCS for chloroform ( $0.18 \mu\text{g/g}$ ). The detected chloroform concentration,  $0.21 \mu\text{g/g}$ , marginally exceeds the O. Reg. 153/04 Table 3 SCS. Chloroform is a volatile organic compound typically formed through the chlorination of drinking water or wastewater. Chloroform was not detected in the VOC analysis of groundwater at MW11-19. A source for the single soil quality exceedance for chloroform at the Phase Two Property is not evident.

Of the 15 soil samples analyzed and containing fill material (**APEC F**), 4 soil samples (27% of all samples) exceeded the O. Reg. 153/04 Table 3 SCS for either arsenic, benzo(a)pyrene, or vanadium. Three additional soil samples that contained a portion of the buried topsoil layer also exceeded the O. Reg. 153/04 Table 3 SCS for either arsenic, vanadium and/or benzo(a)pyrene. The aerial distribution of fill material/buried topsoil layer exceeding O. Reg. 153/04 Table 3 SCS (See Figure 4) appears to be focused at the center of the north parking lot (BH4-19, BH6-19, BH7-19, BH8-19, and BH10-19) and adjacent to the northeast corner of the CBN building (MW10-19 and MW11-19). The depth of identified impact at these borehole locations ranges from



0.6 m to 2.4 m. As reported in HCE, 2017, both arsenic and lead exceeded the O. Reg. 153/04 Table 3 SCS for a fill material sample (0 to 0.5 mbgs) at City of Ottawa monitoring well BH6-2 at Laurel Street. Of note, no fill material samples on the Phase Two Property exceeded the O. Reg. 153/04 Table 3 SCS for lead.

### Groundwater

Results of the groundwater analyses are described in Section 6.7. No groundwater sample locations produced results exceeding the O. Reg. 153/04 Table 3 SCS. Consequently, the findings for the assessed APECs are summarized as follows:

- The groundwater analyses for Metals and PAHs at BH6-6 did not identify an environmental impact to groundwater from **APEC C** (two former nickel/chrome plating areas located up gradient of this off site monitoring well location).
- The groundwater analysis for PCBs at MW4 did not identify an environmental impact to groundwater from **APEC D** (two hydro transformers located up gradient of this off site monitoring well location).
- The groundwater analyses for MW8-19, MW9-19, MW10-19, and MW11-19 for Metals, PAHs, PHC/BTEX and VOCs did not identify an environmental impact to groundwater from **APEC E** (former wastewater treatment system in north end of CBN building) or **APEC F** (Imported fill material of unknown quality).

### Sediment

There is no sediment on the Phase Two Property and therefore, no contaminated sediment was identified.

### **Contaminant Release Mechanisms, Transport, and Receptor Exposure**

Human receptors may be exposed to contaminants of concern through inhalation of soil particles and/or vapours, dermal contact, and/or ingestion. Ecological receptors may be exposed through inhalation of particles and/or vapours and/or soil gas, plant uptake, dermal contact and/or root uptake and/or ingestion.

The soil component values used in determining the O. Reg. 153/04 Table 3 SCS are presented in Appendix A2 of MECP's "Rationale for the Development of Soil and Ground Water Standards for Use at Contaminated Sites in Ontario. April 15, 2011. PIBS 7386e01." These component values are discussed below in relation to measured concentrations at the Phase Two Property and the indicated risk for receptor exposure.



The O. Reg. 153/04 Table 3 SCS for vanadium, arsenic, and benzo(a)pyrene are established based on an assessed upper limit for Ontario Soil Background concentrations:

- The maximum measured concentration for vanadium in soil was 127  $\mu\text{g/g}$ . As mentioned previous herein a proposal has been provided to MECP to increase the Soil Background concentration for vanadium to 123  $\mu\text{g/g}$  for sites in Eastern Ontario. An approved increase would reduce the number of soil samples exceeding for vanadium at the Phase Two property from 12 samples to 2 samples. The MECP's derived incidental ingestion and dermal contact (S3) value for adult worker exposure is 160  $\mu\text{g/g}$  for Industrial/ Commercial/Community land use. Therefore, a concern for direct worker exposure to vanadium in soils at the Phase Two property soil is not indicated.
- The maximum measured concentration for arsenic in soil was 27  $\mu\text{g/g}$  (obtained for both soil samples that exceeded the O. Reg. 153/04 Table 3 SCS). The MECP's derived direct soil contact value for arsenic for vegetation and soil invertebrates is 34  $\mu\text{g/g}$ . The MECP's derived incidental ingestion and dermal contact (S3) value for adult worker exposure is 47  $\mu\text{g/g}$  for Industrial/ Commercial/Community land use. Therefore, a concern for direct worker exposure to arsenic in soils at the Phase Two property soil is not indicated.
- The maximum measured concentration for benzo(a)pyrene in soil was 0.56  $\mu\text{g/g}$ . The inferred source for benzo(a)pyrene is the placement of poor quality fill material containing coal cinders. This material has likely been in place since building construction in 1947. The MECP's derived incidental ingestion and dermal contact (S3) value for adult worker exposure to benzo(a)pyrene is 3.6  $\mu\text{g/g}$  for Industrial/Commercial/Community land use. Consequently a concern for direct worker exposure to benzo(a)pyrene in soils at the Phase Two property is not indicated.

The O. Reg. 153/04 Table 3 SCS for total chromium (160  $\mu\text{g/g}$ ) is based on potential exposure for Mammals & Birds. The single detection for total chromium was measured at 162  $\mu\text{g/g}$ , marginally exceeding the O. Reg. 153/04 Table 3 SCS. The MECP's derived incidental ingestion and dermal contact (S3) value for adult worker exposure to total chromium is 240,000  $\mu\text{g/g}$  for Industrial/ Commercial/Community land use. Consequently a concern for direct worker exposure to chromium (total) in soils at the Phase Two property soil is not indicated.

The O. Reg. 153/04 Table 3 SCS for chloroform in soil (0.18  $\mu\text{g/g}$ ) is based on potential exposure for indoor air (i.e. soil vapour intrusion). The single detection for chloroform (MW11-19 SS8: 4.6 to 5.2 mbgs) was measured at 0.21  $\mu\text{g/g}$ , marginally exceeding the O. Reg. 153/04 Table 3 SCS. Chloroform was not detected in the groundwater sample at MW11-19. The MECP's derived incidental ingestion and dermal contact (S3) value for exposure to total chromium is 1300  $\mu\text{g/g}$  for Industrial/ Commercial/Community land use. Based on the significant sample depth and marginal exceedance of the O. Reg. 153/04 Table 3 SCS for chloroform, a concern for worker



exposure to chloroform in soils is not indicated. Since the CBN building is constructed slab on grade a concern for worker exposure inside the building due to vapour intrusion of chloroform is not indicated, but can only be verified through indoor air quality sampling.

No groundwater samples collected as part of the Phase two ESA investigation exceeded O. Reg. 153/04 Table 3 SCS. This includes all identified contaminants of concern for soils. Consequently, groundwater has not been identified as a contaminant transport pathway for the contaminants of concern.

## 7. CONCLUSIONS

BluMetric was retained by Canadian Bank Note Company, Limited, to complete a Phase Two ESA for the property at 975 Gladstone, Ottawa, Ontario. The investigation assessed the APECs and PCAs identified in the Phase One ESA (BluMetric, July 2019) and not currently monitored through a CMP. Measured concentrations of chemicals were compared to O. Reg. 153/04 O. Reg. 153/04 Table 3 SCS for Industrial/Commercial/Community Property Use at sites with fine and medium textured soil.

The results of this assessment identified soil impacts (vanadium, arsenic, chromium (total), chloroform and benzo(a)pyrene) exceeding the generic O. Reg. 153/04 Table 3 SCS. Detected vanadium concentrations are considered to be natural and due to elevated levels in the native silty clay. Detected arsenic, chromium (total), and benzo(a)pyrene concentrations may be attributed to poor quality fill material (**APEC F**) placed on the Phase Two Property. Chloroform was detected for only one soil sample obtained at depth (4.6 to 5.2 mbgs: Silty clay) and was not detected in the groundwater at the same location (MW11-19). Based on the Phase Two ESA results the distribution of fill materials exceeding O. Reg. 153/04 Table 3 SCS appears to be primarily focused near the center of the north parking lot and adjacent to the northeast corner of the CBN building. The depth of identified impacts to fill material ranges from 0.6 to 2.4 m.

No groundwater quality impacts were identified for the sample locations and analyses completed for the Phase Two ESA investigation.

Known impacts to soil and groundwater at the Phase Two Property are monitored through a Contaminant Management Plan (CMP) that includes annual groundwater sampling and annual reporting to the City of Ottawa. Remediation of impacts or completion of a risk assessment would be necessary in support of filing for a Record of Site Condition for the Phase Two Property.



## 7.1 LIMITING CONDITIONS, QP STATEMENT, AND QP SIGNATURE

This Phase Two ESA was performed in accordance with the substance and intent of the Phase Two ESA definition in O. Reg. 153/04. The findings in this report are based on observations and laboratory testing of samples collected at specific locations. The conclusions presented in this report represent our professional opinion and are based on the conditions observed on the dates set out in the report, the information available at time this report was prepared, the scope of work, and any limiting conditions noted herein.


BluMetric provides no assurances regarding changes to conditions subsequent to the time of the assessment. BluMetric makes no warranty as to the accuracy or completeness of the information provided by others or of the conclusions and recommendations predicated on the accuracy of that information.


This report has been prepared for CBN. Any use a third party makes of this report, any reliance on the report, or decisions based upon the report, are the responsibility of those third parties unless authorization is received from BluMetric in writing. BluMetric accepts no responsibility for any loss or damages suffered by any unauthorized third party as a result of decisions made or actions taken based on this report.

This Phase Two ESA has been conducted in general accordance with O. Reg. 153/04 by or under the supervision of a qualified person.

This report was prepared by Robert Hillier and Carolyn Miller of BluMetric Environmental Inc.

Respectfully submitted,  
**BluMetric Environmental Inc.**

  
Robert Hillier, P. Geo, QP<sub>ESA</sub>  
Senior Hydrogeologist

  
Carolyn Miller, EIT  
Engineer In Training



## 8. REFERENCES

AGRA Earth & Environmental Limited, 1999. Status Report, B A Bank Note, 975 Gladstone Avenue, Ottawa, Ontario.

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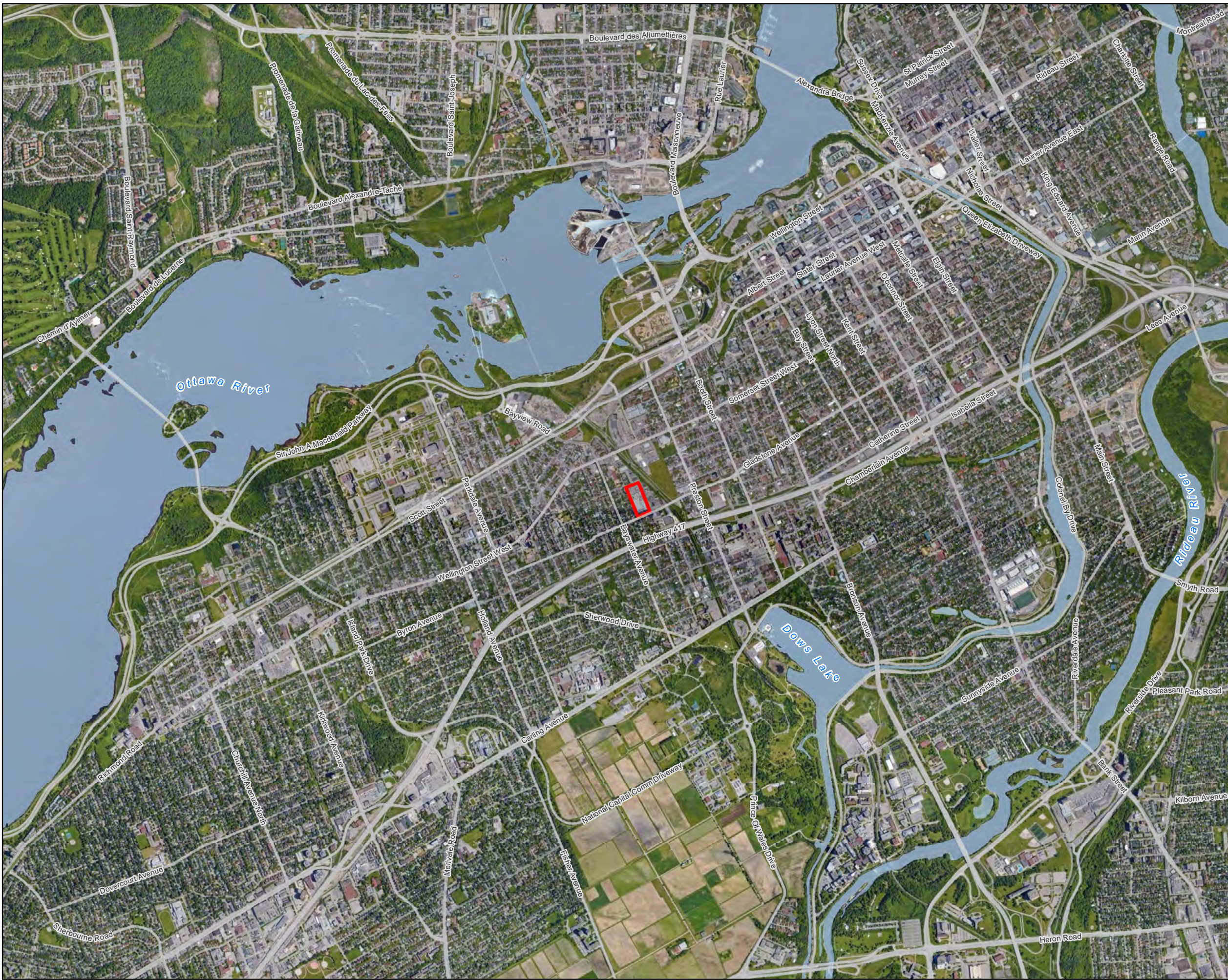
## 9. FIGURES AND TABLES

### 9.1 FIGURES



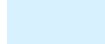
The following topics are addressed in the following figures:

Topic	Figure Number
Site Location. Areas of natural significance and water bodies within 30 m, if any.	Figure 1
Plan of the property before actions to reduce COCs (include buildings, storage tanks, drainage features, area of fill). Shows mapped location of subsurface utilities.	Figure 2
Phase One Conceptual Site Model	Figure 3a and 3b
Static groundwater data and inferred flow direction.	Figure 4
Plan(s) showing concentrations of all sampled locations for COCs in soil, exceeding comparison SCS.	Figure 5
Plan(s) showing concentrations of all sampled locations for COCs in ground water, exceeding SCS.	No Concentrations in Groundwater exceeded O. Reg. 153/04 Table 3 SCS.
Plan(s) and cross-section showing lateral and vertical extent of COCs in soil, ground water, and sediment (include sample locations, labels, sampled depth or interval, concentration(s), applicable SCS, and stratigraphy down to the deepest aquifer or aquitard investigated).	Figures 6, 7, and 8.



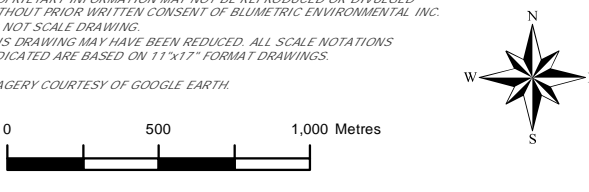


**LEGEND**

-  Road
-  Phase Two Property
-  Waterbody

1				
REV.	DESCRIPTION	YY/MM/DD	BY	CHK

**REFERENCES**  
 PROPRIETARY INFORMATION MAY NOT BE REPRODUCED OR DIVULGED WITHOUT PRIOR WRITTEN CONSENT OF BLUMETRIC ENVIRONMENTAL INC. DO NOT SCALE DRAWING.  
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 IMAGERY COURTESY OF GOOGLE EARTH.



**CLIENT**  
 Canadian Bank Note Company Ltd.

**PROJECT**  
 Phase Two ESA  
 975 Gladstone Avenue,  
 Ottawa, Ontario

**TITLE**  
 General Site Location



3108 Carp Road PO Box 430  
 Ottawa, Ontario K0A 1L0  
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 FAX: (613) 839-5376  
 Email: info@blumetric.ca  
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<b>PROJECT #</b> 190625-00		<b>DATE</b> October 03, 2019	
<b>DRAWN</b> KH	<b>CHECKED</b> MKB	<b>FIG NO.</b> 01	<b>REV</b> 0



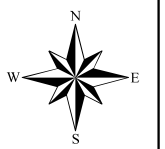
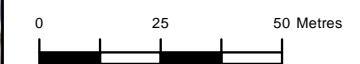
LEGEND



Phase Two Property

1				
REV.	DESCRIPTION	YY/MM/DD	BY	CHK

**REFERENCES**  
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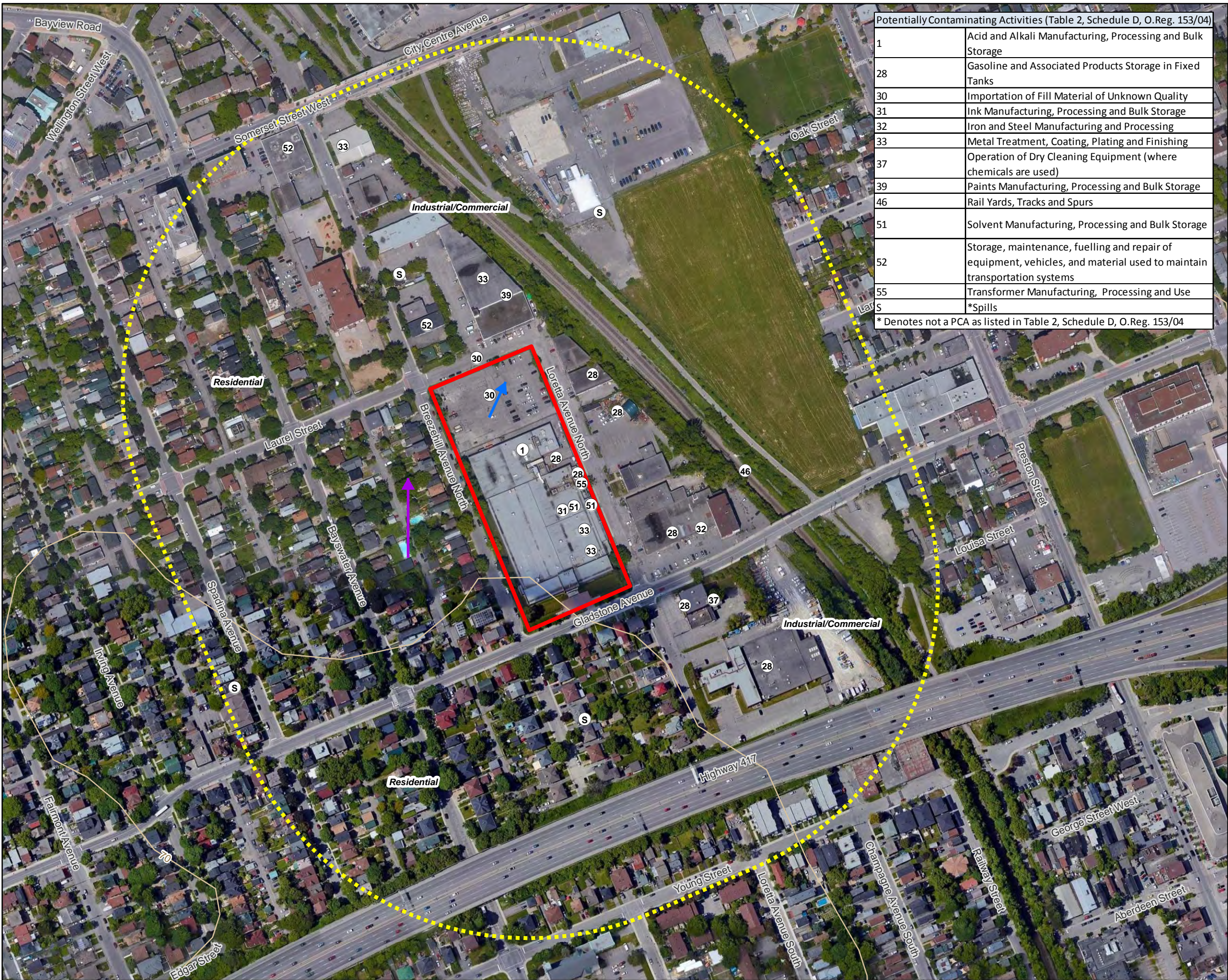
**CLIENT**  
 Canadian Bank Note Company Ltd.

**PROJECT**  
 Phase Two ESA  
 975 Gladstone Avenue,  
 Ottawa, Ontario

**TITLE**  
 Phase Two Property

**BluMetric™**  
 Environmental  
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<b>PROJECT #</b> 190625-00		<b>DATE</b> October 03, 2019	
<b>DRAWN</b> KH	<b>CHECKED</b> MKB	<b>FIG NO.</b> 02	<b>REV</b> 0



Potentially Contaminating Activities (Table 2, Schedule D, O.Reg. 153/04)	
1	Acid and Alkali Manufacturing, Processing and Bulk Storage
28	Gasoline and Associated Products Storage in Fixed Tanks
30	Importation of Fill Material of Unknown Quality
31	Ink Manufacturing, Processing and Bulk Storage
32	Iron and Steel Manufacturing and Processing
33	Metal Treatment, Coating, Plating and Finishing
37	Operation of Dry Cleaning Equipment (where chemicals are used)
39	Paints Manufacturing, Processing and Bulk Storage
46	Rail Yards, Tracks and Spurs
51	Solvent Manufacturing, Processing and Bulk Storage
52	Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems
55	Transformer Manufacturing, Processing and Use
S	*Spills
* Denotes not a PCA as listed in Table 2, Schedule D, O.Reg. 153/04	

**LEGEND**

- Phase One Study Area (250 m)
- Phase One Property
- Inferred Direction of Local Groundwater Flow
- Inferred Direction of Regional Groundwater Flow

**Elevation (m)**

- Major Contour (10m)
- Minor Contour (5 m)

REV.	DESCRIPTION	YY/MM/DD	BY	CHK
1				

**REFERENCES**  
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**CLIENT**  
 Canadian Bank Note Company Ltd.

**PROJECT**  
 Phase Two ESA  
 975 Gladstone Avenue,  
 Ottawa, Ontario

**TITLE**  
 Phase One Conceptual Site Model -  
 Potentially Contaminating Activities

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<b>PROJECT #</b> 190625		<b>DATE</b> October 03, 2019	
<b>DRAWN</b> KH	<b>CHECKED</b> MKB	<b>FIG NO.</b> 03a	<b>REV</b> 0



**LEGEND**

- Phase One Property
- 1947 Date of Construction
- Inferred Direction of Groundwater Flow

**Elevation (m)**

- Major Contour (10m)
- Minor Contour (5 m)

Areas of Potential Environmental Concern	
A.	PHC and PAH impacts from a former Bunker C heating oil tank at the Loretta Avenue North loading dock.
B.	PHC impacts from former solvent storage tanks in the ink mixing room and solvent storage room.
C.	Metals and PAH impacts from former nickel and chrome plating operations.
D.	PHC impacts from diesel fuel AST for backup generator. PHC and/or PCB impacts from transformers
E.	Potential metals impacts from former effluent system
F.	Potential presence of fill material of poor environmental quality beneath north parking lot. Known arsenic and lead impacts to shallow fill material on Laurel Street.

REV.	DESCRIPTION	YY/MM/DD	BY	CHK
1				

**REFERENCES**  
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0 25 50 Metres

**CLIENT**  
**Canadian Bank Note Company Ltd.**

**PROJECT**  
**Phase Two ESA  
 975 Gladstone Avenue,  
 Ottawa, Ontario**

**TITLE**  
**Phase One Conceptual Site Model -  
 Areas of Potential Environmental Concern**

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<b>PROJECT #</b> 190625		<b>DATE</b> October 03, 2019	
<b>DRAWN</b> KH	<b>CHECKED</b> MKB	<b>FIG NO.</b> 03b	<b>REV</b> 0



**LEGEND**

- Borehole
- City Well
- Monitoring Well
- 6055 Static Groundwater Elevation - October 7, 2019
- Inferred Groundwater Flow Direction
- Phase Two Property

1				
REV.	DESCRIPTION	YY/MM/DD	BY	CHK

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0 25 50 Metres

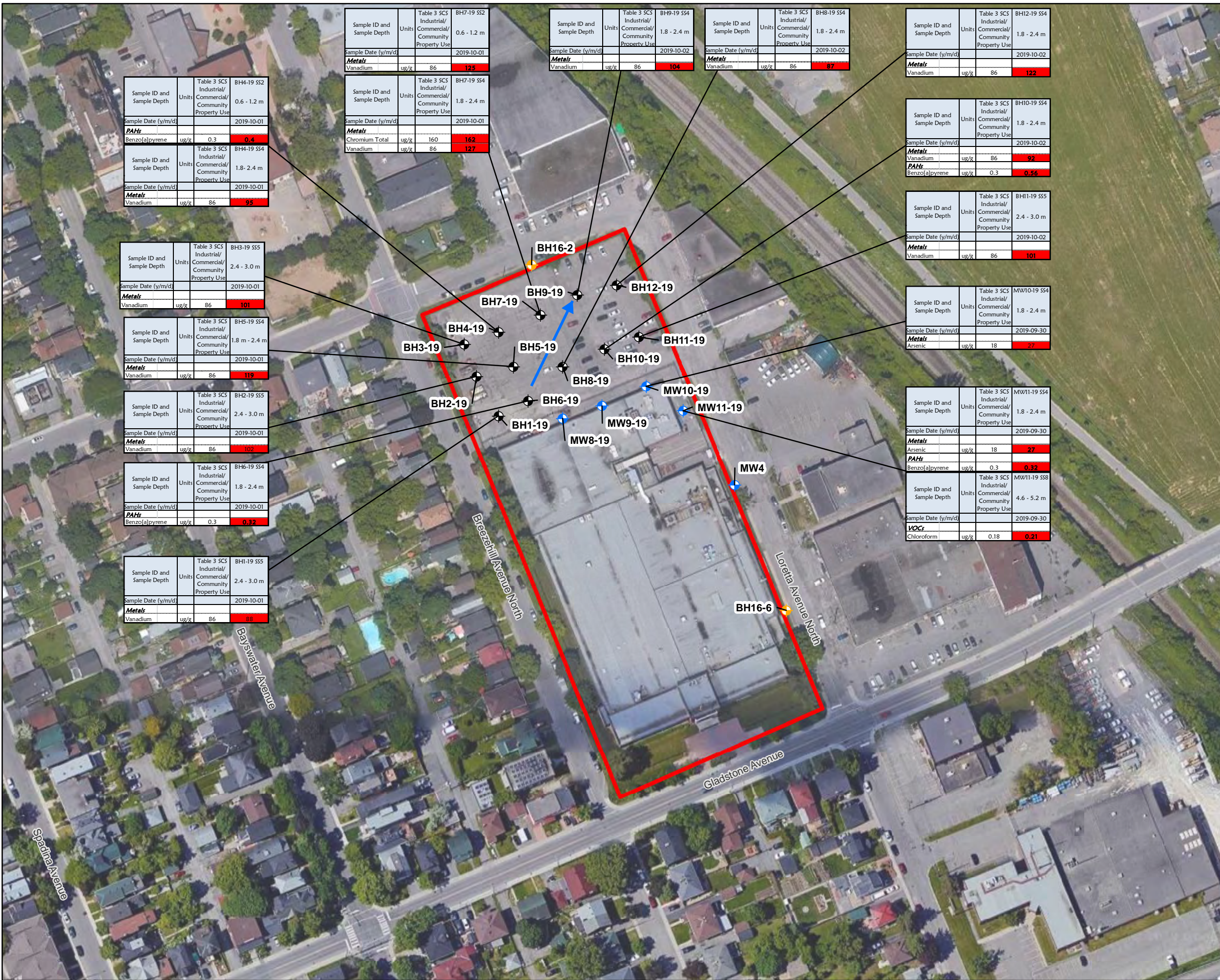
**CLIENT**  
 Canadian Bank Note Company Ltd.

**PROJECT**  
 Phase Two ESA  
 975 Gladstone Avenue,  
 Ottawa, Ontario

**TITLE**  
 Site Plan

3108 Carp Road PO Box 430  
 Ottawa, Ontario K0A 1L0  
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<b>PROJECT #</b> 190625-00		<b>DATE</b> October 18, 2019	
<b>DRAWN</b> KH	<b>CHECKED</b> RH	<b>FIG NO.</b> 04	<b>REV</b> 0



**LEGEND**

- Borehole
- City Well
- Monitoring Well
- Inferred Groundwater Flow Direction
- Phase Two Property

Sample ID and Sample Depth	Units	Table 3 SCS Industrial/Commercial/Community Property Use	Value
BH7-19 S52	0.6 - 1.2 m	Table 3 SCS Industrial/Commercial/Community Property Use	0.6 - 1.2 m
Sample Date (y/m/d)			2019-10-01
<b>Metals</b>			
Vanadium	ug/g	86	125
BH4-19 S52	0.6 - 1.2 m	Table 3 SCS Industrial/Commercial/Community Property Use	0.6 - 1.2 m
Sample Date (y/m/d)			2019-10-01
<b>PAHs</b>			
Benzo[a]pyrene	ug/g	0.3	0.4
BH4-19 S54	1.8 - 2.4 m	Table 3 SCS Industrial/Commercial/Community Property Use	1.8 - 2.4 m
Sample Date (y/m/d)			2019-10-01
<b>Metals</b>			
Vanadium	ug/g	86	95
BH7-19 S54	1.8 - 2.4 m	Table 3 SCS Industrial/Commercial/Community Property Use	1.8 - 2.4 m
Sample Date (y/m/d)			2019-10-01
<b>Metals</b>			
Chromium Total	ug/g	160	162
Vanadium	ug/g	86	127
BH9-19 S54	1.8 - 2.4 m	Table 3 SCS Industrial/Commercial/Community Property Use	1.8 - 2.4 m
Sample Date (y/m/d)			2019-10-02
<b>Metals</b>			
Vanadium	ug/g	86	104
BH8-19 S54	1.8 - 2.4 m	Table 3 SCS Industrial/Commercial/Community Property Use	1.8 - 2.4 m
Sample Date (y/m/d)			2019-10-02
<b>Metals</b>			
Vanadium	ug/g	86	87
BH12-19	1.8 - 2.4 m	Table 3 SCS Industrial/Commercial/Community Property Use	1.8 - 2.4 m
Sample Date (y/m/d)			2019-10-02
<b>Metals</b>			
Vanadium	ug/g	86	92
<b>PAHs</b>			
Benzo[a]pyrene	ug/g	0.3	0.56
BH11-19 S55	2.4 - 3.0 m	Table 3 SCS Industrial/Commercial/Community Property Use	2.4 - 3.0 m
Sample Date (y/m/d)			2019-10-02
<b>Metals</b>			
Vanadium	ug/g	86	101
MW10-19 S54	1.8 - 2.4 m	Table 3 SCS Industrial/Commercial/Community Property Use	1.8 - 2.4 m
Sample Date (y/m/d)			2019-09-30
<b>Metals</b>			
Arsenic	ug/g	18	27
MW11-19 S54	1.8 - 2.4 m	Table 3 SCS Industrial/Commercial/Community Property Use	1.8 - 2.4 m
Sample Date (y/m/d)			2019-09-30
<b>Metals</b>			
Arsenic	ug/g	18	27
MW11-19 S58	4.6 - 5.2 m	Table 3 SCS Industrial/Commercial/Community Property Use	4.6 - 5.2 m
Sample Date (y/m/d)			2019-09-30
<b>VOCs</b>			
Chloroform	ug/g	0.18	0.21
BH6-19 S54	1.8 - 2.4 m	Table 3 SCS Industrial/Commercial/Community Property Use	1.8 - 2.4 m
Sample Date (y/m/d)			2019-10-01
<b>PAHs</b>			
Benzo[a]pyrene	ug/g	0.3	0.32
BH1-19 S55	2.4 - 3.0 m	Table 3 SCS Industrial/Commercial/Community Property Use	2.4 - 3.0 m
Sample Date (y/m/d)			2019-10-01
<b>Metals</b>			
Vanadium	ug/g	86	88

REV.	DESCRIPTION	YY/MM/DD	BY	CHK
1				

**REFERENCES**  
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**CLIENT**  
 Canadian Bank Note Company Ltd.

**PROJECT**  
 Phase Two ESA  
 975 Gladstone Avenue,  
 Ottawa, Ontario

**TITLE**  
 Soil Laboratory Results  
 Exceeding Criteria

3108 Carp Road PO Box 430  
 Ottawa, Ontario K0A 1L0  
 TEL: (613) 839-3053  
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 Web: http://www.blumetric.ca

PROJECT # 190625-00	DATE October 18, 2019
DRAWN KH	CHECKED RH
FIG NO. 05	REV 0



LEGEND

- Monitoring Well / Borehole
- Line of Cross Section
- Property Line

REV.	DESCRIPTION	YY/MM/DD	BY	CHK

REFERENCES  
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CLIENT  
**CANADIAN BANK NOTE COMPANY LTD**

PROJECT  
**PHASE TWO ESA 975 GLADSTONE AVENUE, OTTAWA, ONTARIO**

TITLE  
**CROSS SECTION LOCATIONS**

3108 Carp Road PO Box 430  
 Ottawa, Ontario, K0A 1L0  
 TEL: (613) 839-3053  
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 Web: http://www.blumetric.ca

PROJECT # <b>190625</b>	DATE <b>October 24, 2019</b>
DRAWN <b>AL</b>	CHECKED <b>RH</b>
DWG NO. <b>6</b>	REV <b>0</b>





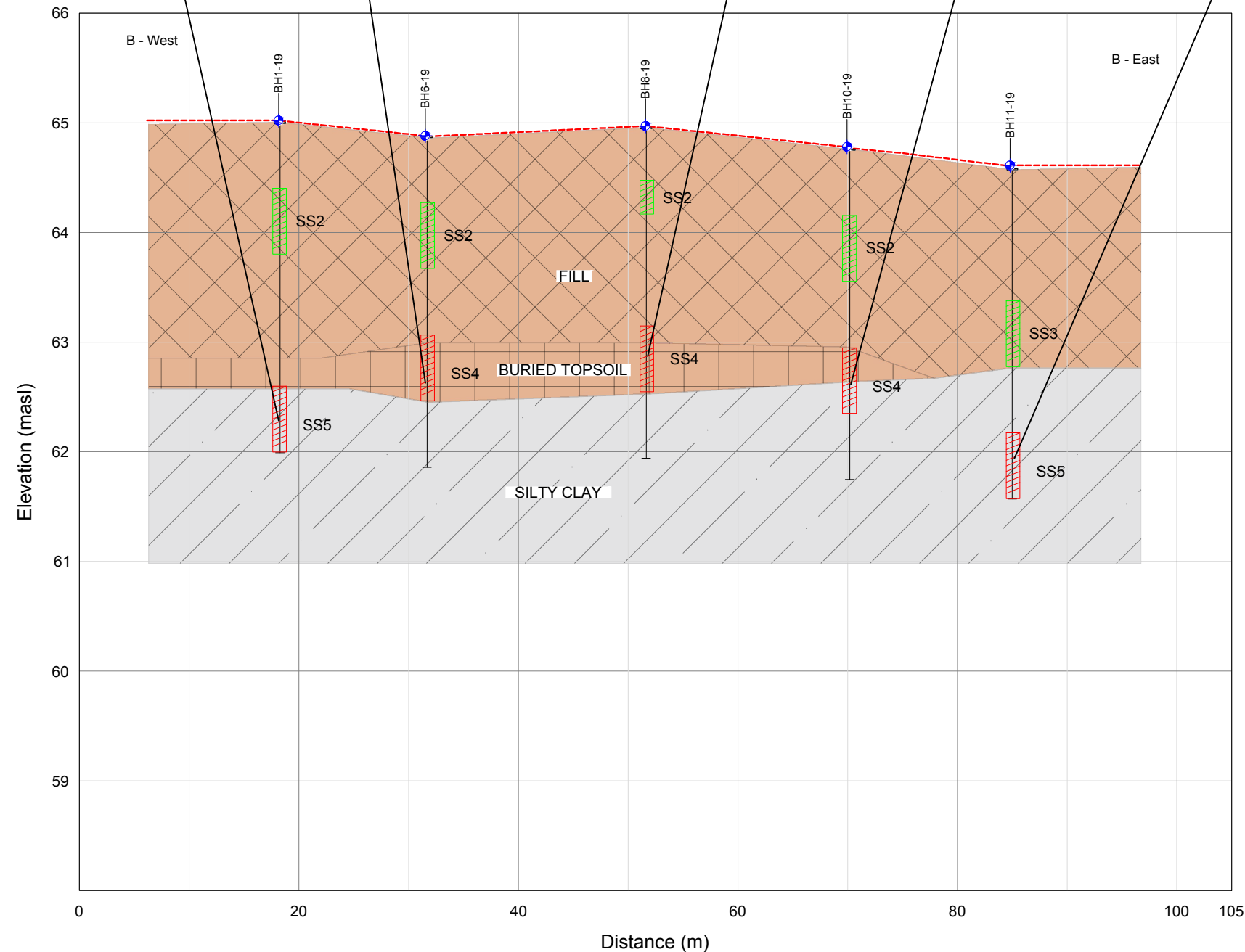
Sample ID and Sample Depth	Units	Table 3 SCS Industrial/Commercial/Community Property Use	BH1-19 SS5 2.4 - 3.0 m
Sample Date (y/m/d)			2019-10-01
<b>Metals</b>			
Vanadium	ug/g	86	88

Sample ID and Sample Depth	Units	Table 3 SCS Industrial/Commercial/Community Property Use	BH6-19 SS4 1.8 - 2.4 m
Sample Date (y/m/d)			2019-10-01
<b>PAHs</b>			
Benzo[a]pyrene	ug/g	0.3	0.32

Sample ID and Sample Depth	Units	Table 3 SCS Industrial/Commercial/Community Property Use	BH8-19 SS4 1.8 - 2.4 m
Sample Date (y/m/d)			2019-10-02
<b>Metals</b>			
Vanadium	ug/g	86	87

Sample ID and Sample Depth	Units	Table 3 SCS Industrial/Commercial/Community Property Use	BH10-19 SS4 1.8 - 2.4 m
Sample Date (y/m/d)			2019-10-02
<b>Metals</b>			
Vanadium	ug/g	86	92
<b>PAHs</b>			
Benzo[a]pyrene	ug/g	0.3	0.56

Sample ID and Sample Depth	Units	Table 3 SCS Industrial/Commercial/Community Property Use	BH11-19 SS5 2.4 - 3.0 m
Sample Date (y/m/d)			2019-10-02
<b>Metals</b>			
Vanadium	ug/g	86	101

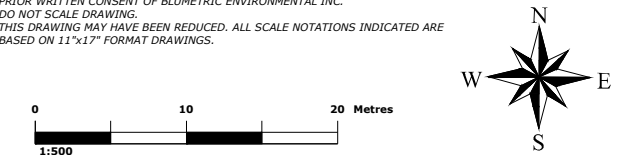


- LEGEND
- Monitoring Well / Borehole
  - Fill Material - Sand, Gravel, Silty Sand
  - Buried Topsoil Layer
  - Silty Clay
  - Silty Sand Till
  - Sample Location Below Table 3 SCS
  - Sample Location Exceeds Table 3 SCS

VERTICAL EXAGGERATION: 10X

REV.	DESCRIPTION	YY/MM/DD	BY	CHK

REFERENCES  
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CLIENT  
**CANADIAN BANK NOTE COMPANY LTD**

PROJECT  
**PHASE TWO ESA 975 GLADSTONE AVENUE, OTTAWA, ONTARIO**

TITLE  
**CROSS SECTION B-B'**

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 Ottawa, Ontario, K0A 1L0  
 TEL: (613) 839-3053  
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 Web: http://www.blumetric.ca

PROJECT # <b>190625</b>	DATE <b>October 24, 2019</b>
DRAWN <b>AL</b>	CHECKED <b>RH</b>
DWG NO. <b>8</b>	REV <b>0</b>

## 9.2 TABLES

The following topics are addressed in the following tables:

Topic	Table Number and Location
Soil Samples Submitted	Table 1 in Section 5.3
Groundwater Samples Submitted	Table 2 in Section 5.6
Monitoring Well Construction	Table 3
Water Levels (to the nearest cm)	Table 3
NAPL Thickness (to the nearest cm)	None was encountered at the Phase Two Property
Elevation	Table 3
Soil Data	Tables 4 to 7
Ground Water Data	Tables 8 to 10
Sediment Data	No Sediment on the Phase Two Property
Laboratory Results for Soil Exceeding Comparison Standards	Table 11 in section 6.10
Laboratory Results for Groundwater Exceeding Comparison Standards	No Groundwater Results Exceeded Comparison Standards



**Table 3: Water Level Measurements**  
**CBN Phase Two ESA, 975 Gladstone Avenue, Ottawa, ON**

Well ID	Top of PVC Elevation* (masl)	Ground Surface Elevation* (masl)	Top of Screen Elevation* (masl)	Bottom of Screen Elevation* (masl)	Date	Depth to		Elevation	
						LNAPL (m bTPVC)	Water (m bTPVC)	LNAPL (m asl)	Water (m asl)
MW4	65.23	65.30	62.81	59.81	7-Oct-19	ND	4.68	-	60.55
MW8-19	64.61	64.77	61.72	58.67	4-Oct-19	ND	3.74	-	60.87
					7-Oct-19	ND	3.74	-	60.87
MW9-19	64.54	64.63	61.73	58.69	4-Oct-19	ND	3.97	-	60.57
					7-Oct-19	ND	3.93	-	60.61
MW10-19	64.34	64.51	61.46	58.41	4-Oct-19	ND	3.87	-	60.47
					7-Oct-19	ND	3.86	-	60.48
MW11-19	64.21	64.37	61.32	58.27	4-Oct-19	ND	3.82	-	60.39
					7-Oct-19	ND	3.81	-	60.40
BH16-6	66.74	66.78	-	-	4-Oct-19	ND	5.15	-	61.59
					7-Oct-19	ND	5.21	-	61.53
BH16-2	64.48	64.66	-	-	4-Oct-19	ND	3.71	-	60.77
					7-Oct-19	ND	3.73	-	60.75

*Notes:*

- \* For MW wells, reference elevation of 65.249 m for fire hydrant arrowhead on Loretta Ave, opposite east plant entrance.
- For BH wells, elevations obtained from HCE, 2017.
- - not applicable/available
- ND - not detected
- m asl - metres above sea level
- m bTPVC - metres below top of PVC

**Table 4: Soil Analytical Results - Metals and PAHs**  
**CBN Phase Two ESA, 975 Gladstone Avenue, Ottawa, ON**

Parameter	Units	MDL	Table 3 Site Condition Standards <sup>1</sup>	APEC ID: A and E			APEC ID: E and F						
				MW11-19 S54 1.8 - 2.4 m	MW11-19 S58 & DUPI 4.6 - 5.2 m		MW8-19 S53 1.5 - 2.1 m	MW8-19 S58 4.6 - 5.2 m	MW8-19 S59 5.2 - 5.8 m	MW9-19 S52 0.6 - 1.2 m	MW9-19 S57 3.7 - 4.3 m	MW10-19 S54 1.8 - 2.4 m	MW10-19 S59 5.2 - 5.8 m
Sample Date (y/m/d)				2019-09-30	2019-09-30		2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-09-30
<b>Physical Characteristics</b>													
Moisture	%	0.1	NV	17.3	33.7	25	15.2	29.2	--	10.4	26.4	17.4	18.3
pH	-	2	5 to 9	--	--	--	--	--	--	--	--	--	--
Soil Particle Size <75µm	%	0.1		--	--	--	--	--	56.9	--	--	--	--
Soil Particle Size >75µm	%	0.1		--	--	--	--	--	43.2	--	--	--	--
<b>Metals</b>													
Antimony	ug/g	1	50	<1	<1	<1	<1	<1	--	<1	<1	<1	<1
Arsenic	ug/g	1	18	27	4	3	6	3	--	3	3	27	3
Barium	ug/g	1	670	244	411	425	157	318	--	149	399	124	170
Beryllium	ug/g	1	10	<1	<1	<1	<1	<1	--	<1	<1	<1	<1
Boron (total)	ug/g	5	120	<5	<5	<5	<5	<5	--	<5	<5	<5	<5
Cadmium	ug/g	0.4	1.9	<0.4	<0.4	<0.4	<0.4	<0.4	--	<0.4	<0.4	<0.4	<0.4
Chromium Total	ug/g	1	160	69	79	80	41	66	--	37	98	35	31
Cobalt	ug/g	1	100	14	17	18	9	14	--	8	19	8	8
Copper	ug/g	1	300	33	41	42	20	32	--	18	39	20	18
Lead	ug/g	1	120	33	8	6	11	7	--	8	7	27	5
Molybdenum	ug/g	1	40	<1	2	3	<1	<1	--	<1	<1	<1	<1
Nickel	ug/g	1	340	39	44	45	24	37	--	21	53	21	18
Selenium	ug/g	1	5.5	<1	1	<1	1	1	--	<1	1	1	<1
Silver	ug/g	0.2	50	0.2	<0.2	<0.2	<0.2	<0.2	--	<0.2	<0.2	0.2	<0.2
Thallium	ug/g	1	3.3	<1	<1	<1	<1	<1	--	<1	<1	<1	<1
Uranium	ug/g	0.5	33	0.6	0.5	0.5	0.5	0.5	--	<0.5	0.6	0.5	<0.5
Vanadium	ug/g	2	86	61	74	77	40	63	--	34	79	34	42
Zinc	ug/g	2	340	96	122	117	58	103	--	48	119	77	57
<b>PAHs</b>													
1+2-methylnaphthalene	ug/g	0.05	85	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Acenaphthene	ug/g	0.05	96	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	ug/g	0.05	0.17	0.09	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	0.08	<0.05
Anthracene	ug/g	0.05	0.74	0.09	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	ug/g	0.05	0.96	0.29	<0.05	<0.05	0.07	<0.05	--	<0.05	<0.05	0.18	<0.05
Benzo[a]pyrene	ug/g	0.05	0.3	0.32	<0.05	<0.05	0.08	<0.05	--	<0.05	<0.05	0.22	<0.05
Benzo[b]fluoranthene	ug/g	0.05	0.96	0.33	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	0.19	<0.05
Benzo[ghi]perylene	ug/g	0.05	9.6	0.18	<0.05	<0.05	0.08	<0.05	--	<0.05	<0.05	0.15	<0.05
Benzo[k]fluoranthene	ug/g	0.05	0.96	0.34	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	0.21	<0.05
Chrysene	ug/g	0.05	9.6	0.35	<0.05	<0.05	0.14	<0.05	--	<0.05	<0.05	0.22	<0.05
Dibenz[ah]anthracene	ug/g	0.05	0.1	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Fluoranthene	ug/g	0.05	9.6	0.56	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	0.34	<0.05
Fluorene	ug/g	0.05	69	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Indeno[123-cd]pyrene	ug/g	0.05	0.95	0.16	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	0.13	<0.05
Methylnaphthalene,1-	ug/g	0.05	85	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Methylnaphthalene,2-	ug/g	0.05	85	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Naphthalene	ug/g	0.05	28	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05
Phenanthrene	ug/g	0.05	16	0.34	<0.05	<0.05	0.07	<0.05	--	<0.05	<0.05	0.12	<0.05
Pyrene	ug/g	0.05	96	0.46	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	0.28	<0.05

**Notes:**

1 - O.Reg. 153/04 "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" April 15, 2011 for Industrial/Commercial/ Community property use, fine to medium textured soils Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

NV - no value

-- - not analysed

Denotes exceeds O.Reg. 153/04 Table 3 SCS

**Table 4: Soil Analytical Results - Metals and PAHs**  
**CBN Phase Two ESA, 975 Gladstone Avenue, Ottawa, ON**

Parameter	Units	MDL	Table 3 Site Condition Standards <sup>1</sup>	APEC ID: F									
				BH1-19 S52 0.6 - 1.2 m	BH1-19 S55 2.4 - 3.0 m	BH2-19 S53 1.2 - 1.8 m	BH2-19 S55 2.4 - 3.0 m	BH3-19 S52 0.6 - 1.2 m	BH3-19 S55 2.4 - 3.0 m	BH4-19 S52 0.6 - 1.2 m	BH4-19 S54 1.8- 2.4 m	BH5-19 AS1 0.3 - 0.6 m	BH5-19 S54 1.8 m - 2.4 m
Sample Date (y/m/d)				2019-10-01	2019-10-01	2019-10-01	2019-10-01	2019-10-01	2019-10-01	2019-10-01	2019-10-01	2019-10-01	2019-10-01
<b>Physical Characteristics</b>													
Moisture	%	0.1	NV	--	--	--	--	--	--	--	--	6.2	--
pH	-	2	5 to 9	--	--	7.23	--	--	--	--	--	--	7.05
Soil Particle Size <75µm	%	0.1		--	--	--	--	--	--	--	--	--	--
Soil Particle Size >75µm	%	0.1		--	--	--	--	--	--	--	--	--	--
<b>Metals</b>													
Antimony	ug/g	1	50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Arsenic	ug/g	1	18	2	3	5	3	16	4	9	3	2	3
Barium	ug/g	1	670	151	500	116	378	99	358	91	357	130	379
Beryllium	ug/g	1	10	<1	<1	<1	<1	<1	1	<1	<1	<1	<1
Boron (total)	ug/g	5	120	<5	<5	<5	<5	<5	<5	<5	<5	<5	7
Cadmium	ug/g	0.4	1.9	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium Total	ug/g	1	160	31	127	31	126	38	128	44	123	21	147
Cobalt	ug/g	1	100	7	22	6	23	7	24	8	22	5	27
Copper	ug/g	1	300	16	52	16	55	17	56	17	53	11	65
Lead	ug/g	1	120	5	9	16	8	22	9	19	9	7	9
Molybdenum	ug/g	1	40	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	ug/g	1	340	18	68	17	68	22	71	21	66	13	80
Selenium	ug/g	1	5.5	<1	<1	<1	<1	<1	1	<1	1	<1	1
Silver	ug/g	0.2	50	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2
Thallium	ug/g	1	3.3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Uranium	ug/g	0.5	33	0.6	0.6	0.5	0.6	0.7	0.6	0.5	0.5	<0.5	0.9
Vanadium	ug/g	2	86	30	<b>88</b>	27	<b>102</b>	33	<b>101</b>	34	<b>95</b>	21	<b>119</b>
Zinc	ug/g	2	340	40	130	42	141	56	143	67	132	28	143
<b>PAHs</b>													
1+2-methylnaphthalene	ug/g	0.05	85	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	ug/g	0.05	96	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	ug/g	0.05	0.17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	ug/g	0.05	0.74	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.22	<0.05	<0.05	<0.05
Benz[a]anthracene	ug/g	0.05	0.96	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	0.51	<0.05	<0.05	<0.05
Benzo[a]pyrene	ug/g	0.05	0.3	<0.05	<0.05	0.09	<0.05	0.07	<0.05	<b>0.4</b>	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	ug/g	0.05	0.96	<0.05	<0.05	0.1	<0.05	0.07	<0.05	0.31	<0.05	<0.05	<0.05
Benzo[ghi]perylene	ug/g	0.05	9.6	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	0.13	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	ug/g	0.05	0.96	<0.05	<0.05	0.08	<0.05	0.07	<0.05	0.4	<0.05	<0.05	<0.05
Chrysene	ug/g	0.05	9.6	0.06	<0.05	0.11	<0.05	0.08	<0.05	0.44	<0.05	<0.05	<0.05
Dibenz[ah]anthracene	ug/g	0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	ug/g	0.05	9.6	<0.05	<0.05	0.14	<0.05	0.09	<0.05	0.96	<0.05	<0.05	<0.05
Fluorene	ug/g	0.05	69	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05
Indeno[123-cd]pyrene	ug/g	0.05	0.95	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	0.14	<0.05	<0.05	<0.05
Methylnaphthalene,1-	ug/g	0.05	85	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methylnaphthalene,2-	ug/g	0.05	85	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	ug/g	0.05	28	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	ug/g	0.05	16	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	0.48	<0.05	<0.05	<0.05
Pyrene	ug/g	0.05	96	<0.05	<0.05	0.12	<0.05	0.08	<0.05	0.75	<0.05	<0.05	<0.05

**Notes:**

1 - O.Reg. 153/04 "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" April 15, 2011 for Industrial/Commercial/ Community property use, fine to medium textured soils Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

NV - no value  
 -- - not analysed

     - Denotes exceeds O.Reg. 153/04 Table 3 SCS

**Table 4: Soil Analytical Results - Metals and PAHs**  
**CBN Phase Two ESA, 975 Gladstone Avenue, Ottawa, ON**

Parameter	Units	MDL	Table 3 Site Condition Standards <sup>1</sup>	APEC ID: F										
				BH5-19 S55 2.4 m - 3.0 m	BH6-19 S52 0.6 - 1.2 m	BH6-19 S54 1.8 - 2.4 m	BH7-19 S52 0.6 - 1.2 m	BH7-19 S54 1.8 - 2.4 m	BH8-19 AS1 0.3 - 0.6 m	BH8-19 S54 1.8 - 2.4 m	BH9-19 S54 1.8 - 2.4 m	BH10-19 S52 & DUP2 0.6 - 1.2 m	BH10-19 S54 1.8 - 2.4 m	
Sample Date (y/m/d)				2019-10-01	2019-10-01	2019-10-01	2019-10-01	2019-10-01	2019-10-02	2019-10-02	2019-10-02	2019-10-02	2019-10-02	2019-10-02
<b>Physical Characteristics</b>														
Moisture	%	0.1	NV	--	--	--	--	--	--	--	--	--	--	--
pH	-	2	5 to 9	--	--	--	--	--	--	--	--	--	--	--
Soil Particle Size <75µm	%	0.1		99.3	--	--	--	--	--	--	--	--	--	--
Soil Particle Size >75µm	%	0.1		0.7	--	--	--	--	--	--	--	--	--	--
<b>Metals</b>														
Antimony	ug/g	1	50	--	<1	<1	<1	<1	2	<1	<1	<1	<1	<1
Arsenic	ug/g	1	18	--	2	11	4	3	3	17	4	3	3	11
Barium	ug/g	1	670	--	186	273	430	393	157	288	399	249	287	263
Beryllium	ug/g	1	10	--	<1	<1	1	<1	<1	<1	1	<1	<1	<1
Boron (total)	ug/g	5	120	--	7	10	7	7	5	7	7	6	6	6
Cadmium	ug/g	0.4	1.9	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium Total	ug/g	1	160	--	43	67	152	<b>162</b>	39	105	127	68	74	116
Cobalt	ug/g	1	100	--	7	13	29	28	9	20	24	14	15	19
Copper	ug/g	1	300	--	21	33	68	68	20	42	56	33	34	42
Lead	ug/g	1	120	--	5	37	10	9	10	32	10	7	7	20
Molybdenum	ug/g	1	40	--	<1	<1	<1	<1	1	<1	<1	<1	<1	<1
Nickel	ug/g	1	340	--	24	37	82	86	24	55	69	39	42	59
Selenium	ug/g	1	5.5	--	<1	1	1	2	<1	<1	1	1	1	1
Silver	ug/g	0.2	50	--	<0.2	0.5	<0.2	<0.2	0.3	<0.2	0.3	<0.2	<0.2	<0.2
Thallium	ug/g	1	3.3	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Uranium	ug/g	0.5	33	--	<0.5	0.6	0.6	0.6	<0.5	0.9	0.6	0.7	0.6	0.7
Vanadium	ug/g	2	86	--	30	55	<b>125</b>	<b>127</b>	45	<b>87</b>	<b>104</b>	62	64	<b>92</b>
Zinc	ug/g	2	340	--	48	112	152	142	47	127	132	76	76	120
<b>PAHs</b>														
1+2-methylnaphthalene	ug/g	0.05	85	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	ug/g	0.05	96	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	ug/g	0.05	0.17	--	<0.05	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.14
Anthracene	ug/g	0.05	0.74	--	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.12
Benz[a]anthracene	ug/g	0.05	0.96	--	<0.05	0.27	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.52
Benzo[a]pyrene	ug/g	0.05	0.3	--	<0.05	<b>0.32</b>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<b>0.56</b>
Benzo[b]fluoranthene	ug/g	0.05	0.96	--	<0.05	0.32	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.55
Benzo[ghi]perylene	ug/g	0.05	9.6	--	<0.05	0.17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.26
Benzo[k]fluoranthene	ug/g	0.05	0.96	--	<0.05	0.29	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.51
Chrysene	ug/g	0.05	9.6	--	<0.05	0.32	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	0.59
Dibenz[ah]anthracene	ug/g	0.05	0.1	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.09
Fluoranthene	ug/g	0.05	9.6	--	<0.05	0.48	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.01
Fluorene	ug/g	0.05	69	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[123-cd]pyrene	ug/g	0.05	0.95	--	<0.05	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.26
Methylnaphthalene,1-	ug/g	0.05	85	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methylnaphthalene,2-	ug/g	0.05	85	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	ug/g	0.05	28	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	ug/g	0.05	16	--	<0.05	0.2	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	0.4
Pyrene	ug/g	0.05	96	--	<0.05	0.41	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.83

**Notes:**

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NV - no value  
 -- - not analysed

     - Denotes exceeds O.Reg. 153/04 Table 3 SCS

**Table 4: Soil Analytical Results - Metals and PAHs**  
**CBN Phase Two ESA, 975 Gladstone Avenue, Ottawa, ON**

Parameter	Units	MDL	Table 3 Site Condition Standards <sup>1</sup>	APEC ID: F				
				BH11-19 S53 1.2 - 1.8 m	BH11-19 S55 2.4 - 3.0 m	BH12-19 S52 & DUP3 0.6 - 1.2 m	BH12-19 S54 1.8 - 2.4 m	
Sample Date (y/m/d)				2019-10-02	2019-10-02	2019-10-02	2019-10-02	
<b>Physical Characteristics</b>								
Moisture	%	0.1	NV	--	--	12	--	--
pH	-	2	5 to 9	--	--	7.19	--	6.87
Soil Particle Size <75µm	%	0.1		--	--	--	--	--
Soil Particle Size >75µm	%	0.1		--	--	--	--	--
<b>Metals</b>								
Antimony	ug/g	1	50	<1	<1	<1	<1	<1
Arsenic	ug/g	1	18	2	3	9	8	3
Barium	ug/g	1	670	307	295	148	151	393
Beryllium	ug/g	1	10	<1	<1	<1	<1	<1
Boron (total)	ug/g	5	120	5	8	8	7	7
Cadmium	ug/g	0.4	1.9	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium Total	ug/g	1	160	78	135	41	55	147
Cobalt	ug/g	1	100	16	24	10	10	28
Copper	ug/g	1	300	35	58	24	23	63
Lead	ug/g	1	120	6	10	18	14	8
Molybdenum	ug/g	1	40	<1	<1	<1	<1	<1
Nickel	ug/g	1	340	44	73	25	31	78
Selenium	ug/g	1	5.5	<1	1	1	2	1
Silver	ug/g	0.2	50	<0.2	<0.2	0.2	<0.2	<0.2
Thallium	ug/g	1	3.3	<1	<1	<1	<1	<1
Uranium	ug/g	0.5	33	<0.5	0.7	1.2	0.7	0.6
Vanadium	ug/g	2	86	65	101	49	46	122
Zinc	ug/g	2	340	76	123	75	64	140
<b>PAHs</b>								
1+2-methylnaphthalene	ug/g	0.05	85	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	ug/g	0.05	96	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	ug/g	0.05	0.17	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	ug/g	0.05	0.74	<0.05	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	ug/g	0.05	0.96	<0.05	<0.05	<0.05	0.06	<0.05
Benzo[a]pyrene	ug/g	0.05	0.3	<0.05	<0.05	<0.05	0.06	<0.05
Benzo[b]fluoranthene	ug/g	0.05	0.96	<0.05	<0.05	<0.05	0.06	<0.05
Benzo[ghi]perylene	ug/g	0.05	9.6	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	ug/g	0.05	0.96	<0.05	<0.05	<0.05	0.07	<0.05
Chrysene	ug/g	0.05	9.6	<0.05	<0.05	<0.05	0.07	<0.05
Dibenz[ah]anthracene	ug/g	0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	ug/g	0.05	9.6	<0.05	<0.05	<0.05	0.09	<0.05
Fluorene	ug/g	0.05	69	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[123-cd]pyrene	ug/g	0.05	0.95	<0.05	<0.05	<0.05	<0.05	<0.05
Methylnaphthalene,1-	ug/g	0.05	85	<0.05	<0.05	<0.05	<0.05	<0.05
Methylnaphthalene,2-	ug/g	0.05	85	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	ug/g	0.05	28	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	ug/g	0.05	16	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	ug/g	0.05	96	<0.05	<0.05	<0.05	0.08	<0.05

Notes:

<sup>1</sup> - O.Reg. 153/04 "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" April 15, 2011 for Industrial/Commercial/ Community property use, fine to medium textured soils  
Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

NV - no value  
-- - not analysed

  - Denotes exceeds O.Reg. 153/04 Table 3 SCS



**Table 5: Soil Analytical Results PHCs/BTEX and VOCs**  
**CBN Phase Two ESA, 975 Gladstone Avenue, Ottawa, ON**

Parameter	Units	MDL	Table 3 Site Condition Standards <sup>1</sup>	APEC ID: A and E			APEC ID: E						APEC ID: F		
				MW11-19 SS4 1.8 - 2.4 m	MW11-19 SS8 & DUPI 4.6 - 5.2 m		MW8-19 SS3 1.5 - 2.1 m	MW8-19 SS8 4.6 - 5.2 m	MW9-19 SS2 0.6 - 1.2 m	MW9-19 SS7 3.7 - 4.3 m	MW10-19 SS4 1.8 - 2.4 m	MW10-19 SS9 5.2 - 5.8 m	BH5-19 AS1 0.3 - 0.6 m	BH12-19 SS2 0.6 - 1.2 m	
Sample Date (y/m/d)				2019-09-30	2019-09-30		2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-10-01	2019-10-02
<b>PHCs</b>															
PHC F1	ug/g	10	65	<10	0.4	30	<10	<10	<10	<10	<10	<10	<10	<10	<10
PHC F1-BTEX	ug/g	10	65	<10	--	30	--	<10	<10	<10	--	--	<10	<10	<10
PHC F2	ug/g	10	250	<10	60	30	<10	<10	<10	<10	<10	<10	<10	<10	<10
PHC F3	ug/g	20	2500	70	130	60	40	30	140	20	70	<20	410	40	40
PHC F4	ug/g	20	6600	60	60	30	50	<20	220	<20	60	<20	910	50	50
PHC F4 Gravimetric	ug/g	100	6600	100	300	--	--	--	900	--	300	--	4100	300	300
<b>BTEX</b>															
Benzene	ug/g	0.02	0.4	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	ug/g	0.2	78	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	ug/g	0.05	19	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	ug/g	0.05	30	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, m/p-	ug/g	0.05	NV	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, o-	ug/g	0.05	NV	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>VOCs</b>															
Acetone	ug/g	0.5	28	--	<0.50	--	<0.50	--	--	<0.50	<0.50	--	--	--	--
Bromodichloromethane	ug/g	0.05	18	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Bromoform	ug/g	0.05	1.7	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Bromomethane	ug/g	0.05	0.05	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Carbon Tetrachloride	ug/g	0.05	1.5	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Chlorobenzene	ug/g	0.05	2.7	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Chloroform	ug/g	0.05	0.18	--	<b>0.21</b>	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dibromochloromethane	ug/g	0.05	13	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichlorobenzene,1,2-	ug/g	0.05	8.5	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichlorobenzene,1,3-	ug/g	0.05	12	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichlorobenzene,1,4-	ug/g	0.05	0.84	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichlorodifluoromethane	ug/g	0.05	25	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichloroethane,1,1-	ug/g	0.05	21	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichloroethane,1,2-	ug/g	0.05	0.05	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichloroethylene,1,1-	ug/g	0.05	0.48	--	0.06	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichloroethylene,1,2-cis-	ug/g	0.05	37	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichloroethylene,1,2-trans-	ug/g	0.05	9.3	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichloropropane,1,2-	ug/g	0.05	0.68	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichloropropene,1,3-	ug/g	0.05	0.21	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichloropropylene,1,3-cis-	ug/g	0.05	0.21	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Dichloropropylene,1,3-trans-	ug/g	0.05	0.21	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Ethylene dibromide	ug/g	0.05	0.05	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Hexane(n)	ug/g	0.05	88	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Methyl Ethyl Ketone	ug/g	0.5	88	--	<0.50	--	<0.50	--	--	<0.50	<0.50	--	--	--	--
Methyl Isobutyl Ketone	ug/g	0.5	210	--	<0.50	--	<0.50	--	--	<0.50	<0.50	--	--	--	--
Methyl tert-Butyl Ether(MTBE)	ug/g	0.05	3.2	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Methylene Chloride	ug/g	0.05	2	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Styrene	ug/g	0.05	43	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Tetrachloroethane,1,1,1,2-	ug/g	0.05	0.11	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Tetrachloroethane,1,1,2,2-	ug/g	0.05	0.094	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Tetrachloroethylene	ug/g	0.05	21	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Trichloroethane,1,1,1-	ug/g	0.05	12	--	0.19	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Trichloroethane,1,1,2-	ug/g	0.05	0.11	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Trichloroethylene	ug/g	0.05	0.61	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Trichlorofluoromethane	ug/g	0.05	5.8	--	<0.05	--	<0.05	--	--	<0.05	<0.05	--	--	--	--
Vinyl Chloride	ug/g	0.02	0.25	--	0.07	--	<0.02	--	--	<0.02	<0.02	--	--	--	--

**Notes:**

1 - Ministry of Environment and Climate Change "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" April 15, 2011

for Industrial/Commercial/Community property use, fine to medium textured soils

Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

NV - no value

-- - not analysed

**X** - Denotes Concentration Exceeds O.Reg 153/04 Table 3 SCS

**Table 6: Summary of Soil Quality Data - O.Reg 558 TCLP Analysis  
CBN Phase Two ESA, 975 Gladstone Avenue, Ottawa, ON**

PARAMETER	Units	MECP O. Reg. 558 <sup>1</sup>	REG558 (SOIL DRUM)
Collection Date			2-Oct-19
<b><i>Inorganics</i></b>			
Fluoride	mg/L	150	0.1
Nitrate and Nitrite as Nitrogen	mg/L	1000	<0.002
<b><i>Metals</i></b>			
Arsenic	mg/L	2.5	<0.02
Barium	mg/L	100	0.94
Boron (total)	mg/L	500	<0.1
Cadmium	mg/L	0.5	<0.008
Chromium Total	mg/L	5	<0.05
Cyanide (CN <sup>-</sup> )	mg/L	20	<0.05
Lead	mg/L	5	<0.01
Mercury	mg/L	0.1	<0.001
Selenium	mg/L	1	<0.02
Silver	mg/L	5	<0.01
Uranium	mg/L	10	<0.01
<b><i>Polycyclic Aromatic Hydrocarbons</i></b>			
Acenaphthene	µg/L	NV	<0.1
Acenaphthylene	µg/L	NV	<0.1
Anthracene	µg/L	NV	<0.1
Benz[a]anthracene	µg/L	NV	<0.1
Benzo[a]pyrene	µg/L	1	<0.01
Benzo[b]fluoranthene	µg/L	NV	<0.05
Benzo[ghi]perylene	µg/L	NV	<0.1
Benzo[k]fluoranthene	µg/L	NV	<0.05
Chrysene	µg/L	NV	<0.05
Dibenz[a h]anthracene	µg/L	NV	<0.1
Fluoranthene	µg/L	NV	<0.1
Fluorene	µg/L	NV	<0.1
Indeno[1 2 3-cd]pyrene	µg/L	NV	<0.1
Methylnaphthalene, 1-	µg/L	NV	<0.1
Methylnaphthalene, 2-	µg/L	NV	<0.1
Naphthalene	µg/L	NV	<0.1
Phenanthrene	µg/L	NV	<0.1
Pyrene	µg/L	NV	<0.1
PCBs	µg/L	300	<0.1
<b><i>Volatile Organic Compounds</i></b>			
Benzene	µg/L	500	<0.5
Carbon Tetrachloride	µg/L	500	<0.2
Chlorobenzene	µg/L	8000	<0.5
Chloroform	µg/L	10000	<0.5
Dichlorobenzene, 1,2-	µg/L	20000	<0.4
Dichlorobenzene, 1,4-	µg/L	500	<0.4
Dichloroethane, 1,2-	µg/L	500	<0.2
Dichloroethylene, 1,1-	µg/L	1400	<0.5
Methyl Ethyl Ketone	µg/L	200000	20
Methylene Chloride	µg/L	5000	<4.0
Trichloroethylene	µg/L	5000	<0.3
Vinyl Chloride	µg/L	200	<0.2

Notes:

<sup>1</sup> Criteria refers to Schedule 4 Leachate Quality Criteria Table in Ontario Regulation 558/00

Denotes Exceeds O. Reg. 558/00 Leachate Quality Criteria

< - less than indicated detection limit

NV - no value

**Table 7: Soil QA/QC Results**  
**CBN Phase Two ESA, 975 Gladstone Avenue, Ottawa, ON**

Parameter	Units	MDL	5X MDL	RPD Alert Criteria (%) <sup>1</sup>	MW11-19 SS8 & DUP1		RPD Qualification Criteria Satisfied? <sup>2</sup>	RPD Value (%)	BH10-19 SS2 & DUP2		RPD Qualification Criteria Satisfied? <sup>2</sup>	RPD Value (%)	BH12-19 SS2 & DUP3		RPD Qualification Criteria Satisfied? <sup>2</sup>	RPD Value (%)
<b>Metals</b>																
Antimony	ug/g	1	5	25	<1	<1	No	NC	<1	<1	No	NC	<1	<1	No	NC
Arsenic	ug/g	1	5	25	4	3	No	NC	3	3	No	NC	9	8	Yes	11.8
Barium	ug/g	1	5	25	411	425	Yes	3.3	249	287	Yes	14.2	148	151	Yes	2.0
Beryllium	ug/g	1	5	25	<1	<1	No	NC	<1	<1	No	NC	<1	<1	No	NC
Boron (total)	ug/g	5	25	25	<5	<5	No	NC	6	6	No	NC	8	7	No	NC
Cadmium	ug/g	0.4	2	25	<0.4	<0.4	No	NC	<0.4	<0.4	No	NC	<0.4	<0.4	No	NC
Chromium Total	ug/g	1	5	25	79	80	Yes	1.3	68	74	Yes	8.5	41	55	Yes	29.2
Cobalt	ug/g	1	5	25	17	18	Yes	5.7	14	15	Yes	6.9	10	10	Yes	0.0
Copper	ug/g	1	5	25	41	42	Yes	2.4	33	34	Yes	3.0	24	23	Yes	4.3
Lead	ug/g	1	5	25	8	6	Yes	28.6	7	7	Yes	0.0	18	14	Yes	25.0
Molybdenum	ug/g	1	5	25	2	3	No	NC	<1	<1	No	NC	<1	<1	No	NC
Nickel	ug/g	1	5	25	44	45	Yes	2.2	39	42	Yes	7.4	25	31	Yes	21.4
Selenium	ug/g	1	5	25	1	<1	No	NC	1	1	No	NC	1	2	No	NC
Silver	ug/g	0.2	1	25	<0.2	<0.2	No	NC	<0.2	<0.2	No	NC	0.2	<0.2	No	NC
Thallium	ug/g	1	5	25	<1	<1	No	NC	<1	<1	No	NC	<1	<1	No	NC
Uranium	ug/g	0.5	2.5	25	0.5	0.5	No	NC	0.7	0.6	No	NC	1.2	0.7	No	NC
Vanadium	ug/g	2	10	25	74	77	Yes	4.0	62	64	Yes	3.2	49	46	Yes	6.3
Zinc	ug/g	2	10	25	122	117	Yes	4.2	76	76	Yes	0.0	75	64	Yes	15.8
<b>PHCs</b>																
PHC F1	ug/g	10	50	30	0.4	30	No	NC	--	--	No	NC	<10	--	No	NC
PHC F1-BTEX	ug/g	10	50	30	--	30	No	NC	--	--	No	NC	<10	--	No	NC
PHC F2	ug/g	10	50	30	60	30	No	NC	--	--	No	NC	<10	--	No	NC
PHC F3	ug/g	20	100	30	130	60	No	NC	--	--	No	NC	40	--	No	NC
PHC F4	ug/g	20	100	30	60	30	No	NC	--	--	No	NC	50	--	No	NC
PHC F4 Gravimetric	ug/g	100	500	30	300	--	No	NC	--	--	No	NC	300	--	No	NC
<b>PAHs</b>																
1+2-methylnaphthalene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC
Acenaphthene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC
Acenaphthylene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC
Anthracene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC
Benzo[a]anthracene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	0.06	No	NC
Benzo[a]pyrene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	0.06	No	NC
Benzo[b]fluoranthene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	0.06	No	NC
Benzo[ghi]perylene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC
Benzo[k]fluoranthene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	0.07	No	NC
Chrysene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	0.07	No	NC
Dibenz[ah]anthracene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC
Fluoranthene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	0.09	No	NC
Fluorene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC
Indeno[123-cd]pyrene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC
Methylnaphthalene.1-	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC
Methylnaphthalene.2-	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC
Naphthalene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC
Phenanthrene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC
Pyrene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	<0.05	<0.05	No	NC	<0.05	0.08	No	NC
<b>BTEX</b>																
Benzene	ug/g	0.02	0.1	50	<0.02	<0.02	No	NC	--	--	No	NC	<0.02	--	No	NC
Toluene	ug/g	0.2	1	50	<0.20	<0.20	No	NC	--	--	No	NC	<0.20	--	No	NC
Ethylbenzene	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	--	--	No	NC	<0.05	--	No	NC
XyleneMixture	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	--	--	No	NC	<0.05	--	No	NC
Xylene,m/p-	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	--	--	No	NC	<0.05	--	No	NC
Xylene,o-	ug/g	0.05	0.25	50	<0.05	<0.05	No	NC	--	--	No	NC	<0.05	--	No	NC

**Notes:**

MDL - Laboratory Method Detection Limit

RPD - Relative Percent Difference

1 - RPD qualification criteria obtained from O. Reg. 153/04 Analytical Protocol (MOECC, July 2011).

2 - The RPD qualification criteria are satisfied when the average of the regular and duplicate sample results is greater than 5X the MDL value.

NC - Not Calculated (RPD Qualification Criteria Not Satisfied)

- Denotes exceeds the recommended alert criteria where the RPD qualification criteria are satisfied.

**Table 8: Groundwater Analytical Results - Metals and PAHs**  
**CBN Phase Two ESA, 975 Gladstone Avenue, Ottawa, ON**

Parameter	Units	Table 3 Site Condition Standards 1	APEC ID: E and F			APEC ID: A and E		APEC ID: C	Equipment Blank
			MW8	MW9	MW10	MW11		BH16-6	
Sample Date (y/m/d)			2019-10-07	2019-10-07	2019-10-07	2019-10-07	Blind DUP	2019-10-07	2019-10-07
<b>PAHs</b>									
Acenaphthene	ug/L	1700	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Acenaphthylene	ug/L	1.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Anthracene	ug/L	2.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Benzo[a]anthracene	ug/L	4.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Benzo[a]pyrene	ug/L	0.81	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A
Benzo[b]fluoranthene	ug/L	0.75	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	N/A
Benzo[ghi]perylene	ug/L	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Benzo[k]fluoranthene	ug/L	0.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	N/A
Chrysene	ug/L	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	N/A
Dibenzo[a h]anthracene	ug/L	0.52	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Fluoranthene	ug/L	130	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Fluorene	ug/L	400	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Indeno[1 2 3-cd]pyrene	ug/L	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Methylnaphthalene, 1-	ug/L	1800	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Methylnaphthalene, 2-	ug/L	1800	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Napthalene	ug/L	6400	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Phenanthrene	ug/L	580	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
Pyrene	ug/L	68	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
<b>Metals</b>									
Antimony	ug/L	20000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
Arsenic	ug/L	1900	<1	<1	<1	<1	<1	<1	<1
Barium	ug/L	29000	290	340	420	270	260	100	<10
Beryllium	ug/L	67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron (Total)	ug/L	45000	60	60	50	90	90	110	<10
Cadmium	ug/L	2.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Total)	ug/L	810	1	1	1	<1	1	1	1
Cobalt	ug/L	66	4.9	0.8	6.4	2.7	3.0	<0.2	<0.2
Copper	ug/L	87	2	2	2	1	2	<1	<1
Lead	ug/L	25	<1	<1	<1	<1	<1	<1	<1
Molybdenum	ug/L	9200	<5	<5	<5	21	22	<5	<5
Nickel	ug/L	490	12	<5	14	7	8	<5	<5
Selenium	ug/L	63	<1	<1	<1	<1	<1	<1	<1
Silver	ug/L	1.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Thallium	ug/L	510	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
Uranium	ug/L	420	2	1	2	2	2	1	<1
Vanadium	ug/L	250	<1	<1	<1	<1	<1	<1	<1
Zinc	ug/L	1100	<10	<10	<10	<10	<10	<10	<10
Sodium	ug/L	2300000	203000	446000	685000	447000	442000	55000	<2000

Notes:

1 - O.Reg. 153/04 "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" April 15, 2011 for All Types of property use, fine to medium textured soils Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

< - less than indicated detection limit

NV - no value

N/A - not available / not analysed

- Denotes Concentration Exceeds O.Reg 153/04 Table 3 SCS

**Table 9: Groundwater Analytical Results BTEX/PHCs and VOCs  
CBN Phase Two ESA, 975 Gladstone Avenue, Ottawa, ON**

Parameter	Units	Table 3 Site Condition Standards <sup>1</sup>	APEC ID: E and F			APEC ID: A and E		Trip Blank
			MW8	MW9	MW10	MW11		
			2019-10-07	2019-10-07	2019-10-07	2019-10-07	Blind DUP	
Sample Date (y/m/d)								
<b><i>BTEX/PHCs</i></b>								
Benzene	ug/L	430	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	ug/L	2300	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Petroleum Hydrocarbon F1	ug/L	750	<20	<20	<20	<20	<20	<20
Petroleum Hydrocarbon F2	ug/L	150	<20	<20	<20	<20	<20	N/A
Petroleum Hydrocarbon F3	ug/L	500	50	<50	<50	<50	<50	N/A
Petroleum Hydrocarbon F4	ug/L	500	70	<50	<50	<50	<50	N/A
Toluene	ug/L	18000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene Mixture	ug/L	4200	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m/p-	ug/L	NV	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Xylene, o-	ug/L	NV	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
<b><i>Volatile Organic Compounds</i></b>								
Acetone	ug/L	130000	<30	<30	<30	<30	<30	<30
Bromodichloromethane	ug/L	85000	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Bromoform	ug/L	770	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Bromomethane	ug/L	56	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	ug/L	8.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	ug/L	630	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	ug/L	22	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	82000	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Dichlorobenzene, 1,2-	ug/L	9600	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Dichlorobenzene, 1,3-	ug/L	9600	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Dichlorobenzene, 1,4-	ug/L	67	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Dichlorodifluoromethane	ug/L	4400	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane, 1,1-	ug/L	3100	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Dichloroethane, 1,2-	ug/L	12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichloroethylene, 1,1-	ug/L	17	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene, cis-1,2-	ug/L	17	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Dichloroethylene, trans-1,2-	ug/L	17	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Dichloropropane, 1,2-	ug/L	140	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3-	ug/L	45	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Ethylene Dibromide	ug/L	0.83	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexane (n)	ug/L	520	<5	<5	<5	<5	<5	<5
Methyl Ethyl Ketone	ug/L	1500000	<10	<10	<10	<10	<10	<10
Methyl Isobutyl Ketone	ug/L	580000	<10	<10	<10	<10	<10	<10
Methyl tert-Butyl Ether (MTBE)	ug/L	1400	<2	<2	<2	<2	<2	<2
Methylene Chloride	ug/L	5500	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Styrene	ug/L	9100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,1,2-	ug/L	28	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,2,2-	ug/L	15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	ug/L	17	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Trichloroethane, 1,1,1-	ug/L	6700	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Trichloroethane, 1,1,2-	ug/L	30	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Trichloroethylene	ug/L	17	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Trichlorofluoromethane	ug/L	2500	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vinyl Chloride	ug/L	1.7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Notes:

1 - O.Reg. 153/04 "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" April 15, 2011 for All Types of property use, fine to medium textured soils Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

< - less than indicated detection limit

NV - no value

N/A - not available / not analysed

- Denotes Concentration Exceeds O.Reg 153/04 Table 3 SCS

**Table 10: Groundwater Analytical Results - PCBs**  
**CBN Phase Two ESA, 975 Gladstone Avenue, Ottawa, ON**

Parameter	Units	Table 3 Site Condition Standards <sup>1</sup>	APEC ID: D
			MW4
Sample Date (y/m/d)			2019-10-07
<b>PCBs</b>			
Polychlorinated Biphenyls	ug/L	15	<0.1
Polychlorinated Biphenyls - Aroclor 1242	ug/L	NV	<0.1
Polychlorinated Biphenyls - Aroclor 1248	ug/L	NV	<0.1
Polychlorinated Biphenyls - Aroclor 1254	ug/L	NV	<0.1
Polychlorinated Biphenyls - Aroclor 1260	ug/L	NV	<0.1

Notes:

<sup>1</sup> - O.Reg. 153/04 "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" April 15, 2011 for All Types of property use, fine to medium textured soils Table 3 - Full Depth Generic Site Condition Standards (SCS) in a Non-Potable Ground Water Condition.

< - less than indicated detection limit

NV - no value

**3.9** - Denotes Concentration Exceeds O.Reg 153/04 Table 3 SCS

## 10. APPENDICES

### 10.1 GENERAL

#### Sampling and Analysis Plan for the Site Investigation

Soil and ground water conditions at the Phase Two Property were investigated by BluMetric for this report in September/October 2019. A soil and ground water sampling plan was developed in August 2019. The plan was developed to address soil and ground water conditions in APECs E and F which includes the area of the north parking lot. APECs A and B are currently monitored under a CMP for the Phase Two Property (2019 Monitoring Well Site Plan is attached). The proposed Phase Two ESA work program also included:

- Replacement of monitoring well BH9 which was paved over in 2019 and is part of the annual groundwater monitoring program for APEC A,
- Assessment of groundwater quality down gradient of the former nickel/chromium plating areas at APEC C, and
- Groundwater sampling/analysis for PCBs at an existing monitoring well located down gradient of the transformers (APEC D).

A site specific health and safety plan (HASP) was prepared before the investigations were undertaken in September 2019. Public and private utility locates were conducted prior to drilling.

The proposed drilling program included the advancement of a total of four (4) boreholes instrumented as monitoring wells and the completion of an additional 12 boreholes for soil sampling only. All boreholes installed as monitoring wells will be advanced up to 6.0 m below ground surface (mbgs) or to auger refusal, whichever comes first. Boreholes installed for soil sampling only will be advanced to maximum depth of 3.0 m to profile and sample the fill material. All boreholes will be advanced using a truck-mount drilling rig using hollow-stem and solid stem augering methods.

Soil samples will be collected continuously by split-spoon sampling techniques for logging and sample headspace screening. Appropriate decontamination/cleaning protocol will be used to prepare the equipment between sampling intervals. The drilling tools will be scrubbed with a detergent and water solution. A portion of the collected soil samples will be placed in a plastic zip-lock bag and screened for combustible vapours using a RKI Eagle 2 combustible gas detector



after equilibration at room temperature. A portion of the soil sample will be placed in clean sample jar and placed in a cooler at approximately 4°C. Field preservation with methanol will be conducted for samples as required by the sampling program. Two soil samples per borehole location will be submitted for laboratory analysis. The proposed soil sample analytical program is included below in Table 1. Proposed borehole and monitoring well locations are indicated on the attached Figure.

**Table 1: Soil and Groundwater Sampling Program**

Borehole / Monitoring Well	APEC(s)	# of Soil Samples for Each Contaminant of Concern (COC)					# of Groundwater Samples for Each COC				
		O.Reg 153 Metals	PAHs	PHC/BTEX	VOC	pH	O.Reg 153 Metals (incl. Na)	PAHs	PHC/BTEX	VOC	PCBs
BH1-19 to BH12-19	F (Fill Quality)	24	24	2		4					
MW8	E/F	2	2	2	1		1	1	1	1	
MW9	E/F	2	2	2	1		1	1	1	1	
MW10	E/F	2	2	2	1		1	1	1	1	
MW11	A/E	2	2	2	1		1	1	1	1	
MW4	D										1
BH16-6 (City Well)	C						1	1			
	Subtotals	32	32	10	4	4	5	5	4	4	1
	QA/QC (10% Blind Dup)	3	3	1			1	1	1	1	0
	QA/QC (Trip Blank)								1	1	
	QA/QC (Equipment Blank)						1				
	<b>Totals</b>	<b>35</b>	<b>35</b>	<b>11</b>	<b>4</b>	<b>4</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>1</b>

*Note: MW11 has been included to replace BH9 (CMP monitoring well) which was paved over in 2019.*

A composite soil sample will be submitted for Ontario Regulation 558 Toxicity Characteristic Leaching Procedure (TCLP) analysis in support of the disposal of excess borehole cuttings. Two soil samples will also be submitted for soil texture analysis in support of confirming the site condition standards that are applicable to the Site. Soil sample analysis will be as per the program summarized in Table 1 which includes 10% blind duplicate sampling to assess the reproducibility of lab results.

Monitoring wells (50 mm ID or 19 mm ID PVC) will be installed in each borehole with the screened interval intersecting the water table. A silica sand pack will be placed around the outside of the well screen in the annular space of the borehole. The sand pack will be extended a minimum of 0.3 metres above the screened interval of the PVC. A minimum of





0.6 metre thick bentonite seal will be placed above the sand pack. Wells will be completed at surface with a flush mount manhole cover with locking bolts. Borehole cuttings from the drilling will be placed in UN-approved drums and stored at an appropriate location on site until the soil can be disposed appropriately following analytical testing. It is anticipated that up to 3 drums of soil cuttings could be produced from the drilling program and require disposal.

Total station survey methods will be used to locate the monitoring well network on a suitable base plan for the Site. The elevation of the ground surface and the top of the riser at each monitoring well will be recorded. If a geodetic bench mark is not available, BluMetric will establish a benchmark with an assumed elevation for the site.

### **GROUNDWATER MONITORING/SAMPLING EVENT**

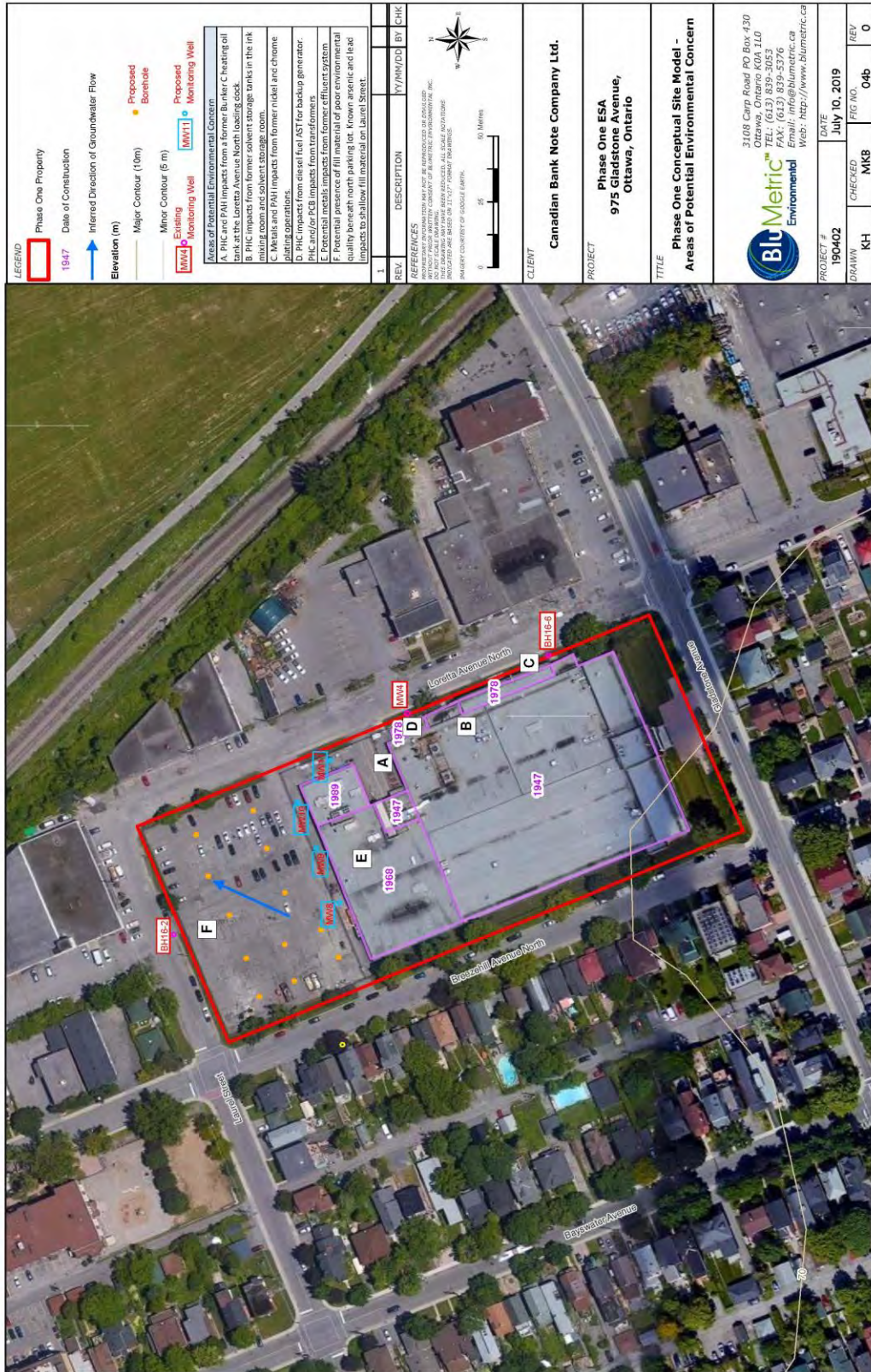
This event involves the monitoring of static water level elevations, LNAPL thickness (if detected), and combustible vapours at all locations. The monitoring event will include the sampling of all 4 new monitoring wells plus groundwater sampling at existing monitoring well MW4 for PCB analysis (APEC D) and groundwater sampling of the City of Ottawa monitoring well BH16-6 for Metals/PAHs analysis (APEC C), pending City of Ottawa permission.

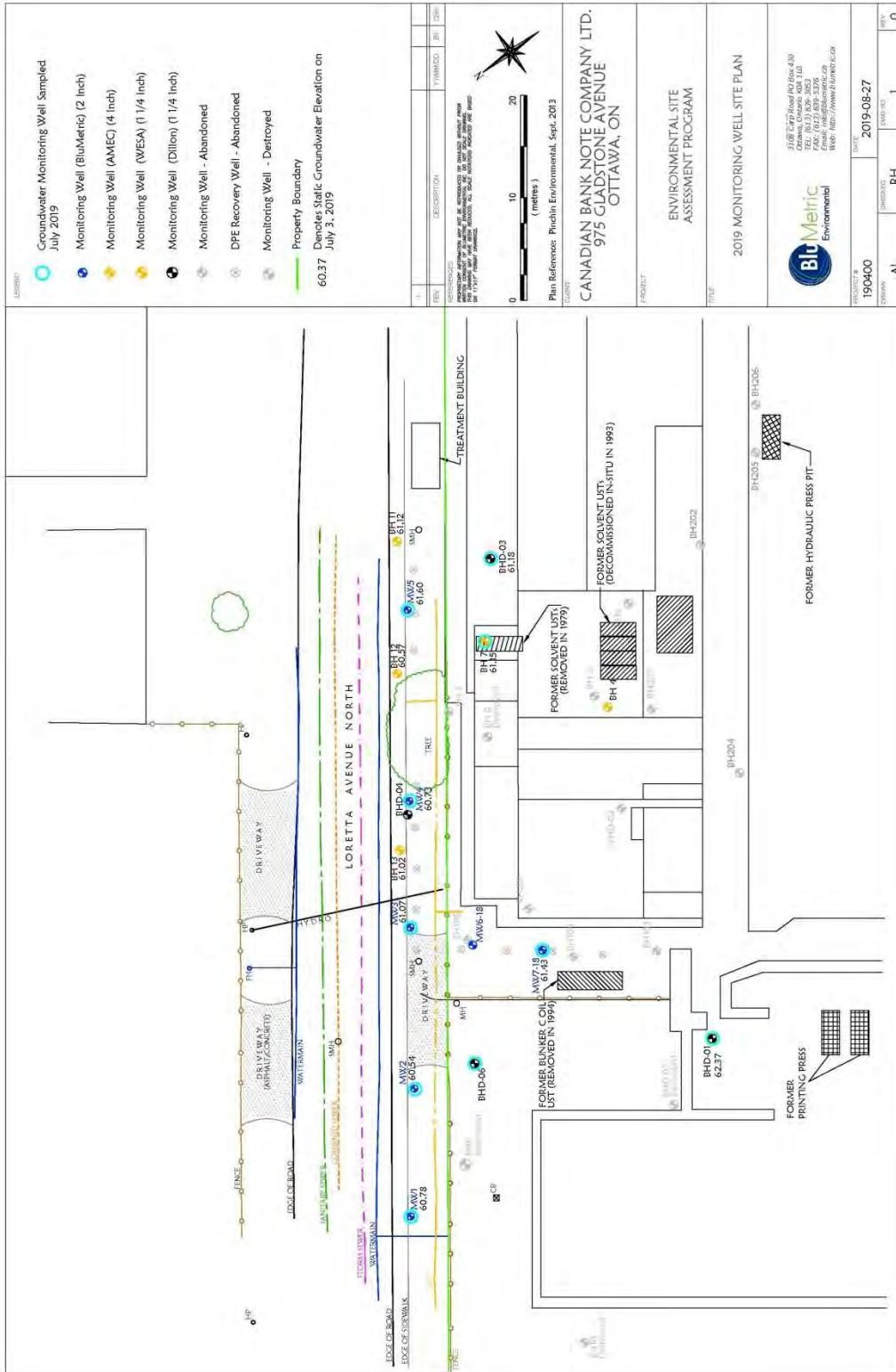
Static water levels and product thicknesses will be measured using a Solinst oil/water interface probe. The interface probe tip and tape will be cleaned between well locations using a combination of methanol and deionized water. Standpipe combustible vapour readings will be obtained with a RKI Eagle 2 combustible gas indicator.

Monitoring wells will be purged of at least three well volumes to ensure samples represent local groundwater conditions. The well volume will be determined based on the static water level, monitoring well depth and well diameter. In the event that sediment is visible in the purge water, the monitoring well will be purged until it is clear. Purge water will be collected in a barrel equipped with a cover and stored at the site until proper offsite disposal by Veolia.

All groundwater samples will be collected using dedicated tubing and using low flow sampling methods. Field measurements for DO, temperature, pH, conductivity and ORP will be conducted using a flow cell to ensure parameter stabilization prior to the collection of groundwater samples. BluMetric field personnel will wear Nalgene® gloves that will be changed between each monitoring well sample that is collected. All collected groundwater samples will immediately be placed in a cooler containing ice to ensure the temperature is kept near 4 °C. Samples will be submitted to the laboratory within 24 hours of sample collection under strict chain of custody protocol noting the project quotation number. Groundwater sample analysis will be as per the program summarized in Table 1 which includes 10% blind duplicate sampling to assess the reproducibility of lab results.







## 10.2 FINALIZED FIELD LOGS

The following borehole logs are included in this section:

- BH1-19 to BH12-19, MW8-19, MW9-19, MW10-19, and MW11-19 constructed/installed under the supervision of BluMetric in September/October 2019.

The following parameter stabilization field logs for groundwater are included in this section:

- MW4, MW8-19, MW9-19, MW10-19, MW11-19 and BH6-16, for October 7, 2019.





# Borehole ID: BH1-19

**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Elevation** Ground: 65.02 m  
 TOP: NA

**UTM NAD83 (Zone 18T):** 5028133.000 N  
 443844.000 E

SUBSURFACE PROFILE				SAMPLE					WELL COMPLETION					
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes
									10	100	1000	10000		
0		<b>Sand and Gravel Fill</b> Asphalt surface overlaying, grey, damp, crushed.		AS1					0.0					
0.61		<b>Silty Sand Fill</b> Dense, grey, damp, some gravel.  - compact, grey-brown.	64.41	SS2		4 6 26 10	33	PAHs, metals	5.0					
1		<b>Silty Sand Fill</b> - loose, moist.		SS3		5 8 8 8	42		0.0					
2.13		<b>Topsoil</b> Dark brown, moist, trace root fibres.	62.89	SS4		2 3 4 4	50							
2.43		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.	62.59	SS5		2 5 6 6	100	PAHs, metals	0.0					
3.05		End of borehole at 3.05 m	61.97											

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** October 1, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)

**Datum:** Fire hydrant Loretta Ave  
 65.25 m  
**Logged By:** B.A.  
**Checked By:** R.H.

**Notes:** SPLIT SPOON



# Borehole ID: BH2-19

**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Elevation** Ground: 65.03 m  
 TOP: NA

**UTM NAD83 (Zone 18T):** 5028149.000 N  
 443835.000 E

SUBSURFACE PROFILE			SAMPLE							WELL COMPLETION				
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes
									10	100	1000	10000		
0		<b>Sand and Gravel Fill</b> Asphalt surface overlaying, grey, damp, crushed.		AS1					0.0					
0.61			64.42											
1		<b>Silty Sand Fill</b> Compact, grey-brown, damp, some gravel		SS2		4 7 9 14	63		0.0					
1.55			63.48											
1.83		<b>Topsoil</b> Dark brown, moist, trace root fibres.		SS3		6 5 2 4	75	PAHs, metals, pH	0.0					
2		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.		SS4		6 2 6 8	100		0.0					
3			3.05											
3.05		End of borehole at 3.05 m	61.98											
4														

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** October 1, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)

**Logged By:** B.A.  
**Checked By:** R.H.

**Notes:** SPLIT SPOON



**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Borehole ID: BH3-19**

**Elevation** Ground: 64.89 m  
 TOP: NA

**UTM NAD83 (Zone 18T):** 5028162.000 N  
 443830.000 E

SUBSURFACE PROFILE				SAMPLE					WELL COMPLETION					
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes
									10	100	1000	10000		
0		<b>Sand and Gravel Fill</b> Asphalt surface overlaying, grey, damp, crushed.		AS1					0.0					
0.61		<b>Silty Sand Fill</b> Loose, grey, moist, some gravel.	64.28											
0.91		<b>Sand Fill</b> Brown, damp, some cinders.	63.98	SS2		4 6 4 4	54	PAHs, metals	5.0					
1.22		<b>Silty Sand Fill</b> Compact, grey, moist.	63.67											
				SS3		6 7 5 9	33		0.0					
				SS4		10 7 7 8	13		0.0					
				SS5		4 3 5 5	100	PAHs, metals	0.0					
3.05		End of borehole at 3.05 m	61.84											

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** October 1, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)  
**Logged By:** B.A.  
**Checked By:** R.H.

Notes: SPLIT SPOON



# Borehole ID: BH4-19

**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Elevation** Ground: 64.66 m  
 TOP: NA

**UTM NAD83 (Zone 18T):** 5028167.000 N  
 443844.000 E

SUBSURFACE PROFILE			SAMPLE							WELL COMPLETION				
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes
									10	100	1000	10000		
0.00		<b>Sand and Gravel Fill</b> Asphalt surface overlaying, grey, damp, crushed.		AS1					0.0					
0.68		<b>Sand Fill</b> Dark brown, moist, sand, trace cinders.	63.98	SS2		4 4 4	67	PAHs, metals	0.0					
0.91		<b>Silty Sand Fill</b> Loose, brown, moist, fine to medium grained.	63.75											
1.83		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.	62.83	SS3		2 2 4 3	63		0.0					
				SS4		4 5 7 6	100	PAHs, metals						
				SS5		5 5 5 5	100		0.0					
3.05		End of borehole at 3.05 m	61.61											

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** October 1, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)

**Logged By:** B.A.  
**Checked By:** R.H.

Notes: SPLIT SPOON





# Borehole ID: BH5-19

**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Elevation** Ground: 64.89 m  
 TOP: NA

**UTM NAD83 (Zone 18T):** 5028153.000 N  
 443850.000 E

SUBSURFACE PROFILE			SAMPLE							WELL COMPLETION					
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes	
									10	100	1000	10000			
0.33		<b>Sand and Gravel Fill</b> Asphalt surface overlaying, grey, damp, crushed.  - loose, moist to wet.	64.56	AS1				BTEX PHCs, PAHs, metals	0.0						
0.64		<b>Silty Sand Fill</b> Compact, grey, moist, trace cobbles.	64.56	SS2		3 22 19 7	54		5.0						
1.83		<b>Silty Clay</b> Very stiff, grey-brown, damp, non-plastic.	63.06	SS3		3 5 3 4	42		0.0						
1.83		<b>Silty Clay</b> Very stiff, grey-brown, damp, non-plastic.	63.06	SS4		4 5 9 9	100	PAHs, metals, pH	0.0						
3.05		<b>Silty Clay</b> Very stiff, grey-brown, damp, non-plastic.	61.84	SS5		4 6 9 18	100	Soil Texture	0.0						
3.05		End of borehole at 3.05 m	61.84												

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** October 1, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)

**Logged By:** B.A.  
**Checked By:** R.H.

Notes: SPLIT SPOON



# Borehole ID: BH6-19

**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Elevation** Ground: 64.88 m  
 TOP: NA

**UTM NAD83 (Zone 18T):** 5028139.000 N  
 443856.000 E

SUBSURFACE PROFILE			SAMPLE							WELL COMPLETION				
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes
									10	100	1000	10000		
0.36		<b>Sand and Gravel Fill</b> Asphalt surface overlaying, grey, damp, crushed.	64.52	AS1					0.0					
0.36 - 1.87		<b>Silty sand Fill</b> Compact, light brown, moist, some gravel, trace clay.	64.52	SS2		9 14 14 8	63	PAHs, metals	0.0					
1.87 - 2.44		<b>Topsoil</b> Black, moist, trace root fibres.	63.01	SS4		6 3 4 6	50	PAHs, metals	0.0					
2.44 - 3.05		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.	62.44	SS5		3 4 6 6	54		0.0					
3.05		End of borehole at 3.05 m	61.83											

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** October 1, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)

**Logged By:** B.A.  
**Checked By:** R.H.

Notes: SPLIT SPOON



# Borehole ID: BH7-19

**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Elevation** Ground: 64.46 m  
 TOP: NA

**UTM NAD83 (Zone 18T):** 5028174.000 N  
 443861.000 E

SUBSURFACE PROFILE			SAMPLE							WELL COMPLETION				
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes
									10	100	1000	10000		
0.00		<b>Sand and Gravel Fill</b> Asphalt surface overlaying, grey, damp, crushed.		AS1					0.0					
0.66		<b>Silty sand Fill</b> Compact, light brown, damp, some gravel.	63.80	SS2		7 11 7 5	42	PAHs, metals	0.0					
1.22		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.	63.24	SS3		4 4 5 5	83		0.0					
				SS4		3 5 6 7	100		0.0					
				SS5		4 5 6 7	100	PAHs, metals	0.0					
3.05		End of borehole at 3.05 m	61.41											

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** October 1, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)

**Logged By:** B.A.  
**Checked By:** R.H.

**Notes:** SPLIT SPOON



**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

# Borehole ID: BH8-19

**Elevation** Ground: 64.97 m  
 TOP: NA

**UTM NAD83 (Zone 18T):** 5028153.000 N  
 443870.000 E

SUBSURFACE PROFILE			SAMPLE							WELL COMPLETION					
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes	
									10	100	1000	10000			
0		<b>Sand and Gravel Fill</b> Asphalt surface overlaying, grey to dark grey, damp, crushed.		AS1				PAHs, metals	0.0						
0.41			64.56												
0.41		<b>Silty Sand Fill</b> Compact, grey-brown, damp, some gravel, trace clay.		SS2		10 5 5 7	75		0.0						
1															
1				SS3		8 21 15 9	71		0.0						
2		<b>Topsoil</b> Compact, grey-brown, moist, some silt.	1.98	SS4		5 3 5 5	79	PAHs, metals							
2			62.99												
2		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.	2.44	SS5		6 6 8 8 9	100		0.0						
2			62.53												
3		End of borehole at 3.05 m	3.05												
3			61.92												
4															

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** October 2, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)

**Logged By:** B.A.  
**Checked By:** R.H.

Notes: SPLIT SPOON



# Borehole ID: BH9-19

**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Elevation** Ground: 64.36 m  
 TOP: NA

**UTM NAD83 (Zone 18T):** 5028182.000 N  
 443876.000 E

SUBSURFACE PROFILE			SAMPLE							WELL COMPLETION				
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes
									10	100	1000	10000		
0		<b>Sand and Gravel Fill</b> Asphalt surface overlaying, grey, damp, crushed.		AS1					0.0					
0.61		<b>Silty sand Fill</b> Compact, light brown, wet, some gravel.	63.75	SS2		3 4 4 12	17		0.0					
1.83		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.	62.53	SS3		7 5 4 7	17		0.0					
1.83		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.	62.53	SS4		5 6 7 8	100	PAHs, metals	0.0					
3.05		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.	61.31	SS5		3 5 7 8	100		0.0					
3.05		End of borehole at 3.05 m	61.31											

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** October 2, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)

**Logged By:** B.A.  
**Checked By:** R.H.

Notes: SPLIT SPOON



# Borehole ID: BH10-19

**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Elevation** Ground: 64.78 m  
 TOP: NA

**UTM NAD83 (Zone 18T):** 5028160.000 N  
 443887.000 E

SUBSURFACE PROFILE				SAMPLE					WELL COMPLETION					
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes
									10	100	1000	10000		
0		<b>Sand and Gravel Fill</b> Asphalt surface overlaying, grey to dark grey, damp, crushed.		AS1						15.0				
0.61			64.17											
1		<b>Silty Sand Fill</b> Compact, grey-brown, damp, some gravel, trace clay.		SS2		5 10 8 7	71	PAHs, metals, DUP2						
				SS3		3 3 3 3 3	63							
2		<b>Topsoil</b> Loose, dark brown, damp, trace root fibres.	1.83											
			62.95											
				SS4		1 5 5 5	54	PAHs, metals		0.0				
			2.13											
		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.												
				SS5		3 4 7 8	79			0.0				
3		End of borehole at 3.05 m	3.05											
			61.73											

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** October 2, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)

**Logged By:** B.A.  
**Checked By:** R.H.

Notes: SPLIT SPOON



# Borehole ID: BH11-19

**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Elevation** Ground: 64.61 m  
 TOP: NA

**UTM NAD83 (Zone 18T):** 5028165.000 N  
 443901.000 E

SUBSURFACE PROFILE			SAMPLE							WELL COMPLETION				
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes
									10	100	1000	10000		
		<b>Sand and Gravel Fill</b> Asphalt surface overlaying, grey, damp, crushed.		AS1					0.0					
		<b>Silty sand Fill</b> Compact, light brown, moist, some gravel, trace clay.	0.37 / 64.24											
1		- loose, damp, trace clay.		SS2		5 7 7 6	67		0.0					
				SS3		4 4 3 2	58	PAHs, metals	15.0					
2		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.	1.83 / 62.78											
				SS4		4 5 6 7	13		0.0					
				SS5		4 6 8 9	100	PAHs, metals	0.0					
3		End of borehole at 3.05 m	3.05 / 61.56											
4														

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** October 2, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)

**Logged By:** B.A.  
**Checked By:** R.H.

Notes: SPLIT SPOON



# Borehole ID: BH12-19

**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Elevation** Ground: 64.26 m  
 TOP: NA

**UTM NAD83 (Zone 18T):** 5028186.000 N  
 443892.000 E

SUBSURFACE PROFILE				SAMPLE							WELL COMPLETION				
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes	
									10	100	1000	10000			
		<b>Sand and Gravel Fill</b> Asphalt surface overlaying, grey, damp, crushed.													
			0.37 63.89	AS1					0.0						
		<b>Silty sand Fill</b> Loose, light brown, moist, some gravel, trace clay.													
			0.91 63.35	SS2		3 4 4 3	63	BTEX PHCs, PAHs, metals, pH	0.0						
		<b>Sand</b> brown, moist, some topsoil.													
			1.22 63.04	SS3		9 10 13 12	58		0.0						
		<b>Silty Sand Fill</b> Loose, light brown, moist to wet.													
			1.83 62.43	SS4		4 6 6 8	100	PAHs, metals, pH	0.0						
		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.													
			3.05 61.21	SS5		5 6 6 7	100		0.0						
		End of borehole at 3.05 m													

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** October 2, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)  
**Logged By:** B.A.  
**Checked By:** R.H.

**Notes:** SPLIT SPOON





**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Well ID: MW8-19**  
**Elevation Ground:** 64.77 m  
**TOP:** 64.61 m  
**MOECC Well Tag:** A268556  
**UTM NAD83 (Zone 18T):** 5028132.000 N  
 443870.000 E

SUBSURFACE PROFILE			SAMPLE							WELL COMPLETION					
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes	
									10	100	1000	10000			
0		Ground Surface	0.00 / 64.77												
0		<b>Sand and Gravel Fill</b> Asphalt surface overlaying grey, moist, trace cobbles.		AS1											flushmount, jplug, cement granular 'A' backfill
0.61		<b>Silty Sand Fill</b> Loose, grey-brown, moist, trace gravel.	0.61 / 64.16	SS2		2 4 3 5	21								
1		- brown, moist to wet, trace clay.													
2		<b>Silt</b> Compact, brown, moist, trace sand and topsoil.	2.08 / 62.69	SS4		2 3 5 5	54								
2		- dark brown, moist, topsoil, trace grass fibres.							BTEX PHCs, PAHs, VOCs,metals						
2.74		<b>Silty Clay</b> Stiff, brown-grey, damp, non-plastic.	2.74 / 62.03	SS5		3 4 5 7	100								
3				SS6		4 5 7 7	100								
4		- moist, mottled, low plasticity.													
5		- grey, moist to wet, high plasticity, trace sand.		SS7		3 5 6 5	100								
5		<b>Silty Sand Till</b> Very loose, grey, wet, trace to some clay.	5.18 / 59.59	SS8		1 2 3 3	50		BTEX PHCs, PAHs,metals						
5				SS9		1 1 1 1	58		Soil Texture						
6		End of well at 6.10 m	6.10 / 58.67												
		Well Completion Details: Screened interval from 3.05 m to 6.10 m below surface Elevation at top of pipe (TOP) = 64.61 m													

BH MW 08 LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** September 30, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)  
**Logged By:** B.A.  
**Checked By:** R.H.

**Notes:** AUGER SAMPLE SPLIT SPOON



**Well ID: MW9-19**

**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Elevation Ground:** 64.63 m  
**TOP:** 64.54 m

**UTM NAD83 (Zone 18T):** 5028137.000 N  
 443886.000 E

SUBSURFACE PROFILE				SAMPLE						WELL COMPLETION					
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes	
									10	100	1000	10000			
0		Ground Surface	0.00 / 64.63												
0		<b>Sand and Gravel Fill</b> Asphalt surface overlaying brown, moist, crushed.		AS1											flushmount, jplug, cement granular 'A' backfill
0.61		<b>Silty Sand Fill</b> Compact, brown, damp, some gravel.	0.61 / 64.02	SS2		4 7 5	54	BTEX PHCs, PAHs, metals							
				SS3		4 3 4 5	33								
				SS4		3 2 3 4	29								
2.43		<b>Silty Clay</b> Stiff, brown-grey, damp, non plastic.	2.43 / 62.20	SS5		2 2 3 7	100								
				SS6		3 5 6 7	100								
		- moist, trace fissures		SS7		2 4 4 6	100	BTEX PHCs, PAHs, VOCs,metals							
				SS8		2 3 3 3	100								
		- moist plastic, some sand.		SS9		1 1 1 1	25								
		<b>Silty Sand Till</b> very loose, grey wet, trace to some clay.	4.88 / 59.75	SS10		1 2	58								
5.94		Auger refusal End of well at 5.94 m	5.94 / 58.69												
<p>Well Completion Details:          Screened interval from 2.90 m to 5.94 m below surface          Elevation at top of pipe (TOP) = 64.54 m</p>															

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** September 30, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)  
**Logged By:** B.A.  
**Checked By:** R.H.

**Notes:** SPLIT SPOON



**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Well ID: MW10-19**  
**Elevation** Ground: 64.51 m  
 TOP: 64.34 m  
**UTM NAD83 (Zone 18T):** 5028145.000 N  
 443904.000 E

SUBSURFACE PROFILE			SAMPLE							WELL COMPLETION				
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes
									10	100	1000	10000		
0		Ground Surface	0.00 / 64.51	AS1					0.0	0.0	0.0	0.0	flushmount, jplug, cement	
0-1.27		<b>Sand and Gravel Fill</b> Compact, grey, moist, crushed.		SS2		5 5 7 4	54		0.0	0.0	0.0	0.0	granular 'A' backfill	
1.27-2.29		<b>Silty Sand Fill</b> Loose, brown, wet, some gravel  - grey, wet, trace gravel.	1.27 / 63.24	SS3		4 4 4 2	71		0.0	0.0	0.0	0.0	bentonite granular seal	
2.29-2.29		<b>Topsoil</b> Dark brown, damp, trace roots.	2.29 / 62.22	SS4		2 2 3 3	79	BTEX PHCs, PAHs, VOCs,metals	0.0	0.0	0.0	0.0		
2.29-3.05		<b>Silty Clay</b> Stiff, grey-brown, damp, non-plastic.		SS5		2 4 6 8	100		5.0	5.0	5.0	5.0		
3.05-4.53		- low-plasticity, wet, trace fissures.		SS6		4 6 7 11	100		5.0	5.0	5.0	5.0		
4.53-5.30		- grey, wet, plastic, some sand.		SS7		4 5 6 6	100		5.0	5.0	5.0	5.0		
5.30-5.30		<b>Silty Sand Till</b> Very loose, grey, wet, non-plastic, trace to some clay.	5.30 / 59.21	SS8		2 2 4 5	100		0.0	0.0	0.0	0.0	3.05m x 50mm slot 10 PVC screen with #2 silica sand pack	
5.30-6.10				SS9		1 2 1 1	100	BTEX PHCs, PAHs,metals	0.0	0.0	0.0	0.0		
6.10-6.10			6.10 / 58.41	SS10		1 1 1 1	100		5.0	5.0	5.0	5.0		
6.10-6.10		End of well at 6.10 m												
Well Completion Details: Screened interval from 3.05 m to 6.10 m below surface Elevation at top of pipe (TOP) = 64.34 m														

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 19-10-25

**Drill Date:** 2019 September 30  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)  
**Logged By:** B.A.  
**Checked By:** R.H.

Notes: SPLIT SPOON



**Project No.:** 190625  
**Client:** Canadian Bank Note Company Ltd.  
**Report:** Phase 2 Environmental site Assessment  
**Site Address:** 975 Gladstone Avenue  
 Ottawa, ON

**Well ID: MW11-19**

**Elevation** Ground: 64.37 m  
 TOP: 64.21 m

**UTM NAD83 (Zone 18T):** 5028135.000 N  
 443919.000 E

SUBSURFACE PROFILE				SAMPLE						WELL COMPLETION					
Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level CGD (ppm)				Construction	Notes	
									10	100	1000	10000			
0		Ground Surface	0.00												
0		<b>Sand and Gravel Fill</b> Compact, brown, damp, crushed.	64.37	AS1					0.0					flushmount, jplug, cement granular 'A' backfill	
1			1.22	SS2		7 21 19 10	33		0.0						
1		<b>Silty Sand Fill</b> Loose, grey, moist, some gravel.	63.15	SS3		3 4 6 3	54								
2		<b>Topsoil</b> Loose, moist, dark grey-brown, trace grass fibres.	1.83												
2		<b>Silty Sand</b> Loose, grey, moist to wet.	2.05	SS4		2 3 5 4	54	BTEX PHCs, PAHs, metals	0.0						
3		<b>Silty Clay</b> Stiff, grey-brown, moist, non-plastic.	2.43	SS5		2 3 5 6	75								
4			2.43	SS6		5 6 8 10	100		0.0						
4			2.43	SS7		3 4 7 6	100		0.0						
5		- firm, grey	2.43	SS8		1 3 3 2	100	BTEX PHCs, PAHs, VOCs,metals, DUP1	15.0						
5		- moist to wet, plastic, some sand, HC odour present, schein along fissure planes.	5.10	SS9		1 3 6 6	100								
5		<b>Silty Sand Till</b> Compact, grey, wet, non-plastic, trace to some clay.	5.10	SS10		1 1 1 1	79								
6		End of well at 6.10 m	6.10												
6		Well Completion Details: Screened interval from 3.05 m to 6.10 m below surface Elevation at top of pipe (TOP) = 64.21 m	58.27												

BH MW OB LOG V1.0 190625 CBN GLADSTONE AVE.GPJ WESA TEMPLATE V1.2.GDT 10/4/19

**Drill Date:** September 30, 2019  
**Drilled By:** Get Drilling Ltd.  
**Drilling Method:** Hollow Stem Auger  
**Hole Diameter:** 0.15 m (OD)

**Logged By:** B.A.  
**Checked By:** R.H.

**Notes:** SPLIT SPOON

Tag#: A268556

Well Record for Well Cluster – Part 1 of 3  
(Only for Multiple Test Holes or Dewatering Wells)  
Regulation 903 Ontario Water Resources Act

All measurements recorded in:  Metric  Imperial

Well Tag No. of Deepest Well: (Print Well Tag No.)

A268556

Dewatering wells

Test holes

Well No. on Drawing of Deepest Well: 1

No. of wells reported 4

Page 1 of 1

Follow instructions on the front and back of this form. Print or Type

Well Cluster Location Information					
Address of Well Location (Street Number(s)/Name(s), RR, if available)		Lot(s)	Concession(s)	Geographic Township	County/District/Upper Tier Municipality
975 Gladstone Ave		-	-	City of Ottawa	City of Ottawa
City, Town, Village or Hamlet		Province	GPS Unit Make	Model	Unit Mode of Operation
Ottawa		Ontario	Samsung	105	<input type="checkbox"/> Undifferentiated <input checked="" type="checkbox"/> Averaged
<input type="checkbox"/> Differentiated, specify: _____					

Mandatory Attachments/Additional Information
<input checked="" type="checkbox"/> Land Owner Consent Form must be attached.
<input checked="" type="checkbox"/> Detailed Drawing of All Well Locations must be attached.
I, the person constructing the well, will promptly submit to the Director, on request, any additional information in my custody or control related to any well in the well cluster that I have constructed.
Signature of Technician/Contractor:  Date (yyyy/mm/dd): 2019 10 03

Well # on Drawing	UTM Coordinates		Hole Depth (m/ft)	Hole Diameter (cm/in)	Method of Construction	Casing Material: Diameter (cm/in)	Casing (m/ft)		Screen Interval (m/ft)		Annular Space Material (m/ft)		Overburden/Bedrock or Abandonment Filing Material Intervals (m/ft)	Static Water Level (m/ft)	Date of Completion (yyyy/mm/dd)		
	Zone	Easting					Northing	From	To	From	To	From				To	Material:
1	18	443870	5028132	6.10	25.40 0-0.3	Boring	Aluminum 16.51	0	0.3			0	0.3	Cement Bentonite	0-0.91 Gray Gravel, Asphalt, Sand	3.05	2019 09 30
					16.51 0.3-6.10	Boring	Plastic 6.03	0	3.05	3.05	6.10	2.74	6.10	Sand	0.91-4.57 Brown Clay 4.57-6.10 Gray clay, silt		
2	18	443886	5028137	5.94	25.40 0-0.3	Boring	Aluminum 16.51	0	0.3			0	0.3	Cement Bentonite	0-0.91m Gray gravel, Asphalt, Sand 0.91-4.57m Brown Clay		
					16.51 0.3-5.94	Boring	Plastic 6.03	0	2.90	2.90	5.94	2.44	5.94	Sand	4.57-5.94m Gray clay, silt	3.05	2019 09 30
3	18	443904	5028145	6.10	25.40 0-0.3	Boring	Aluminum 16.51	0	0.3			0	0.3	Cement Bentonite	0-0.91 Gray Gravel, Asphalt, Sand 0.91-4.57 Brown Clay		
					16.51 0.3-6.10	Boring	Plastic 6.03	0.3	3.05	3.05	6.10	2.74	6.10	Sand	4.57-6.10 Gray silty, clay	3.05	2019 09 30
4	18	443919	5028135	6.010	25.40 0-0.3	Boring	Aluminum 16.51	0	0.3			0	0.3	Cement	0-0.3m Gray Gravel, Asphalt		
					16.51 0.3-6.10	Boring	Plastic 6.03	0	3.05	3.05	6.10	0.3	2.74	Bentonite	0.3-2.13m Brown Sand, cobbles, Fill 2.13-2.44m Brown Top Soil	3.05	2019 09 30
												2.74	6.10	Sand	2.44-4.57m Brown Clay 4.57-6.10m Gray Clay silt		

Well Contractor and Well Technician Information			
Business Name of Well Contractor	Business Address (Street Number/Name, RR)	Municipality	Province
GET Drilling LTD	278 Drive-in RD	Napanee	ON
Postal Code	Bus. Telephone No.	Well Contractor's Licence No.	Business E-mail Address
K7R3L1	613 354 4767	7085	getdrilling@mycandora.ca
Name of Well Technician (First Name, Last Name)	Well Technician's Licence No.	Signature of Well Technician	Date Submitted (yyyy/mm/dd)
Mike Turnbull	3042		2019 10 03

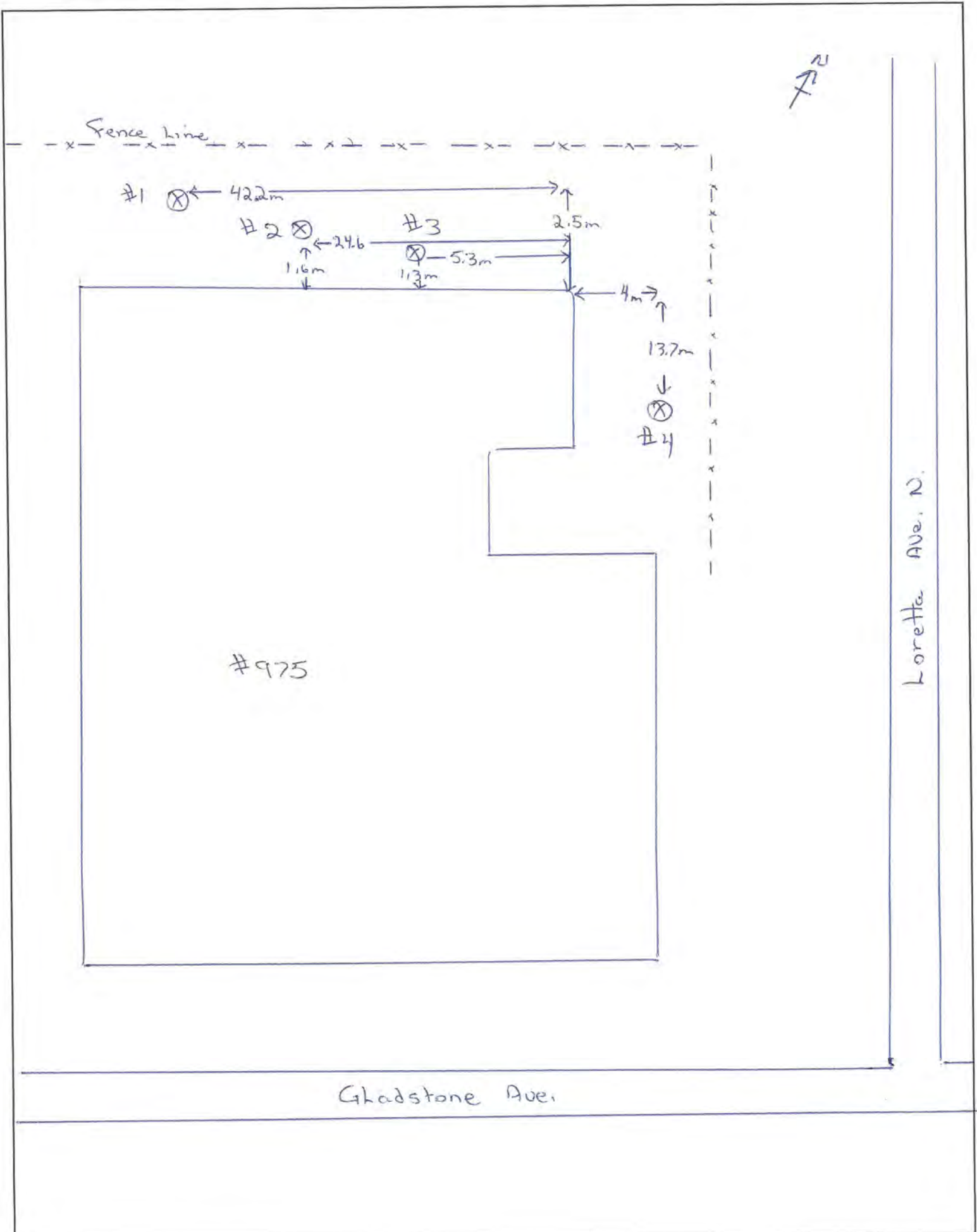
Date First Well in Cluster Constructed or Abandoned (yyyy/mm/dd)	Date Last Well in Cluster Completed (yyyy/mm/dd)	Ministry Use Only Date Received (yyyy/mm/dd) Audit No. <b>C 45377</b>
2019 09 30	2019 09 30	
Well Abandonment Person Abandoning the Wells: Name _____ (Print or Type) - See instruction 11 on the back of this form		Comments:



**Note:** This **Well Record for Well Cluster Part 3 - Detailed Drawing of all Well Locations**, must be attached to Parts 1 and 2. The drawing must include all property boundaries, an arrow indicating the North direction, all named roads and sufficient measurements to locate all wells in the cluster in relation to fixed points. The drawing must show the location of each well and each well must be numbered on the drawing to match number used for that well on the **Well Record for Well Cluster Parts 1 and 2**. The well with the well tag must be clearly identified on the Drawing. UTM coordinates should appear beside each well, if space permits. Additional comments on wells can be included on the drawing

Well Tag Number: # A268556

"Well Record for Well Cluster" Form Audit Number: # C 453 77



5.20 TPVC

Job#  
BluMetric Staff:

WL Start (m) 5.24 m bgs  
WL Finish (m) 5.40 m bgs

Well/Pump Depth (m)  
Tubing Level (m)



Monitoring Location	Sample Date	Pump Rate (mL/min)	Time	WL (m) m bgs	Parameter				
					Dissolved Oxygen (mg/L)	ORP (mV)	Temperature (°Celsius)	pH	Conductivity (µS/cm)
BTH16-16	7 Oct 19	70	10:22	5.24					
		70	10:25	5.26					
		70	10:28	5.265	5.03	124.9	16.3	7.81	829
		80	10:31	5.28	5.35	128.5	16.3	7.48	826
		80	10:34	5.29	4.29	128.2	16.3	7.46	823
		80	10:37	5.30	4.16	129.0	16.3	7.46	818
			11:23	5.40					

Pump on

Sampled →  
Pump off →

Notes: Purged 1800 mL

Sample Description (Colour, Clarity, Odour): Sample is clear, colourless, odourless

Reading Time Interval: 3 min minutes

Pump Used: Bladder Peristaltic Multi Meter Used: YSI Pro Plus Horiba U22

3.72 TPVC

Job#  
BluMetric Staff:

WL Start (m) 3.88 m bgs  
WL Finish (m) 4.00 m bgs

Well/Pump Depth (m)  
Tubing Level (m)

Monitoring Location	Sample Date	Pump Rate (mL/min)	Time	WL (m) m bgs	Parameter				
					Dissolved Oxygen (mg/L)	ORP (mV)	Temperature (°Celsius)	pH	Conductivity (µS/cm)
MW8	7 Oct 19	70	11:48	3.88					
		80	11:51	3.90					
		90	11:54	3.91					
		90	11:57	3.93	3.51	120.8	16.2	6.98	1899
		90	12:00	3.93	3.20	119.3	16.3	6.99	1904
		90	12:03	3.94	3.50	117.2	16.3	6.99	1906
			12:59	4.00					

Sampled →  
Pump off →

Notes: Purged 1700 mL, well dried during sampling, some bottles partially filled.

Sample Description (Colour, Clarity, Odour): clear, colourless, odourless

Reading Time Interval: 3 min minutes

Pump Used: Bladder Peristaltic Multi Meter Used: YSI Pro Plus Horiba U22



Job#  
BluMetric Staff:

WL Start (m) 3.81 TPC  
3.97 mbgs  
WL Finish (m) 4.22 mbgs

Well/Pump Depth (m)  
Tubing Level (m)



Pump on →

Sampled →  
Pump off →

Monitoring Location	Sample Date	Pump Rate (mL/min)	Time	WL (m) mbgs	Parameter				
					Dissolved Oxygen (mg/L)	ORP (mV)	Temperature (°Celsius)	pH	Conductivity (µS/cm)
MW11	7 Oct 19	90	14:44	3.97					
			14:47	4.01	4.17	94.6	17.2	7.35	3031
			14:50	4.04	4.13	95.8	17.1	7.31	2997
			14:53	4.07	4.24	95.0	17.1	7.29	2827
			14:56	4.10	5.09	96.0	17.2	7.29	2768
			15:20	4.22					

Notes: Purged w/ 1000 mL  
Sample Description (Colour, Clarity, Odour): Clear, Colourless, Odourless  
Reading Time Interval: 3 min minutes  
Pump Used: Bladder Peristaltic Multi Meter Used: YSI Pro Plus Horiba U22

\* Dup  
Collected  
Here \*

Job#  
BluMetric Staff:

WL Start (m) 4.67 TPC  
4.76 mbgs  
WL Finish (m)

Well/Pump Depth (m)  
Tubing Level (m)

Sampled →  
Pump off →

Monitoring Location	Sample Date	Pump Rate (mL/min)	Time	WL (m) mbgs	Parameter				
					Dissolved Oxygen (mg/L)	ORP (mV)	Temperature (°Celsius)	pH	Conductivity (µS/cm)
MW4	7 Oct 19	70	15:40	4.76					
		70	15:43	4.70	7.02	91.2	17.4	7.52	2078
		70	15:46	4.79	6.35	98.7	17.4	7.41	2359
		80	15:49	4.81	6.38	99.7	17.5	7.42	2358
		80	15:59	4.82					

Notes: Purged w/ 700 mL, Sampled early (well going dry)  
Sample Description (Colour, Clarity, Odour): Clear, Colourless, Odourless  
Reading Time Interval: 3 min minutes  
Pump Used: Bladder Peristaltic Multi Meter Used: YSI Pro Plus Horiba U22

\* well is 11 paces from rd parking sign

Job# 190625  
 BluMetric Staff:

3.90 TPVC  
 WL Start (m) 4.00 mbgs  
 WL Finish (m) 4.17 mbgs

Well/Pump Depth (m)  
 Tubing Level (m)



Pump on →  
 Sampled →  
 Pump off →

Monitoring Location	Sample Date	Pump Rate (mL/min)	Time	WL (m) mbgs	Parameter				
					Dissolved Oxygen (mg/L)	ORP (mV)	Temperature (°Celsius)	pH	Conductivity (µS/cm)
MW9	7 Oct 19	90	13:20	4.00					
		90	13:23	4.04	1.80	94.9	15.9	6.73	3435
		90	13:26	4.06	0.73	88.7	15.6	6.74	3402
		90	13:29	4.07	0.57	88.5	15.3	6.74	3359
		90	13:32	4.10	0.46	89.4	15.3	6.76	3274
			13:46	4:17					

Notes: Purged ~ 1000 mL

Sample Description (Colour, Clarity, Odour): Translucent, grey, odourless

Reading Time Interval: 3 min minutes

Pump Used: Bladder Peristaltic Multi Meter Used: YSI Pro Plus Horiba U22

Job#  
 BluMetric Staff:

3.85 TPVC  
 WL Start (m) 4.00 mbgs  
 WL Finish (m) 4.20 mbgs

Well/Pump Depth (m)  
 Tubing Level (m)

Pump on →  
 Sampled →  
 Pump off →

Monitoring Location	Sample Date	Pump Rate (mL/min)	Time	WL (m) mbgs	Parameter				
					Dissolved Oxygen (mg/L)	ORP (mV)	Temperature (°Celsius)	pH	Conductivity (µS/cm)
MW10	7 Oct 19	90	14:00	4.00					
		90	14:03	4.05	6.17	93.2	16.5	6.93	4145
		90	14:06	4.07	5.55	96.2	16.0	6.84	4178
		90	14:09	4.08	5.22	97.0	15.7	6.84	4178
		90	14:12	4.09	4.83	97.6	15.7	6.83	4170
		90	14:27	4.20					

Notes: ~ 1000 mL Purged

Sample Description (Colour, Clarity, Odour): Clear, colourless, odourless

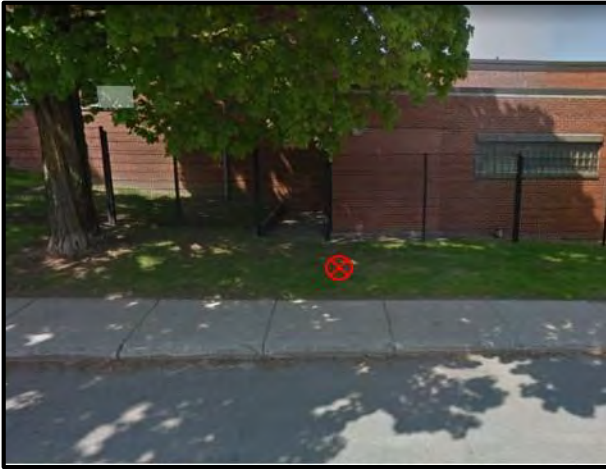
Reading Time Interval: 3 min minutes

Pump Used: Bladder Peristaltic Multi Meter Used: YSI Pro Plus Horiba U22

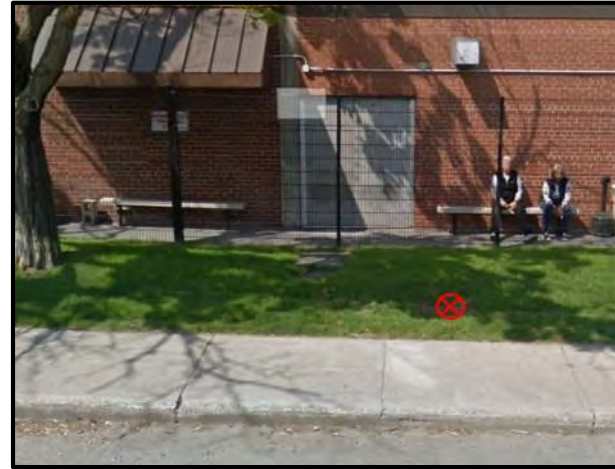
### 10.3 PHOTO LOG

The following provides photographs of the various investigation locations.

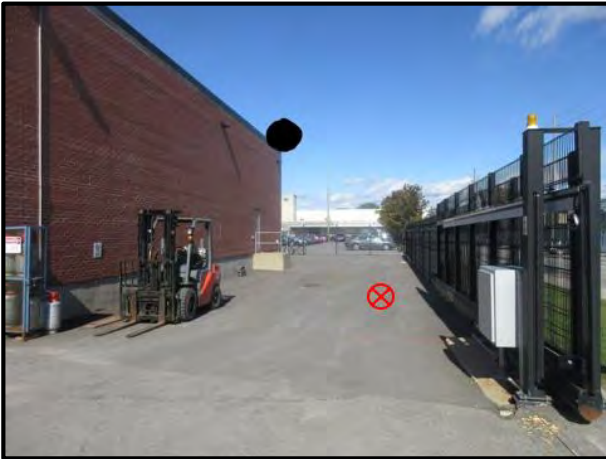




**Photo 1:** Approximate location of BH16-6E



**Photo 2:** Approximate location of MW4



**Photo 3:** Approximate location of MW11-19



**Photo 3:** Approximate location of MW10-19



**Photo 5:** Approximate locations of MW8-19 and MW9-19



**Photo 6:** Approximate location of BH16-2

#### 10.4 CERTIFICATES OF ANALYSES

The following laboratory reports from Eurofins are provided at the end of this appendix:

- Certificate of Analysis for Eurofins Report #: 1918051. Report dated October 8, 2019 which contains the results for 1 bulk soil sample analysis for O.Reg. 558 TCLP collected on October 2, 2019; and,
- Certificate of Analysis for Eurofins Report #: 1918061. Report dated October 3, 2019 which contains the results for soil texture analysis for 2 soil samples collected on October 1, and 2, 2019; and,
- Certificate of Analysis for Eurofins Report #: 1918054. Report dated October 9, 2019 which contains the results for soil samples collected on September 30, 2019 and October 1-2, 2019.
- Certificate of Analysis for Eurofins Report #: 1918357. Report dated October 15, 2019 which contains the results for 6 groundwater samples, 1 blind duplicate sample, 1 trip blank and 1 equipment blank analysis for samples collected on October 7, 2019.





**Certificate of Analysis**

Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#: 190625  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918051  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-08  
Project: CBN Gladstone  
COC #: 204840

---

**Dear Rob Hillier:**

**Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).**

Report Comments:

APPROVAL: \_\_\_\_\_  
Addrine Thomas, Inorganics Supervisor

APPROVAL: \_\_\_\_\_  
Tanya Baillargeon, Team Leader

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: <http://www.cala.ca/scopes/2602.pdf>.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#: 190625  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918051  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-08  
Project: CBN Gladstone  
COC #: 204840

Lab I.D. 1457113  
Sample Matrix R347  
Sample Type  
Sampling Date 2019-09-30  
Sample I.D. Reg 558

Group	Analyte	MRL	Units	Guideline	
Anions	F	0.10	mg/L	LQC 150.0	<0.10
	NO2 + NO3 as N	0.10	mg/L	LQC 1000	<0.10
General Chemistry	Cyanide (free)	0.05	mg/L	LQC 20.0	<0.05
Leachate	REG 558 Leach				Y
	Zero Headspace Extraction				Y
Mercury	Hg	0.001	mg/L	LQC 0.1	<0.001
Metals	Ag	0.01	mg/L	LQC 5	<0.01
	As	0.02	mg/L	LQC 2.5	<0.02
	B	0.1	mg/L	LQC 500.0	<0.1
	Ba	0.01	mg/L	LQC 100.0	0.94
	Cd	0.008	mg/L	LQC 0.5	<0.008
	Cr	0.05	mg/L	LQC 5.0	<0.05
	Pb	0.01	mg/L	LQC 5.0	<0.01
	Se	0.02	mg/L	LQC 1.0	<0.02
	U	0.01	mg/L	LQC 10.0	<0.01
Moisture	Moisture-Humidite	0.1	%		13.8
PAH	1-methylnaphthalene	0.1	ug/L		<0.1
	2-methylnaphthalene	0.1	ug/L		<0.1
	Acenaphthene	0.1	ug/L		<0.1
	Acenaphthylene	0.1	ug/L		<0.1
	Anthracene	0.1	ug/L		<0.1
	Benzo(a)anthracene	0.1	ug/L		<0.1
	Benzo(a)pyrene	0.01	ug/L	LQC 1.0	<0.01
	Benzo(b)fluoranthene	0.05	ug/L		<0.05
Benzo(g,h,i)perylene	0.1	ug/L		<0.1	

Guideline = REG 558

\* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.  
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Client: Blumetric Environmental Inc.-Carp  
 P.O. Box 430, 3108 Carp Rd.  
 Carp, ON  
 K0A 1L0  
 Attention: Mr. Rob Hillier  
 PO#: 190625  
 Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918051  
 Date Submitted: 2019-10-02  
 Date Reported: 2019-10-08  
 Project: CBN Gladstone  
 COC #: 204840

Lab I.D. 1457113  
 Sample Matrix R347  
 Sample Type  
 Sampling Date 2019-09-30  
 Sample I.D. Reg 558

Group	Analyte	MRL	Units	Guideline	
PAH	Benzo(k)fluoranthene	0.05	ug/L		<0.05
	Chrysene	0.05	ug/L		<0.05
	Dibenzo(a,h)anthracene	0.1	ug/L		<0.1
	Fluoranthene	0.1	ug/L		<0.1
	Fluorene	0.1	ug/L		<0.1
	Indeno(1,2,3-c,d)pyrene	0.1	ug/L		<0.1
	Naphthalene	0.1	ug/L		<0.1
	Phenanthrene	0.1	ug/L		<0.1
	Pyrene	0.1	ug/L		<0.1
PCBs	Polychlorinated Biphenyls (PCBs)	0.1	ug/L	LQC 300	<0.1
VOCs Surrogates	1,2-dichloroethane-d4	0	%		85
	4-bromofluorobenzene	0	%		94
	Toluene-d8	0	%		100
Volatiles	1,1-dichloroethylene	0.5	ug/L	LQC 1400	<0.5
	1,2-dichlorobenzene	0.4	ug/L	LQC 20000	<0.4
	1,2-dichloroethane	0.2	ug/L	LQC 500	<0.2
	1,4-dichlorobenzene	0.4	ug/L	LQC 500	<0.4
	Benzene	0.5	ug/L	LQC 500	<0.5
	Carbon Tetrachloride	0.2	ug/L	LQC 500	<0.2
	Chloroform	0.5	ug/L	LQC 10000	<0.5
	Dichloromethane	4.0	ug/L	LQC 5000	<4.0
	Methyl Ethyl Ketone (MEK)	10	ug/L	LQC 200000	20
	Monochlorobenzene	0.5	ug/L	LQC 8000	<0.5
	Tetrachloroethylene	0.3	ug/L	LQC 3000	<0.3
Trichloroethylene	0.3	ug/L	LQC 5000	<0.3	

Guideline = REG 558

\* = Guideline Exceedence

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**Certificate of Analysis**

Client: Blumetric Environmental Inc.-Carp  
 P.O. Box 430, 3108 Carp Rd.  
 Carp, ON  
 K0A 1L0  
 Attention: Mr. Rob Hillier  
 PO#: 190625  
 Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918051  
 Date Submitted: 2019-10-02  
 Date Reported: 2019-10-08  
 Project: CBN Gladstone  
 COC #: 204840

Lab I.D.	1457113
Sample Matrix	R347
Sample Type	
Sampling Date	2019-09-30
Sample I.D.	Reg 558

Group	Analyte	MRL	Units	Guideline	
Volatiles	Vinyl Chloride	0.2	ug/L	LQC 200	<0.2

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Report Number: 1918051  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-08  
Project: CBN Gladstone  
COC #: 204840

**QC Summary**

Analyte	Blank	QC % Rec	QC Limits
<b>Run No</b> 372473 <b>Analysis/Extraction Date</b> 2019-10-07 <b>Analyst</b> C_M <b>Method</b> P 8270			
Methlynaphthalene, 1-	<0.1 ug/L	68	50-140
Methlynaphthalene, 2-	<0.1 ug/L	70	50-140
Acenaphthene	<0.1 ug/L	72	50-140
Acenaphthylene	<0.1 ug/L	70	50-140
Anthracene	<0.1 ug/L	74	50-140
Benz[a]anthracene	<0.1 ug/L	72	50-140
Benzo[a]pyrene	<0.01 ug/L	67	50-140
Benzo[b]fluoranthene	<0.05 ug/L	72	50-140
Benzo[ghi]perylene	<0.1 ug/L	74	50-140
Benzo[k]fluoranthene	<0.05 ug/L	75	50-140
Chrysene	<0.05 ug/L	75	50-140
Dibenz[a h]anthracene	<0.1 ug/L	76	50-140
Fluoranthene	<0.1 ug/L	72	50-140
Fluorene	<0.1 ug/L	74	50-140
Indeno[1 2 3-cd]pyrene	<0.1 ug/L	76	50-140
Naphthalene	<0.1 ug/L	68	50-140

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Report Number: 1918051  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-08  
Project: CBN Gladstone  
COC #: 204840

**QC Summary**

Analyte	Blank	QC % Rec	QC Limits
Phenanthrene	<0.1 ug/L	76	50-140
Pyrene	<0.1 ug/L	72	50-140
<b>Run No</b> 373244 <b>Analysis/Extraction Date</b> 2019-10-04 <b>Analyst</b> SG <b>Method</b> ASTM 2216			
Moisture-Humidite			80-120
REG 558 Leach			
Zero Headspace Extraction			
<b>Run No</b> 373498 <b>Analysis/Extraction Date</b> 2019-10-04 <b>Analyst</b> Z_S <b>Method</b> C SM4500-NO3-F			
NO2 + NO3 as N	<0.10 mg/L	96	80-120
<b>Run No</b> 373512 <b>Analysis/Extraction Date</b> 2019-10-04 <b>Analyst</b> Z_S <b>Method</b> C SM4500-CNC			
Cyanide (CN-)	<0.05 mg/L	85	75-125
<b>Run No</b> 373557 <b>Analysis/Extraction Date</b> 2019-10-05 <b>Analyst</b> K_J <b>Method</b> SM2320,2510,4500H/F			
F		100	90-110
<b>Run No</b> 373559 <b>Analysis/Extraction Date</b> 2019-10-04 <b>Analyst</b> TJB <b>Method</b> EPA 8260			
Methyl Ethyl Ketone	<10 ug/L		60-130

**Guideline = REG 558**

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Report Number: 1918051  
 Date Submitted: 2019-10-02  
 Date Reported: 2019-10-08  
 Project: CBN Gladstone  
 COC #: 204840

**QC Summary**

Analyte	Blank	QC % Rec	QC Limits
<b>Run No</b> 373560 <b>Analysis/Extraction Date</b> 2019-10-04 <b>Analyst</b> TJB <b>Method</b> EPA 8260			
Dichloroethylene, 1,1-	<0.5 ug/L	95	60-130
Dichlorobenzene, 1,2-	<0.4 ug/L	96	60-130
Dichloroethane, 1,2-	<0.2 ug/L	98	60-130
Dichlorobenzene, 1,4-	<0.4 ug/L	105	60-130
Benzene	<0.5 ug/L	99	60-130
Carbon Tetrachloride	<0.2 ug/L	104	60-130
Chloroform	<0.5 ug/L	94	60-130
Methylene Chloride	<4.0 ug/L	86	60-130
Chlorobenzene	<0.5 ug/L	96	60-130
Tetrachloroethylene	<0.3 ug/L	97	60-130
Trichloroethylene	<0.3 ug/L	96	60-130
Vinyl Chloride	<0.2 ug/L	98	60-130
<b>Run No</b> 373580 <b>Analysis/Extraction Date</b> 2019-10-07 <b>Analyst</b> HK <b>Method</b> EPA 8081B			
Polychlorinated Biphenyls	<0.1 ug/L	78	60-140
<b>Run No</b> 373600 <b>Analysis/Extraction Date</b> 2019-10-07 <b>Analyst</b> SKH <b>Method</b> M SM3112B-3500B			

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Report Number: 1918051  
 Date Submitted: 2019-10-02  
 Date Reported: 2019-10-08  
 Project: CBN Gladstone  
 COC #: 204840

**QC Summary**

Analyte	Blank	QC % Rec	QC Limits
Mercury	<0.001 mg/L	97	76-123
<b>Run No</b> 373607 <b>Analysis/Extraction Date</b> 2019-10-07 <b>Analyst</b> H_D <b>Method</b> EPA 200.8			
Silver	<0.01 mg/L	110	70-130
Arsenic	<0.02 mg/L	104	70-130
Barium	<0.01 mg/L	106	70-130
Cadmium	<0.008 mg/L	109	70-130
Chromium Total	<0.05 mg/L	110	70-130
Lead	<0.01 mg/L	108	70-130
Selenium	<0.02 mg/L	113	70-130
Uranium	<0.01 mg/L	90	70-130
<b>Run No</b> 373610 <b>Analysis/Extraction Date</b> 2019-10-07 <b>Analyst</b> H_D <b>Method</b> EPA 200.8			
Boron (total)	<0.1 mg/L	110	84.9-115

**Guideline = REG 558**

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Report Number: 1918051  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-08  
Project: CBN Gladstone  
COC #: 204840

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***Sample Comment Summary***

Sample ID: 1457113 Reg 558 Metals analysis performed on aqua-regia digest of sample material, except for Boron.

**Guideline = REG 558**

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Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918061  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-03  
Project: CBN Gladstone  
COC #: 207444

---

**Dear Rob Hillier:**

**Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).**

Report Comments:

APPROVAL: \_\_\_\_\_  
Rebecca Koshy, Project Manager

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: <http://www.cala.ca/scopes/2602.pdf>.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.



**Certificate of Analysis**

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 Carp, ON  
 K0A 1L0  
 Attention: Mr. Rob Hillier  
 PO#: 190625  
 Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918061  
 Date Submitted: 2019-10-02  
 Date Reported: 2019-10-03  
 Project: CBN Gladstone  
 COC #: 207444

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1457167 Soil153  2019-09-30 MW8-19 SS9	1457168 Soil153  2019-09-30 BH5-19 SS5
Particle Size	Soil < 75um	0.1	%			56.9	99.3
	Soil > 75um	0.1	%			43.2	0.7
	Texture - Coarse Med/Fine					Med/Fine	Med/Fine

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

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**Certificate of Analysis**

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Attention: Mr. Rob Hillier  
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Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918061  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-03  
Project: CBN Gladstone  
COC #: 204840

**QC Summary**

Analyte	Blank	QC % Rec	QC Limits
<b>Run No</b> 373244 <b>Analysis/Extraction Date</b> 2019-10-03 <b>Analyst</b> SG <b>Method</b> C Ag Particle			
Soil < 75um			
Soil > 75um			
Texture - Coarse Med/Fine			

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

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P.O. Box 430, 3108 Carp Rd.  
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Attention: Mr. Rob Hillier  
Invoice to: Blumetric Environmental Inc.-Carp  
PO#: 190625

Report Number: 1918054  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-09  
Project: CBN Gladstone  
COC #: 204840  
Temperature (C): 10  
Custody Seal:

Dear Rob Hillier:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

### Sample Comment Summary

Sample ID: 1457129	MW9-19 SS2	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1457131	MW10-19 SS4	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1457133	MW11-19 SS4	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1457134	MW11-19 SS8	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1457144	BH5-19 AS1	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1457157	BH12-19 SS2	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).

Report Comments:

\_\_\_\_\_  
Addrine Thomas, Inorganics Supervisor

\_\_\_\_\_  
Tanya Baillargeon, Team Leader

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Report Number: 1918054  
 Date Submitted: 2019-10-02  
 Date Reported: 2019-10-09  
 Project: CBN Gladstone  
 COC #: 204840

**O.Reg 153-T3-Ind/Com-Coarse**

***Exceedence Summary***

Sample I.D.	Analyte	Result	Units	Criteria
<b>Hydrocarbons</b>				
BH5-19 AS1	Petroleum Hydrocarbons F4g	4100	ug/g	STD 3300
<b>Metals</b>				
BH10-19 SS4	Vanadium	92	ug/g	STD 86
BH11-19 SS5	Vanadium	101	ug/g	STD 86
BH1-19 SS5	Vanadium	88	ug/g	STD 86
BH12-19 SS4	Vanadium	122	ug/g	STD 86
BH2-19 SS5	Vanadium	102	ug/g	STD 86
BH3-19 SS5	Vanadium	101	ug/g	STD 86
BH4-19 SS4	Vanadium	95	ug/g	STD 86
BH5-19 SS4	Vanadium	119	ug/g	STD 86
BH7-19 SS2	Vanadium	125	ug/g	STD 86
BH7-19 SS4	Chromium Total	162	ug/g	STD 160
BH7-19 SS4	Vanadium	127	ug/g	STD 86
BH8-19 SS4	Vanadium	87	ug/g	STD 86
BH9-19 SS4	Vanadium	104	ug/g	STD 86
MW10-19 SS4	Arsenic	27	ug/g	STD 18
MW11-19 SS4	Arsenic	27	ug/g	STD 18
<b>PAH</b>				
BH10-19 SS4	Benzo[a]pyrene	0.56	ug/g	STD 0.3
BH4-19 SS2	Benzo[a]pyrene	0.40	ug/g	STD 0.3
BH6-19 SS4	Benzo[a]pyrene	0.32	ug/g	STD 0.3
MW11-19 SS4	Benzo[a]pyrene	0.32	ug/g	STD 0.3
<b>Volatiles</b>				
MW11-19 SS8	Vinyl Chloride	0.07	ug/g	STD 0.032

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Date Submitted: 2019-10-02  
Date Reported: 2019-10-09  
Project: CBN Gladstone  
COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Hydrocarbons**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.														
					1457127	Soil153	2019-09-30	MW8-19	SS3	1457128	Soil153	2019-09-30	MW8-19	SS8	1457129	Soil153	2019-09-30	MW9-19	SS2	1457130	Soil153	2019-09-30	MW9-19	SS7
PHC's F1	373682	10	ug/g	STD 55	<10	<10	<10	<10	<10	<10														
PHC's F1-BTEX	373685	10	ug/g		<10	<10																		
PHC's F2	373716	10	ug/g	STD 230	<10	<10	<10	<10	<10	<10														
PHC's F3	373716	20	ug/g	STD 1700	40	30	140	20	70															
PHC's F4	373716	20	ug/g	STD 3300	50	<20	220	<20	60															
PHC's F4g	208523	100	ug/g	STD 3300			900		300															

**Hydrocarbons**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.								
					1457132	Soil153	2019-09-30	MW10-19	SS9	1457133	Soil153	2019-09-30	MW11-19	SS4	1457134	Soil153	2019-09-30	MW11-19
PHC's F1	373682	10	ug/g	STD 55	<10	<10	.40	30										
PHC's F1-BTEX	373685	10	ug/g		<10	<10		30										
PHC's F2	373716	10	ug/g	STD 230	<10	<10	60	30										
PHC's F3	373716	20	ug/g	STD 1700	<20	70	130	60										
PHC's F4	373716	20	ug/g	STD 3300	<20	60	60	30										
PHC's F4g	208523	100	ug/g	STD 3300		100	300											

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Report Number: 1918054  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-09  
Project: CBN Gladstone  
COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Hydrocarbons**

Lab I.D. 1457144  
Sample Matrix Soil153  
Sample Type  
Sample Date 2019-10-01  
Sampling Time  
Sample I.D. BH5-19  
AS1

Analyte	Batch No	MRL	Units	Guideline	
PHC's F1	373682	10	ug/g	STD 55	<10
PHC's F1-BTEX	373685	10	ug/g		<10
PHC's F2	373716	10	ug/g	STD 230	<10
PHC's F3	373716	20	ug/g	STD 1700	410
PHC's F4	373716	20	ug/g	STD 3300	910
PHC's F4g	208523	100	ug/g	STD 3300	4100*

**Hydrocarbons**

Lab I.D. 1457157  
Sample Matrix Soil153  
Sample Type  
Sample Date 2019-10-02  
Sampling Time  
Sample I.D. BH12-19  
SS2

Analyte	Batch No	MRL	Units	Guideline	
PHC's F1	373682	10	ug/g	STD 55	<10
PHC's F1-BTEX	373685	10	ug/g		<10
PHC's F2	373716	10	ug/g	STD 230	<10
PHC's F3	373716	20	ug/g	STD 1700	40
PHC's F4	373716	20	ug/g	STD 3300	50
PHC's F4g	208523	100	ug/g	STD 3300	300

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Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#: 190625  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918054  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-09  
Project: CBN Gladstone  
COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Metals**

Lab I.D.  
Sample Matrix  
Sample Type  
Sample Date  
Sampling Time  
Sample I.D.  
Guideline

Analyte	Batch No	MRL	Units	Guideline	1457127 Soil153 2019-09-30 MW8-19 SS3	1457128 Soil153 2019-09-30 MW8-19 SS8	1457129 Soil153 2019-09-30 MW9-19 SS2	1457130 Soil153 2019-09-30 MW9-19 SS7	1457131 Soil153 2019-09-30 MW10-19 SS4
Antimony	373454	1	ug/g	STD 40	<1	<1	<1	<1	<1
Arsenic	373454	1	ug/g	STD 18	6	3	3	3	27*
Barium	373454	1	ug/g	STD 670	157	318	149	399	124
Beryllium	373454	1	ug/g	STD 8	<1	<1	<1	<1	<1
Boron (total)	373454	5	ug/g	STD 120	<5	<5	<5	<5	<5
Cadmium	373454	0.4	ug/g	STD 1.9	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium Total	373454	1	ug/g	STD 160	41	66	37	98	35
Cobalt	373454	1	ug/g	STD 80	9	14	8	19	8
Copper	373454	1	ug/g	STD 230	20	32	18	39	20
Lead	373454	1	ug/g	STD 120	11	7	8	7	27
Molybdenum	373454	1	ug/g	STD 40	<1	<1	<1	<1	<1
Nickel	373454	1	ug/g	STD 270	24	37	21	53	21
Selenium	373454	1	ug/g	STD 5.5	1	1	<1	1	1
Silver	373454	0.2	ug/g	STD 40	<0.2	<0.2	<0.2	<0.2	0.2
Thallium	373454	1	ug/g	STD 3.3	<1	<1	<1	<1	<1
Uranium	373454	0.5	ug/g	STD 33	0.5	0.5	<0.5	0.6	0.5
Vanadium	373454	2	ug/g	STD 86	40	63	34	79	34
Zinc	373454	2	ug/g	STD 340	58	103	48	119	77

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Report Number: 1918054  
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Date Reported: 2019-10-09  
Project: CBN Gladstone  
COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Metals**

Lab I.D.  
Sample Matrix  
Sample Type  
Sample Date  
Sampling Time  
Sample I.D.  
Guideline

1457132 Soil153 2019-09-30 MW10-19 SS9	1457133 Soil153 2019-09-30 MW11-19 SS4	1457134 Soil153 2019-09-30 MW11-19 SS8	1457135 Soil153 2019-09-30 DUP 1	1457136 Soil153 2019-10-01 BH1-19 SS2
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Analyte	Batch No	MRL	Units	Guideline	1457132	1457133	1457134	1457135	1457136
Antimony	373454	1	ug/g	STD 40	<1	<1	<1	<1	<1
Arsenic	373454	1	ug/g	STD 18	3	27*	4	3	2
Barium	373454	1	ug/g	STD 670	170	244	411	425	151
Beryllium	373454	1	ug/g	STD 8	<1	<1	<1	<1	<1
Boron (total)	373454	5	ug/g	STD 120	<5	<5	<5	<5	<5
Cadmium	373454	0.4	ug/g	STD 1.9	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium Total	373454	1	ug/g	STD 160	31	69	79	80	31
Cobalt	373454	1	ug/g	STD 80	8	14	17	18	7
Copper	373454	1	ug/g	STD 230	18	33	41	42	16
Lead	373454	1	ug/g	STD 120	5	33	8	6	5
Molybdenum	373454	1	ug/g	STD 40	<1	<1	2	3	<1
Nickel	373454	1	ug/g	STD 270	18	39	44	45	18
Selenium	373454	1	ug/g	STD 5.5	<1	<1	1	<1	<1
Silver	373454	0.2	ug/g	STD 40	<0.2	0.2	<0.2	<0.2	<0.2
Thallium	373454	1	ug/g	STD 3.3	<1	<1	<1	<1	<1
Uranium	373454	0.5	ug/g	STD 33	<0.5	0.6	0.5	0.5	0.6
Vanadium	373454	2	ug/g	STD 86	42	61	74	77	30
Zinc	373454	2	ug/g	STD 340	57	96	122	117	40

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Project: CBN Gladstone  
COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Metals**

Lab I.D.  
Sample Matrix  
Sample Type  
Sample Date  
Sampling Time  
Sample I.D.  
Guideline

Analyte	Batch No	MRL	Units	Guideline	1457137 Soil153 2019-10-01 BH1-19 SS5	1457138 Soil153 2019-10-01 BH2-19 SS3	1457139 Soil153 2019-10-01 BH2-19 SS5	1457140 Soil153 2019-10-01 BH3-19 SS2	1457141 Soil153 2019-10-01 BH3-19 SS5
Antimony	373454	1	ug/g	STD 40	<1	<1	<1	<1	<1
Arsenic	373454	1	ug/g	STD 18	3	5	3	16	4
Barium	373454	1	ug/g	STD 670	500	116	378	99	358
Beryllium	373454	1	ug/g	STD 8	<1	<1	<1	<1	1
Boron (total)	373454	5	ug/g	STD 120	<5	<5	<5	<5	<5
Cadmium	373454	0.4	ug/g	STD 1.9	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium Total	373454	1	ug/g	STD 160	127	31	126	38	128
Cobalt	373454	1	ug/g	STD 80	22	6	23	7	24
Copper	373454	1	ug/g	STD 230	52	16	55	17	56
Lead	373454	1	ug/g	STD 120	9	16	8	22	9
Molybdenum	373454	1	ug/g	STD 40	<1	<1	<1	<1	<1
Nickel	373454	1	ug/g	STD 270	68	17	68	22	71
Selenium	373454	1	ug/g	STD 5.5	<1	<1	<1	<1	1
Silver	373454	0.2	ug/g	STD 40	<0.2	0.3	<0.2	<0.2	<0.2
Thallium	373454	1	ug/g	STD 3.3	<1	<1	<1	<1	<1
Uranium	373454	0.5	ug/g	STD 33	0.6	0.5	0.6	0.7	0.6
Vanadium	373454	2	ug/g	STD 86	88*	27	102*	33	101*
Zinc	373454	2	ug/g	STD 340	130	42	141	56	143

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Report Number: 1918054  
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Project: CBN Gladstone  
COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Metals**

Lab I.D.  
Sample Matrix  
Sample Type  
Sample Date  
Sampling Time  
Sample I.D.

1457142 Soil153 2019-10-01 BH4-19 SS2	1457143 Soil153 2019-10-01 BH4-19 SS4	1457144 Soil153 2019-10-01 BH5-19 AS1	1457145 Soil153 2019-10-01 BH5-19 SS4	1457146 Soil153 2019-10-01 BH6-19 SS2
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Analyte	Batch No	MRL	Units	Guideline	1457142 Soil153 2019-10-01 BH4-19 SS2	1457143 Soil153 2019-10-01 BH4-19 SS4	1457144 Soil153 2019-10-01 BH5-19 AS1	1457145 Soil153 2019-10-01 BH5-19 SS4	1457146 Soil153 2019-10-01 BH6-19 SS2
Antimony	373454	1	ug/g	STD 40	<1	<1	<1		
	373533	1	ug/g	STD 40				<1	<1
Arsenic	373454	1	ug/g	STD 18	9	3	2		
	373533	1	ug/g	STD 18				3	2
Barium	373454	1	ug/g	STD 670	91	357	130		
	373533	1	ug/g	STD 670				379	186
Beryllium	373454	1	ug/g	STD 8	<1	<1	<1		
	373533	1	ug/g	STD 8				<1	<1
Boron (total)	373454	5	ug/g	STD 120	<5	<5	<5		
	373533	5	ug/g	STD 120				7	7
Cadmium	373454	0.4	ug/g	STD 1.9	<0.4	<0.4	<0.4		
	373533	0.4	ug/g	STD 1.9				<0.4	<0.4
Chromium Total	373454	1	ug/g	STD 160	44	123	21		
	373533	1	ug/g	STD 160				147	43
Cobalt	373454	1	ug/g	STD 80	8	22	5		
	373533	1	ug/g	STD 80				27	7
Copper	373454	1	ug/g	STD 230	17	53	11		
	373533	1	ug/g	STD 230				65	21
Lead	373454	1	ug/g	STD 120	19	9	7		
	373533	1	ug/g	STD 120				9	5
Molybdenum	373454	1	ug/g	STD 40	<1	<1	<1		
	373533	1	ug/g	STD 40				<1	<1
Nickel	373454	1	ug/g	STD 270	21	66	13		

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Report Number: 1918054  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-09  
Project: CBN Gladstone  
COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Metals**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1457142	1457143	1457144	1457145	1457146	
					Soil153	Soil153	Soil153	Soil153	Soil153	Soil153
					2019-10-01	2019-10-01	2019-10-01	2019-10-01	2019-10-01	2019-10-01
					BH4-19	BH4-19	BH5-19	BH5-19	BH5-19	BH6-19
					SS2	SS4	AS1	SS4	SS4	SS2
Nickel	373533	1	ug/g	STD 270					80	24
Selenium	373454	1	ug/g	STD 5.5	<1	1	<1			
	373533	1	ug/g	STD 5.5					1	<1
Silver	373454	0.2	ug/g	STD 40	<0.2	<0.2	0.2			
	373533	0.2	ug/g	STD 40					<0.2	<0.2
Thallium	373454	1	ug/g	STD 3.3	<1	<1	<1			
	373533	1	ug/g	STD 3.3					<1	<1
Uranium	373454	0.5	ug/g	STD 33	0.5	0.5	<0.5			
	373533	0.5	ug/g	STD 33					0.9	<0.5
Vanadium	373454	2	ug/g	STD 86	34	95*	21			
	373533	2	ug/g	STD 86					119*	30
Zinc	373454	2	ug/g	STD 340	67	132	28			
	373533	2	ug/g	STD 340					143	48

**Metals**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1457147	1457148	1457149	1457150	1457151	
					Soil153	Soil153	Soil153	Soil153	Soil153	Soil153
					2019-10-01	2019-10-01	2019-10-01	2019-10-02	2019-10-02	2019-10-02
					BH6-19	BH7-19	BH7-19	BH8-19	BH8-19	BH8-19
					SS4	SS2	SS4	AS1	SS4	SS4
Antimony	373533	1	ug/g	STD 40	<1	<1	<1	2	<1	
Arsenic	373533	1	ug/g	STD 18	11	4	3	3	17	
Barium	373533	1	ug/g	STD 670	273	430	393	157	288	
Beryllium	373533	1	ug/g	STD 8	<1	1	<1	<1	<1	
Boron (total)	373533	5	ug/g	STD 120	10	7	7	5	7	
Cadmium	373533	0.4	ug/g	STD 1.9	<0.4	<0.4	<0.4	<0.4	<0.4	

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**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Metals**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1457147	1457148	1457149	1457150	1457151
					Sample Matrix	Soil153	Soil153	Soil153	Soil153	Soil153
					Sample Type	2019-10-01	2019-10-01	2019-10-01	2019-10-02	2019-10-02
					Sample Date					
					Sampling Time					
					Sample I.D.	BH6-19	BH7-19	BH7-19	BH8-19	BH8-19
						SS4	SS2	SS4	AS1	SS4
Chromium Total	373533	1	ug/g	STD 160		67	152	162*	39	105
Cobalt	373533	1	ug/g	STD 80		13	29	28	9	20
Copper	373533	1	ug/g	STD 230		33	68	68	20	42
Lead	373533	1	ug/g	STD 120		37	10	9	10	32
Molybdenum	373533	1	ug/g	STD 40		<1	<1	<1	1	<1
Nickel	373533	1	ug/g	STD 270		37	82	86	24	55
Selenium	373533	1	ug/g	STD 5.5		1	1	2	<1	<1
Silver	373533	0.2	ug/g	STD 40		0.5	<0.2	<0.2	0.3	<0.2
Thallium	373533	1	ug/g	STD 3.3		<1	<1	<1	<1	<1
Uranium	373533	0.5	ug/g	STD 33		0.6	0.6	0.6	<0.5	0.9
Vanadium	373533	2	ug/g	STD 86		55	125*	127*	45	87*
Zinc	373533	2	ug/g	STD 340		112	152	142	47	127

**Metals**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1457152	1457153	1457154	1457155	1457156
					Sample Matrix	Soil153	Soil153	Soil153	Soil153	Soil153
					Sample Type	2019-10-02	2019-10-02	2019-10-02	2019-10-02	2019-10-02
					Sample Date					
					Sampling Time					
					Sample I.D.	BH9-19	BH10-19	BH10-19	BH11-19	BH11-19
						SS4	SS2	SS4	SS3	SS5
Antimony	373533	1	ug/g	STD 40		<1	<1	<1	<1	<1
Arsenic	373533	1	ug/g	STD 18		4	3	11	2	3
Barium	373533	1	ug/g	STD 670		399	249	263	307	295
Beryllium	373533	1	ug/g	STD 8		1	<1	<1	<1	<1
Boron (total)	373533	5	ug/g	STD 120		7	6	6	5	8
Cadmium	373533	0.4	ug/g	STD 1.9		<0.4	<0.4	<0.4	<0.4	<0.4
Chromium Total	373533	1	ug/g	STD 160		127	68	116	78	135

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**Metals**

Lab I.D.  
Sample Matrix  
Sample Type  
Sample Date  
Sampling Time  
Sample I.D.

1457152 Soil153	1457153 Soil153	1457154 Soil153	1457155 Soil153	1457156 Soil153
2019-10-02	2019-10-02	2019-10-02	2019-10-02	2019-10-02
BH9-19 SS4	BH10-19 SS2	BH10-19 SS4	BH11-19 SS3	BH11-19 SS5

Analyte	Batch No	MRL	Units	Guideline	BH9-19 SS4	BH10-19 SS2	BH10-19 SS4	BH11-19 SS3	BH11-19 SS5
Cobalt	373533	1	ug/g	STD 80	24	14	19	16	24
Copper	373533	1	ug/g	STD 230	56	33	42	35	58
Lead	373533	1	ug/g	STD 120	10	7	20	6	10
Molybdenum	373533	1	ug/g	STD 40	<1	<1	<1	<1	<1
Nickel	373533	1	ug/g	STD 270	69	39	59	44	73
Selenium	373533	1	ug/g	STD 5.5	1	1	1	<1	1
Silver	373533	0.2	ug/g	STD 40	0.3	<0.2	<0.2	<0.2	<0.2
Thallium	373533	1	ug/g	STD 3.3	<1	<1	<1	<1	<1
Uranium	373533	0.5	ug/g	STD 33	0.6	0.7	0.7	<0.5	0.7
Vanadium	373533	2	ug/g	STD 86	104*	62	92*	65	101*
Zinc	373533	2	ug/g	STD 340	132	76	120	76	123

**Metals**

Lab I.D.  
Sample Matrix  
Sample Type  
Sample Date  
Sampling Time  
Sample I.D.

1457157 Soil153	1457158 Soil153	1457159 Soil153	1457160 Soil153
2019-10-02	2019-10-02	2019-10-02	2019-10-02
BH12-19 SS2	BH12-19 SS4	DUP 2	DUP 3

Analyte	Batch No	MRL	Units	Guideline	BH12-19 SS2	BH12-19 SS4	DUP 2	DUP 3
Antimony	373533	1	ug/g	STD 40	<1	<1	<1	<1
Arsenic	373533	1	ug/g	STD 18	9	3	3	8
Barium	373533	1	ug/g	STD 670	148	393	287	151
Beryllium	373533	1	ug/g	STD 8	<1	<1	<1	<1
Boron (total)	373533	5	ug/g	STD 120	8	7	6	7
Cadmium	373533	0.4	ug/g	STD 1.9	<0.4	<0.4	<0.4	<0.4
Chromium Total	373533	1	ug/g	STD 160	41	147	74	55
Cobalt	373533	1	ug/g	STD 80	10	28	15	10

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COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Metals**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1457157	1457158	1457159	1457160
					Sample Matrix	Soil153	Soil153	Soil153	Soil153
					Sample Type				
					Sample Date	2019-10-02	2019-10-02	2019-10-02	2019-10-02
					Sampling Time				
					Sample I.D.	BH12-19	BH12-19	DUP 2	DUP 3
					Guideline	SS2	SS4		
Copper	373533	1	ug/g	STD 230		24	63	34	23
Lead	373533	1	ug/g	STD 120		18	8	7	14
Molybdenum	373533	1	ug/g	STD 40		<1	<1	<1	<1
Nickel	373533	1	ug/g	STD 270		25	78	42	31
Selenium	373533	1	ug/g	STD 5.5		1	1	1	2
Silver	373533	0.2	ug/g	STD 40		0.2	<0.2	<0.2	<0.2
Thallium	373533	1	ug/g	STD 3.3		<1	<1	<1	<1
Uranium	373533	0.5	ug/g	STD 33		1.2	0.6	0.6	0.7
Vanadium	373533	2	ug/g	STD 86		49	122*	64	46
Zinc	373533	2	ug/g	STD 340		75	140	76	64

**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1457127	1457128	1457129	1457130	1457131
					Sample Matrix	Soil153	Soil153	Soil153	Soil153	Soil153
					Sample Type					
					Sample Date	2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-09-30
					Sampling Time					
					Sample I.D.	MW8-19	MW8-19	MW9-19	MW9-19	MW10-19
					Guideline	SS3	SS8	SS2	SS7	SS4
1+2-methylnaphthalene	208523	0.05	ug/g			<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	373252	0.05	ug/g	STD 96		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	373252	0.05	ug/g	STD 0.15		<0.05	<0.05	<0.05	<0.05	0.08
Anthracene	373252	0.05	ug/g	STD 0.67		<0.05	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	373252	0.05	ug/g	STD 0.96		0.07	<0.05	<0.05	<0.05	0.18
Benzo[a]pyrene	373252	0.05	ug/g	STD 0.3		0.08	<0.05	<0.05	<0.05	0.22
Benzo[b]fluoranthene	373252	0.05	ug/g	STD 0.96		<0.05	<0.05	<0.05	<0.05	0.19
Benzo[ghi]perylene	373252	0.05	ug/g	STD 9.6		0.08	<0.05	<0.05	<0.05	0.15
Benzo[k]fluoranthene	373252	0.05	ug/g	STD 0.96		<0.05	<0.05	<0.05	<0.05	0.21

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Report Number: 1918054  
 Date Submitted: 2019-10-02  
 Date Reported: 2019-10-09  
 Project: CBN Gladstone  
 COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1457127 Soil153 2019-09-30 MW8-19 SS3	1457128 Soil153 2019-09-30 MW8-19 SS8	1457129 Soil153 2019-09-30 MW9-19 SS2	1457130 Soil153 2019-09-30 MW9-19 SS7	1457131 Soil153 2019-09-30 MW10-19 SS4
Chrysene	373252	0.05	ug/g	STD 9.6		0.14	<0.05	<0.05	<0.05	0.22
Dibenz[a h]anthracene	373252	0.05	ug/g	STD 0.1		<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	373252	0.05	ug/g	STD 9.6		<0.05	<0.05	<0.05	<0.05	0.34
Fluorene	373252	0.05	ug/g	STD 62		<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	373252	0.05	ug/g	STD 0.76		<0.05	<0.05	<0.05	<0.05	0.13
Methlynaphthalene, 1-	373252	0.05	ug/g	STD 76		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 2-	373252	0.05	ug/g	STD 76		<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	373252	0.05	ug/g	STD 9.6		<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	373252	0.05	ug/g	STD 12		0.07	<0.05	<0.05	<0.05	0.12
Pyrene	373252	0.05	ug/g	STD 96		<0.05	<0.05	<0.05	<0.05	0.28

**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1457132 Soil153 2019-09-30 MW10-19 SS9	1457133 Soil153 2019-09-30 MW11-19 SS4	1457134 Soil153 2019-09-30 MW11-19 SS8	1457135 Soil153 2019-09-30 DUP 1	1457136 Soil153 2019-10-01 BH1-19 SS2
1+2-methylnaphthalene	208523	0.05	ug/g			<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	373252	0.05	ug/g	STD 96		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	373252	0.05	ug/g	STD 0.15		<0.05	0.09	<0.05	<0.05	<0.05
Anthracene	373252	0.05	ug/g	STD 0.67		<0.05	0.09	<0.05	<0.05	<0.05
Benz[a]anthracene	373252	0.05	ug/g	STD 0.96		<0.05	0.29	<0.05	<0.05	<0.05
Benzo[a]pyrene	373252	0.05	ug/g	STD 0.3		<0.05	0.32*	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	373252	0.05	ug/g	STD 0.96		<0.05	0.33	<0.05	<0.05	<0.05
Benzo[ghi]perylene	373252	0.05	ug/g	STD 9.6		<0.05	0.18	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	373252	0.05	ug/g	STD 0.96		<0.05	0.34	<0.05	<0.05	<0.05

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COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1457132	1457133	1457134	1457135	1457136
					Sample Matrix	Soil153	Soil153	Soil153	Soil153	Soil153
					Sample Type	2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-10-01
					Sample Date					
					Sampling Time					
					Sample I.D.	MW10-19	MW11-19	MW11-19	DUP 1	BH1-19
						SS9	SS4	SS8		SS2
Chrysene	373252	0.05	ug/g	STD 9.6		<0.05	0.35	<0.05	<0.05	0.06
Dibenz[a h]anthracene	373252	0.05	ug/g	STD 0.1		<0.05	0.05	<0.05	<0.05	<0.05
Fluoranthene	373252	0.05	ug/g	STD 9.6		<0.05	0.56	<0.05	<0.05	<0.05
Fluorene	373252	0.05	ug/g	STD 62		<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	373252	0.05	ug/g	STD 0.76		<0.05	0.16	<0.05	<0.05	<0.05
Methlynaphthalene, 1-	373252	0.05	ug/g	STD 76		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 2-	373252	0.05	ug/g	STD 76		<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	373252	0.05	ug/g	STD 9.6		<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	373252	0.05	ug/g	STD 12		<0.05	0.34	<0.05	<0.05	<0.05
Pyrene	373252	0.05	ug/g	STD 96		<0.05	0.46	<0.05	<0.05	<0.05

**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1457137	1457138	1457139	1457140	1457141
					Sample Matrix	Soil153	Soil153	Soil153	Soil153	Soil153
					Sample Type	2019-10-01	2019-10-01	2019-10-01	2019-10-01	2019-10-01
					Sample Date					
					Sampling Time					
					Sample I.D.	BH1-19	BH2-19	BH2-19	BH3-19	BH3-19
						SS5	SS3	SS5	SS2	SS5
1+2-methylnaphthalene	208523	0.05	ug/g			<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	373252	0.05	ug/g	STD 96		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	373252	0.05	ug/g	STD 0.15		<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	373252	0.05	ug/g	STD 0.67		<0.05	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	373252	0.05	ug/g	STD 0.96		<0.05	0.08	<0.05	<0.05	<0.05
Benzo[a]pyrene	373252	0.05	ug/g	STD 0.3		<0.05	0.09	<0.05	0.07	<0.05
Benzo[b]fluoranthene	373252	0.05	ug/g	STD 0.96		<0.05	0.10	<0.05	0.07	<0.05
Benzo[ghi]perylene	373252	0.05	ug/g	STD 9.6		<0.05	0.06	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	373252	0.05	ug/g	STD 0.96		<0.05	0.08	<0.05	0.07	<0.05

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**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1457137 Soil153 2019-10-01 BH1-19 SS5	1457138 Soil153 2019-10-01 BH2-19 SS3	1457139 Soil153 2019-10-01 BH2-19 SS5	1457140 Soil153 2019-10-01 BH3-19 SS2	1457141 Soil153 2019-10-01 BH3-19 SS5
Chrysene	373252	0.05	ug/g	STD 9.6		<0.05	0.11	<0.05	0.08	<0.05
Dibenz[a h]anthracene	373252	0.05	ug/g	STD 0.1		<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	373252	0.05	ug/g	STD 9.6		<0.05	0.14	<0.05	0.09	<0.05
Fluorene	373252	0.05	ug/g	STD 62		<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	373252	0.05	ug/g	STD 0.76		<0.05	0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 1-	373252	0.05	ug/g	STD 76		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 2-	373252	0.05	ug/g	STD 76		<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	373252	0.05	ug/g	STD 9.6		<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	373252	0.05	ug/g	STD 12		<0.05	0.06	<0.05	<0.05	<0.05
Pyrene	373252	0.05	ug/g	STD 96		<0.05	0.12	<0.05	0.08	<0.05

**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1457142 Soil153 2019-10-01 BH4-19 SS2	1457143 Soil153 2019-10-01 BH4-19 SS4	1457144 Soil153 2019-10-01 BH5-19 AS1	1457145 Soil153 2019-10-01 BH5-19 SS4	1457146 Soil153 2019-10-01 BH6-19 SS2
1+2-methylnaphthalene	208523	0.05	ug/g			<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	373252	0.05	ug/g	STD 96		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	373252	0.05	ug/g	STD 0.15		<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	373252	0.05	ug/g	STD 0.67		0.22	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	373252	0.05	ug/g	STD 0.96		0.51	<0.05	<0.05	<0.05	<0.05
Benzo[a]pyrene	373252	0.05	ug/g	STD 0.3		0.40*	<0.05	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	373252	0.05	ug/g	STD 0.96		0.31	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	373252	0.05	ug/g	STD 9.6		0.13	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	373252	0.05	ug/g	STD 0.96		0.40	<0.05	<0.05	<0.05	<0.05

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**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1457142	1457143	1457144	1457145	1457146
					Sample Matrix	Soil153	Soil153	Soil153	Soil153	Soil153
					Sample Type	2019-10-01	2019-10-01	2019-10-01	2019-10-01	2019-10-01
					Sample Date					
					Sampling Time					
					Sample I.D.	BH4-19	BH4-19	BH5-19	BH5-19	BH6-19
						SS2	SS4	AS1	SS4	SS2
Chrysene	373252	0.05	ug/g	STD 9.6		0.44	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	373252	0.05	ug/g	STD 0.1		<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	373252	0.05	ug/g	STD 9.6		0.96	<0.05	<0.05	<0.05	<0.05
Fluorene	373252	0.05	ug/g	STD 62		0.05	<0.05	<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	373252	0.05	ug/g	STD 0.76		0.14	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 1-	373252	0.05	ug/g	STD 76		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 2-	373252	0.05	ug/g	STD 76		<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	373252	0.05	ug/g	STD 9.6		<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	373252	0.05	ug/g	STD 12		0.48	<0.05	<0.05	<0.05	<0.05
Pyrene	373252	0.05	ug/g	STD 96		0.75	<0.05	<0.05	<0.05	<0.05

**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1457147	1457148	1457149	1457150	1457151
					Sample Matrix	Soil153	Soil153	Soil153	Soil153	Soil153
					Sample Type	2019-10-01	2019-10-01	2019-10-01	2019-10-02	2019-10-02
					Sample Date					
					Sampling Time					
					Sample I.D.	BH6-19	BH7-19	BH7-19	BH8-19	BH8-19
						SS4	SS2	SS4	AS1	SS4
1+2-methylnaphthalene	208523	0.05	ug/g			<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	373252	0.05	ug/g	STD 96		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	373252	0.05	ug/g	STD 0.15		0.09	<0.05	<0.05	<0.05	<0.05
Anthracene	373252	0.05	ug/g	STD 0.67		0.06	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	373252	0.05	ug/g	STD 0.96		0.27	<0.05	<0.05	<0.05	<0.05
Benzo[a]pyrene	373252	0.05	ug/g	STD 0.3		0.32*	<0.05	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	373252	0.05	ug/g	STD 0.96		0.32	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	373252	0.05	ug/g	STD 9.6		0.17	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	373252	0.05	ug/g	STD 0.96		0.29	<0.05	<0.05	<0.05	<0.05

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**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1457147	1457148	1457149	1457150	1457151
					Sample Matrix	Soil153	Soil153	Soil153	Soil153	Soil153
					Sample Type	2019-10-01	2019-10-01	2019-10-01	2019-10-02	2019-10-02
					Sample Date					
					Sampling Time					
					Sample I.D.	BH6-19	BH7-19	BH7-19	BH8-19	BH8-19
						SS4	SS2	SS4	AS1	SS4
Chrysene	373252	0.05	ug/g	STD 9.6		0.32	<0.05	<0.05	0.08	<0.05
Dibenz[a h]anthracene	373252	0.05	ug/g	STD 0.1		<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	373252	0.05	ug/g	STD 9.6		0.48	<0.05	<0.05	<0.05	<0.05
Fluorene	373252	0.05	ug/g	STD 62		<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	373252	0.05	ug/g	STD 0.76		0.16	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 1-	373252	0.05	ug/g	STD 76		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 2-	373252	0.05	ug/g	STD 76		<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	373252	0.05	ug/g	STD 9.6		<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	373252	0.05	ug/g	STD 12		0.20	<0.05	<0.05	0.06	<0.05
Pyrene	373252	0.05	ug/g	STD 96		0.41	<0.05	<0.05	<0.05	<0.05

**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1457152	1457153	1457154	1457155	1457156
					Sample Matrix	Soil153	Soil153	Soil153	Soil153	Soil153
					Sample Type	2019-10-02	2019-10-02	2019-10-02	2019-10-02	2019-10-02
					Sample Date					
					Sampling Time					
					Sample I.D.	BH9-19	BH10-19	BH10-19	BH11-19	BH11-19
						SS4	SS2	SS4	SS3	SS5
1+2-methylnaphthalene	208523	0.05	ug/g			<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	373252	0.05	ug/g	STD 96		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	373252	0.05	ug/g	STD 0.15		<0.05	<0.05	0.14	<0.05	<0.05
Anthracene	373252	0.05	ug/g	STD 0.67		<0.05	<0.05	0.12	<0.05	<0.05
Benz[a]anthracene	373252	0.05	ug/g	STD 0.96		<0.05	<0.05	0.52	<0.05	<0.05
Benzo[a]pyrene	373252	0.05	ug/g	STD 0.3		<0.05	<0.05	0.56*	<0.05	<0.05
Benzo[b]fluoranthene	373252	0.05	ug/g	STD 0.96		<0.05	<0.05	0.55	<0.05	<0.05
Benzo[ghi]perylene	373252	0.05	ug/g	STD 9.6		<0.05	<0.05	0.26	<0.05	<0.05
Benzo[k]fluoranthene	373252	0.05	ug/g	STD 0.96		<0.05	<0.05	0.51	<0.05	<0.05

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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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 P.O. Box 430, 3108 Carp Rd.  
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 Attention: Mr. Rob Hillier  
 PO#: 190625  
 Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918054  
 Date Submitted: 2019-10-02  
 Date Reported: 2019-10-09  
 Project: CBN Gladstone  
 COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**PAH**

Lab I.D.  
 Sample Matrix  
 Sample Type  
 Sample Date  
 Sampling Time  
 Sample I.D.

1457152 Soil153	1457153 Soil153	1457154 Soil153	1457155 Soil153	1457156 Soil153
2019-10-02	2019-10-02	2019-10-02	2019-10-02	2019-10-02
BH9-19 SS4	BH10-19 SS2	BH10-19 SS4	BH11-19 SS3	BH11-19 SS5

Analyte	Batch No	MRL	Units	Guideline	1457152 Soil153	1457153 Soil153	1457154 Soil153	1457155 Soil153	1457156 Soil153
Chrysene	373252	0.05	ug/g	STD 9.6	<0.05	<0.05	0.59	<0.05	<0.05
Dibenz[a h]anthracene	373252	0.05	ug/g	STD 0.1	<0.05	<0.05	0.09	<0.05	<0.05
Fluoranthene	373252	0.05	ug/g	STD 9.6	<0.05	<0.05	1.01	<0.05	<0.05
Fluorene	373252	0.05	ug/g	STD 62	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	373252	0.05	ug/g	STD 0.76	<0.05	<0.05	0.26	<0.05	<0.05
Methylnaphthalene, 1-	373252	0.05	ug/g	STD 76	<0.05	<0.05	<0.05	<0.05	<0.05
Methylnaphthalene, 2-	373252	0.05	ug/g	STD 76	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	373252	0.05	ug/g	STD 9.6	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	373252	0.05	ug/g	STD 12	<0.05	<0.05	0.40	<0.05	<0.05
Pyrene	373252	0.05	ug/g	STD 96	<0.05	<0.05	0.83	<0.05	<0.05

**PAH**

Lab I.D.  
 Sample Matrix  
 Sample Type  
 Sample Date  
 Sampling Time  
 Sample I.D.

1457157 Soil153	1457158 Soil153	1457159 Soil153	1457160 Soil153
2019-10-02	2019-10-02	2019-10-02	2019-10-02
BH12-19 SS2	BH12-19 SS4	DUP 2	DUP 3

Analyte	Batch No	MRL	Units	Guideline	1457157 Soil153	1457158 Soil153	1457159 Soil153	1457160 Soil153
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05	<0.05	<0.05	<0.05
Acenaphthene	373252	0.05	ug/g	STD 96	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	373252	0.05	ug/g	STD 0.15	<0.05	<0.05	<0.05	<0.05
Anthracene	373252	0.05	ug/g	STD 0.67	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	373252	0.05	ug/g	STD 0.96	<0.05	<0.05	<0.05	0.06
Benzo[a]pyrene	373252	0.05	ug/g	STD 0.3	<0.05	<0.05	<0.05	0.06
Benzo[b]fluoranthene	373252	0.05	ug/g	STD 0.96	<0.05	<0.05	<0.05	0.06
Benzo[ghi]perylene	373252	0.05	ug/g	STD 9.6	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	373252	0.05	ug/g	STD 0.96	<0.05	<0.05	<0.05	0.07

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Project: CBN Gladstone  
COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1457157 Soil153 2019-10-02 BH12-19 SS2	1457158 Soil153 2019-10-02 BH12-19 SS4	1457159 Soil153 2019-10-02 DUP 2	1457160 Soil153 2019-10-02 DUP 3
Chrysene	373252	0.05	ug/g	STD 9.6		<0.05	<0.05	<0.05	0.07
Dibenz[a h]anthracene	373252	0.05	ug/g	STD 0.1		<0.05	<0.05	<0.05	<0.05
Fluoranthene	373252	0.05	ug/g	STD 9.6		<0.05	<0.05	<0.05	0.09
Fluorene	373252	0.05	ug/g	STD 62		<0.05	<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	373252	0.05	ug/g	STD 0.76		<0.05	<0.05	<0.05	<0.05
Methylnaphthalene, 1-	373252	0.05	ug/g	STD 76		<0.05	<0.05	<0.05	<0.05
Methylnaphthalene, 2-	373252	0.05	ug/g	STD 76		<0.05	<0.05	<0.05	<0.05
Naphthalene	373252	0.05	ug/g	STD 9.6		<0.05	<0.05	<0.05	<0.05
Phenanthrene	373252	0.05	ug/g	STD 12		<0.05	<0.05	<0.05	<0.05
Pyrene	373252	0.05	ug/g	STD 96		<0.05	<0.05	<0.05	0.08

**Volatiles**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1457127 Soil153 2019-09-30 MW8-19 SS3	1457128 Soil153 2019-09-30 MW8-19 SS8	1457129 Soil153 2019-09-30 MW9-19 SS2	1457130 Soil153 2019-09-30 MW9-19 SS7	1457131 Soil153 2019-09-30 MW10-19 SS4
Acetone	373682	0.50	ug/g	STD 16		<0.50			<0.50	<0.50
Benzene	373681	0.02	ug/g	STD 0.32		<0.02	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	373681	0.05	ug/g	STD 18		<0.05			<0.05	<0.05
Bromoform	373681	0.05	ug/g	STD 0.61		<0.05			<0.05	<0.05
Bromomethane	373681	0.05	ug/g	STD 0.05		<0.05			<0.05	<0.05
Carbon Tetrachloride	373681	0.05	ug/g	STD 0.21		<0.05			<0.05	<0.05
Chlorobenzene	373681	0.05	ug/g	STD 2.4		<0.05			<0.05	<0.05
Chloroform	373681	0.05	ug/g	STD 0.47		<0.05			<0.05	<0.05
Dibromochloromethane	373681	0.05	ug/g	STD 13		<0.05			<0.05	<0.05

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**Volatiles**

Lab I.D.  
 Sample Matrix  
 Sample Type  
 Sample Date  
 Sampling Time  
 Sample I.D.

1457127 Soil153	1457128 Soil153	1457129 Soil153	1457130 Soil153	1457131 Soil153
2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-09-30
MW8-19 SS3	MW8-19 SS8	MW9-19 SS2	MW9-19 SS7	MW10-19 SS4

Analyte	Batch No	MRL	Units	Guideline	1457127 Soil153	1457128 Soil153	1457129 Soil153	1457130 Soil153	1457131 Soil153
Dichlorobenzene, 1,2-	373681	0.05	ug/g	STD 6.8	<0.05			<0.05	<0.05
Dichlorobenzene, 1,3-	373681	0.05	ug/g	STD 9.6	<0.05			<0.05	<0.05
Dichlorobenzene, 1,4-	373681	0.05	ug/g	STD 0.2	<0.05			<0.05	<0.05
Dichlorodifluoromethane	373681	0.05	ug/g	STD 16	<0.05			<0.05	<0.05
Dichloroethane, 1,1-	373681	0.05	ug/g	STD 17	<0.05			<0.05	<0.05
Dichloroethane, 1,2-	373681	0.05	ug/g	STD 0.05	<0.05			<0.05	<0.05
Dichloroethylene, 1,1-	373681	0.05	ug/g	STD 0.064	<0.05			<0.05	<0.05
Dichloroethylene, 1,2-cis-	373681	0.05	ug/g	STD 55	<0.05			<0.05	<0.05
Dichloroethylene, 1,2-trans-	373681	0.05	ug/g	STD 1.3	<0.05			<0.05	<0.05
Dichloropropane, 1,2-	373681	0.05	ug/g	STD 0.16	<0.05			<0.05	<0.05
Dichloropropene, 1,3-	373682	0.05	ug/g	STD 0.18	<0.05			<0.05	<0.05
Dichloropropene, 1,3-cis-	373681	0.05	ug/g		<0.05			<0.05	<0.05
Dichloropropene, 1,3-trans-	373681	0.05	ug/g		<0.05			<0.05	<0.05
Ethylbenzene	373681	0.05	ug/g	STD 9.5	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylene dibromide	373681	0.05	ug/g	STD 0.05	<0.05			<0.05	<0.05
Hexane (n)	373681	0.05	ug/g	STD 46	<0.05			<0.05	<0.05
Methyl Ethyl Ketone	373682	0.50	ug/g	STD 70	<0.50			<0.50	<0.50
Methyl Isobutyl Ketone	373682	0.50	ug/g	STD 31	<0.50			<0.50	<0.50
Methyl tert-Butyl Ether (MTBE)	373682	0.05	ug/g	STD 11	<0.05			<0.05	<0.05
Methylene Chloride	373681	0.05	ug/g	STD 1.6	<0.05			<0.05	<0.05
Styrene	373681	0.05	ug/g	STD 34	<0.05			<0.05	<0.05
Tetrachloroethane, 1,1,1,2-	373681	0.05	ug/g	STD 0.087	<0.05			<0.05	<0.05
Tetrachloroethane, 1,1,2,2-	373681	0.05	ug/g	STD 0.05	<0.05			<0.05	<0.05
Tetrachloroethylene	373681	0.05	ug/g	STD 4.5	<0.05			<0.05	<0.05

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Attention: Mr. Rob Hillier  
PO#: 190625  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918054  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-09  
Project: CBN Gladstone  
COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Volatiles**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1457127	1457128	1457129	1457130	1457131
					Sample Matrix	Soil153	Soil153	Soil153	Soil153	Soil153
					Sample Type	2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-09-30
					Sample Date	2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-09-30
					Sampling Time					
					Sample I.D.	MW8-19	MW8-19	MW9-19	MW9-19	MW10-19
						SS3	SS8	SS2	SS7	SS4
Toluene	373681	0.20	ug/g	STD 68		<0.20	<0.20	<0.20	<0.20	<0.20
Trichloroethane, 1,1,1-	373681	0.05	ug/g	STD 6.1		<0.05			<0.05	<0.05
Trichloroethane, 1,1,2-	373681	0.05	ug/g	STD 0.05		<0.05			<0.05	<0.05
Trichloroethylene	373681	0.05	ug/g	STD 0.91		<0.05			<0.05	<0.05
Trichlorofluoromethane	373681	0.05	ug/g	STD 4		<0.05			<0.05	<0.05
Vinyl Chloride	373681	0.02	ug/g	STD 0.032		<0.02			<0.02	<0.02
Xylene Mixture	373683	0.05	ug/g	STD 26		<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, m/p-	373681	0.05	ug/g			<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, o-	373681	0.05	ug/g			<0.05	<0.05	<0.05	<0.05	<0.05

**Volatiles**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1457132	1457133	1457134	1457135
					Sample Matrix	Soil153	Soil153	Soil153	Soil153
					Sample Type	2019-09-30	2019-09-30	2019-09-30	2019-09-30
					Sample Date	2019-09-30	2019-09-30	2019-09-30	2019-09-30
					Sampling Time				
					Sample I.D.	MW10-19	MW11-19	MW11-19	DUP 1
						SS9	SS4	SS8	
Acetone	373682	0.50	ug/g	STD 16				<0.50	
Benzene	373681	0.02	ug/g	STD 0.32		<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	373681	0.05	ug/g	STD 18				<0.05	
Bromoform	373681	0.05	ug/g	STD 0.61				<0.05	
Bromomethane	373681	0.05	ug/g	STD 0.05				<0.05	
Carbon Tetrachloride	373681	0.05	ug/g	STD 0.21				<0.05	
Chlorobenzene	373681	0.05	ug/g	STD 2.4				<0.05	
Chloroform	373681	0.05	ug/g	STD 0.47				0.21	
Dibromochloromethane	373681	0.05	ug/g	STD 13				<0.05	
Dichlorobenzene, 1,2-	373681	0.05	ug/g	STD 6.8				<0.05	

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**Volatiles**

Lab I.D.  
Sample Matrix  
Sample Type  
Sample Date  
Sampling Time  
Sample I.D.

1457132 Soil153	1457133 Soil153	1457134 Soil153	1457135 Soil153
2019-09-30	2019-09-30	2019-09-30	2019-09-30
MW10-19 SS9	MW11-19 SS4	MW11-19 SS8	DUP 1

Analyte	Batch No	MRL	Units	Guideline				
Dichlorobenzene, 1,3-	373681	0.05	ug/g	STD 9.6			<0.05	
Dichlorobenzene, 1,4-	373681	0.05	ug/g	STD 0.2			<0.05	
Dichlorodifluoromethane	373681	0.05	ug/g	STD 16			<0.05	
Dichloroethane, 1,1-	373681	0.05	ug/g	STD 17			<0.05	
Dichloroethane, 1,2-	373681	0.05	ug/g	STD 0.05			<0.05	
Dichloroethylene, 1,1-	373681	0.05	ug/g	STD 0.064			0.06	
Dichloroethylene, 1,2-cis-	373681	0.05	ug/g	STD 55			<0.05	
Dichloroethylene, 1,2-trans-	373681	0.05	ug/g	STD 1.3			<0.05	
Dichloropropane, 1,2-	373681	0.05	ug/g	STD 0.16			<0.05	
Dichloropropene, 1,3-	373682	0.05	ug/g	STD 0.18			<0.05	
Dichloropropene, 1,3-cis-	373681	0.05	ug/g				<0.05	
Dichloropropene, 1,3-trans-	373681	0.05	ug/g				<0.05	
Ethylbenzene	373681	0.05	ug/g	STD 9.5	<0.05	<0.05	<0.05	<0.05
Ethylene dibromide	373681	0.05	ug/g	STD 0.05			<0.05	
Hexane (n)	373681	0.05	ug/g	STD 46			<0.05	
Methyl Ethyl Ketone	373682	0.50	ug/g	STD 70			<0.50	
Methyl Isobutyl Ketone	373682	0.50	ug/g	STD 31			<0.50	
Methyl tert-Butyl Ether (MTBE)	373682	0.05	ug/g	STD 11			<0.05	
Methylene Chloride	373681	0.05	ug/g	STD 1.6			<0.05	
Styrene	373681	0.05	ug/g	STD 34			<0.05	
Tetrachloroethane, 1,1,1,2-	373681	0.05	ug/g	STD 0.087			<0.05	
Tetrachloroethane, 1,1,2,2-	373681	0.05	ug/g	STD 0.05			<0.05	
Tetrachloroethylene	373681	0.05	ug/g	STD 4.5			<0.05	
Toluene	373681	0.20	ug/g	STD 68	<0.20	<0.20	<0.20	<0.20

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**Volatiles**

Lab I.D.  
Sample Matrix  
Sample Type  
Sample Date  
Sampling Time  
Sample I.D.

1457132 Soil153	1457133 Soil153	1457134 Soil153	1457135 Soil153
2019-09-30	2019-09-30	2019-09-30	2019-09-30
MW10-19 SS9	MW11-19 SS4	MW11-19 SS8	DUP 1

Analyte	Batch No	MRL	Units	Guideline
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Trichloroethane, 1,1,1-	373681	0.05	ug/g	STD 6.1		0.19	
Trichloroethane, 1,1,2-	373681	0.05	ug/g	STD 0.05		<0.05	
Trichloroethylene	373681	0.05	ug/g	STD 0.91		<0.05	
Trichlorofluoromethane	373681	0.05	ug/g	STD 4		<0.05	
Vinyl Chloride	373681	0.02	ug/g	STD 0.032		0.07*	
Xylene Mixture	373683	0.05	ug/g	STD 26	<0.05	<0.05	<0.05
Xylene, m/p-	373681	0.05	ug/g		<0.05	<0.05	<0.05
Xylene, o-	373681	0.05	ug/g		<0.05	<0.05	<0.05

**Volatiles**

Lab I.D.  
Sample Matrix  
Sample Type  
Sample Date  
Sampling Time  
Sample I.D.

1457144 Soil153
2019-10-01
BH5-19 AS1

Analyte	Batch No	MRL	Units	Guideline
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Benzene	373681	0.02	ug/g	STD 0.32	<0.02
Ethylbenzene	373681	0.05	ug/g	STD 9.5	<0.05
Toluene	373681	0.20	ug/g	STD 68	<0.20
Xylene Mixture	373683	0.05	ug/g	STD 26	<0.05
Xylene, m/p-	373681	0.05	ug/g		<0.05
Xylene, o-	373681	0.05	ug/g		<0.05

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P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#: 190625  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918054  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-09  
Project: CBN Gladstone  
COC #: 204840

**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Volatiles**

Lab I.D. 1457157  
Sample Matrix Soil153  
Sample Type  
Sample Date 2019-10-02  
Sampling Time  
Sample I.D. BH12-19  
SS2

Analyte	Batch No	MRL	Units	Guideline	
Benzene	373681	0.02	ug/g	STD 0.32	<0.02
Ethylbenzene	373681	0.05	ug/g	STD 9.5	<0.05
Toluene	373681	0.20	ug/g	STD 68	<0.20
Xylene Mixture	373683	0.05	ug/g	STD 26	<0.05
Xylene, m/p-	373681	0.05	ug/g		<0.05
Xylene, o-	373681	0.05	ug/g		<0.05

**Inorganics**

Lab I.D. 1457138  
Sample Matrix Soil153  
Sample Type  
Sample Date 2019-10-01  
Sampling Time  
Sample I.D. BH2-19  
SS3

Analyte	Batch No	MRL	Units	Guideline	
pH - CaCl2	373244	2.00			7.23

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**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Inorganics**

Lab I.D. 1457145  
 Sample Matrix Soil153  
 Sample Type  
 Sample Date 2019-10-01  
 Sampling Time  
 Sample I.D. BH5-19  
 SS4

Analyte	Batch No	MRL	Units	Guideline
pH - CaCl2	373244	2.00		7.05

**Inorganics**

Lab I.D. 1457157  
 Sample Matrix Soil153  
 Sample Type  
 Sample Date 2019-10-02  
 Sampling Time 2019-10-02  
 Sample I.D. BH12-19  
 SS2

Analyte	Batch No	MRL	Units	Guideline	
pH - CaCl2	373244	2.00		7.19	6.87

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**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Moisture**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.		
					1457127	Soil153	Soil153	2019-09-30	2019-09-30	2019-09-30	2019-09-30	2019-09-30
Moisture-Humidite	373653	0.1	%		15.2	29.2	10.4	26.4	17.4			

**Moisture**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1457132	Soil153	Soil153	2019-09-30	2019-09-30	2019-09-30
Moisture-Humidite	373653	0.1	%		18.3	17.3	33.7	25.0		

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**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**Moisture**

Lab I.D. 1457144  
 Sample Matrix Soil153  
 Sample Type  
 Sample Date 2019-10-01  
 Sampling Time  
 Sample I.D. BH5-19  
 AS1

Analyte	Batch No	MRL	Units	Guideline
Moisture-Humidite	373653	0.1	%	6.2

**Moisture**

Lab I.D. 1457157  
 Sample Matrix Soil153  
 Sample Type  
 Sample Date 2019-10-02  
 Sampling Time  
 Sample I.D. BH12-19  
 SS2

Analyte	Batch No	MRL	Units	Guideline
Moisture-Humidite	373653	0.1	%	12.0

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**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**PHC Surrogate**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1457127	1457128	1457129	1457130	1457131	
Alpha-androstrane	373716	0	%		Soil153	Soil153	Soil153	2019-09-30	2019-09-30	2019-09-30
					MW8-19 SS3	MW8-19 SS8	MW9-19 SS2	MW9-19 SS7	MW10-19 SS4	
					82	88	85	88	88	

**PHC Surrogate**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1457132	1457133	1457134	1457135		
Alpha-androstrane	373716	0	%		Soil153	Soil153	Soil153	2019-09-30	2019-09-30	2019-09-30
					MW10-19 SS9	MW11-19 SS4	MW11-19 SS8	DUP 1		
					81	80	79	90		

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**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**PHC Surrogate**

Lab I.D. 1457144  
 Sample Matrix Soil153  
 Sample Type  
 Sample Date 2019-10-01  
 Sampling Time  
 Sample I.D. BH5-19  
 AS1

Analyte	Batch No	MRL	Units	Guideline
Alpha-androstrane	373716	0	%	85

**PHC Surrogate**

Lab I.D. 1457157  
 Sample Matrix Soil153  
 Sample Type  
 Sample Date 2019-10-02  
 Sampling Time  
 Sample I.D. BH12-19  
 SS2

Analyte	Batch No	MRL	Units	Guideline
Alpha-androstrane	373716	0	%	79

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**Guideline = O.Reg 153-T3-Ind/Com-Coarse**

**VOCs Surrogates**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.														
					1457127	Soil153	2019-09-30	MW8-19	SS3	1457128	Soil153	2019-09-30	MW8-19	SS8	1457129	Soil153	2019-09-30	MW9-19	SS2	1457130	Soil153	2019-09-30	MW9-19	SS7
1,2-dichloroethane-d4	373681	0	%		111						118	109												
4-bromofluorobenzene	373681	0	%		112						121	116												
Toluene-d8	373681	0	%		102	101	102	103	103															

**VOCs Surrogates**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.								
					1457132	Soil153	2019-09-30	MW10-19	SS9	1457133	Soil153	2019-09-30	MW11-19	SS4	1457134	Soil153	2019-09-30	MW11-19
1,2-dichloroethane-d4	373681	0	%								118							
4-bromofluorobenzene	373681	0	%								104							
Toluene-d8	373681	0	%		101	101	101	99										

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**VOCs Surrogates**

Lab I.D. 1457144  
 Sample Matrix Soil153  
 Sample Type  
 Sample Date 2019-10-01  
 Sampling Time  
 Sample I.D. BH5-19  
 AS1

Analyte	Batch No	MRL	Units	Guideline
Toluene-d8	373681	0	%	102

**VOCs Surrogates**

Lab I.D. 1457157  
 Sample Matrix Soil153  
 Sample Type  
 Sample Date 2019-10-02  
 Sampling Time  
 Sample I.D. BH12-19  
 SS2

Analyte	Batch No	MRL	Units	Guideline
Toluene-d8	373681	0	%	103

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**Quality Assurance Summary**

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
208523	1+2-methylnaphthalene							
208523	PHC's F4g	<100 ug/g	91	80-120		60-140		0-30
373244	pH - CaCl2	5.90	100	90-110			0	
373252	Methylnaphthalene, 1-	<0.05 ug/g	92	50-140	56	50-140	0	0-40
373252	Methylnaphthalene, 2-	<0.05 ug/g	87	50-140	54	50-140	0	0-40
373252	Acenaphthene	<0.05 ug/g	92	50-140	68	50-140	0	0-40
373252	Acenaphthylene	<0.05 ug/g	88	50-140	74	50-140	0	0-40
373252	Anthracene	<0.05 ug/g	97	50-140	74	50-140	0	0-40
373252	Benz[a]anthracene	<0.05 ug/g	98	50-140	75	50-140	0	0-40
373252	Benzo[a]pyrene	<0.05 ug/g	87	50-140	50	50-140	0	0-40
373252	Benzo[b]fluoranthene	<0.05 ug/g	102	50-140	52	50-140	0	0-40
373252	Benzo[ghi]perylene	<0.05 ug/g	102	50-140	50	50-140	0	0-40
373252	Benzo[k]fluoranthene	<0.05 ug/g	102	50-140	65		0	0-40
373252	Chrysene	<0.05 ug/g	100	50-140	72	50-140	0	0-40
373252	Dibenz[a h]anthracene	<0.05 ug/g	100	50-140	50	50-140	0	0-40
373252	Fluoranthene	<0.05 ug/g	101	50-140	73	50-140	0	0-40
373252	Fluorene	<0.05 ug/g	94	50-140	70	50-140	0	0-40
373252	Indeno[1 2 3-cd]pyrene	<0.05 ug/g	94	50-140	52	50-140	0	0-40
373252	Naphthalene	<0.05 ug/g	88	50-140	60	50-140	0	0-40
373252	Phenanthrene	<0.05 ug/g	98	50-140	70	50-140	0	0-40
373252	Pyrene	<0.05 ug/g	101	50-140	75	50-140	0	0-40
373454	Silver	<0.2 ug/g	90	70-130	89	70-130	0	0-20
373454	Arsenic	<1 ug/g	91	70-130	92	70-130	0	0-20
373454	Boron (total)	<5 ug/g	96	70-130	114	70-130	0	0-20
373454	Barium	<1 ug/g	97	70-130	371	70-130	1	0-20
373454	Beryllium	<1 ug/g	99	70-130	89	70-130	0	0-20
373454	Cadmium	<0.4 ug/g	98	70-130	90	70-130	0	0-20
373454	Cobalt	<1 ug/g	97	70-130	106	70-130	0	0-20
373454	Chromium Total	<1 ug/g	98	70-130	162	70-130	1	0-20
373454	Copper	<1 ug/g	102	70-130	133	70-130	4	0-20
373454	Molybdenum	<1 ug/g	95	70-130	88	70-130	0	0-20
373454	Nickel	<1 ug/g	98	70-130	135	70-130	1	0-20
373454	Lead	<1 ug/g	99	70-130	179	70-130	3	0-20

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COC #: 204840

**Quality Assurance Summary**

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
373454	Antimony	<1 ug/g	82	70-130	85	70-130	0	0-20
373454	Selenium	<1 ug/g	100	70-130	81	70-130	0	0-20
373454	Thallium	<1 ug/g	99	70-130	88	70-130	0	0-20
373454	Uranium	<0.5 ug/g	94	70-130	87	70-130	0	0-20
373454	Vanadium	<2 ug/g	94	70-130	197	70-130	1	0-20
373454	Zinc	<2 ug/g	105	70-130	578	70-130	2	0-20
373533	Silver	<0.2 ug/g	97	70-130	103	70-130	0	0-20
373533	Arsenic	<1 ug/g	100	70-130	96	70-130	0	0-20
373533	Boron (total)	<5 ug/g	108	70-130	102	70-130	0	0-20
373533	Barium	<1 ug/g	104	70-130	3	70-130	8	0-20
373533	Beryllium	<1 ug/g	109	70-130	106	70-130	0	0-20
373533	Cadmium	<0.4 ug/g	109	70-130	106	70-130	0	0-20
373533	Cobalt	<1 ug/g	108	70-130	88	70-130	9	0-20
373533	Chromium Total	<1 ug/g	110	70-130	47	70-130	10	0-20
373533	Copper	<1 ug/g	114	70-130	76	70-130	9	0-20
373533	Molybdenum	<1 ug/g	106	70-130	104	70-130	0	0-20
373533	Nickel	<1 ug/g	110	70-130	75	70-130	9	0-20
373533	Lead	<1 ug/g	107	70-130	96	70-130	11	0-20
373533	Antimony	<1 ug/g	82	70-130	75	70-130	0	0-20
373533	Selenium	<1 ug/g	105	70-130	102	70-130	0	0-20
373533	Thallium	<1 ug/g	108	70-130	99	70-130	0	0-20
373533	Uranium	<0.5 ug/g	101	70-130	99	70-130	0	0-20
373533	Vanadium	<2 ug/g	105	70-130	74	70-130	9	0-20
373533	Zinc	<2 ug/g	111	70-130	46	70-130	6	0-20
373653	Moisture-Humidite		100	80-120			2	
373681	Tetrachloroethane, 1,1,1,2-	<0.05 ug/g	88	60-130	89	50-140	0	0-50
373681	Trichloroethane, 1,1,1-	<0.05 ug/g	84	60-130	75	50-140	0	0-50
373681	Tetrachloroethane, 1,1,2,2-	<0.05 ug/g	92	60-130	99	50-140	0	0-30
373681	Trichloroethane, 1,1,2-	<0.05 ug/g	82	60-130	98	50-140	0	0-50
373681	Dichloroethane, 1,1-	<0.05 ug/g	85	60-130	105	50-140	0	0-50
373681	Dichloroethylene, 1,1-	<0.05 ug/g	79	60-130	71	50-140	0	0-50
373681	Dichlorobenzene, 1,2-	<0.05 ug/g	90	60-130	105	50-140	0	0-50
373681	Dichloroethane, 1,2-	<0.05 ug/g	93	60-130	103	50-140	0	0-50

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373681	Dichloropropane, 1,2-	<0.05 ug/g	86	60-130	91	50-140	0	0-50
373681	Dichlorobenzene, 1,3-	<0.05 ug/g	103	60-130	110	50-140	0	0-50
373681	Dichlorobenzene, 1,4-	<0.05 ug/g	93	60-130	96	50-140	0	0-50
373681	Benzene	<0.02 ug/g	85	60-130	87	50-140	0	0-50
373681	Bromodichloromethane	<0.05 ug/g	86	60-130	81	50-140	0	0-50
373681	Bromoform	<0.05 ug/g	84	60-130	100	50-140	0	0-50
373681	Bromomethane	<0.05 ug/g	118	60-130	99	50-140	0	0-50
373681	Dichloroethylene, 1,2-cis-	<0.05 ug/g	82	60-130	76	50-140	0	0-50
373681	Dichloropropene, 1,3-cis-	<0.05 ug/g	92	60-130	96	50-140	0	0-50
373681	Carbon Tetrachloride	<0.05 ug/g	99	60-130	85	50-140	0	0-50
373681	Chloroform	0.06 ug/g	81	60-130	76	50-140	0	0-50
373681	Dibromochloromethane	<0.05 ug/g	86	60-130	97	50-140	0	0-50
373681	Dichlorodifluoromethane	<0.05 ug/g	102	60-130	68	50-140	0	0-50
373681	Methylene Chloride	<0.05 ug/g	91	60-130	82	50-140	0	0-50
373681	Ethylbenzene	<0.05 ug/g	85	60-130	80	50-140	0	0-50
373681	Ethylene dibromide	<0.05 ug/g	86	60-130		50-140		0-50
373681	Hexane (n)	<0.05 ug/g	75	60-130	84	50-140	0	0-50
373681	Xylene, m/p-	<0.05 ug/g	89	60-130	90	50-140	0	0-50
373681	Chlorobenzene	<0.05 ug/g	87	60-130	89	50-140	0	0-50
373681	Xylene, o-	<0.05 ug/g	89	60-130	91	50-140	0	0-50
373681	Styrene	<0.05 ug/g	87	60-130	88	50-140	0	0-50
373681	Dichloroethylene, 1,2-trans-	<0.05 ug/g	85	60-130	89	50-140	0	0-50
373681	Dichloropropene, 1,3-trans-	<0.05 ug/g	90	60-130	88	50-140	0	0-50
373681	Tetrachloroethylene	<0.05 ug/g	86	60-130	64	50-140	0	0-50
373681	Toluene	<0.20 ug/g	90	60-130	91	50-140	0	0-50
373681	Trichloroethylene	<0.05 ug/g	82	60-130	82	50-140	0	0-50
373681	Trichlorofluoromethane	<0.05 ug/g	99	60-130	65	50-140	0	0-50
373681	Vinyl Chloride	<0.02 ug/g	97	60-130	91	50-140	0	0-50
373682	Dichloropropene, 1,3-							
373682	Acetone	<0.50 ug/g	106	60-130	108	50-140	0	0-50
373682	PHC's F1	<10 ug/g	95	80-120	99	60-140	0	0-30
373682	Methyl Ethyl Ketone	<0.50 ug/g	104	60-130	104	50-140	0	0-50
373682	Methyl Isobutyl Ketone	<0.50 ug/g	84	60-130	98	50-140	0	0-50

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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#: 190625  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918054  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-09  
Project: CBN Gladstone  
COC #: 204840

**Quality Assurance Summary**

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
373682	Methyl tert-Butyl Ether (MTBE)	<0.05 ug/g	83	60-130	78	50-140	0	0-50
373683	Xylene Mixture							
373685	PHC's F1-BTEX							
373716	PHC's F2	<10 ug/g	108	80-120	112	60-140	0	0-30
373716	PHC's F3	<20 ug/g	108	80-120	112	60-140	0	0-30
373716	PHC's F4	<20 ug/g	108	80-120	112	60-140	0	0-30

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COC #: 204840

**Test Summary**

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
208523	1+2-methylnaphthalene	GC-MS	2019-10-07	2019-10-07	C_M	P 8270
208523	PHC's F4g	GC/FID	2019-10-09	2019-10-09	C_M	CCME
373244	pH - CaCl2	pH Meter	2019-10-04	2019-10-04	SG	Ag Soil
373252	Methylnaphthalene, 1-	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Methylnaphthalene, 2-	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Acenaphthene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Acenaphthylene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Anthracene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Benz[a]anthracene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Benzo[a]pyrene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Benzo[b]fluoranthene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Benzo[ghi]perylene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Benzo[k]fluoranthene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Chrysene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Dibenz[a h]anthracene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Fluoranthene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Fluorene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Indeno[1 2 3-cd]pyrene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Naphthalene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Phenanthrene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373252	Pyrene	GC-MS	2019-10-04	2019-10-04	C_M	P 8270
373454	Silver	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Arsenic	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Boron (total)	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Barium	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Beryllium	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Cadmium	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Cobalt	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Chromium Total	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Copper	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Molybdenum	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Nickel	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Lead	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8

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Methods references and/or additional QA/QC information available on request.

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Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#: 190625  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918054  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-09  
Project: CBN Gladstone  
COC #: 204840

**Test Summary**

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
373454	Antimony	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Selenium	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Thallium	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Uranium	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Vanadium	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373454	Zinc	ICAPQ-MS	2019-10-03	2019-10-03	H_D	EPA 200.8
373533	Silver	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Arsenic	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Boron (total)	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Barium	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Beryllium	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Cadmium	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Cobalt	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Chromium Total	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Copper	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Molybdenum	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Nickel	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Lead	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Antimony	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Selenium	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Thallium	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Uranium	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Vanadium	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373533	Zinc	ICAPQ-MS	2019-10-04	2019-10-04	H_D	EPA 200.8
373653	Moisture-Humidite	Oven	2019-10-07	2019-10-08	C_M	ASTM 2216
373681	Tetrachloroethane, 1,1,1,2-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Trichloroethane, 1,1,1-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Tetrachloroethane, 1,1,2,2-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Trichloroethane, 1,1,2-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Dichloroethane, 1,1-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Dichloroethylene, 1,1-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Dichlorobenzene, 1,2-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Dichloroethane, 1,2-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B

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Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#: 190625  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918054  
Date Submitted: 2019-10-02  
Date Reported: 2019-10-09  
Project: CBN Gladstone  
COC #: 204840

**Test Summary**

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
373681	Dichloropropane, 1,2-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Dichlorobenzene, 1,3-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Dichlorobenzene, 1,4-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Benzene	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Bromodichloromethane	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Bromoform	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Bromomethane	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Dichloroethylene, 1,2-cis-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Dichloropropene, 1,3-cis-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Carbon Tetrachloride	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Chloroform	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Dibromochloromethane	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Dichlorodifluoromethane	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Methylene Chloride	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Ethylbenzene	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Ethylene dibromide	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Hexane (n)	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Xylene, m/p-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Chlorobenzene	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Xylene, o-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Styrene	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Dichloroethylene, 1,2-trans-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Dichloropropene, 1,3-trans-	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Tetrachloroethylene	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Toluene	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Trichloroethylene	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Trichlorofluoromethane	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373681	Vinyl Chloride	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373682	Dichloropropene, 1,3-	GC-MS	2019-10-08	2019-10-08	TJB	V 8260B
373682	Acetone	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373682	PHC's F1	GC/FID	2019-10-08	2019-10-08	TJB	CCME
373682	Methyl Ethyl Ketone	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373682	Methyl Isobutyl Ketone	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B

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Client: Blumetric Environmental Inc.-Carp  
 P.O. Box 430, 3108 Carp Rd.  
 Carp, ON  
 K0A 1L0  
 Attention: Mr. Rob Hillier  
 PO#: 190625  
 Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918054  
 Date Submitted: 2019-10-02  
 Date Reported: 2019-10-09  
 Project: CBN Gladstone  
 COC #: 204840

***Test Summary***

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
373682	Methyl tert-Butyl Ether (MTBE)	GC-MS	2019-10-04	2019-10-05	TJB	V 8260B
373683	Xylene Mixture	GC-MS	2019-10-08	2019-10-08	TJB	V 8260B
373685	PHC's F1-BTEX	GC/FID	2019-10-08	2019-10-08	TJB	CCME
373716	PHC's F2	GC/FID	2019-10-08	2019-10-09	C_M	CCME
373716	PHC's F3	GC/FID	2019-10-08	2019-10-09	C_M	CCME
373716	PHC's F4	GC/FID	2019-10-08	2019-10-09	C_M	CCME

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CLIENT INFORMATION

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES  NO  )

Company: Blumetric  
 Contact: Rob Hillier  
 Address: 3108 Carp Rd. PO Box 430 Carp ON K0A 1L0  
 Telephone: 613 839 3053 ext 233 | Cell:  
 Email #1: rhillier@blumetric.ca  
 Email #2:

Company:  
 Contact:  
 Address:  
 Telephone:  
 Fax:  
 Email #1: ape@blumetric.ca  
 Email #2:  
 PO #: 190625

REGULATION/GUIDELINE REQUIRED

Sanitary Sewer, City: \_\_\_\_\_  
 Storm Sewer, City: \_\_\_\_\_  
 ODWSOG  
 PWQO  
 O. Reg 347/558  
 Other: \_\_\_\_\_  
 None

O. Reg 153  
 Table # 3, Course / Fine, Surface / subsurface.  
 Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment  
 Excess Soil, Table: \_\_\_\_\_ Type: \_\_\_\_\_

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04  
 Yes  No

TURN-AROUND TIME (Business Days)

1 Day\* (100%)  2 Day\*\* (50%)  3-5 Days (25%)  5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.  
 \*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.  
 \*\*For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

Quote #: 190338

Project: CBN Gladstone

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).

Sample ID		Date/Time Collected	Sample Matrix	# of Containers	O.Reg.153 parameters							TEL P	RN# (Lab Use Only)
Field Filtered ->					PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only		
nw8-19	SS3	Sept 30/19 am	S	4	✓	✓	✓	✓			✓		
nw8-19	SS8	am	S	4	✓	✓		✓			✓		
nw9-19	SS2	am	S	4	✓	✓		✓			✓		
nw9-19	SS7	pm	S	4	✓	✓	✓	✓			✓		
nw10-19	SS4	pm	S	4	✓	✓	✓	✓			✓		
nw10-19	SS9	pm	S	4	✓	✓		✓			✓		
nw11-19	SS4	pm	S	4	✓	✓		✓			✓		
nw11-19	SS8	pm	S	4	✓	✓	✓	✓			✓		
Dup 1			S	4	✓	✓		✓			✓		
Reg SS3		pm	S	3									1457113

PRINT: B. Andress | SIGN: [Signature] | DATE/TIME: Oct 2/19 | TEMP (°C): 10°C  
 Sampled By: B. Andress | Inquished By: B. Andress | Received By: Markente  
 COMMENTS: On Ice  
 CUSTODY SEAL:  YES  NO | Ice packs submitted:  Yes  No

CLIENT INFORMATION				INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> )												
Company: Blumetric				Company:						Fax:						
Contact: Rob Hillier				Contact:						Email: #1: ape@blumetric.ca						
Address: 3108 Carp Rd. PO Box 430 Carp ON K0A 1K0				Address:						Email: #2:						
Telephone: 613 839 3053 ext 233 Cell:				Telephone:						PO #: 190625						
Email: #1: rhillier@blumetric.ca				<b>REGULATION/GUIDELINE REQUIRED</b>												
Email: #2:																
Project: CBN Gladstone Quote #: 190338				<input type="checkbox"/> Sanitary Sewer, City: _____ <input type="checkbox"/> Storm Sewer, City: _____ <input type="checkbox"/> ODWSOG <input type="checkbox"/> PWQO <input type="checkbox"/> O. Reg 347/558 <input type="checkbox"/> Other: _____ <input type="checkbox"/> None						<input checked="" type="checkbox"/> O. Reg 153  Table # 3 Course / Fine, Surface / subsurface. Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment  <input type="checkbox"/> Excess Soil, Table: _____ Type: _____  The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04 <input type="checkbox"/> Yes <input type="checkbox"/> No						
TURN-AROUND TIME (Business Days)																
<input type="checkbox"/> 1 Day* (100%) <input type="checkbox"/> 2 Day** (50%) <input type="checkbox"/> 3-5 Days (25%) <input checked="" type="checkbox"/> 5-7 Days (Standard)																
Please contact Lab in advance to determine rush availability.																
*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.																
**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.																
The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).				Sample Details										Sample Analysis Required		RN# (Lab Use Only)
				Field Filtered ->	Sample Matrix	# of Containers	PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only	TEL	Stress	
Sample ID	Date/Time Collected															
mw8-19 SS3	Sept 30/19 am	S	4	✓	✓	✓	✓			✓						1457127
mw8-19 SS8	am	S	4	✓	✓		✓			✓						28
mw9-19 SS2	am	S	4	✓	✓		✓			✓						29
mw9-19 SS7	pm	S	4	✓	✓	✓	✓			✓						30
mw10-19 SS4	pm	S	4	✓	✓	✓	✓			✓						31
mw10-19 SS9	pm	S	4	✓	✓		✓			✓						32
mw11-19 SS4	pm	S	4	✓	✓		✓			✓						33
mw11-19 SS8	pm	S	4	✓	✓	✓	✓			✓						34
Dup 1		S	4	✓	✓		✓			✓						35
Reg SS8	pm	S	3								✓					
PRINT				SIGN				DATE/TIME				TEMP (°C)		COMMENTS:		
Sampled By: B. Address				[Signature]				Oct 2/19				10°C		On Ice		
Relinquished By: B. Address				[Signature]				2019-10-07						CUSTODY SEAL: <input type="checkbox"/> YES <input type="checkbox"/> NO Ice packs submitted: <input type="checkbox"/> Yes <input type="checkbox"/> No		
Received By: Mackenzie				[Signature]												

CLIENT INFORMATION		INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> )	
Company: <u>BluMetric</u>	Contact: <u>Rob Hillier</u>	Company:	Fax:
Address: <u>3108 Corp Rd</u>	Telephone: <u>613 839 3053 ext 233</u>	Contact:	Email: #1: <u>apeblumetric.ca</u>
Telephone: <u>613 839 3053 ext 233</u>	Cell:	Address:	Email: #2:
Email: #1: <u>rhillier@blumetric.ca</u>		Telephone:	PO #: <u>190625</u>

Project: <u>CBN Gladstone</u>		Quote #: <u>190338</u>
TURN-AROUND TIME (Business Days)		
<input type="checkbox"/> 1 Day* (100%)	<input type="checkbox"/> 2 Day** (50%)	<input type="checkbox"/> 3-5 Days (25%)
<input checked="" type="checkbox"/> 5-7 Days (Standard)		
Please contact Lab in advance to determine rush availability.		
*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.		
**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.		

REGULATION/GUIDELINE REQUIRED	
<input type="checkbox"/> Sanitary Sewer, City: _____	<input checked="" type="checkbox"/> O. Reg 153
<input type="checkbox"/> Storm Sewer, City: _____	Table # <u>3</u> , Course / Fine, Surface / subsurface.
<input type="checkbox"/> ODWSOG	Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment
<input type="checkbox"/> PWQO	<input type="checkbox"/> Excess Soil, Table: _____ Type: _____
<input type="checkbox"/> O. Reg 347/558	
<input type="checkbox"/> Other: _____	
<input type="checkbox"/> None	The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
	<input type="checkbox"/> Yes <input type="checkbox"/> No

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).

Sample ID	Date/Time Collected	Sample Details		Sample Analysis Required										RN# (Lab Use Only)									
		Sample Matrix	# of Containers	O.Reg.153 parameters																			
				PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only	PH	Ammonia	Chloride		Sulfide								
BH1-19 SS2	Oct 1/19	S	2				✓					✓											36
BH1-19 SS5		S	2				✓					✓											37
BH2-19 SS3		S	2				✓					✓	✓										38
BH2-19 SS5		S	2				✓					✓											39
BH3-19 SS2		S	2				✓					✓											40
BH3-19 SS5		S	2				✓					✓											41
BH4-19 SS2		S	2				✓					✓											42
BH4-19 SS4		S	2				✓					✓											43
BH5-19 ASI		S	4	✓	✓		✓					✓											44
BH5-19 SS4		S	2				✓					✓	✓										45

PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:
Sampled By: <u>B. Address</u>	<u>[Signature]</u>			
Relinquished By: <u>B. Address</u>	<u>[Signature]</u>	<u>Oct 2/19</u>		
Received By: <u>MacKenzie</u>	<u>[Signature]</u>	<u>2019-10-14:20</u>	<u>10°C</u>	
CUSTODY SEAL: <input type="checkbox"/> YES <input type="checkbox"/> NO				Ice packs submitted: <input type="checkbox"/> Yes <input type="checkbox"/> No

CLIENT INFORMATION

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES  NO  )

Company: Blumetric  
 Contact: Robt Hillier  
 Address: 3108 Carp Rd  
 Telephone: 613-839-3053  
 Cell:

Company:  
 Contact:  
 Address:  
 Telephone:  
 Fax:  
 Email: #1: ap@blumetric.ca  
 Email: #2:  
 PO #: 190625

Email: #1: rhillier@blumetric.ca

REGULATION/GUIDELINE REQUIRED

Email: #2:  
 Project: CBN Gladstone  
 Quote #: 190338

- Sanitary Sewer, City: \_\_\_\_\_
- Storm Sewer, City: \_\_\_\_\_
- ODWSOG
- PWQO
- O. Reg 347/558
- Other: \_\_\_\_\_
- None

O. Reg 153  
 Table # 3 Course / Fine, Surface / subsurface.  
 Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment  
 Excess Soil, Table: \_\_\_\_\_ Type: \_\_\_\_\_  
 The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04  
 Yes  No

TURN-AROUND TIME (Business Days)

- 1 Day\* (100%)
- 2 Day\*\* (50%)
- 3-5 Days (25%)
- 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.

\*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

\*\*For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details		Sample Analysis Required										RN# (Lab Use Only)	
Field Filtered -->		O.Reg.153 parameters											
Sample Matrix	# of Containers	PHC FL - F4	BTEX	VOCS	PAHS	PCBs	Metals + Inorganics	Metals only	PH				
BH6-19 SS2	2				✓		✓						46
BH6-19 SS4	2				✓		✓						47
BH7-19 SS2	2				✓		✓					SS3	48
BH7-19 SS4	2				✓		✓					SS5	49
BH8-19 ASI	2				✓		✓						50
BH8-19 SS4	2				✓		✓						51
BH9-19 SS4	2				✓		✓						52
BH10-19 SS2	2				✓		✓						53
BH10-19 SS4	2				✓		✓						54
BH11-19 SS3	2				✓		✓						55

PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:
Sampled By: B. Andress	<i>[Signature]</i>	Oct 2 / 19	10°C	On Ice
Relinquished By: B. Andress	<i>[Signature]</i>	2019-10-20		
Received By: Mackenzie	<i>[Signature]</i>			

CUSTOMY SEAL:  YES  NO Ice packs submitted:  Yes  No

CLIENT INFORMATION

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES  NO  )

Company: Blumetric  
 Contact: Rob Hillier  
 Address: 3108 Carp Rd  
 Telephone: 613-839-3053 ext 233 Cell:  
 Email: #1: rhillier@blumetric.ca  
 Email: #2:  
 Project: CBN Gladstone Quote #: 190338

Company:  
 Contact:  
 Address:  
 Telephone:  
 Fax:  
 Email: #1: ap@blumetric.ca  
 Email: #2:  
 PO #: 190625

TURN-AROUND TIME (Business Days)

- 1 Day\* (100%)  2 Day\*\* (50%)  3-5 Days (25%)  5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.

\*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

\*\*For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

REGULATION/GUIDELINE REQUIRED

- Sanitary Sewer, City: \_\_\_\_\_  
 Storm Sewer, City: \_\_\_\_\_  
 ODWSOG  
 PWQO  
 O. Reg 347/558  
 Other: \_\_\_\_\_  
 None

- O. Reg 153  
 Table # 3, Course / Fine, Surface / subsurface.  
 Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment  
 Excess Soil, Table: \_\_\_\_\_ Type: \_\_\_\_\_  
 The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04  
 Yes  No

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details		Sample Analysis Required										RN# (Lab Use Only)										
Sample ID	Date/Time Collected	Field Filtered -->	O.Reg.153 parameters																			
Sample Matrix	# of Containers		PHC FL - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only	PH	SO <sub>4</sub>	Residue										
BH11-19 S55	Oct 2/19 am	S 2				✓			✓													56
BH12-19 S52	pm	S 4	✓	✓		✓			✓	✓												57
BH12-19 S54	pm	S 2				✓			✓	✓												58
Dup 2		S 2				✓			✓													59
Dup 3		S 2				✓			✓													60
R558																						
mWB-19 S59	Sept 30/19	S 1										✓										
BH5-19 S55	Oct 1/19	S 1										✓										

PRINT SIGN DATE/TIME TEMP (°C) COMMENTS:

Sampled By: B. Andrews  
 Relinquished By: B. Andrews  
 Received By: Mackenzie

Signature: [Signature]  
 Date/Time: Oct 2/19 2:14:20  
 Temp: 10°C

On Ice

CUSTODY SEAL:  YES  NO Ice packs submitted:  Yes  No

CLIENT INFORMATION

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES  NO  )

Company: Blumetric  
 Contact: Rob Hillier  
 Address: 3108 Carp Rd  
 Telephone: 613-839-3053 ext 233 Cell:  
 Email #1: rhillier@blumetric.ca  
 Email #2:  
 Project: CBN Gladstone Quote #: 190338

Company:  
 Contact:  
 Address:  
 Telephone:  
 Fax:  
 Email #1: ap@blumetric.ca  
 Email #2:  
 PO #: 190625

TURN-AROUND TIME (Business Days)

1 Day\* (100%)  2 Day\*\* (50%)  3-5 Days (25%)  5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.

\*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

\*\*For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

REGULATION/GUIDELINE REQUIRED

- Sanitary Sewer, City: \_\_\_\_\_
- Storm Sewer, City: \_\_\_\_\_
- ODWSOG
- PWQO
- O. Reg 347/558
- Other: \_\_\_\_\_
- None

O. Reg 153  
 Table # 3 Course / Fine, Surface / subsurface.  
 Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment  
 Excess Soil, Table: \_\_\_\_\_ Type: \_\_\_\_\_  
 The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04  
 Yes  No

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details		Sample Analysis Required										RN# (Lab Use Only)				
Field Filtered -->		O.Reg.153 parameters														
Sample Matrix	# of Containers	PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only	PH	SOIL	ACTURE					
BH11-19 S55	Oct 2/19 am	S	2						✓							
BH12-19 S52	pm	S	4	✓	✓				✓	✓						
BH12-19 S54	pm	S	2						✓	✓						
Dup 2		S	2						✓							
Dup 3		S	2						✓							
<del>Res 558</del>																
mwb-19 S59	Sept 30/19	S	1									✓				
BH5-19 S55	Oct 1/19	S	1									✓				

1457#67  
08

PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:
Sampled By: B. Address	<i>[Signature]</i>	Oct 2/19	10°C	On Ice
Relinquished By: B. Address		2019/10/14:20		
Collected By: Mackenzie	MRC			CUSTODY SEAL: <input type="checkbox"/> YES <input type="checkbox"/> NO Ice packs submitted: <input type="checkbox"/> Yes <input type="checkbox"/> No

Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
Invoice to: Blumetric Environmental Inc.-Carp  
PO#:

Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845  
Temperature (C): 16  
Custody Seal:

Page 1 of 23

**Dear Rob Hillier:**

**Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).**

### ***Sample Comment Summary***

Sample ID: 1458099 MW8 Sodium analysis for this report was performed from the nitric acid preserved bottles.
--

Report Comments:

\_\_\_\_\_  
Addrine Thomas, Inorganics Supervisor

\_\_\_\_\_  
Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated

Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at <http://www.cala.ca/scopes/2602.pdf>

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.



Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#:  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**Hydrocarbons**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1458099	GW153	1458100	GW153	1458101	GW153
PHC's F1	373994	20	ug/L	<20	2019-10-07	12:03	MW8	2019-10-07	13:32	MW9
PHC's F1-BTEX	373996	20	ug/L	<20	2019-10-07	14:12	MW10	2019-10-07	14:56	MW11
PHC's F2	373966	20	ug/L	<20						
PHC's F3	373966	50	ug/L	50						
PHC's F4	373966	50	ug/L	70						

**Hydrocarbons**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1458105	GW153	1458107	GW153	2019-10-07	2019-10-07
PHC's F1	373994	20	ug/L	<20						
PHC's F1-BTEX	373996	20	ug/L	<20						
PHC's F2	373966	20	ug/L	<20						
PHC's F3	373966	50	ug/L	<50						
PHC's F4	373966	50	ug/L	<50						

Results relate only to the parameters tested on the samples submitted.  
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#:  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**Metals**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1458099	1458100	1458101	1458102
					Sample Matrix	GW153	GW153	GW153	GW153
					Sample Type	2019-10-07	2019-10-07	2019-10-07	2019-10-07
					Sample Date	12:03	13:32	14:12	14:56
					Sampling Time	MW8	MW9	MW10	MW11
					Sample I.D.				
Antimony	373789	0.5	ug/L			<0.5	<0.5		<0.5
	373847	0.5	ug/L					<0.5	
Arsenic	373789	1	ug/L			<1	<1		<1
	373847	1	ug/L					<1	
Barium	373789	10	ug/L			290	340		270
	373847	10	ug/L					420	
Beryllium	373789	0.5	ug/L			<0.5	<0.5		<0.5
	373847	0.5	ug/L					<0.5	
Boron (total)	373819	10	ug/L			60	60		90
	373847	10	ug/L					50	
Cadmium	373789	0.1	ug/L			<0.1	<0.1		<0.1
	373847	0.1	ug/L					<0.1	
Chromium Total	373789	1	ug/L			1	1		<1
	373847	1	ug/L					1	
Cobalt	373789	0.2	ug/L			4.9	0.8		2.7
	373847	0.2	ug/L					6.4	
Copper	373789	1	ug/L			2	2		1
	373847	1	ug/L					2	
Lead	373789	1	ug/L			<1	<1		<1
	373847	1	ug/L					<1	
Molybdenum	373789	5	ug/L			<5	<5		21
	373847	5	ug/L					<5	
Nickel	373789	5	ug/L			12	<5		7

Results relate only to the parameters tested on the samples submitted.  
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#:  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**Metals**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.									
					1458099	1458100	1458101	1458102	GW153	GW153	GW153	GW153	2019-10-07	2019-10-07	2019-10-07	2019-10-07	MW8	MW9	MW10
Nickel	373847	5	ug/L															14	
Selenium	373789	1	ug/L																<1
	373847	1	ug/L																<1
Silver	373789	0.1	ug/L																<0.1
	373847	0.1	ug/L																<0.1
Sodium	373775	2000	ug/L																203000
Thallium	373789	0.1	ug/L																<0.1
	373847	0.1	ug/L																<0.1
Uranium	373789	1	ug/L																2
	373847	1	ug/L																1
Vanadium	373789	1	ug/L																2
	373847	1	ug/L																<1
Zinc	373789	10	ug/L																<10
	373847	10	ug/L																<10

Results relate only to the parameters tested on the samples submitted.  
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#:  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**Metals**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1458104	1458106	1458107	2019-10-07	2019-10-07	2019-10-07
Antimony	373789	0.5	ug/L		<0.5					
	373847	0.5	ug/L			0.6	<0.5			
Arsenic	373789	1	ug/L		<1					
	373847	1	ug/L			<1	<1			
Barium	373789	10	ug/L		100					
	373847	10	ug/L			<10	260			
Beryllium	373789	0.5	ug/L		<0.5					
	373847	0.5	ug/L			<0.5	<0.5			
Boron (total)	373819	10	ug/L		110					
	373847	10	ug/L			<10	90			
Cadmium	373789	0.1	ug/L		<0.1					
	373847	0.1	ug/L			<0.1	<0.1			
Chromium Total	373789	1	ug/L		1					
	373847	1	ug/L			1	1			
Cobalt	373789	0.2	ug/L		<0.2					
	373847	0.2	ug/L			<0.2	3.0			
Copper	373789	1	ug/L		<1					
	373847	1	ug/L			<1	2			
Lead	373789	1	ug/L		<1					
	373847	1	ug/L			<1	<1			
Molybdenum	373789	5	ug/L		<5					
	373847	5	ug/L			<5	22			
Nickel	373789	5	ug/L		<5					

Results relate only to the parameters tested on the samples submitted.  
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#:  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**Metals**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1458104	1458106	1458107	2019-10-07	2019-10-07	2019-10-07
Nickel	373847	5	ug/L			GW153				
Selenium	373789	1	ug/L		<1					
	373847	1	ug/L						<1	<1
Silver	373789	0.1	ug/L		<0.1					
	373847	0.1	ug/L						<0.1	<0.1
Sodium	373775	2000	ug/L		55000				<2000	442000
Thallium	373789	0.1	ug/L		<0.1					
	373847	0.1	ug/L						<0.1	0.1
Uranium	373789	1	ug/L		1					
	373847	1	ug/L						<1	2
Vanadium	373789	1	ug/L		<1					
	373847	1	ug/L						<1	<1
Zinc	373789	10	ug/L		<10					
	373847	10	ug/L						<10	<10

Results relate only to the parameters tested on the samples submitted.  
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#:  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**PAH**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1458099	1458100	1458101	1458102
					Sample Matrix	GW153	GW153	GW153	GW153
					Sample Type	2019-10-07	2019-10-07	2019-10-07	2019-10-07
					Sample Date	12:03	13:32	14:12	14:56
					Sampling Time	MW8	MW9	MW10	MW11
					Sample I.D.				
1+2-methylnaphthalene	208523	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Acenaphthene	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Acenaphthylene	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Anthracene	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Benz[a]anthracene	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Benzo[a]pyrene	373970	0.01	ug/L			<0.01	<0.01	<0.01	<0.01
Benzo[b]fluoranthene	373970	0.05	ug/L			<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Benzo[k]fluoranthene	373970	0.05	ug/L			<0.05	<0.05	<0.05	<0.05
Chrysene	373970	0.05	ug/L			<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Fluoranthene	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Fluorene	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Indeno[1 2 3-cd]pyrene	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Methylnaphthalene, 1-	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Methylnaphthalene, 2-	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Naphthalene	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Phenanthrene	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
Pyrene	373970	0.1	ug/L			<0.1	<0.1	<0.1	<0.1

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Client: Blumetric Environmental Inc.-Carp  
P.O. Box 430, 3108 Carp Rd.  
Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#:  
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**PAH**

Lab I.D.  
Sample Matrix  
Sample Type  
Sample Date  
Sampling Time  
Sample I.D.

1458104  
GW153  
2019-10-07  
10:37  
BH16-6

1458107  
GW153  
2019-10-07  
GW Blind  
DUP

**Analyte                      Batch No                      MRL                      Units                      Guideline**

Analyte	Batch No	MRL	Units	Guideline	1458104 GW153 2019-10-07 10:37 BH16-6	1458107 GW153 2019-10-07 GW Blind DUP
1+2-methylnaphthalene	208523	0.1	ug/L		<0.1	<0.1
Acenaphthene	373970	0.1	ug/L		<0.1	<0.1
Acenaphthylene	373970	0.1	ug/L		<0.1	<0.1
Anthracene	373970	0.1	ug/L		<0.1	<0.1
Benz[a]anthracene	373970	0.1	ug/L		<0.1	<0.1
Benzo[a]pyrene	373970	0.01	ug/L		<0.01	<0.01
Benzo[b]fluoranthene	373970	0.05	ug/L		<0.05	<0.05
Benzo[ghi]perylene	373970	0.1	ug/L		<0.1	<0.1
Benzo[k]fluoranthene	373970	0.05	ug/L		<0.05	<0.05
Chrysene	373970	0.05	ug/L		<0.05	<0.05
Dibenz[a h]anthracene	373970	0.1	ug/L		<0.1	<0.1
Fluoranthene	373970	0.1	ug/L		<0.1	<0.1
Fluorene	373970	0.1	ug/L		<0.1	<0.1
Indeno[1 2 3-cd]pyrene	373970	0.1	ug/L		<0.1	<0.1
Methylnaphthalene, 1-	373970	0.1	ug/L		<0.1	<0.1
Methylnaphthalene, 2-	373970	0.1	ug/L		<0.1	<0.1
Naphthalene	373970	0.1	ug/L		<0.1	<0.1
Phenanthrene	373970	0.1	ug/L		<0.1	<0.1
Pyrene	373970	0.1	ug/L		<0.1	<0.1

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K0A 1L0  
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Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**Volatiles**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1458099	1458100	1458101	1458102
					Sample Matrix	GW153	GW153	GW153	GW153
					Sample Type	2019-10-07	2019-10-07	2019-10-07	2019-10-07
					Sample Date	12:03	13:32	14:12	14:56
					Sampling Time	MW8	MW9	MW10	MW11
					Sample I.D.				
Acetone	373999	30	ug/L			<30	<30	<30	<30
Benzene	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	373994	0.3	ug/L			<0.3	<0.3	<0.3	<0.3
Bromoform	373994	0.4	ug/L			<0.4	<0.4	<0.4	<0.4
Bromomethane	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	373994	0.2	ug/L			<0.2	<0.2	<0.2	<0.2
Chlorobenzene	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Chloroform	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	373994	0.3	ug/L			<0.3	<0.3	<0.3	<0.3
Dichlorobenzene, 1,2-	373994	0.4	ug/L			<0.4	<0.4	<0.4	<0.4
Dichlorobenzene, 1,3-	373994	0.4	ug/L			<0.4	<0.4	<0.4	<0.4
Dichlorobenzene, 1,4-	373994	0.4	ug/L			<0.4	<0.4	<0.4	<0.4
Dichlorodifluoromethane	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Dichloroethane, 1,1-	373994	0.4	ug/L			<0.4	<0.4	<0.4	<0.4
Dichloroethane, 1,2-	373994	0.2	ug/L			<0.2	<0.2	<0.2	<0.2
Dichloroethylene, 1,1-	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,2-cis-	373994	0.4	ug/L			<0.4	<0.4	<0.4	<0.4
Dichloroethylene, 1,2-trans-	373994	0.4	ug/L			<0.4	<0.4	<0.4	<0.4
Dichloropropane, 1,2-	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3-	373994	0.3	ug/L			<0.3	<0.3	<0.3	<0.3
Dichloropropene, 1,3-cis-	373994	0.2	ug/L			<0.2	<0.2	<0.2	<0.2
Dichloropropene, 1,3-trans-	373994	0.2	ug/L			<0.2	<0.2	<0.2	<0.2
Ethylbenzene	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5

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K0A 1L0  
Attention: Mr. Rob Hillier  
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Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**Volatiles**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1458099	1458100	1458101	1458102
					Sample Matrix	GW153	GW153	GW153	GW153
					Sample Type				
					Sample Date	2019-10-07	2019-10-07	2019-10-07	2019-10-07
					Sampling Time	12:03	13:32	14:12	14:56
					Sample I.D.	MW8	MW9	MW10	MW11
Ethylene dibromide	373994	0.2	ug/L			<0.2	<0.2	<0.2	<0.2
Hexane (n)	373994	5	ug/L			<5	<5	<5	<5
Methyl Ethyl Ketone	373999	10	ug/L			<10	<10	<10	<10
Methyl Isobutyl Ketone	373999	10	ug/L			<10	<10	<10	<10
Methyl tert-Butyl Ether (MTBE)	373999	2	ug/L			<2	<2	<2	<2
Methylene Chloride	373994	4.0	ug/L			<4.0	<4.0	<4.0	<4.0
Styrene	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,1,2-	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,2,2-	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	373994	0.3	ug/L			<0.3	<0.3	<0.3	<0.3
Toluene	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,1-	373994	0.4	ug/L			<0.4	<0.4	<0.4	<0.4
Trichloroethane, 1,1,2-	373994	0.4	ug/L			<0.4	<0.4	<0.4	<0.4
Trichloroethylene	373994	0.3	ug/L			<0.3	<0.3	<0.3	<0.3
Trichlorofluoromethane	373994	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Vinyl Chloride	373994	0.2	ug/L			<0.2	<0.2	<0.2	<0.2
Xylene Mixture	373997	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
Xylene, m/p-	373994	0.4	ug/L			<0.4	<0.4	<0.4	<0.4
Xylene, o-	373994	0.4	ug/L			<0.4	<0.4	<0.4	<0.4

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Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**Volatiles**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1458105
					Sample Matrix	1458107
					GW153	GW153
					2019-10-07	2019-10-07
					Trip Blank	GW Blind DUP
1,3,5-trimethylbenzene	373994	0.3	ug/L		<0.3	
Acetone	373999	30	ug/L		<30	<30
Benzene	373994	0.5	ug/L		<0.5	<0.5
Bromodichloromethane	373994	0.3	ug/L		<0.3	<0.3
Bromoform	373994	0.4	ug/L		<0.4	<0.4
Bromomethane	373994	0.5	ug/L		<0.5	<0.5
Carbon Tetrachloride	373994	0.2	ug/L		<0.2	<0.2
Chlorobenzene	373994	0.5	ug/L		<0.5	<0.5
Chloroethane	373994	0.2	ug/L		<0.2	
Chloroform	373994	0.5	ug/L		<0.5	<0.5
Dibromochloromethane	373994	0.3	ug/L		<0.3	<0.3
Dichlorobenzene, 1,2-	373994	0.4	ug/L		<0.4	<0.4
Dichlorobenzene, 1,3-	373994	0.4	ug/L		<0.4	<0.4
Dichlorobenzene, 1,4-	373994	0.4	ug/L		<0.4	<0.4
Dichlorodifluoromethane	373994	0.5	ug/L		<0.5	<0.5
Dichloroethane, 1,1-	373994	0.4	ug/L		<0.4	<0.4
Dichloroethane, 1,2-	373994	0.2	ug/L		<0.2	<0.2
Dichloroethylene, 1,1-	373994	0.5	ug/L		<0.5	<0.5
Dichloroethylene, 1,2-cis-	373994	0.4	ug/L		<0.4	<0.4
Dichloroethylene, 1,2-trans-	373994	0.4	ug/L		<0.4	<0.4
Dichloropropane, 1,2-	373994	0.5	ug/L		<0.5	<0.5
Dichloropropene, 1,3-	373994	0.3	ug/L		<0.3	<0.3
Dichloropropene, 1,3-cis-	373994	0.2	ug/L		<0.2	<0.2

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Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
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Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**Volatiles**

Lab I.D.  
Sample Matrix  
Sample Type  
Sample Date  
Sampling Time  
Sample I.D.

1458105 GW153	1458107 GW153
2019-10-07	2019-10-07
Trip Blank	GW Blind DUP

Analyte	Batch No	MRL	Units	Guideline		
Dichloropropene, 1,3-trans-	373994	0.2	ug/L		<0.2	<0.2
Ethylbenzene	373994	0.5	ug/L		<0.5	<0.5
Ethylene dibromide	373994	0.2	ug/L		<0.2	<0.2
Hexane (n)	373994	5	ug/L		<5	<5
Methyl Ethyl Ketone	373999	10	ug/L		<10	<10
Methyl Isobutyl Ketone	373999	10	ug/L		<10	<10
Methyl tert-Butyl Ether (MTBE)	373999	2	ug/L		<2	<2
Methylene Chloride	373994	4.0	ug/L		<4.0	<4.0
Styrene	373994	0.5	ug/L		<0.5	<0.5
Tetrachloroethane, 1,1,1,2-	373994	0.5	ug/L		<0.5	<0.5
Tetrachloroethane, 1,1,2,2-	373994	0.5	ug/L		<0.5	<0.5
Tetrachloroethylene	373994	0.3	ug/L		<0.3	<0.3
Toluene	373994	0.5	ug/L		<0.5	<0.5
Trichloroethane, 1,1,1-	373994	0.4	ug/L		<0.4	<0.4
Trichloroethane, 1,1,2-	373994	0.4	ug/L		<0.4	<0.4
Trichloroethylene	373994	0.3	ug/L		<0.3	<0.3
Trichlorofluoromethane	373994	0.5	ug/L		<0.5	<0.5
Vinyl Chloride	373994	0.2	ug/L		<0.2	<0.2
Xylene Mixture	373997	0.5	ug/L		<0.5	<0.5
Xylene, m/p-	373994	0.4	ug/L		<0.4	<0.4
Xylene, o-	373994	0.4	ug/L		<0.4	<0.4

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K0A 1L0  
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COC #: 204845

**PCBs**

Lab I.D. 1458103  
Sample Matrix GW153  
Sample Type  
Sample Date 2019-10-07  
Sampling Time 15:49  
Sample I.D. MW4

Analyte	Batch No	MRL	Units	Guideline
Aroclor 1016	373887	0.1	ug/L	<0.1
Aroclor 1242	373887	0.1	ug/L	<0.1
Aroclor 1248	373887	0.1	ug/L	<0.1
Aroclor 1254	373887	0.1	ug/L	<0.1
Aroclor 1260	373887	0.1	ug/L	<0.1
Polychlorinated Biphenyls	373887	0.1	ug/L	<0.1

**PHC Surrogate**

Lab I.D. 1458099  
Sample Matrix GW153  
Sample Type  
Sample Date 2019-10-07  
Sampling Time 12:03  
Sample I.D. MW8

1458100 GW153  
2019-10-07 13:32 MW9

1458101 GW153  
2019-10-07 14:12 MW10

1458102 GW153  
2019-10-07 14:56 MW11

Analyte	Batch No	MRL	Units	Guideline
Alpha-androstrane	373966	0	%	104

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**PHC Surrogate**

Lab I.D. 1458107  
 Sample Matrix GW153  
 Sample Type  
 Sample Date 2019-10-07  
 Sampling Time  
 Sample I.D. GW Blind  
 Guideline DUP

Analyte	Batch No	MRL	Units	Guideline
Alpha-androstrane	373966	0	%	100

**Surrogates**

Lab I.D. 1458103  
 Sample Matrix GW153  
 Sample Type  
 Sample Date 2019-10-07  
 Sampling Time 15:49  
 Sample I.D. MW4

Analyte	Batch No	MRL	Units	Guideline
Decachlorobiphenyl	373886		%	63.0

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COC #: 204845

**VOCs Surrogates**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1458099	GW153	1458100	GW153	1458101	GW153
1,2-dichloroethane-d4	373994	0	%		2019-10-07	2019-10-07	2019-10-07	2019-10-07	12:03	13:32
4-bromofluorobenzene	373994	0	%		MW8	MW9	MW10	MW11		
Toluene-d8	373994	0	%							

**VOCs Surrogates**

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1458105	GW153	1458107	GW153	2019-10-07	2019-10-07
1,2-dichloroethane-d4	373994	0	%							
4-bromofluorobenzene	373994	0	%							
Toluene-d8	373994	0	%							

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**Quality Assurance Summary**

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
208523	1+2-methylnaphthalene							
373775	Sodium	<2000 ug/L	97	82-118	93	80-120	0	0-20
373789	Silver	<0.1 ug/L	102	80-120	85	70-130	0	0-20
373789	Arsenic	<1 ug/L	101	91.7-108.2	106	70-130	0	0-20
373789	Barium	<10 ug/L	101	93.4-106.5		70-130	0	0-20
373789	Beryllium	<0.5 ug/L	107	89.5-110.4	112	70-130	0	0-20
373789	Cadmium	<0.1 ug/L	102	93.5-106.4	103	70-130	0	0-20
373789	Cobalt	<0.2 ug/L	101	92.7-107.2	90	70-130	0	0-20
373789	Chromium Total	<1 ug/L	103	94-106	103	70-130	0	0-20
373789	Copper	<1 ug/L	100	92.4-107.6	90	70-130	0	0-20
373789	Molybdenum	<5 ug/L	105	92.8-107.2	100	70-130	0	0-20
373789	Nickel	<5 ug/L	102	93-106.9	92	70-130	0	0-20
373789	Lead	<1 ug/L	100	90-110	89	70-130	0	0-20
373789	Antimony	<0.5 ug/L	102	89.6-110.3	92	70-130	0	0-20
373789	Selenium	<1 ug/L	99	87.4-112.6	109	70-130	0	0-20
373789	Thallium	<0.1 ug/L	103	90.4-109.5	91	70-130	0	0-20
373789	Uranium	<1 ug/L	101	92.7-107.2	89	70-130	0	0-20
373789	Vanadium	<1 ug/L	103	93-106.9	105	70-130	0	0-20
373789	Zinc	<10 ug/L	100	91.5-108.4	88	70-130	0	0-20
373819	Boron (total)	<10 ug/L	108	84.9-115		70-130	6	0-20
373847	Silver	<0.1 ug/L	104	80-120	110	70-130	0	0-20
373847	Arsenic	<1 ug/L	101	91.7-108.2	112	70-130	0	0-20
373847	Boron (total)	<10 ug/L	105	84.9-115	94	70-130	6	0-20
373847	Barium	<10 ug/L	102	93.4-106.5	71	70-130	1	0-20
373847	Beryllium	<0.5 ug/L	105	89.5-110.4	118	70-130	0	0-20
373847	Cadmium	<0.1 ug/L	105	93.5-106.4	116	70-130	0	0-20
373847	Cobalt	<0.2 ug/L	100	92.7-107.2	109	70-130	0	0-20
373847	Chromium Total	<1 ug/L	102	94-106	118	70-130	0	0-20
373847	Copper	<1 ug/L	99	92.4-107.6	108	70-130	0	0-20
373847	Molybdenum	<5 ug/L	102	92.8-107.2	103	70-130	0	0-20
373847	Nickel	<5 ug/L	103	93-106.9	111	70-130	0	0-20
373847	Lead	<1 ug/L	102	90-110	113	70-130	0	0-20
373847	Antimony	<0.5 ug/L	102	89.6-110.3	97	70-130	0	0-20

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Carp, ON  
K0A 1L0  
Attention: Mr. Rob Hillier  
PO#:   
Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918357  
Date Submitted: 2019-10-07  
Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**Quality Assurance Summary**

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
373847	Selenium	<1 ug/L	98	87.4-112.6	113	70-130	0	0-20
373847	Thallium	<0.1 ug/L	104	90.4-109.5	113	70-130	0	0-20
373847	Uranium	<1 ug/L	101	92.7-107.2	108	70-130	0	0-20
373847	Vanadium	<1 ug/L	104	93-106.9	113	70-130	0	0-20
373847	Zinc	<10 ug/L	102	91.5-108.4	115	70-130	0	0-20
373887	Aroclor 1016	<0.1 ug/L	88		N/A		N/A	
373887	Aroclor 1242	<0.1 ug/L	88	60-140	N/A	60-140	N/A	0-30
373887	Aroclor 1248	<0.1 ug/L	88	60-140	N/A	60-140	N/A	0-30
373887	Aroclor 1254	<0.1 ug/L	88	60-140	N/A	60-140	N/A	0-30
373887	Aroclor 1260	<0.1 ug/L	88	60-140	N/A	60-140	N/A	0-30
373887	Polychlorinated Biphenyls	<0.1 ug/L	88	60-140		60-140		0-30
373966	PHC's F2	<20 ug/L	112	60-140		60-140		0-30
373966	PHC's F3	<50 ug/L	112	60-140		60-140		0-30
373966	PHC's F4	<50 ug/L	112	60-140		60-140		0-30
373970	Methlynaphthalene, 1-	<0.1 ug/L	92	50-140		50-140		0-30
373970	Methlynaphthalene, 2-	<0.1 ug/L	86	50-140		50-140		0-30
373970	Acenaphthene	<0.1 ug/L	92	50-140		50-140		0-30
373970	Acenaphthylene	<0.1 ug/L	88	50-140		50-140		0-30
373970	Anthracene	<0.1 ug/L	96	50-140		50-140		0-30
373970	Benz[a]anthracene	<0.1 ug/L	98	50-140		50-140		0-30
373970	Benzo[a]pyrene	<0.01 ug/L	87	50-140		50-140		0-30
373970	Benzo[b]fluoranthene	<0.05 ug/L	102	50-140		50-140		0-30
373970	Benzo[ghi]perylene	<0.1 ug/L	102	50-140		50-140		0-30
373970	Benzo[k]fluoranthene	<0.05 ug/L	102	50-140		50-140		0-30
373970	Chrysene	<0.05 ug/L	100	50-140		50-140		0-30
373970	Dibenz[a h]anthracene	<0.1 ug/L	100	50-140		50-140		0-30
373970	Fluoranthene	<0.1 ug/L	102	50-140		50-140		0-30
373970	Fluorene	<0.1 ug/L	94	50-140		50-140		0-30
373970	Indeno[1 2 3-cd]pyrene	<0.1 ug/L	94	50-140		50-140		0-30
373970	Naphthalene	<0.1 ug/L	88	50-140		50-140		0-30
373970	Phenanthrene	<0.1 ug/L	98	50-140		50-140		0-30
373970	Pyrene	<0.1 ug/L	102	50-140		50-140		0-30
373994	Tetrachloroethane, 1,1,1,2-	<0.5 ug/L	97	60-130	90	50-140	0	0-30

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Report Number: 1918357  
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Date Reported: 2019-10-15  
Project: 190625  
COC #: 204845

**Quality Assurance Summary**

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
373994	Trichloroethane, 1,1,1-	<0.4 ug/L	94	60-130	91	50-140	0	0-30
373994	Tetrachloroethane, 1,1,2,2-	<0.5 ug/L	103	60-130	94	50-140	0	0-30
373994	Trichloroethane, 1,1,2-	<0.4 ug/L	91	60-130	87	50-140	0	0-30
373994	Dichloroethane, 1,1-	<0.4 ug/L	89	60-130	85	50-140	0	0-30
373994	Dichloroethylene, 1,1-	<0.5 ug/L	95	60-130	91	50-140	0	0-30
373994	Dichlorobenzene, 1,2-	<0.4 ug/L	96	60-130	89	50-140	0	0-30
373994	Dichloroethane, 1,2-	<0.2 ug/L	98	60-130	94	50-140	0	0-30
373994	Dichloropropane, 1,2-	<0.5 ug/L	95	60-130	90	50-140	0	0-30
373994	1,3,5-trimethylbenzene	<0.3 ug/L	105	60-130	101	50-140	0	0-30
373994	Dichlorobenzene, 1,3-	<0.4 ug/L	110	60-130	102	50-140	0	0-30
373994	Dichloropropene, 1,3-							
373994	Dichlorobenzene, 1,4-	<0.4 ug/L	105	60-130	99	50-140	0	0-30
373994	Benzene	<0.5 ug/L	99	60-130	92	50-140	0	0-30
373994	Bromodichloromethane	<0.3 ug/L	92	60-130	87	50-140	2	0-30
373994	Bromoform	<0.4 ug/L	90	60-130	85	50-140	0	0-30
373994	Bromomethane	<0.5 ug/L	80	60-130	55	50-140	0	0-30
373994	Dichloroethylene, 1,2-cis-	<0.4 ug/L	91	60-130	87	50-140	0	0-30
373994	Dichloropropene, 1,3-cis-	<0.2 ug/L	97	60-130	85	50-140	0	0-30
373994	Carbon Tetrachloride	<0.2 ug/L	104	60-130	100	50-140	0	0-30
373994	Chloroethane	<0.2 ug/L	94	60-130	73	50-140	0	0-30
373994	Chloroform	<0.5 ug/L	94	60-130	117	50-140	0	0-30
373994	Dibromochloromethane	<0.3 ug/L	92	60-130	88	50-140	0	0-30
373994	Dichlorodifluoromethane	<0.5 ug/L	101	60-130	89	50-140	0	0-30
373994	Methylene Chloride	<4.0 ug/L	86	60-130	102	50-140	0	0-30
373994	Ethylbenzene	<0.5 ug/L	94	60-130	92	50-140	0	0-30
373994	Ethylene dibromide	<0.2 ug/L	91	60-130		50-140		0-30
373994	PHC's F1	<20 ug/L	108	60-140	98	60-140	0	0-30
373994	Hexane (n)	<5 ug/L	100	60-130	85	50-140	0	0-30
373994	Xylene, m/p-	<0.4 ug/L	101	60-130	97	50-140	0	0-30
373994	Chlorobenzene	<0.5 ug/L	96	60-130	91	50-140	0	0-30
373994	Xylene, o-	<0.4 ug/L	97	60-130	93	50-140	0	0-30
373994	Styrene	<0.5 ug/L	95	60-130	87	50-140	0	0-30
373994	Dichloroethylene, 1,2-trans-	<0.4 ug/L	91	60-130	87	50-140	0	0-30

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**Quality Assurance Summary**

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373994	Dichloropropene, 1,3-trans-	<0.2 ug/L	96	60-130	79	50-140	0	0-30
373994	Tetrachloroethylene	<0.3 ug/L	97	60-130	94	50-140	0	0-30
373994	Toluene	<0.5 ug/L	100	60-130	95	50-140	0	0-30
373994	Trichloroethylene	<0.3 ug/L	96	60-130	92	50-140	0	0-30
373994	Trichlorofluoromethane	<0.5 ug/L	96	60-130	92	50-140	0	0-30
373994	Vinyl Chloride	<0.2 ug/L	98	60-130	96	50-140	0	0-30
373996	PHC's F1-BTEX							
373997	Xylene Mixture							
373999	Acetone	<30 ug/L		60-130	94	50-140	0	0-30
373999	Methyl Ethyl Ketone	<10 ug/L		60-130	87	50-140	0	0-30
373999	Methyl Isobutyl Ketone	<10 ug/L		60-130	110	50-140	0	0-30
373999	Methyl tert-Butyl Ether (MTBE)	<2 ug/L	90	60-130	91	50-140	0	0-30

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**Test Summary**

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
208523	1+2-methylnaphthalene	GC-MS	2019-10-15	2019-10-15	C_M	P 8270
373775	Sodium	ICP-OES	2019-10-09	2019-10-09	SKH	M SM3120B-3500C
373789	Silver	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Arsenic	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Barium	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Beryllium	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Cadmium	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Cobalt	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Chromium Total	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Copper	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Molybdenum	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Nickel	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Lead	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Antimony	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Selenium	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Thallium	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Uranium	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Vanadium	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373789	Zinc	ICAPQ-MS	2019-10-09	2019-10-09	H_D	EPA 200.8
373819	Boron (total)	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Silver	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Arsenic	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Boron (total)	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Barium	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Beryllium	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Cadmium	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Cobalt	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Chromium Total	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Copper	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Molybdenum	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Nickel	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Lead	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Antimony	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8

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**Test Summary**

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
373847	Selenium	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Thallium	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Uranium	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Vanadium	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373847	Zinc	ICAPQ-MS	2019-10-10	2019-10-10	H_D	EPA 200.8
373887	Aroclor 1016	GC/ECD	2019-10-10	2019-10-10	HK	EPA 8081B
373887	Aroclor 1242	GC/ECD	2019-10-10	2019-10-10	HK	EPA 8081B
373887	Aroclor 1248	GC/ECD	2019-10-10	2019-10-10	HK	EPA 8081B
373887	Aroclor 1254	GC/ECD	2019-10-10	2019-10-10	HK	EPA 8081B
373887	Aroclor 1260	GC/ECD	2019-10-10	2019-10-10	HK	EPA 8081B
373887	Polychlorinated Biphenyls	GC/ECD	2019-10-10	2019-10-10	HK	EPA 8081B
373966	PHC's F2	GC/FID	2019-10-11	2019-10-15	C_M	CCME O.Reg 153/04
373966	PHC's F3	GC/FID	2019-10-11	2019-10-15	C_M	CCME O.Reg 153/04
373966	PHC's F4	GC/FID	2019-10-11	2019-10-15	C_M	CCME O.Reg 153/04
373970	Methylnaphthalene, 1-	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Methylnaphthalene, 2-	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Acenaphthene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Acenaphthylene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Anthracene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Benz[a]anthracene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Benzo[a]pyrene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Benzo[b]fluoranthene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Benzo[ghi]perylene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Benzo[k]fluoranthene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Chrysene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Dibenz[a h]anthracene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Fluoranthene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Fluorene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Indeno[1 2 3-cd]pyrene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Naphthalene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Phenanthrene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373970	Pyrene	GC-MS	2019-10-09	2019-10-09	C_M	P 8270
373994	Tetrachloroethane, 1,1,1,2-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260

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**Test Summary**

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373994	Trichloroethane, 1,1,1-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Tetrachloroethane, 1,1,2,2-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Trichloroethane, 1,1,2-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Dichloroethane, 1,1-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Dichloroethylene, 1,1-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Dichlorobenzene, 1,2-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Dichloroethane, 1,2-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Dichloropropane, 1,2-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	1,3,5-trimethylbenzene	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Dichlorobenzene, 1,3-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Dichloropropene, 1,3-	GC-MS	2019-10-15	2019-10-15	TJB	EPA 8260
373994	Dichlorobenzene, 1,4-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Benzene	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Bromodichloromethane	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Bromoform	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Bromomethane	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Dichloroethylene, 1,2-cis-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Dichloropropene, 1,3-cis-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Carbon Tetrachloride	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Chloroethane	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Chloroform	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Dibromochloromethane	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Dichlorodifluoromethane	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Methylene Chloride	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Ethylbenzene	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Ethylene dibromide	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	PHC's F1	GC/FID	2019-10-15	2019-10-15	TJB	CCME O.Reg 153/04
373994	Hexane (n)	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Xylene, m/p-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Chlorobenzene	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Xylene, o-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Styrene	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Dichloroethylene, 1,2-trans-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260

Results relate only to the parameters tested on the samples submitted.  
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Blumetric Environmental Inc.-Carp  
 P.O. Box 430, 3108 Carp Rd.  
 Carp, ON  
 K0A 1L0  
 Attention: Mr. Rob Hillier  
 PO#:  
 Invoice to: Blumetric Environmental Inc.-Carp

Report Number: 1918357  
 Date Submitted: 2019-10-07  
 Date Reported: 2019-10-15  
 Project: 190625  
 COC #: 204845

***Test Summary***

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
373994	Dichloropropene,1,3-trans-	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Tetrachloroethylene	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Toluene	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Trichloroethylene	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Trichlorofluoromethane	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373994	Vinyl Chloride	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373996	PHC's F1-BTEX	GC/FID	2019-10-15	2019-10-15	TJB	CCME O.Reg 153/04
373997	Xylene Mixture	GC-MS	2019-10-15	2019-10-15	TJB	EPA 8260
373999	Acetone	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373999	Methyl Ethyl Ketone	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373999	Methyl Isobutyl Ketone	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260
373999	Methyl tert-Butyl Ether (MTBE)	GC-MS	2019-10-09	2019-10-12	TJB	EPA 8260

Results relate only to the parameters tested on the samples submitted.  
 Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

STANDARD CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

Eurofins Workorder #:

1918357

CLIENT INFORMATION				INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES <input type="checkbox"/> NO <input type="checkbox"/> )											
Company: Blometric				Company: Blometric				Fax:							
Contact: Rob Hillier				Contact: Accounts Payable				Email: #1: a@blometric.ca							
Address: 308 Carp Rd.				Address:				Email: #2:							
Telephone: 613 839 3053		Cell:		Telephone:				PO #:							
Email: #1: rhillier@blometric.ca				REGULATION/GUIDELINE REQUIRED											
Email: #2:				<input type="checkbox"/> Sanitary Sewer, City: _____				<input checked="" type="checkbox"/> O. Reg 153							
Project: 190625				Quote #:				Table # _____, Course / Fine, Surface / subsurface.							
TURN-AROUND TIME (Business Days)				<input type="checkbox"/> Storm Sewer, City: _____				Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment							
<input type="checkbox"/> 1 Day* (100%)				<input type="checkbox"/> 2 Day** (50%)				<input type="checkbox"/> ODWSOG							
<input type="checkbox"/> 3-5 Days (25%)				<input checked="" type="checkbox"/> 5-7 Days (Standard)				<input type="checkbox"/> PWQO							
Please contact Lab in advance to determine rush availability.				<input type="checkbox"/> O. Reg 347/558				<input type="checkbox"/> Excess Soil, Table: _____ Type: _____							
*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.				<input type="checkbox"/> Other: _____				The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04							
**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.				<input type="checkbox"/> None				<input type="checkbox"/> Yes <input type="checkbox"/> No							
Sample Details				Sample Analysis Required											
The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).				Field Filtered -->											
				O.Reg.153 parameters											
Sample ID	Date/Time Collected	Sample Matrix	# of Containers	PHC FL - F4	BTEX	VOCS	PAHS	PCBs	Metals + Inorganics	Metals only	O. Reg 153 Metals Each		RN# (Lab Use Only)		
MW 8	7 Oct 2019 12:03	GW	8	X	X	X	X				X			458009	
MW 9	13:32	GW	8	X	X	X	X				X			100	
MW 10	14:12	GW	8	X	X	X	X				X			01	
MW 11	14:56	GW	8	X	X	X	X				X			02	
MW 4	15:49	GW	1					X						03	
BH16-6	10:37	GW	5				X				X			04	
Trip Blank			2	X	X	X								05	
Equipment Blank			4								X			06	
GW Blind DUP		GW	8	X	X	X	X				X			07	
PRINT				SIGN				DATE/TIME				TEMP (°C)			
Sampled By: L. JOHNSTON				[Signature]				7 Oct 2019							
Relinquished By: L. JOHNSTON				[Signature]				7 Oct 2019 17:00							
Received By:				[Signature]				08/07/19				16			
COMMENTS: metals analysis, O. Reg 153 including Na												CUSTODY SEAL: <input type="checkbox"/> YES <input type="checkbox"/> NO		Ice packs submitted: <input type="checkbox"/> Yes <input type="checkbox"/> No	

18-10

## 10.5 LOCATE REPORTS







UNDERGROUND SERVICE LOCATORS INC.

DATE: SEPT 11 | 2019

Stan Pedlar  
Locate Technician  
stanp@usl-1.com  
cell 613-986-7226

775 Taylor Creek Drive,  
Ottawa ON K1C 1T1  
tel 613-226-8750  
fax 613-226-8677  
toll-free 877-248-3444  
www.usl-1.com

Client Name: BLUMETRIC

Job Location: 975 GLADSTONE AV.

Nature of work: BH'S

**DESCRIPTION OF PUBLIC LOCATES**

BELL: Utility in work area: Yes  No  - Located  - Marked  - See attached sketch   
Notes: BELL IS CLEAR, SEE BELL CLEARANCE.

GAS: Utility in work area: Yes  No  - Located  - Marked  - See attached sketch   
Notes: GAS IS CLEAR, SEE PROMARK REPORT.

HYDRO: Utility in work area: Yes  No  - Located  - Marked  - See attached sketch   
Notes: HYDRO OTTAWA IS CLEAR, SEE PROMARK REPORT.

WATER: Utility in work area: Yes  No  - Located  - Marked  - See attached sketch   
<sup>+SEWER</sup> Notes: CITY WATER / SEWER ARE CLEAR, SEE CITY REPORT.

STREET LIGHTS: Utility in work area: Yes  No  - Located  - Marked  - See attached sketch   
Notes: STREET LIGHTS ARE CLEAR, SEE BLACK + MAC REPORT.

Utility in work area: Yes/No  - Located  - Marked  - See attached sketch   
Notes: \_\_\_\_\_

Utility in work area: Yes / No  - Located  - Marked  - See attached sketch   
Notes: \_\_\_\_\_

Notes: \_\_\_\_\_

Locators Name: Stan Pedlar

Signature: [Signature]

\*\*\* IF THERE ARE ANY QUESTIONS WITH REGARDS TO THIS OR ANY OTHER CLEARANCE SHEET PLEASE CONTACT US IMMEDIATELY \*\*\*

Bu metriz

## BELL CANADA CLEARANCE

CLEARANCE # A5348412

One Call Ticket #: 2019358067

Issued By: BELL CANADA

For Station Code: BCOE01

Date: 08/28/2019

Time: 13:06:37

Primary Contact: TANIA HOLYER

Fax: (613)-226-8677 ext.

Type of Work: BORE HOLES

### LOCATE DETAILS

Location: 975, GLADSTONE AVE  
OTTAWA

### Remarks:

-75.717220 45.404717 NB\_SEGMENTS: 1 BCOE01 OTWASL01 OTWAWWS01 ENOE01 HOT1

OTTAWA DPRA: 2 CORLOT=U CLEAR NORTH PARKING LOT (ENTIRE) TO ALL PROPERTY LINES. ALSO CLEAR EAST SIDE OF BUILDING FROM NE BUILDING CORNER TO 20M SOUTH. AS PER DETAILED PLAN. NO\_PLAN: 813 725-K1Y

It is the excavator/requestor's responsibility to notify the Look-Up Centre if they cannot meet the conditions outlined above. Failing to do so would acknowledge the acceptance of the conditions outlined prior to any excavation/work.

**CAUTION:** Stakes or markings may disappear or be displaced. Should sketch and markings not coincide, a new locate must be obtained. This locate is based on information that was provided to the One Call Centre. Any change to location/scope of work requires a new locate from the One Call Centre.

As there may be other buried utilities in the dig site area, you are advised to contact all buried utility owners for your work area and obtain the necessary locates/clearances.

Please pay special attention to who/what this clearance is for. Please review the document carefully and compare it to your locate request to ensure you understand what you are being cleared for. We are not responsible for any damages that result from misunderstanding what utility you are cleared for on this paperwork. Please do not hesitate to contact us if you have any questions or concerns.

**If you have any questions or concerns regarding your clearance, please call the Look-Up Centre at 1-844-225-5550.**

Attached to the house is a small grey or black box. From this box there is a buried service wire which runs from the house to the road (could run to the back of the property if rear fed). The wire is approximately 6-12 inches deep and if you are planning to dig in that area, you need to dig by hand (shovel/spade) only. The wire can be lifted out of the way and reburied at the end of the dig. If you happen to cut the service wire, call 611 (Homeowners) or 1-844-225-5550 (Contractors) for a repair."

UNION GAS EMERGENCY # 1-877-989-0999

Primary Locate Sheet



Fax: 613-723-9277

Toll free: 1-800-371-8866

Email:

Request # 2019358067  
NORMAL

Utilities Located: <input type="checkbox"/> Bell <input checked="" type="checkbox"/> Gas <input checked="" type="checkbox"/> Hydro Ottawa <input type="checkbox"/> Hydro One <input type="checkbox"/> Videotron <input type="checkbox"/> Lakefront Utilities <input type="checkbox"/> El Exxon Energy	Revised Excavation Date <b>N/A</b> mm/dd/yyyy	Excavation Date 09/04/2018 00:00:00 mm/dd/yyyy	Status <u>STANDARD</u> Homeowner <input type="checkbox"/>
--	---	--	---

Requested by: TANIA HOLYER	Company: U.S.L	Phone: (613)-226-8750 ext.	Fax/email: (613)-226-8677 ext.	Contractor <input checked="" type="checkbox"/>
				Project <input type="checkbox"/>

Appt Date: <b>N/A</b> mm/dd/yyyy	Received Date: 09/27/2018 mm/dd/yyyy	Locate Address: 975, GLADSTONE AVE 1st Inters.: BREEZEHILL AVE N 2nd Inters.: LORETTA AVE N
-------------------------------------	---	---

Type of work: BORE HOLES	City: OTTAWA
-----------------------------	-----------------

Caller's Remarks:  
MACH. DIG  
COR LOT=U CLEAR NORTH PARKING LOT (ENTIRE) TO ALL PROPERTY LINES. ALSO CLEAR EAST SIDE OF BUILDING FROM NE BUILDING CORNER TO 20M SOUTH AS PER DETAILED PLAN.

-75.717220, 45.404717, NB\_SEGMENTS::1, NO\_PLAN::B13 725, BCOED1, OTWASLD1, OTWAWSD1, ENOED1, HOT1

Bell Mark   Clear <b>N/A</b>	Enbridge Gas Mark   Clear <b>1</b>	Hydro Ottawa Mark   Clear <b>1</b>	Street Lighting Mark   Clear <b>N/A</b>	Lakefront Mark   Clear <b>N/A</b>	Hydro One Mark   Clear <b>N/A</b>	Veridian Mark   Clear <b>N/A</b>	Union Gas Mark   Clear <b>N/A</b>	Videotron Mark   Clear <b>N/A</b>
---------------------------------	---------------------------------------	---------------------------------------	--	--------------------------------------	--------------------------------------	-------------------------------------	--------------------------------------	--------------------------------------

**LOCATED AREA: EXCAVATOR SHALL NOT WORK OUTSIDE THE LOCATED AREA WITHOUT OBTAINING ANOTHER LOCATE.**

Records Reference: <input type="checkbox"/> Map <input type="checkbox"/> Network X # <input type="checkbox"/> Byars <input checked="" type="checkbox"/> Datapak <input type="checkbox"/> LAC Multiviewer Field Notes: <b>4047</b> Other: <b>NE177 -NE178-,FN-355-1-2, FN-3056-1</b> <b>N/A</b> DPT Remarks: <b>GMOBILE</b>	<input type="checkbox"/> Third Party Notification       <p style="text-align: right;">Apply Sticker Here if Required</p>
---	---

Excavator shall notify & receive a clearance from Utility prior to excavation for the following: **N/A**

Telecom  High Priority Cable  Central Office Vicinity

Method of Field Marking:  Paint  Stakes  Flags  Offset Flags  Other (Telecom=Orange, Gas=Yellow, Hydro Ott. =Red)

Caution: Locates are VOID after 30 days. Hydro One valid for 60 days. See Disclaimer for the specific Facility Owner's Guidelines.

Caution: Any changes to location or nature of work require new locate. The Excavator must not work outside the Located Area without a new locate. Privately owned services within the located area have not been marked - check with service/property owner. For all Locate requests including remarks contact: Ontario One Call at 1-800-400-2255 or www.on1call.com.

Locator Name: LAPIERRE PHILOMENE	Start Time: <b>3:30</b>	<input type="checkbox"/> Mark & Fax <input type="checkbox"/> Left on Site <input checked="" type="checkbox"/> Emailed
ID #: <b>1590</b>	End Time: <b>4:00</b>	Print: <b>N/A</b>
Date: <b>SEP-05-19</b>	Total Hours: <b>30MINS</b>	Signature:

**A copy of this Primary Locate Sheet and Auxiliary Locate Sheet(s) must be on site and in the hands of the machine operator during work operations. If sketch and markings do not coincide, the Excavator must obtain a new locate.**



Auxiliary Locate Sheet

Union Gas Emergency #  
1-877-989-0999

Fax:  
613-723-9277

Toll free:  
1-800-371-8866

Email

Utilities Located:  Bell  Gas  HydroOttawa  Hydro One  Videotron  Peel Fibre  Ellexion Energy

Date Located: SEP-05-19  
mm/dd/yyyy

Request #  
2019358067

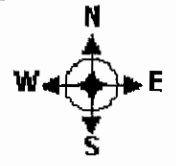
Number of Services marked: (Specify building/house numbers) 0

**LOCATED AREA: EXCAVATOR SHALL NOT WORK OUTSIDE THE LOCATED AREA WITHOUT OBTAINING ANOTHER LOCATE**

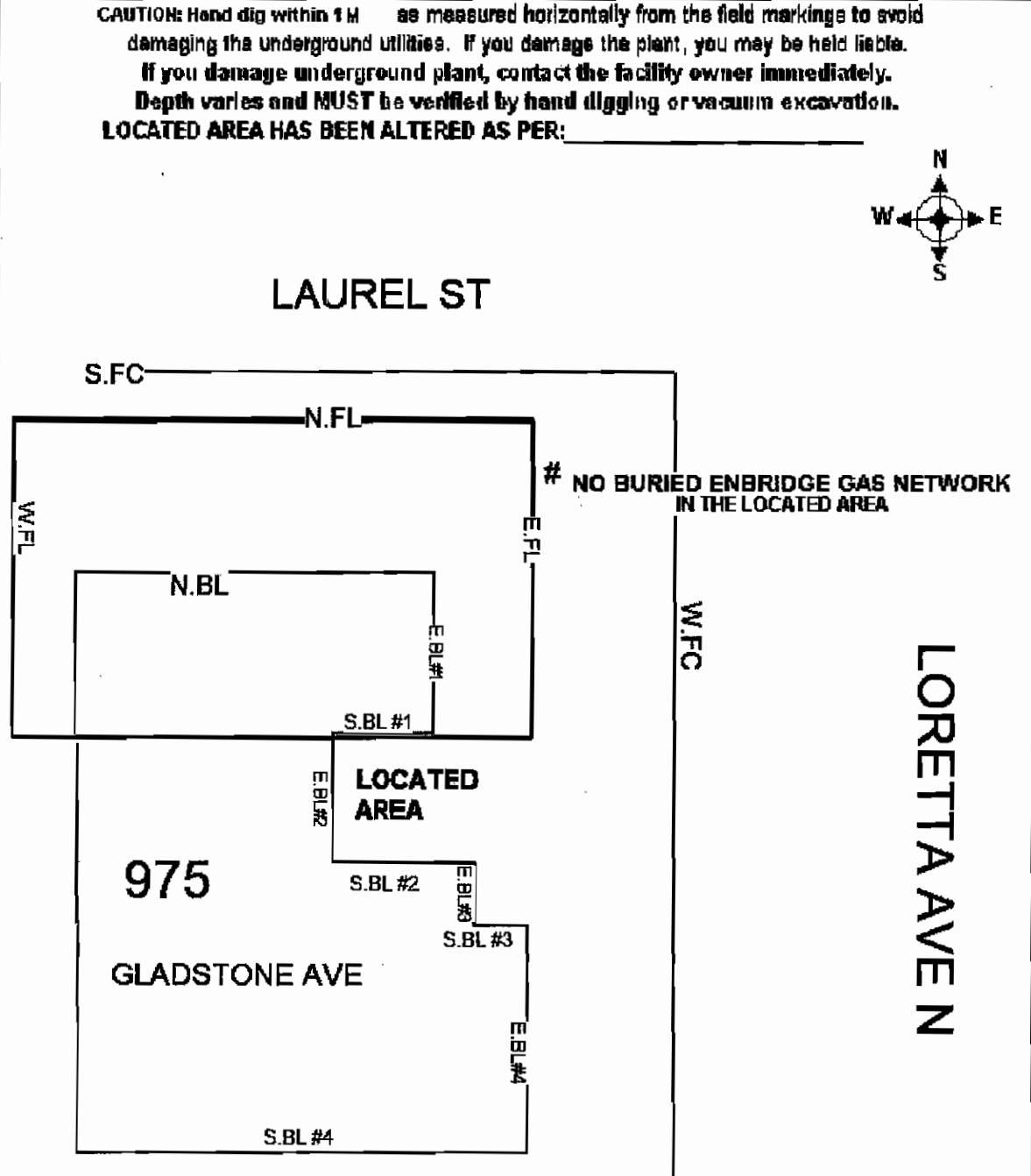
FROM: S.BL #1 975 GLADSTONE AVE  
FROM: W.FL 975 GLADSTONE AVE

TO: N.FL 975 GLADSTONE AVE  
TO: E.FL 975 GLADSTONE AVE

**CAUTION: Hand dig within 1 M as measured horizontally from the field markings to avoid damaging the underground utilities. If you damage the plant, you may be held liable. If you damage underground plant, contact the facility owner immediately. Depth varies and MUST be verified by hand digging or vacuum excavation. LOCATED AREA HAS BEEN ALTERED AS PER:**



- Legend**
- Building Line — BL —
  - Fence Line — FL —
  - Face of Curb — FC —
  - Road Edge — RE —
  - Property Line — PL —
  - Driveway — DW —
  - Catch Basin  CB
  - Sidewalk — SW —
  - Demarcation  DM
  - Railway  RR
  - Pole  O
  - Flush to Grade Pedestal  P
  - Pedestal  X
  - Buried Cable — B —
  - Conduit — C —
  - Buried Service Wire — BSW —
  - Manhole  MH
  - Fibre Optic Cable — FO —
  - Bell Hydro Service — HS —
  - Gas Main — GM —
  - Gas Service — GS —
  - Gas Valve  V
  - Hydrant  H
  - Transformer  T
  - Hydro — H —
  - Hydro Pole — X —
  - Street Light Cable — SL —
  - Street Light  S
  - North N.
  - South S.
  - East E.
  - West W.



THIS FORM VALID ONLY WITH Primary Locate Form. This sketch is not to scale. Any privately owned services within the located area have not been marked - check with service/property owner.

A copy of this Auxiliary Locate Sheet(s) and the Primary Locate Sheet must be on site and in the hands of the machine operator during work operations. If sketch and markings do not coincide, the Excavator must obtain a new locate.



Auxiliary Locate Sheet

Union Gas Emergency #  
1-877-989-0899

Fax: 613-723-9277

Toll free: 1-800-371-8866

Email

Utilities  Bell  Gas  HydroOttawa  Street Lighting  
 Located:  Blink  Peel Fibre

Date Located: SEP-05-19  
mm/dd/yyyy

Request # 2019358067

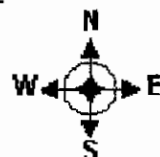
Number of Services marked: (Specify building/house numbers) N/A

**LOCATED AREA: EXCAVATOR SHALL NOT WORK OUTSIDE THE LOCATED AREA WITHOUT OBTAINING ANOTHER LOCATE**

FROM: S.BL #1 975 GLADSTONE AVE  
 FROM: W.FL 975 GLADSTONE AVE

TO: N.FL 975 GLADSTONE AVE  
 TO: E.FL 975 GLADSTONE AVE

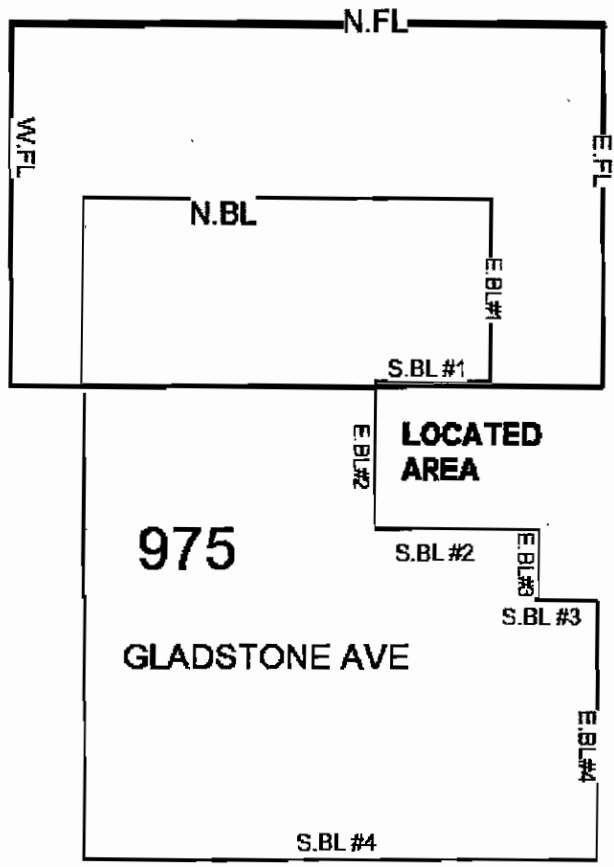
**CAUTION: Hand dig within 1.5M** as measured horizontally from the field markings to avoid damaging the underground utilities. If you damage the plant, you may be held liable. If you damage underground plant, contact the facility owner immediately. Depth varies and **MUST** be verified by hand digging or vacuum excavation. LOCATED AREA HAS BEEN ALTERED AS PER: \_\_\_\_\_



LAUREL ST

# NO BURIED HYDRO OTTAWA NETWORK IN THE LOCATED AREA

- Legend**
- Building Line — BL —
  - Fence Line — FL —
  - Face of Curb — FC —
  - Road Edge — RE —
  - Property Line — PL —
  - Driveway — DW —
  - Catch Basin CB
  - Sidewalk SW
  - Demarcation DM
  - Railway
  - Pole
  - Flush to Grade Pedestal
  - Pedestal
  - Buried Cable — B —
  - Conduit — C —
  - Buried Service Wire — BSW —
  - Manhole MH
  - Fibre Optic Cable — FO —
  - Gas Main — GM —
  - Gas Service — GS —
  - Gas Valve
  - Hydrant
  - Transformer
  - Hydro Ottawa — H —
  - Hydro Pole X
  - Street Light Cable — SL —
  - Street Light
  - North N.
  - South S.
  - East E.
  - West W.



THIS FORM VALID ONLY WITH Primary Locate Form. This sketch is not to scale. Any privately owned services within the located area have not been marked- check with service/property owner.

A copy of this Auxiliary Locate Sheet(s) and the Primary Locate Sheet must be on site and in the hands of the machine operator during work operations. If sketch and markings do not coincide, the Excavator must obtain a new locate.

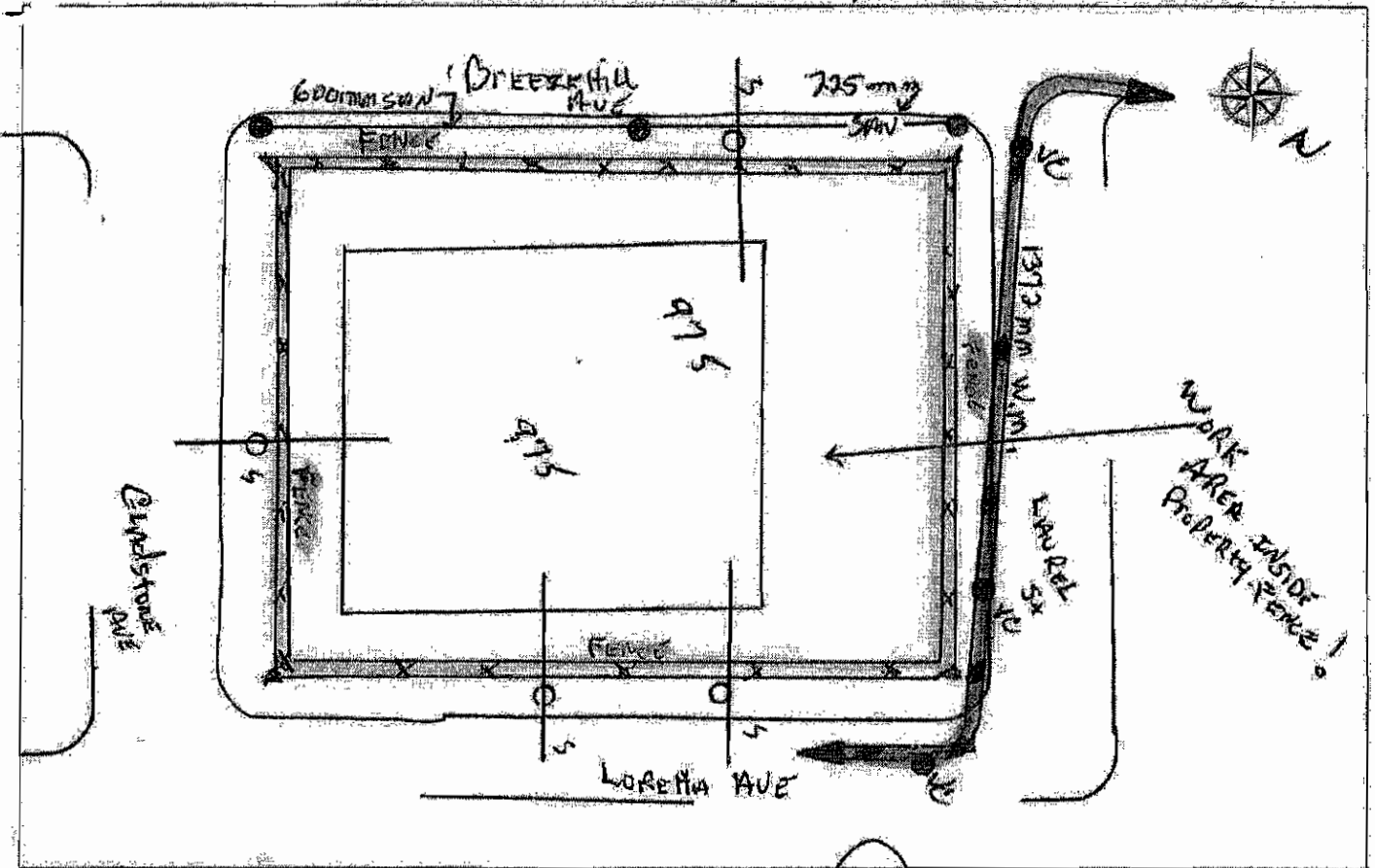
**City of Ottawa Locate Report – Water and Sewer Utilities**  
**Rapport de localisation des conduites d'eau et d'égout d'Ottawa**



For more information / Pour de plus amples renseignements : 3-1-1 or/ou (613) 580-2424, ext. (poste) 22336.

Date : <b>SEPT 5 / 19</b>	Work Order # / No d'ordre de travail : <b>1198 1341</b>
Location of Work / Lieu de travail : <b>975 GLADSTONE AVE</b>	ON1CALL # / No d'appel ON1 : <b>2019 3580 671</b>
Type of Work / Type de travail : <b>BORE HOLES</b>	<input type="checkbox"/> ArcView attached Plan ArcView ci-joint
Contractor / Entrepreneur : <b>USL-1</b>	Fax / Télécopieur :

**Sketch Not To Scale / Le croquis n'est pas à l'échelle**



Contractor signature  
Signature de l'entrepreneur

Locator (please print)  
Marqueurs [en lettres moulées]

Method of marking / Méthode de marquage

- Flags / Drapeaux     Paint / Peinture     Other (specify) / Autre [précisez] :

Remarks / Commentaires : **ALL WATER SERVICE FOR #975 ARE PRIVATE. ALL BORE HOLES ON PRIVATE PROPERTY, INSIDE PROPERTY FENCE.**

Office copy: White  
Copie du bureau: Blanc

Contractor copy: Yellow  
Copie de l'entrepreneur: Jaune

Void after 60 days.  
Périmé après 60 jours.

Blumetric



# City of Ottawa Street Light Locate

Ontario One Call TF

## NOTICE OF INTENT TO EXCAVATE

Header Code: STANDARD  
Request Type: NORMAL

Ticket No: 2019358067

Original Call Date: 08/27/2019 1:25:35 PM  
Work To Begin Date: 09/04/2019

Company: U S L  
Contact Name: TANIA HOLYER PAGER:  
Contact Phone: (613)-226-8750 ext. CELL:  
Fax: (613)-226-8677 ext.  
Alternate Contact: JACQUES DESJARDINS ALT. PHONE:

Place: OTTAWA  
Street: 975 GLADSTONE AVE  
Nearest Intersecting Street: BREEZEHILL AVE N  
Second Intersecting Street: LORETTA AVE N

Subdivision: OTTAWA

### Additional Dig Information:

CORLOT=U CLEAR NORTH PARKING LOT (ENTIRE) TO ALL PROPERTY LINES. ALSO CLEAR EAST SIDE OF BUILDING FROM NE BUILDING CORNER TO 20M SOUTH AS PER DETAILED PLAN. NO\_PLAN::613 725

WO/ JOB #: ANYTIME  
Type Of Work: BORE HOLES

### Remarks:

-75.717220 45.404717 NB\_SEGMENTS::1 BCOE01 OTWASLD1 OTWAWS01 ENOE01 HOT1

<b>Onl Call #</b>	2019358067
<b>Date Requested</b>	08/27/2019 1:26:35 PM

**City of Ottawa Street Light Locate**

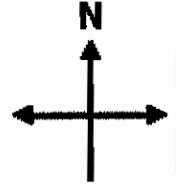
**Dispatcher:** Lisa Bisailon  
**Phone:** 613-526-1226



<b>Company</b>	U S L
<b>Name</b>	TANIA HOLYER
<b>Phone</b>	(613)-226-8750 ext.
<b>FAX</b>	(613)-226-8677 ext.
<b>Site Contact</b>	JACQUES DESJARDINS
<b>Phone</b>	

**Instructions**  
 975, GLADSTONE AVE  
 CORLOT=U CLEAR NORTH PARKING LOT (ENTIRE) TO ALL PROPERTY LINES. ALSO CLEAR EAST SIDE OF BUILDING FROM NE BUILDING CORNER TO 20M SOUTH AS PER DETAILED PLAN. NO\_PLAN:613 725

**LOCATOR SKETCH**



**Clear  
O-H Service**

No City of Ottawa Street  
Light assets in dig area

<b>SL</b> Underground Street Light Cable	<b>OH</b> Overhead/Aerial Wires	<b>Source/Transformer</b>
<b>Street Light</b>	<b>Globe/Decorative Light</b>	<b>Hydro Pole</b>

**Locator Notes/Comments:**

Locate is valid for 60 days. If sketch is different from markings, location or nature of work changes, a new locate must be requested. Hand dig within 1m (3.28ft) on either side of markings. Depth of buried plant varies.  Cette fiche n'est pas valide 60 jours de calendrier apres le reparaage. Si les marques ne concordent pas avec celles sur le croquis, un nouveau reperage est requis. Tout changement a l'emplacement ou a la nature du travail necessite un nouveau reperage. Creuser a la main un metre (3.28 pieds) du repere. La profondeur des installation varie d'un endroit a l'autre.	<b>Date Located</b>	08/29/2019
	<b>Time of day</b>	
	<b>Located by</b>	MIKE LESPERANCE
	<b>Signature</b>	
		Page 2 of 2



## Disclaimer

### Warning!

The Excavator must have a copy of this locate on the job site during excavation.

**Located Area:** The Excavator must not work outside the area indicated, by the located area in the diagram, without a further locate completed by Black & McDonald Limited.

**Locate the Plant:** The plant location information provided is the best we have available, but constitutes only an estimate. Depth of underground plant varies and the exact location must be determined by hand digging prior to excavation with mechanical equipment.

Mechanical equipment must not be used within 1.0 meter of the estimated location of the plant.

**Valid Documentation:** This locate is valid only for the Agency accepting it. Other parties must obtain and accept their respective underground locate from Ontario 1 Call.

**Excavator Alterations:** Under no circumstance shall an Excavator touch or move an underground power cable. Arrangements must be made to have qualified personnel relocate any such cable.

**Expose the plant:** Once the plant has been located by hand digging, it must be exposed along its length adjacent to or in the immediate vicinity of the proposed excavation. For this purpose, mechanical equipment must not be used within 0.5 meters of the plant.

**Digging around the Exposed Plant:** When the plant has been exposed, any further excavation within 0.3 meters, must only be done by hand digging and not with mechanical equipment.

**Support Requirements:** If the underground plant is exposed over a distance of more than 1.25 meters, the Facility Owner must be notified. Underground plant must be supported at all times.

**Private Cables:** Please be advised that Black & McDonald Limited is not responsible for and does not locate private cables

**New Cables:** Be aware that new cables could be installed at any time after the locate has been completed. It is the Excavator's responsibility to call for new locates if any changes are known or suspected.

**Caution:** The markings may disappear or be misplaced. Should sketch and markings not coincide, the Excavator must obtain a new locate. This is based on the information given at the time. Any changes to location or nature of work require a new locate. The Excavator must not work outside the indicated located area without a further locate. Privately owned services within the located area have not been marked- check with service/property owner.

**Liability:** Any person or Excavator who interferes with or damages any underground electrical cable without having obtained a valid locate/clearance from Black & McDonald Limited, shall be liable for all cost incurred during the repair of the cable as well as any resulting legal actions.

This locate has been given as accurately as possible, but no locate is guaranteed. Excavators must always dig with extreme caution to prevent the possibility of damaging electrical cables and endangering safety.

Locate is void after 60 days

For remarks contact Ontario One Call 1-800-400-2255 or [www.on1call.com](http://www.on1call.com)



## locates

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**From:** Solutions@on1call.com  
**Sent:** Tuesday, August 27, 2019 1:25 PM  
**To:** locates@usl-1.com  
**Subject:** Request 2019358067  
**Attachments:** MapSelection\_27082019\_09172261.png; Blumetric.975\_Gladstone.png

<<https://www.on1call.com/wp-content/themes/ooc/images/ooc-logo-2.png>> LOCATE REQUEST CONFIRMATION

TICKET #: 2019358067 REQUEST PRIORITY: STANDARD REQUEST TYPE: REGULAR WORK TO BEGIN DATE:  
09/04/2019

Update of Ticket # Project # Transmit date: 08/27/2019 01:24:46 PM

### REQUESTOR'S CONTACT INFORMATION

Contractor ID#: 202 Company Phone #: (613) 226-8750  
Contact Name: TANIA HOLYER Cell #:  
Alternate Contact Name: JACQUES DESJARDINS Fax #: (613) 226-8677  
Company name: U S L Email: locates@usl-1.com  
Address: 775 TAYLOR CREEK DR Alternate Contact #:

### DIG INFORMATION

Region/County: OTTAWA Type of work: BORE HOLES Mark & Fax: NO  
Community: Max Depth: 100.00 FT Area is not marked: NO  
City: OTTAWA Machine Dig: YES Area is marked: YES  
Address: 975, GLADSTONE AVE Hand Dig: NO Site Meet Req.: YES  
Directional Drilling: NO Work being done for: Blumetric  
Intersecting Street 1: BREEZEHILL AVE N Public Property: YES  
Intersecting Street 2: LORETTA AVE N Private Property: YES

### DETAILED DESCRIPTION OF WORK REMARKS

CORLOT=U Clear north parking lot (entire) to all property lines. Also clear east side of building from NE building corner to 20M south as per detailed plan.

MEMBERS NOTIFIED: The following owners of underground infrastructure in the area of your excavation site have been notified.

Member name	Station Code	Initial Status
HYDRO OTTAWA (HOT1)	HOT1	Notification sent
PROMARK FOR ENBRIDGE GAS (ENOE01)	ENOE01	Notification sent
CITY OF OTTAWA WATER/SEWER (OTWAWS01)	OTWAWS01	Notification sent
BLACK AND MC DONALD FOR CITY OF OTTAWA STREET LIGHTS (OTWASL01)	OTWASL01	Notification sent
PROMARK FOR BELL CANADA (BCOE01)	BCOE01	Notification sent

MAP SELECTION: Map Selection provided by the excavator through Ontario One Call's map tool or through agent interpretation by phone

CONTRACTOR'S SKETCH: A file provided directly by the excavator, not generated by Ontario One Call:

IMPORTANT INFORMATION: Please read.

Defining "NC" - Non-Compliant

- Non-compliant members have not met their obligations under section 5 of the Ontario Underground Infrastructure Notification Act. ON1Call has notified these members to ensure they are aware of your excavation. In this circumstance, should the member not respond, the excavator should contact the member directly to obtain their locates or request a status. ON1Call will not be provided with a locate status from the member regarding this ticket and therefore, cannot provide further information at this time. For locate status contact information please refer to our website.

You have a valid locate when...

- You have reviewed your locate request information for accuracy. CONTACT Ontario One Call (ON1Call) IMMEDIATELY if changes are needed and obtain a corrected locate request confirmation.
- You have obtained locates or clearances from all ON1Call members listed in this ticket before beginning your dig.

You've met your obligations when...

- In addition to this locate request, you have DIRECTLY contacted all owners of infrastructure who ARE NOT current members of ON1Call (such as owned buried infrastructure on private property), as well as arranged for contract locates for your private lines on your private property - where applicable. For a list of locate status contacts visit [www.on1call.com](http://www.on1call.com).
- You respect the marks and instructions provided by the locators and dig with care; the marks and locator instructions MUST MATCH.
- You have obtained any necessary permits from the municipality in which you are excavating.

What does "Cleared" mean in the "Initial Status" section?

1. The information that you have provided about your dig will not affect that member's underground infrastructure and they have provided you with a clearance, if anything about your excavation changes, please ensure that you update your ticket immediately.

What are the images under "Map Selection":

1. A drawing created by an excavator directly within Ontario One Call's web ticket tool, this is expected to be an accurate rendition of the dig site, and it is the excavator's responsibility to ensure the location matches the information they provide under the 'Dig Location' section OR;
2. A drawing created by an Ontario One Call agent, this drawing is based on a verbal description by phone of the area by the excavator. Agents may create drawings that are larger than the proposed dig to minimize risk of interpretation. It is the excavator's responsibility to review these map selections for accuracy. Changes can be made by the excavator through the web ticket tool, to learn how visit [www.on1call.com/contractors](http://www.on1call.com/contractors).
3. All drawings dictate which members are notified.

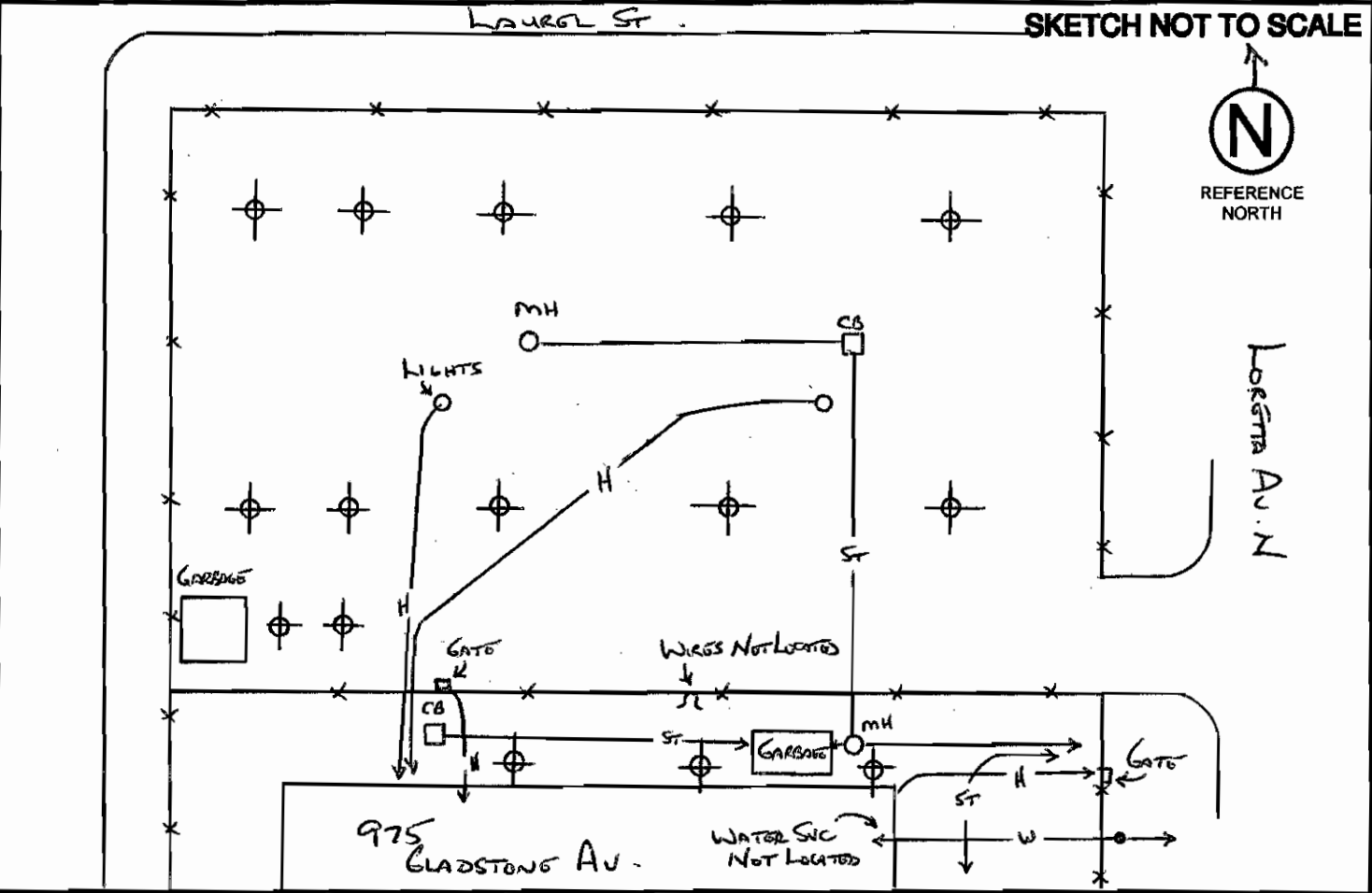
**UNDERGROUND SERVICE LOCATORS - PRIVATE UTILITY REPORT** DATE: *SEPT 5 / 2019*  
**ONE-CALL SYSTEMS INC.**  
**775 TAYLOR CREEK DRIVE** *Map 1 of 2* **PHONE (613) 226-8750**  
**OTTAWA, ON, K4A 0Z9** **FAX (613) 226-8677**

**CUSTOMER:** *BLUMETRIC* **REQUESTED BY:** *ROBERT HILLIER*

**LOCATION OF WORK:** *975 GLADSTONE AV.* **LIMITS OF WORK:** *BH's*

HYDRO --H--	CABLE T.V. --T.V.--	STEAM --STEAM--
GAS --G--	SANITARY --SAN--	ELECTRICAL --E--
BELL --B--	STORM --ST--	COMMUNICATIONS --COM--
UNIDENTIFIED CABLE --UC--	FIBER OPTIC --FOC--	OTHER:
WATER --W--		

**LOCATES ONLY APPLICABLE TO INFO ABOVE - LOCATES VOID AFTER 30 DAYS!**



- USL-1 as a Private utility locator, is not permitted to locate Publicly owned utilities. In some cases, Public utilities may be noted on a sketch, but are FOR REFERENCE ONLY, and under no circumstances shall be used for excavation purposes. It is the contractor's responsibility to verify any Public utilities noted on the USL-1 sketch by referring to the Public utility locate sheets for physical LOCATION AND ACCURACY. USL-1 DOES NOT ASSUME LIABILITY FOR PUBLIC LOCATE INNACCURACIES.
- If the proposed work area is on Private property, it does NOT mean that all buried utilities are Private. Regardless of when you are digging, and what the proposed depth of excavation is, it is the law to notify Ontario One Call (or Info-Excavation in Quebec) to obtain Public utility locates.

**COMMENTS:** *Could Not Located All Wires - Water Service Not Located*

**THIS SKETCH IS NOT A PUBLIC UTILITY LOCATE/DOCUMENT. PUBLIC UTILITIES SHOWN ARE FOR REFERENCE ONLY. REFER TO USL-1 DISCLAIMER - FORM 101. CONTRACTOR IS RESPONSIBLE TO ENSURE THEY HAVE PUBLIC UTILITY LOCATES BEFORE COMMENCING WORK.**

**LOCATORS NAME:** *STAN PEDNAR 613-986-7226* **SIGNATURE:** *[Signature]*

**LOCATE RECEIVED AND REVIEWED BY** \_\_\_\_\_ **Print Name** \_\_\_\_\_ **Signature** \_\_\_\_\_

**CAUTION: HAND DIG WITHIN 1.5 METERS OF MARKINGS**

**UNDERGROUND SERVICE LOCATORS - PRIVATE UTILITY REPORT** DATE: SEPT 5 / 2019

**ONE-CALL SYSTEMS INC.**  
**775 TAYLOR CREEK DRIVE**  
**OTTAWA, ON, K4A 0Z9**

*Map 2 of 2*

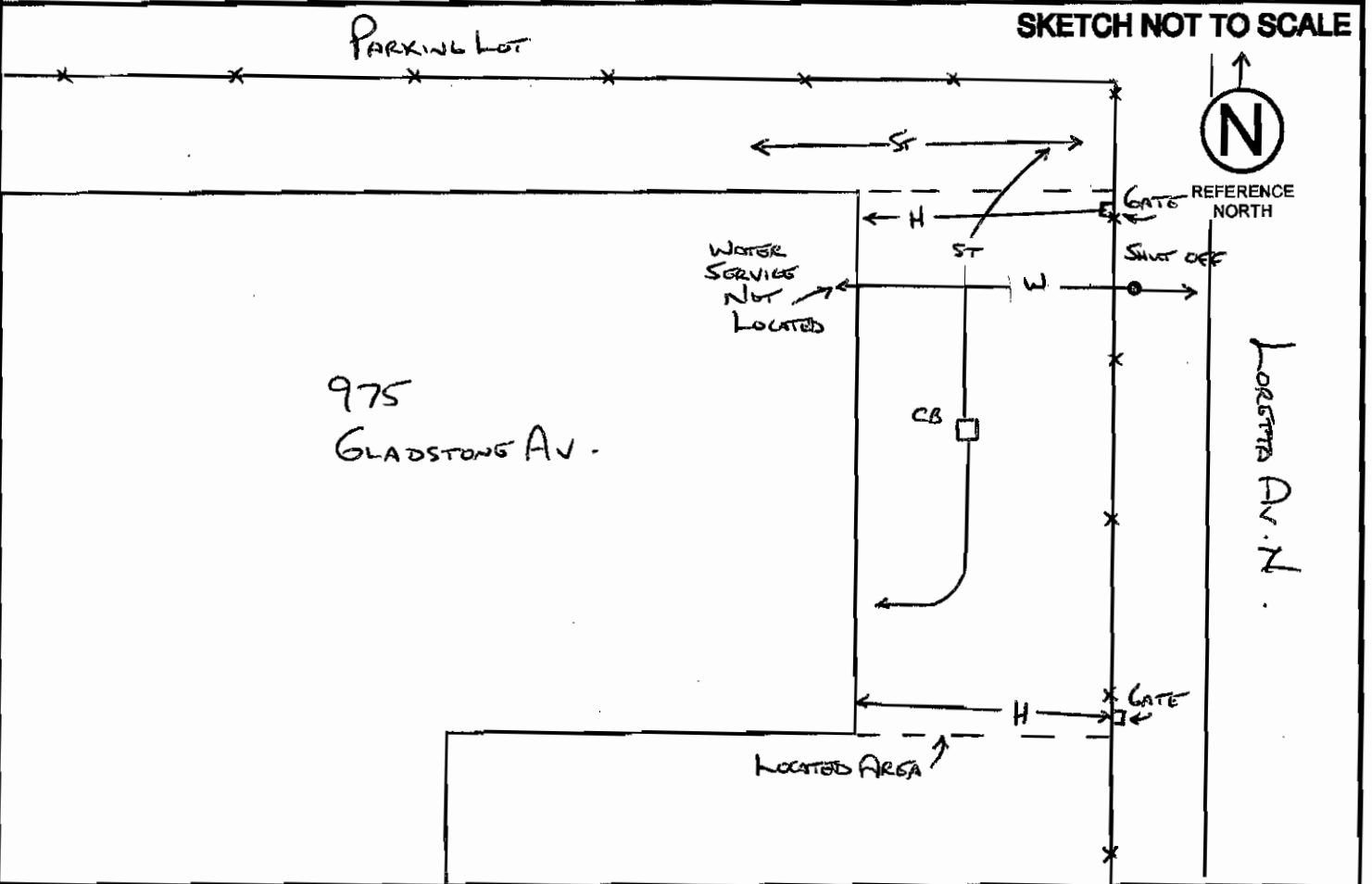
PHONE (613) 226-8750  
 FAX (613) 226-8677

CUSTOMER: BLUMETRIC REQUESTED BY: ROBERT HILLIER

LOCATION OF WORK: 975 GLADSTONE AV. LIMITS OF WORK: BH'S

HYDRO --H--	CABLE T.V. --T.V.--	STEAM --STEAM--
GAS --G--	SANITARY --SAN--	ELECTRICAL --E--
BELL --B--	STORM --ST--	COMMUNICATIONS --COM--
UNIDENTIFIED CABLE --UC--	FIBER OPTIC --FOC--	OTHER:
WATER --W--		

**LOCATES ONLY APPLICABLE TO INFO ABOVE - LOCATES VOID AFTER 30 DAYS!**



- USL-1 as a Private utility locator, is not permitted to locate Publicly owned utilities. In some cases, Public utilities may be noted on a sketch, but are FOR REFERENCE ONLY, and under no circumstances shall be used for excavation purposes. It is the contractor's responsibility to verify any Public utilities noted on the USL-1 sketch by referring to the Public utility locate sheets for physical LOCATION AND ACCURACY. USL-1 DOES NOT ASSUME LIABILITY FOR PUBLIC LOCATE INNACCURACIES.
- If the proposed work area is on Private property, it does NOT mean that all buried utilities are Private. Regardless of when you are digging, and what the proposed depth of excavation is, it is the law to notify Ontario One Call (or Info-Excavation in Quebec) to obtain Public utility locates.

COMMENTS: WATER SVC NOT LOCATED. NO BUILDING ACCESS.

**THIS SKETCH IS NOT A PUBLIC UTILITY LOCATE/DOCUMENT. PUBLIC UTILITIES SHOWN ARE FOR REFERENCE ONLY. REFER TO USL-1 DISCLAIMER - FORM 101. CONTRACTOR IS RESPONSIBLE TO ENSURE THEY HAVE PUBLIC UTILITY LOCATES BEFORE COMMENCING WORK.**

LOCATORS NAME: STAN PEDNAR 613-986-7226 SIGNATURE: [Signature]

LOCATE RECEIVED AND REVIEWED BY \_\_\_\_\_  
 Print Name Signature

**CAUTION: HAND DIG WITHIN 1.5 METERS OF MARKINGS**

## USL-1 DISCLAIMER - FORM 101

- It is our Clients responsibility to fully read and understand this document, prior to any ground disturbance taking place. Should any questions or clarifications be required, contact USL-1 before commencing work
- Locate is VOID after 30 days from the date the locate was completed. Contact USL-1 for remarks and/or new ticket requests, with a minimum notice of 5 business days
- If the scope of work, locate area, or site information changes, contact USL-1 before continuing work. In certain instances, a new ticket request may be required
- Any work within 1.5 metres laterally of a marked utility, must be hand dug or daylighted. Utility depths vary, as does the accuracy of the locate equipment, and therefore depths are typically not provided and should not be used for excavation purposes. Depth of utilities should also be verified by hand digging or daylighting. The best information is provided at the time of the locate, however the accuracy of field markings can vary with regard to equipment accuracy and external interference
- If the paint markings or flags on site differ from that of the sketch provided, please contact USL-1 before commencing work. If possible, the issue will be clarified by USL-1 and/or a site meet may be requested with the appropriate parties
- The "Excavator" is responsible for keeping a current copy of the locates on site, with the operators and in/on the excavation equipment AT ALL TIMES
- It is the "Excavator/Contractor's" responsibility to read ALL locate sheets, both public and private, to ensure they understand what potential hazards or buried utilities exist in their work area
- Special purpose locates such as sewer sondeing, locate surveys, tunnel identification, conduit identification, ground fault detections, ground penetrating radar, well cap location, concrete scanning, or anything else that requires use of more than Radiodetection equipment, must be identified at the time of the original locate request. Should a USL-1 locator identify any special needs services during a normal Private utility locate, the client will be notified for the appropriate course of action
- Not all buried utilities can be traced. In many instances, water and sewer lines, irrigation systems, grounding cables, fibre optic cables, heating cables, protection cables, and communication cables may not be traceable. Typically, sewer lines will be painted and lined up directionally from manhole to manhole where possible. It may not be possible to detect bends in the sewer lines between manholes. If tracer wires have been buried with the utility, they will be used to locate the buried utility where possible. If a buried utility cannot be traced, it will be noted on the USL-1 report. USL-1 is not liable for damage to untraceable utilities
- Public utility locators have maps, plans and as-built diagrams for reference to work from. Private utility locators, for the most part, do not. USL-1 will attempt to locate any Private utilities on a site, using as-built plans provided to them. Building access is mandatory and must be arranged by our client. Any conduits or utilities noted entering or exiting a building will be traced if possible, as well as any other visible utilities observed on site. It is the responsibility of the contractor to provide any and all buried utility information and site contacts that they have. There is no guarantee that USL-1 can find all buried utilities if the property owner does not have records or information regarding their own buried utilities
- USL- 1 cannot be held liable for damage to Private water and/or sewer laterals unless building access is granted, and the utility is locatable
- Thick snow and ice, frozen manhole lids, live traffic, parked cars, construction debris and activities etc, are all factors that can interfere with USL-1's ability to perform Private utility locates. USL-1 cannot guaranty location of all buried utilities when such factors impede the locate process. It is the contractor's responsibility to ensure that the work areas are safe and accessible for locates, prior to USL-1's arrival to site
- USL-1 as a Private utility locator, is not permitted to locate Publicly owned utilities. In some cases, Public utilities may be noted on a sketch, but are FOR REFERENCE ONLY, and under no circumstances shall be used for excavation purposes. It is the contractor's responsibility to verify any Public utilities noted on the USL-1 sketch by referring to the Public utility locate sheets for physical LOCATION AND ACCURACY. USL-1 DOES NOT ASSUME LIABILTY FOR PUBLIC LOCATE INNACCURACIES
- If the proposed work area is on Private property, it does NOT mean that all buried utilities are Private. Regardless of where you are digging, and what the proposed depth of excavation is, it is the law to notify Ontario One Call (or Info-Excavation in Quebec) to obtain Public utility locates
- NCC PROPERTY - assuming the contractor has been issued a Land Access Permit from the NCC, it is typically indicated within the permit that it is the contractor's responsibility to contact NCC for utility locates of their buried utilities

USL-1 - January 2016