BRIGHTPATH EARLY LEARNING & CHILD CARE

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT

90 MAPLE GROVE ROAD, OTTAWA, ONTARIO

FINAL REPORT

JANUARY 20, 2020

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TERRAPEX

PROJECT # CO738.01

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1.0 EXECUTIVE SUMMARY

Terrapex Environmental Ltd. (Terrapex) was retained by BrightPath Early Learning and Child Care (BrightPath) to conduct a Phase Two Environmental Site Assessment (ESA) of the property located at 90 Maple Grove Road, in Ottawa, Ontario (referenced variously as the "Phase Two Property" or the "Site"). The Phase Two ESA documented herein is being undertaken to support the filing of a Record of Site Condition (RSC) per Ontario Regulation 153/04 (O.Reg. 153/04), *Records of Site Condition - Part XV.1 of the Act* for the Site. The Site is proposed be developed for use as a daycare and the therefore the Site is expected to be "institutional" property use" per Section 14.5 and 14.8 of O. Reg. 153/04.

The objective of the Phase Two ESA was to assess Areas of Potential Environmental Concern (APECs) identified during a previous Phase One ESA work program at the Site in order to identify the location and concentration of contaminants, and (if necessary) to remediate contaminants found in the land or water on, in, or under the Phase Two Property.

The Site is irregular in shape and occupies an approximate footprint of 11,291 m^2. The Site is situated to the northwest of the intersection of Maple Grove Road and Terry Fox Drive. A Hydro Ottawa garage and storage yard is located to the north and west of the Site. The Site was developed by Kanata Hydro (precursor of Hydro Ottawa) in 1985 and used as an office building and for line operations until 2002. The Site was then leased Ottawa Telecom (2000-2008), Atria Networks (2008-2014) and Annidis Corporation (2014 to 2018).

The Site is developed with an irregularly shaped single-storey commercial building. The footprint of the building is approximately 1,700 m^2. An asphalt parking lot is located to the north, west and south of the on-Site building. The southern portion of the asphalt parking lot is shared with the neighboring 100 Maple Grove Road property located to the west and north of the Site. The remainder of the Site is grass covered with trees.

Based on a Phase One ESA study of the Site, the Phase Two ESA was undertaken to assess five on-Site APECs.

On October 16, 2015, nine boreholes were drilled at the Site to a maximum depth of 6.1 m below grade (bg). Four of the boreholes were completed as monitoring wells.

Selected soil samples recovered from the boreholes were submitted for laboratory analyses for a variety of parameters including benzene, toluene, ethylbenzene, and xylenes (collectively, BTEX) and the F1, F2, F3, and F4 petroleum hydrocarbon (PHC) parameters, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), cyanide and metallic and inorganic parameters. Selected groundwater samples recovered from the monitoring wells were submitted for laboratory analyses of BTEX and F1 to F4 PHCs, PAHs PCBs, and metal and inorganic parameters.

The generic Site Condition Standards (SCS) listed in Table 3 of the April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (the Ministry of the Environment, Conservation and Parks, 2011) that are applicable to residential / parkland / institutional land use, fine/medium textured soils, in a non-potable groundwater condition (hereafter referenced as the MECP Table 3 SCS) were selected for evaluating laboratory analytical results.

SAR and EC exhibited concentrations in excess of the MECP (2011) Table 3 SCS in soil samples BH108-2 and BH109-2. It is Terrapex's opinion that based on the location of the borehole BH108 and BH109 the concentrations of SAR and EC present in the soil samples are related to winter salting operations for the safety of vehicular and pedestrian traffic. Therefore in accordance with Section 49.1 of O.Reg. 153/04, the MECP (2011) Table 3 SCS is deemed not to have been exceeded for EC and SAR for both sampling locations.

None of the parameters analysed in any of the soil and groundwater samples exceeded the MECP (2011) Table 3 SCS.

Sediment is not present at the Site, and therefore contaminants of concern are not present within sediment.

2.0 INTRODUCTION

Terrapex Environmental Ltd. (Terrapex) was retained by BrightPath Early Learning and Child Care (BrightPath) to conduct a Phase Two Environmental Site Assessment (ESA) of the property located at 90 Maple Grove Road, in Ottawa, Ontario (referenced variously as the "Phase Two Property" or the "Site").

It is understood that the study documented herein is being undertaken by BrightPath for the purpose of filing a Record of Site Condition (RSC) per Ontario Regulation 153/04 (O.Reg. 153/04), *Records of Site Condition - Part XV.1 of the Act* for the Site on the basis future institutional land use. It is understood that BrightPath intends to redevelop the Site to use as a daycare.

The objective of the investigation was to assess Areas of Potential Environmental Concern (APECs) identified during a previous Phase One ESA work program at the Site in order to identify the location and concentration of contaminants in the land or water on, in, or under the Phase Two Property, and (if necessary) to remediate contaminants found in the land or water on, in, or under the Phase Two property.

The findings of the Phase One ESA are documented in Terrapex's report entitled *Phase One Environmental Site Assessment, 90 Maple Grove Road, Ottawa, Ontario, Final Report,* dated October 18, 2019.

2.1 SITE DESCRIPTION

The Site is irregular in shape and occupies an approximate footprint of 11,291 square metres (m^2). The Site is situated to the northwest of the intersection of Maple Grove Road and Terry Fox Drive. A Hydro Ottawa garage and storage yard is located to the north and west of the Site.

The Site is developed with an irregularly shaped single-storey commercial building. Parking lots are located to the south and west of the building. The footprint of the building is approximately 1,700 m^2. An asphalt parking lot is located to the north, west and south of the on-Site building. The southern portion of the asphalt parking lot is shared with the neighboring 100 Maple Grove Road property located to the west and north of the Site. The remainder of the Site is grass covered with trees.

The legal description of the Site is as follows:

PART OF LOT 1, CONCESSION 2, FORMERLY TOWNSHIP OF MARCH, DESIGNATED AS PARTS 16, 17, 18, 19 AND 20 ON PLAN 4R-24734. TOGETHER WITH AN EASEMENT IN FAVOUR OF PARTS 16, 17, 18 AND 19 PLAN 4R-24734 OVER PART LOT 1, CONCESSION 2, FORMERLY TOWNSHIP OF MARCH, PARTS 3 AND 21 PLAN 4R-24734 AS IN OC1171860.TOGETHER WITH AN EASEMENT IN FAVOUR OF PARTS 16, 17, 18 AND 19 PLAN 4R-24734 OVER PART LOT 1, CONCESSION 2, FORMERLY TOWNSHIP OF MARCH, PARTS 10, 11 AND 12 PLAN 4R-24734 AS IN OC1171860. TOGETHER WITH AN EASEMENT IN FAVOUR OF PARTS 16, 17, 18 AND 19 PLAN 4R-24734 OVER PART LOT 1, CONCESSION 2, FORMERLY TOWNSHIP OF MARCH, PART 5 PLAN 4R-24734 AS IN OC1171860. TOGETHER WITH AN EASEMENT IN FAVOUR OF PARTS 16, 17, 18 AND

19 PLAN 4R-24734 OVER PART LOT 1, CONCESSION 2, FORMERLY TOWNSHIP OF MARCH, PARTS 8, 11 AND 14 PLAN 4R-24734 AS IN OC1171860.; SUBJECT TO AN EASEMENT OVER PART 17 PLAN 4R-24734 IN FAVOUR OF PART LOT 1, CONCESSION 2, FORMERLY TOWNSHIP OF MARCH, PARTS 1 TO 6 AND 21 PLAN 4R-24734 AS IN OC1171860; SUBJECT TO AN EASEMENT OVER PART 17 PLAN 4R-24734 IN FAVOUR OF PART LOT 1, CONCESSION 2, FORMERLY TOWNSHIP OF MARCH, PARTS 7 TO 15 AND 21 PLAN 4R-24734 AS IN OC1171860; SUBJECT TO AN EASEMENT OVER PART 19 PLAN 4R-24734 IN FAVOUR OF PART LOT 1, CONCESSION 2, FORMERLY TOWNSHIP OF MARCH, PARTS 1 TO 6 AND 21 PLAN 4R-24734 AS IN OC1171860; SUBJECT TO AN EASEMENT OVER PART 19 PLAN 4R-24734 IN FAVOUR OF PART LOT 1, CONCESSION 2, FORMERLY TOWNSHIP OF MARCH, PARTS 7 TO 15 PLAN 4R-24734 AS IN OC1171860; CITY OF OTTAWA

A Site location plan is provided as Figure 1. Figure 2 shows the layout of the property at the time of the Phase Two ESA.

BrightPath provided a plan of survey for the Site, entitled *Part of Lot 1, Concession 2, Geographic Township of March, City of Ottawa* surveyed by Annis, O'Sullivan Vollebekk Ltd., dated Sept 19, 2019. The Site is associated with PIN 045090134. A copy of the plan of survey is included in Appendix I.

2.2 PROPERTY OWNERSHIP

The registered owner of the Site is Hydro Ottawa Limited. Authorization to proceed with the study was provided by Ms. Angela Collier at Hydro Ottawa, 2711 Hunt Club Road, Ottawa, Ontario, K1G 3S4.

2.3 CURRENT AND PROPOSED FUTURE USES

The Site was developed by Hydro Ottawa in 1985 and used as an office building and for line operations until 2002. The Site was then leased Ottawa Telecom (2000-2008), Atria Networks (2008-2014) and Annidis Corporation (2014 to 2018). The Site's was formerly a part of the 100 Maple Grove Road until it was reportedly severed from that property in 2005. The 100 Maple Grove Road property was listed as a former polychlorinated biphenyl (PCB) storage Site until 2003 (as part of the Hydro Ottawa operations) when the PCBs were removed and the Site was deregistered.

The Site was formerly leased to Ottawa Telecom (2000-2008), Atria Networks (2008-2014) and Annidis Corporation (2014 to 2018) for various commercial activities. At the time of the study the Site was vacant.

The Site is proposed be developed for use as a daycare and therefore, the Site is expected to be "institutional property use" per Section 14.5 and 14.8 of O. Reg. 153/04.

2.4 APPLICABLE SITE CONDITION STANDARDS

Generic Ministry of the Environment, Conservation and Parks (MECP, previously Ministry of the Environment and Climate Change, MOECC) Site Condition Standards (SCSs) for evaluating laboratory analytical results were selected from the April 15, 2011 *Soil, Ground Water and*

Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MECP, 2011) document on the basis of the criteria specified in O. Reg. 153/04.

The Site specific details which influenced the soil and groundwater standards selection are summarized below:

- more than 2 metres (m) of overburden was observed during the work program;
- the pH determined for soil samples submitted for laboratory analysis as part of this Phase Two ESA, ranged from 6.96 to 7.92, which is between the prescribed values for the application of generic SCS (5 to 9 for surface soil above 1.5 m; 5 to 11 for subsurface soil below 1.5 m);
- the Site does not include land within 30 m of an area of natural significance and is not otherwise considered ”potentially sensitive”;
- stratified site conditions will not be used when evaluating laboratory analytical results;
- future use of the Site is excepted to be for an institutional use (daycare);
- the Site and developed properties within 250 m of the Site are serviced with a municipal drinking water supply; and,
- soil texture at the Site has been classified as “medium and fine textured” based on the result of grain size analysis conducted for two representative soil samples.

Based on the above, full depth background generic MECP SCS corresponding to residential / parkland / institutional land use in non-potable groundwater condition with a medium-fine textured soil listed in Table 3 of the April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act,* (hereafter referenced as the MECP Table 3 SCS) are suitable for evaluating soil and groundwater laboratory analytical results.

Notification was provided to the City of Ottawa on December 9, 2019 of the intent to use the non-potable groundwater standards for the purpose of filing a RSC. The City approved the use of the non-potable groundwater standards on January 2, 2010. Copies of the notification letter and the City response are provided in Appendix II.

3.0 BACKGROUND INFORMATION

3.1 PHYSICAL SETTING

3.1.1 WATER BODIES & AREAS OF NATURAL SIGNIFICANCE

Water Bodies: The nearest water body is the Carp River (located 500 m to the west), which flows northwest until ultimately discharging into the Ottawa River (the confluence of the rivers located approximately 32 kilometres (km) to the northwest of the Site).

Areas of Natural Significance: Information from the the Ministry of Natural Resources (MNR) and the Mississippi Valley Conservation Authority (MVCA) showed that the Site is not located within or adjacent to a Natural Heritage Restoration Areas, an environmental sensitive/ significant area, or an Area of Natural and Scientific Interest (Life and Earth Science).

3.1.2 TOPOGRAPHY & SURFACE WATER DRAINAGE

Topography: A review of the 2010 Ontario Base Map (OBM) indicates the Site is located at an approximate elevation of 100 m above mean sea level (amsl). The regional topography at the Site slopes downward to the west, towards the Carp River.

The plan of survey *Part of Lot 1, Concession 2, Geographic Township of March, City of Ottawa* surveyed by Annis, O'Sullivan Vollebekk Ltd., dated Sept 19, 2019 (see Appendix I), indicates that the Site slopes down to the west with elevations ranging from approximately 102.30 m to 99.52 m amsl.

Surface Water Drainage: Mapping available from the MVCA website (www.mvc.on.ca) indicates that the Site is within the Carp River watershed. Accordingly, surface water drainage from the Site ultimately flows towards the Carp River, which is located approximately 500 m to the west of the Site.

Interpreted Direction of Groundwater Flow: Based on topography, the inferred direction of local groundwater flow is to the west, towards the Carp River. Regional groundwater flow is expected to be to the west towards the Carp River as well. It should be recognized that local groundwater flow may also be influenced by local subsurface structures and utilities.

3.2 PAST INVESTIGATIONS

Terrapex was provided with the following previous environmental reports by Hydro Ottawa for review as part of the scope of the Phase One ESA.

- *Inspection and Investigation of PCB Storage Container #210 Hydro Ottawa, 100 Maple Grove Road, Ottawa (Kanata), Ontario,* prepared by Water Earth Science Associates Ltd. and dated June 23, 2003.

A summary of pertinent investigation findings presented in this document is presented below.

Inspection and Investigation 2003

The report described the decommissioning of a PCB storage container located on the 100 Maple Grove Property. Reportedly the PCBs were stored in a metal shipping container with an internal containment tray for spill containment. The ground surface beneath the container was gravel surfaced. The metal shipping container (used to hold the PCBs) was removed from 100 Maple Grove Road property on June 4, 2003 and a site inspection by WESA indicated that no oil staining was present on the gravel surface immediately underneath. The location of the PCB metal storage container could not be ascertained from the report.

A five point composite sample of the gravel underneath the metal shipping container was collected for laboratory analysis of PCBs. Laboratory analysis indicated that no PCBs were detected above the laboratory detection limit in the collected soil sample of the surface material. It should be noted that the reported detection limit (2 µg/g), although less than the criteria at the time (25 µg/g), would not be less than the current MECP standard of 1.1 µg/g for a commercial or industrial property or 0.35 µg/g for residential, parkland or institutional land uses. The report concluded that all PCB material and the PCB storage container had been removed from 100 Maple Grove Road property.

A subsequent follow up letter from the Ministry of Environment (MOE, former name of the MECP) dated July 14, 2003, to Ottawa Hydro acknowledged the deregistration of the 100 Maple Grove Road property as a PCB storage site.

Review of the aerial photographs (further described in Section 4.3.1) showed no metal shipping containers were stored on the Site in 2002. The aforementioned report was limited in that it only pertains to the metal shipping container and not to historic spills to the soil or grounds (if any) in the vicinity of the PCB storage site or elsewhere on the 100 Maple Grove Road property (which the Site would have been a part of at the time).

4.0 SCOPE OF INVESTIGATION

4.1 OVERVIEW OF SITE INVESTIGATION

The scope of Terrapex's assessment comprised the following:

- preparing a sampling and analysis plan which identified target sampling locations and associated rationale, a proposed laboratory analytical program, sample containers and preservation methods, and the number and type of Quality Control (QC) samples;
- advancing nine boreholes to depths between 2.0 m and 6.1 m bg (below grade) using a track-mounted drill rig with standard solid-stem augers and dual-tube sampling equipment.
- collecting soil samples during drilling, and logging of visual, olfactory and tactile soil characteristics, and evidence of petroleum hydrocarbon or other chemical impacts, if any;
- measuring combustible soil vapour (CSV) concentrations in soil samples;
- submitting selected soil samples for laboratory analyses of contaminants of potential concern (COPCs) based on the sampling and analysis plan and field observations;
- installing groundwater monitoring wells at four of the borehole locations;
- developing the newly installed groundwater monitoring wells;
- monitoring the wells, and collecting and submitting groundwater samples for laboratory analyses of COPCs based on the sampling and analysis plan;
- surveying the elevation of each of the newly installed wells relative to a temporary benchmark;
- evaluating laboratory analytical results with respect to the selected SCS; and,
- refining the existing Conceptual Site Model (developed during the Terrapex Phase One ESA work program) in light of the information collected during the Phase Two ESA activities.

The sampling and analysis plan is attached in Appendix III. The sampling procedures are documented in detail in Section 5.0.

4.2 MEDIA INVESTIGATED

Based on the findings of the previous Phase One ESA work program (Terrapex, 2019) and previously conducted work programs by others, the Phase Two ESA work program documented herein included investigation of the environmental quality of both native soil, fill and groundwater at the Site.

The environmental quality of sediment was not investigated as sediment is not present at the Site.

Soil, fill and groundwater were investigated by drilling boreholes and installing monitoring wells, as described above, and in Section 5.0.

4.3 PHASE ONE CONCEPTUAL SITE MODEL

The identified PCAs and APECs associated with the CSM developed during the 2019 Terrapex Phase One ESA are illustrated on Figures 3 and 5, respectively. A summary of the CSM is provided below.

Site Features: The Site is irregular in shape and occupies an approximate footprint of 11,291 m^2. The Site is situated to the northwest of the intersection of Maple Grove Road and Terry Fox Drive. A Hydro Ottawa garage and storage yard is located to the north and west of the Site.

The Site is developed with an irregularly shaped single-storey commercial building. The footprint of the building is approximately 1,700 m^2. An asphalt parking lot is located to the north, west and south of the on-Site building. The southern portion of the asphalt parking lot is shared with the neighboring 100 Maple Grove Road property, located to the west and north of the Site. The remainder of the Site is grass covered with trees

Site History: The Site was developed by Kanata Hydro (currently Hydro Ottawa) in 1985 and used as an office building and for line operations until 2002. The Site was formerly a part of the 100 Maple Grove Road property until it was severed from that property in 2005. The 100 Maple Grove Road property was listed a former PCB storage Site until 2003 when the PCBs were removed and the Site was deregistered.

The Site was leased to Ottawa Telecom (2000-2008), Atria Networks (2008-2014) and Annidis Corporation (2014 to 2018). The Site is currently vacant.

Uses of Adjacent Properties: There are commercial businesses to the north and west of the Site. A park (Walter Baker Park) is located to the south across Maple Grove Road, and residential properties are located to the east, across Terry Fox Drive.

Existing Buildings and Structures: The building at the Site is irregular in shape and encompasses a footprint of approximately 1,700 m^2. Site interviews have determined that the building was initially constructed in 1986. The building is a single storey slab on grade construction

outfitted with metal and brick siding.

A truck garage located in the northern portion of the on-Site building which is can be accessed from three garage doors located on each side (the eastern and western) of the building. Catch basins were located throughout the garage, including two manholes which could not be opened at the time of the Site visit.

Water Bodies: The Site does not include and is not adjacent to or within 30 m of a water body, as defined in O. Reg. 153/04. The nearest water body to the Site is the Carp River, located approximately 500 m west of the Site, flows to the north into the Ottawa River.

Areas of Natural Significance: The Site does not include, and is not within, adjacent to, or within 30 m of an area of natural significance, as defined in O. Reg. 153/04, and no areas of natural significance were identified as being located in whole or in part in the Phase One Study Area.

Geology/Hydrogeology: The Site is located in a physiographic region known as the Limestone plains. The Site is located in a mixed area with fine-textured glaciomarine deposits characterized predominantly by silt and clay minor sand and gravel, massive to well laminated in the western portion of the Site and coarse-textured galciomarine deposits characterized predominantly by sand, gravel and minor amounts of silt and clay in the eastern portion of the Site. Bedrock geology consists of primarily of limestone, dolostone shale, arkose and sandstone.

Surface runoff on the Site generally flows into catch basins and ditches located throughout the Site. MVCA mapping indicates that the Site is within the Carp River Watershed. Accordingly, surface water drainage from the Site may ultimately flow toward this river.

Potentially Contaminating Activities (PCAs): Four PCAs, as listed in Table 2 of Schedule D of O. Reg. 153/04, were identified at the Site:

- PCA 30 – Importation of Fill Material of Unknown Quality;
- PCA 58 – Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners (the Site was formerly registered as a former PCB storage facility);
- PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks (associated with the onsite diesel generator); and,
- PCA 28 – Gasoline and Associated Products Storage in Fixed Tanks (the record of an AST possibly being located onsite).

Eight off-Site PCAs were identified within the Phase One Study Area, but only one resulted in APECs at the Site, which was the presence of the storage yard located to the west of the Site containing wooden poles The location of the PCAs is provided in Figure 4.

As a result of the PCAs and other considerations, five APECs were identified at the Site, as summarized below.

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Area of Potential Environ-mental Concern[1]	Location Of Area of Potential Environmental Concern On Phase One Property	Potentially Contaminating Activity[2]	Location of PCA (On-Site Or Off-Site)	Contaminants Of Potential Concern[3]	Media Potentially Impacted (Ground water, Soil, and/or Sediment)
APEC 1	- Encompassing the entirety of the Site	- 30 - Importation of Fill Material of Unknown Quality	- PCA 1 - (On-site)	- Metals - As, Sb, Se - Cr (VI) & Hg - B-HWS - EC, SAR - BTEX, PHCs - PAHs	- Soil
APEC 2	- Encompassing the western portion of the Site along the Hydro Ottawa work yard	- 59 - Wood Treating and Preservative Facility and Bulk Storage of Treated and Preserved Wood Products	- PCA 3 - (off-Site)	- Metals - As, Sb, Se - Cr (VI) & Hg - B-HWS - EC, SAR - BTEX, PHCs - PAHs - Na, Cl (groundwater)	- Soil - Groundwater
APEC 3	- Encompassing beside the garage and western portion of the Site.	- 58 – Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners	- PCA 4 - (On-Site or Off-site)	- PCBs	- Soil - Groundwater
APEC 4	- Encompassing the area adjacent to the fuel AST for the backup generator	- 28 – Gasoline and Associated Products Storage in Fixed Tanks	- PCA 2 - (On-Site)	- PHCs - BTEX	- Soil - Groundwater
APEC 5	- Due to the lack of information regarding the location of the fuel storage tank, the APEC encompasses the entire Site	- 28 – Gasoline and Associated Products Storage in Fixed Tanks	- PCA 6 (exact location unknown) - (On-Site or Off-Site)	- PHCs - BTEX	- Soil - Groundwater

[1] Areas of potential environmental concern means the area on, in or under a Phase One property where one or more contaminants are potentially present, as determined through the Phase One environmental site assessment, including through,
(a) identification of past or present uses on, in or under the Phase One property, and
(b) identification of potentially contaminating activity.

[2] Potentially contaminating activity means a use or activity set out in Column A of Table 2 of Schedule D that is occurring or has occurred in a Phase One study area.

[3] Contaminants of potential concern according to the Method Groups as identified in the "Protocol for in the Assessment of Properties under Part XV.1 of the Environmental Protection Act", March 9, 2004, amended as of July 1, 2011:

BTEX: benzene, toluene, ethylbenzene, xylenes	Hg: mercury	As: arsenic	EC: electrical conductivity
PHCs: petroleum hydrocarbons (F1-F4)	B - HWS boron, hot water soluble	Sb: antimony	SAR: sodium adsorption ratio
VOCs: volatile organic compounds	Cr (VI): chromium (hexavalent)	Se: selenium	
PAHs: polycyclic aromatic hydrocarbons	Na: sodium	Cl: chloride	

Contaminants of Potential Concern: The COPCs associated with the PCAs listed include BTEX, PHCs, PAHs, metals, metal hydrides (arsenic, antimony, selenium), hot water soluble boron, hexavalent chromium, mercury, EC, SAR, sodium, chloride and PCBs.

Migration Pathways: In general, potential preferential migration pathways for sub-surface contaminants at a Site comprise buried utilities, naturally occurring sand seams, or other subsurface areas of increased permeability. Therefore, any sandy or gravelly fill material or soil as well as service lines within the Site (if any) could act as potential migration pathways.

Uncertainty: The main uncertainties in the Phase One CSM are the following:

a) The lack of information regarding subsurface utilities.

b) The unknown location of the storage tank previously registered to Kanata Hydro at 100 Maple Grove as documented in the ERIS report.

c) The lack of information on the quality of the fill brought in during the development.

d) The lack of availability of Site operating records for the former hydro operation at the Site including PCB storage at the Site.

4.4.1 DEVIATIONS FROM THE SAMPLING AND ANALYSIS PLAN

Deviations from the proposed sampling and analysis plan are the following:

- The monitoring well installed along the western boundary of the Site was installed in borehole BHF instead of MWC (actual BH106 location) as originally planned.
- A soil sample collected from the native material in borehole BHF (installed as MW105) was submitted for additional laboratory analysis of metals and inorganics to evaluate the metals in the native soils at the Site.

These deviations are not considered to have significantly affected the data or the conclusions of the ESA. The sampling and analysis plan is provided in Appendix III.

4.5 IMPEDIMENTS

Access to and throughout the Site was not impeded at any time during the Phase Two ESA work program.

The presence of buried services at the Site did limit the placement of boreholes and monitoring wells at the Site. Some locations required minor adjustments in the field to the planned location of boreholes to avoid damaging these utilities. These impediments are not considered to have significantly affected the data or the conclusions of the ESA.

5.0 INVESTIGATION METHOD

5.1 GENERAL

Prior to drilling at the Site, local utility companies were contacted in order to obtain stake-outs and clearance with respect to buried services. A private locating company, CCC Scanning Ltd. (CCC), was also retained to provide clearance with respect to buried services in the drill areas. All intrusive sampling locations were greater than the required distance from all located underground utilities, and were therefore given clearance. The approximate locations of the on-Site underground utility locations are provided in Figure 2.

For work that Terrapex supervised, a Site-specific health and safety plan (HASP) and a Daily Safe Work Permit were also prepared by Terrapex prior to commencing all field work. All team members, including sub-contractors, read and signed the HASP before working at the Site.

All methods used during the investigation were completed as per Terrapex's associated standard operating procedures (SOPs).

5.2 DRILLING

Borehole drilling and monitoring well installation services required for the Phase Two ESA were provided by Strata Drilling Group (Strata) of Stouffville, Ontario under contract with Terrapex. Strata is a MECP-licensed well drilling contractor.

Borehole drilling and monitoring well installations required for the Phase Two ESA work program were completed using a track-mounted Geoprobe 6620DT direct-push drill rig equipped with standard solid-stem augers and dual-tube sampling equipment. Boreholes were advanced to a maximum depth of 6.1 m bg with monitoring wells being advanced to at least 1.0 m below the apparent water table for evaluation of environmental quality of both native soil and groundwater at the Site, as well as surficial soil.

On October 16, 2019, nine boreholes (MW101, BH102, MW103, MW104, MW105, BH106, BH107, MW108, MW109) were drilled to depths ranging between 1.8 m and 6.1 m bg. The borehole locations relative to the identified APECs are shown on the Figure 5B. All field work was completed under the full-time supervision of Terrapex staff.

5.3 SOIL

5.3.1 SOIL SAMPLING

Soil samples were generally collected on a continuous basis at each borehole location using a 1.2 m long, 60 mm diameter direct-push sampler.

To mitigate potential cross-contamination, clean drilling augers were used at each borehole and new PVC liners were used for each soil sample. Fresh nitrile gloves were donned for the handling of each sample.

Each recovered sample was divided into two portions, with one portion placed in a clear sampling bag for field screening/logging, and the second portion placed in laboratory supplied sampling containers, brought to the laboratory and extracted at the laboratory within the required 7 days of sampling. Soil descriptions were recorded based on the Unified Soil Classification System (USCS).

Samples for analyses were placed in a cooler with ice and delivered with a signed chain of custody to the project laboratory for analysis.

Borehole and monitoring well locations are shown on Figure 5B and 6. Graphic borehole logs illustrating the stratigraphy encountered, chemical analysis samples and measured combustible soil vapour concentrations are included in Appendix IV.

5.3.2 FIELD SCREENING MEASUREMENTS

CSV concentrations were measured in each soil sample, using a RKI Eagle portable gas detector calibrated to n-hexane and operated in methane elimination mode. The Eagle gas detector can measure total combustible organic compounds to a nominal detection level of 10 parts per million by volume (ppm), with an accuracy of approximately ±5%.

The gas detector was calibrated according to the manufacturer's instructions before the field investigation.

“Worst-case” soil samples were selected on the basis of vapour screening, visual and olfactory evidence of contamination, and sample location in relation to potential point sources of impact.

5.4 GROUNDWATER

5.4.1 MONITORING WELL INSTALLATION

Monitoring wells were installed in four of the boreholes (MW101, MW103, MW104 and MW105) using new 50 mm inside-diameter schedule 40 PVC well pipe and # 10 slot screen. The annulus of each well was backfilled with washed silica sand to a depth of approximately 0.3 m above the screened interval. A hydrated bentonite seal was placed above the sand pack to prevent infiltration of surface water into the monitoring well. A steel flushmount casing, cemented in place, was installed at each of the four well locations.

To mitigate potential cross-contamination, new materials were used for the installation of each monitoring well. Fresh nitrile gloves were donned for the handling of the well material at each well location.

Well installation details are provided on the borehole logs in Appendix IV.

5.4.2 MONITORING WELL DEVELOPMENT METHOD

The monitoring wells installed as part of the current work program were developed on October 18, 2019 to remove drilling debris that may have been introduced during well installation. Well development was conducted to minimize any potential sampling and analytical bias that may result from excessive particulate capture within groundwater samples recovered from these wells.

Depth to water and depth to the bottom of the wells were measured prior to well development. The volume of water in the well and its annulus were calculated based on the depth measurements, diameter of the well standpipe and annulus, and assumed annulus porosity of 30%.

The wells were developed using a surge block and a dedicated inertial sampler comprising low density polyethylene (LDPE) tubing and a LDPE foot valve. Each well was surged and purged until water free of visible particulate was yielded, or until ten well volumes of water were removed, whichever came first. The use of this technique resulted in the removal of between 40 L and 129 L from each of the monitoring wells.

5.4.3 FIELD MEASUREMENTS OF WATER QUALITY PARAMETERS

Water quality parameters including temperature, pH, specific conductivity, dissolved oxygen (DO), and oxidation reduction potential (ORP), were measured during sampling of groundwater using a peristaltic pump and a YSI Pro Plus water quality meter. Prior to sampling, Terrapex recorded the water quality parameters over 3-minute intervals. When the parameters stabilized to within requirements as outlined in the *Groundwater Sampling, Low Volume Purging, Using Peristaltic Pump* SOP, the well was deemed appropriate for sampling.

5.4.4 GROUNDWATER SAMPLING

Groundwater samples were collected from the monitoring wells on October 23, 2019. Prior to sampling, monitoring activities included the measurement of combustible vapours within the headspace of the well immediately upon removal of the well standpipe cap, using a RKI Eagle portable gas detector calibrated to n-hexane and operated in “methane elimination” mode. The depth to water in the well was measured using a Solinst interface probe. The presence, and apparent thickness (if applicable), of any light non-aqueous phase liquids (LNAPL) or dense non-aqueous phase liquids (DNAPL) in the well was also assessed using the interface probe.

To mitigate potential cross-contamination, the interface probe was washed with a liquid solution of Alconox detergent and rinsed with fresh water between each monitoring well. A fresh pair of latex or nitrile gloves was donned at each well location.

Sampling was conducted using “low-flow” methodology with a peristaltic pump (Spectra) as per Terrapex's SOP.

Groundwater samples were collected directly into pre-cleaned, laboratory-supplied bottles, placed in a cooler with ice, and shipped within four days of collection under chain of custody to the project laboratory for analysis.

5.5 SEDIMENT

5.6.1 SEDIMENT SAMPLING

The sampling of sediments was not completed as part of this work program as sediment is not present at the Site.

5.6 ANALYTICAL TESTING

Laboratory analytical services for this work program were provided by Bureau Veritas (BV) in Mississauga, Ontario under contract with Terrapex. BV was accredited by Standards Council of Canada (SCC) to International Standard ISO/IEC 17025:2005, *General Requirement for the Competence of Testing and Calibration Laboratories*.

Soil samples were analyzed as follows:

- One shallow sample from each of boreholes BH102, BH106, BH107, BH108 and BH109 of any perceived fill, was submitted for laboratory analysis of BTEX, PHCs F1-F4, PAHs, and metals and inorganics to evaluate any impacts from the fill of unknown quality and/or impacts from the adjacent work yard (APEC 1 and 2 respectively).
- One shallow soil sample from borehole BH105 was submitted for laboratory analysis of PAHs, and metals and inorganics to evaluate any impacts from the fill of unknown quality and/or impacts from the adjacent work yard (APEC 1 and 2 respectively).
- One soil sample from each of the boreholes MW101, MW103, MW104, MW105, BH106 and BH107 was submitted for laboratory analysis of PCBs to evaluate any impacts from the historic use of the Site and neighboring property as a PCB storage Site (APEC 3).
- One soil sample (selected from the apparent depth of the water table in the absence of field evidence of impact) from each of boreholes MW101, MW103, MW104 and MW105 was submitted for laboratory analyses of BTEX and PHC F1-F4 to evaluate potential contaminants from either the onsite fuel generator, the possible former presence of a fuel AST on the Site, respectively (APECs 3, 4 and 5).

- Soil sample MW105-5 collected from the native material at borehole MW105 was additionally submitted for laboratory analysis of metals and inorganics to evaluate the native silty clay for any naturally occurring elevated metals concentrations.
- One duplicate soil sample was submitted for analysis of BTEX, PHC F1-F4, PCBs PAHs and metallic and inorganic parameters for QA/QC purposes.
- One methanol blank sample (labelled “Trip Blank”) was submitted for analysis of BTEX and PHC F1 for QA/QC purposes.

Groundwater samples were analyzed as follows:

- One groundwater sample recovered from each of the monitoring wells were submitted for laboratory analyses of BTEX, PHC F1-F4 and PCBs to evaluate potential impacts from the onsite diesel AST (APEC 4), the former presence of a fuel AST on the 100 Maple Grove property (APEC 5), and the storage of PCBs on the 100 Maple Grove Road property (APEC 3).
- One groundwater sample recovered from monitoring well MW105 was submitted for laboratory analysis of PAHs and metals and inorganics to evaluate potential impacts from the possible impacts from wood preservation in the adjacent work yard (APEC 2).
- One duplicate groundwater sample was submitted for laboratory analyses of BTEX, PHC F1-F4, PAHs, PCBs and metals and inorganics for QA/QC purposes.
- One trip spike and one trip blank sample were submitted for laboratory analyses of BTEX and PHC F1 for QA/QC purposes.

The specific sample locations and parameters analyzed at each location are shown on Figure 5B for soil and Figure 5C for groundwater.

5.7 RESIDUE MANAGEMENT PROCEDURES

All soil cuttings produced during borehole drilling, were contained in a 205 L drum at the Site. Based on the laboratory analytical results (further discussed in Sections 6.6 and 6.7), the concentrations of all tested parameters from soil and groundwater samples were less than the MECP Table 3 SCS. As such, this material is suitable to remain on Site. The purged groundwater which was free of any hydrocarbon sheen or any obvious signs of impact was poured onto the ground at the Site and allowed to infiltrate.

5.8 ELEVATION SURVEYING

The elevation of the top of the pipe and ground surface at each existing and newly installed monitoring well was surveyed by Terrapex on October 18, 2019 with reference to a temporary benchmark. The fire hydrant spindle located on the southern portion Site was used as a benchmark and was assigned the elevation of 102.22 m amsl (based on the Plan of Survey).

5.9 QUALITY ASSURANCE AND QUALITY CONTROL MEASURES

To mitigate potential cross-contamination during drilling, clean drilling augers were used for each borehole and new PVC liners inside the direct-push sampler were used for each soil sample. Fresh nitrile gloves were donned for the handling of each sample.

During groundwater sampling, newly installed dedicated sampling tubing was used at each monitoring well location. To mitigate cross-contamination, the interface probe was washed with a liquid solution of Alconox detergent and rinsed with fresh municipal water between each monitoring well. A fresh pair of nitrile gloves was donned at each well location.

Pre-cleaned soil and groundwater sample containers for the Site's specific parameters were provided by BV and used at each borehole and monitoring well location for the collection of soil and groundwater samples.

The sample containers and preservation methods for soil and groundwater samples collected for this investigation are provided in the Sampling and Analysis Plan in Appendix III.

Samples for analyses were placed in an enclosed cooler with loose ice and transported under signed chain of custody and custody seals to BV for analysis. Soil samples for analysis of volatile organic parameters were received at the laboratory, and immediately extracted.

BV QA/QC program consisted of the analysis of laboratory replicates, matrix spikes, matrix blanks, method blanks and surrogate percent recoveries, as appropriate for the particular analysis protocol.

Three "blind" field duplicates were submitted to the laboratory for chemical analysis for QA/QC purposes during the Phase Two ESA work program:

- one duplicate soil sample MW104-6 (identified as MW104-16) was submitted for analysis of BTEX, PHC F1-F4, and PCBs;
- one duplicate soil sample BH109-2 (identified as BH109-12) was submitted for analysis of PAHs and metals and inorganics; and,
- one duplicate groundwater sample of MW105 (identified as MW111) was submitted for analyses of BTEX, PHC F1-F4, PAHs, PCBs and metals and inorganics.

One methanol blank sample for soil (labelled as "Field Blank"), one trip blank sample for groundwater (identified as "Trip Blank"), and one trip spike sample for groundwater (identified as "Trip Spike") were also submitted for analysis as QA/QC measures. The trip blank and trip spike samples were prepared by the laboratory, and the sampling container remained within the bottle order package from the time of the delivery, sampling and submission to the laboratory.

With the exception of the trip blank and trip spike samples that were prepared by BV itself, the laboratory was not informed of the nature or number of field QA/QC samples.

6.0 REVIEW AND EVALUATION

6.1 GEOLOGY

Stratigraphy encountered during the drilling program generally consisted of various amounts of a silty sand fill or reworked native material underlain by a native clayey silt clay transitioning to a silty clay, underlain by a silty sand with some coarse gravel. Various fill material found beneath surface at the Site consisted of coarse sand, reworked silty sand and gravel. Sample recovery of coarse fill material at surface was poor so depths of the fill layers are approximated. No deleterious material was observed in samples of fill collected during drilling.

Saturated conditions (i.e., the apparent water table) were observed at a depth of approximately 1.60 m to 2.16 m bg in the clayey silt stratum. Auger refusal on apparent bedrock was encountered in boreholes MW101 (3.8 m bg), BH102 (3.1 m bg), MW103 (4.9 m bg), MW104 (6.1 m bg) and BH108 (1.8 m bg).

A copy of the borehole logs is included in Appendix IV. Cross sections showing the depth to bedrock and water are provided in Figure 7 and 8.

6.2 GROUNDWATER ELEVATIONS AND FLOW DIRECTION

The monitoring wells were screened from a depth of approximately 1.8 m bg to a depth of approximately 3.0 m bg, based on field observation of moisture content. Installation details of the monitoring wells are shown on Table 1 and on the borehole logs in Appendix IV.

Depths to groundwater from ground surface in the monitoring wells measured on October 23, 2019 were 1.60 m (MW105), 1.95 m (MW101), (MW103), 2.13 m and 2.16 m (MW104). Monitoring data is shown on Table 1.

No evidence of either light, non-aqueous phase liquid (LNAPL) or dense, non-aqueous phase liquid (DNAPL) was observed during monitoring, purging, or sampling of the monitoring wells during this work program. LNAPL and DNAPL monitoring data are shown on Table 1.

Groundwater elevations were calculated using the surveyed elevation of the top of the well pipe and the measured depth to water on October 23, 2019. The minimum groundwater elevation on this date was 99.24 m (MW105), and the maximum groundwater elevation was 100.84 m (MW101).

Groundwater contours were electronically generated using Surfer™ Surface Mapping System with Point Kriging geostatistical gridding method to interpolate the data points. Interpreted groundwater contours based on these calculations are shown on Figure 9. The general flow direction of shallow groundwater at the Site was determined to be to the southwest towards the Carp River.

As the water table is fairly shallow, the direction of groundwater flow may be somewhat influenced by seasonal factors. It may also be influenced by deeper utilities (e.g., water and sewer lines), but the contouring results do not suggest that this is occurring.

6.3 GROUNDWATER HYDRAULIC GRADIENTS

Based on the measured groundwater elevations, the average horizontal hydraulic gradient over the area assessed was calculated as approximately 0.019 m/m calculated between MW101 and MW105 which are along the same groundwater flow path (southwesterly).

The horizontal hydraulic conductivity in the sandy silty clay is estimated to be 1.0×10^{-7} m/s based on the published values for this type of soil (*Groundwater*, Freeze and Cherry, 1979). Assuming an average hydraulic gradient of 0.019 m/m and a typical porosity for sandy silty clay of 0.4, the average linear horizontal groundwater velocity across the clayey silt layer (where the majority of groundwater flow would be expected) at the Site is calculated, using Darcy's Law, to be in the order of 0.1 m/year.

6.4 FINE-MEDIUM SOIL TEXTURE

Two representative soil samples of the native silty sand (BH106-2 and MW103-6) of the dominant stratigraphy encountered (clay/ silty clay) at the Site were submitted to BV for grain size analysis.

The results of the analyses indicated that both samples were medium/fine textured as defined by O. Reg. 153/04.

6.5 SOIL FIELD SCREENING

No visual (staining) or olfactory (odour) evidence of impacted soil was observed in the soil samples recovered from the borehole locations. CSV concentrations measured in all recovered soil samples were less than 10 ppm.

6.6 SOIL QUALITY

Laboratory analytical results of the soil samples submitted for analyses of metal and inorganic parameters, BTEX and PHC F1-F4, PAHs and PCBs are summarized in Tables 2 through 5, respectively. The maximum concentrations, sample names and well screen intervals, are summarized in Table 10. Plan view for all contaminants of potential concern in soil, are provided in Figure 10 through Figure 22. Copies of the Laboratory Certificates of Analyses are attached in Appendix V. The CSV concentration measured for each soil sample, the soil conditions, sample depths and chemical parameters analysed at each borehole are presented in the borehole logs in Appendix IV. A discussion of the results by parameter group is provided below.

Metals and Inorganics (Table 2, Figures 10-18): Analysis of seven samples (excluding the blind duplicate) of soil for metals and other regulated parameters has not identified any soil exceeding the Table 3 SCS with the exception of two soil samples (BH108-2 and BH109-2) as follows:

- Soil sample BH108-2 collected from a borehole in the parking lot in the southern portion of the Site were in excess of the Table 3 SCS for SAR; and,
- Soil sample BH109-2 (and its associated duplicate pair) collected from a borehole in the parking lot in the southern portion of the Site were in excess of the the Table 3 SCS for SAR and EC.

It is Terrapex's opinion that based on the location of the borehole BH108 and BH109 the concentrations of SAR and EC present in the soil samples are related to winter salting operations for the safety of vehicular and pedestrian traffic. Therefore in accordance with Section 49.1 of O.Reg. 153/04, the MECP (2011) Table 3 SCS is deemed not to have been exceeded for EC and SAR for both sampling locations.

BTEX (Table 3, Figure 19): Analysis of nine samples of soil (excluding a blind field duplicate) for BTEX has not identified any soil with concentrations, exceeding the Table 3 SCS.

PHCs (Table 3, Figure 20): Analysis of nine samples of soil (excluding a blind field duplicate) for petroleum parameters (PHC F1 to F4) has not identified any soil with concentrations, exceeding the Table 3 SCS.

PAHs (Table 4, Figure 21): Analysis of six samples of soil (excluding a blind field duplicate) for PAHs has not identified any soil with concentrations, exceeding the Table 3 SCS.

PCBs (Table 5, Figure 22): Analysis of six samples of soil (excluding a blind field duplicate) for PCBs has not identified any soil with concentrations, exceeding the Table 3 SCS.

6.7 GROUNDWATER QUALITY

Laboratory analytical results of the groundwater samples submitted for analysis which contribute to the Phase Two CSM are summarized in Tables 6 through 9. The maximum concentrations, sample names and well screen intervals, are summarized in Table 11. Copies of the Laboratory Certificates of Analyses are attached in Appendix V. A discussion of the results by parameter group is provided below.

Metals and Inorganics (Table 6, Figures 23-29): Analysis of one groundwater sample for metals and inorganics has not identified any groundwater with concentrations, exceeding the Table 3 SCS

BTEX (Table 7, Figure 30): Analysis of four samples of groundwater (excluding a blind field duplicate) for BTEX has not identified any groundwater with concentrations, exceeding the Table 3 SCS.

PHCs (Table 7, Figure 31): Analysis of four samples of groundwater (excluding a blind field duplicate) for petroleum parameters (PHCs F1 to F4) has not identified any groundwater with concentrations, exceeding the Table 3 SCS.

PAHs (Table 8, Figure 32): Analysis of one samples of groundwater (excluding a blind field duplicate) for PAHs has not identified any groundwater with concentrations, exceeding the Table 3 SCS.

PCBs (Table 9, Figure 33): Analysis of four samples of groundwater (excluding a blind field duplicate) for PAHs has not identified any groundwater with concentrations, exceeding the Table 3 SCS.

6.8 SEDIMENT QUALITY

The environmental quality of sediment was not investigated as sediment is not present at the Site.

6.9 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

QA/QC Control Limits: A review of the quality assurance reports attached to the laboratory certificates of analyses indicate that the laboratory QA/QC samples were within the quality control limits.

Matrix Spike Recoveries: The groundwater matrix spike for silver was 70%, below the QC limit of 80%. BV concluded that while the recovery was outside the control limits the overall quality control for the analysis met the acceptability criteria. Furthermore, no detectable concentrations of silver present in either of the samples submitted for analysis. All other matrix spike recoveries were within the acceptable QC limits.

Detection Limits: No sample dilution was required by the laboratory. Laboratory detection limits for soil sample MW104-6 (and its duplicate pair MW104-16) were raised for PCBs however they were below the relevant MECP (2011) Table 3 SCS so therefore there is no affect for interpretation.

Travel Spike Samples: Travel spike recoveries reported by the laboratory are summarized in the groundwater analytical results Table 7. The recoveries of all analysed parameters within the travel spike sample were within acceptance limits.

Travel Blank Samples: Laboratory results for the methanol blank sample is presented in the soil analytical results Table 3. Laboratory results for the Trip Blank sample for groundwater is

presented in Tables 7. Detectable concentrations of the tested parameters were not reported in the travel blank samples.

Field Duplicate Samples: Field duplicate sample results are presented in the soil and groundwater analytical results tables (Tables 2 through 9). Relative percent difference (RPD) for field duplicate sample results is calculated as follows:

$$RPD = \left| \frac{result_1 - result_2}{\frac{1}{2}\, x\, (result_1 + result_2)} \right| x\ 100\%$$

RPD is not calculated where reported concentrations are less than five times the method detection limit. Increased RPD values may be encountered whenever duplicate analyses are completed on samples representing heterogeneous fill materials. However, significant concerns regarding the validity of analytical results would generally not be suspected if calculated RPD do not exceed the specified alert criteria by more than a factor of 2.(i.e., an RPD of >60%).

Quantitative correlation was not calculable for the BTEX and PHC, PAH and PCBs analytical results of the field duplicate soil and groundwater samples (and their respective sample pairs), as the reported concentrations of all tested parameters for either one or both samples were less than five times the reportable detection limits.

Calculated RPDs for the field duplicate soil samples for the analysis of metallic and inorganic parameters are presented in Table 2. The acceptable correlation between original and field duplicate samples is typically 30% for inorganics. In several parameters (barium, hexavalent chromium, cobalt, copper, nickel, thallium and zinc) had RPDs greater than the alert criteria However, this suspected to be due to nature of the fill material of where these soil samples were collected. Generally the analytical results are within two factors of the alert criteria (i.e less than 60%) and therefore do not represent as significant concern. In all cases, concentrations of those parameters were less than the MECP (2011) Table 3 SCS.

Calculated RPDs for the field duplicate groundwater sample for the analysis of metallic and inorganic parameters are presented in Table 6. All calculable RPDs for the field duplicate groundwater samples for inorganics were below the alert criteria.

Sample Holding Times: Sample holding times were met for all samples.

6.10 PHASE TWO CONCEPTUAL SITE MODEL

A preliminary CSM was developed as part of the Phase One ESA, which is discussed in Section 4.3. Following the completion of the Phase Two ESA field program, the CSM has been updated to present the current Site characteristics and identify actual or potential sources of contamination, pathways, release mechanisms, receptors, and exposure routes. Additional inputs to the CSM include:

- Approximate locations underground utilities at the Site;
- stratigraphy observed during this Phase Two ESA work program;
- results of chemical testing for the current soil and groundwater conditions; and,
- groundwater levels and interpreted groundwater flow direction.

A narrative summary of the Phase Two CSM is provided below. Figures 1 through 33 illustrating the Phase Two CSM are attached, and referenced in the appropriate sections below.

OVERVIEW

Site Description (Figures 1 and 2): The Site is irregular in shape and occupies an approximate footprint of 11,291 m^2. The Site is situated to the northwest of the intersection of Maple Grove Road and Terry Fox Drive. A Hydro Ottawa garage and storage yard is located to the north and west of the Site.

The Site is developed with an irregularly shaped single-storey building. The footprint of the building is approximately 1,700 m^2. An asphalt parking lot is located to the north, west and south of the on-Site building. The southern portion of the asphalt parking lot is shared with the neighboring 100 Maple Grove Road property located to the west and north of the Site. The remainder of the Site is grass covered with trees.

Past and Present Uses (Figures 3 and 5A): The Site was developed by Kanata Hydro (currently Hydro Ottawa) in 1985 and used as an office building and for line operations until 2002. The Site was formerly a part of the 100 Maple Grove Road property until it was reportedly severed from that property in 2005. The 100 Maple Grove Road property was listed a former PCB storage Site until 2003 when it was deregistered.

The Site was leased to Ottawa Telecom (2000-2008), Atria Networks (2008-2014) and Annidis Corporation (2014 to 2018). The Site is currently vacant.

Adjacent Land Uses (Figure 3): Uses and occupants of the properties located adjacent to the Site are a mix of residential, parkland, commercial and institutional, as follows:

> ***North:*** Commercial properties, Palladium Drive and commercial properties beyond.
>
> ***West:*** Hydro Ottawa storage yard, commercial development and Silver Seven Road, and the Carp River beyond.
>
> ***South:*** Maple Grove Road and Walter Baker Park beyond.
>
> ***Southwest:*** Terry Fox Drive, residential properties and Esso gas station and automotive garage (44 Edgewater Street).

East: Terry Fox Drive and residential properties beyond.

Assessment Criteria: The generic MECP SCS determined to be applicable to the intended use of the Site are those for residential/parkland/institutional property use, fine/medium-textured soils, in a non-potable groundwater situation (MECP Table 3 Site Condition Standards). The Site is not environmentally sensitive per the definition of O. Reg. 153/04.

PCAs AND APECs

Potential Contaminating Actvities (PCA) (Figure 4): Four on-Site PCAs and eight off-Site PCAs relating to activities or incidents within the Phase One Study Area were identified.

POTENTIALLY CONTAMINATING ACTIVITIES WITHIN THE PHASE ONE STUDY AREA

PCA	ADDRESS	POTENTIAL ENVIRONMENTAL CONCERN	DATA SOURCE	POTENTIALLY CONTAMINATING ACTIVITY (as set out in Column A of Table 2 in Schedule D of O. Reg. 153/04)	UNCERTAINTY	LIKELIHOOD TO AFFECT THE SITE
PCA 1	90 Maple Grove Road (The Site)	- The presence of fill brought to the Site during development.	- Aerial Photographs	- 30 – Importation of Fill Material of Unknown Quality	- High	- Possible
PCA 2	90 Maple Grove Road (The Site)	- The presence of a diesel fuel AST associated with the backup generator located at the Site.	- Site Reconnaissance	- 28 – Gasoline and Associated Products Storage in Fixed Tanks	- Low. Presence is confirmed	- Possible
PCA 3	100 Maple Grove Road (Adjacent to the Site, north and west)	- Presence of the storage yard located to the west of the Site containing wooden poles.	- Aerial Photographs	- 59 - Wood Treating and Preservative Facility and Bulk Storage of Treated and Preserved Wood Products	- Low. Presence is confirmed.	- Possible due to being either on the Site or adjacent.

PCA	ADDRESS	POTENTIAL ENVIRONMENTAL CONCERN	DATA SOURCE	POTENTIALLY CONTAMINATING ACTIVITY (as set out in Column A of Table 2 in Schedule D of O. Reg. 153/04)	UNCERTAINTY	LIKELIHOOD TO AFFECT THE SITE
PCA 4	90 Maple Grove Road (The Site's former addresses was 100 Maple Grove prior to 2005)	- ERIS identified 100 Maple Grove as a PCB storage yard. Soil testing was limited and detection limits inadequate to current soil standards.	- ERIS	- 58 – Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners	- High, the location of the PCB storage is not confirmed, but is understood to have been in a shipping container in the yard area of 100 Maple Grove (off-site)	- Possible if the PCB being located on the Site.
PCA 5	100 Maple Grove Road (Adjacent to the Site, north and west)	- Presence of a diesel AST associated with a backup generator located in the eastern portion of the property.	- ERIS - Site Reconnaissance	- 28 – Gasoline and Associated Products Storage in Fixed Tanks	- Low	- Unlikely, due to limited volume and horizontal distance from the Site and apparently situated down-gradient of the Site.
PCA 6	90 Maple Grove Road The Site's former addresses was 100 Maple Grove prior to 2005)	- Presence of a 2000 L fuel storage tank as identified in the ERIS report registered to Kanata Hydro at 100 maple grove Road	- ERIS	- 28 – Gasoline and Associated Products Storage in Fixed Tanks	- High, location, type, and construction unknown	- Possible, however exact location of AST unknown and no corroborating information is available.
PCA 7	501 Palladium Drive (Approximately 300 m west of the Site).	- Manufacturing of microchips and computer equipment at Lockheed Martin (2019 - 2015) and Smart Technologies (2015 -2007).	- ERIS Report - Aerial Photographs	- 19 – Electronic and Computer Equipment Manufacturing	- Existence confirmed by multiple listings and records in the ERIS report	- Unlikely due to the length of operation (since 2007) and the property is situated in a down gradient position relative to the Site.

PCA	ADDRESS	POTENTIAL ENVIRONMENTAL CONCERN	DATA SOURCE	POTENTIALLY CONTAMINATING ACTIVITY (as set out in Column A of Table 2 in Schedule D of O. Reg. 153/04)	UNCERTAINTY	LIKELIHOOD TO AFFECT THE SITE
PCA 8	400 Maple Grove Road (approximately 130 m to the west of the Site)	- Manufacturing of microchips and computer equipment at Honeywell Ltd from 2007 to present.	- ERIS Report - Aerial Photographs	- 19 – Electronic and Computer Equipment Manufacturing	- Existence confirmed by multiple listings and records in the ERIS report	- Unlikely due to the length of operation (since 1997) and the property is situated in a down gradient position relative to the Site.
PCA 9	333 Palladium Drive (Approximately 100 m northwest of the Site)	- Manufacturing of microchips and computer equipment at Curtiss Wright since at least 1997 (formerly known as DY 4 Systems).	- ERIS Report - Aerial Photographs	- 19 – Electronic and Computer Equipment Manufacturing	- Existence confirmed by multiple listings and records in the ERIS report	- Unlikely due to the length of operation (since 1990s) and the property is situated in a cross gradient and slightly down gradient position relative to the Site.
PCA 10	308 Palladium Drive (located approximately 270 m to the north of the Site)	- Manufacturing of microchips and computer equipment at Xilinc Inc. for a unknown amount of time	- ERIS Report	- 19 – Electronic and Computer Equipment Manufacturing	- High, only one record detailed the existence of manufacturing. No listings of the CA or ECA database for air emissions were identified.	- Unlikely due to the length of operation (since 1990s) and the property is situated in a cross gradient and slightly down gradient position relative to the Site.
PCA 11	44 Edgewater Street (Approximately 250 m southwest of the Site)	- Presence of the gasoline fuel station since 2002 until present	- Aerial Photographs - HLUI	- 28 – Gasoline and Associated Products Storage in Fixed Tanks	- Existence confirmed by multiple listings and records in the ERIS report	- Unlikely due to the large horizontal distance and the property is situated cross gradient position relative to the Site

PCA	ADDRESS	POTENTIAL ENVIRONMENTAL CONCERN	DATA SOURCE	POTENTIALLY CONTAMINATING ACTIVITY (as set out in Column A of Table 2 in Schedule D of O. Reg. 153/04)	UNCERTAINTY	LIKELIHOOD TO AFFECT THE SITE
PCA 12	638 Terry Fox Drive (Approximately 250 m southwest of the Site)	- Presence of Mr. Lube automotive garage since 2007 until present	- ERIS - Site Reconnaissance - Aerial Photographs	- 27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	- Existence confirmed by multiple listings and records in the ERIS report	- Unlikely due to the large horizontal distance and the property is situated cross gradient relative to the Site

Areas of Potential Environmental Concern (APEC) (Figure 5A): Five APECs were identified at the Site as a result of the PCAs. Details regarding the sources of the APECs, their locations, the contaminants of potential concern and the media which may be affected are provided below. The locations of the APECs are shown on Figure 5A and the resulting sampling locations are provided in Figure 5B and Figure 5C.

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Area of Potential Environ-mental Concern[1]	Location Of Area of Potential Environmental Concern On Phase One Property	Potentially Contaminating Activity[2]	Location of PCA (On-Site Or Off-Site)	Contaminants Of Potential Concern[3]	Media Potentially Impacted (Ground water, Soil, and/or Sediment)
APEC 1	- Encompassing the entirety of the Site	- 30 - Importation of Fill Material of Unknown Quality	- PCA 1 - (On-site)	- Metals - As, Sb, Se - Cr (VI) & Hg - B-HWS - EC, SAR - BTEX, PHCs - PAHs - CN-	- Soil
APEC 2	- Encompassing the western portion of the Site along the Hydro Ottawa work yard	- 59 - Wood Treating and Preservative Facility and Bulk Storage of Treated and Preserved Wood Products	- PCA 3 - (off-Site)	- Metals - As, Sb, Se - Cr (VI) & Hg - B-HWS - EC, SAR - BTEX, PHCs - PAHs - CN- - Na, Cl (groundwater)	- Soil - Groundwater

Area of Potential Environ-mental Concern[1]	Location Of Area of Potential Environmental Concern On Phase One Property	Potentially Contaminating Activity[2]	Location of PCA (On-Site Or Off-Site)	Contaminants Of Potential Concern[3]	Media Potentially Impacted (Ground water, Soil, and/or Sediment)
APEC 3	- Encompassing beside the garage and western portion of the Site.	- 58 – Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners	- PCA 4 - (On-Site or off-site)	- PCBs	- Soil - Groundwater
APEC 4	- Encompassing the area adjacent to the fuel AST for the backup generator	- 28 – Gasoline and Associated Products Storage in Fixed Tanks	- PCA 2 - (On-Site)	- PHCs - BTEX	- Soil - Groundwater
APEC 5	- Due to the lack of information regarding the location of the fuel storage tank, the APEC encompasses the entire Site	- 28 – Gasoline and Associated Products Storage in Fixed Tanks	- PCA 6 (exact location unknown) - (On-Site or off-Site)	- PHCs - BTEX	- Soil - Groundwater

1 Areas of potential environmental concern means the area on, in or under a Phase One property where one or more contaminants are potentially present, as determined through the Phase One environmental site assessment, including through,
(a) identification of past or present uses on, in or under the Phase One property, and
(b) identification of potentially contaminating activity.

2 Potentially contaminating activity means a use or activity set out in Column A of Table 2 of Schedule D that is occurring or has occurred in a Phase One study area.

3 Contaminants of potential concern according to the Method Groups as identified in the "Protocol for in the Assessment of Properties under Part XV.1 of the Environmental Protection Act", March 9, 2004, amended as of July 1, 2011:

BTEX: benzene, toluene, ethylbenzene, xylenes	Hg: mercury	As: arsenic	EC: electrical conductivity
PHCs: petroleum hydrocarbons (F1-F4)	B - HWS boron, hot water soluble	Sb: antimony	SAR: sodium adsorption ratio
VOCs: volatile organic compounds	Cr (VI): chromium (hexavalent)	Se: selenium	CN-: Cyanide
PAHs: polycyclic aromatic hydrocarbons	Na: sodium	Cl: chloride	

Subsurface Structures and Utilities That May Affect Contaminant Distribution and Transport (Figure 2): During the Phase Two ESA work program, local utility companies were contacted in order to obtain stake outs and clearance with respect to buried services under the Phase Two Property. A private locating company Capital Concrete Coring Ltd. (CCC) was also retained to provide clearance with respect to buried services in the drill areas. Underground utilities at the Phase Two Property include hydro, natural gas, electrical, telephone and sanitary and storm sewers. The locations of the underground utilities present at the Site are provided in Figure 2.

In general, potential preferential migration pathways for sub-surface contaminants at a site comprise buried utilities, naturally occurring sand seams, or other subsurface areas of increased

permeability. As a result, the underground utilities present throughout the Phase Two Property could be considered as potential preferential migration pathways.

However, the results of the Phase Two ESA indicate that the groundwater conditions at the Phase Two Property meet the MECP SCS listed in Table 3 of the April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (MOE, 2011) corresponding to residential / parkland / institutional land use in non-potable groundwater situation for the COPCs analysed, the potential preferential migration pathways are not considered to be of concern.

Physical Setting of The Phase Two ESA Property

Stratigraphy: Stratigraphy encountered during the drilling program generally consisted of various amounts of a silty sand fill or reworked native material underlain by a native clayey silt clay transitioning to a silty clay, underlain by a silty sand with some coarse gravel. Various fill material found beneath surface at the Site consisted of coarse sand, reworked silty sand and gravel varying in depths from 0.3 to 1.2 m bg. Sample recovery of coarse fill material at surface was poor, so depths of the fill layers are approximated. No deleterious material was observed in samples of fill collected during drilling.

Refer to Figures 2 for the borehole locations, Figures 7 and 8 for the cross sections showing the soil stratigraphy of the Phase Two Property. Borehole logs showing the soil stratigraphy encountered in the boreholes are provided in Appendix IV.

Hydrogeological Characteristics: Based on the measured groundwater elevations, the average horizontal hydraulic gradient over the area assessed was calculated as approximately 0.019 m/m calculated between MW101 and MW105 which are along the same groundwater flow path (southwesterly).

The horizontal hydraulic conductivity in the sandy silty clay is estimated to be 1.0×10^{-7} m/s based on the published values for this type of soil (*Groundwater*, Freeze and Cherry, 1979). Assuming an average hydraulic gradient of 0.019 m/m and a typical porosity for sandy silty clay of 0.4, the average linear horizontal groundwater velocity across the sandy silty clay layer (where the majority of groundwater flow would be expected) at the Site is calculated, using Darcy's Law, to be in the order of 0.1 m/year.

The general flow direction of shallow groundwater at the Phase Two Property was determined to be to the southwest towards the Carp River. As the water table is fairly shallow, the direction of groundwater flow may be somewhat influenced by seasonal factors. It may also be influenced by deeper utilities (e.g. water and sewer lines), but the contouring results do not suggest that this is occurring. Refer to Figure 9 for the monitoring well locations and interpreted groundwater elevation contours.

Depth to Bedrock: Bedrock was encountered in several boreholes advanced in this Phase Two ESA in depths varying between 1.8 to 6.1 m bg.

Depth to Water Table: Monitoring data is shown on Table 1. Depths to groundwater in the monitoring wells measured on October 23, 2019 were 1.60 m (MW105), 1.95 m (MW101), 2.13 m (MW103) and 2.16 m (MW104) from ground surface. Monitoring data is shown on Table 1. No evidence of either LNAPL or DNAPL was observed during monitoring, purging, or sampling of the monitoring wells during the Phase Two ESA work program.

Refer to Figures 5C for the monitoring well locations, Figures 7 and 8 for the cross sections showing the water table of the Phase Two Property, and Borehole Logs for water table encountered in the boreholes.

Applicability of Section 41 or 43.1 of O. Reg. 153/04: O. Reg. 153/04 describes conditions, which when present, can constitute an "environmentally sensitive site". They include the presence of areas of natural significance (such as wetlands, provincial parks, nature reserves and valuable animal habitats) within 30 m of the Site, and sites where soil pH lies outside the range of 5 to 9 for shallow soil and 5 to 11 for deep soil.

The Site is not located within an area of natural significance (such as wetlands, provincial parks, nature reserves and valuable animal habitats), does not include and is not adjacent to an area of natural significance or part of such an area, and does not include land that is within 30 m of an area of natural significance or part of such an area.

Soil pH values are within the required ranges.

Areas Where Soil has been Brought to the Property: No soil was excavated for reuse on the Phase Two Property or brought from another property following completion of the Phase Two ESA.

Locations of Proposed Buildings and Structures: At the time of this investigation, there was the only the main building which was vacant at the time of the Phase Two ESA. The main onsite building will redeveloped as a daycare. The proposed development plan is presented in Appendix I.

Contamination

Media of Concern: Soil and groundwater have been identified as the media of concern at the Site at the Site. Sediment is not present at the Site.

Contaminants of Concern: All soil samples recovered from the sample locations had concentrations of metals and inorganics, BTEX and PHC F1-F4, PAHs, and PCBs parameters

less than the applicable MECP Table 3 SCS. All groundwater samples collected from the sample locations had concentrations of metals and inorganics, BTEX and PHC F1-F4, PAHs, and PCBs less than the applicable MECP Table 3 SCS. Therefore, there were no COPCs identified in soil and groundwater during this Phase Two ESA program.

SAR and EC exhibited concentrations in excess of the MECP (2011) Table 3 SCS in soil samples BH108-2 and BH109-2. It is Terrapex's opinion that based on the location of the borehole BH108 and BH109 the concentrations of SAR and EC present in the soil samples are related to winter salting operations for the safety of vehicular and pedestrian traffic. Therefore in accordance with Section 49.1 of O.Reg. 153/04, the MECP (2011) Table 3 SCS is deemed not to have been exceeded for EC and SAR for both sampling locations.

Areas, Origin, Extent, Distribution and Delineation of Contamination: No contaminants were identified at the Site.

Migration of Contaminants: The Phase Two ESA has identified no contaminants present at the Site.

Climatic or Meteorological Impacts on Contaminant Migration: As no contaminants were identified in either the soil or groundwater at the Site climatic or meteorological impacts on contaminant migration is not a concern.

Soil Vapour Intrusion of Contaminants into Buildings: As volatile contaminants have not been identified at the Site, there are no concerns related to the intrusion of vapours into the existing or future buildings at the Site.

7.0 CONCLUSIONS

The Phase Two ESA investigation of the Site, as documented in this report, indicated that contaminants of concern were not identified within soil or groundwater at the Site.

Sediment is not present at the Site, and therefore contaminants of concern are not present within sediment.

The date of the last work on all of the planning of the Site investigation, conducting the investigation, and receiving and evaluating the information gathered during the Site inspection for the Phase Two ESA (per Section 33.5 (1) (a) of O. Reg. 153/04) is December 20, 2019. For the purposes of filing a Record of Site Condition, the Certification Date of the Phase Two ESA (per Section 17 (3) of O. Reg. 153/04) is October 23, 2019.

7.1 SIGNATURES

The environmental assessment described herein was conducted in accordance with the terms of reference for this project, agreed upon by BrightPath and Terrapex Environmental Ltd.

The Phase Two Environmental Site Assessment of the property located at 90 Maple Grove Road Ottawa, Ontario was conducted in general accordance with O.Reg. 153/04 by, or under the supervision of a Qualified Person as required by the regulation.

Terrapex Environmental Ltd. has exercised due care, diligence, and judgement in the performance of this Phase Two ESA; however, studies of this nature have inherent limitations. The reported information is believed to provide a reasonable representation of the general environmental conditions at the Site, at the time the assessment was conducted. However, the data were collected at discrete locations and conditions may vary at other locations or with the passage of time. The assessment was also limited to a study of those chemical parameters specifically addressed in this report.

In addition, our comments, conclusions, and recommendations are based in part on the observations and data documented by third parties. By necessity, except where explicitly noted, we have relied upon the accuracy and completeness of information presented by said third parties, regardless of any disclaimers regarding reliance provided in the documentation subjected to peer review. Terrapex Environmental Ltd. does not assume any responsibility for errors, omissions, or other limitations pertaining to third party work programs.

This report has been prepared for the sole use of BrightPath Early Learning & Child Care and Terrapex Environmental Ltd. accepts no liability for claims arising from the use of this report, or from actions taken or decisions made as a result of this report, by parties other than BrightPath Early Learning & Child Care.

Greg Sabourin, P.Eng.
Project Manager
Qualified Person per O. Reg. 153/04

Keith Brown, P.Eng.
Senior Reviewer
Qualified Person per O.Reg. 153/04

Rod Rose, P.Geo. (Limited)
Branch Manager
Qualified Person per O. Reg. 153/04

8.0 REFERENCES

Ontario Regulation 153/04, *Records of Site Condition – Part XV.1 of the Environmental Protection Act*.

Topographic Map: National Topographic Systems (NTS), Natural Resources Canada, (1:50 000), 2013, information current as of 2010, Map 30M/14.

Ontario Base Map (OBM): MNR, 2010, available from EcoLog ERIS.

Quaternary Geology of Ontario, Southern Sheet, Map 2556, Ministry of Northern Development and Mines, 1991.

Bedrock Geology of Ontario, Southern Sheet, Ontario Geological Survey, Map 2544, Ministry of Northern Development and Mines, 1991.

The Physiography of Southern Ontario, Chapman and Putnam, Ontario Research Foundation, 1966.

Ministry of the Environment (MOE), *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, April 15, 2011.

Ministry of Natural Resources (MNR), 2014 “Land Information Ontario (LIO)". Available online at: (http://www.ontario.ca/environment-and-energy/land-information-ontario).

Environmental Reports:

Inspection and Investigation of PCB Storage Container #210 Hydro Ottawa, 100 Maple Grove Road, Ottawa (Kanata), Ontario prepared by Water Earth Science Associates Ltd. Dated June 23, 2003.

Terrapex, *Phase One Environmental Site Assessment, 90 Maple Grove Road, Ottawa, Ontario, Final Report,* dated October 18, 2019.

FIGURES

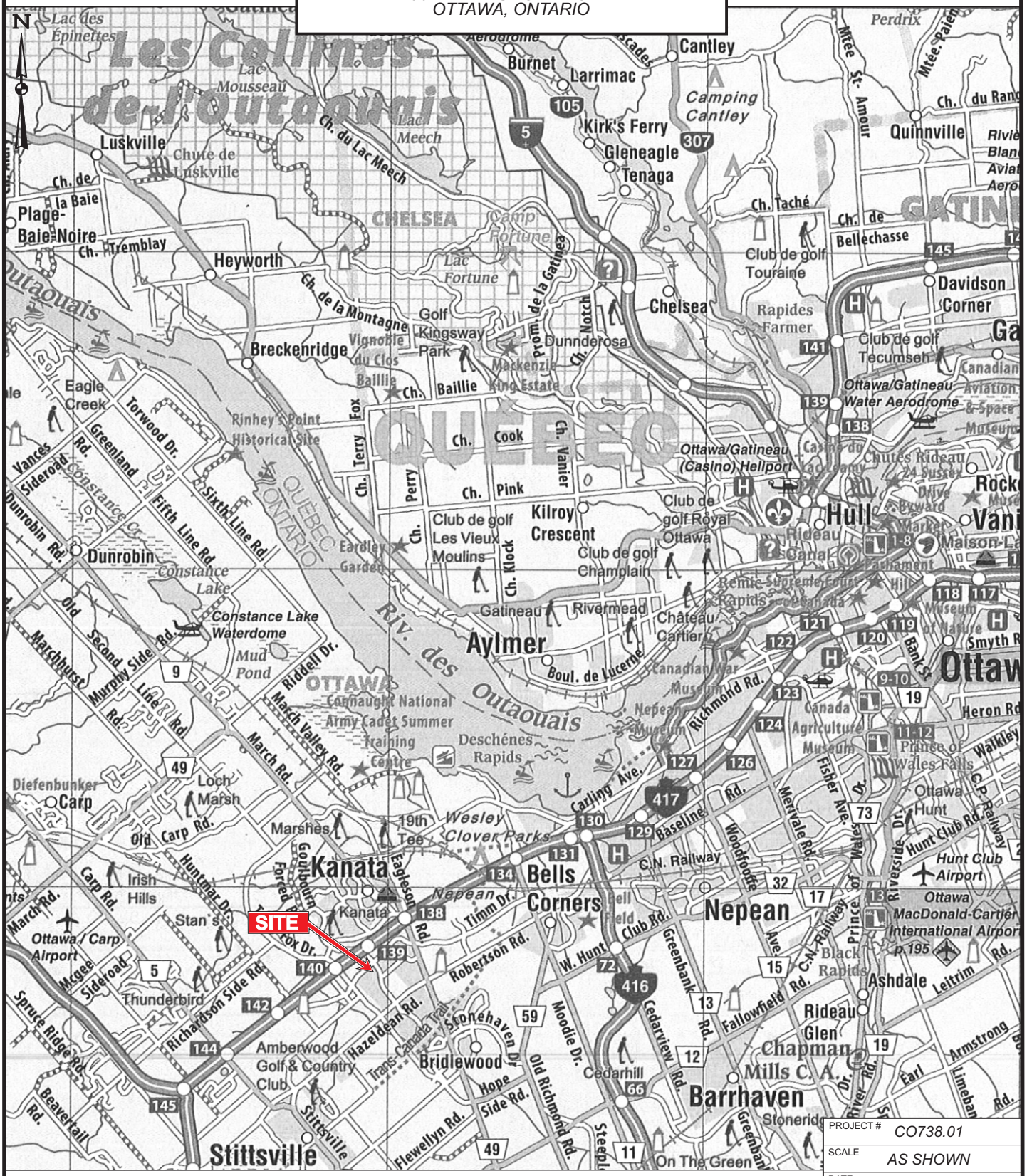
TERRAPEX

SITE LOCATION

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 1

SOURCE: CCCMAPS, ONTARIO BACK ROAD ATLAS, 2016 EDITION, PAGE 88.

TERRAPEX

GENERAL SITE LAYOUT

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

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LEGEND

- FIRE HYDRANT
- CATCHBASIN
- MANHOLE
- UNDERGROUND CABLE
- WATER
- UNDERGROUND HYDRO
- UNDERGROUND STORM

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/ SW
CHECKED	GS/ KB
DRAWING #	FIGURE 2

TERRAPEX

PHASE ONE CONCEPTUAL SITE MODEL - STUDY AREA

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

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EARLY LEARNING & CHILD CARE

0 100m 200m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS
DRAWING #	FIGURE 3

TERRAPEX

PHASE ONE CONCEPTUAL SITE MODEL - PCAs

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

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LEGEND

- POTENTIALLY CONTAMINATING ACTIVITIES (PCA)

NOTE: PCA LOCATIONS SHOWN ARE FOR ILLUSTRATION PURPOSES, THESE ARE APPROXIMATE LOCATIONS AND DO NOT REPRESENT AREA OF STORAGE / OPERATIONS.

SOURCE: CITY OF OTTAWA, geoOTTAWA, 2017 IMAGERY.

0 100m 200m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS
DRAWING #	FIGURE 4

TERRAPEX

PHASE ONE CONCEPTUAL SITE MODEL - APECs

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

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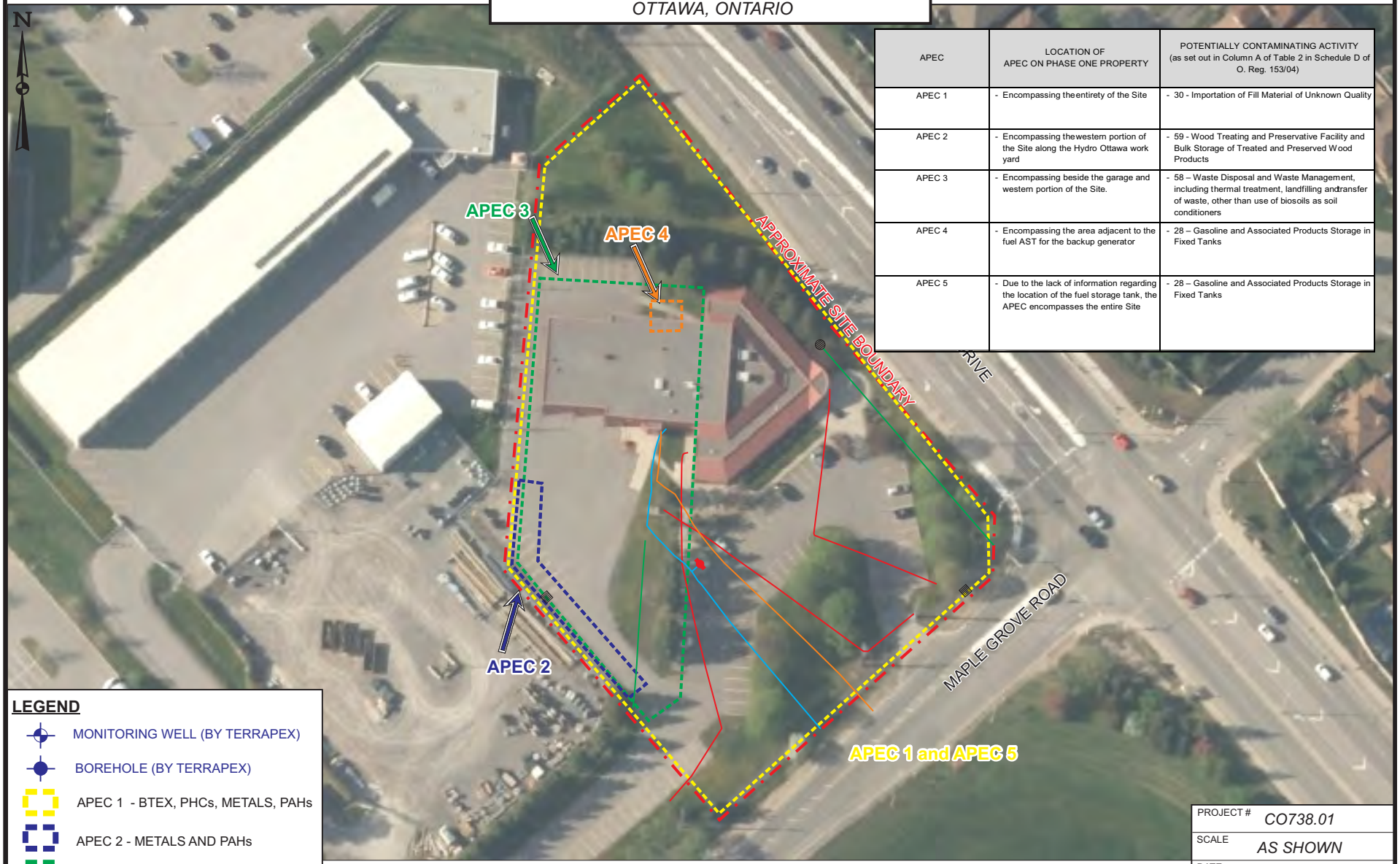
EARLY LEARNING & CHILD CARE



APEC	LOCATION OF APEC ON PHASE ONE PROPERTY	POTENTIALLY CONTAMINATING ACTIVITY (as set out in Column A of Table 2 in Schedule D of O. Reg. 153/04)
APEC 1	- Encompassing the entirety of the Site	- 30 - Importation of Fill Material of Unknown Quality
APEC 2	- Encompassing the western portion of the Site along the Hydro Ottawa work yard	- 59 - Wood Treating and Preservative Facility and Bulk Storage of Treated and Preserved Wood Products
APEC 3	- Encompassing beside the garage and western portion of the Site.	- 58 – Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners
APEC 4	- Encompassing the area adjacent to the fuel AST for the backup generator	- 28 – Gasoline and Associated Products Storage in Fixed Tanks
APEC 5	- Due to the lack of information regarding the location of the fuel storage tank, the APEC encompasses the entire Site	- 28 – Gasoline and Associated Products Storage in Fixed Tanks

LEGEND

- MONITORING WELL (BY TERRAPEX)
- BOREHOLE (BY TERRAPEX)
- APEC 1 - BTEX, PHCs, METALS, PAHs
- APEC 2 - METALS AND PAHs
- APEC 3 - PCBs
- APEC 4- BTEX, PHCs
- APEC 5- BTEX, PHCs

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/SW
CHECKED	GS/ KB
DRAWING #	FIGURE 5A

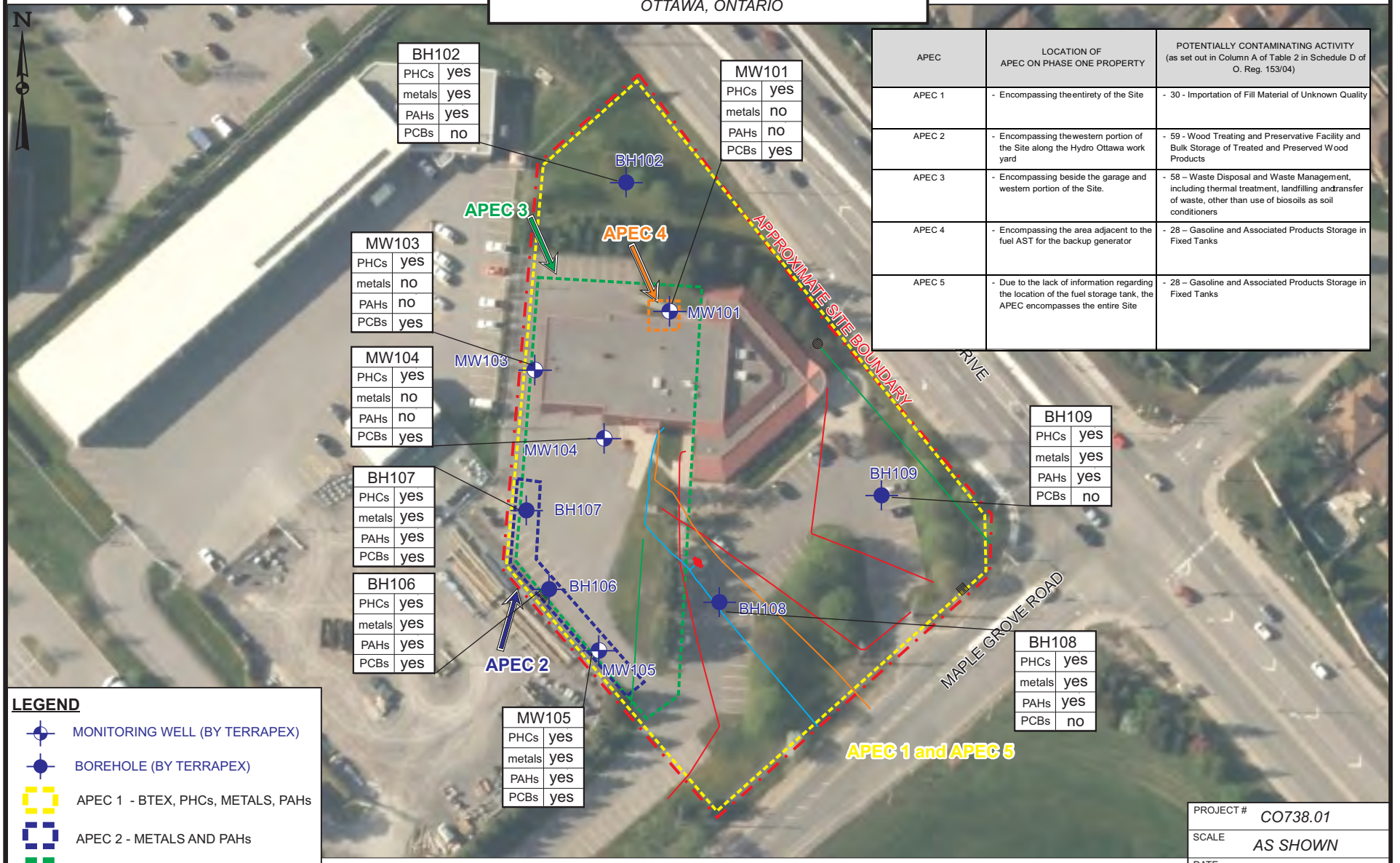
TERRAPEX

PHASE ONE CONCEPTUAL SITE MODEL - APECs & SAMPLING LOCATIONS - SOIL

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



APEC	LOCATION OF APEC ON PHASE ONE PROPERTY	POTENTIALLY CONTAMINATING ACTIVITY (as set out in Column A of Table 2 in Schedule D of O. Reg. 153/04)
APEC 1	- Encompassing the entirety of the Site	- 30 - Importation of Fill Material of Unknown Quality
APEC 2	- Encompassing the western portion of the Site along the Hydro Ottawa work yard	- 59 - Wood Treating and Preservative Facility and Bulk Storage of Treated and Preserved Wood Products
APEC 3	- Encompassing beside the garage and western portion of the Site.	- 58 – Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners
APEC 4	- Encompassing the area adjacent to the fuel AST for the backup generator	- 28 – Gasoline and Associated Products Storage in Fixed Tanks
APEC 5	- Due to the lack of information regarding the location of the fuel storage tank, the APEC encompasses the entire Site	- 28 – Gasoline and Associated Products Storage in Fixed Tanks

LEGEND

- MONITORING WELL (BY TERRAPEX)
- BOREHOLE (BY TERRAPEX)
- APEC 1 - BTEX, PHCs, METALS, PAHs
- APEC 2 - METALS AND PAHs
- APEC 3 - PCBs
- APEC 4- BTEX, PHCs
- APEC 5- BTEX, PHCs

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/SW
CHECKED	GS/ KB
DRAWING #	FIGURE 5B

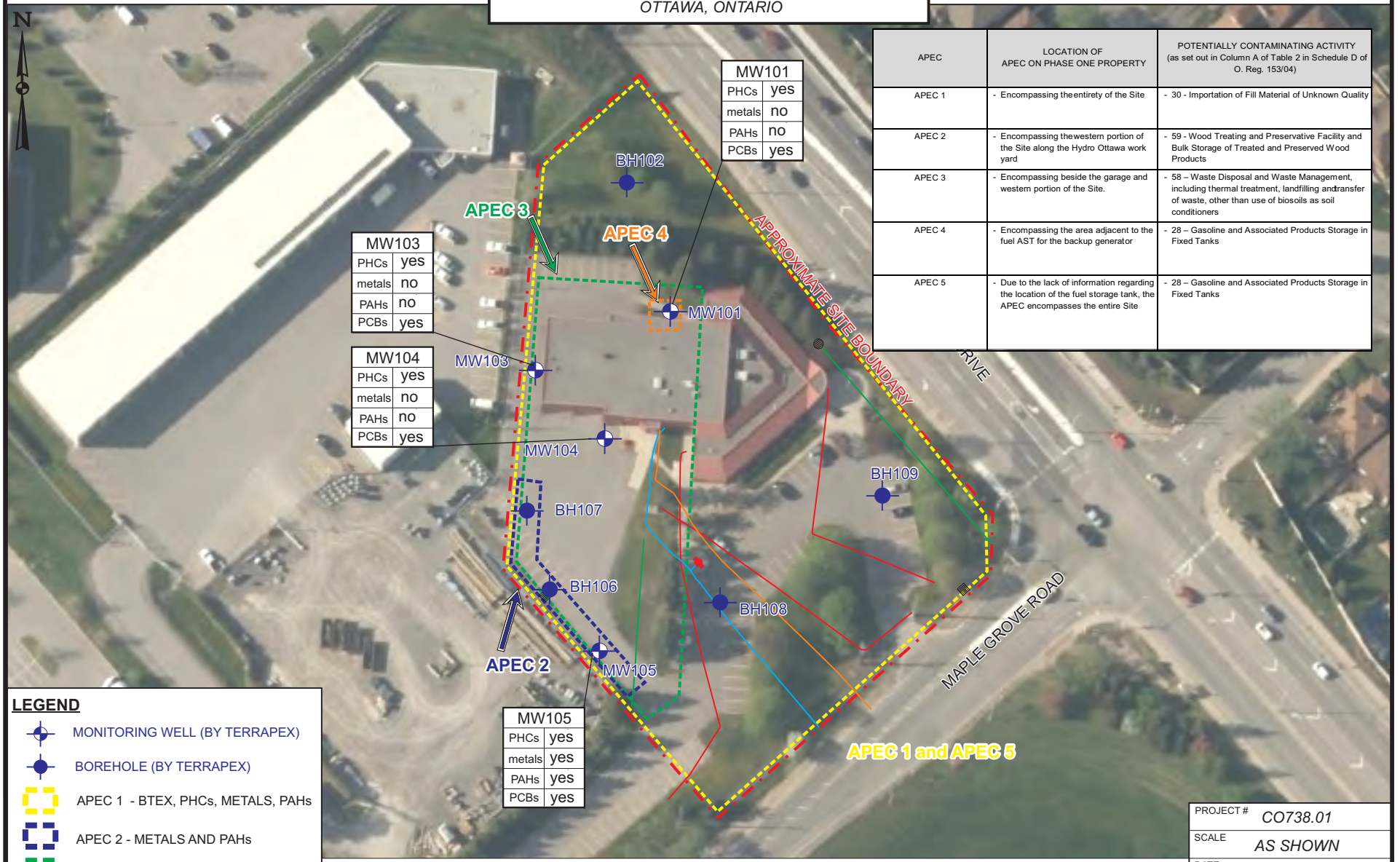
TERRAPEX

PHASE ONE CONCEPTUAL SITE MODEL - APECs & SAMPLING LOCATIONS - GROUNDWATER

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



MW101	
PHCs	yes
metals	no
PAHs	no
PCBs	yes

MW103	
PHCs	yes
metals	no
PAHs	no
PCBs	yes

MW104	
PHCs	yes
metals	no
PAHs	no
PCBs	yes

MW105	
PHCs	yes
metals	yes
PAHs	yes
PCBs	yes

APEC	LOCATION OF APEC ON PHASE ONE PROPERTY	POTENTIALLY CONTAMINATING ACTIVITY (as set out in Column A of Table 2 in Schedule D of O. Reg. 153/04)
APEC 1	- Encompassing the entirety of the Site	- 30 - Importation of Fill Material of Unknown Quality
APEC 2	- Encompassing the western portion of the Site along the Hydro Ottawa work yard	- 59 - Wood Treating and Preservative Facility and Bulk Storage of Treated and Preserved Wood Products
APEC 3	- Encompassing beside the garage and western portion of the Site.	- 58 – Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners
APEC 4	- Encompassing the area adjacent to the fuel AST for the backup generator	- 28 – Gasoline and Associated Products Storage in Fixed Tanks
APEC 5	- Due to the lack of information regarding the location of the fuel storage tank, the APEC encompasses the entire Site	- 28 – Gasoline and Associated Products Storage in Fixed Tanks

LEGEND

- MONITORING WELL (BY TERRAPEX)
- BOREHOLE (BY TERRAPEX)
- APEC 1 - BTEX, PHCs, METALS, PAHs
- APEC 2 - METALS AND PAHs
- APEC 3 - PCBs
- APEC 4- BTEX, PHCs
- APEC 5- BTEX, PHCs

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/SW
CHECKED	GS/ KB
DRAWING #	FIGURE 5C

TERRAPEX

CROSS SECTION PLAN

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- MONITORING WELL
- BOREHOLE
- CROSS SECTION

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	OCTOBER 2019
DRAWN	AB
CHECKED	GS
DRAWING #	FIGURE 6

TERRAPEX

CROSS SECTION A - A'

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

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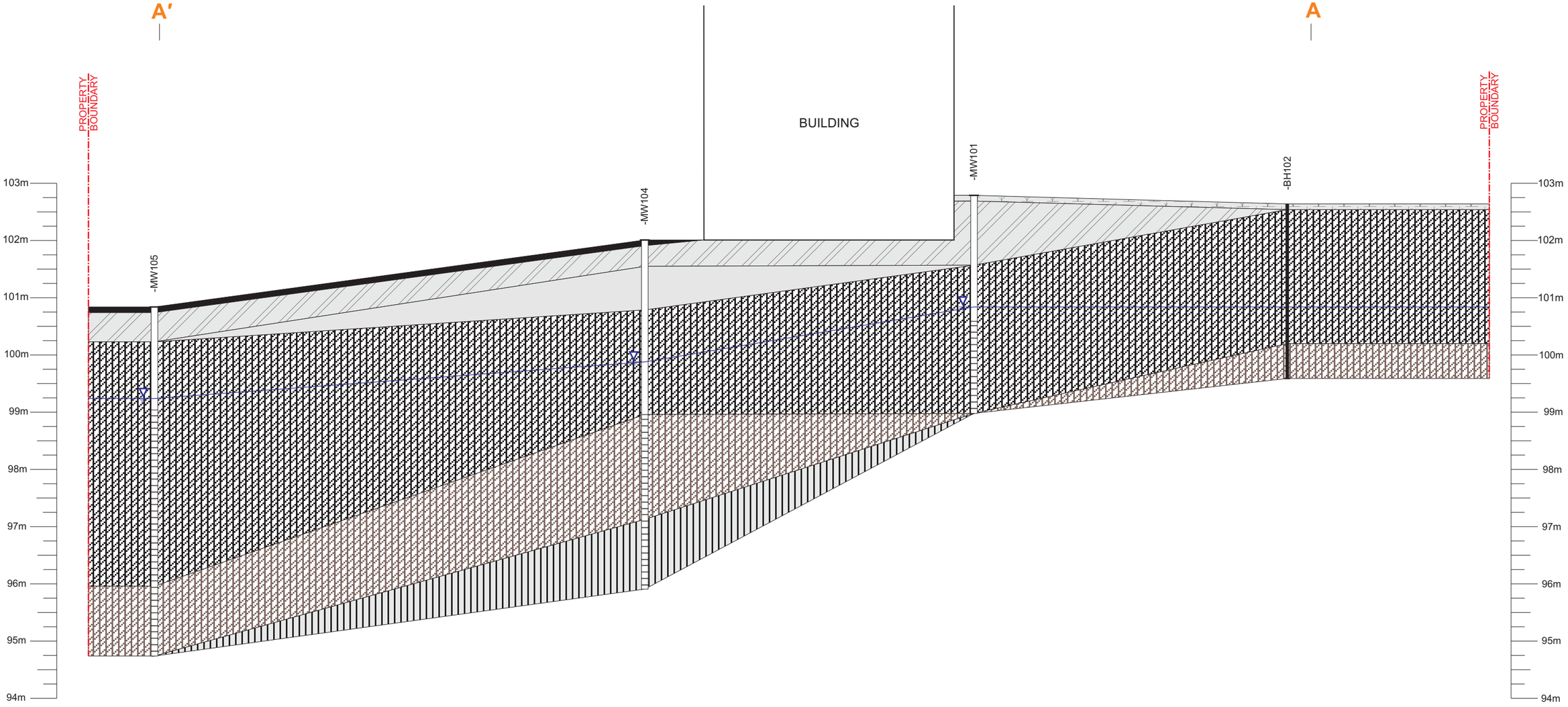
EARLY LEARNING & CHILD CARE



LEGEND

- ASPHALT
- TOPSOIL
- COARSE SAND FILL
- COARSE SAND
- GROUNDWATER LEVEL (AS OF OCTOBER 23, 2019)
- CLAYEY SILT
- SILTY CLAY
- SILTY SAND
- MONITORING WELL
  - SCREENED LEVEL
- BOREHOLE

VERTICAL SCALE: 0 2m 4m

HORIZONTAL SCALE: 0 10m 20m

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	OCTOBER 2019
DRAWN	AB
CHECKED	GS/KB
DRAWING #	FIGURE 7

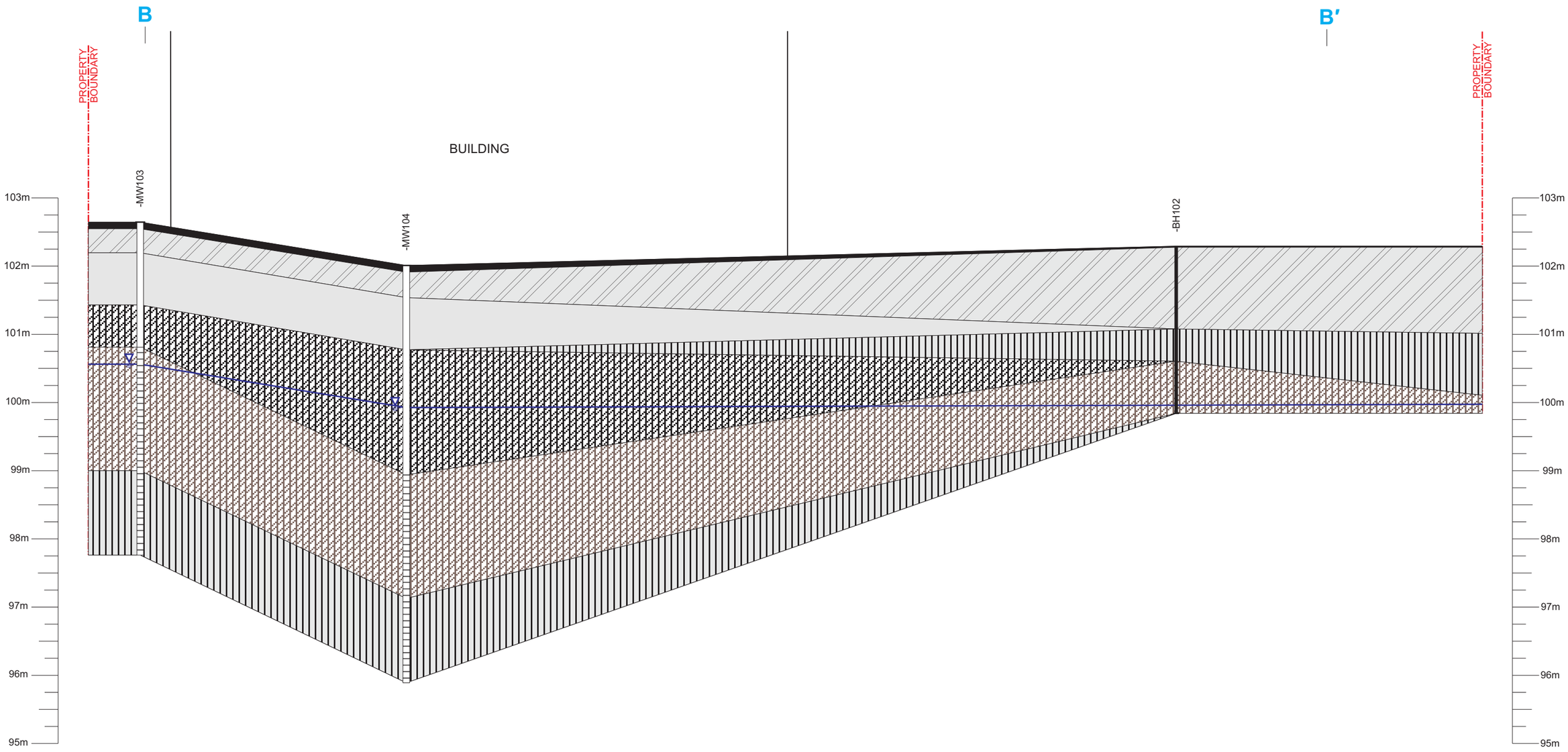
TERRAPEX

CROSS SECTION B - B'

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



LEGEND

- ASPHALT
- COARSE SAND FILL
- COARSE SAND
- GROUNDWATER LEVEL (AS OF OCTOBER 23, 2019)
- CLAYEY SILT
- SILTY CLAY
- SILTY SAND
- MONITORING WELL
  - SCREENED LEVEL
- BOREHOLE

VERTICAL SCALE: 0 — 2m — 4m

HORIZONTAL SCALE: 0 — 10m — 20m

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	OCTOBER 2019
DRAWN	AB
CHECKED	GS/KB
DRAWING #	FIGURE 8

TERRAPEX

INTERPRETED GROUNDWATER CONTOURS (AS OF OCTOBER 23, 2019)

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- 94.66m — GROUNDWATER ELEVATION RELATIVE TO ON-SITE BENCHMARK
- INTERPRETED GROUNDWATER CONTOUR (AS OF OCTOBER 23, 2019)
- GROUNDWATER FLOW DIRECTION
- MONITORING WELL (TERRAPEX, 2019)
- BOREHOLE (TERRAPEX, 2019)

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 9

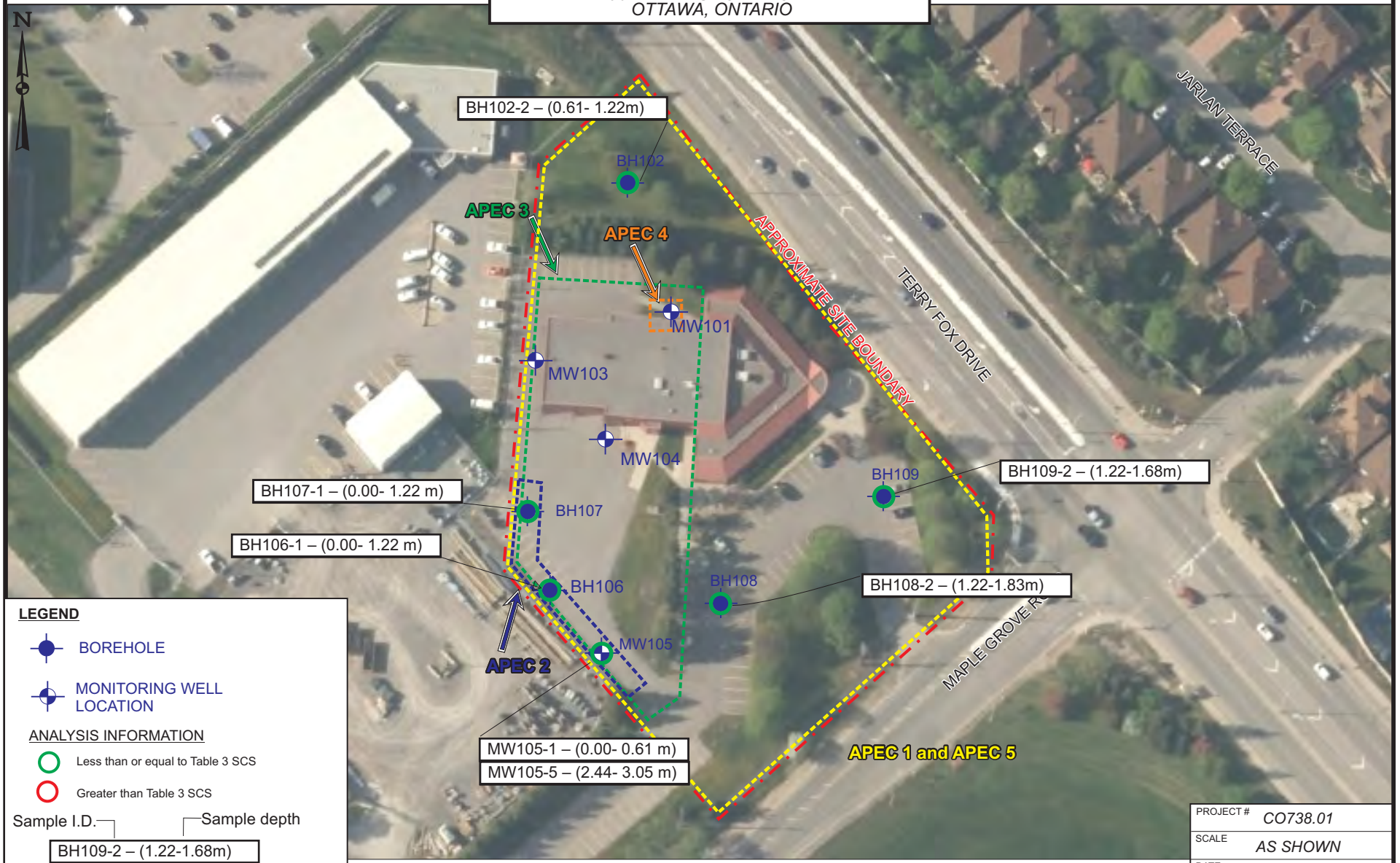
TERRAPEX

SOIL ANALYTICAL RESULTS - METALS

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 10

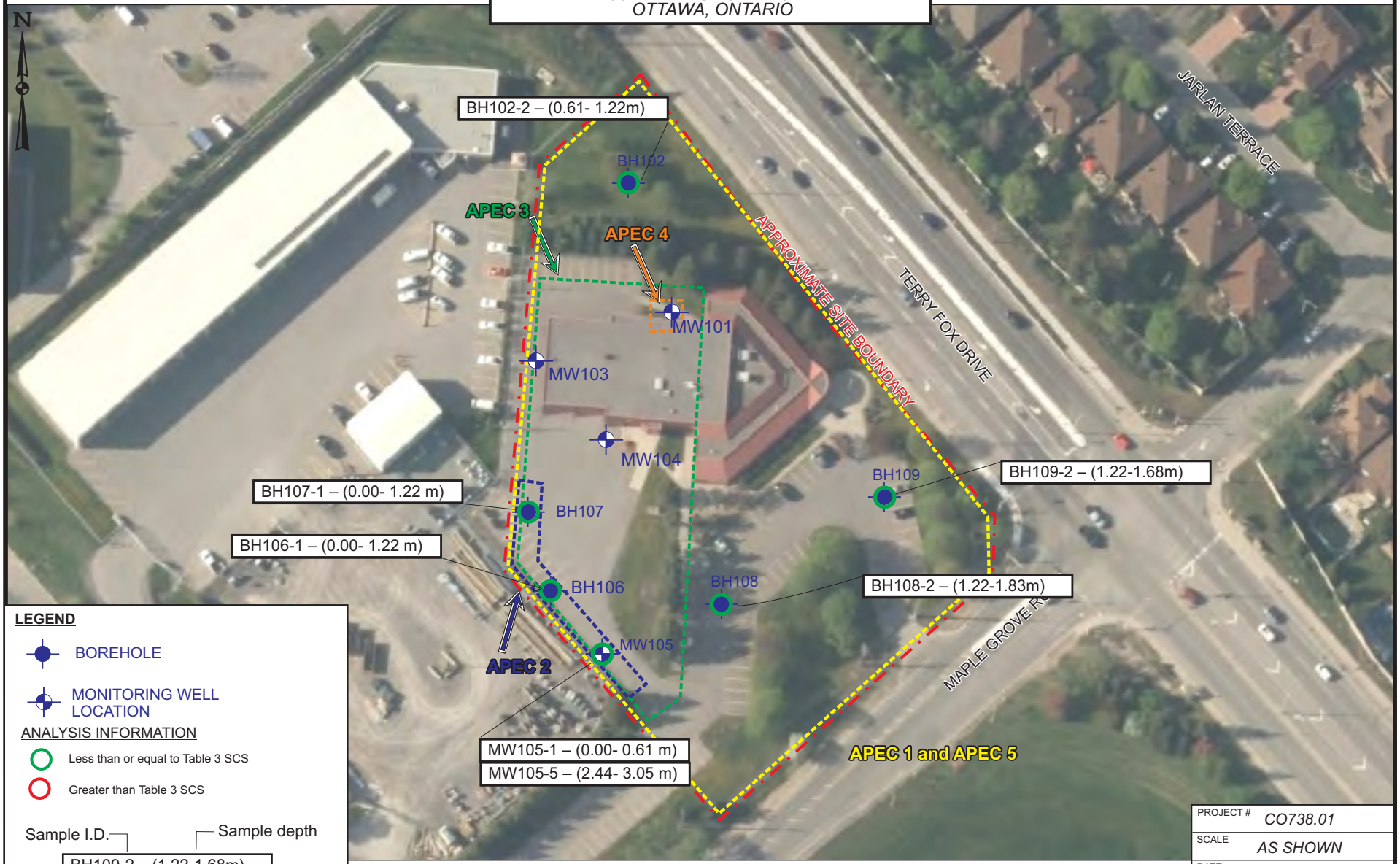
TERRAPEX

SOIL ANALYTICAL RESULTS - HYDRIDE FORMING METALS

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 11

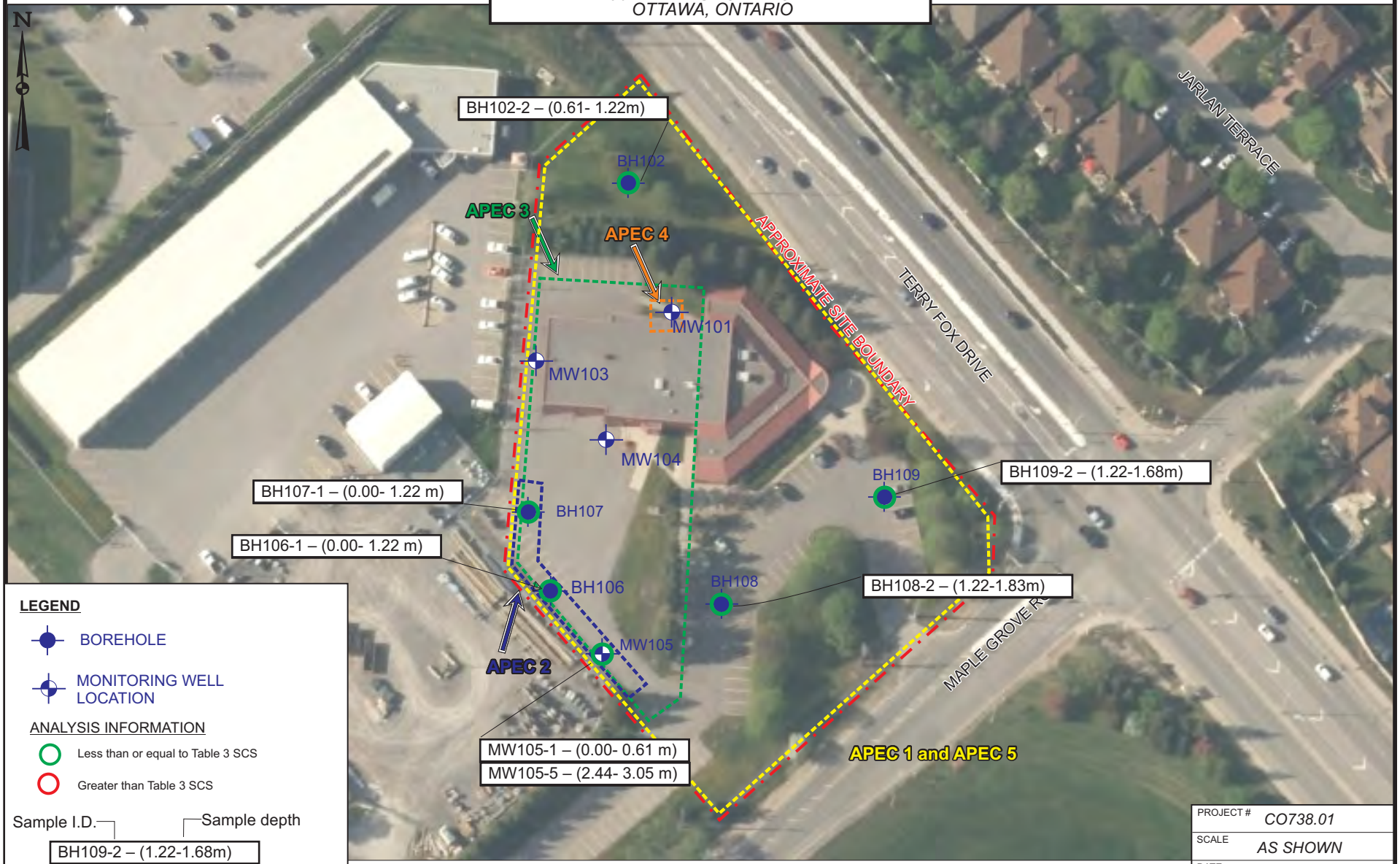
TERRAPEX

SOIL ANALYTICAL RESULTS - BORON (HOT WATER SOLUBLE)

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 12

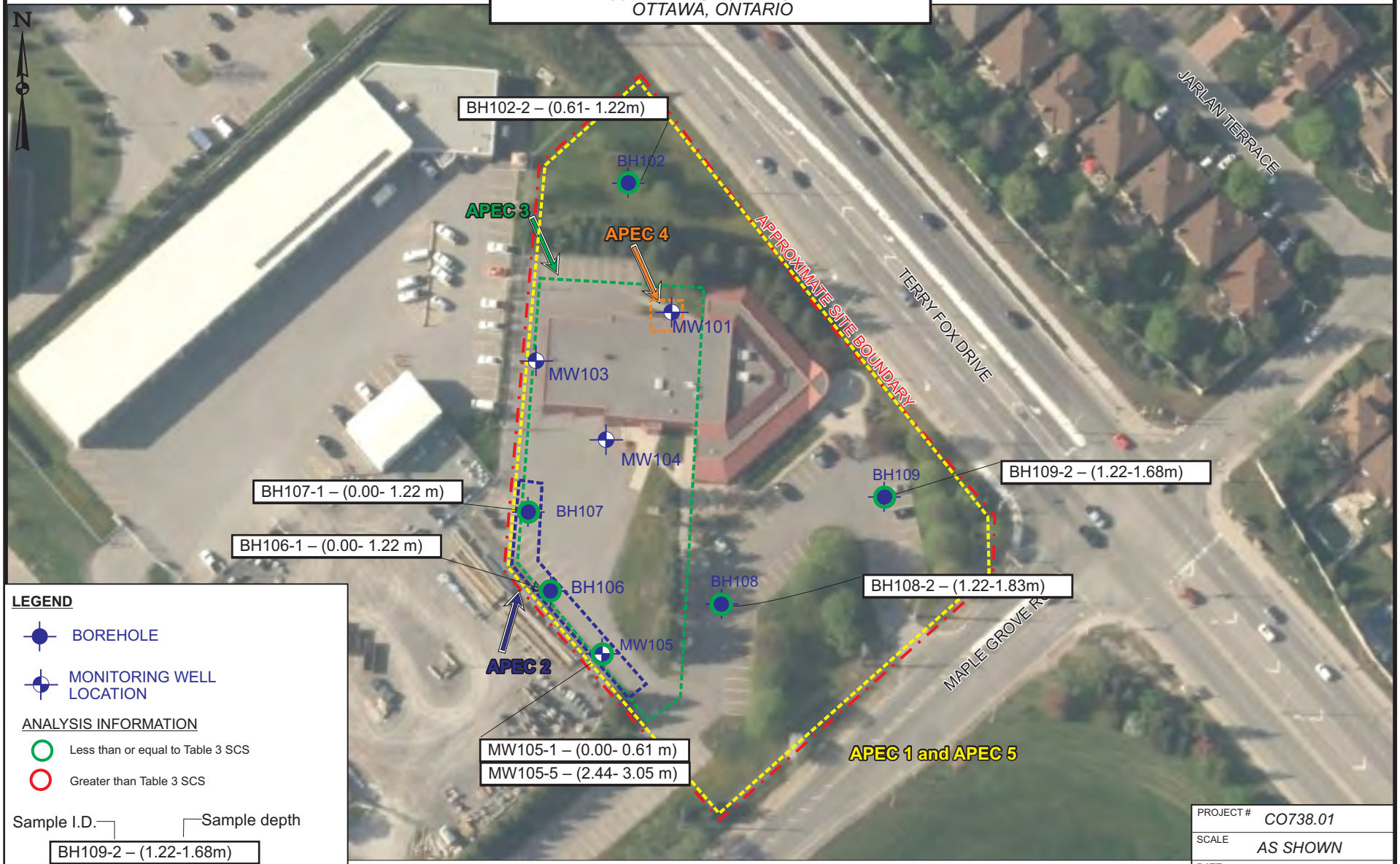
TERRAPEX

SOIL ANALYTICAL RESULTS - HEXAVALENT CHROMIUM

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 13

TERRAPEX

SOIL ANALYTICAL RESULTS - CYANIDE

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 14

TERRAPEX

SOIL ANALYTICAL RESULTS - MERCURY

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 15

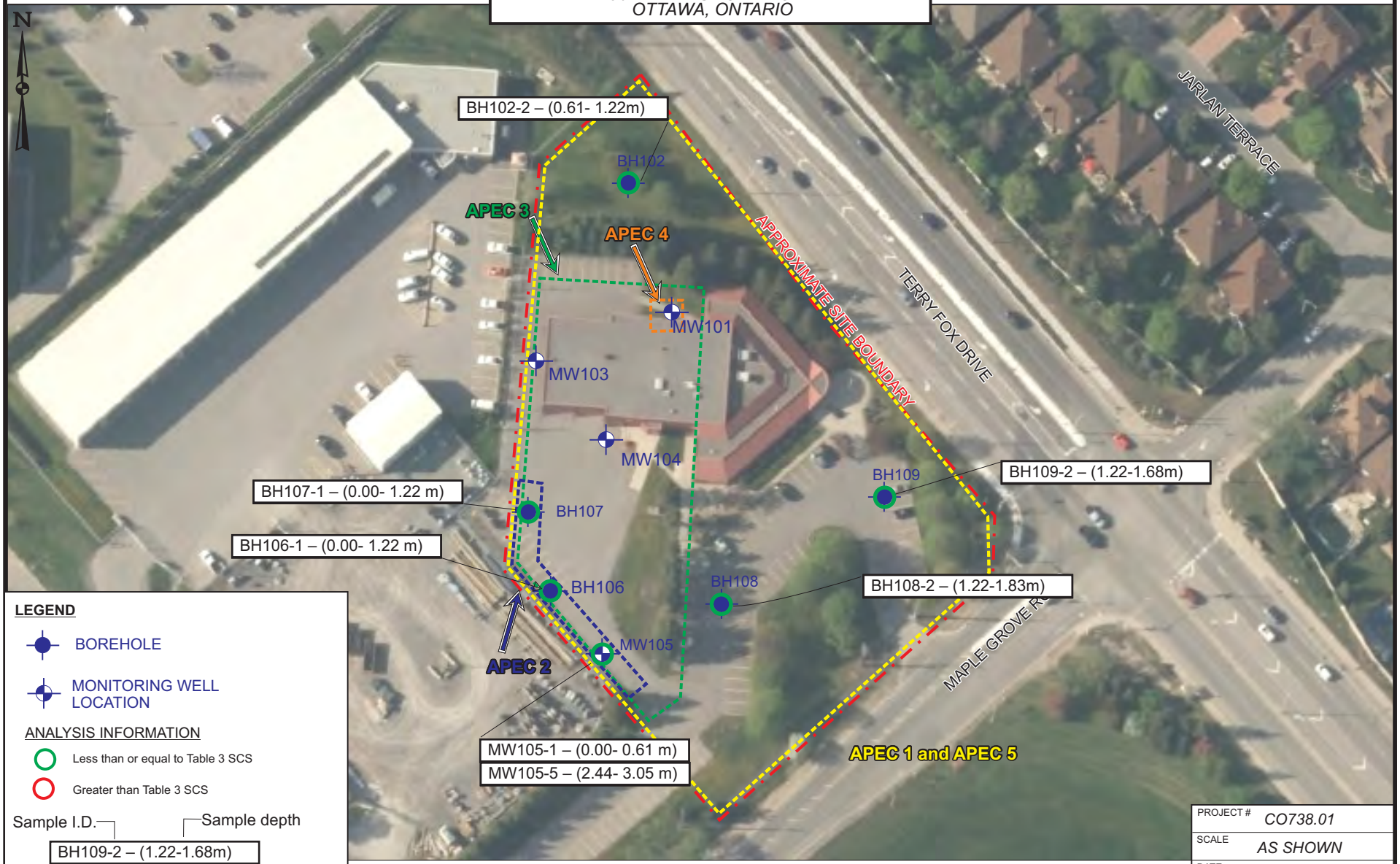
TERRAPEX

SOIL ANALYTICAL RESULTS - pH

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 16

TERRAPEX

SOIL ANALYTICAL RESULTS - ELECTRICAL CONDUCTIVITY

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)		TABLE 3 SCS
PARAMETERS	mS/cm	
EC	0.7	1.0

Concentration

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.
NOTE: BH109-2 IS DEEMED NOT TO EXCEED THE TABLE 3 SCS IN ACCORDANCE WITH SECTION 49.1 OF O.REG. 153/04

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 17

TERRAPEX

SOIL ANALYTICAL RESULTS - SODIUM ADSORPTION RATIO

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)		TABLE 3 SCS
PARAMETERS	mS/cm	
SAR	27	0.7

Concentration

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.
NOTE: BH108-2 AND BH109-2 ARE DEEMED NOT TO EXCEED THE TABLE 3 SCS IN ACCORDANCE WITH SECTION 49.1 OF O.REG. 153/04.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 18

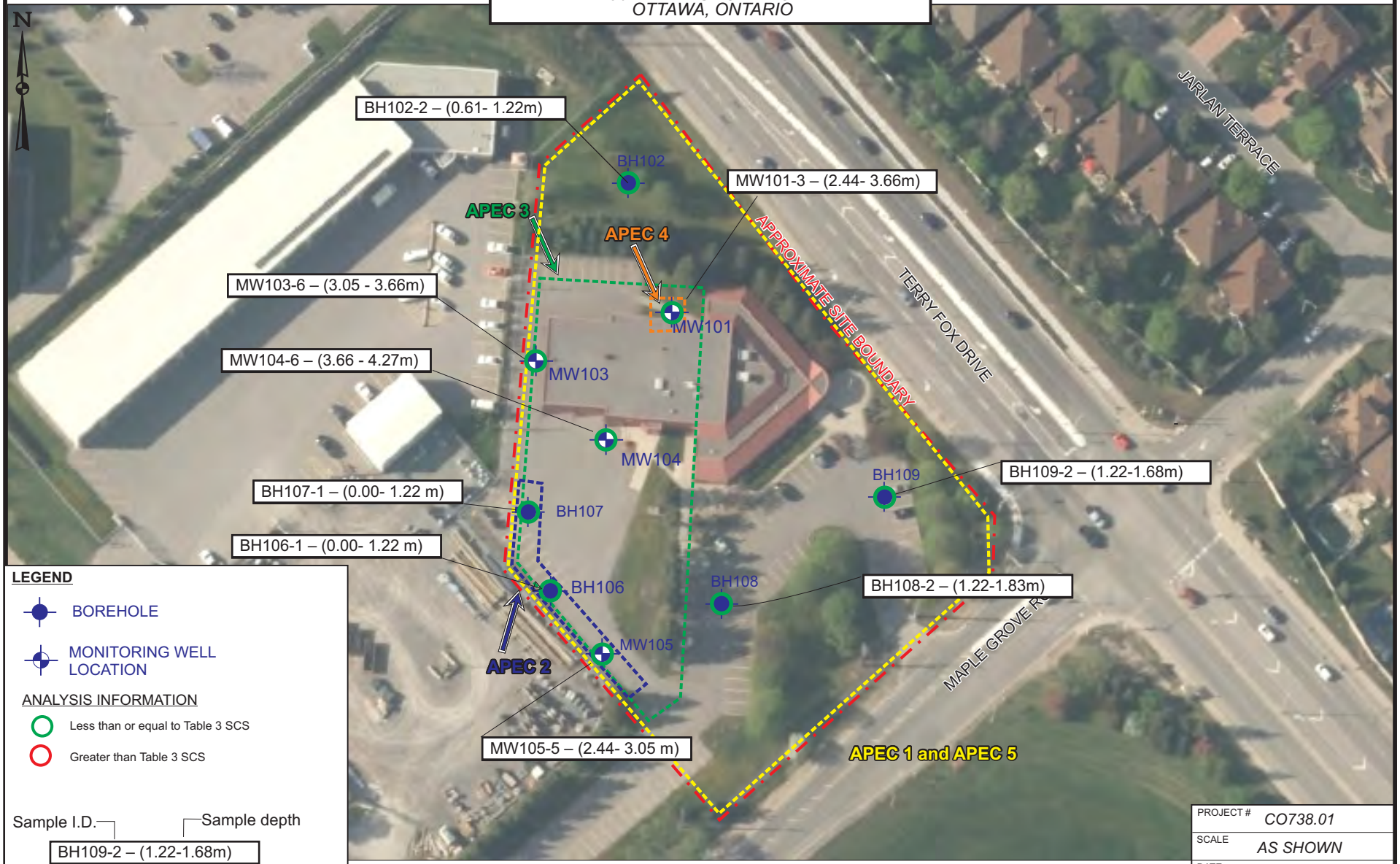
TERRAPEX

SOIL ANALYTICAL RESULTS - BTEX

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 19

TERRAPEX

SOIL ANALYTICAL RESULTS - PHC F1 - F4

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)		TABLE 3 SCS
PARAMETERS	ug/g	
PHC F1	<10	65

Concentration

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 20

TERRAPEX

SOIL ANALYTICAL RESULTS - PAHs

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 21

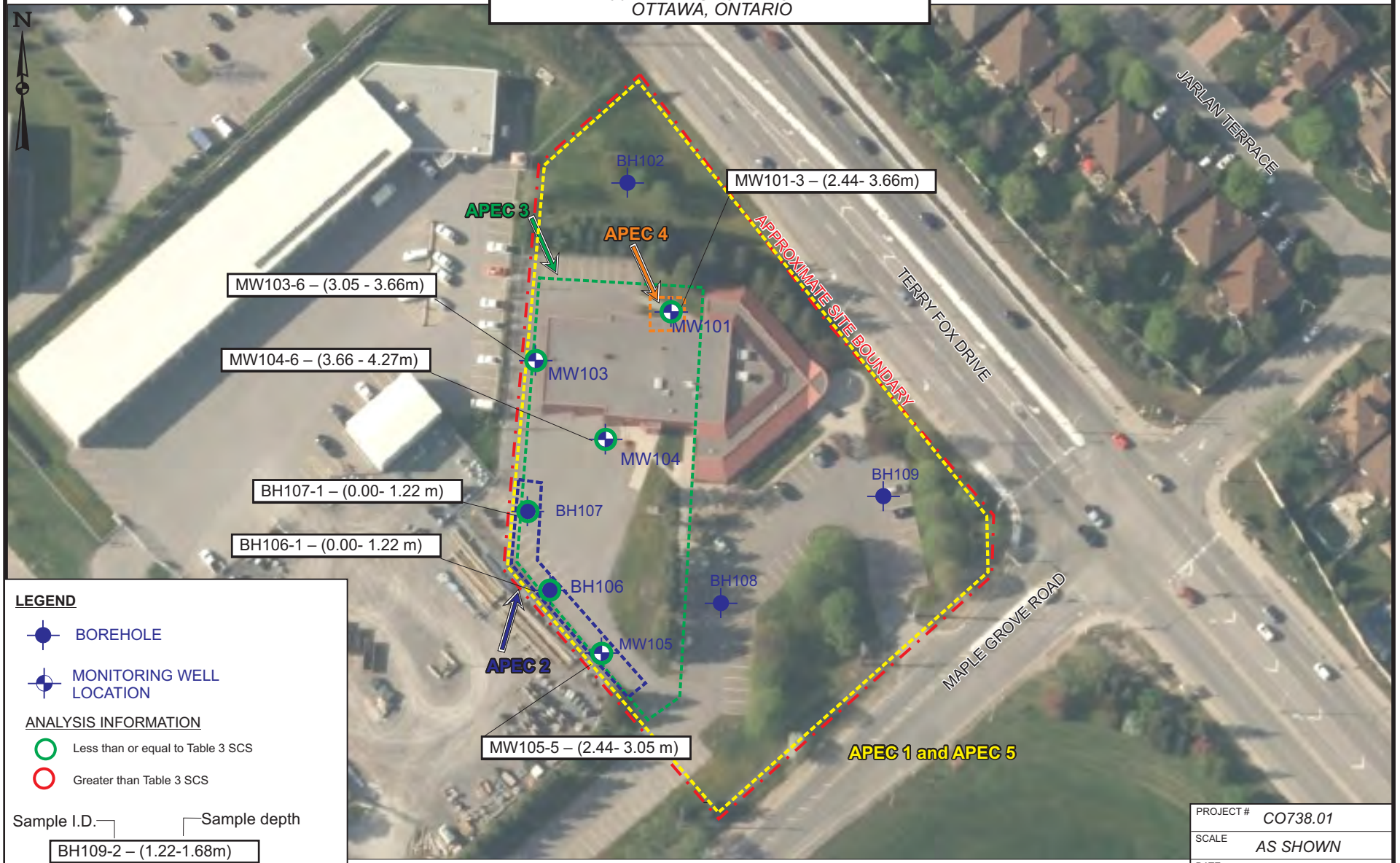
TERRAPEX

SOIL ANALYTICAL RESULTS - PCBs

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Sample depth

BH109-2 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB
CHECKED	GS/ KB
DRAWING #	FIGURE 22

TERRAPEX

GROUNDWATER ANALYTICAL RESULTS - METALS

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Screen Interval

MW101 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/ SW
CHECKED	GS/ KB
DRAWING #	FIGURE 23

TERRAPEX

GROUNDWATER ANALYTICAL RESULTS - HYDRIDE FORMING METALS

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Screen Interval

MW101 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/ SW
CHECKED	GS/ KB
DRAWING #	FIGURE 24

TERRAPEX

GROUNDWATER ANALYTICAL RESULTS - HEXAVALENT CHROMIUM

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Screen Interval

MW101 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/ SW
CHECKED	GS/ KB
DRAWING #	FIGURE 25

TERRAPEX

GROUNDWATER ANALYTICAL RESULTS - CYANIDE

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Screen Interval

MW101 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/ SW
CHECKED	GS/ KB
DRAWING #	FIGURE 26

TERRAPEX

GROUNDWATER ANALYTICAL RESULTS - MERCURY

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. ┐ ┌ Screen Interval

MW101 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/ SW
CHECKED	GS/ KB
DRAWING #	FIGURE 27

TERRAPEX

GROUNDWATER ANALYTICAL RESULTS - SODIUM

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Screen Interval

MW101 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/ SW
CHECKED	GS/ KB
DRAWING #	FIGURE 28

TERRAPEX

GROUNDWATER ANALYTICAL RESULTS - CHLORIDE

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Screen Interval

MW101 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/ SW
CHECKED	GS/ KB
DRAWING #	FIGURE 29

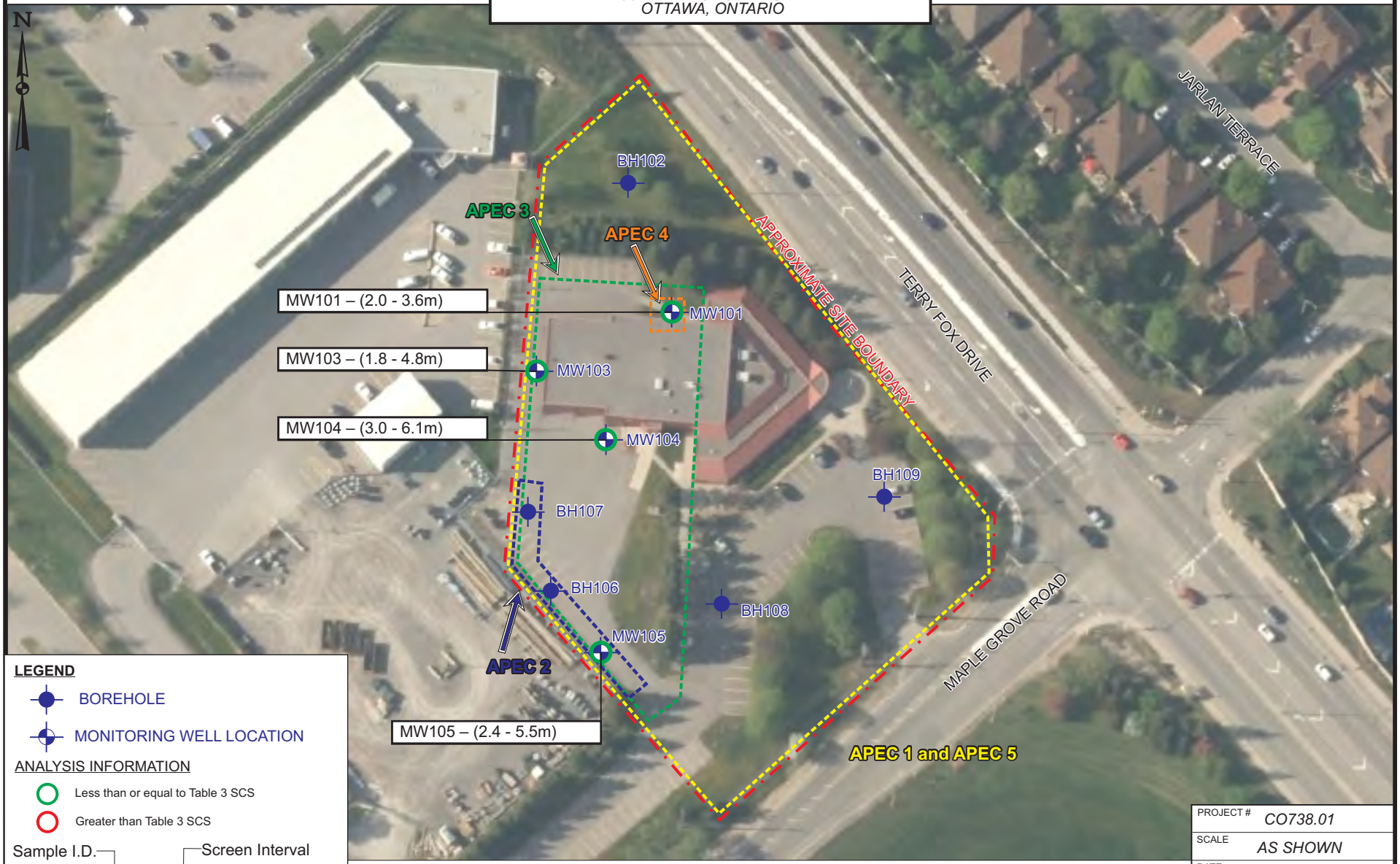
TERRAPEX

GROUNDWATER ANALYTICAL RESULTS - BTEX

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Screen Interval

MW101 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/ SW
CHECKED	GS/ KB
DRAWING #	FIGURE 30

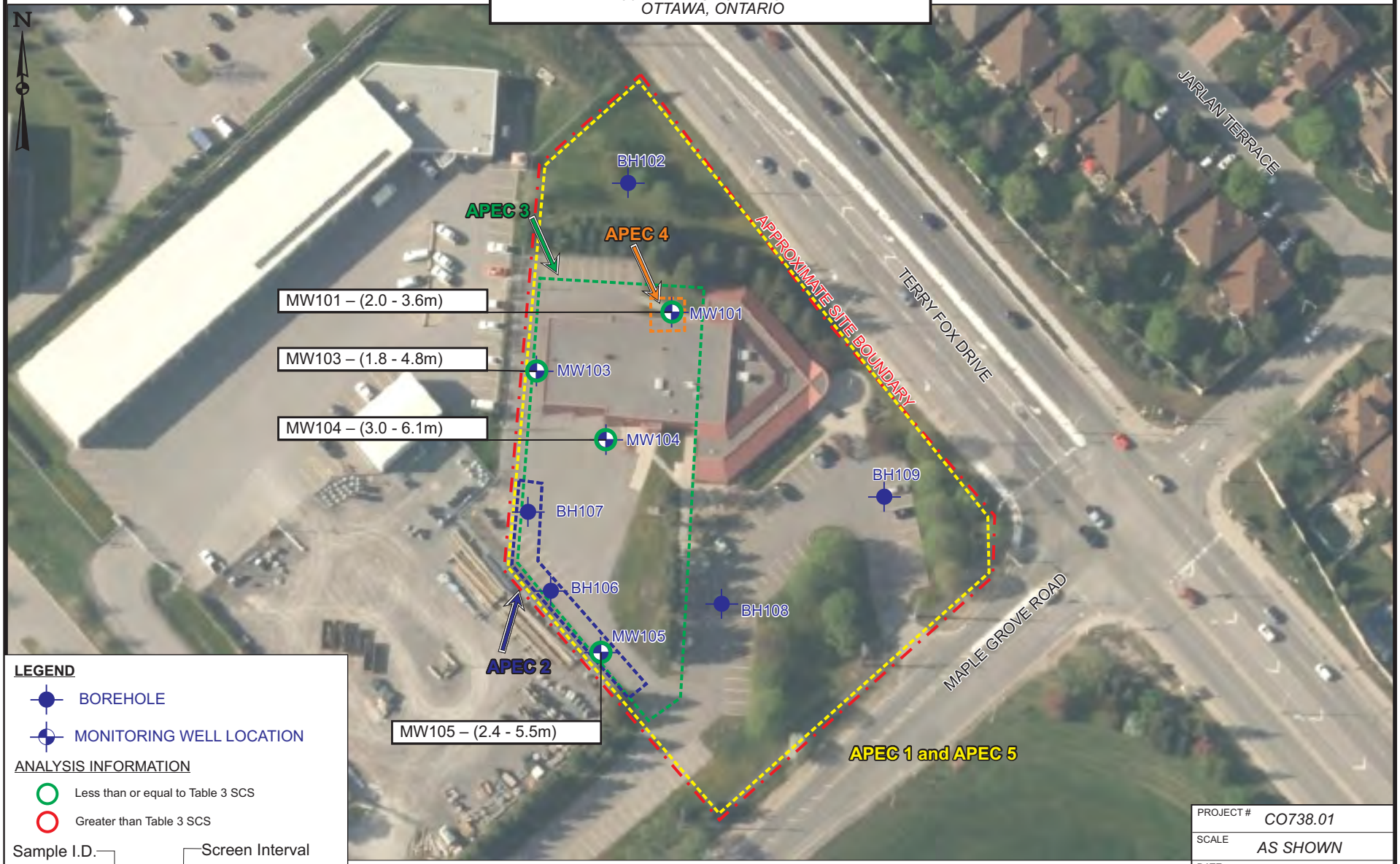
TERRAPEX

GROUNDWATER ANALYTICAL RESULTS - PHC F1-F4

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Screen Interval

MW101 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/ SW
CHECKED	GS/ KB
DRAWING #	FIGURE 31

TERRAPEX

GROUNDWATER ANALYTICAL RESULTS - PAHs

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Screen Interval

MW101 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/ SW
CHECKED	GS/ KB
DRAWING #	FIGURE 32

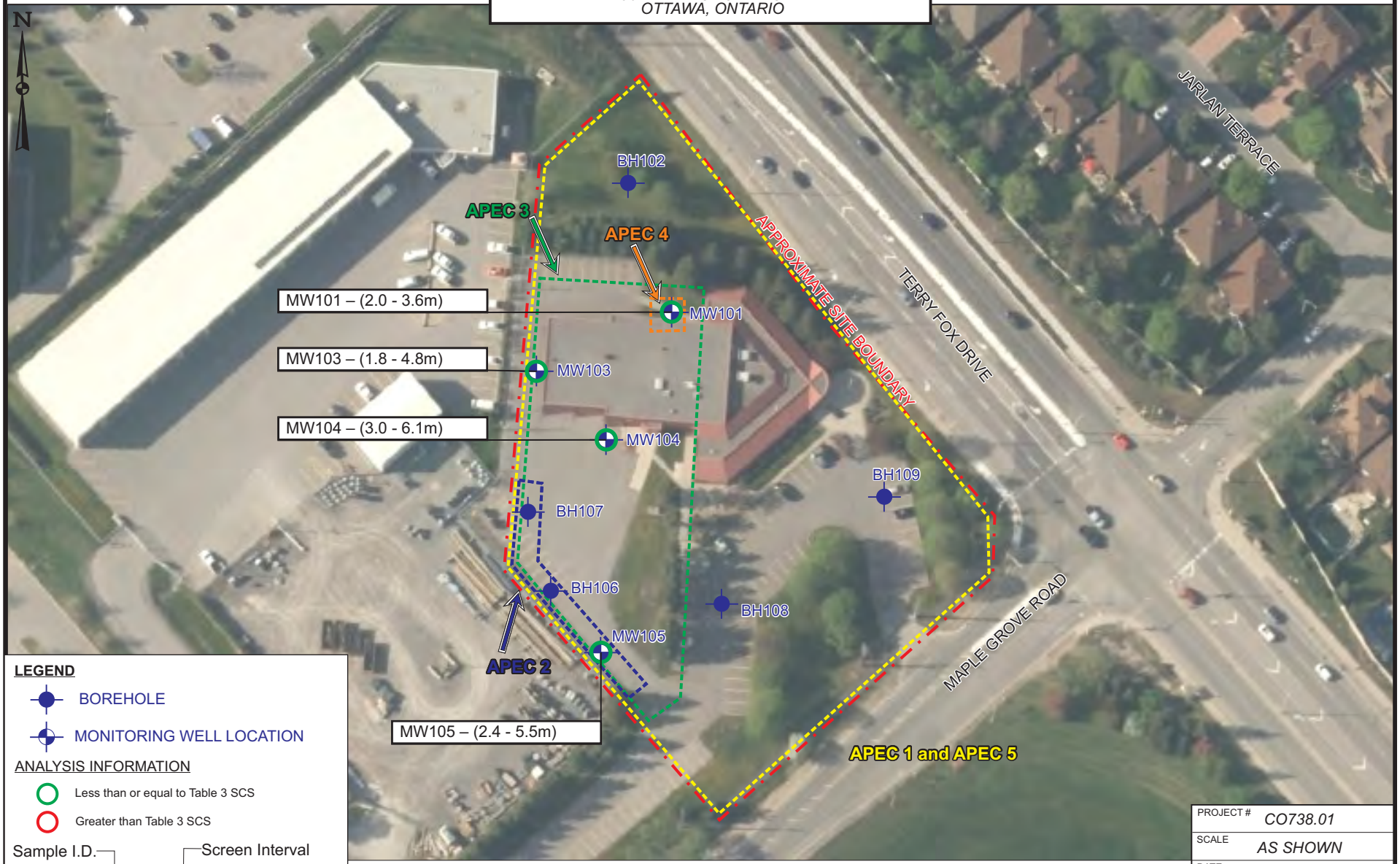
TERRAPEX

GROUNDWATER ANALYTICAL RESULTS - PCBs

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE



LEGEND

- BOREHOLE
- MONITORING WELL LOCATION

ANALYSIS INFORMATION

- Less than or equal to Table 3 SCS
- Greater than Table 3 SCS

Sample I.D. — Screen Interval

MW101 – (1.22-1.68m)

SCS (Site Conditions Standards) refer to Standards from *Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*; residential/ parkland/ institutional property use for medium and fine textured soil

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	CO738.01
SCALE	AS SHOWN
DATE	DECEMBER 2019
DRAWN	AB/ SW
CHECKED	GS/ KB
DRAWING #	FIGURE 33

TABLES

TABLE 1 GROUNDWATER MONITORING DATA
90 Maple Grove Road, Ottawa, Ontario

WELL NUMBER	DATE	GROUND ELEVATION[1] (m)	T.O.P. ELEVATION[2] (m)	SCREEN LENGTH (m)	BOTTOM OF SCREEN[3] (m)	CV[4]	DEPTH TO WATER FROM T.O.P. (m)	DEPTH TO WATER FROM GROUND (m)	GROUNDWATER ELEVATION[5] (m)	LNAPL THICKNESS[6] (m)
MW101	23-Oct-19	102.79	102.66	1.53	96.69	<10 ppm	1.82	1.95	100.84	None
MW103	23-Oct-19	102.06	101.93	3.05	96.88	<10 ppm	2.00	2.13	99.93	None
MW104	23-Oct-19	102.01	101.88	3.05	96.83	<10 ppm	2.03	2.16	99.85	None
MW105	23-Oct-19	100.84	100.68	3.05	94.74	<10 ppm	1.44	1.60	99.24	None

[1] Elevation of ground surface at well location, relative to site benchmark
[2] Elevation of highest point of well pipe ("top of pipe"), relative to site benchmark
[3] Elevation of bottom of well screened interval, relative to site benchmark
[4] Combustible vapour concentration in well headspace in parts per million by volume (ppm) or percent of lower explosive limit (%LEL)
[5] Static water level elevation, relatve to site benchmark
[6] Measured thickness of light, non-aqueous phase liquid, if any

TABLE 2 SOIL ANALYTICAL RESULTS - METALS & INORGANICS
90 Maple Grove Road, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 R / P / I fine / medium	BH102-2	MW105-1	MW105-5
Sample Depth	m bg	-	0.00 - 0.61	0.00 - 0.61	2.44- 3.05
CSV Reading	-	-	<10 ppm	<10 ppm	<10 ppm
Sampling Date	-	-	Oct-16-2019	Oct-16-2019	Oct-16-2019
Analysis Date	-	-	-	-	-
Certificate of Analysis No.	-	-	B9T4207	B9T4207	B9T4207
Antimony	µg/g	7.5	< 0.20	< 0.20	< 0.20
Arsenic	µg/g	18	1.1	< 1.0	1.2
Barium	µg/g	390	260	56	98
Beryllium	µg/g	5	0.83	0.27	0.36
Boron (Hot Water Soluble) [2]	µg/g	1.5	0.058	0.063	0.063
Boron (Total) [2]	µg/g	120	5.2	< 5.0	< 5.0
Cadmium	µg/g	1.2	0.10	< 0.10	< 0.10
Chromium	µg/g	160	59	21	25
Hexavalent Chromium	µg/g	10	< 0.2	< 0.2	< 0.2
Cobalt	µg/g	22	17	4.8	7.1
Copper	µg/g	180	32	5.8	14
Cyanide (CN-)	µg/g	0.051	<0.01	<0.01	<0.01
Lead	µg/g	120	7.2	2.9	3.6
Mercury	µg/g	1.8	< 0.050	< 0.050	< 0.050
Molybdenum	µg/g	6.9	< 0.50	< 0.50	< 0.50
Nickel	µg/g	130	33	10	14
Selenium	µg/g	2.4	< 0.50	< 0.50	< 0.50
Silver	µg/g	25	< 0.20	< 0.20	< 0.20
Thallium	µg/g	1	0.32	0.10	0.12
Uranium	µg/g	23	0.64	0.44	1.6
Vanadium	µg/g	86	80	30	39
Zinc	µg/g	340	93	28	38
pH	-	-	6.96	7.51	7.69
Electrical Conductivity	mS/cm	0.7	0.047	0.19	0.31
Sodium Adsorption Ratio	-	5	0.52	1.3	2.9

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; Residential / Parkland / Institutional land use, medium and fine textured soil

[2] subsurface soils, the Total Boron standard applies

ns No standard
m bg Meters below grade
CSV Reading Combustible soil vapour reading (ppm or % LEL)
ppm Parts per million (by volume)
% LEL Percent of the lower explosive limit
BOLD Exceeds standard
RPD Relative Percent Difference

TABLE 2 SOIL ANALYTICAL RESULTS - METALS & INORGANICS
90 Maple Grove Road, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 R / P / I fine / medium	BH106-1	BH107-1	BH108-2
Sample Depth	m bg	-	0.00 - 1.22	0.00 - 1.22	1.22 - 1.83
CSV Reading	-	-	<10 ppm	<10 ppm	<10 ppm
Sampling Date	-	-	Oct-16-2019	Oct-16-2019	Oct-16-2019
Analysis Date	-	-	-	-	-
Certificate of Analysis No.	-	-	B9T4207	B9T4207	B9T4207
Antimony	µg/g	7.5	< 0.20	< 0.20	< 0.20
Arsenic	µg/g	18	< 1.0	< 1.0	1.4
Barium	µg/g	390	46	120	49
Beryllium	µg/g	5	0.21	< 0.20	0.23
Boron (Hot Water Soluble) [2]	µg/g	1.5	< 0.050	0.16	0.089
Boron (Total) [2]	µg/g	120	< 5.0	< 5.0	< 5.0
Cadmium	µg/g	1.2	< 0.10	< 0.10	< 0.10
Chromium	µg/g	160	14	5.1	18
Hexavalent Chromium	µg/g	10	< 0.2	< 0.2	< 0.2
Cobalt	µg/g	22	3.8	1.6	4.0
Copper	µg/g	180	8.6	3.1	11
Cyanide (CN-)	µg/g	0.051	<0.01	<0.01	<0.01
Lead	µg/g	120	3.0	7.0	2.5
Mercury	µg/g	1.8	< 0.050	< 0.050	< 0.050
Molybdenum	µg/g	6.9	< 0.50	< 0.50	0.78
Nickel	µg/g	130	8.4	4.4	9.4
Selenium	µg/g	2.4	< 0.50	< 0.50	< 0.50
Silver	µg/g	25	< 0.20	< 0.20	< 0.20
Thallium	µg/g	1	0.14	0.27	0.078
Uranium	µg/g	23	0.37	0.33	0.39
Vanadium	µg/g	86	26	7.3	28
Zinc	µg/g	340	19	6.6	18
pH	-	-	7.82	7.87	7.80
Electrical Conductivity	mS/cm	0.7	0.12	0.21	0.38
Sodium Adsorption Ratio	-	5	1.4	1.1	**7.9**

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; Residential / Parkland / Institutional land use, medium and fine textured soil

[2] subsurface soils, the Total Boron standard applies

ns No standard
m bg Meters below grade
CSV Reading Combustible soil vapour reading (ppm or % LEL)
ppm Parts per million (by volume)
% LEL Percent of the lower explosive limit
BOLD Exceeds standard
RPD Relative Percent Difference

TABLE 2 SOIL ANALYTICAL RESULTS - METALS & INORGANICS
90 Maple Grove Road, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 R / P / I fine / medium	BH109-2	BH109-12 duplicate of BH109-2	RPD
Sample Depth	m bg	-	1.22 - 1.68		-
CSV Reading	-	-	<10 ppm		-
Sampling Date	-	-	Oct-16-2019		-
Analysis Date	-	-	-	-	-
Certificate of Analysis No.	-	-	B9T4207	B9T4207	
Antimony	µg/g	7.5	< 0.20	< 0.20	-
Arsenic	µg/g	18	1.9	1.5	-
Barium	µg/g	390	130	78	50.0%
Beryllium	µg/g	5	0.44	0.31	-
Boron (Hot Water Soluble) [2]	µg/g	1.5	0.089	0.050	-
Boron (Total) [2]	µg/g	120	< 5.0	< 5.0	-
Cadmium	µg/g	1.2	< 0.10	< 0.10	-
Chromium	µg/g	160	31	20	43.1%
Hexavalent Chromium	µg/g	10	< 0.2	< 0.2	-
Cobalt	µg/g	22	8.7	6.0	36.7%
Copper	µg/g	180	19	14	30.3%
Cyanide (CN-)	µg/g	0.051	<0.01	<0.01	-
Lead	µg/g	120	4.6	3.4	-
Mercury	µg/g	1.8	< 0.050	< 0.050	-
Molybdenum	µg/g	6.9	0.60	< 0.50	-
Nickel	µg/g	130	19	13	37.5%
Selenium	µg/g	2.4	< 0.50	< 0.50	-
Silver	µg/g	25	< 0.20	< 0.20	-
Thallium	µg/g	1	0.14	0.095	38.3%
Uranium	µg/g	23	0.51	0.43	17.0%
Vanadium	µg/g	86	47	35	29.3%
Zinc	µg/g	340	44	30	37.8%
pH	-	-	7.90	7.92	-
Electrical Conductivity	mS/cm	0.7	**1.0**	**0.95**	5.1%
Sodium Adsorption Ratio	-	5	**27**	**22**	20.4%

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; Residential / Parkland / Institutional land use, medium and fine textured soil

[2] subsurface soils, the Total Boron standard applies

ns No standard
m bg Meters below grade
CSV Reading Combustible soil vapour reading (ppm or % LEL)
ppm Parts per million (by volume)
% LEL Percent of the lower explosive limit
BOLD Exceeds standard
RPD Relative Percent Difference

TABLE 3 SOIL ANALYTICAL RESULTS - BTEX & PHCS
90 Maple Grove, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 R / P / I fine / medium	MW101-3	BH102-2	MW103-6
Sample Depth	m bg	-	2.44 - 3.66	0.61 - 1.22	3.05 - 3.66
CSV Reading	-	-	<10 ppm	<10 ppm	<10 ppm
Sampling Date	-	-	Oct-16-2019	Oct-16-2019	Oct-16-2019
Analysis Date	-	-	Oct-24/25-2019	Oct-24/25-2019	Oct-24/25-2019
Certificate of Analysis No.	-	-	B9T4207	B9T4207	B9T4207
Benzene	µg/g	0.17	< 0.020	< 0.020	< 0.020
Toluene	µg/g	6	< 0.020	< 0.020	< 0.020
Ethylbenzene	µg/g	15	< 0.020	< 0.020	< 0.020
Xylenes (total)	µg/g	25	< 0.040	< 0.040	< 0.040
Petroleum Hydrocarbons, F1	µg/g	65	< 10	< 10	< 10
Petroleum Hydrocarbons, F2	µg/g	150	< 10	< 10	< 10
Petroleum Hydrocarbons, F3	µg/g	1,300	< 50	< 50	< 50
Petroleum Hydrocarbons, F4	µg/g	5,600	< 50	< 50	< 50

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; Residential / Parkland / Institutional land use, medium and fine textured soil

ns No standard
m bg Meters below grade
CSV Reading Combustible soil vapour reading (ppm or % LEL)
ppm Parts per million (by volume)
% LEL Percent of the lower explosive limit
BOLD Exceeds standard
RPD Relative Percent Difference

[2] Results from gravimetric analysis

TABLE 3 SOIL ANALYTICAL RESULTS - BTEX & PHCS
90 Maple Grove, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 R / P / I fine / medium	MW104-6	MW104-16 duplicate of MW104-6	RPD	MW105-5	BH106-1
Sample Depth	m bg	-	3.66 - 4.27		-	2.44 - 3.05	0.00 - 1.22
CSV Reading	-	-	<10 ppm		-	<10 ppm	<10 ppm
Sampling Date	-	-	Oct-16-2019	Oct-16-2019	-	Oct-16-2019	Oct-16-2019
Analysis Date	-	-	Oct-24/25-2019	Oct-24/25-2019	-	Oct-24/25-2019	Oct-24/25-2019
Certificate of Analysis No.	-	-	B9T4207	B9T4207	-	B9T4207	B9T4207
Benzene	µg/g	0.17	< 0.020	< 0.020	-	< 0.020	< 0.020
Toluene	µg/g	6	< 0.020	< 0.020	-	< 0.020	< 0.020
Ethylbenzene	µg/g	15	< 0.020	< 0.020	-	< 0.020	< 0.020
Xylenes (total)	µg/g	25	< 0.040	< 0.040	-	< 0.040	< 0.040
Petroleum Hydrocarbons, F1	µg/g	65	< 10	< 10	-	< 10	< 10
Petroleum Hydrocarbons, F2	µg/g	150	< 10	< 10	-	< 10	< 10
Petroleum Hydrocarbons, F3	µg/g	1,300	< 50	< 50	-	< 50	< 50
Petroleum Hydrocarbons, F4	µg/g	5,600	< 50	< 50	-	< 50	< 50

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; Residential / Parkland / Institutional land use, medium and fine textured soil

ns No standard
m bg Meters below grade
CSV Reading Combustible soil vapour reading (ppm or % LEL)
ppm Parts per million (by volume)
% LEL Percent of the lower explosive limit
BOLD Exceeds standard
RPD Relative Percent Difference
[2] Results from gravimetric analysis

TABLE 3 SOIL ANALYTICAL RESULTS - BTEX & PHCS
90 Maple Grove, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 R / P / I fine / medium	BH107-1	BH108-2	BH109-2	Field Blank (methanol blank)
Sample Depth	m bg	-	0.00 - 1.22	1.22 - 1.83	1.22 - 1.68	-
CSV Reading	-	-	<10 ppm	<10 ppm	<10 ppm	-
Sampling Date	-	-	Oct-16-2019	Oct-16-2019	Oct-16-2019	Oct-16-2019
Analysis Date	-	-	Oct-24/25-2019	Oct-24/25-2019	Oct-24/25-2019	Oct-24/25-2019
Certificate of Analysis No.	-	-	B9T4207	B9T4207	B9T4207	B9T4207
Benzene	µg/g	0.17	< 0.020	< 0.020	< 0.020	< 0.020
Toluene	µg/g	6	< 0.020	< 0.020	< 0.020	< 0.020
Ethylbenzene	µg/g	15	< 0.020	< 0.020	< 0.020	< 0.020
Xylenes (total)	µg/g	25	< 0.040	< 0.040	< 0.040	< 0.040
Petroleum Hydrocarbons, F1	µg/g	65	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons, F2	µg/g	150	< 10	< 10	< 10	-
Petroleum Hydrocarbons, F3	µg/g	1,300	< 50	< 50	< 50	-
Petroleum Hydrocarbons, F4	µg/g	5,600	140 [2]	< 50	170 [2]	-

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; Residential / Parkland / Institutional land use, medium and fine textured soil

ns No standard
m bg Meters below grade
CSV Reading Combustible soil vapour reading (ppm or % LEL)
ppm Parts per million (by volume)
% LEL Percent of the lower explosive limit
BOLD Exceeds standard
RPD Relative Percent Difference

[2] Results from gravimetric analysis

TABLE 4 SOIL ANALYTICAL RESULTS - PAHs
90 Maple Grove Road, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 R / P / I fine / medium	BH102-2	MW105-1	BH106-1	BH107-1
Sample Depth	m bg	-	0.00 - 0.61	0.00 - 0.61	0.00 - 1.22	0.00 - 1.22
CSV Reading	-	-	<10 ppm	<10 ppm	<10 ppm	<10 ppm
Sampling Date	-	-	Oct-16-2019	Oct-16-2019	Oct-16-2019	Oct-16-2019
Analysis Date	-	-	Oct-24/25-19	Oct-24/25-19	Oct-24/25-19	Oct-24/25-19
Certificate of Analysis No.	-	-	B9T4207	B9T4207	B9T4207	B9T4207
Acenaphthene	µg/g	58	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Acenaphthylene	µg/g	0.17	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Anthracene	µg/g	0.74	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Benz(a)anthracene	µg/g	0.63	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Benzo(a)pyrene	µg/g	0.3	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Benzo(b)fluoranthene	µg/g	0.78	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Benzo(g,h,i)perylene	µg/g	7.8	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Benzo(k)fluoranthene	µg/g	0.78	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Chrysene	µg/g	7.8	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Dibenz(a,h)anthracene	µg/g	0.1	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Fluoranthene	µg/g	0.69	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Fluorene	µg/g	69	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Indeno(1,2,3-cd)pyrene	µg/g	0.48	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Methylnaphthalene, 1-[2]	µg/g	3.4	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Methylnaphthalene, 2-[2]	µg/g	3.4	< 0.0050	< 0.0050	< 0.0050	0.0069
Methylnaphthalene, 1- & 2-[2]	µg/g	3.4	<0.0071	<0.0071	<0.0071	<0.0071
Naphthalene	µg/g	0.75	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Phenanthrene	µg/g	7.8	< 0.0050	< 0.0050	< 0.0050	0.0054
Pyrene	µg/g	78	< 0.0050	< 0.0050	< 0.0050	< 0.0050

[1] Standards from Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act; Residential / Parkland / Institutional land use, medium and fine textured soil

[2] 2-methylnaphthalene standard applicable to 1-methylnaphthalene with the provision that if both are detected, the sum of the two concentrations cannot exceed the standard

ns No standard
m bg Meters below grade
CSV Reading Combustible soil vapour reading (ppm or % LEL)
ppm Parts per million (by volume)
% LEL Percent of the lower explosive limit
BOLD Exceeds standard
RPD Relative Percent Difference

TABLE 4 SOIL ANALYTICAL RESULTS - PAHs
90 Maple Grove Road, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 R / P / I fine / medium	BH108-2	BH109-2	BH109-12 duplicate of BH109-2	RPD
Sample Depth	m bg	-	1.22 - 1.83	1.22 - 1.68		-
CSV Reading	-	-	<10 ppm	<10 ppm		-
Sampling Date	-	-	Oct-16-2019	Oct-16-2019		-
Analysis Date	-	-	Oct-24/25-19	Oct-24/25-19	Oct-24/25-19	-
Certificate of Analysis No.	-	-	B9T4207	B9T4207	B9T4207	-
Acenaphthene	µg/g	58	< 0.0050	< 0.0050	< 0.0050	-
Acenaphthylene	µg/g	0.17	< 0.0050	< 0.0050	< 0.0050	-
Anthracene	µg/g	0.74	< 0.0050	< 0.0050	< 0.0050	-
Benz(a)anthracene	µg/g	0.63	< 0.0050	< 0.0050	< 0.0050	-
Benzo(a)pyrene	µg/g	0.3	< 0.0050	< 0.0050	< 0.0050	-
Benzo(b)fluoranthene	µg/g	0.78	< 0.0050	< 0.0050	< 0.0050	-
Benzo(g,h,i)perylene	µg/g	7.8	< 0.0050	< 0.0050	< 0.0050	-
Benzo(k)fluoranthene	µg/g	0.78	< 0.0050	< 0.0050	< 0.0050	-
Chrysene	µg/g	7.8	< 0.0050	< 0.0050	< 0.0050	-
Dibenz(a,h)anthracene	µg/g	0.1	< 0.0050	< 0.0050	< 0.0050	-
Fluoranthene	µg/g	0.69	< 0.0050	< 0.0050	< 0.0050	-
Fluorene	µg/g	69	< 0.0050	< 0.0050	< 0.0050	-
Indeno(1,2,3-cd)pyrene	µg/g	0.48	< 0.0050	< 0.0050	< 0.0050	-
Methylnaphthalene, 1-[2]	µg/g	3.4	< 0.0050	< 0.0050	< 0.0050	-
Methylnaphthalene, 2-[2]	µg/g	3.4	< 0.0050	< 0.0050	< 0.0050	-
Methylnaphthalene, 1- & 2-[2]	µg/g	3.4	<0.0071	<0.0071	<0.0071	-
Naphthalene	µg/g	0.75	< 0.0050	< 0.0050	< 0.0050	-
Phenanthrene	µg/g	7.8	< 0.0050	< 0.0050	< 0.0050	-
Pyrene	µg/g	78	< 0.0050	< 0.0050	< 0.0050	-

[1] Standards from Table 3 of April 15, 2011 Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act; Residential / Parkland / Institutional land use, medium and fine textured soil

[2] 2-methylnaphthalene standard applicable to 1-methylnaphthalene with the provision that if both are detected, the sum of the two concentrations cannot exceed the standard

ns No standard
m bg Meters below grade
CSV Reading Combustible soil vapour reading (ppm or % LEL)
ppm Parts per million (by volume)
% LEL Percent of the lower explosive limit
BOLD Exceeds standard
RPD Relative Percent Difference

TABLE 5 SOIL ANALYTICAL RESULTS - PCBs
90 Maple Grove, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 R / P / I fine / medium	MW101-3	MW103-6	MW104-6	MW104-16 Duplicate of MW104-6	RPD
Sample Depth	m bg	-	2.44 - 3.66	3.05 - 3.66	3.66 - 4.27		-
CSV Reading	-	-	<10 ppm	<10 ppm	<10 ppm		-
Sampling Date	-	-	Oct-16-2019	Oct-16-2019	Oct-16-2019	Oct-16-2019	-
Analysis Date	-	-	Oct-23-2019	Oct-23-2019	Oct-23-2019	Oct-23-2019	-
Certificate of Analysis No.	-	-					
Aroclor 1242	µg/g	-	<0.010	<0.010	<0.020	<0.020	-
Aroclor 1248	µg/g	-	<0.010	<0.010	<0.020	<0.020	-
Aroclor 1254	µg/g	-	<0.010	<0.010	<0.020	<0.020	-
Aroclor 1260	µg/g	-	<0.010	<0.010	<0.020	<0.020	-
Total PCB	µg/g	0.35	<0.010	<0.010	<0.020	<0.020	-

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; Residential / Parkland / Institutional land use, medium and fine textured soil

ns	No standard
m bg	Meters below grade
CSV Reading	Combustible soil vapour reading (ppm or % LEL)
ppm	Parts per million (by volume)
% LEL	Percent of the lower explosive limit
BOLD	Exceeds standard
RPD	Relative Percent Difference

TABLE 5 SOIL ANALYTICAL RESULTS - PCBs
90 Maple Grove, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 R / P / I fine / medium	MW105-1	BH106-1	BH107-1
Sample Depth	m bg	-	2.44 - 3.05	0.00 - 1.22	0.00 - 1.22
CSV Reading	-	-	<10 ppm	<10 ppm	<10 ppm
Sampling Date	-	-	Oct-16-2019	Oct-16-2019	Oct-16-2019
Analysis Date	-	-	Oct-23-19	Oct-23-19	Oct-23-19
Certificate of Analysis No.	-	-			
Aroclor 1242	µg/g	-	<0.010	<0.010	<0.010
Aroclor 1248	µg/g	-	<0.010	<0.010	<0.010
Aroclor 1254	µg/g	-	<0.010	<0.010	<0.010
Aroclor 1260	µg/g	-	<0.010	<0.010	<0.010
Total PCB	µg/g	0.35	<0.010	<0.010	<0.010

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; Residential / Parkland / Institutional land use, medium and fine textured soil

ns	No standard
m bg	Meters below grade
CSV Reading	Combustible soil vapour reading (ppm or % LEL)
ppm	Parts per million (by volume)
% LEL	Percent of the lower explosive limit
BOLD	Exceeds standard
RPD	Relative Percent Difference

TABLE 6 GROUNDWATER ANALYTICAL RESULTS - METALS & INORGANICS
90 Maple Grove Road, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 fine / medium	MW105	MW111 duplicate of MW105	RPD
CV Reading	-	-	<10 ppm		-
Sampling Date	-	-	Oct-23-2019		-
Analysis Date	-	-	-	-	-
Certificate of Analysis No.	-	-	B9T9002	B9T9002	-
Antimony	µg/L	20,000	< 0.50	< 0.50	-
Arsenic	µg/L	1,900	1.9	1.8	-
Barium	µg/L	29,000	120	120	0.0%
Beryllium	µg/L	67	< 0.50	< 0.50	-
Boron	µg/L	45,000	23	25	-
Cadmium	µg/L	2.7	< 0.10	< 0.10	-
Chromium	µg/L	810	< 5.0	< 5.0	-
Hexavalent Chromium	µg/L	140	< 0.50	< 0.50	-
Cobalt	µg/L	66	0.95	0.93	-
Copper	µg/L	87	< 1.0	< 1.0	-
Cyanide (CN-)	µg/L	66	<1	<1	-
Lead	µg/L	25	< 0.50	< 0.50	
Mercury	µg/L	2.8	< 0.1	< 0.1	
Molybdenum	µg/L	9,200	3.1	2.9	6.7%
Nickel	µg/L	490	2.2	2.4	-
Selenium	µg/L	63	< 2.0	< 2.0	-
Silver	µg/L	1.5	< 0.10	< 0.10	-
Sodium	µg/L	2,300,000	220,000	220000	0.0%
Thallium	µg/L	510	< 0.050	< 0.050	-
Uranium	µg/L	420	5.1	5.1	0.0%
Vanadium	µg/L	250	1.1	1.0	-
Zinc	µg/L	1,100	< 5.0	< 5.0	-
Chloride	µg/L	2,300,000	260,000	260,000	0.0%

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; medium and fine textured soil

CV Combustible vapour reading (ppm or % LEL)
ppm Parts per million (by volume)
% LEL Percent of the lower explosive limit
BOLD Exceeds standard
RPD Relative Percent Difference

TABLE 7 GROUNDWATER ANALYTICAL RESULTS - BTEX & PHCs
90 Maple Grove, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 fine / medium	MW101	MW103	MW104
CV Reading	-	-	<10 ppm	<10 ppm	<10 ppm
Sampling Date	-	-	Oct-23-2019	Oct-23-2019	Oct-23-2109
Analysis Date	-	-	-	-	-
Certificate of Analysis No.	-	-	B9T9002	B9T9002	B9T9002
Benzene	µg/L	430	< 0.20	< 0.20	< 0.20
Toluene	µg/L	18,000	< 0.20	< 0.20	< 0.20
Ethylbenzene	µg/L	2,300	< 0.20	< 0.20	< 0.20
Xylenes (total)	µg/L	4,200	< 0.40	< 0.40	< 0.40
Petroleum Hydrocarbons, F1	µg/L	750	< 25	< 25	< 25
Petroleum Hydrocarbons, F2	µg/L	150	< 100	< 100	< 100
Petroleum Hydrocarbons, F3	µg/L	500	< 200	< 200	< 200
Petroleum Hydrocarbons, F4	µg/L	500	< 200	< 200	< 200

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; medium and fine textured soil

ns	No standard
CV Reading	Combustible vapour reading (ppm or % LEL)
ppm	Parts per million (by volume)
% LEL	Percent of the lower explosive limit
BOLD	Exceeds standard
RPD	Relative Percent Difference

TABLE 7 GROUNDWATER ANALYTICAL RESULTS - BTEX & PHCs
90 Maple Grove, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 fine / medium	MW105	MW111 (duplicate of MW105)	RPD	Trip Blank	Trip Spike (% recovery)
CV Reading	-	-	<10 ppm		-	<10 ppm	<10 ppm
Sampling Date	-	-	Oct-23-2109		-	Oct-23-2019	Oct-23-2019
Analysis Date	-	-	-	-	-	-	-
Certificate of Analysis No.	-	-	B9T9002	B9T9002	-	B9T9002	B9T9002
Benzene	µg/L	430	< 0.20	< 0.20	-	< 0.20	110%
Toluene	µg/L	18,000	< 0.20	< 0.20	-	< 0.20	99%
Ethylbenzene	µg/L	2,300	< 0.20	< 0.20	-	< 0.20	110%
Xylenes (total)	µg/L	4,200	< 0.40	< 0.40	-	< 0.40	110%
Petroleum Hydrocarbons, F1	µg/L	750	< 25	< 25	-	< 25	-
Petroleum Hydrocarbons, F2	µg/L	150	< 100	< 100	-	-	-
Petroleum Hydrocarbons, F3	µg/L	500	< 200	< 200	-	-	-
Petroleum Hydrocarbons, F4	µg/L	500	< 200	< 200	-	-	-

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; medium and fine textured soil

ns No standard
CV Reading Combustible vapour reading (ppm or % LEL)
ppm Parts per million (by volume)
% LEL Percent of the lower explosive limit
BOLD Exceeds standard
RPD Relative Percent Difference

TABLE 8 GROUNDWATER ANALYTICAL RESULTS - PAHs
90 Maple Grove, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 fine / medium	MW105	MW111 (duplicate of MW105)	RPD
CV Reading	-	-	<10 ppm	<10 ppm	-
Sampling Date	-	-	23-Oct-19	23-Oct-19	-
Analysis Date	-	-	30-Oct-19	30-Oct-19	-
Certificate of Analysis No.	-	-	B9T9002	B9T9002	-
Acenaphthene	µg/L	1,700	< 0.050	< 0.050	-
Acenaphthylene	µg/L	1.8	< 0.050	< 0.050	-
Anthracene	µg/L	2.4	< 0.050	< 0.050	-
Benz(a)anthracene	µg/L	4.7	< 0.050	< 0.050	-
Benzo(a)pyrene	µg/L	0.81	< 0.010	< 0.010	-
Benzo(b)fluoranthene	µg/L	0.75	< 0.050	< 0.050	-
Benzo(g,h,i)perylene	µg/L	0.2	< 0.050	< 0.050	-
Benzo(k)fluoranthene	µg/L	0.4	< 0.050	< 0.050	-
Chrysene	µg/L	1	< 0.050	< 0.050	-
Dibenz(a,h)anthracene	µg/L	0.52	< 0.050	< 0.050	-
Fluoranthene	µg/L	130	< 0.050	< 0.050	-
Fluorene	µg/L	400	< 0.050	< 0.050	-
Indeno(1,2,3-cd)pyrene	µg/L	0.2	< 0.050	< 0.050	-
Methylnaphthalene, 1-	µg/L	1,800	< 0.050	< 0.050	-
Methylnaphthalene, 2-	µg/L	1,800	< 0.050	< 0.050	-
Methylnaphthalene, 1- & 2- [2]	µg/L	1,800	<0.071	<0.,071	-
Naphthalene	µg/L	6,400	< 0.050	< 0.050	-
Phenanthrene	µg/L	580	< 0.030	< 0.030	-
Pyrene	µg/L	68	< 0.050	< 0.050	-

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; medium and fine textured soil

[2] 2-methylnaphthalene standard applicable to 1-methylnaphthalene with the provision that if both are detected, the sum of the two concentrations cannot exceed the standard

ns No standard

CV Reading Combustible vapour reading (ppm or % LEL)

ppm Parts per million (by volume)

% LEL Percent of the lower explosive limit

BOLD Exceeds standard

RPD Relative Percent Differences

TABLE 9 GROUNDWATER ANALYTICAL RESULTS - PCBs
90 Maple Grove, Ottawa, Ontario

Terrapex Sample Name	Units	STANDARDS[1] 2011 Table 3 fine / medium	MW101	MW103	MW104	MW105	MW111 duplicate of MW105	RPD
CV Reading	-	-	<10 ppm	<10 ppm	<10 ppm	<10 ppm	<10 ppm	-
Sampling Date	-	-	Oct-23-2019	Oct-23-2019	Oct-23-2109	Oct-23-2109	Oct-23-2019	-
Analysis Date	-	-	Oct-30-109	Oct-30-2019	Oct-30-2019	Oct-30-2109	Oct-30-2019	-
Certificate of Analysis No.	-	-	B9T9002	B9T9002	B9T9002	B9T9002	B9T9002	-
Aroclor 1242	µg/L	-	<0.05	<0.05	<0.05	<0.05	<0.05	-
Aroclor 1248	µg/L	-	<0.05	<0.05	<0.05	<0.05	<0.05	-
Aroclor 1254	µg/L	-	<0.05	<0.05	<0.05	<0.05	<0.05	-
Aroclor 1260	µg/L	-	<0.05	<0.05	<0.05	<0.05	<0.05	-
Total PCB	µg/L	15	<0.05	<0.05	<0.05	<0.05	<0.05	-

[1] Standards from Table 3 of April 15, 2011 *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* ; medium and fine textured soil

ns No standard
CV Reading Combustible vapour reading (ppm or % LEL)
ppm Parts per million (by volume)
% LEL Percent of the lower explosive limit
BOLD Exceeds standard
RPD Relative Percent Difference

TABLE 10 MAXIMUM CONCENTRATIONS IN SOIL
90 Maple Grove Road Ottawa, ON

Contaminant of Potential Concern	Units	T3- Soil-F Standards	Maximum Concentration	Maximum Detection Limit	Total Number of Occurance Exceeding	Sample Name of First Occurance	Date of First Occurance	Depth of First Occurance (m bg)
pH Minimum		NV	6.96	-	-	-	-	-
pH Maximum		NV	7.92	-	-	-	-	-
Acenaphthene	µg/L	58	<0.0050	0.0050	-	-	-	-
Acenaphthylene	µg/L	0.17	<0.0050	0.0050	-	-	-	-
Anthracene	µg/L	0.74	<0.0050	0.0050	-	-	-	-
Antimony	µg/L	7.5	<0.20	0.20	-	-	-	-
Arsenic	µg/L	18	1.9	1.0	-	-	-	-
Barium	µg/L	390	260	0.5	-	-	-	-
Benzene	µg/L	0.17	<0.020	0.020	-	-	-	-
Benz[a]anthracene	µg/L	0.63	<0.0050	0.0050	-	-	-	-
Benzo[a]pyrene	µg/L	0.3	<0.0050	0.0050	-	-	-	-
Benzo[b]fluoranthene	µg/L	0.78	<0.0050	0.0050	-	-	-	-
Benzo[g,h,i]perylene	µg/L	7.8	<0.0050	0.0050	-	-	-	-
Benzo[k]fluoranthene	µg/L	0.78	<0.0050	0.0050	-	-	-	-
Beryllium	µg/L	5	0.83	0.2	-	-	-	-
Boron, Hot Water Soluble[1]	µg/L	1.5	0.089	0.050	-	-	-	-
Boron	µg/L	120	5.2	5.0	-	-	-	-
Cadmium	µg/L	1.2	0.10	0.10	-	-	-	-
Chromium	µg/L	160	59	1.0	-	-	-	-
Hexavalent Chromium	µg/L	10	<0.2	0.2	-	-	-	-
Chrysene	µg/L	7.8	<0.0050	0.0050	-	-	-	-
Cobalt	µg/L	22	17	0.10	-	-	-	-
Copper	µg/L	180	32	0.50	-	-	-	-
Cyanide	µg/L	0.051	<0.01	0.01	-	-	-	-
Dibenz[a,h]anthracene	µg/L	0.1	<0.0050	0.0050	-	-	-	-
Ethylbenzene	µg/L	15	<0.020	0.020	-	-	-	-
Fluoranthene	µg/L	0.69	<0.0050	0.0050	-	-	-	-
Fluorene	µg/L	69	<0.0050	0.0050	-	-	-	-
Indeno[1,2,3-cd]pyrene	µg/L	0.48	<0.0050	0.0050	-	-	-	-
Lead	µg/L	120	7.2	1.0	-	-	-	-
Mercury	µg/L	1.8	<0.050	0.050	-	-	-	-
Methyl Mercury[2]	µg/L	0.0094	-	-	-	-	-	-
Methlynaphthalene, 2-(1-)[3]	µg/L	3.4	<0.0071	0.0071	-	-	-	-
Molybdenum	µg/L	6.9	0.78	0.50	-	-	-	-
Naphthalene	µg/L	0.75	<0.0050	0.0050	-	-	-	-
Nickel	µg/L	130	33	0.50	-	-	-	-
Petroleum Hydrocarbons F1[4]	µg/L	65	<10	10	-	-	-	-
Petroleum Hydrocarbons F2	µg/L	150	<10	10	-	-	-	-
Petroleum Hydrocarbons F3	µg/L	1,300	<50	50	-	-	-	-
Petroleum Hydrocarbons F4	µg/L	5,600	95	50	-	-	-	-
Petroleum Hydrocarbons F4G	µg/L	5,600	170	100	-	-	-	-
Phenanthrene	µg/L	7.8	0.0054	0.0050	-	-	-	-
Polychlorinated Biphenyls	µg/L	0.35	<0.010	0.010	-	-	-	-
Pyrene	µg/L	78	<0.0050	0.0050	-	-	-	-
Selenium	µg/L	2.4	<0.50	0.50	-	-	-	-
Silver	µg/L	25	<0.20	0.20	-	-	-	-
Thallium	µg/L	1	0.32	0.050	-	-	-	-
Toluene	µg/L	6	<0.020	0.020	-	-	-	-
Uranium	µg/L	23	1.6	0.050	-	-	-	-
Vanadium	µg/L	86	80	5.0	-	-	-	-
Xylene, Total	µg/L	25	<0.040	0.040	-	-	-	-
Zinc	µg/L	340	93	5.0	-	-	-	-
Electrical Conductivity[5]	ms/cm	0.7	***1***	0.002	-	-	-	-
Chloride	µg/L	NA	-	-	-	-	-	-
Sodium Adsorption Ratio[5]	µg/L	5	***27***	-	-	-	-	-

[1] Hot water soluble boron applies to surface soils (<1.5 m bg),
[2] Analysis for methyl mercury only applies when mercury standard is exceeded.
[3] The sum of 1-methylnaphthallene and 2- methylnaphthalene.
[4] F1 fraction does not include BTEX.
[5] deemed not to exceed as per Section 49.1 of O.Reg. 153/04

TABLE 11 MAXIMUM CONCENTRATIONS IN GROUNDWATER
90 Maple Grove Road Ottawa, ON

Contaminant of Potential Concern	Units	T3- GW-F Standards	Maximum Concentration	Maximum Detection Limit	Total Number of Occurance Exceeding	Sample Name of First Occurance	Date of First Occurance	Depth of First Occurance (m bg)
pH Minimum		NV	-	-	-	-	-	-
pH Maximum		NV	-	-	-	-	-	-
Acenaphthene	µg/L	1,700	<0.050	0.050	-	-	-	-
Acenaphthylene	µg/L	1.8	<0.050	0.050	-	-	-	-
Anthracene	µg/L	2.4	<0.050	0.050	-	-	-	-
Antimony	µg/L	20,000	<0.50	0.50	-	-	-	-
Arsenic	µg/L	1,900	1.9	1.0	-	-	-	-
Barium	µg/L	29,000	120	2.0	-	-	-	-
Benzene	µg/L	430	<0.20	0.20	-	-	-	-
Benz[a]anthracene	µg/L	4.7	<0.050	0.050	-	-	-	-
Benzo[a]pyrene	µg/L	0.81	<0.010	0.010	-	-	-	-
Benzo[b]fluoranthene	µg/L	0.75	<0.050	0.050	-	-	-	-
Benzo[g,h,i]perylene	µg/L	0.2	<0.050	0.050	-	-	-	-
Benzo[k]fluoranthene	µg/L	0.4	<0.050	0.050	-	-	-	-
Beryllium	µg/L	67	<0.50	0.50	-	-	-	-
Boron, Hot Water Soluble*	µg/L	NA	-	-	-	-	-	-
Boron	µg/L	45,000	25	10	-	-	-	-
Cadmium	µg/L	2.7	<0.10	0.10	-	-	-	-
Chromium	µg/L	810	<5.0	5.0	-	-	-	-
Hexavalent Chromium	µg/L	140	<0.50	0.50	-	-	-	-
Chrysene	µg/L	1	<0.050	0.050	-	-	-	-
Cobalt	µg/L	66	0.95	0.5	-	-	-	-
Copper	µg/L	87	<1.0	1.0	-	-	-	-
Cyanide	µg/L	66	<1	1	-	-	-	-
Dibenz[a,h]anthracene	µg/L	0.52	<0.050	0.050	-	-	-	-
Ethylbenzene	µg/L	2,300	<0.20	0.20	-	-	-	-
Fluoranthene	µg/L	130	<0.050	0.050	-	-	-	-
Fluorene	µg/L	400	<0.050	0.050	-	-	-	-
Indeno[1,2,3-cd]pyrene	µg/L	0.2	<0.050	0.050	-	-	-	-
Lead	µg/L	25	<0.50	0.50	-	-	-	-
Mercury	µg/L	2.8	<0.1	0.1	-	-	-	-
Methyl Mercury [1]	µg/L	0.15	-	-	-	-	-	-
Methlynaphthalene, 2-(1-) [2]	µg/L	1,800	<0.071	0.071	-	-	-	-
Molybdenum	µg/L	9,200	3.1	0.50	-	-	-	-
Naphthalene	µg/L	6,400	<0.050	0.050	-	-	-	-
Nickel	µg/L	490	2.4	1.0	-	-	-	-
Petroleum Hydrocarbons F1 [3]	µg/L	750	<25	25	-	-	-	-
Petroleum Hydrocarbons F2	µg/L	150	<100	100	-	-	-	-
Petroleum Hydrocarbons F3	µg/L	500	<200	200	-	-	-	-
Petroleum Hydrocarbons F4	µg/L	500	<200	200	-	-	-	-
Petroleum Hydrocarbons F4G	µg/L	500	-	-	-	-	-	-
Phenanthrene	µg/L	580	<0.030	0.030	-	-	-	-
Polychlorinated Biphenyls	µg/L	15	<0.05	0.05	-	-	-	-
Pyrene	µg/L	68	<0.050	0.050	-	-	-	-
Selenium	µg/L	63	<2.0	2.0	-	-	-	-
Silver	µg/L	1.5	<0.10	0.10	-	-	-	-
Thallium	µg/L	510	<0.050	0.050	-	-	-	-
Toluene	µg/L	18,000	<0.20	0.20	-	-	-	-
Uranium	µg/L	420	5.3	0.10	-	-	-	-
Vanadium	µg/L	250	1.1	0.50	-	-	-	-
Xylene, Total	µg/L	4,200	<0.40	0.40	-	-	-	-
Zinc	µg/L	1,100	<5.0	5.0	-	-	-	-
Electrical Conductivity	ms/cm	NA	-	-	-	-	-	-
Chloride	µg/L	2,300,000	260,000	3.0	-	-	-	-
Sodium Adsorption Ratio	-	NA	-	-	-	-	-	-
Sodium	µg/L	2,300,000	220,000	100	-	-	-	-

[1] Analysis for methyl mercury only applies when mercury standard is exceeded.

[2] The sum of 1-methylnaphthallene and 2- methylnaphthalene.

[3] F1 fraction does not include BTEX.

APPENDIX I
PLAN OF SURVEY, PROPOSED DEVELOPMENT PLAN

TOPOGRAPHIC PLAN OF SURVEY OF

PART OF LOT 1
CONCESSION 2
GEOGRAPHIC TOWNSHIP OF MARCH
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 250

10 7.5 5.0 2.5 0 5 10 Metres

Metric

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act and the Surveyors Act and the regulations made under them.
2. The survey was completed on the 30th day of August, 2019.

Sept 19/19
Date

T. Hartwick
Ontario Land Surveyor

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2094017

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29 (3).

Notes & Legend

—□—	Denotes	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
CC	"	Cut Cross
CP	"	Concrete Pin
Meas.	"	Measured
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	"	Plan 4R-24734
(P2)	"	Plan 4R-18402
(P3)	"	Plan 4R-28902
VC	"	Valve Chamber
WV	"	Water Valve
	"	Gate
— TV —	"	Underground Cable
— P —	"	Underground Hydro
— ST —	"	Underground Storm
CB	"	Catch Basin
DI	"	Ditch Inlet
ø	"	Diameter
o B	"	Bollard
O LS	"	Light Standard
O LF	"	Light Fixture
T/G	"	Top of Grate
B/G	"	Bottom of Grate
MH	"	Maintenance Hole
MH-S	"	Maintenance Hole (Sanitary)
RW-C	"	Concrete Retaining Wall
CSP	"	Corrugated Steel Pipe
T/P	"	Top of Pipe
FH	"	Fire Hydrant
TOS	"	Top of Slope
BOS	"	Bottom of Slope
SWC	"	Concrete Sidewalk
AC	"	Air Conditioner
CLF	"	Chain Link Fence
x65.00	"	Location of Elevation
x65.00*	"	Top of Concrete Curb Elevation
	"	Coniferous Tree
	"	Deciduous Tree

Bearings are grid, derived from Can-Net 2016 Real Time Network GPS observations and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

For bearing comparison purposes, a clockwise rotaion of 0°29'20" has been applied to the bearings shown on (P1).

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

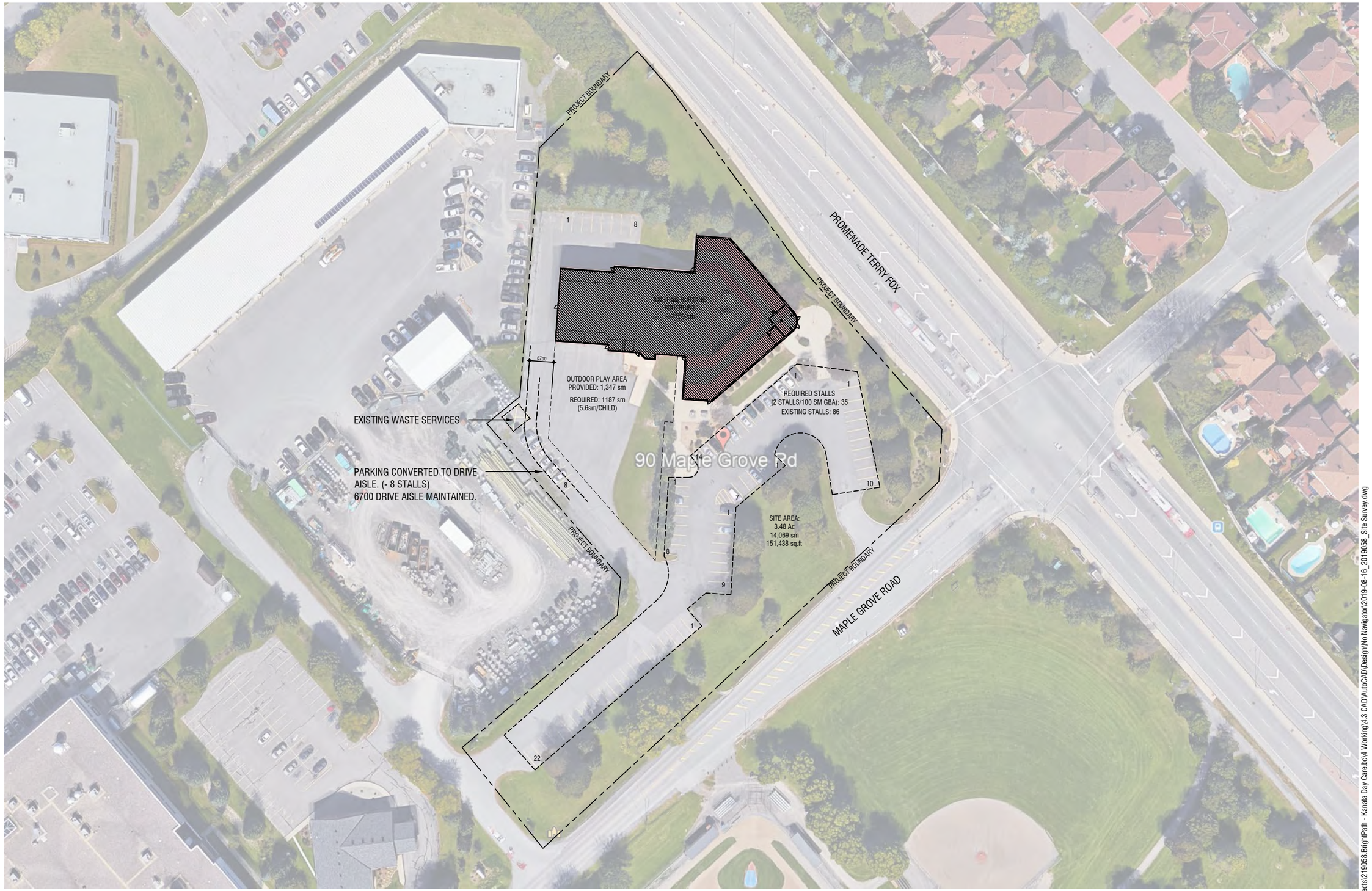
UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.
3. Subsurface Utilities located by Deepview Utilities Locates and Concrete Scanning.

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors

Job No. I7368-19 Bright Path Plan Of Survey D4 AR

Y:\2019\I7368-19\Drawings\I7368-19 Bright Path Plan of Survey D4.dwg



1 SITE PLAN
- SCALE: 1:1000

S2 architecture
www.s2architecture.com

SITE PLAN SKETCH

90 MAPLE GROVE ROAD, OTTAWA, ON
KANATA
BRIGHTPATH
219058

SCALE AS NOTED
DATE SEPTEMBER 10, 2019
DRAWN BY MLC

-

P:\Calgary\2019 Projects\219058.BrightPath - Kanata Day Care.bc\4 Working\4.3 CAD\AutoCAD\Design\No Navigator\2019-08-16_219058_Site Survey.dwg

APPENDIX II
NON-POTABLE GROUNDWATER NOTIFICATION

December 12, 2019
CO738.01

City of Ottawa
Planning, Infrastructure and Economic Development
Michel.Kearney@ottawa.ca

Attention: Michel Kearney, P.Geo
Senior Hydrogeologist

Re: Notification of Environmental Standards
90 Maple Grove Road Ottawa ON

Dear Mr. Kearney:

Terrapex Environmental Ltd. (Terrapex) has been retained by a developer to conduct a Phase Two Environmental Site Assessment at 90 Maple Grove Road, Ontario (the site).

After reviewing Ontario Regulation (O. Reg.) 153/04 *Records of Site Condition - Part XV.1 of the Act,* Terrapex has determined that the site meets the requirements for the application of generic site condition standards (SCS) in a non-potable groundwater condition. Analytical data collected at the site will be compared against the applicable O.Reg. 153/04 full depth SCS in a non-potable groundwater condition.

On behalf of the developer, and in accordance with the requirements of Section 35 of O. Reg. 153/04, Terrapex is hereby providing written notice to the City of Ottawa of the intention to apply non-potable groundwater site condition standards at the 90 Maple Grove Road property.

If you have any questions or concerns regarding this matter, please do not hesitate to contact the undersigned.

Sincerely,
TERRAPEX ENVIRONMENTAL LTD.

Greg Sabourin, P.Eng.
Project Manager

02 January 2020

Mr. Greg Sabourin, P.Eng.
Terrapex Environmental Ltd.
20 Gurdwara Road, Unit 1
Ottawa, Ontario
K2E 8B3

Dear Mr. Sabourin,

Re: Record of Site Condition – 90 Maple Grove Road

As per your letter of December 12, 2019 (attached) requesting to use non-potable standards, this is to advise that the City of Ottawa does not object to the use of non-potable groundwater standards for the property identified as 90 Maple Grove Road, Ottawa, ON, as part of the filing of a Record of Site Condition.

Best Regards,

Michel Kearney, P.Geo.

Senior Hydrogeologist
Asset Management
Planning, Infrastructure and Economic Development Department

Hydrogéologue principal
Gestion des actifs
Services de la planification, de l'infrastructure et du développement économique
City of Ottawa | Ville d'Ottawa

613.580.2424 ext./poste 22872
ottawa.ca/planning / ottawa.ca/urbanisme

APPENDIX III
SAMPLING AND ANALYSIS PLAN

TERRAPEX

SAMPLING AND ANALYSIS PLAN
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

Site: 90 Maple Grove Road Ottawa, ON
Project No: CO738.01
Date: October 15, 2019

OBJECTIVES

On behalf of City of Ottawa, Terrapex Environmental Ltd. (Terrapex) has prepared this sampling and analysis plan for a Phase Two Environmental Site Assessment (ESA) at 90 Maple Grove Road Ottawa, Ontario, the "Phase Two Property". The Phase Two ESA is to be conducted to prior to possible redevelopment in accordance to Ontario Regulation (O. Reg.) 153/04, *Records of Site Condition - Part XV.1 of the Act*. The objective of this ESA is to determine the location and concentration of contaminants in the land or water on, in or under the Phase Two Property.

The Phase Two ESA will investigate all Areas of Potential Environmental Concern (APECs) which were identified in a Phase One ESA of the property conducted by Terrapex, dated October 18, 2019. The APECs are shown on Figure 1 and listed in Table 1.

SAMPLING PROGRAM

The media to be investigated and the contaminants of concern have been determined based on findings from previously completed Phase One ESA and based on potential environmental concerns identified from on-site and off-site activities. The media, investigation and sampling methods are summarized on Table 2. The rationale for each sampling location, and the proposed laboratory analytical program for each location, is shown on Table 3. Modifications may be made to the program during the course of implementation, based on field observations, and will be documented in the Phase Two ESA report.

STANDARD OPERATING PROCEDURES

The following Terrapex Standard Operating Procedures (SOPs) will be used:

SOP E01.00 – Field Meter Calibration
SOP E03.00 – Borehole Advancement Using Rotary Auger
SOP E04.00 – Monitoring Well Installation
SOP E05.00 – Monitoring Well Development
SOP E06.00 – Groundwater Monitoring
SOP E07.01 – Groundwater Sampling, Low Volume Purge, Using Peristaltic Pump
SOP E09.00 – Soil Sample Handling
SOP E10.00 – Soil Classification
SOP E12.00 – Field Program Quality Assurance & Quality Control

DATA QUALITY OBJECTIVES

The investigation will be completed following Terrapex SOP *E12.00 - Field Program Quality Assurance & Quality Control*, which specifies requirements for minimizing cross-contamination, record-keeping, sample storage, sample submission, field QA/QC samples and data quality objectives. If the data quality objectives are not met, the Qualified Person for the project will review the results and determine whether the deviation affects decision-making or the overall objectives of the investigation.

LABORATORY PROGRAM

Project Laboratory: Bureau Veritas

Accreditation: BV is accredited by Standards Council of Canada (SCC) to International Standard ISO/IEC 17025:2005, *General Requirement for the Competence of Testing and Calibration Laboratories*.

Proposed Analytical Program: See Table 3, attached.

Analytical Methods: The laboratory will use the methods specified in the *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004, amended as of July 1, 2011 (Analytical Protocol).*

Sample Containers and Preservatives: See Table 4, attached.

Bureau Veritas Quality Assurance/Quality Control (QA/QC) program will consist of the analysis of method blanks, laboratory control samples, matrix spikes, sample duplicates, and surrogates, as appropriate for the particular analysis protocol and as specified in the *Analytical Protocol.*

TERRAPEX

PROPOSED INVESTIGATION

90 MAPLE GROVE ROAD
OTTAWA, ONTARIO

CLIENT

brightpath
EARLY LEARNING & CHILD CARE

LEGEND

- PROPOSED MONITORING WELL
- PROPOSED BOREHOLE

0 25m 50m

SOURCE: VUMAP FIRST BASE SOLUTIONS, 2017 IMAGERY.

PROJECT #	QO736.01
SCALE	AS SHOWN
DATE	SEPTEMBER 2019
DRAWN	AB
CHECKED	GS
DRAWING #	FIGURE 2

SUB-CONTRACTORS

All sub-contractors used in the Phase Two ESA will be approved suppliers according to Terrapex's Quality Management System. The following sub-contractors will be retained for this project:

Private utility locates: Capital Cutting and Coring Ltd.
Borehole drilling and well installation: Strata Drilling Group
Laboratory analyses: Bureau Veritas

ATTACHMENTS

Figure 1 – Areas of Potential Environmental Concern and Proposed Sampling Locations
Table 1 – Areas of Potential Environmental Concern
Table 2 – Media to be Investigated
Table 3 – Proposed Sampling Plan
Table 4 – Sample Containers and Preservation Plan

POTENTIALLY CONTAMINATING ACTIVITIES WITHIN THE PHASE ONE STUDY AREA (TERRAPEX, 2019)

APEC	LOCATION OF APEC ON PHASE ONE PROPERTY	POTENTIALLY CONTAMINATING ACTIVITY (as set out in Column A of Table 2 in Schedule D of O. Reg. 153/04)	LOCATION OF PCA (On-Site or Off-Site)	CONTAMINANTS OF POTENTIAL CONCERN	MEDIA POTENTIALLY IMPACTED (Groundwater, Soil, and/or Sediment)
APEC 1	- Encompassing the area in the vicinity of the AST in south eastern portion of the Site	- 28 – Gasoline and Associated Products Storage in Fixed Tanks	- PCA 1	- PHCs - BTEX	- Soil - Groundwater
APEC 2	- Encompassing the area around the present locations of the drums	- Other – presence of drums with unknown contents	- PCA 2	- PHCs - VOCs	- Soil - Groundwater
APEC 3	- Encompassing the area around the former buildings located in the southeastern portion of the Site	- Other - Presence of vehicles and/or material storage during former agricultural operations	- PCA 3	- PHCs - BTEX	- Soil - Groundwater
APEC 4	- Encompassing the area around the former barn located in the central portion of the Site	- Other - Presence of vehicles and/or material storage during former agricultural operations	- PCA 4	- PHCs - BTEX	- Soil - Groundwater
APEC 5	- Across the Site	- 40 – Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) manufacturing, Processing, Bulk Storage and Large-Scale Application	- PCA 5	- Pesticides and herbicides - Metals and Inorganics	- Soil
APEC 6	- The northeastern portion of the Site	- 30 – Importation of Fill of Unknown Quality	- PCA 6	- Metals and Inorganics - PAHs - PHCs and BTEX	- Soil
APEC 7	- The southeastern portion of the Site	- 34 – Metal Fabrication	- PCA 7	- Metals and Inorganics - PHCs and BTEX	- Soil - Groundwater

PHCs: petroleum hydrocarbon
PAHs: polycyclic aromatic hydrocarbons
VOCs: volatile organic compounds

TABLE 2 - MEDIA INVESTIGATED, CONTAMINANTS OF CONCERN AND METHODS

Media	Contaminants of Concern	Investigation Method	Equipment	Sample Collection Method
Soil	Petroleum hydrocarbons Polycyclic aromatic hydrocarbons Volatile organic compounds Benzene, toluene, ethylbenzene, xylenes Metals, metal hydrides Mercury Chromium VI Hot water soluble boron Organochlorine pesticides	Boreholes and Test pitting	GM100 GM drill rig and Backhoe	Disposable plastic liner continous sampler and a backhoe bucket
Groundwater	Petroleum hydrocarbons Polycyclic aromatic hydrocarbons Volatile organic compounds Benzene, toluene, ethylbenzene, xylenes Metals, metal hydrides Mercury Cyanide Chromium VI Sodium, chloride Nitrite, nitrate Pesticides Polychlorinated biphenyls	Monitoring wells	GM100 GM drill rig	Low-flow sampling using peristaltic pump, target top 0.5 m of water column

TABLE 1 PROPOSED SAMPLING PLAN AND RATIONALE
90 Maple Grove Road Ottawa, ON

Sampling Location	Location	APEC	Depth (m)	Screened Interval (m)	Sampling Technique	Rationale	Soil				Groundwater			
							BTEX, F1-F4	Inorg.	PAHs	PCBs	BTEX, F1-F4	Inorg.	PAHs	PCBs
MWA	Near the AST	3	6.1	3.0 - 6.1	dual tube w/ PVC liner	Soil and groundwater quality in the area of the AST.	1			1	1			1
MWB	Downgradient of the AST	3	6.1	3.0 - 6.1	dual tube w/ PVC liner	Soil and groundwater quality downgradient of the AST .	1			1	1			1
MWC	Along the western boundary of the Site, adjacent to the work yard	2	6.1	3.0 - 6.1	dual tube w/ PVC liner	Soil and groundwater quality adjacent to the storage yard	1	1	1	1	1	1	1	1
MWD	Downgradient of the AST	3	6.1	3.0 - 6.1	dual tube w/ PVC liner	Soil and groundwater quality downgradient of the AST.	1			1	1			1
BHE	Along the western boundary of the Site along adjacent to the work yard	1, 2	2.0	-	dual tube w/ PVC liner	Determine the quality of fill and soil quality adjacent to the storage yard	1	1	1	1				
BHF							1	1	1	1				
BHG	Throughout the Site	1	2.0	-	dual tube w/ PVC liner	Determine the quality of fill throughout the Site	1	1	1					
BHH							1	1	1					
BHI							1	1	1					
Total Before QA/QC Samples							**9**	**6**	**6**	**6**	**4**	**1**	**1**	**4**
QA/QC field duplicate						One duplicate per 10 samples	1	1	1	1	1	1	1	1
QA/QC field blank (methanol blank for soil, deionized water blank for water)						One per sampling round (volatiles only)	1							
QA/QC trip blank						One per sampling round (volatiles in groundwater only)					1			
QA/QC trip spike						One per sampling round (volatiles in groundwater only)					1			
Total Laboratory Analyses							**11**	**7**	**7**	**7**	**7**	**2**	**2**	**5**

Notes: APEC = Area of Potential Concern, refer to phase one ESA
VOCs = volatile organic compounds (O. Reg. 153/04)
BTEX/F1-F4 = benzene, toluene, ethylbenzene, xylenes and petroleum hydrocarbons in the F1 to F4 fractions
Inorg. = metals and general inorganic parameters (O. Reg. 153/04)
PAHs = polycyclic aromatic hydrocarbons (O. Reg. 153/04)
PCBs = Polychlorinated Biphenyls

TABLE 4 - SAMPLE CONTAINERS AND PRESERVATION

Media	Analytical Parameter	Field Filtered	Sample Container	Preservation	Holding Time (preserved)
Soil	Metals, metal hydrides, hot water soluble boron, chromium VI, pH	Not applicable	250 mL glass jar	5 ± 3 °C	180 days
	BTEX, PHC F1	Not applicable	40 mL glass vial and 60 mL glass jar, no headspace	10 mL methanol, 5 ± 3 °C	14 days
	PHCs F2-F4	Not applicable	120 mL glass jar, teflon lined lid	5 ± 3 °C	14 days
	VOCs	Not applicable	40 mL glass vial and 60 mL glass jar, no headspace	10 mL methanol, 5 ± 3 °C	14 days
	Organochlorine pesticides	Not applicable	250 mL glass jar	5 ± 3 °C	60 days
	PAHs	Not applicable	120 mL glass jar, teflon lined lid	5 ± 3 °C	60 days
Groundwater	Metals, metal hydrides, sodium	Yes	250 mL HDPE bottle	HNO_3 to pH < 2 5 ± 3 oC	60 days
	Mercury	Yes	100 mL clear glass bottle	HCl to pH < 2 5 ± 3 oC	28 days
	Chromium VI	Yes	120 mL HDPE bottle	$(NH_4)_2SO_4/HN_4OH$ 5 ± 3 oC	28 days
	Cyanide	No	120 mL HDPE bottle	NaOH to pH > 12 5 ± 3 °C	14 days
	BTEX, PHC F1	No	3 x 40 mL clear glass septum vial, no headspace	$NaHSO_4$ to pH < 2 5 ± 3 $_o$C	14 days
	PHCs F2-F4	No	2 x 100 mL amber glass bottle	$NaHSO_4$ to pH < 2 5 ± 3 $_o$C	40 days
	VOCs	No	3 x 40 mL clear glass septum vial, no headspace	$NaHSO_4$ to pH < 2 5 ± 3 $_o$C	14 days
	PAHs	No	2 x 100 mL amber glass bottle	5 ± 3 °C	14 days

BTEX = benzene, toluene, ethylbenzene, xylenes
PHC F1 - F4 = petroleum hydrocarbons F1 to F4 fractions
VOCs = volatile organic compounds
PAHs = polycyclic aromatic hydrocarbons (O. Reg. 153/04)

APPENDIX IV

BOREHOLE LOGS

RECORD OF: MW101

PROJECT NO: **CO738.01**
CLIENT: **BRIGHTPATH**
ADDRESS LINE 1: **90 MAPLE GROVE ROAD**
ADDRESS LINE 2:
CITY / PROVINCE: **OTTAWA, ONTARIO**

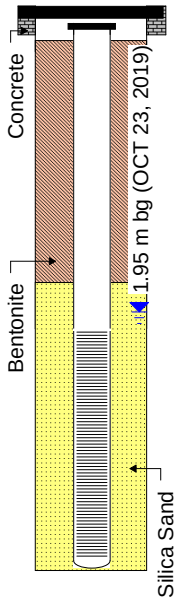
BORING DATE: **OCTOBER 16, 2019**
TYPE OF AUGER: **SOILD STEM**
TYPE OF RIG: **GEOPROBE 6620DT**
CONTRACTOR: **STRATA DRILLING GROUP**

VAPOUR MONITOR: **RKI EAGLE II**
PIPE SCHEDULE: **40**
RISER LENGTH: **1.53**

BOREHOLE DIAMETER: **0.15 (6")**
SCREEN SLOT #: **10**
SAND TYPE: **SILICA**

WELL DIAMETER: **0.051 m (2")**
SCREEN LENGTH: **1.55**
SEALANT TYPE: **BENTONITE**

SUBSURFACE PROFILE			SAMPLE								
Depth (ft / m)	Strataplot	Description	Elevation	Number	Type	% Recovery	SPT (n)	CSV (ppm or %LEL - if applicable)	Odour	Laboratory Testing	Piezometer or Monitoring Well Installation
0 / 0		Ground Surface	102.79								
0 / 0		***TOPSOIL (GRASS SURFACE)***									
0 / 0 – 3 / 1		***COARSE SAND FILL*** SOME CLAY		1	DP	40%	-	<10 ppm	None		
3 / 1			101.57								
3 / 1 – 12 / 3.8		***CLAYEY SILT*** REWORKED, WITH SOME SAND GREY, SOFT		2	DP	36%	-	<10 ppm	None		
10 / 3 – 12 / 3.8				3	DP	25%	-	<10 ppm	None	BTEX, PHC F1-F4 & PCBs	
12 / 3.8		REFUSAL AT 3.80 m bg	98.98								



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RECORD OF: BH102

PROJECT NO: **CO738.01**
CLIENT: **BRIGHTPATH**
ADDRESS LINE 1: **90 MAPLE GROVE ROAD**
ADDRESS LINE 2:
CITY / PROVINCE: **OTTAWA, ONTARIO**

BORING DATE: **OCTOBER 16, 2019**
TYPE OF AUGER: **SOILD STEM**
TYPE OF RIG: **GEOPROBE 6620DT**
CONTRACTOR: **STRATA DRILLING GROUP**

VAPOUR MONITOR: **RKI EAGLE II**
BOREHOLE DIAMETER: **0.15 (6")**
WELL DIAMETER: **-**
PIPE SCHEDULE: **-**
SCREEN SLOT #: **-**
SCREEN LENGTH: **-**
RISER LENGTH: **-**
SAND TYPE: **-**
SEALANT TYPE: **BENTONITE**

SUBSURFACE PROFILE			SAMPLE								
Depth (ft / m)	Strataplot	Description	Elevation	Number	Type	% Recovery	SPT (n)	CSV (ppm or %LEL - if applicable)	Odour	Laboratory Testing	Piezometer or Monitoring Well Installation
0		Ground Surface	102.64								
0		***TOPSOIL (GRASS SURFACE)***		1	DP	90%	-	<10 ppm	None		
1		***CLAYEY SILT*** WITH SOME SAND, GREY, DRY		2	DP	90%	-	<10 ppm	None	BTEX, PHC F1-F4, INORGANICS AND PAHs	
1			101.42								
2				3	DP	100%	-	<10 ppm	None		
2				4	DP	100%	-	<10 ppm	None		
2			100.20								
3		***SILTY CLAY*** SOME COARSE GRAVEL, GREY	99.90	5	DP	100%	-	<10 ppm	None		
3		WET	99.59								
3		REFUSAL AT 3.05 m bg									

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RECORD OF: MW103

PROJECT NO: **CO738.01**
CLIENT: **BRIGHTPATH**
ADDRESS LINE 1: **90 MAPLE GROVE ROAD**
ADDRESS LINE 2:
CITY / PROVINCE: **OTTAWA, ONTARIO**

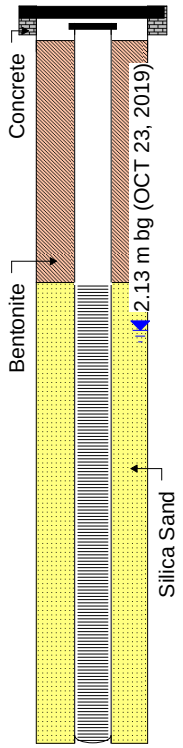
BORING DATE: **OCTOBER 16, 2019**
TYPE OF AUGER: **SOILD STEM**
TYPE OF RIG: **GEOPROBE 6620DT**
CONTRACTOR: **STRATA DRILLING GROUP**

VAPOUR MONITOR: **RKI EAGLE II**
PIPE SCHEDULE: **40**
RISER LENGTH: **1.80 m**

BOREHOLE DIAMETER: **0.15 (6")**
SCREEN SLOT #: **10**
SAND TYPE: **SILICA**

WELL DIAMETER: **0.051 m (2")**
SCREEN LENGTH: **3.05 m**
SEALANT TYPE: **BENTONITE**

SUBSURFACE PROFILE			SAMPLE								
Depth (ft / m)	Strataplot	Description	Elevation	Number	Type	% Recovery	SPT (n)	CSV (ppm or %LEL - if applicable)	Odour	Laboratory Testing	Piezometer or Monitoring Well Installation
0 / 0		Ground Surface	102.66								
0 / 0		***ASPHALT SURFACE***									
1 / 0		***COARSE SAND (FILL)*** WITH COARSE GRAVEL	102.20	1	DP	50%	-	<10 ppm	None		
2 / 1		***COARSE SAND***	101.44	2	DP	50%	-	<10 ppm	None		
4 / 1		***CLAYEY SILT*** WITH SOME FINE SAND, BROWN	100.83	3	DP	100%	-	<10 ppm	None		
6 / 2		***SILTY CLAY***		4	DP	100%	-	<10 ppm	None		
8 / 2				5	DP	100%	-	<10 ppm	None		
10 / 3		SATURATED	99.31 / 99.00	6	DP	100%	-	<10 ppm	None	BTEX, PHC F1-F4, PCBs, grainsize & pH	
12 / 3		***SILTY SAND*** WITH SOME FINE GRAVEL		7	DP	100%	-	<10 ppm	None		
14 / 4			97.78	8	DP	100%	-	<10 ppm	None		
16 / 5		REFUSAL AT 4.9 m bg									



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RECORD OF: MW104

PROJECT NO: **CO738.01**
CLIENT: **BRIGHTPATH**
ADDRESS LINE 1: **90 MAPLE GROVE ROAD**
ADDRESS LINE 2:
CITY / PROVINCE: **OTTAWA, ONTARIO**

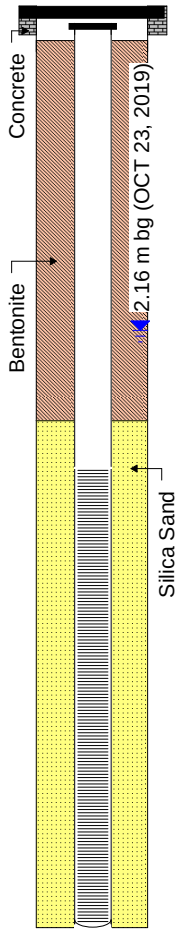
BORING DATE: **OCTOBER 16, 2019**
TYPE OF AUGER: **SOILD STEM**
TYPE OF RIG: **GEOPROBE 6620DT**
CONTRACTOR: **STRATA DRILLING GROUP**

VAPOUR MONITOR: **RKI EAGLE II**
PIPE SCHEDULE: **40**
RISER LENGTH: **1.80 m**

BOREHOLE DIAMETER: **0.15 (6")**
SCREEN SLOT #: **10**
SAND TYPE: **SILICA**

WELL DIAMETER: **0.051 m (2")**
SCREEN LENGTH: **3.05 m**
SEALANT TYPE: **BENTONITE**

SUBSURFACE PROFILE			SAMPLE								
Depth (ft / m)	Strataplot	Description	Elevation	Number	Type	% Recovery	SPT (n)	CSV (ppm or %LEL - if applicable)	Odour	Laboratory Testing	Piezometer or Monitoring Well Installation
0		Ground Surface	102.01								
0		***ASPHALT SURFACE***									
1		***COARSE SAND FILL***	101.55								
2		***COARSE SAND***		1	DP	40%	-	<10 ppm	None		
3 / 1			100.79								
4		***CLAYEY SILT*** WITH SOME SAND GREY, FIRM		2	DP	100%	-	<10 ppm	None		
5											
6				3	DP	100%	-	<10 ppm	None		
7 / 2											
8				4	DP	100%	-	<10 ppm	None		
9			98.96								
10 / 3		***SILTY CLAY*** GREY		5	DP	100%	-	<10 ppm	None		
11											
12			98.05	6	DP	100%	-	<10 ppm	None	BTEX, PHC F1-F4, PCBs	
13 / 4		SATURATED									
14				7	DP	100%	-	<10 ppm	None		
15			97.13								
16 / 5		***SILTY SAND*** WITH SOME FINE GRAVEL		8	DP	100%	-	<10 ppm	None		
17											
18				9	DP	100%	-	<10 ppm	None		
19											
20 / 6			95.91								
21											
22											
23 / 7											
24											



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RECORD OF: MW105

PROJECT NO: **CO738.01**
CLIENT: **BRIGHTPATH**
ADDRESS LINE 1: **90 MAPLE GROVE ROAD**
ADDRESS LINE 2:
CITY / PROVINCE: **OTTAWA, ONTARIO**

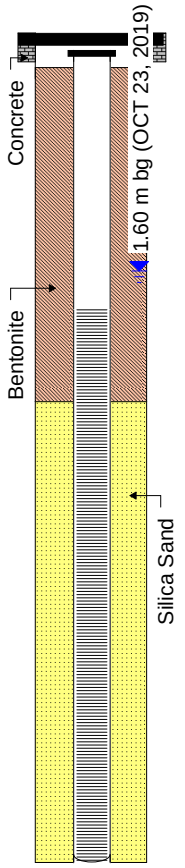
BORING DATE: **OCTOBER 16, 2019**
TYPE OF AUGER: **SOILD STEM**
TYPE OF RIG: **GEOPROBE 6620DT**
CONTRACTOR: **STRATA DRILLING GROUP**

VAPOUR MONITOR: **RKI EAGLE II**
PIPE SCHEDULE: **40**
RISER LENGTH: **1.80 m**

BOREHOLE DIAMETER: **0.15 (6")**
SCREEN SLOT #: **10**
SAND TYPE: **SILICA**

WELL DIAMETER: **0.051 m (2")**
SCREEN LENGTH: **3.05 m**
SEALANT TYPE: **BENTONITE**

SUBSURFACE PROFILE			SAMPLE								
Depth (ft / m)	Strataplot	Description	Elevation	Number	Type	% Recovery	SPT (n)	CSV (ppm or %LEL - if applicable)	Odour	Laboratory Testing	Piezometer or Monitoring Well Installation
0		Ground Surface	100.84								
0		***ASPHALT SURFACE***									
1		***COARSE SAND FILL*** WITH SOME CLAY	100.23	1	DP	50%	-	<10 ppm	None	PAHs, INORGANICS & PCBs	
2		***CLAYEY SILT*** WITH SOME SAND, BROWN, FIRM		2	DP	50%	-	<10 ppm	None		
3				3	DP	100%	-	<10 ppm	None		
4				4	DP	100%	-	<10 ppm	None		
5				5	DP	100%	-	<10 ppm	None	BTEX, PHC F1-F4 & INORGANICS	
6			97.49	6	DP	100%	-	<10 ppm	None		
7		***CLAYEY SILT*** WITH SOME SAND, GREY, SATURATED		7	DP	100%	-	<10 ppm	None		
8				8	DP	100%	-	<10 ppm	None		
9			95.96								
10		***SILTY CLAY*** GREY		9	DP	100%	-	<10 ppm	None		
11				10	DP	100%	-	<10 ppm	None		
12			94.74								
13		***END OF HOLE***									



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RECORD OF: BH106

PROJECT NO: **CO738.01**
CLIENT: **BRIGHTPATH**
ADDRESS LINE 1: **90 MAPLE GROVE ROAD**
ADDRESS LINE 2:
CITY / PROVINCE: **OTTAWA, ONTARIO**

BORING DATE: **OCTOBER 16, 2019**
TYPE OF AUGER: **SOILD STEM**
TYPE OF RIG: **GEOPROBE 6620DT**
CONTRACTOR: **STRATA DRILLING GROUP**

VAPOUR MONITOR: **RKI EAGLE II**
PIPE SCHEDULE: **40**
RISER LENGTH: **1.80 m**

BOREHOLE DIAMETER: **0.15 (6")**
SCREEN SLOT #: **10**
SAND TYPE: **SILICA**

WELL DIAMETER: **0.051 m (2")**
SCREEN LENGTH: **3.05 m**
SEALANT TYPE: **BENTONITE**

SUBSURFACE PROFILE			SAMPLE								
Depth (ft / m)	Strataplot	Description	Elevation	Number	Type	% Recovery	SPT (n)	CSV (ppm or %LEL - if applicable)	Odour	Laboratory Testing	Piezometer or Monitoring Well Installation
0		Ground Surface	100.84								
0		***GRAVEL SURFACE***									
1		***COARSE SAND FILL*** WITH SOME GRAVEL		1	DP	50%	-	<10 ppm	None	BTEX, PHC F1-F4, PAHs, INORGANICS & PCBs	
3			99.62								
4		***SILTY SAND (FILL)*** WITH SOME CLAY, WHITE SPECS	99.16	2	DP	50%	-	<10 ppm	None	grainsize, pH	
6		***SILTY CLAY*** GREY		3	DP	100%	-	<10 ppm	None		
9				4	DP	100%	-	<10 ppm	None		
11				5	DP	100%	-	<10 ppm	None		
12			97.18								
13		***END OF HOLE***									

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RECORD OF: BH107

PROJECT NO: **CO738.01**
CLIENT: **BRIGHTPATH**
ADDRESS LINE 1: **90 MAPLE GROVE ROAD**
ADDRESS LINE 2:
CITY / PROVINCE: **OTTAWA, ONTARIO**

BORING DATE: **OCTOBER 16, 2019**
TYPE OF AUGER: **SOILD STEM**
TYPE OF RIG: **GEOPROBE 6620DT**
CONTRACTOR: **STRATA DRILLING GROUP**

VAPOUR MONITOR: **RKI EAGLE II**
PIPE SCHEDULE: **-**
RISER LENGTH: **-**

BOREHOLE DIAMETER: **0.15 (6")**
SCREEN SLOT #: **-**
SAND TYPE: **-**

WELL DIAMETER: **-**
SCREEN LENGTH: **-**
SEALANT TYPE: **BENTONITE**

SUBSURFACE PROFILE			SAMPLE								
Depth (ft / m)	Strataplot	Description	Elevation	Number	Type	% Recovery	SPT (n)	CSV (ppm or %LEL - if applicable)	Odour	Laboratory Testing	Piezometer or Monitoring Well Installation
0		Ground Surface	101.25								
0		***GRAVEL SUFRACE***									
1		***COARSE SAND FILL***		1	DP	20%	-	<10 ppm	None	BTEX PHC F1-F4, PAHs, INORGANICS & PCBs	
3 / 1			100.03								
4		***CLAYEY SILT*** BROWN		2	DP	50%	-	<10 ppm	None		
8 / 2			98.81								
8		END OF HOLE									
10 / 3											
13 / 4											
16 / 5											
20 / 6											
23 / 7											

LOGGED BY: **GS** INPUT BY: **GS** CHECKED BY: **JM** INPUT DATE: **OCTOBER 24, 2019**

RECORD OF: BH108

PROJECT NO: **CO738.01**
CLIENT: **BRIGHTPATH**
ADDRESS LINE 1: **90 MAPLE GROVE ROAD**
ADDRESS LINE 2:
CITY / PROVINCE: **OTTAWA, ONTARIO**

BORING DATE: **OCTOBER 16, 2019**
TYPE OF AUGER: **SOILD STEM**
TYPE OF RIG: **GEOPROBE 6620DT**
CONTRACTOR: **STRATA DRILLING GROUP**

VAPOUR MONITOR: **RKI EAGLE II**
BOREHOLE DIAMETER: **0.15 (6")**
WELL DIAMETER: **-**
PIPE SCHEDULE: **-**
SCREEN SLOT #: **-**
SCREEN LENGTH: **-**
RISER LENGTH: **-**
SAND TYPE: **-**
SEALANT TYPE: **BENTONITE**

SUBSURFACE PROFILE			SAMPLE								
Depth (ft / m)	Strataplot	Description	Elevation	Number	Type	% Recovery	SPT (n)	CSV (ppm or %LEL - if applicable)	Odour	Laboratory Testing	Piezometer or Monitoring Well Installation
		Ground Surface	101.69								
0		***ASPHALT SURFACE***									
		NO RECOVERY		1	DP	10%	-	<10 ppm	None		
1 / 3			100.47								
		SILTY SAND WITH SOME GRAVEL		2	DP	20%	-	<10 ppm	None	BTEX PHC F1-F4, PAHs, INORGANICS & PCBs	
2 / 6			99.86								
		REFUSAL AT 1.8 M BG									
3 / 10											
4 / 13											
5 / 16											
6 / 20											
7 / 23											

LOGGED BY: **GS** INPUT BY: **GS** CHECKED BY: **JM** INPUT DATE: **OCTOBER 24, 2019**

RECORD OF: BH109

PROJECT NO: **CO738.01**
CLIENT: **BRIGHTPATH**
ADDRESS LINE 1: **90 MAPLE GROVE ROAD**
ADDRESS LINE 2:
CITY / PROVINCE: **OTTAWA, ONTARIO**

BORING DATE: **OCTOBER 16, 2019**
TYPE OF AUGER: **SOILD STEM**
TYPE OF RIG: **GEOPROBE 6620DT**
CONTRACTOR: **STRATA DRILLING GROUP**

VAPOUR MONITOR: **RKI EAGLE II**
BOREHOLE DIAMETER: **0.15 (6")**
WELL DIAMETER: **-**
PIPE SCHEDULE: **-**
SCREEN SLOT #: **-**
SCREEN LENGTH: **-**
RISER LENGTH: **-**
SAND TYPE: **-**
SEALANT TYPE: **BENTONITE**

SUBSURFACE PROFILE			SAMPLE								
Depth (ft / m)	Strataplot	Description	Elevation	Number	Type	% Recovery	SPT (n)	CSV (ppm or %LEL - if applicable)	Odour	Laboratory Testing	Piezometer or Monitoring Well Installation
		Ground Surface	102.30								
0		***ASPHALT SURFACE***									
1		***COARSE SAND (FILL)*** WITH SOME CLAY	101.08	1	DP	30%	-	<10 ppm	None		
4 / 1		***SILTY SAND (FILL)*** WITH SOME GRAVEL & WHITE SPECS ENTRAINED	100.62	2	DP	100%	-	<10 ppm	None	BTEX PHC F1-F4, PAHs, INORGANICS & PCBs	
6 / 2		***SILTY CLAY*** WITH SOME CLAY, BROWN	99.86	3	DP	100%	-	<10 ppm	None		
		END OF HOLE									
3											
4											
5											
6											
7											

LOGGED BY: **GS** INPUT BY: **GS** CHECKED BY: **JM** INPUT DATE: **OCTOBER 24, 2019**

APPENDIX V
LABORATORY CERTIFICATES OF ANALYSIS

Your Project #: CO738.01
Site Location: 90 MAPLE GROVE,OTTAWA
Your C.O.C. #: 743677-02-01

Attention: Greg Sabourin

Terrapex Environmental Ltd
1-20 Gurdwara Rd.
Ottawa, ON
CANADA K2E 8B3

Report Date: 2019/11/14
Report #: R5965118
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: B9T9002
Received: 2019/10/23, 16:30

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	1	N/A	2019/10/30	CAM SOP-00301	EPA 8270D m
Methylnaphthalene Sum (1)	1	N/A	2019/10/31	CAM SOP-00301	EPA 8270D m
Chloride by Automated Colourimetry (1)	2	N/A	2019/10/31	CAM SOP-00463	SM 23 4500-Cl E m
Chromium (VI) in Water (1)	2	N/A	2019/10/25	CAM SOP-00436	EPA 7199 m
Free (WAD) Cyanide (1)	2	N/A	2019/10/28	CAM SOP-00457	OMOE E3015 m
Petroleum Hydro. CCME F1 & BTEX in Water (1)	7	N/A	2019/10/29	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	2	2019/10/30	2019/10/30	CAM SOP-00316	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	3	2019/10/30	2019/10/31	CAM SOP-00316	CCME PHC-CWS m
Mercury (1)	2	2019/10/29	2019/10/29	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	1	N/A	2019/10/30	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS (1)	1	N/A	2019/11/05	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM) (1)	2	2019/10/30	2019/10/30	CAM SOP-00318	EPA 8270D m
Polychlorinated Biphenyl in Water (1)	5	2019/10/30	2019/10/30	CAM SOP-00309	EPA 8082A m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Your Project #: CO738.01
Site Location: 90 MAPLE GROVE,OTTAWA
Your C.O.C. #: 743677-02-01

Attention: Greg Sabourin

Terrapex Environmental Ltd
1-20 Gurdwara Rd.
Ottawa, ON
CANADA K2E 8B3

Report Date: 2019/11/14
Report #: R5965118
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: B9T9002
Received: 2019/10/23, 16:30

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Laboratories Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alisha Williamson, Project Manager
Email: Alisha.Williamson@bvlabs.com
Phone# (613)274-0573
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: B9T9002
Report Date: 2019/11/14

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE,OTTAWA
Sampler Initials: GS

RESULTS OF ANALYSES OF WATER

BV Labs ID		LCU529	LCU530		
Sampling Date		2019/10/23 14:00	2019/10/23 14:10		
COC Number		743677-02-01	743677-02-01		
	UNITS	**MW105**	**MW111**	**RDL**	**QC Batch**
Inorganics					
WAD Cyanide (Free)	ug/L	ND	ND	1	6406828
Dissolved Chloride (Cl-)	mg/L	260	260	3.0	6407099

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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BV Labs Job #: B9T9002
Report Date: 2019/11/14

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE,OTTAWA
Sampler Initials: GS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID		LCU529			LCU529			LCU530		
Sampling Date		2019/10/23 14:00			2019/10/23 14:00			2019/10/23 14:10		
COC Number		743677-02-01			743677-02-01			743677-02-01		
	UNITS	**MW105**	**RDL**	**QC Batch**	**MW105 Lab-Dup**	**RDL**	**QC Batch**	**MW111**	**RDL**	**QC Batch**
Metals										
Chromium (VI)	ug/L	ND	0.50	6410947				ND	0.50	6410947
Mercury (Hg)	ug/L	ND	0.1	6411819				ND	0.1	6411819
Dissolved Antimony (Sb)	ug/L	ND	0.50	6424745	ND	0.50	6424745	ND	0.50	6407396
Dissolved Arsenic (As)	ug/L	1.9	1.0	6424745	1.8	1.0	6424745	1.8	1.0	6407396
Dissolved Barium (Ba)	ug/L	120	2.0	6424745	120	2.0	6424745	120	2.0	6407396
Dissolved Beryllium (Be)	ug/L	ND	0.50	6424745	ND	0.50	6424745	ND	0.50	6407396
Dissolved Boron (B)	ug/L	23	10	6424745	23	10	6424745	25	10	6407396
Dissolved Cadmium (Cd)	ug/L	ND	0.10	6424745	ND	0.10	6424745	ND	0.10	6407396
Dissolved Chromium (Cr)	ug/L	ND	5.0	6424745	ND	5.0	6424745	ND	5.0	6407396
Dissolved Cobalt (Co)	ug/L	0.95	0.50	6424745	0.96	0.50	6424745	0.93	0.50	6407396
Dissolved Copper (Cu)	ug/L	ND	1.0	6424745	ND	1.0	6424745	ND	1.0	6407396
Dissolved Lead (Pb)	ug/L	ND	0.50	6424745	ND	0.50	6424745	ND	0.50	6407396
Dissolved Molybdenum (Mo)	ug/L	3.1	0.50	6424745	3.0	0.50	6424745	2.9	0.50	6407396
Dissolved Nickel (Ni)	ug/L	2.2	1.0	6424745	2.3	1.0	6424745	2.4	1.0	6407396
Dissolved Selenium (Se)	ug/L	ND	2.0	6424745	ND	2.0	6424745	ND	2.0	6407396
Dissolved Silver (Ag)	ug/L	ND	0.10	6424745	ND	0.10	6424745	ND	0.10	6407396
Dissolved Sodium (Na)	ug/L	220000	100	6424745	220000	100	6424745	220000	100	6407396
Dissolved Thallium (Tl)	ug/L	ND	0.050	6424745	ND	0.050	6424745	ND	0.050	6407396
Dissolved Uranium (U)	ug/L	5.1	0.10	6424745	5.3	0.10	6424745	5.1	0.10	6407396
Dissolved Vanadium (V)	ug/L	1.1	0.50	6424745	1.0	0.50	6424745	1.0	0.50	6407396
Dissolved Zinc (Zn)	ug/L	ND	5.0	6424745	ND	5.0	6424745	ND	5.0	6407396

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		LCU529	LCU530			LCU530		
Sampling Date		2019/10/23 14:00	2019/10/23 14:10			2019/10/23 14:10		
COC Number		743677-02-01	743677-02-01			743677-02-01		
	UNITS	**MW105**	**MW111**	**RDL**	**QC Batch**	**MW111 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/L	ND	ND	0.071	6403773			
Polyaromatic Hydrocarbons								
Acenaphthene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Acenaphthylene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Anthracene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Benzo(a)anthracene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Benzo(a)pyrene	ug/L	ND	ND	0.010	6414365	ND	0.010	6414365
Benzo(b/j)fluoranthene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Benzo(g,h,i)perylene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Benzo(k)fluoranthene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Chrysene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Dibenz(a,h)anthracene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Fluoranthene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Fluorene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
1-Methylnaphthalene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
2-Methylnaphthalene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Naphthalene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Phenanthrene	ug/L	ND	ND	0.030	6414365	ND	0.030	6414365
Pyrene	ug/L	ND	ND	0.050	6414365	ND	0.050	6414365
Surrogate Recovery (%)								
D10-Anthracene	%	114	116		6414365	114		6414365
D14-Terphenyl (FS)	%	103	104		6414365	100		6414365
D8-Acenaphthylene	%	104	111		6414365	104		6414365

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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BV Labs Job #: B9T9002
Report Date: 2019/11/14

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE,OTTAWA
Sampler Initials: GS

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		LCU526	LCU527			LCU527			LCU528		
Sampling Date		2019/10/23 13:00	2019/10/23 12:00			2019/10/23 12:00			2019/10/23 11:30		
COC Number		743677-02-01	743677-02-01			743677-02-01			743677-02-01		
	UNITS	**MW101**	**MW103**	**RDL**	**QC Batch**	**MW103 Lab-Dup**	**RDL**	**QC Batch**	**MW104**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons											
Benzene	ug/L	ND	ND	0.20	6411807	ND	0.20	6411807	ND	0.20	6411807
Toluene	ug/L	ND	ND	0.20	6411807	ND	0.20	6411807	ND	0.20	6411807
Ethylbenzene	ug/L	ND	ND	0.20	6411807	ND	0.20	6411807	ND	0.20	6411807
o-Xylene	ug/L	ND	ND	0.20	6411807	ND	0.20	6411807	ND	0.20	6411807
p+m-Xylene	ug/L	ND	ND	0.40	6411807	ND	0.40	6411807	ND	0.40	6411807
Total Xylenes	ug/L	ND	ND	0.40	6411807	ND	0.40	6411807	ND	0.40	6411807
F1 (C6-C10)	ug/L	ND	ND	25	6411807	ND	25	6411807	ND	25	6411807
F1 (C6-C10) - BTEX	ug/L	ND	ND	25	6411807	ND	25	6411807	ND	25	6411807
F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/L	ND	ND	100	6414659				ND	100	6414659
F3 (C16-C34 Hydrocarbons)	ug/L	ND	ND	200	6414659				ND	200	6414659
F4 (C34-C50 Hydrocarbons)	ug/L	ND	ND	200	6414659				ND	200	6414659
Reached Baseline at C50	ug/L	Yes	Yes		6414659				Yes		6414659
Surrogate Recovery (%)											
1,4-Difluorobenzene	%	102	102		6411807	103		6411807	101		6411807
4-Bromofluorobenzene	%	105	106		6411807	104		6411807	102		6411807
D10-Ethylbenzene	%	97	97		6411807	97		6411807	99		6411807
D4-1,2-Dichloroethane	%	113	113		6411807	112		6411807	110		6411807
o-Terphenyl	%	106	106		6414659				105		6414659

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		LCU528			LCU529	LCU530			LCU530		
Sampling Date		2019/10/23 11:30			2019/10/23 14:00	2019/10/23 14:10			2019/10/23 14:10		
COC Number		743677-02-01			743677-02-01	743677-02-01			743677-02-01		
	UNITS	**MW104 Lab-Dup**	**RDL**	**QC Batch**	**MW105**	**MW111**	**RDL**	**QC Batch**	**MW111 Lab-Dup**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons											
Benzene	ug/L				ND	ND	0.20	6411807			
Toluene	ug/L				ND	ND	0.20	6411807			
Ethylbenzene	ug/L				ND	ND	0.20	6411807			
o-Xylene	ug/L				ND	ND	0.20	6411807			
p+m-Xylene	ug/L				ND	ND	0.40	6411807			
Total Xylenes	ug/L				ND	ND	0.40	6411807			
F1 (C6-C10)	ug/L				ND	ND	25	6411807			
F1 (C6-C10) - BTEX	ug/L				ND	ND	25	6411807			
F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/L	ND	100	6414659	ND	ND	100	6414362	ND	100	6414362
F3 (C16-C34 Hydrocarbons)	ug/L	ND	200	6414659	ND	ND	200	6414362	ND	200	6414362
F4 (C34-C50 Hydrocarbons)	ug/L	ND	200	6414659	ND	ND	200	6414362	ND	200	6414362
Reached Baseline at C50	ug/L	Yes		6414659	Yes	Yes		6414362	Yes		6414362
Surrogate Recovery (%)											
1,4-Difluorobenzene	%				102	105		6411807			
4-Bromofluorobenzene	%				103	106		6411807			
D10-Ethylbenzene	%				98	100		6411807			
D4-1,2-Dichloroethane	%				110	114		6411807			
o-Terphenyl	%	104		6414659	97	98		6414362	102		6414362

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

Bureau Veritas Laboratories 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.bvlabs.com

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		LCU531			LCU532		
Sampling Date		2019/10/23			2019/10/21 12:45		
COC Number		743677-02-01			743677-02-01		
	UNITS	**TRIP BLANK#4176**	**RDL**	**QC Batch**	**TRIP SPIKE#4785**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons							
Benzene	ug/L	ND	0.20	6411807	100	0.20	6411807
Toluene	ug/L	ND	0.20	6411807	99	0.20	6411807
Ethylbenzene	ug/L	ND	0.20	6411807	110	0.20	6411807
o-Xylene	ug/L	ND	0.20	6411807	110	0.20	6411807
p+m-Xylene	ug/L	ND	0.40	6411807	110	0.40	6411807
Total Xylenes	ug/L	ND	0.40	6411807			
F1 (C6-C10)	ug/L	ND	25	6411807			
F1 (C6-C10) - BTEX	ug/L	ND	25	6411807			
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	103		6411807	105		6411807
4-Bromofluorobenzene	%	104		6411807	100		6411807
D10-Ethylbenzene	%	98		6411807	100		6411807
D4-1,2-Dichloroethane	%	113		6411807	111		6411807

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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BV Labs Job #: B9T9002
Report Date: 2019/11/14

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE,OTTAWA
Sampler Initials: GS

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

BV Labs ID		LCU526	LCU527	LCU528	LCU529	LCU530		
Sampling Date		2019/10/23 13:00	2019/10/23 12:00	2019/10/23 11:30	2019/10/23 14:00	2019/10/23 14:10		
COC Number		743677-02-01	743677-02-01	743677-02-01	743677-02-01	743677-02-01		
	UNITS	**MW101**	**MW103**	**MW104**	**MW105**	**MW111**	**RDL**	**QC Batch**
PCBs								
Aroclor 1242	ug/L	ND	ND	ND	ND	ND	0.05	6414552
Aroclor 1248	ug/L	ND	ND	ND	ND	ND	0.05	6414552
Aroclor 1254	ug/L	ND	ND	ND	ND	ND	0.05	6414552
Aroclor 1260	ug/L	ND	ND	ND	ND	ND	0.05	6414552
Total PCB	ug/L	ND	ND	ND	ND	ND	0.05	6414552
Surrogate Recovery (%)								
Decachlorobiphenyl	%	66	65	73	71	70		6414552

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Bureau Veritas Laboratories 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.bvlabs.com

TEST SUMMARY

BV Labs ID: LCU526
Sample ID: MW101
Matrix: Water

Collected: 2019/10/23
Shipped:
Received: 2019/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6411807	N/A	2019/10/29	Joe Paino
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6414659	2019/10/30	2019/10/31	(Kent) Maolin Li
Polychlorinated Biphenyl in Water	GC/ECD	6414552	2019/10/30	2019/10/30	Svitlana Shaula

BV Labs ID: LCU527
Sample ID: MW103
Matrix: Water

Collected: 2019/10/23
Shipped:
Received: 2019/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6411807	N/A	2019/10/29	Joe Paino
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6414659	2019/10/30	2019/10/31	(Kent) Maolin Li
Polychlorinated Biphenyl in Water	GC/ECD	6414552	2019/10/30	2019/10/30	Svitlana Shaula

BV Labs ID: LCU527 Dup
Sample ID: MW103
Matrix: Water

Collected: 2019/10/23
Shipped:
Received: 2019/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6411807	N/A	2019/10/29	Joe Paino

BV Labs ID: LCU528
Sample ID: MW104
Matrix: Water

Collected: 2019/10/23
Shipped:
Received: 2019/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6411807	N/A	2019/10/29	Joe Paino
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6414659	2019/10/30	2019/10/31	(Kent) Maolin Li
Polychlorinated Biphenyl in Water	GC/ECD	6414552	2019/10/30	2019/10/30	Svitlana Shaula

BV Labs ID: LCU528 Dup
Sample ID: MW104
Matrix: Water

Collected: 2019/10/23
Shipped:
Received: 2019/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6414659	2019/10/30	2019/10/31	(Kent) Maolin Li

BV Labs ID: LCU529
Sample ID: MW105
Matrix: Water

Collected: 2019/10/23
Shipped:
Received: 2019/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6403773	N/A	2019/10/31	Automated Statchk
Chloride by Automated Colourimetry	KONE	6407099	N/A	2019/10/31	Deonarine Ramnarine
Chromium (VI) in Water	IC	6410947	N/A	2019/10/25	Lang Le
Free (WAD) Cyanide	SKAL/CN	6406828	N/A	2019/10/28	Gnana Thomas
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6411807	N/A	2019/10/29	Joe Paino

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Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE,OTTAWA
Sampler Initials: GS

TEST SUMMARY

BV Labs ID: LCU529
Sample ID: MW105
Matrix: Water

Collected: 2019/10/23
Shipped:
Received: 2019/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6414362	2019/10/30	2019/10/30	Anna Stuglik Rolland
Mercury	CV/AA	6411819	2019/10/29	2019/10/29	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6424745	N/A	2019/11/05	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6414365	2019/10/30	2019/10/30	Bibin Alias Paul
Polychlorinated Biphenyl in Water	GC/ECD	6414552	2019/10/30	2019/10/30	Svitlana Shaula

BV Labs ID: LCU529 Dup
Sample ID: MW105
Matrix: Water

Collected: 2019/10/23
Shipped:
Received: 2019/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	6424745	N/A	2019/11/05	Arefa Dabhad

BV Labs ID: LCU530
Sample ID: MW111
Matrix: Water

Collected: 2019/10/23
Shipped:
Received: 2019/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6403773	N/A	2019/10/30	Automated Statchk
Chloride by Automated Colourimetry	KONE	6407099	N/A	2019/10/31	Deonarine Ramnarine
Chromium (VI) in Water	IC	6410947	N/A	2019/10/25	Lang Le
Free (WAD) Cyanide	SKAL/CN	6406828	N/A	2019/10/28	Gnana Thomas
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6411807	N/A	2019/10/29	Joe Paino
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6414362	2019/10/30	2019/10/30	Anna Stuglik Rolland
Mercury	CV/AA	6411819	2019/10/29	2019/10/29	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	6407396	N/A	2019/10/30	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6414365	2019/10/30	2019/10/30	Bibin Alias Paul
Polychlorinated Biphenyl in Water	GC/ECD	6414552	2019/10/30	2019/10/30	Svitlana Shaula

BV Labs ID: LCU530 Dup
Sample ID: MW111
Matrix: Water

Collected: 2019/10/23
Shipped:
Received: 2019/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6414362	2019/10/30	2019/10/30	Anna Stuglik Rolland
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6414365	2019/10/30	2019/10/30	Bibin Alias Paul

BV Labs ID: LCU531
Sample ID: TRIP BLANK#4176
Matrix: Water

Collected: 2019/10/23
Shipped:
Received: 2019/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6411807	N/A	2019/10/29	Joe Paino

BV Labs Job #: B9T9002
Report Date: 2019/11/14

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE,OTTAWA
Sampler Initials: GS

TEST SUMMARY

BV Labs ID: LCU532
Sample ID: TRIP SPIKE#4785
Matrix: Water

Collected: 2019/10/21
Shipped:
Received: 2019/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6411807	N/A	2019/10/29	Joe Paino

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.3°C

Revised report (2019/11/14): Report revised to reflect changes to data reported for metals for sample MW105 (LCU529) due to internal process error.

Sample LCU532 [TRIP SPIKE#4785] : F1/BTEX Analysis: Trip spike results are expressed as percentage of the spiked amounts.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6406828	GTO	Matrix Spike	WAD Cyanide (Free)	2019/10/28		89	%	80 - 120
6406828	GTO	Spiked Blank	WAD Cyanide (Free)	2019/10/28		96	%	80 - 120
6406828	GTO	Method Blank	WAD Cyanide (Free)	2019/10/28	ND,RDL=1		ug/L	
6406828	GTO	RPD	WAD Cyanide (Free)	2019/10/28	NC		%	20
6407099	DRM	Matrix Spike	Dissolved Chloride (Cl-)	2019/10/31		NC	%	80 - 120
6407099	DRM	Spiked Blank	Dissolved Chloride (Cl-)	2019/10/31		105	%	80 - 120
6407099	DRM	Method Blank	Dissolved Chloride (Cl-)	2019/10/31	ND, RDL=1.0		mg/L	
6407099	DRM	RPD	Dissolved Chloride (Cl-)	2019/10/31	3.1		%	20
6407396	ADA	Matrix Spike	Dissolved Antimony (Sb)	2019/10/30		109	%	80 - 120
			Dissolved Arsenic (As)	2019/10/30		104	%	80 - 120
			Dissolved Barium (Ba)	2019/10/30		101	%	80 - 120
			Dissolved Beryllium (Be)	2019/10/30		113	%	80 - 120
			Dissolved Boron (B)	2019/10/30		109	%	80 - 120
			Dissolved Cadmium (Cd)	2019/10/30		107	%	80 - 120
			Dissolved Chromium (Cr)	2019/10/30		96	%	80 - 120
			Dissolved Cobalt (Co)	2019/10/30		99	%	80 - 120
			Dissolved Copper (Cu)	2019/10/30		105	%	80 - 120
			Dissolved Lead (Pb)	2019/10/30		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2019/10/30		110	%	80 - 120
			Dissolved Nickel (Ni)	2019/10/30		95	%	80 - 120
			Dissolved Selenium (Se)	2019/10/30		102	%	80 - 120
			Dissolved Silver (Ag)	2019/10/30		70 (1)	%	80 - 120
			Dissolved Sodium (Na)	2019/10/30		NC	%	80 - 120
			Dissolved Thallium (Tl)	2019/10/30		107	%	80 - 120
			Dissolved Uranium (U)	2019/10/30		101	%	80 - 120
			Dissolved Vanadium (V)	2019/10/30		98	%	80 - 120
			Dissolved Zinc (Zn)	2019/10/30		102	%	80 - 120
6407396	ADA	Spiked Blank	Dissolved Antimony (Sb)	2019/10/30		100	%	80 - 120
			Dissolved Arsenic (As)	2019/10/30		98	%	80 - 120
			Dissolved Barium (Ba)	2019/10/30		96	%	80 - 120
			Dissolved Beryllium (Be)	2019/10/30		106	%	80 - 120
			Dissolved Boron (B)	2019/10/30		101	%	80 - 120
			Dissolved Cadmium (Cd)	2019/10/30		99	%	80 - 120
			Dissolved Chromium (Cr)	2019/10/30		93	%	80 - 120
			Dissolved Cobalt (Co)	2019/10/30		98	%	80 - 120
			Dissolved Copper (Cu)	2019/10/30		97	%	80 - 120
			Dissolved Lead (Pb)	2019/10/30		99	%	80 - 120
			Dissolved Molybdenum (Mo)	2019/10/30		96	%	80 - 120
			Dissolved Nickel (Ni)	2019/10/30		94	%	80 - 120
			Dissolved Selenium (Se)	2019/10/30		99	%	80 - 120
			Dissolved Silver (Ag)	2019/10/30		93	%	80 - 120
			Dissolved Sodium (Na)	2019/10/30		99	%	80 - 120
			Dissolved Thallium (Tl)	2019/10/30		100	%	80 - 120
			Dissolved Uranium (U)	2019/10/30		97	%	80 - 120
			Dissolved Vanadium (V)	2019/10/30		94	%	80 - 120
			Dissolved Zinc (Zn)	2019/10/30		98	%	80 - 120
6407396	ADA	Method Blank	Dissolved Antimony (Sb)	2019/10/30	ND, RDL=0.50		ug/L	
			Dissolved Arsenic (As)	2019/10/30	ND, RDL=1.0		ug/L	
			Dissolved Barium (Ba)	2019/10/30	ND, RDL=2.0		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Beryllium (Be)	2019/10/30	ND, RDL=0.50		ug/L	
			Dissolved Boron (B)	2019/10/30	ND, RDL=10		ug/L	
			Dissolved Cadmium (Cd)	2019/10/30	ND, RDL=0.10		ug/L	
			Dissolved Chromium (Cr)	2019/10/30	ND, RDL=5.0		ug/L	
			Dissolved Cobalt (Co)	2019/10/30	ND, RDL=0.50		ug/L	
			Dissolved Copper (Cu)	2019/10/30	ND, RDL=1.0		ug/L	
			Dissolved Lead (Pb)	2019/10/30	ND, RDL=0.50		ug/L	
			Dissolved Molybdenum (Mo)	2019/10/30	ND, RDL=0.50		ug/L	
			Dissolved Nickel (Ni)	2019/10/30	ND, RDL=1.0		ug/L	
			Dissolved Selenium (Se)	2019/10/30	ND, RDL=2.0		ug/L	
			Dissolved Silver (Ag)	2019/10/30	ND, RDL=0.10		ug/L	
			Dissolved Sodium (Na)	2019/10/30	ND, RDL=100		ug/L	
			Dissolved Thallium (Tl)	2019/10/30	ND, RDL=0.050		ug/L	
			Dissolved Uranium (U)	2019/10/30	ND, RDL=0.10		ug/L	
			Dissolved Vanadium (V)	2019/10/30	ND, RDL=0.50		ug/L	
			Dissolved Zinc (Zn)	2019/10/30	ND, RDL=5.0		ug/L	
6407396	ADA	RPD	Dissolved Antimony (Sb)	2019/10/30	NC		%	20
			Dissolved Arsenic (As)	2019/10/30	2.9		%	20
			Dissolved Barium (Ba)	2019/10/30	0.25		%	20
			Dissolved Beryllium (Be)	2019/10/30	NC		%	20
			Dissolved Boron (B)	2019/10/30	4.6		%	20
			Dissolved Cadmium (Cd)	2019/10/30	NC		%	20
			Dissolved Chromium (Cr)	2019/10/30	NC		%	20
			Dissolved Cobalt (Co)	2019/10/30	6.7		%	20
			Dissolved Copper (Cu)	2019/10/30	NC		%	20
			Dissolved Lead (Pb)	2019/10/30	NC		%	20
			Dissolved Molybdenum (Mo)	2019/10/30	NC		%	20
			Dissolved Nickel (Ni)	2019/10/30	NC		%	20
			Dissolved Selenium (Se)	2019/10/30	NC		%	20
			Dissolved Silver (Ag)	2019/10/30	NC		%	20
			Dissolved Thallium (Tl)	2019/10/30	NC		%	20
			Dissolved Uranium (U)	2019/10/30	NC		%	20
			Dissolved Vanadium (V)	2019/10/30	4.7		%	20
			Dissolved Zinc (Zn)	2019/10/30	NC		%	20
6410947	LLE	Matrix Spike	Chromium (VI)	2019/10/29		103	%	80 - 120
6410947	LLE	Spiked Blank	Chromium (VI)	2019/10/29		105	%	80 - 120
6410947	LLE	Method Blank	Chromium (VI)	2019/10/29	ND, RDL=0.50		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6410947	LLE	RPD	Chromium (VI)	2019/10/29	NC		%	20
6411807	JP5	Matrix Spike [LCU527-03]	1,4-Difluorobenzene	2019/10/29		101	%	70 - 130
			4-Bromofluorobenzene	2019/10/29		104	%	70 - 130
			D10-Ethylbenzene	2019/10/29		100	%	70 - 130
			D4-1,2-Dichloroethane	2019/10/29		115	%	70 - 130
			Benzene	2019/10/29		91	%	70 - 130
			Toluene	2019/10/29		90	%	70 - 130
			Ethylbenzene	2019/10/29		102	%	70 - 130
			o-Xylene	2019/10/29		102	%	70 - 130
			p+m-Xylene	2019/10/29		105	%	70 - 130
			F1 (C6-C10)	2019/10/29		99	%	70 - 130
6411807	JP5	Spiked Blank	1,4-Difluorobenzene	2019/10/29		104	%	70 - 130
			4-Bromofluorobenzene	2019/10/29		103	%	70 - 130
			D10-Ethylbenzene	2019/10/29		105	%	70 - 130
			D4-1,2-Dichloroethane	2019/10/29		112	%	70 - 130
			Benzene	2019/10/29		94	%	70 - 130
			Toluene	2019/10/29		91	%	70 - 130
			Ethylbenzene	2019/10/29		103	%	70 - 130
			o-Xylene	2019/10/29		103	%	70 - 130
			p+m-Xylene	2019/10/29		108	%	70 - 130
			F1 (C6-C10)	2019/10/29		96	%	70 - 130
6411807	JP5	Method Blank	1,4-Difluorobenzene	2019/10/29		103	%	70 - 130
			4-Bromofluorobenzene	2019/10/29		102	%	70 - 130
			D10-Ethylbenzene	2019/10/29		98	%	70 - 130
			D4-1,2-Dichloroethane	2019/10/29		110	%	70 - 130
			Benzene	2019/10/29	ND, RDL=0.20		ug/L	
			Toluene	2019/10/29	ND, RDL=0.20		ug/L	
			Ethylbenzene	2019/10/29	ND, RDL=0.20		ug/L	
			o-Xylene	2019/10/29	ND, RDL=0.20		ug/L	
			p+m-Xylene	2019/10/29	ND, RDL=0.40		ug/L	
			Total Xylenes	2019/10/29	ND, RDL=0.40		ug/L	
			F1 (C6-C10)	2019/10/29	ND, RDL=25		ug/L	
			F1 (C6-C10) - BTEX	2019/10/29	ND, RDL=25		ug/L	
6411807	JP5	RPD [LCU527-03]	Benzene	2019/10/29	NC		%	30
			Toluene	2019/10/29	NC		%	30
			Ethylbenzene	2019/10/29	NC		%	30
			o-Xylene	2019/10/29	NC		%	30
			p+m-Xylene	2019/10/29	NC		%	30
			Total Xylenes	2019/10/29	NC		%	30
			F1 (C6-C10)	2019/10/29	NC		%	30
			F1 (C6-C10) - BTEX	2019/10/29	NC		%	30
6411819	MEN	Matrix Spike	Mercury (Hg)	2019/10/29		100	%	75 - 125
6411819	MEN	Spiked Blank	Mercury (Hg)	2019/10/29		98	%	80 - 120
6411819	MEN	Method Blank	Mercury (Hg)	2019/10/29	ND, RDL=0.1		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6411819	MEN	RPD	Mercury (Hg)	2019/10/29	NC		%	20
6414362	AS2	Matrix Spike [LCU529-02]	o-Terphenyl	2019/10/30		107	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2019/10/30		127	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2019/10/30		NC	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2019/10/30		114	%	50 - 130
6414362	AS2	Spiked Blank	o-Terphenyl	2019/10/30		108	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2019/10/30		123	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2019/10/30		121	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2019/10/30		114	%	60 - 130
6414362	AS2	Method Blank	o-Terphenyl	2019/10/30		96	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2019/10/30	ND, RDL=100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2019/10/30	ND, RDL=200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2019/10/30	ND, RDL=200		ug/L	
6414362	AS2	RPD [LCU530-02]	F2 (C10-C16 Hydrocarbons)	2019/10/30	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2019/10/30	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2019/10/30	NC		%	30
6414365	PP4	Matrix Spike	D10-Anthracene	2019/10/30		105	%	50 - 130
			D14-Terphenyl (FS)	2019/10/30		70	%	50 - 130
			D8-Acenaphthylene	2019/10/30		105	%	50 - 130
			Acenaphthene	2019/10/30		103	%	50 - 130
			Acenaphthylene	2019/10/30		106	%	50 - 130
			Anthracene	2019/10/30		102	%	50 - 130
			Benzo(a)anthracene	2019/10/30		110	%	50 - 130
			Benzo(a)pyrene	2019/10/30		103	%	50 - 130
			Benzo(b/j)fluoranthene	2019/10/30		102	%	50 - 130
			Benzo(g,h,i)perylene	2019/10/30		105	%	50 - 130
			Benzo(k)fluoranthene	2019/10/30		99	%	50 - 130
			Chrysene	2019/10/30		102	%	50 - 130
			Dibenz(a,h)anthracene	2019/10/30		102	%	50 - 130
			Fluoranthene	2019/10/30		110	%	50 - 130
			Fluorene	2019/10/30		104	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/10/30		109	%	50 - 130
			1-Methylnaphthalene	2019/10/30		113	%	50 - 130
			2-Methylnaphthalene	2019/10/30		104	%	50 - 130
			Naphthalene	2019/10/30		99	%	50 - 130
			Phenanthrene	2019/10/30		107	%	50 - 130
			Pyrene	2019/10/30		109	%	50 - 130
6414365	PP4	Spiked Blank	D10-Anthracene	2019/10/30		109	%	50 - 130
			D14-Terphenyl (FS)	2019/10/30		100	%	50 - 130
			D8-Acenaphthylene	2019/10/30		106	%	50 - 130
			Acenaphthene	2019/10/30		111	%	50 - 130
			Acenaphthylene	2019/10/30		112	%	50 - 130
			Anthracene	2019/10/30		110	%	50 - 130
			Benzo(a)anthracene	2019/10/30		119	%	50 - 130
			Benzo(a)pyrene	2019/10/30		113	%	50 - 130
			Benzo(b/j)fluoranthene	2019/10/30		114	%	50 - 130
			Benzo(g,h,i)perylene	2019/10/30		117	%	50 - 130
			Benzo(k)fluoranthene	2019/10/30		111	%	50 - 130
			Chrysene	2019/10/30		113	%	50 - 130
			Dibenz(a,h)anthracene	2019/10/30		112	%	50 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Fluoranthene	2019/10/30		120	%	50 - 130
			Fluorene	2019/10/30		111	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/10/30		121	%	50 - 130
			1-Methylnaphthalene	2019/10/30		123	%	50 - 130
			2-Methylnaphthalene	2019/10/30		112	%	50 - 130
			Naphthalene	2019/10/30		105	%	50 - 130
			Phenanthrene	2019/10/30		115	%	50 - 130
			Pyrene	2019/10/30		118	%	50 - 130
6414365	PP4	Method Blank	D10-Anthracene	2019/10/30		119	%	50 - 130
			D14-Terphenyl (FS)	2019/10/30		101	%	50 - 130
			D8-Acenaphthylene	2019/10/30		110	%	50 - 130
			Acenaphthene	2019/10/30	ND, RDL=0.050		ug/L	
			Acenaphthylene	2019/10/30	ND, RDL=0.050		ug/L	
			Anthracene	2019/10/30	ND, RDL=0.050		ug/L	
			Benzo(a)anthracene	2019/10/30	ND, RDL=0.050		ug/L	
			Benzo(a)pyrene	2019/10/30	ND, RDL=0.010		ug/L	
			Benzo(b/j)fluoranthene	2019/10/30	ND, RDL=0.050		ug/L	
			Benzo(g,h,i)perylene	2019/10/30	ND, RDL=0.050		ug/L	
			Benzo(k)fluoranthene	2019/10/30	ND, RDL=0.050		ug/L	
			Chrysene	2019/10/30	ND, RDL=0.050		ug/L	
			Dibenz(a,h)anthracene	2019/10/30	ND, RDL=0.050		ug/L	
			Fluoranthene	2019/10/30	ND, RDL=0.050		ug/L	
			Fluorene	2019/10/30	ND, RDL=0.050		ug/L	
			Indeno(1,2,3-cd)pyrene	2019/10/30	ND, RDL=0.050		ug/L	
			1-Methylnaphthalene	2019/10/30	ND, RDL=0.050		ug/L	
			2-Methylnaphthalene	2019/10/30	ND, RDL=0.050		ug/L	
			Naphthalene	2019/10/30	ND, RDL=0.050		ug/L	
			Phenanthrene	2019/10/30	ND, RDL=0.030		ug/L	
			Pyrene	2019/10/30	ND, RDL=0.050		ug/L	
6414365	PP4	RPD [LCU530-02]	Acenaphthene	2019/10/30	NC		%	30
			Acenaphthylene	2019/10/30	NC		%	30
			Anthracene	2019/10/30	NC		%	30
			Benzo(a)anthracene	2019/10/30	NC		%	30
			Benzo(a)pyrene	2019/10/30	NC		%	30
			Benzo(b/j)fluoranthene	2019/10/30	NC		%	30
			Benzo(g,h,i)perylene	2019/10/30	NC		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(k)fluoranthene	2019/10/30	NC		%	30
			Chrysene	2019/10/30	NC		%	30
			Dibenz(a,h)anthracene	2019/10/30	NC		%	30
			Fluoranthene	2019/10/30	NC		%	30
			Fluorene	2019/10/30	NC		%	30
			Indeno(1,2,3-cd)pyrene	2019/10/30	NC		%	30
			1-Methylnaphthalene	2019/10/30	NC		%	30
			2-Methylnaphthalene	2019/10/30	NC		%	30
			Naphthalene	2019/10/30	NC		%	30
			Phenanthrene	2019/10/30	NC		%	30
			Pyrene	2019/10/30	NC		%	30
6414552	SVS	Matrix Spike	Decachlorobiphenyl	2019/10/30		86	%	60 - 130
			Aroclor 1260	2019/10/30		103	%	60 - 130
			Total PCB	2019/10/30		103	%	60 - 130
6414552	SVS	Spiked Blank	Decachlorobiphenyl	2019/10/30		69	%	60 - 130
			Aroclor 1260	2019/10/30		74	%	60 - 130
			Total PCB	2019/10/30		74	%	60 - 130
6414552	SVS	Method Blank	Decachlorobiphenyl	2019/10/30		62	%	60 - 130
			Aroclor 1242	2019/10/30	ND, RDL=0.05		ug/L	
			Aroclor 1248	2019/10/30	ND, RDL=0.05		ug/L	
			Aroclor 1254	2019/10/30	ND, RDL=0.05		ug/L	
			Aroclor 1260	2019/10/30	ND, RDL=0.05		ug/L	
			Total PCB	2019/10/30	ND, RDL=0.05		ug/L	
6414552	SVS	RPD	Aroclor 1242	2019/10/30	NC		%	30
			Aroclor 1248	2019/10/30	NC		%	30
			Aroclor 1254	2019/10/30	NC		%	30
			Aroclor 1260	2019/10/30	NC		%	30
			Total PCB	2019/10/30	NC		%	40
6414659	KLI	Matrix Spike [LCU527-02]	o-Terphenyl	2019/10/31		113	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2019/10/31		117	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2019/10/31		NC	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2019/10/31		125	%	50 - 130
6414659	KLI	Spiked Blank	o-Terphenyl	2019/10/31		108	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2019/10/31		110	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2019/10/31		121	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2019/10/31		117	%	60 - 130
6414659	KLI	Method Blank	o-Terphenyl	2019/10/31		105	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2019/10/31	ND, RDL=100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2019/10/31	ND, RDL=200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2019/10/31	ND, RDL=200		ug/L	
6414659	KLI	RPD [LCU528-02]	F2 (C10-C16 Hydrocarbons)	2019/10/31	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2019/10/31	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2019/10/31	NC		%	30
6424745	ADA	Matrix Spike [LCU529-08]	Dissolved Antimony (Sb)	2019/11/05		104	%	80 - 120
			Dissolved Arsenic (As)	2019/11/05		99	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Barium (Ba)	2019/11/05		101	%	80 - 120
			Dissolved Beryllium (Be)	2019/11/05		104	%	80 - 120
			Dissolved Boron (B)	2019/11/05		100	%	80 - 120
			Dissolved Cadmium (Cd)	2019/11/05		101	%	80 - 120
			Dissolved Chromium (Cr)	2019/11/05		94	%	80 - 120
			Dissolved Cobalt (Co)	2019/11/05		96	%	80 - 120
			Dissolved Copper (Cu)	2019/11/05		101	%	80 - 120
			Dissolved Lead (Pb)	2019/11/05		93	%	80 - 120
			Dissolved Molybdenum (Mo)	2019/11/05		102	%	80 - 120
			Dissolved Nickel (Ni)	2019/11/05		93	%	80 - 120
			Dissolved Selenium (Se)	2019/11/05		97	%	80 - 120
			Dissolved Silver (Ag)	2019/11/05		95	%	80 - 120
			Dissolved Sodium (Na)	2019/11/05		NC	%	80 - 120
			Dissolved Thallium (Tl)	2019/11/05		96	%	80 - 120
			Dissolved Uranium (U)	2019/11/05		101	%	80 - 120
			Dissolved Vanadium (V)	2019/11/05		97	%	80 - 120
			Dissolved Zinc (Zn)	2019/11/05		96	%	80 - 120
6424745	ADA	Spiked Blank	Dissolved Antimony (Sb)	2019/11/05		99	%	80 - 120
			Dissolved Arsenic (As)	2019/11/05		97	%	80 - 120
			Dissolved Barium (Ba)	2019/11/05		98	%	80 - 120
			Dissolved Beryllium (Be)	2019/11/05		102	%	80 - 120
			Dissolved Boron (B)	2019/11/05		100	%	80 - 120
			Dissolved Cadmium (Cd)	2019/11/05		98	%	80 - 120
			Dissolved Chromium (Cr)	2019/11/05		93	%	80 - 120
			Dissolved Cobalt (Co)	2019/11/05		99	%	80 - 120
			Dissolved Copper (Cu)	2019/11/05		99	%	80 - 120
			Dissolved Lead (Pb)	2019/11/05		95	%	80 - 120
			Dissolved Molybdenum (Mo)	2019/11/05		96	%	80 - 120
			Dissolved Nickel (Ni)	2019/11/05		94	%	80 - 120
			Dissolved Selenium (Se)	2019/11/05		98	%	80 - 120
			Dissolved Silver (Ag)	2019/11/05		93	%	80 - 120
			Dissolved Sodium (Na)	2019/11/05		96	%	80 - 120
			Dissolved Thallium (Tl)	2019/11/05		97	%	80 - 120
			Dissolved Uranium (U)	2019/11/05		100	%	80 - 120
			Dissolved Vanadium (V)	2019/11/05		95	%	80 - 120
			Dissolved Zinc (Zn)	2019/11/05		98	%	80 - 120
6424745	ADA	Method Blank	Dissolved Antimony (Sb)	2019/11/05	ND, RDL=0.50		ug/L	
			Dissolved Arsenic (As)	2019/11/05	ND, RDL=1.0		ug/L	
			Dissolved Barium (Ba)	2019/11/05	ND, RDL=2.0		ug/L	
			Dissolved Beryllium (Be)	2019/11/05	ND, RDL=0.50		ug/L	
			Dissolved Boron (B)	2019/11/05	ND, RDL=10		ug/L	
			Dissolved Cadmium (Cd)	2019/11/05	ND, RDL=0.10		ug/L	
			Dissolved Chromium (Cr)	2019/11/05	ND, RDL=5.0		ug/L	
			Dissolved Cobalt (Co)	2019/11/05	ND, RDL=0.50		ug/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Copper (Cu)	2019/11/05	ND, RDL=1.0		ug/L	
			Dissolved Lead (Pb)	2019/11/05	ND, RDL=0.50		ug/L	
			Dissolved Molybdenum (Mo)	2019/11/05	ND, RDL=0.50		ug/L	
			Dissolved Nickel (Ni)	2019/11/05	ND, RDL=1.0		ug/L	
			Dissolved Selenium (Se)	2019/11/05	ND, RDL=2.0		ug/L	
			Dissolved Silver (Ag)	2019/11/05	ND, RDL=0.10		ug/L	
			Dissolved Sodium (Na)	2019/11/05	ND, RDL=100		ug/L	
			Dissolved Thallium (Tl)	2019/11/05	ND, RDL=0.050		ug/L	
			Dissolved Uranium (U)	2019/11/05	ND, RDL=0.10		ug/L	
			Dissolved Vanadium (V)	2019/11/05	ND, RDL=0.50		ug/L	
			Dissolved Zinc (Zn)	2019/11/05	ND, RDL=5.0		ug/L	
6424745	ADA	RPD [LCU529-08]	Dissolved Antimony (Sb)	2019/11/05	NC		%	20
			Dissolved Arsenic (As)	2019/11/05	9.5		%	20
			Dissolved Barium (Ba)	2019/11/05	1.7		%	20
			Dissolved Beryllium (Be)	2019/11/05	NC		%	20
			Dissolved Boron (B)	2019/11/05	0.74		%	20
			Dissolved Cadmium (Cd)	2019/11/05	NC		%	20
			Dissolved Chromium (Cr)	2019/11/05	NC		%	20
			Dissolved Cobalt (Co)	2019/11/05	1.1		%	20
			Dissolved Copper (Cu)	2019/11/05	NC		%	20
			Dissolved Lead (Pb)	2019/11/05	NC		%	20
			Dissolved Molybdenum (Mo)	2019/11/05	1.0		%	20
			Dissolved Nickel (Ni)	2019/11/05	4.9		%	20
			Dissolved Selenium (Se)	2019/11/05	NC		%	20
			Dissolved Silver (Ag)	2019/11/05	NC		%	20
			Dissolved Sodium (Na)	2019/11/05	0.68		%	20
			Dissolved Thallium (Tl)	2019/11/05	NC		%	20
			Dissolved Uranium (U)	2019/11/05	2.7		%	20
			Dissolved Vanadium (V)	2019/11/05	2.5		%	20
			Dissolved Zinc (Zn)	2019/11/05	NC		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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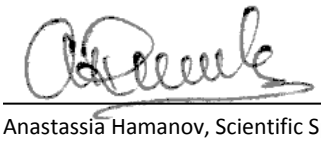
BV Labs Job #: B9T9002
Report Date: 2019/11/14

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE,OTTAWA
Sampler Initials: GS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist

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Your Project #: CO738.01
Site Location: 90 MAPLE GROVE
Your C.O.C. #: 742862-01-01, 742862-02-01

Attention: Greg Sabourin

Terrapex Environmental Ltd
1-20 Gurdwara Rd.
Ottawa, ON
CANADA K2E 8B3

Report Date: 2019/10/29
Report #: R5942575
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9T4207
Received: 2019/10/18, 17:00

Sample Matrix: Soil
Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	7	N/A	2019/10/25	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron (1)	8	2019/10/22	2019/10/23	CAM SOP-00408	R153 Ana. Prot. 2011
Free (WAD) Cyanide (1)	8	2019/10/24	2019/10/28	CAM SOP-00457	OMOE E3015 m
Conductivity (1)	8	2019/10/24	2019/10/24	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1, 2)	8	2019/10/22	2019/10/24	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 3)	11	N/A	2019/10/24	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 4)	5	2019/10/21	2019/10/24	CAM SOP-00316	CCME CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 4)	5	2019/10/24	2019/10/25	CAM SOP-00316	CCME CWS m
F4G (CCME Hydrocarbons Gravimetric) (1)	2	2019/10/28	2019/10/28	CAM SOP-00316	CCME PHC-CWS m
Strong Acid Leachable Metals by ICPMS (1)	8	2019/10/22	2019/10/23	CAM SOP-00447	EPA 6020B m
Moisture (1)	12	N/A	2019/10/21	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	5	2019/10/24	2019/10/24	CAM SOP-00318	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM) (1)	2	2019/10/24	2019/10/25	CAM SOP-00318	EPA 8270D m
Polychlorinated Biphenyl in Soil (1)	7	2019/10/23	2019/10/23	CAM SOP-00309	EPA 8082A m
pH CaCl2 EXTRACT (1)	10	2019/10/23	2019/10/23	CAM SOP-00413	EPA 9045 D m
Sieve, 75um (1)	2	N/A	2019/10/24	CAM SOP-00467	Carter 2nd ed m
Sodium Adsorption Ratio (SAR) (1)	8	N/A	2019/10/25	CAM SOP-00102	EPA 6010C

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope

Your Project #: CO738.01
Site Location: 90 MAPLE GROVE
Your C.O.C. #: 742862-01-01, 742862-02-01

Attention: Greg Sabourin

Terrapex Environmental Ltd
1-20 Gurdwara Rd.
Ottawa, ON
CANADA K2E 8B3

Report Date: 2019/10/29
Report #: R5942575
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9T4207
Received: 2019/10/18, 17:00

dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Laboratories Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(4) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alisha Williamson, Project Manager
Email: Alisha.Williamson@bvlabs.com
Phone# (613)274-0573
==========
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BV Labs Job #: B9T4207
Report Date: 2019/10/29

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE
Sampler Initials: GS

RESULTS OF ANALYSES OF SOIL

BV Labs ID		LBU415			LBU416			LBU417		
Sampling Date		2019/10/16 09:10			2019/10/16 09:45			2019/10/16 10:30		
COC Number		742862-01-01			742862-01-01			742862-01-01		
	UNITS	**MW101-3**	**RDL**	**QC Batch**	**BH102-2**	**RDL**	**QC Batch**	**MW103-6**	**RDL**	**QC Batch**
Calculated Parameters										
Sodium Adsorption Ratio	N/A				0.52		6395654			
Inorganics										
Conductivity	mS/cm				0.047	0.002	6403572			
Moisture	%	27	1.0	6397998	24	1.0	6397998	26	1.0	6397266
Available (CaCl2) pH	pH				6.96		6401267	7.88		6401267
WAD Cyanide (Free)	ug/g				ND	0.01	6403761			
Miscellaneous Parameters										
Grain Size	%							FINE	N/A	6402436
Sieve - #200 (<0.075mm)	%							79	1	6402436
Sieve - #200 (>0.075mm)	%							21	1	6402436

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
N/A = Not Applicable

BV Labs ID		LBU418	LBU419			LBU420	LBU421	LBU422		
Sampling Date		2019/10/16 13:05	2019/10/16 13:15			2019/10/16 14:00	2019/10/16 13:55	2019/10/16 16:00		
COC Number		742862-01-01	742862-01-01			742862-01-01	742862-01-01	742862-01-01		
	UNITS	**MW104-6**	**MW104-16**	**RDL**	**QC Batch**	**MW105-5**	**MW105-1**	**BH106-1**	**RDL**	**QC Batch**
Calculated Parameters										
Sodium Adsorption Ratio	N/A					2.9	1.3	1.4		6395654
Inorganics										
Conductivity	mS/cm					0.31	0.19	0.12	0.002	6403572
Moisture	%	35	32	1.0	6397998	21	10	9.0	1.0	6397266
Available (CaCl2) pH	pH					7.69	7.51	7.82		6401267
WAD Cyanide (Free)	ug/g					ND	ND	ND	0.01	6403761

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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BV Labs Job #: B9T4207
Report Date: 2019/10/29

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE
Sampler Initials: GS

RESULTS OF ANALYSES OF SOIL

BV Labs ID		LBU423			LBU424		LBU425		
Sampling Date		2019/10/16 16:05			2019/10/16 16:20		2019/10/16 16:40		
COC Number		742862-01-01			742862-01-01		742862-02-01		
	UNITS	**BH106-2**	**RDL**	**QC Batch**	**BH107-1**	**QC Batch**	**BH108-2**	**RDL**	**QC Batch**
Calculated Parameters									
Sodium Adsorption Ratio	N/A				1.1	6395654	7.9		6395654
Inorganics									
Conductivity	mS/cm				0.21	6403572	0.38	0.002	6403572
Moisture	%				4.6	6397266	13	1.0	6397998
Available (CaCl2) pH	pH	7.80		6401267	7.87	6401267	7.80		6401267
WAD Cyanide (Free)	ug/g				ND	6403761	ND	0.01	6403761
Miscellaneous Parameters									
Grain Size	%	FINE	N/A	6402436					
Sieve - #200 (<0.075mm)	%	68	1	6402436					
Sieve - #200 (>0.075mm)	%	32	1	6402436					

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
N/A = Not Applicable

BV Labs ID		LBU425			LBU426	LBU427		
Sampling Date		2019/10/16 16:40			2019/10/16 17:00	2019/10/16 17:15		
COC Number		742862-02-01			742862-02-01	742862-02-01		
	UNITS	**BH108-2 Lab-Dup**	**RDL**	**QC Batch**	**BH109-2**	**BH109-12**	**RDL**	**QC Batch**
Calculated Parameters								
Sodium Adsorption Ratio	N/A				27	22		6395654
Inorganics								
Conductivity	mS/cm				1.0	0.95	0.002	6403572
Moisture	%				24	17	1.0	6397998
Available (CaCl2) pH	pH	7.80		6401267	7.90	7.92		6401267
WAD Cyanide (Free)	ug/g	ND	0.01	6403761	ND	ND	0.01	6403761

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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BV Labs Job #: B9T4207
Report Date: 2019/10/29

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE
Sampler Initials: GS

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		LBU416	LBU420	LBU421	LBU422	LBU424		
Sampling Date		2019/10/16 09:45	2019/10/16 14:00	2019/10/16 13:55	2019/10/16 16:00	2019/10/16 16:20		
COC Number		742862-01-01	742862-01-01	742862-01-01	742862-01-01	742862-01-01		
	UNITS	**BH102-2**	**MW105-5**	**MW105-1**	**BH106-1**	**BH107-1**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	ND	ND	ND	ND	ND	0.2	6398567
Metals								
Hot Water Ext. Boron (B)	ug/g	0.058	0.063	0.063	ND	0.16	0.050	6399752
Acid Extractable Antimony (Sb)	ug/g	ND	ND	ND	ND	ND	0.20	6399619
Acid Extractable Arsenic (As)	ug/g	1.1	1.2	ND	ND	ND	1.0	6399619
Acid Extractable Barium (Ba)	ug/g	260	98	56	46	120	0.50	6399619
Acid Extractable Beryllium (Be)	ug/g	0.83	0.36	0.27	0.21	ND	0.20	6399619
Acid Extractable Boron (B)	ug/g	5.2	ND	ND	ND	ND	5.0	6399619
Acid Extractable Cadmium (Cd)	ug/g	0.10	ND	ND	ND	ND	0.10	6399619
Acid Extractable Chromium (Cr)	ug/g	59	25	21	14	5.1	1.0	6399619
Acid Extractable Cobalt (Co)	ug/g	17	7.1	4.8	3.8	1.6	0.10	6399619
Acid Extractable Copper (Cu)	ug/g	32	14	5.8	8.6	3.1	0.50	6399619
Acid Extractable Lead (Pb)	ug/g	7.2	3.6	2.9	3.0	7.0	1.0	6399619
Acid Extractable Molybdenum (Mo)	ug/g	ND	ND	ND	ND	ND	0.50	6399619
Acid Extractable Nickel (Ni)	ug/g	33	14	10	8.4	4.4	0.50	6399619
Acid Extractable Selenium (Se)	ug/g	ND	ND	ND	ND	ND	0.50	6399619
Acid Extractable Silver (Ag)	ug/g	ND	ND	ND	ND	ND	0.20	6399619
Acid Extractable Thallium (Tl)	ug/g	0.32	0.12	0.10	0.14	0.27	0.050	6399619
Acid Extractable Uranium (U)	ug/g	0.64	1.6	0.44	0.37	0.33	0.050	6399619
Acid Extractable Vanadium (V)	ug/g	80	39	30	26	7.3	5.0	6399619
Acid Extractable Zinc (Zn)	ug/g	93	38	28	19	6.6	5.0	6399619
Acid Extractable Mercury (Hg)	ug/g	ND	ND	ND	ND	ND	0.050	6399619

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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BV Labs Job #: B9T4207
Report Date: 2019/10/29

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE
Sampler Initials: GS

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		LBU424			LBU425	LBU426	LBU427		
Sampling Date		2019/10/16 16:20			2019/10/16 16:40	2019/10/16 17:00	2019/10/16 17:15		
COC Number		742862-01-01			742862-02-01	742862-02-01	742862-02-01		
	UNITS	**BH107-1 Lab-Dup**	**RDL**	**QC Batch**	**BH108-2**	**BH109-2**	**BH109-12**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g				ND	ND	ND	0.2	6398567
Metals									
Hot Water Ext. Boron (B)	ug/g	0.17	0.050	6399752	0.089	0.089	0.050	0.050	6399752
Acid Extractable Antimony (Sb)	ug/g				ND	ND	ND	0.20	6399619
Acid Extractable Arsenic (As)	ug/g				1.4	1.9	1.5	1.0	6399619
Acid Extractable Barium (Ba)	ug/g				49	130	78	0.50	6399619
Acid Extractable Beryllium (Be)	ug/g				0.23	0.44	0.31	0.20	6399619
Acid Extractable Boron (B)	ug/g				ND	ND	ND	5.0	6399619
Acid Extractable Cadmium (Cd)	ug/g				ND	ND	ND	0.10	6399619
Acid Extractable Chromium (Cr)	ug/g				18	31	20	1.0	6399619
Acid Extractable Cobalt (Co)	ug/g				4.0	8.7	6.0	0.10	6399619
Acid Extractable Copper (Cu)	ug/g				11	19	14	0.50	6399619
Acid Extractable Lead (Pb)	ug/g				2.5	4.6	3.4	1.0	6399619
Acid Extractable Molybdenum (Mo)	ug/g				0.78	0.60	ND	0.50	6399619
Acid Extractable Nickel (Ni)	ug/g				9.4	19	13	0.50	6399619
Acid Extractable Selenium (Se)	ug/g				ND	ND	ND	0.50	6399619
Acid Extractable Silver (Ag)	ug/g				ND	ND	ND	0.20	6399619
Acid Extractable Thallium (Tl)	ug/g				0.078	0.14	0.095	0.050	6399619
Acid Extractable Uranium (U)	ug/g				0.39	0.51	0.43	0.050	6399619
Acid Extractable Vanadium (V)	ug/g				28	47	35	5.0	6399619
Acid Extractable Zinc (Zn)	ug/g				18	44	30	5.0	6399619
Acid Extractable Mercury (Hg)	ug/g				ND	ND	ND	0.050	6399619

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		LBU416			LBU416			LBU421		
Sampling Date		2019/10/16 09:45			2019/10/16 09:45			2019/10/16 13:55		
COC Number		742862-01-01			742862-01-01			742862-01-01		
	UNITS	**BH102-2**	**RDL**	**QC Batch**	**BH102-2 Lab-Dup**	**RDL**	**QC Batch**	**MW105-1**	**RDL**	**QC Batch**
Calculated Parameters										
Methylnaphthalene, 2-(1-)	ug/g	ND	0.0071	6395653				ND	0.0071	6395653
Polyaromatic Hydrocarbons										
Acenaphthene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Acenaphthylene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Anthracene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Benzo(a)anthracene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Benzo(a)pyrene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Benzo(b/j)fluoranthene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Benzo(g,h,i)perylene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Benzo(k)fluoranthene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Chrysene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Dibenz(a,h)anthracene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Fluoranthene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Fluorene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Indeno(1,2,3-cd)pyrene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
1-Methylnaphthalene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
2-Methylnaphthalene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Naphthalene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Phenanthrene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Pyrene	ug/g	ND	0.0050	6403592	ND	0.0050	6403592	ND	0.0050	6405212
Surrogate Recovery (%)										
D10-Anthracene	%	97		6403592	106		6403592	106		6405212
D14-Terphenyl (FS)	%	83		6403592	89		6403592	108		6405212
D8-Acenaphthylene	%	96		6403592	100		6403592	101		6405212

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		LBU422	LBU424	LBU425	LBU426		LBU427		
Sampling Date		2019/10/16 16:00	2019/10/16 16:20	2019/10/16 16:40	2019/10/16 17:00		2019/10/16 17:15		
COC Number		742862-01-01	742862-01-01	742862-02-01	742862-02-01		742862-02-01		
	UNITS	**BH106-1**	**BH107-1**	**BH108-2**	**BH109-2**	**QC Batch**	**BH109-12**	**RDL**	**QC Batch**
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	ND	ND	ND	ND	6395653	ND	0.0071	6395653
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Acenaphthylene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Anthracene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Benzo(a)anthracene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Benzo(a)pyrene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Benzo(b/j)fluoranthene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Benzo(g,h,i)perylene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Benzo(k)fluoranthene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Chrysene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Dibenz(a,h)anthracene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Fluoranthene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Fluorene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Indeno(1,2,3-cd)pyrene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
1-Methylnaphthalene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
2-Methylnaphthalene	ug/g	ND	0.0069	ND	ND	6403592	ND	0.0050	6405212
Naphthalene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Phenanthrene	ug/g	ND	0.0054	ND	ND	6403592	ND	0.0050	6405212
Pyrene	ug/g	ND	ND	ND	ND	6403592	ND	0.0050	6405212
Surrogate Recovery (%)									
D10-Anthracene	%	96	91	100	103	6403592	106		6405212
D14-Terphenyl (FS)	%	83	79	87	88	6403592	110		6405212
D8-Acenaphthylene	%	96	81	99	101	6403592	98		6405212

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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BV Labs Job #: B9T4207
Report Date: 2019/10/29

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE
Sampler Initials: GS

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		LBU415		LBU416			LBU416		
Sampling Date		2019/10/16 09:10		2019/10/16 09:45			2019/10/16 09:45		
COC Number		742862-01-01		742862-01-01			742862-01-01		
	UNITS	**MW101-3**	**QC Batch**	**BH102-2**	**RDL**	**QC Batch**	**BH102-2 Lab-Dup**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
Benzene	ug/g	ND	6404368	ND	0.020	6404368			
Toluene	ug/g	ND	6404368	ND	0.020	6404368			
Ethylbenzene	ug/g	ND	6404368	ND	0.020	6404368			
o-Xylene	ug/g	ND	6404368	ND	0.020	6404368			
p+m-Xylene	ug/g	ND	6404368	ND	0.040	6404368			
Total Xylenes	ug/g	ND	6404368	ND	0.040	6404368			
F1 (C6-C10)	ug/g	ND	6404368	ND	10	6404368			
F1 (C6-C10) - BTEX	ug/g	ND	6404368	ND	10	6404368			
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	ND	6403942	ND	10	6403584	ND	10	6403584
F3 (C16-C34 Hydrocarbons)	ug/g	ND	6403942	ND	50	6403584	ND	50	6403584
F4 (C34-C50 Hydrocarbons)	ug/g	ND	6403942	ND	50	6403584	ND	50	6403584
Reached Baseline at C50	ug/g	Yes	6403942	Yes		6403584	Yes		6403584
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	98	6404368	100		6404368			
4-Bromofluorobenzene	%	104	6404368	105		6404368			
D10-Ethylbenzene	%	96	6404368	96		6404368			
D4-1,2-Dichloroethane	%	102	6404368	103		6404368			
o-Terphenyl	%	82	6403942	101		6403584	102		6403584

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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BV Labs Job #: B9T4207
Report Date: 2019/10/29

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE
Sampler Initials: GS

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		LBU417	LBU418	LBU419	LBU420		LBU422		
Sampling Date		2019/10/16 10:30	2019/10/16 13:05	2019/10/16 13:15	2019/10/16 14:00		2019/10/16 16:00		
COC Number		742862-01-01	742862-01-01	742862-01-01	742862-01-01		742862-01-01		
	UNITS	**MW103-6**	**MW104-6**	**MW104-16**	**MW105-5**	**QC Batch**	**BH106-1**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
Benzene	ug/g	ND	ND	ND	ND	6404368	ND	0.020	6404368
Toluene	ug/g	ND	ND	ND	ND	6404368	ND	0.020	6404368
Ethylbenzene	ug/g	ND	ND	ND	ND	6404368	ND	0.020	6404368
o-Xylene	ug/g	ND	ND	ND	ND	6404368	ND	0.020	6404368
p+m-Xylene	ug/g	ND	ND	ND	ND	6404368	ND	0.040	6404368
Total Xylenes	ug/g	ND	ND	ND	ND	6404368	ND	0.040	6404368
F1 (C6-C10)	ug/g	ND	ND	ND	ND	6404368	ND	10	6404368
F1 (C6-C10) - BTEX	ug/g	ND	ND	ND	ND	6404368	ND	10	6404368
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	ND	ND	ND	ND	6403942	ND	10	6403584
F3 (C16-C34 Hydrocarbons)	ug/g	ND	ND	ND	ND	6403942	ND	50	6403584
F4 (C34-C50 Hydrocarbons)	ug/g	ND	ND	ND	ND	6403942	ND	50	6403584
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	6403942	Yes		6403584
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	99	101	99	98	6404368	99		6404368
4-Bromofluorobenzene	%	103	105	103	104	6404368	104		6404368
D10-Ethylbenzene	%	87	98	91	92	6404368	97		6404368
D4-1,2-Dichloroethane	%	102	104	103	101	6404368	102		6404368
o-Terphenyl	%	90	84	88	87	6403942	100		6403584

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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BV Labs Job #: B9T4207
Report Date: 2019/10/29

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE
Sampler Initials: GS

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		LBU424			LBU425			LBU426		
Sampling Date		2019/10/16 16:20			2019/10/16 16:40			2019/10/16 17:00		
COC Number		742862-01-01			742862-02-01			742862-02-01		
	UNITS	**BH107-1**	**RDL**	**QC Batch**	**BH108-2**	**RDL**	**QC Batch**	**BH109-2**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons										
Benzene	ug/g	ND	0.020	6404368	ND	0.020	6404368	ND	0.020	6404368
Toluene	ug/g	ND	0.020	6404368	ND	0.020	6404368	ND	0.020	6404368
Ethylbenzene	ug/g	ND	0.020	6404368	ND	0.020	6404368	ND	0.020	6404368
o-Xylene	ug/g	ND	0.020	6404368	ND	0.020	6404368	ND	0.020	6404368
p+m-Xylene	ug/g	ND	0.040	6404368	ND	0.040	6404368	ND	0.040	6404368
Total Xylenes	ug/g	ND	0.040	6404368	ND	0.040	6404368	ND	0.040	6404368
F1 (C6-C10)	ug/g	ND	10	6404368	ND	10	6404368	ND	10	6404368
F1 (C6-C10) - BTEX	ug/g	ND	10	6404368	ND	10	6404368	ND	10	6404368
F2-F4 Hydrocarbons										
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	140	100	6409697				170	100	6409697
F2 (C10-C16 Hydrocarbons)	ug/g	ND	10	6403584	ND	10	6403584	ND	10	6403584
F3 (C16-C34 Hydrocarbons)	ug/g	ND	50	6403584	ND	50	6403584	ND	50	6403584
F4 (C34-C50 Hydrocarbons)	ug/g	94	50	6403584	ND	50	6403584	95	50	6403584
Reached Baseline at C50	ug/g	No		6403584	Yes		6403584	No		6403584
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	98		6404368	99		6404368	99		6404368
4-Bromofluorobenzene	%	103		6404368	103		6404368	104		6404368
D10-Ethylbenzene	%	94		6404368	90		6404368	97		6404368
D4-1,2-Dichloroethane	%	102		6404368	100		6404368	100		6404368
o-Terphenyl	%	96		6403584	96		6403584	100		6403584

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		LBU426			LBU428		
Sampling Date		2019/10/16 17:00			2019/10/16		
COC Number		742862-02-01			742862-02-01		
	UNITS	**BH109-2 Lab-Dup**	**RDL**	**QC Batch**	**FIELD BLANK**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons							
Benzene	ug/g				ND	0.020	6404368
Toluene	ug/g				ND	0.020	6404368
Ethylbenzene	ug/g				ND	0.020	6404368
o-Xylene	ug/g				ND	0.020	6404368
p+m-Xylene	ug/g				ND	0.040	6404368
Total Xylenes	ug/g				ND	0.040	6404368
F1 (C6-C10)	ug/g				ND	10	6404368
F1 (C6-C10) - BTEX	ug/g				ND	10	6404368
F2-F4 Hydrocarbons							
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	170	100	6409697			
Surrogate Recovery (%)							
1,4-Difluorobenzene	%				99		6404368
4-Bromofluorobenzene	%				102		6404368
D10-Ethylbenzene	%				97		6404368
D4-1,2-Dichloroethane	%				100		6404368

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

BV Labs Job #: B9T4207
Report Date: 2019/10/29

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE
Sampler Initials: GS

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

BV Labs ID		LBU415	LBU417		LBU418	LBU419		LBU421		
Sampling Date		2019/10/16 09:10	2019/10/16 10:30		2019/10/16 13:05	2019/10/16 13:15		2019/10/16 13:55		
COC Number		742862-01-01	742862-01-01		742862-01-01	742862-01-01		742862-01-01		
	UNITS	**MW101-3**	**MW103-6**	**RDL**	**MW104-6**	**MW104-16**	**RDL**	**MW105-1**	**RDL**	**QC Batch**
PCBs										
Aroclor 1242	ug/g	ND	ND	0.010	ND	ND	0.020	ND	0.010	6401870
Aroclor 1248	ug/g	ND	ND	0.010	ND	ND	0.020	ND	0.010	6401870
Aroclor 1254	ug/g	ND	ND	0.010	ND	ND	0.020	ND	0.010	6401870
Aroclor 1260	ug/g	ND	ND	0.010	ND	ND	0.020	ND	0.010	6401870
Total PCB	ug/g	ND	ND	0.010	ND	ND	0.020	ND	0.010	6401870
Surrogate Recovery (%)										
Decachlorobiphenyl	%	69	66		72	71		66		6401870

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

BV Labs ID		LBU422	LBU424		
Sampling Date		2019/10/16 16:00	2019/10/16 16:20		
COC Number		742862-01-01	742862-01-01		
	UNITS	**BH106-1**	**BH107-1**	**RDL**	**QC Batch**
PCBs					
Aroclor 1242	ug/g	ND	ND	0.010	6401870
Aroclor 1248	ug/g	ND	ND	0.010	6401870
Aroclor 1254	ug/g	ND	ND	0.010	6401870
Aroclor 1260	ug/g	ND	ND	0.010	6401870
Total PCB	ug/g	ND	ND	0.010	6401870
Surrogate Recovery (%)					
Decachlorobiphenyl	%	62	64		6401870

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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TEST SUMMARY

BV Labs ID: LBU415
Sample ID: MW101-3
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6404368	N/A	2019/10/24	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6403942	2019/10/21	2019/10/24	Prabhjot Gulati
Moisture	BAL	6397998	N/A	2019/10/21	Gurpreet Kaur
Polychlorinated Biphenyl in Soil	GC/ECD	6401870	2019/10/23	2019/10/23	Sarah Huang

BV Labs ID: LBU416
Sample ID: BH102-2
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6395653	N/A	2019/10/25	Automated Statchk
Hot Water Extractable Boron	ICP	6399752	2019/10/22	2019/10/23	Jolly John
Free (WAD) Cyanide	TECH	6403761	2019/10/24	2019/10/28	Louise Harding
Conductivity	AT	6403572	2019/10/24	2019/10/24	Tanvee Kapur
Hexavalent Chromium in Soil by IC	IC/SPEC	6398567	2019/10/22	2019/10/24	Sally Norouz Coughlin
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6404368	N/A	2019/10/24	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6403584	2019/10/24	2019/10/25	(Kent) Maolin Li
Strong Acid Leachable Metals by ICPMS	ICP/MS	6399619	2019/10/22	2019/10/23	Daniel Teclu
Moisture	BAL	6397998	N/A	2019/10/21	Gurpreet Kaur
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6403592	2019/10/24	2019/10/24	Mitesh Raj
pH CaCl2 EXTRACT	AT	6401267	2019/10/23	2019/10/23	Kazzandra Adeva
Sodium Adsorption Ratio (SAR)	CALC/MET	6395654	N/A	2019/10/25	Automated Statchk

BV Labs ID: LBU416 Dup
Sample ID: BH102-2
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6403584	2019/10/24	2019/10/25	(Kent) Maolin Li
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6403592	2019/10/24	2019/10/24	Mitesh Raj

BV Labs ID: LBU417
Sample ID: MW103-6
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6404368	N/A	2019/10/24	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6403942	2019/10/21	2019/10/24	Prabhjot Gulati
Moisture	BAL	6397266	N/A	2019/10/21	Gurpreet Kaur
Polychlorinated Biphenyl in Soil	GC/ECD	6401870	2019/10/23	2019/10/23	Sarah Huang
pH CaCl2 EXTRACT	AT	6401267	2019/10/23	2019/10/23	Kazzandra Adeva
Sieve, 75um	SIEV	6402436	N/A	2019/10/24	Min Yang

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TEST SUMMARY

BV Labs ID: LBU418
Sample ID: MW104-6
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6404368	N/A	2019/10/24	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6403942	2019/10/21	2019/10/24	Prabhjot Gulati
Moisture	BAL	6397998	N/A	2019/10/21	Gurpreet Kaur
Polychlorinated Biphenyl in Soil	GC/ECD	6401870	2019/10/23	2019/10/23	Sarah Huang

BV Labs ID: LBU419
Sample ID: MW104-16
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6404368	N/A	2019/10/24	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6403942	2019/10/21	2019/10/24	Prabhjot Gulati
Moisture	BAL	6397998	N/A	2019/10/21	Gurpreet Kaur
Polychlorinated Biphenyl in Soil	GC/ECD	6401870	2019/10/23	2019/10/23	Sarah Huang

BV Labs ID: LBU420
Sample ID: MW105-5
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6399752	2019/10/22	2019/10/23	Jolly John
Free (WAD) Cyanide	TECH	6403761	2019/10/24	2019/10/28	Louise Harding
Conductivity	AT	6403572	2019/10/24	2019/10/24	Tanvee Kapur
Hexavalent Chromium in Soil by IC	IC/SPEC	6398567	2019/10/22	2019/10/24	Sally Norouz Coughlin
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6404368	N/A	2019/10/24	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6403942	2019/10/21	2019/10/24	Prabhjot Gulati
Strong Acid Leachable Metals by ICPMS	ICP/MS	6399619	2019/10/22	2019/10/23	Daniel Teclu
Moisture	BAL	6397266	N/A	2019/10/21	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6401267	2019/10/23	2019/10/23	Kazzandra Adeva
Sodium Adsorption Ratio (SAR)	CALC/MET	6395654	N/A	2019/10/25	Automated Statchk

BV Labs ID: LBU421
Sample ID: MW105-1
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6395653	N/A	2019/10/25	Automated Statchk
Hot Water Extractable Boron	ICP	6399752	2019/10/22	2019/10/23	Jolly John
Free (WAD) Cyanide	TECH	6403761	2019/10/24	2019/10/28	Louise Harding
Conductivity	AT	6403572	2019/10/24	2019/10/24	Tanvee Kapur
Hexavalent Chromium in Soil by IC	IC/SPEC	6398567	2019/10/22	2019/10/24	Sally Norouz Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	6399619	2019/10/22	2019/10/23	Daniel Teclu
Moisture	BAL	6397266	N/A	2019/10/21	Gurpreet Kaur
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6405212	2019/10/24	2019/10/25	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	6401870	2019/10/23	2019/10/23	Sarah Huang

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TEST SUMMARY

BV Labs ID: LBU421
Sample ID: MW105-1
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	6401267	2019/10/23	2019/10/23	Kazzandra Adeva
Sodium Adsorption Ratio (SAR)	CALC/MET	6395654	N/A	2019/10/25	Automated Statchk

BV Labs ID: LBU422
Sample ID: BH106-1
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6395653	N/A	2019/10/25	Automated Statchk
Hot Water Extractable Boron	ICP	6399752	2019/10/22	2019/10/23	Jolly John
Free (WAD) Cyanide	TECH	6403761	2019/10/24	2019/10/28	Louise Harding
Conductivity	AT	6403572	2019/10/24	2019/10/24	Tanvee Kapur
Hexavalent Chromium in Soil by IC	IC/SPEC	6398567	2019/10/22	2019/10/24	Sally Norouz Coughlin
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6404368	N/A	2019/10/24	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6403584	2019/10/24	2019/10/25	(Kent) Maolin Li
Strong Acid Leachable Metals by ICPMS	ICP/MS	6399619	2019/10/22	2019/10/23	Daniel Teclu
Moisture	BAL	6397266	N/A	2019/10/21	Gurpreet Kaur
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6403592	2019/10/24	2019/10/24	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	6401870	2019/10/23	2019/10/23	Sarah Huang
pH CaCl2 EXTRACT	AT	6401267	2019/10/23	2019/10/23	Kazzandra Adeva
Sodium Adsorption Ratio (SAR)	CALC/MET	6395654	N/A	2019/10/25	Automated Statchk

BV Labs ID: LBU423
Sample ID: BH106-2
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	6401267	2019/10/23	2019/10/23	Kazzandra Adeva
Sieve, 75um	SIEV	6402436	N/A	2019/10/24	Min Yang

BV Labs ID: LBU424
Sample ID: BH107-1
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6395653	N/A	2019/10/25	Automated Statchk
Hot Water Extractable Boron	ICP	6399752	2019/10/22	2019/10/23	Jolly John
Free (WAD) Cyanide	TECH	6403761	2019/10/24	2019/10/28	Louise Harding
Conductivity	AT	6403572	2019/10/24	2019/10/24	Tanvee Kapur
Hexavalent Chromium in Soil by IC	IC/SPEC	6398567	2019/10/22	2019/10/24	Sally Norouz Coughlin
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6404368	N/A	2019/10/24	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6403584	2019/10/24	2019/10/25	(Kent) Maolin Li
F4G (CCME Hydrocarbons Gravimetric)	BAL	6409697	2019/10/28	2019/10/28	Narinderjeet Kaur
Strong Acid Leachable Metals by ICPMS	ICP/MS	6399619	2019/10/22	2019/10/23	Daniel Teclu
Moisture	BAL	6397266	N/A	2019/10/21	Gurpreet Kaur

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BV Labs Job #: B9T4207
Report Date: 2019/10/29

Terrapex Environmental Ltd
Client Project #: CO738.01
Site Location: 90 MAPLE GROVE
Sampler Initials: GS

TEST SUMMARY

BV Labs ID: LBU424
Sample ID: BH107-1
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6403592	2019/10/24	2019/10/24	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	6401870	2019/10/23	2019/10/23	Sarah Huang
pH CaCl2 EXTRACT	AT	6401267	2019/10/23	2019/10/23	Kazzandra Adeva
Sodium Adsorption Ratio (SAR)	CALC/MET	6395654	N/A	2019/10/25	Automated Statchk

BV Labs ID: LBU424 Dup
Sample ID: BH107-1
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6399752	2019/10/22	2019/10/23	Jolly John

BV Labs ID: LBU425
Sample ID: BH108-2
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6395653	N/A	2019/10/25	Automated Statchk
Hot Water Extractable Boron	ICP	6399752	2019/10/22	2019/10/23	Jolly John
Free (WAD) Cyanide	TECH	6403761	2019/10/24	2019/10/28	Louise Harding
Conductivity	AT	6403572	2019/10/24	2019/10/24	Tanvee Kapur
Hexavalent Chromium in Soil by IC	IC/SPEC	6398567	2019/10/22	2019/10/24	Sally Norouz Coughlin
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6404368	N/A	2019/10/24	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6403584	2019/10/24	2019/10/25	(Kent) Maolin Li
Strong Acid Leachable Metals by ICPMS	ICP/MS	6399619	2019/10/22	2019/10/23	Daniel Teclu
Moisture	BAL	6397998	N/A	2019/10/21	Gurpreet Kaur
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6403592	2019/10/24	2019/10/24	Mitesh Raj
pH CaCl2 EXTRACT	AT	6401267	2019/10/23	2019/10/23	Kazzandra Adeva
Sodium Adsorption Ratio (SAR)	CALC/MET	6395654	N/A	2019/10/25	Automated Statchk

BV Labs ID: LBU425 Dup
Sample ID: BH108-2
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	6403761	2019/10/24	2019/10/28	Louise Harding
pH CaCl2 EXTRACT	AT	6401267	2019/10/23	2019/10/23	Kazzandra Adeva

BV Labs ID: LBU426
Sample ID: BH109-2
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6395653	N/A	2019/10/25	Automated Statchk
Hot Water Extractable Boron	ICP	6399752	2019/10/22	2019/10/23	Jolly John
Free (WAD) Cyanide	TECH	6403761	2019/10/24	2019/10/28	Louise Harding

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TEST SUMMARY

BV Labs ID: LBU426
Sample ID: BH109-2
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	6403572	2019/10/24	2019/10/24	Tanvee Kapur
Hexavalent Chromium in Soil by IC	IC/SPEC	6398567	2019/10/22	2019/10/24	Sally Norouz Coughlin
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6404368	N/A	2019/10/24	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6403584	2019/10/24	2019/10/25	(Kent) Maolin Li
F4G (CCME Hydrocarbons Gravimetric)	BAL	6409697	2019/10/28	2019/10/28	Narinderjeet Kaur
Strong Acid Leachable Metals by ICPMS	ICP/MS	6399619	2019/10/22	2019/10/23	Daniel Teclu
Moisture	BAL	6397998	N/A	2019/10/21	Gurpreet Kaur
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6403592	2019/10/24	2019/10/24	Mitesh Raj
pH CaCl2 EXTRACT	AT	6401267	2019/10/23	2019/10/23	Kazzandra Adeva
Sodium Adsorption Ratio (SAR)	CALC/MET	6395654	N/A	2019/10/25	Automated Statchk

BV Labs ID: LBU426 Dup
Sample ID: BH109-2
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
F4G (CCME Hydrocarbons Gravimetric)	BAL	6409697	2019/10/28	2019/10/28	Narinderjeet Kaur

BV Labs ID: LBU427
Sample ID: BH109-12
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6395653	N/A	2019/10/25	Automated Statchk
Hot Water Extractable Boron	ICP	6399752	2019/10/22	2019/10/23	Jolly John
Free (WAD) Cyanide	TECH	6403761	2019/10/24	2019/10/28	Louise Harding
Conductivity	AT	6403572	2019/10/24	2019/10/24	Tanvee Kapur
Hexavalent Chromium in Soil by IC	IC/SPEC	6398567	2019/10/22	2019/10/24	Sally Norouz Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	6399619	2019/10/22	2019/10/23	Daniel Teclu
Moisture	BAL	6397998	N/A	2019/10/21	Gurpreet Kaur
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6405212	2019/10/24	2019/10/25	Mitesh Raj
pH CaCl2 EXTRACT	AT	6401267	2019/10/23	2019/10/23	Kazzandra Adeva
Sodium Adsorption Ratio (SAR)	CALC/MET	6395654	N/A	2019/10/25	Automated Statchk

BV Labs ID: LBU428
Sample ID: FIELD BLANK
Matrix: Soil

Collected: 2019/10/16
Shipped:
Received: 2019/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6404368	N/A	2019/10/24	Domnica Andronescu

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.3°C

Sample LBU416 [BH102-2] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample LBU418 [MW104-6] : PCB Analysis: Detection limits were adjusted for high moisture content.

Sample LBU419 [MW104-16] : PCB Analysis: Detection limits were adjusted for high moisture content.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6397266	KJP	RPD	Moisture	2019/10/21	0		%	20
6397998	KJP	RPD	Moisture	2019/10/21	6.1		%	20
6398567	SAC	Matrix Spike	Chromium (VI)	2019/10/24		82	%	70 - 130
6398567	SAC	Spiked Blank	Chromium (VI)	2019/10/24		94	%	80 - 120
6398567	SAC	Method Blank	Chromium (VI)	2019/10/24	ND, RDL=0.2		ug/g	
6398567	SAC	RPD	Chromium (VI)	2019/10/24	NC		%	35
6399619	DT1	Matrix Spike	Acid Extractable Antimony (Sb)	2019/10/23		96	%	75 - 125
			Acid Extractable Arsenic (As)	2019/10/23		106	%	75 - 125
			Acid Extractable Barium (Ba)	2019/10/23		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2019/10/23		109	%	75 - 125
			Acid Extractable Boron (B)	2019/10/23		111	%	75 - 125
			Acid Extractable Cadmium (Cd)	2019/10/23		110	%	75 - 125
			Acid Extractable Chromium (Cr)	2019/10/23		NC	%	75 - 125
			Acid Extractable Cobalt (Co)	2019/10/23		114	%	75 - 125
			Acid Extractable Copper (Cu)	2019/10/23		NC	%	75 - 125
			Acid Extractable Lead (Pb)	2019/10/23		113	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2019/10/23		108	%	75 - 125
			Acid Extractable Nickel (Ni)	2019/10/23		NC	%	75 - 125
			Acid Extractable Selenium (Se)	2019/10/23		111	%	75 - 125
			Acid Extractable Silver (Ag)	2019/10/23		112	%	75 - 125
			Acid Extractable Thallium (Tl)	2019/10/23		110	%	75 - 125
			Acid Extractable Uranium (U)	2019/10/23		113	%	75 - 125
			Acid Extractable Vanadium (V)	2019/10/23		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2019/10/23		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2019/10/23		101	%	75 - 125
6399619	DT1	Spiked Blank	Acid Extractable Antimony (Sb)	2019/10/23		100	%	80 - 120
			Acid Extractable Arsenic (As)	2019/10/23		104	%	80 - 120
			Acid Extractable Barium (Ba)	2019/10/23		98	%	80 - 120
			Acid Extractable Beryllium (Be)	2019/10/23		96	%	80 - 120
			Acid Extractable Boron (B)	2019/10/23		93	%	80 - 120
			Acid Extractable Cadmium (Cd)	2019/10/23		98	%	80 - 120
			Acid Extractable Chromium (Cr)	2019/10/23		101	%	80 - 120
			Acid Extractable Cobalt (Co)	2019/10/23		101	%	80 - 120
			Acid Extractable Copper (Cu)	2019/10/23		101	%	80 - 120
			Acid Extractable Lead (Pb)	2019/10/23		104	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2019/10/23		99	%	80 - 120
			Acid Extractable Nickel (Ni)	2019/10/23		100	%	80 - 120
			Acid Extractable Selenium (Se)	2019/10/23		105	%	80 - 120
			Acid Extractable Silver (Ag)	2019/10/23		102	%	80 - 120
			Acid Extractable Thallium (Tl)	2019/10/23		103	%	80 - 120
			Acid Extractable Uranium (U)	2019/10/23		104	%	80 - 120
			Acid Extractable Vanadium (V)	2019/10/23		101	%	80 - 120
			Acid Extractable Zinc (Zn)	2019/10/23		103	%	80 - 120
			Acid Extractable Mercury (Hg)	2019/10/23		100	%	80 - 120
6399619	DT1	Method Blank	Acid Extractable Antimony (Sb)	2019/10/23	ND, RDL=0.20		ug/g	
			Acid Extractable Arsenic (As)	2019/10/23	ND, RDL=1.0		ug/g	
			Acid Extractable Barium (Ba)	2019/10/23	ND, RDL=0.50		ug/g	
			Acid Extractable Beryllium (Be)	2019/10/23	ND, RDL=0.20		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Boron (B)	2019/10/23	ND, RDL=5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2019/10/23	ND, RDL=0.10		ug/g	
			Acid Extractable Chromium (Cr)	2019/10/23	ND, RDL=1.0		ug/g	
			Acid Extractable Cobalt (Co)	2019/10/23	ND, RDL=0.10		ug/g	
			Acid Extractable Copper (Cu)	2019/10/23	ND, RDL=0.50		ug/g	
			Acid Extractable Lead (Pb)	2019/10/23	ND, RDL=1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2019/10/23	ND, RDL=0.50		ug/g	
			Acid Extractable Nickel (Ni)	2019/10/23	ND, RDL=0.50		ug/g	
			Acid Extractable Selenium (Se)	2019/10/23	ND, RDL=0.50		ug/g	
			Acid Extractable Silver (Ag)	2019/10/23	ND, RDL=0.20		ug/g	
			Acid Extractable Thallium (Tl)	2019/10/23	ND, RDL=0.050		ug/g	
			Acid Extractable Uranium (U)	2019/10/23	ND, RDL=0.050		ug/g	
			Acid Extractable Vanadium (V)	2019/10/23	ND, RDL=5.0		ug/g	
			Acid Extractable Zinc (Zn)	2019/10/23	ND, RDL=5.0		ug/g	
			Acid Extractable Mercury (Hg)	2019/10/23	ND, RDL=0.050		ug/g	
6399619	DT1	RPD	Acid Extractable Antimony (Sb)	2019/10/23	NC		%	30
			Acid Extractable Arsenic (As)	2019/10/23	5.5		%	30
			Acid Extractable Barium (Ba)	2019/10/23	1.6		%	30
			Acid Extractable Beryllium (Be)	2019/10/23	6.1		%	30
			Acid Extractable Boron (B)	2019/10/23	11		%	30
			Acid Extractable Cadmium (Cd)	2019/10/23	15		%	30
			Acid Extractable Chromium (Cr)	2019/10/23	1.1		%	30
			Acid Extractable Cobalt (Co)	2019/10/23	1.4		%	30
			Acid Extractable Copper (Cu)	2019/10/23	2.9		%	30
			Acid Extractable Lead (Pb)	2019/10/23	0.23		%	30
			Acid Extractable Molybdenum (Mo)	2019/10/23	NC		%	30
			Acid Extractable Nickel (Ni)	2019/10/23	1.6		%	30
			Acid Extractable Selenium (Se)	2019/10/23	NC		%	30
			Acid Extractable Silver (Ag)	2019/10/23	NC		%	30
			Acid Extractable Thallium (Tl)	2019/10/23	5.6		%	30
			Acid Extractable Uranium (U)	2019/10/23	2.4		%	30
			Acid Extractable Vanadium (V)	2019/10/23	1.8		%	30
			Acid Extractable Zinc (Zn)	2019/10/23	3.4		%	30
			Acid Extractable Mercury (Hg)	2019/10/23	NC		%	30
6399752	JOH	Matrix Spike [LBU424-01]	Hot Water Ext. Boron (B)	2019/10/23		102	%	75 - 125
6399752	JOH	Spiked Blank	Hot Water Ext. Boron (B)	2019/10/23		96	%	75 - 125
6399752	JOH	Method Blank	Hot Water Ext. Boron (B)	2019/10/23	ND, RDL=0.050		ug/g	
6399752	JOH	RPD [LBU424-01]	Hot Water Ext. Boron (B)	2019/10/23	4.1		%	40

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6401267	KAD	Spiked Blank	Available (CaCl2) pH	2019/10/23		100	%	97 - 103
6401267	KAD	RPD [LBU425-01]	Available (CaCl2) pH	2019/10/23	0.054		%	N/A
6401870	SHG	Matrix Spike	Decachlorobiphenyl	2019/10/23		81	%	60 - 130
			Aroclor 1260	2019/10/23		107	%	30 - 130
			Total PCB	2019/10/23		107	%	30 - 130
6401870	SHG	Spiked Blank	Decachlorobiphenyl	2019/10/23		95	%	60 - 130
			Aroclor 1260	2019/10/23		111	%	30 - 130
			Total PCB	2019/10/23		111	%	30 - 130
6401870	SHG	Method Blank	Decachlorobiphenyl	2019/10/23		85	%	60 - 130
			Aroclor 1242	2019/10/23	ND, RDL=0.010		ug/g	
			Aroclor 1248	2019/10/23	ND, RDL=0.010		ug/g	
			Aroclor 1254	2019/10/23	ND, RDL=0.010		ug/g	
			Aroclor 1260	2019/10/23	ND, RDL=0.010		ug/g	
			Total PCB	2019/10/23	ND, RDL=0.010		ug/g	
6401870	SHG	RPD	Aroclor 1242	2019/10/23	NC		%	50
			Aroclor 1248	2019/10/23	NC		%	50
			Aroclor 1254	2019/10/23	29		%	50
			Aroclor 1260	2019/10/23	NC		%	50
			Total PCB	2019/10/23	29		%	50
6402436	GYA	QC Standard	Sieve - #200 (<0.075mm)	2019/10/24		56	%	53 - 58
			Sieve - #200 (>0.075mm)	2019/10/24		44	%	42 - 47
6402436	GYA	RPD	Sieve - #200 (<0.075mm)	2019/10/24	0.15		%	20
			Sieve - #200 (>0.075mm)	2019/10/24	0.65		%	20
6403572	TKP	Spiked Blank	Conductivity	2019/10/24		103	%	90 - 110
6403572	TKP	Method Blank	Conductivity	2019/10/24	ND, RDL=0.002		mS/cm	
6403572	TKP	RPD	Conductivity	2019/10/24	0		%	10
6403584	KLI	Matrix Spike [LBU416-01]	o-Terphenyl	2019/10/25		102	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2019/10/25		101	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2019/10/25		103	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2019/10/25		105	%	50 - 130
6403584	KLI	Spiked Blank	o-Terphenyl	2019/10/25		104	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2019/10/25		102	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2019/10/25		105	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2019/10/25		106	%	80 - 120
6403584	KLI	Method Blank	o-Terphenyl	2019/10/25		102	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2019/10/25	ND, RDL=10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2019/10/25	ND, RDL=50		ug/g	
			F4 (C34-C50 Hydrocarbons)	2019/10/25	ND, RDL=50		ug/g	
6403584	KLI	RPD [LBU416-01]	F2 (C10-C16 Hydrocarbons)	2019/10/25	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2019/10/25	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2019/10/25	NC		%	30
6403592	RAJ	Matrix Spike [LBU416-01]	D10-Anthracene	2019/10/24		103	%	50 - 130
			D14-Terphenyl (FS)	2019/10/24		86	%	50 - 130
			D8-Acenaphthylene	2019/10/24		100	%	50 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acenaphthene	2019/10/24		96	%	50 - 130
			Acenaphthylene	2019/10/24		101	%	50 - 130
			Anthracene	2019/10/24		97	%	50 - 130
			Benzo(a)anthracene	2019/10/24		102	%	50 - 130
			Benzo(a)pyrene	2019/10/24		92	%	50 - 130
			Benzo(b/j)fluoranthene	2019/10/24		92	%	50 - 130
			Benzo(g,h,i)perylene	2019/10/24		94	%	50 - 130
			Benzo(k)fluoranthene	2019/10/24		82	%	50 - 130
			Chrysene	2019/10/24		96	%	50 - 130
			Dibenz(a,h)anthracene	2019/10/24		102	%	50 - 130
			Fluoranthene	2019/10/24		86	%	50 - 130
			Fluorene	2019/10/24		99	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/10/24		100	%	50 - 130
			1-Methylnaphthalene	2019/10/24		103	%	50 - 130
			2-Methylnaphthalene	2019/10/24		97	%	50 - 130
			Naphthalene	2019/10/24		86	%	50 - 130
			Phenanthrene	2019/10/24		94	%	50 - 130
			Pyrene	2019/10/24		87	%	50 - 130
6403592	RAJ	Spiked Blank	D10-Anthracene	2019/10/24		97	%	50 - 130
			D14-Terphenyl (FS)	2019/10/24		84	%	50 - 130
			D8-Acenaphthylene	2019/10/24		99	%	50 - 130
			Acenaphthene	2019/10/24		98	%	50 - 130
			Acenaphthylene	2019/10/24		103	%	50 - 130
			Anthracene	2019/10/24		95	%	50 - 130
			Benzo(a)anthracene	2019/10/24		104	%	50 - 130
			Benzo(a)pyrene	2019/10/24		97	%	50 - 130
			Benzo(b/j)fluoranthene	2019/10/24		97	%	50 - 130
			Benzo(g,h,i)perylene	2019/10/24		99	%	50 - 130
			Benzo(k)fluoranthene	2019/10/24		88	%	50 - 130
			Chrysene	2019/10/24		95	%	50 - 130
			Dibenz(a,h)anthracene	2019/10/24		103	%	50 - 130
			Fluoranthene	2019/10/24		90	%	50 - 130
			Fluorene	2019/10/24		103	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/10/24		104	%	50 - 130
			1-Methylnaphthalene	2019/10/24		106	%	50 - 130
			2-Methylnaphthalene	2019/10/24		101	%	50 - 130
			Naphthalene	2019/10/24		92	%	50 - 130
			Phenanthrene	2019/10/24		98	%	50 - 130
			Pyrene	2019/10/24		91	%	50 - 130
6403592	RAJ	Method Blank	D10-Anthracene	2019/10/24		98	%	50 - 130
			D14-Terphenyl (FS)	2019/10/24		82	%	50 - 130
			D8-Acenaphthylene	2019/10/24		94	%	50 - 130
			Acenaphthene	2019/10/24	ND, RDL=0.0050		ug/g	
			Acenaphthylene	2019/10/24	ND, RDL=0.0050		ug/g	
			Anthracene	2019/10/24	ND, RDL=0.0050		ug/g	
			Benzo(a)anthracene	2019/10/24	ND, RDL=0.0050		ug/g	
			Benzo(a)pyrene	2019/10/24	ND, RDL=0.0050		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(b/j)fluoranthene	2019/10/24	ND, RDL=0.0050		ug/g	
			Benzo(g,h,i)perylene	2019/10/24	ND, RDL=0.0050		ug/g	
			Benzo(k)fluoranthene	2019/10/24	ND, RDL=0.0050		ug/g	
			Chrysene	2019/10/24	ND, RDL=0.0050		ug/g	
			Dibenz(a,h)anthracene	2019/10/24	ND, RDL=0.0050		ug/g	
			Fluoranthene	2019/10/24	ND, RDL=0.0050		ug/g	
			Fluorene	2019/10/24	ND, RDL=0.0050		ug/g	
			Indeno(1,2,3-cd)pyrene	2019/10/24	ND, RDL=0.0050		ug/g	
			1-Methylnaphthalene	2019/10/24	ND, RDL=0.0050		ug/g	
			2-Methylnaphthalene	2019/10/24	ND, RDL=0.0050		ug/g	
			Naphthalene	2019/10/24	ND, RDL=0.0050		ug/g	
			Phenanthrene	2019/10/24	ND, RDL=0.0050		ug/g	
			Pyrene	2019/10/24	ND, RDL=0.0050		ug/g	
6403592	RAJ	RPD [LBU416-01]	Acenaphthene	2019/10/24	NC		%	40
			Acenaphthylene	2019/10/24	NC		%	40
			Anthracene	2019/10/24	NC		%	40
			Benzo(a)anthracene	2019/10/24	NC		%	40
			Benzo(a)pyrene	2019/10/24	NC		%	40
			Benzo(b/j)fluoranthene	2019/10/24	NC		%	40
			Benzo(g,h,i)perylene	2019/10/24	NC		%	40
			Benzo(k)fluoranthene	2019/10/24	NC		%	40
			Chrysene	2019/10/24	NC		%	40
			Dibenz(a,h)anthracene	2019/10/24	NC		%	40
			Fluoranthene	2019/10/24	NC		%	40
			Fluorene	2019/10/24	NC		%	40
			Indeno(1,2,3-cd)pyrene	2019/10/24	NC		%	40
			1-Methylnaphthalene	2019/10/24	NC		%	40
			2-Methylnaphthalene	2019/10/24	NC		%	40
			Naphthalene	2019/10/24	NC		%	40
			Phenanthrene	2019/10/24	NC		%	40
			Pyrene	2019/10/24	NC		%	40
6403761	LHA	Matrix Spike [LBU425-01]	WAD Cyanide (Free)	2019/10/28		99	%	75 - 125
6403761	LHA	Spiked Blank	WAD Cyanide (Free)	2019/10/28		98	%	80 - 120
6403761	LHA	Method Blank	WAD Cyanide (Free)	2019/10/28	ND, RDL=0.01		ug/g	
6403761	LHA	RPD [LBU425-01]	WAD Cyanide (Free)	2019/10/28	NC		%	35
6403942	GUL	Matrix Spike	o-Terphenyl	2019/10/24		87	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2019/10/24		89	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2019/10/24		89	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2019/10/24		89	%	50 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6403942	GUL	Spiked Blank	o-Terphenyl	2019/10/24		89	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2019/10/24		90	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2019/10/24		90	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2019/10/24		91	%	80 - 120
6403942	GUL	Method Blank	o-Terphenyl	2019/10/24		88	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2019/10/24	ND, RDL=10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2019/10/24	ND, RDL=50		ug/g	
			F4 (C34-C50 Hydrocarbons)	2019/10/24	ND, RDL=50		ug/g	
6403942	GUL	RPD	F2 (C10-C16 Hydrocarbons)	2019/10/24	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2019/10/24	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2019/10/24	NC		%	30
6404368	DAN	Matrix Spike	1,4-Difluorobenzene	2019/10/24		98	%	60 - 140
			4-Bromofluorobenzene	2019/10/24		105	%	60 - 140
			D10-Ethylbenzene	2019/10/24		107	%	60 - 140
			D4-1,2-Dichloroethane	2019/10/24		104	%	60 - 140
			Benzene	2019/10/24		98	%	60 - 140
			Toluene	2019/10/24		99	%	60 - 140
			Ethylbenzene	2019/10/24		108	%	60 - 140
			o-Xylene	2019/10/24		111	%	60 - 140
			p+m-Xylene	2019/10/24		113	%	60 - 140
			F1 (C6-C10)	2019/10/24		108	%	60 - 140
6404368	DAN	Spiked Blank	1,4-Difluorobenzene	2019/10/24		102	%	60 - 140
			4-Bromofluorobenzene	2019/10/24		104	%	60 - 140
			D10-Ethylbenzene	2019/10/24		92	%	60 - 140
			D4-1,2-Dichloroethane	2019/10/24		101	%	60 - 140
			Benzene	2019/10/24		90	%	60 - 140
			Toluene	2019/10/24		89	%	60 - 140
			Ethylbenzene	2019/10/24		95	%	60 - 140
			o-Xylene	2019/10/24		97	%	60 - 140
			p+m-Xylene	2019/10/24		99	%	60 - 140
			F1 (C6-C10)	2019/10/24		109	%	80 - 120
6404368	DAN	Method Blank	1,4-Difluorobenzene	2019/10/24		100	%	60 - 140
			4-Bromofluorobenzene	2019/10/24		103	%	60 - 140
			D10-Ethylbenzene	2019/10/24		91	%	60 - 140
			D4-1,2-Dichloroethane	2019/10/24		101	%	60 - 140
			Benzene	2019/10/24	ND, RDL=0.020		ug/g	
			Toluene	2019/10/24	ND, RDL=0.020		ug/g	
			Ethylbenzene	2019/10/24	ND, RDL=0.020		ug/g	
			o-Xylene	2019/10/24	ND, RDL=0.020		ug/g	
			p+m-Xylene	2019/10/24	ND, RDL=0.040		ug/g	
			Total Xylenes	2019/10/24	ND, RDL=0.040		ug/g	
			F1 (C6-C10)	2019/10/24	ND, RDL=10		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			F1 (C6-C10) - BTEX	2019/10/24	ND, RDL=10		ug/g	
6404368	DAN	RPD	F1 (C6-C10)	2019/10/24	NC		%	30
			F1 (C6-C10) - BTEX	2019/10/24	NC		%	30
6405212	RAJ	Matrix Spike	D10-Anthracene	2019/10/25		100	%	50 - 130
			D14-Terphenyl (FS)	2019/10/25		99	%	50 - 130
			D8-Acenaphthylene	2019/10/25		93	%	50 - 130
			Acenaphthene	2019/10/25		100	%	50 - 130
			Acenaphthylene	2019/10/25		98	%	50 - 130
			Anthracene	2019/10/25		95	%	50 - 130
			Benzo(a)anthracene	2019/10/25		106	%	50 - 130
			Benzo(a)pyrene	2019/10/25		102	%	50 - 130
			Benzo(b/j)fluoranthene	2019/10/25		100	%	50 - 130
			Benzo(g,h,i)perylene	2019/10/25		81	%	50 - 130
			Benzo(k)fluoranthene	2019/10/25		100	%	50 - 130
			Chrysene	2019/10/25		99	%	50 - 130
			Dibenz(a,h)anthracene	2019/10/25		88	%	50 - 130
			Fluoranthene	2019/10/25		102	%	50 - 130
			Fluorene	2019/10/25		94	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/10/25		84	%	50 - 130
			1-Methylnaphthalene	2019/10/25		110	%	50 - 130
			2-Methylnaphthalene	2019/10/25		100	%	50 - 130
			Naphthalene	2019/10/25		95	%	50 - 130
			Phenanthrene	2019/10/25		99	%	50 - 130
			Pyrene	2019/10/25		100	%	50 - 130
6405212	RAJ	Spiked Blank	D10-Anthracene	2019/10/25		105	%	50 - 130
			D14-Terphenyl (FS)	2019/10/25		105	%	50 - 130
			D8-Acenaphthylene	2019/10/25		101	%	50 - 130
			Acenaphthene	2019/10/25		102	%	50 - 130
			Acenaphthylene	2019/10/25		100	%	50 - 130
			Anthracene	2019/10/25		98	%	50 - 130
			Benzo(a)anthracene	2019/10/25		108	%	50 - 130
			Benzo(a)pyrene	2019/10/25		105	%	50 - 130
			Benzo(b/j)fluoranthene	2019/10/25		103	%	50 - 130
			Benzo(g,h,i)perylene	2019/10/25		86	%	50 - 130
			Benzo(k)fluoranthene	2019/10/25		102	%	50 - 130
			Chrysene	2019/10/25		102	%	50 - 130
			Dibenz(a,h)anthracene	2019/10/25		91	%	50 - 130
			Fluoranthene	2019/10/25		104	%	50 - 130
			Fluorene	2019/10/25		97	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/10/25		88	%	50 - 130
			1-Methylnaphthalene	2019/10/25		112	%	50 - 130
			2-Methylnaphthalene	2019/10/25		101	%	50 - 130
			Naphthalene	2019/10/25		96	%	50 - 130
			Phenanthrene	2019/10/25		100	%	50 - 130
			Pyrene	2019/10/25		102	%	50 - 130
6405212	RAJ	Method Blank	D10-Anthracene	2019/10/25		96	%	50 - 130
			D14-Terphenyl (FS)	2019/10/25		96	%	50 - 130
			D8-Acenaphthylene	2019/10/25		93	%	50 - 130
			Acenaphthene	2019/10/25	ND, RDL=0.0050		ug/g	
			Acenaphthylene	2019/10/25	ND, RDL=0.0050		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Anthracene	2019/10/25	ND, RDL=0.0050		ug/g	
			Benzo(a)anthracene	2019/10/25	ND, RDL=0.0050		ug/g	
			Benzo(a)pyrene	2019/10/25	ND, RDL=0.0050		ug/g	
			Benzo(b/j)fluoranthene	2019/10/25	ND, RDL=0.0050		ug/g	
			Benzo(g,h,i)perylene	2019/10/25	ND, RDL=0.0050		ug/g	
			Benzo(k)fluoranthene	2019/10/25	ND, RDL=0.0050		ug/g	
			Chrysene	2019/10/25	ND, RDL=0.0050		ug/g	
			Dibenz(a,h)anthracene	2019/10/25	ND, RDL=0.0050		ug/g	
			Fluoranthene	2019/10/25	ND, RDL=0.0050		ug/g	
			Fluorene	2019/10/25	ND, RDL=0.0050		ug/g	
			Indeno(1,2,3-cd)pyrene	2019/10/25	ND, RDL=0.0050		ug/g	
			1-Methylnaphthalene	2019/10/25	ND, RDL=0.0050		ug/g	
			2-Methylnaphthalene	2019/10/25	ND, RDL=0.0050		ug/g	
			Naphthalene	2019/10/25	ND, RDL=0.0050		ug/g	
			Phenanthrene	2019/10/25	ND, RDL=0.0050		ug/g	
			Pyrene	2019/10/25	ND, RDL=0.0050		ug/g	
6405212	RAJ	RPD	Acenaphthene	2019/10/25	NC		%	40
			Acenaphthylene	2019/10/25	NC		%	40
			Anthracene	2019/10/25	NC		%	40
			Benzo(a)anthracene	2019/10/25	NC		%	40
			Benzo(a)pyrene	2019/10/25	NC		%	40
			Benzo(b/j)fluoranthene	2019/10/25	NC		%	40
			Benzo(g,h,i)perylene	2019/10/25	NC		%	40
			Benzo(k)fluoranthene	2019/10/25	NC		%	40
			Chrysene	2019/10/25	NC		%	40
			Dibenz(a,h)anthracene	2019/10/25	NC		%	40
			Fluoranthene	2019/10/25	NC		%	40
			Fluorene	2019/10/25	NC		%	40
			Indeno(1,2,3-cd)pyrene	2019/10/25	NC		%	40
			1-Methylnaphthalene	2019/10/25	NC		%	40
			2-Methylnaphthalene	2019/10/25	NC		%	40
			Naphthalene	2019/10/25	NC		%	40
			Phenanthrene	2019/10/25	NC		%	40
			Pyrene	2019/10/25	NC		%	40
6409697	NKR	Matrix Spike [LBU424-03]	F4G-sg (Grav. Heavy Hydrocarbons)	2019/10/28		102	%	65 - 135
6409697	NKR	Spiked Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2019/10/28		104	%	65 - 135
6409697	NKR	Method Blank	F4G-sg (Grav. Heavy Hydrocarbons)	2019/10/28	ND, RDL=100		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6409697	NKR	RPD [LBU426-01]	F4G-sg (Grav. Heavy Hydrocarbons)	2019/10/28	0		%	50

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Anastassia Hamanov, Scientific Specialist

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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