CONCEPTUAL SITE MODEL

3610 INNES ROAD, OTTAWA, ON

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1 PHASE TWO CONCEPTUAL SITE MODEL

This narrative and the following tables and figures represent the Phase Two Conceptual Site Model (CSM) for 3610 Innes Road in Ottawa, Ontario (the RSC Property).

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1.1 SITE DESCRIPTION

A Phase Two Environmental Site Assessment (ESA) was conducted for the property located at 3610 Innes Road in Ottawa, Ontario, referred to as the "Site". The Site location is shown on **Figure 1**. The Site is an irregularly-shaped vacant property, covering approximately 14.98 hectares. The northwestern portion of the Site was formerly occupied by ancillary buildings, associated with a building-supply retail operation. The buildings were demolished in 2018 and no buildings remain on Site. The north and northeast portion of the Site had been used by the building supply retail operation for outdoor storage of materials, including overstock or waste materials. The south portion of the Site is vacant/cleared land.

Access to Innes Road is via a narrow (less than 30 m wide, approximately 125 m long) strip with a commercial storage and truck rental operation to the east of the strip and a parking area proposed for development of a commercial car wash to the west of the strip. These adjacent parcels had been part of a larger property that included the Phase One Property, but these two portions along Innes Road were divested to new owners. The balance of the Site (south of the Innes Road access strip) is bounded by vacant undeveloped land to the east, south and west, although residential development has been initiated on some adjacent lands. A hydro corridor extends along the south boundary of the Site and to the north, across Innes Road is an established residential subdivision. The property boundary is shown on **Figure 2**.

It is noted that the larger property had been identified by municipal addresses of 3604 and 3636 Innes Road. After divestment of the portions to the east and west of the access strip, the Phase One Property was assigned the municipal address of 3610 Innes Road in Ottawa, Ontario.

The surface of the north part of the Site is asphalt-covered with remains of concrete foundations from the former ancillary buildings. The south part of the former commercial operations consists of gravel or soil cover. Beyond the former commercial area, making up most of the Site, the ground is covered with vegetation. Trees that had covered a portion of the property have been removed in preparation for development.

1.2 POTENTIALLY CONTAMINATING ACTIVITIES AND AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

The Phase One ESA identified potentially contaminating activities (PCAs) on the Site that may have contributed to areas of potential environmental concern (APECs), as defined in Ontario Regulation (O. Reg.) 153/04. The building supply operation began sometime after 1973 (reported to be early 1980s in a Phase One ESA interview) and would have included the storage of wood that may have been treated with wood preservatives. Wood preservation activities were not conducted on Site.

PCAs that were identified on the Site included an area of stained soil that was confirmed (through sampling at TE-02) to have contamination from petroleum hydrocarbon compounds (PHCs) contributing to the potential for groundwater contamination; the storage of snow from the parking areas on the Site and the adjacent sites, that may have contributed other regulated parameters (ORPs) such as electrical conductivity (EC), sodium adsorption ratio (SAR), and PHCs to soil; the mixing of debris with soil which was placed at grade along the south part of the commercial operations and in an above grade soil and debris pile along the west property boundary with confirmed impacts from PHCs and polycyclic aromatic hydrocarbons (PAHs) in soil in the debris pile; and, the storage of preserved wood products that may have contained chromated arsenicals (metals and hydride-forming metals), PAHs, creosote/phenols (Acid/Base/Neutral (ABNs) compounds) or chlorinated phenols (CPs), including pentachlorophenol which may have dispersed into soil.

Based on documentation from the United States Environmental Protection Agency (USEPA), wood preservation for uses in residential applications typically relied on chromated arsenicals (https://www.epa.gov/ingredients-used-pesticide-products/overview-wood-preservative-chemicals#reregistration), which included a combination of chromium, copper and arsenic. Oil-based wood preservatives that used creosote/phenols (ABN compounds) or CPs (specifically pentachlorophenol) were generally used for commercial purposes, such as railway ties, highway guard

rails and hydro poles. These materials are not expected to have been stored at the Site but use of railway ties in landscaping was possible and these contaminants (PAHs, ABNs and CPs) have been included in the assessment.

No PCAs from off-site locations were considered to have the potential to result in an APEC. In previous reports, the soil staining at TE-02 was suggested to have been related to oily liquids observed in drums stored at the retail operation's ancillary buildings. The buildings and associated drum storage were not on the Site. The potential for soil contamination associated with releases from oily liquids was considered to have only a local effect (impacts of a few square metres) and, therefore, storage of oily liquids in drums on the adjacent property was not considered as a PCA leading to an APEC.

Six APECs (**Figure 2**) were identified at the Site:

- APEC-1 (south part of the overstock storage yard, on east part of the Site): Previous ESA reports confirmed impacts of PHC F3 in soil at TE-02, in an area where surface staining had been noted. Additional sampling was conducted in 2016, with analysis of samples for PHCs, benzene, toluene, ethylbenzene and xylenes (BTEX) and metals, EC and SAR, and PAHs (associated with APEC-3, which includes APEC-1). No additional impacts from PHCs were identified in soil; however, one sample exhibited an exceedance of SAR (BH16-6), considered as part of APEC-5. Initial remediation (2016) removed approximately 100 m^3 of PHC impacted soil to a depth of approximately 0.35 m and restored the Site to industrial, commercial, community (ICC) site condition standards (SCS). Further remediation was conducted in 2019 to prepare the Site for residential, parkland and institutional (RPI) land use. Nearby groundwater impacts at wells BH16-5 and MW17-5 from PHCs were confirmed to be limited to water entrained in a separate contaminated soil layer with no residual groundwater impacts at MW19-5 noted after removal of contaminated soil in the area. Remediation areas in APEC-1 included Area 2 and Area 3, related to removal of ICC soil from the 2016 remediation area around TE-02 and Area 4 (removal of soil with elevated SAR from BH16-6 – part of APEC-5 that is within APEC-1) and Area 6 (discussed below and shown on Figure 9), removal of stained soil encountered during remediation at Area 4;
- APEC-2 (south of the gate/fence at the south limit of the overstock storage yard). Snow from the parking surfaces at the overstock storage yard was stored in the area and there was the potential to impact the soil and groundwater quality from the use of road salt (EC and SAR) and PHCs (including BTEX) from automotive fluid releases. Soil samples were analysed for metals, EC, SAR, and PHCs (with BTEX). Groundwater impacts would only occur if significant impacts in the soil were present at or below the groundwater elevation. No impacts were identified in soil and groundwater in this APEC and no remediation excavations were associated with APEC-2;
- APEC-3 (across the overstock area and extending north to the outdoor storage and ancillary building area and south along the west property boundary). Based on information provided in interviews, soil was imported from local aggregate suppliers to maintain the grades in the south area of the building supply operations used for overstock materials. During the placement of the aggregate soil, debris (plastic, concrete, mortar, rubble, etc.) was mixed in with the soil and buried mainly in the south-central portion of APEC-3. **Figure 2** shows the three sub-areas of APEC-3 as the area with no shading at the north limits where fill was identified without debris, the light-green south-central area of APEC-3 where buried debris was noted to be mixed in with the fill and the dark green shaded area at the southwest part of APEC-3 where a pile of soil mixed with debris was placed above grade along the west property boundary. The soil was reportedly of a known quality, having originated from on-site topsoil or local quarries, however, the inclusion of debris materials represented a potential for contamination from metals, hydride forming metals, EC, SAR, PHCs, BTEX and PAHs. The quality of the fill was assessed across APEC-3. SAR was identified at BH16-6 (also part of APEC-1); PHCs were identified at TP19 and TP20; and PAHs were identified at TP19 and TP21. Groundwater impacts would only occur if significant impacts in the soil were present at or below the groundwater elevation, which was not noted to be present at APEC-3. Remediation Area 1 was identified to consist of the stockpiled soil that included TP19, TP20 and TP21. Remediation Area 4 discussed under APEC-1 involved removal of SAR impacted soil at BH16-6;
- APEC-4 (unpaved area of overstock storage). Preserved wood may have been stored on ground surface in the area, with metals, hydride-forming metals, PAHs, ABNs and CPs potentially leaching to soil. ABNs and CPs were analysed in samples GS20-1 to GS20-5 and no contaminants were identified at concentrations exceeding

the MECP Table 3 SCS. Concentrations of PAHs in samples submitted for analysis in APEC-4 were also less than the MECP Table 3 SCS, as indicated on the figure showing the distribution of PAHs. Groundwater impacts would only occur if significant impacts in soil were present at or below the groundwater elevation. The only contaminants in soil identified within APEC-4 were the PHCs and SAR discussed as part of APEC-1, which is wholly within APEC-4. No remediation excavations were associated with APEC-4;

- APEC-5 (unpaved area of east overstock storage). Areas between rows of stored materials may have been salted for the safety of vehicular or pedestrian traffic in winter months, with EC and SAR potentially impacting soil. The areas between stored materials would have been cleared to allow year-round access and the gravel surface might have allowed the infiltration of salt in soil resulting in elevated values of EC and SAR. Assessment of EC and SAR was included in the evaluation of fill of unknown quality. Elevated SAR was noted at BH16-6 (also in APEC-1) and elevated EC was noted at BH16-8, included as remediation Area 5. Under section 49.1, paragraph 1 of O. Reg. 153/04, the elevated values of EC and SAR observed at these two locations and associated verification sampling from Areas 2 and 5 are considered to not exceed the site condition standards because they are related to the application of salt for the safety of vehicular or pedestrian traffic; and
- APEC-6 (grassed area to east of remediation Area 6). During remediation, groundwater infiltrating the open excavation at Area 6 from damaged well MW17-5 was pumped and discharged to surface in the grassed area to the east of the excavation. Impacts from PHCs and BTEX are possible from the discharge water that contained elevated concentrations of PHCs-F2 at the previous sampling event. Groundwater impacts would only occur if significant impacts in soil were present at or below the groundwater elevation. No contaminants were identified in the sampling at APEC-6 and no remediation was conducted for this APEC.

1.3 SUBSURFACE UTILITIES

The Site was historically used as the outdoor storage area of a retail building supply operation. The lands occupied by the retail operation were divested and no longer form part of the Site. Services associated with the retail operation would be located off the Site, between the retail building and Innes Road.

There are no known underground utilities at the Site. Therefore, there are no subsurface conditions that would affect the local groundwater flow and any associated contaminant distribution.

1.4 PHYSICAL SETTING

The Site is situated within the Ottawa Valley Clay Plains physiographic region, which consists of clay plains, interrupted by ridges of rock or sand and characterized by deep grey silty clays mildly calcareous, suggesting an origin from the more acidic rocks of the Canadian Shield (Chapman et al., 2007). Surficial geology mapping from Ontario Geological Survey (2010) indicates that the Site is dominated by glaciomarine and marine deposits of silt and clay, corresponding to the post-glacial Champlain Sea deposits. Bedrock in the area consists of the Middle Ordovician Rocks of Bobcaygeon Training Group of Simcoe and consists of limestone (Ontario Geological Survey, 2011).

Geological conditions encountered on the Site during drilling programs consisted of granular fill materials on the north side of the Site, including foreign constituents in some areas such as wood, charred remains and brick fragments. Where present, the fill extended from ground surface to 0.61 metres below ground surface (mbgs); in other locations, top soil was present from ground surface to 0.23 mbgs. The surficial layer was underlain by native clayey silt or silty clay, to a maximum depth of 6.25 mbgs. A lens of gravel to sandy gravel was found in the central portion of the Site. The overburden represents one single aquitard with permeable lenses of gravel to sandy gravel at the depths investigated.

The investigation included sampling and monitoring groundwater elevations in the overburden, within the upper weathered bedrock layer and deeper bedrock, to provide lateral and vertical delineation. Based on groundwater elevation monitoring data obtained in November 2020, the average horizontal hydraulic gradient in the shallow overburden was calculated to be about 0.003 m/m. The vertical hydraulic gradient, as measured at the nested well set

of MW19-5 and MW20-5D was calculated to be 0.2 in a downward direction, based on the same November 2020 groundwater monitoring data.

Bedrock was encountered from approximately 2.3 mbgs in the northern portions of the Site to 7.2 mbgs at boreholes advanced further south on the Site. The depth to bedrock was more than 2 mbgs at the sampling locations, and, therefore, the Site is not a shallow soil site.

The Site is located with an urban area, with full servicing for municipal water and sewer available along Innes Road. The Site has an approximate elevation of 87 meters above sea level (masl). The surface topography of the Site generally slopes down to the southwest.

Groundwater elevations fluctuate at the Site, through seasonal influences from precipitation and freeze-thaw periods. The measurements collected over a three-year period indicated that the groundwater ranged from 1.46 mbgs to 3.10 mbgs, translating to an elevation of approximately 85.1 masl to 86.8 masl. The highest elevations were generally in spring conditions (i.e., from March to May), with variability of up to 1.17 m throughout a hydrological cycle each year.

McKinnon Creek is present approximately 600 m southeast of the Site (MNRF, February 2020). Several agricultural ditches were documented to be present on the adjacent property west of the Site, but these have been removed as part of the residential redevelopment of the area.

A stormwater management pond is located on the south adjacent property, just southwest of the Site. This pond was formed over an area with historical watercourses, located more than 80 m from the Site. There are no Provincially Significant Wetlands or Areas of Natural and Scientific Interest on or in proximity to the Site (Muncaster Environmental Planning Inc., 2019).

The principle direction of local groundwater flow in the overburden is inferred to the south/southwest, with regional aquifer groundwater flow expected to be to the north towards the Ottawa River (approximately 5 km away).

1.5 BUILDINGS AND STRUCTURES

There are no buildings present on the Site. Previously, there were three unheated structures, used as out-buildings for the retail operations. The concrete floor slabs remain on part of the western side of the Site.

The Site is proposed for a residential development that will see construction of residential and mixed-use buildings across much of the area. Land not covered by buildings will be completed with roadways, pathways or natural landscaping. The exact locations of buildings are not known.

1.6 GROUNDWATER USE AND ENVIRONMENTALLY SENSITIVE AREAS

Non-potable groundwater conditions are considered to apply to the Site (as described in more detail in Section 1.8), in accordance with Section 35 of O. Reg. 153/04, as follows:

1. Based on the information reviewed, the properties within 250 m of the Site boundary receive their drinking water from the municipality, and the source of the municipal system is the Ottawa River;
2. The Site will not be used for agricultural or other use upon filing of the record of site condition;
3. There are no well-head protection areas, Provincially Significant Wetlands or Areas of Natural and Scientific Interest on or adjacent to the Site that have been identified for the protection of groundwater, nor have properties within the Phase One study area been identified to have a well intended for use as a source of water for human consumption or agriculture; and
4. The Clerk of the City of Ottawa has been notified of the intention to apply non-potable groundwater conditions by letter dated July 20, 2020.

No conditions were found on the Site which would apply under Section 41 (Environmentally Sensitive Areas) and Section 43.1 (Shallow Soil Property or lands within 30 m of a water body) of O. Reg. 153/04.

1.7 IMPORTED SOIL

Mixed fill conditions were encountered during the investigation programs. The origin of the fill material is unknown; however, an interview with the former co-owner of the Site, indicated that the fill was brought in from local pits/quarries. Sampling of the fill material identified contamination only where associated with debris, with staining or asphalt inclusions. This supports the interview information that the fill was obtained from local commercial quarry sources.

In preparation for the 2019 remediation, approximately 80 m^3 of soil was imported to the Site from a Glenview-owned property approximately 2 km to the south. A Phase One ESA of the source site did not identify APECs; and the soil to be imported was analysed for standard potential contaminants including metals, hydride-forming metals, EC, SAR, PHCs and BTEX. Samples were recovered from 15 test pits with 35 samples submitted to provide characterization of the site. This sampling frequency exceeded the requirement under O. Reg. 153/04 for a single sample for up to 160 m^3 of imported soil. Comparison of the analytical results against MECP Table 1 SCS confirmed that soil quality met this standard and was, therefore, suitable for import to the Site, to backfill areas of remediation. The imported soil was used in part to backfill the remediated Areas 2 to 6. Backfill was not required for Area 1, which was a mound placed above grade.

1.8 APPLICABLE SITE CONDITION STANDARDS

WSP identified the applicable generic soil and groundwater SCS based on the following information available for the Site:

- A ditch used to collect surface water runoff ran south along the west side of the Site. This ditch was filled during redevelopment at the western neighbouring property. The ditch is not a watercourse, as defined in O. Reg. 153/04 and no watercourses are present on or within 30 m of the Site;
- There are three records of wells located on the Site, and 30 well records for the Phase One Study Area. The well records identified twenty-five domestic and public wells, one commercial well, three monitoring wells and test holes and one abandoned well within the Phase One Study Area. It is concluded that the domestic, public and commercial wells are not active water supply wells as the properties within the study area are fully serviced for potable water and the City of Ottawa obtains its potable water for this area from the Ottawa River;
- City of Ottawa was notified by WSP on November 2, 2018 of the intended use of non-potable standards (Table 3: Full Depth Generic Site Condition Standards) and no objections were received at that time. A subsequent follow up notification was sent on February 4, 2020 and again on July 20, 2020, and no objections were received from the City following these notifications;
- Surrounding properties are residential or commercial uses;
- The Site is not considered an “environmentally sensitive” site and it is not a shallow soil site, as defined by O. Reg. 153/04;
- Field observations indicate that the soil at the Site is consistent with the definition of ‘coarse textured’ in O. Reg. 153/04;
- Residential land use is proposed for some or all of the Site; and
- Stratified soil conditions were not used for evaluating laboratory results.

Based on the above site specific details, soil and groundwater quality at the Site was compared to Table 3: Full Depth Generic SCS in a Non-Potable Ground Water Condition for residential, institutional and parkland (RPI) property uses set out in the Ministry of Environment, Conservation and Parks (MECP) publication Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011), hereinafter referred to as the “MECP Table 3 SCS”.

1.9 DISTRIBUTION AND EXTENT OF SOIL AND GROUNDWATER IMPACTS

1.9.1 DISCUSSION OF CONTAMINANT DISTRIBUTION

The laboratory analytical results indicate that the maximum measured concentrations of the following soil parameters exceed the applicable MECP Table 3 SCS:

Table 1. Soil Parameters That Exceed the MECP Table 3 SCS

OTHER REGULATED PARAMETERS	Electrical Conductivity
	Sodium Adsorption Ratio
PHCs	Petroleum Hydrocarbon F3 Fraction
	Petroleum Hydrocarbon F4 Fraction
PAHs	Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b/j)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Pyrene

The other regulated parameters (ORPs) are anticipated to have resulted from the use of road salt on parking and material storage areas (BH16-6 with SAR from 0.23 to 1.52 mbgs, and BH16-8 with EC from 0.20 to 1.52 mbgs **Figure 3**). It is expected that salt would have been used for safety purposes within the aisles of the yard, where BH16-6 and BH16-8 are situated. It was confirmed through verification sampling after remediation (Areas 2 and 5 in Section 1.10) that impacts didn't extend past 2 mbgs. There was no migration of contamination to groundwater as confirmed in samples from BH16-8. The area where salt would have been applied for safety (APEC-5) is distinct from the former snow stockpiling area (APEC-2). Based on a review of aerial photographs, the snow stockpiling area would have been located south of a fence, which separated the overstock yard from the fallow lands to the south. The ORPs in APEC-2 complied with MECP Table 3 SCS and the ORPs in APEC-5 (TP20-3 and at Sidewall-E at TP20-3) are exempt under the application of Section 49.1 of O. Reg. 153/04. Remediation of these areas was conducted prior to changes in the regulation that allowed for the exemption; cross sections of the remediation that was conducted are included for completeness (see Section 1.10).

The PHC parameters were noted to exceed MECP Table 3 SCS in two areas on the Site. The source of the PHCs are expected to have resulted from debris mixed with soil in the pile at the west boundary of the Site (TP19 and TP20, **Figure 4**) and the release of oily liquid in the overstock area (near TE-02 and MW19-5, **Figure 4**). Cross sections showing stratigraphy and sampling conducted in these areas are included as **Figure 4-1** to **Figure 4-4**. Impacts were noted to extend over a relatively small area at each of these locations, with impacts not extending to the next closest sampling locations.

For the fill pile where PHCs were identified at TP19 and TP20 (**Figure 4**), impacts were considered to have been associated with buried debris, such as tar or oily materials. Contaminants were within the fill pile as shown in the cross-sections (**Figure 4-1** and **Figure 4-2**). It was confirmed through verification sampling after remediation (Area 1 in Section 1.10) that impacts did not extend to the base of the pile and groundwater impacts were not considered possible, as the contamination was in soil placed above grade on the Site.

For the area where previous PHC contamination was identified at location TE-02 in APEC-1, sampling during multiple investigations indicated that soil impacts didn't extend south of the area around TE-02, as documented through results from TE-01, BH16-4, BH16-5, BH16-6 and BH5 (**Figure 4**). Residual impacts, exceeding MECP Table 3 RPI SCS were noted at the east (EW8) and south (SW11) limits of the 2016 remediation at TE-02, as shown in cross section on **Figure 4-3** and **Figure 4-4** and these were addressed through remediation Areas 2 and 3 in 2019 (see Section 1.10 for remediation details).

Groundwater impacts noted at BH16-5/MW17-5 (in APEC-1) were not accompanied by contamination in soil at the well location. (Note that the well installed at BH16-5 was damaged during site activities and was replaced with well

MW17-5. This well was damaged during remediation and was replaced with MW19-5 after remediation, to document groundwater quality). During remediation of Area 4 (BH16-6 to the northeast), soil with PHC-contamination was observed to extend toward MW17-5, suggesting that the groundwater impacts were associated with a contaminated soil layer and this area was included in APEC-1. The delineation of impacts in this added remediation area (Area 6) of PHC impacts is discussed more in Section 1.10. Delineation was achieved during remediation, with the depth of PHC impacts in soil extended to the top of bedrock, observed to be at approximately 3 mbgs in the area.

The PAHs at TP19 and TP21 (**Figure 5**) are associated with fill that could have included asphalt pieces placed in a pile on the western boundary of the Site. The concentrations are consistent with asphalt and the presence of contamination was limited to two samples in the fill as shown in cross sections included as **Figure 5-1** and **Figure 5-2**. It was confirmed through verification sampling after remediation (Area 1 in Section 1.10) that impacts did not extend to the base of the pile and groundwater impacts were not anticipated, as the contamination was from contaminants with low solubility in soil placed above grade on the Site.

The laboratory analytical results indicate that the maximum measured concentrations of the following groundwater parameters exceeded the applicable MECP Table 3 SCS:

Table 2. Groundwater Parameters That Exceed the MECP Table 3 SCS

PHCS	F1, F2 and F3 Fractions

The groundwater impacts were noted at BH16-5/MW17-5, in an area approximately 20 m south of where previous staining had been remediated (TE-02). Drums containing oily liquid had been stored off the Site, near former ancillary buildings, more than 175 m from the groundwater impacts. Impacts were measured at BH16-5/MW17-5 with a screen set at approximately 84 masl to 87 masl. The distribution of the impacted groundwater identified on the Site is illustrated on **Figure 6**, with cross sections shown on **Figure 6-1** and **Figure 6-2**. Soil at BH16-5 was sampled from 0.23 m to 1.52 m and from 2.90 m to 3.05 m and did not exhibit concentrations of PHCs that exceeded the MECP Table 3 SCS and there was no evidence of migration of PHC contamination from this location. No impacts were encountered in groundwater at BH16-8 (screened interval from approximately 84.5 masl to 87.5 masl) advanced in 2016, approximately 50 m to the south of BH16-5/MW17-5. In 2017, additional monitoring wells (BH2 to BH6) were advanced from 2 m to 25 m from BH16-5/MW17-5, with screens installed in the shallow bedrock from approximately 83 masl to approximately 85 masl and no PHCs were detected in samples from these wells. During remediation, it became evident that groundwater impacts were related to water entrained within a layer of soil contamination in remediation Area 6. Vertical and additional lateral delineation (to the south) was conducted in November 2020 and no measurable PHCs were identified in groundwater from the deeper well (MW20-5D with a screen that extended from 80.0 masl to 83.0 masl) or at MW20-5S where groundwater was recovered from the measured elevation of 87.1 masl to the base of the well at 86.0 masl.

It is interpreted that a hydraulic connection exists between the silty clay overburden and limestone bedrock and that the groundwater from all the wells discussed above represents the only aquifer, which is the bedrock aquifer. No contaminants were identified in the groundwater beyond sampling location MW16-5/17-5.

Groundwater contours are provided in **Figure 7** and hydrogeological cross sections are provided in **Figure 7-1** and **Figure 7-2**. Groundwater conditions were assessed in overburden soil and bedrock through the investigation. Contamination was found to be limited to a single borehole location, assumed to have resulted from PHCs in soil. Groundwater quality returned after soil removal and PHCs were not detected in samples recovered after remediation.

Soil remediation was completed at the Site in July 2019 (see Section 1.10) and groundwater samples were collected in MW19-5 on October 10, 2019 and January 14, 2020. Concentrations of PHCs (BTEX and fractions F1 to F4) for these samples were below method detection limits.

Free flowing product was not encountered during remedial excavation and was not reported in previous ESAs involving the Phase Two Property.

Seasonal effects to the contaminant distribution was noted for PHCs prior to remediation, with groundwater concentrations fluctuating seasonally. No climatic effects were anticipated for the ORPs or PAHs in soil. With the remediation that was implemented in 2019, no fluctuations are anticipated in future groundwater quality.

1.9.2 DISCUSSION OF NATURALLY OCCURRING METALS

Metals (barium, cobalt and vanadium) were measured in native clayey soil at concentrations that exceeded the MECP Table 3 SCS. No other metals were measured at concentrations exceeding the SCS in the 45 samples of native and fill soil submitted for analysis.

The samples with elevated metal parameters were described as either clayey silt or silty clay. Of the 34 samples of clayey silt or silty clay submitted for analysis, the concentrations of barium, cobalt or vanadium exceeded the MECP Table 3 SCS at 23 locations; meaning that at approximately 70% of the locations one or more of these parameters exceeded generic SCS. Impacts were noted as deep as 6.1 mbgs at one location (BH16-10). The location of samples and respective concentrations of barium, cobalt and vanadium in the native clayey silt or silty clay layers is shown on **Figure 8**. The results of sampling are shown in cross section on **Figure 8-1**, **Figure 8-2** and **Figure 8-3**. In the clayey silt material, the concentrations of these three metals ranged as follows:

- Barium: from 84 ug/g to 524 ug/g,
- Cobalt: from 5.4 ug/g to 27 ug/g, and
- Vanadium: from 21 ug/g to 114 ug/g.

Analysis of metals in the overlying fill layer were also sampled at TE-01, TE-02 and TE-04, and measured concentrations of barium, cobalt and vanadium met the applicable SCS at each of these locations, with ranges in concentrations in the fill material as follows:

- Barium: from 61 ug/g to 177 ug/g,
- Cobalt: from 4 ug/g to 14 ug/g, and
- Vanadium: from 10 ug/g to 72 ug/g.

The barium, cobalt and vanadium are attributed to naturally elevated concentrations in the clay soils of the eastern Ontario and western Quebec regions. The MECP District Engineer for the Ottawa Region was consulted to confirm the findings of metals in clayey soil and compare these results to other investigations in the area that included sampling of clayey soil of the Champlain Sea deposition. The rationale supporting this opinion is as follows:

- No potentially contaminating activities (PCAs) were identified on the Site or in the surrounding study area that would results in elevated concentrations of these three metal parameters. Anthropogenic sources of the metals are considered to include the following:
  - Barium: mining of barium sulphate ore, oil and gas drilling muds, manufacture of paints, brick, glass and rubber (ASTDR.cdc.gov.toxprofiles tp24-c1.pdf)
  - Cobalt: metal alloys, industrial applications and paint and ceramic dyes (ASTDR.cdc.gov.toxprofiles tp33-c1.pdf)
  - Vanadium: deposition from industries burning coal and crude oils (ASTDR.cdc.gov.toxprofiles tp58-c6.pdf)
- The elevated concentrations are present in native soil, with no evidence of anthropogenic disturbance. Only soil described as clayey silt or silty clay had metals at concentrations exceeded the MECP Table 3 SCS.
- Vanadium is the most prevalent of the naturally occurring metals, being at a concentration exceeding the MECP Table 3 SCS at most (23) of the noted samples. The ratio of vanadium to the other two metals is generally consistent: the concentration of barium is generally 3 to 5 times higher than the concentration of vanadium and the concentration of cobalt is 20% to 25% of the concentration of vanadium. Overall, the distribution of barium, cobalt and vanadium is consistent between samples, whether concentrations of the individual metals are elevated or within the MECP Table 3 SCS values. This suggests that the metals are naturally occurring, resulting from the marine deposition that occurred in the Ottawa area.
- WSP identified three other reports (Gemtec 2018, Golder 2016, Golder 2017) from public on-line sources with reported elevated concentrations of barium, cobalt and vanadium in clay of marine origin in the Ottawa area. The reported concentrations of barium, cobalt and vanadium in these three reports was within or above the range of concentrations observed at the Site. At each of these locations, the soil with elevated concentrations of

barium, cobalt and vanadium were reported to be a silty clay or clayey silt, similar to the Site and there were no identified anthropogenic sources suspected of contributing these metals as contaminants at the sites.

These observations of metal concentrations at the Site and surrounding area support the conclusion that barium, cobalt and vanadium are naturally occurring in the clayey silt and silty clay soils at the Site and that they do not represent contamination.

1.9.3 OFF-SITE MIGRATION OF CONTAMINANTS

ORPs, PAHs and the PHCs in the fill pile were noted to be present in surficial samples and impacts didn't extend to deeper soil. This indicated that contaminants didn't migrate from the initial area of release. For the PHCs, impacts extended to the competent bedrock.

Soil remediation was completed at the Site in July 2019 (see Section 1.10) and groundwater samples were collected in MW19-5 on October 10, 2019 and January 14, 2020. Concentrations of PHCs (BTEX and fractions F1 to F4) for these samples were below method detection limits. The source of groundwater contamination was removed during soil remediation activities.

No off-site groundwater migration is expected to be occurring, based on findings of the ESAs.

1.9.4 VAPOUR INTRUSION

No contaminants were identified at the Site that would result in subsurface conditions that would contribute to vapour concentrations that would result in intrusion to buildings.

1.10 REMEDIAL ACTIONS

Site remediation involved the removal of impacted soil, including a stockpile of soil mixed with debris identified as Area 1. Excavation in Areas 2, 3 and 5 extended to silty clay interpreted to be native soil, and excavation in Area 6 extended to bedrock. Although initially identified separately, Area 4 was later included in the greater Area 6. Locations of the remediation areas are shown on **Figure 9**. No reagents or treatment methods were introduced to the Site during the remedial actions.

Surface material was removed across the excavation areas to a minimum depth of 0.8 mbgs and the remediation was extended to a maximum depth of 3.2 mbgs in areas where interim verification samples identified contamination extended deeper than indicated by Phase Two ESA sampling. Assessment of the known contaminants was conducted through collection of soil samples to delineate the vertical and horizontal extent of contamination as identified in the Phase Two ESA. A total of 57 soil samples (including field duplicates) were collected from varying depths of the remediation excavation and submitted to AGAT Laboratories for analysis of the contaminants of concern identified for each area.

Results of analyses were compared to the 2011 MECP Table 3 SCS. Limits of excavation were established at the point where results of analysis and visual observations indicated that no residual contamination was present in soil remaining onsite. Excavation activities for the Site were completed on July 17, 2019.

Table 3. Details of Remediation Excavations

Area	Contaminants of Concern	Approx. Lateral Dimensions	Maximum Depth	Estimated Quantity of Soil Removed
1	PAH, PHCs F1-F4	NA – mound	4 m	6,580 m^3
2	PHCs F1-F4	3 m x 7 m	0.9 m	19 m^3

Area	Contaminants of Concern	Approx. Lateral Dimensions	Maximum Depth	Estimated Quantity of Soil Removed
3	PHCs F1-F4	3 m x 5 m	0.8 m	12 m^3
5	EC	4 m x 4 m	2 m	32 m^3
4 and 6	PHC F1-F4, BTEX, EC	15 m x 15 m	3 m	675 m^3

The remedial excavation was completed by an environmental contractor with Qualified Person oversight. No permits, such as site alternation permits or work within a regulated zone were required from the municipality or conservation area. Excavated soils were transported off-site to the City of Ottawa waste receiving facility located at Trail Road, Ottawa, Ontario.

Note that the remediation which occurred at Area 1 saw the removal of the upper portion of a mound of soil. Where the mounded soil had been mixed with debris and found to be contaminated, it was removed. As a result, following the removal of impacted soil, sidewalls only remained at the west and southwest corner, where debris was noted to be absent. Test pits TPA, TPB and G2 (**Figure 10** and **Figure 11**) were advanced immediately adjacent to the remedial excavation at Area 1 to assess soil conditions within the remaining mound; analytical parameters (PHCs at TPA, TPB and G2 and PAHs at TPA and TPB) complied with MECP Table 3 SCS. Test pits at G1 and G3 were advanced north and northeast of the mound, where the edge met existing grade. These test pits are considered to provide overall horizontal delineation to the remediated Area 1.

Soil remediation in Area1 consisted of the initial removal of the top 2.0 m of the mound. Contamination had previously been identified at TP19 (PHCs and PAHs), TP20 (PHCs) and TP21 (PHCs and PAHs). These are shown in plan view for PHCs on **Figure 10**, and PAHs on **Figure 11**. Cross sections of the removal and verification samples are shown on **Figure 10-1 and 11-1** for PHCs and PAHs, respectively.

Confirmatory sampling included TPA and TPB as mentioned above as well as TPC met MECP Table 3SCS for PHCs and PAHs. TPD, TPE and TPF-2, located in the central area of the mound had one or more exceedances of PHCs and PAHs when compared to MECP Table 3 SCS. Based on these results and the visible characteristics of the material in the mound, a further 0.7 m layer of material was removed, to 2.7 m below the initial elevation of the mound. The areas subjected to this additional removal are shown as a light-green dashed line on **Figure 10** and **Figure 11**. At this removal depth, samples B1 to B14 were recovered from the base of the excavation. Samples from B2, B3 had both PHCs and PAHs that exceeded MECP Table 3 SCS and samples B7, B8, B9, B10, B11 and B13 exceeded MECP Table 3 SCS for PAHs only. The excavation was extended to remove an additional 0.5 m to a total of 3.2 m below the initial mound elevation. Confirmatory samples were recovered at locations B15 to B22 and submitted for PHCs and PAHs, to reflect the contaminants of concern in the mounded soil mixed with debris. Sample B15 located near previous sample B3 confirmed that the base of the excavation in this area met the MECP Table 3 SCS for both PHCs and PAHs. Similarly, soil at B7, B8, B9 and B10 was confirmed through verification samples B15, B20, B19 and B18, respectively to meet the MECP Table 3 SCS for PAHs. Concentrations of one or more parameters exceeding MECP Table 3 SCS were measured at B16, B17 and B22 that had been placed near B2, B11 and B13, respectively. At these locations, the excavation was extended to native soil (B16-2, B17-2 and B22-2) and results confirmed that contaminants were not present in the native soil. The soil with measured concentrations of PHCs or PAHs was removed from the mound at Area 1 and remaining soil meets the MECP Table 3 SCS.

Areas 2 and 3 (**Figure 12**) were excavated to remove residual contaminants after the 2016 remediation at TE-02. Concentrations remained that met ICC SCS but exceeded MECP Table 3 SCS for RPI land use. Soil to the depth approximately 0.9 mbgs (**Figure 12-1** shows the cross section) was removed in this area and confirmation sampling (EW1, EW2, EB3, EB4, WW1, WW2, WB1 and WB2) at the locations shown on **Figure 12** and **Figure 12-1** confirmed that PHC impacts did not remain at this location.

Areas 4 and 5 were excavated to remove SAR at BH16-8 and EC at BH16-8, prior to identifying that the SAR and EC were related to the application of salt for vehicular or pedestrian safety and was, therefore, exempt from being identified as a contaminant. During excavation in Area 4 (to a depth of 3.0 mbgs), stained and odorous soil was

encountered, and the excavation was extended into Area 6, to remove PHC contamination (see following paragraph). The excavation at Area 5 extended to 2.0 mbgs, with verification samples recovered at SW1, SW2, B1 and B2. The extent of remediation through soil removal at Area 4 and Area 5 is shown on **Figure 13** with cross sections on **Figure 13-1**. As the exemption was applied, EC residuals at TP20-3 and Sidewall-E are not considered to be contaminants. Post remediation, the concentration of EC and SAR (TP20-1 to TP20-5), along with PHCs (TP20-6 to TP20-9, on **Figure 2** and **Figure 4**) were assessed at APEC-2, the snow disposal area as well as within APEC-5, the area of salt application to ground surface. Impacts were noted at TP20-3 and excavation was completed at this sampling point prior to determining that the EC exceedance was exempt. Soil was returned to the excavation and remains onsite.

Area 6 extended from Area 4, which was initiated to remove SAR impacts (prior to recognizing the exemption) at BH16-6. Stained soil was unearthed at the base of the excavation and was found to extend to the south and west, toward MW17-5. The excavation for Area 6 (**Figure 14**) extended to bedrock, as indicated on the cross section (**Figure 14-1**). Field monitoring was conducted on the sidewalls (N1 to N6, SW1 to SW5, E1 to E8 and W1 to W5) and samples N1, SW2, E4, E7 and W4 were selected as worst-case conditions and submitted for analysis of PHCs F1-F4 and BTEX. Results were in compliance with MECP Table 3 SCS, with only PHC F1 measured at detectable concentrations and these were less than 10 ug/g, compared to the MECP Table 3 SCS of 55 ug/g.

A limited volume of groundwater was removed following excavation of impacted soils from Area 6 and discharged to surface, south of the excavation footprint. This was required after MW17-5 collapsed during soil removal and dry conditions were required prior to backfilling.

The bottom of the excavation had filled with rainwater or groundwater from the damaged well. It is estimated that less than one (1) meter of water was above bedrock. At the time that the water was pumped from the excavation, impacted soils had largely been removed and the most recent sampling of groundwater at MW17-5 had indicated a PHC F2 concentration of 155 ug/L, marginally exceeding the MECP Table 3 SCS of 150 ug/L, with other contaminants in compliance with site standards. To remove any concern that the infiltration of groundwater into the excavation would affect the aquifer, water in the excavation was extracted using a suction pump equipped with a screen to filter out debris, and subsequently discharged to surface south of the excavation footprint. Because groundwater quality had been contaminated in previous samples, this area was identified as APEC-6 and two surface soil samples (GS20-6 and GS20-7) were recovered in November 2020 and submitted for analysis of PHCs F1-F4 and BTEX. No contaminants were detected in the samples (**Figure 4**).

A well driller was retained to decommission the well within a day of the damage, stopping groundwater infiltration into the excavation.

Subsequent sampling of MW19-5, installed to replace the collapsed well MW17-5, confirmed the absence of contamination in the groundwater that would have entered the excavation.

Groundwater was sampled from monitoring well MW19-5 on two occasions after remediation through the removal of contaminated soil, to confirm that removal of entrained groundwater was effective in reducing the contaminant concentrations to MECP Table 3 SCS. Findings of PHC distribution in groundwater after remediation, including wells advanced in November 2020 for delineation, are shown on **Figure 6**, with cross sections shown on **Figure 6-1** and **Figure 6-2**.

1.11 RECEPTORS AND EXPOSURE PATHWAYS

1.11.1 HUMAN HEALTH RECEPTORS

Until redevelopment (before and after remediation), human receptors to the Site would be limited to visitors or trespassers. Once redevelopment begins, there would be construction workers visiting the site and post development, residents, trespassers and visitors would occupy the Site. The receptors could include adults and children over short and long terms.

Exposure pathways (**Figure 15**) at the Site prior to remediation would have been limited to contact (ingestion, dermal contact or particulate inhalation) or outdoor inhalation with the contaminated soil or groundwater. With the completion of remediation, there are no complete exposure pathways to any receptors at the Site.

1.11.2 ECOLOGICAL RECEPTORS

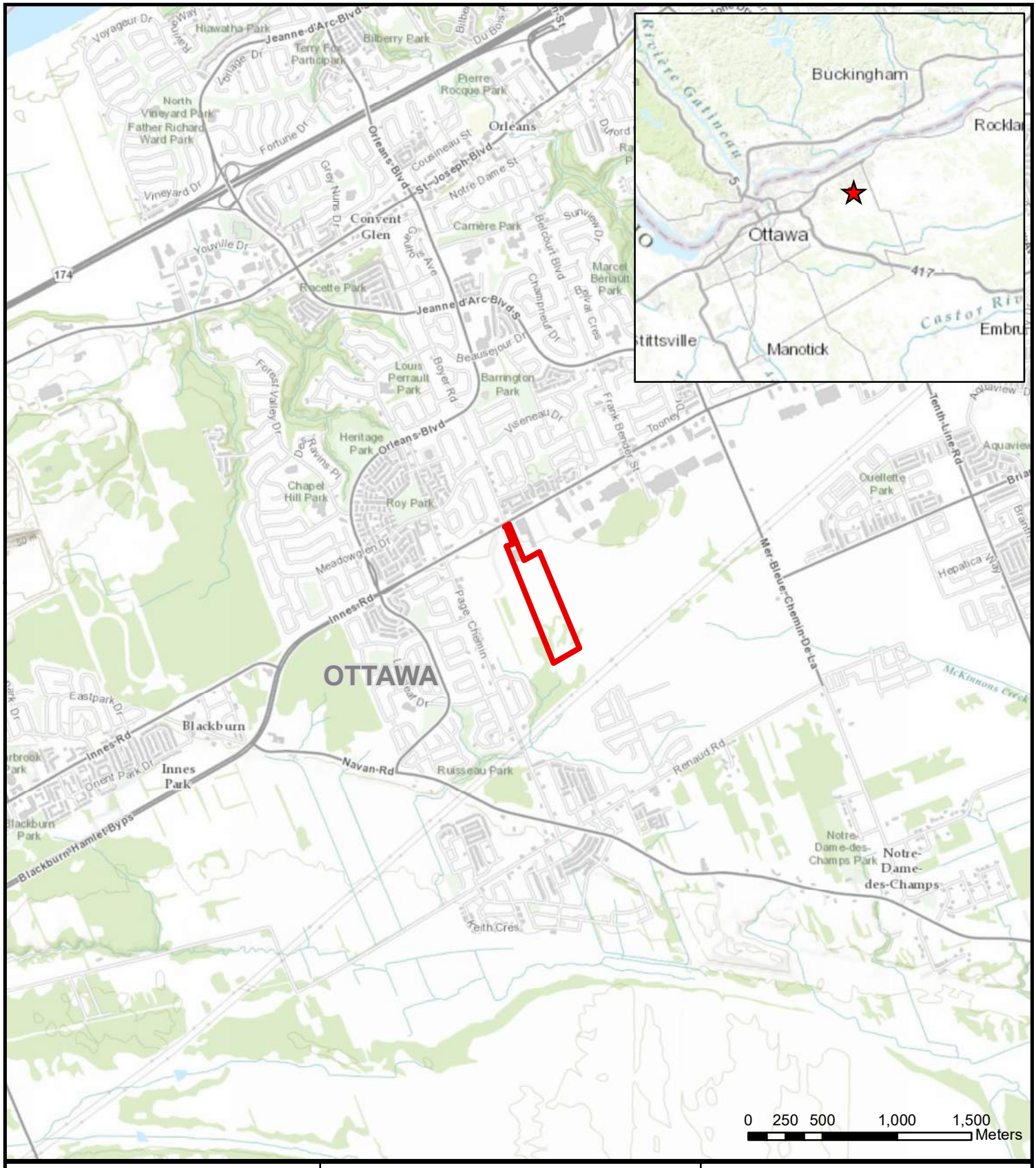
The Site is not considered ecologically sensitive; however, possible ecological receptors include vegetation (e.g., trees, shrubs, grass and future ornamental plants), soil invertebrates, small mammals (e.g., squirrels, groundhogs, etc.) and birds. Exposure pathways (**Figure 16**) would include root uptake for vegetation and soil ingestion, dermal contact, soil particle inhalation and food ingestion.

With remediation, there are no sources remaining on Site and no complete exposure pathways are present on Site.

1.12 REFERENCES

- Chapman, L.J. and Putnam, D.F., 2007. Physiography of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 228 ISBN 978-1-4249-5158-1
- Gemtec, 2018. Phase Two Environmental Site Assessment of 170 Pretoria Avenue, Ottawa, Ontario, Prepared for ART Properties and Construction (Project 64155.06).
- Golder Associates, 2016. Technical Memorandum for Phase II Environmental Site Assessment, 3490 Innes Road, Ottawa, Ontario. Prepared for Innes Road Development Corporation (Project No. 1660030-3000).
- Golder Associates, 2017. Report Extract for Conceptual Site Model, Oblates Property RSC #3, 175 Main Street, Ottawa, Ontario. Prepared for Greystone Village Inc. (Project No. 1525113-1000-3).
- Muncaster Environmental Planning Inc. August 2019. Re: BMR Lands, South Side of Innes Road, EIS – Species at Risk and Mitigation Measures – Updated.
- Ministry of Natural Resources and Forestry, February 2020. Make a Map: Natural Heritage Areas, available at http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US. Accessed on February 12, 2020.
- Ontario Geological Survey, 2010. Surficial Geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release – Data 128.
- Ontario Geological Survey, 2011. 1:250 000 scale bedrock geology of Ontario; Ontario Geological Survey, Miscellaneous Release---Data 126-Revision 1. ISBN 978-1-4435-5705-4 [zip file].

FIGURES



WSP

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PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

SITE LOCATION PLAN

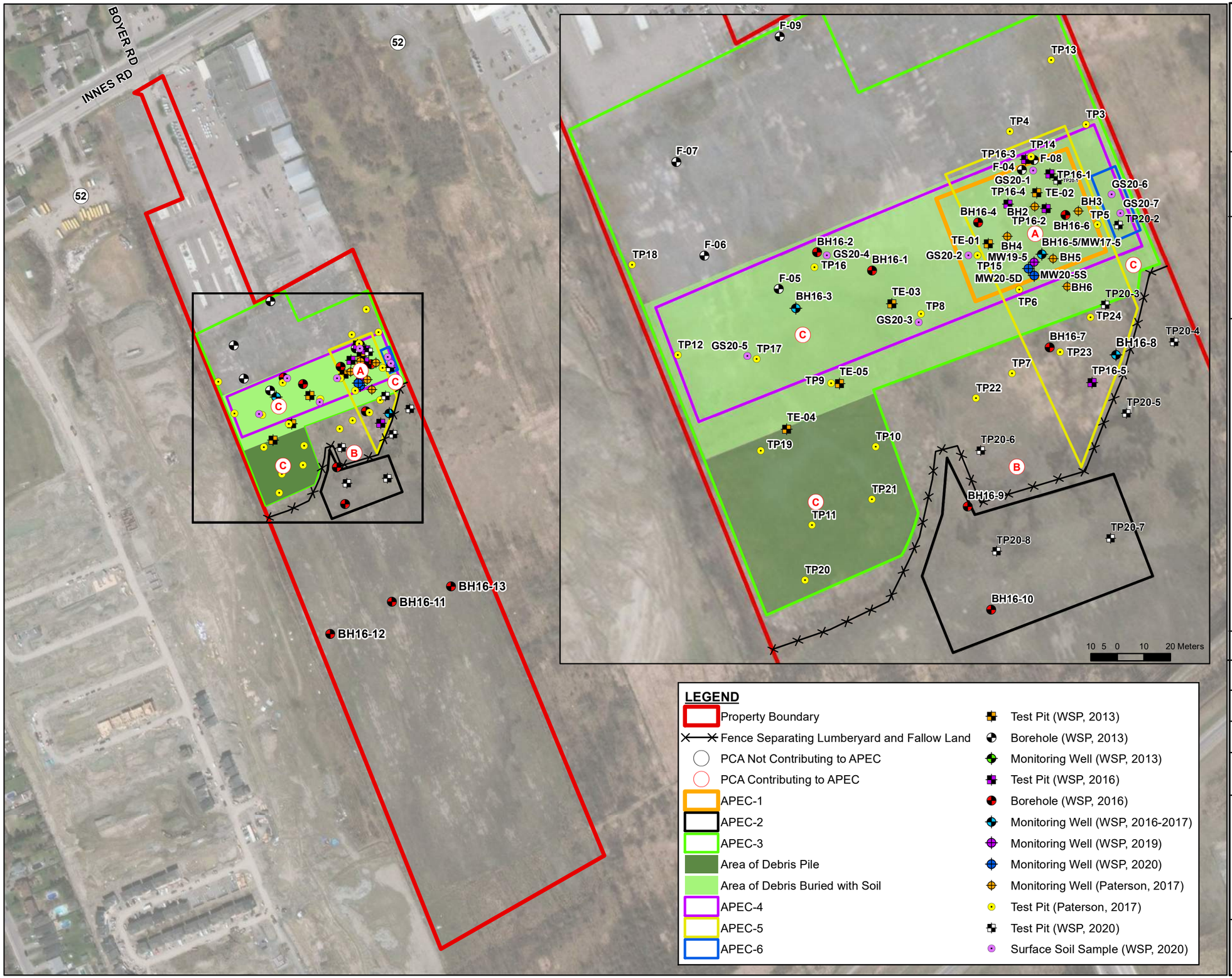
LEGEND

PROPERTY BOUNDARY

Scale	1:35,000
Date	FEBRUARY 2021
Drawn By	NN
Job No.	17M-01348-00

FIGURE 1

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 1 Site Location Plan.mxd



LEGEND

- Property Boundary
- Fence Separating Lumberyard and Fallow Land
- PCA Not Contributing to APEC
- PCA Contributing to APEC
- APEC-1
- APEC-2
- APEC-3
- Area of Debris Pile
- Area of Debris Buried with Soil
- APEC-4
- APEC-5
- APEC-6
- Test Pit (WSP, 2013)
- Borehole (WSP, 2013)
- Monitoring Well (WSP, 2013)
- Test Pit (WSP, 2016)
- Borehole (WSP, 2016)
- Monitoring Well (WSP, 2016-2017)
- Monitoring Well (WSP, 2019)
- Monitoring Well (WSP, 2020)
- Monitoring Well (Paterson, 2017)
- Test Pit (Paterson, 2017)
- Test Pit (WSP, 2020)
- Surface Soil Sample (WSP, 2020)

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PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: JS/NN	
CHECKED BY: NC	
SCALE: 1:4,000	

50 25 0 50 100 150 Meters

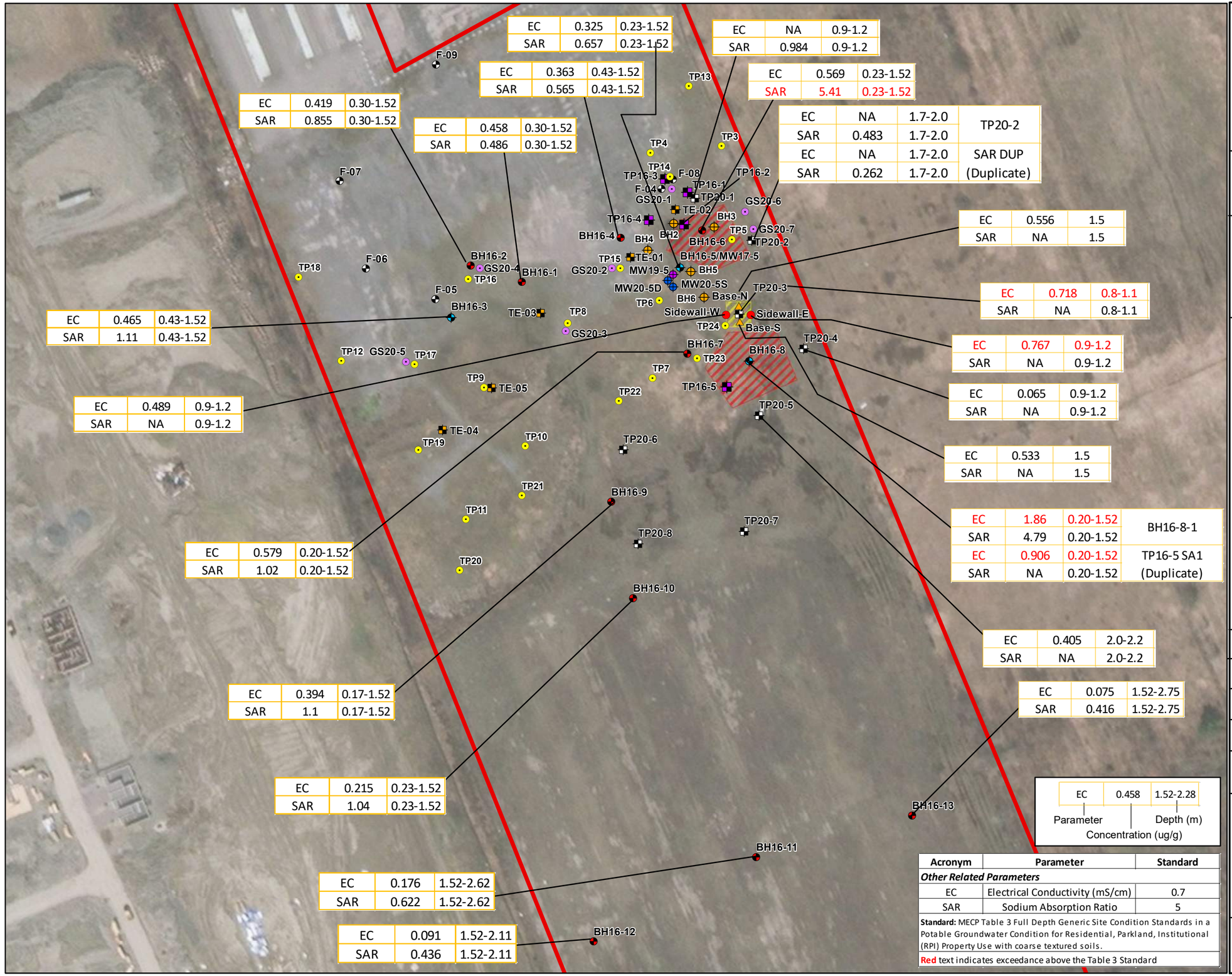
NAD1983 ZONE 18

TITLE

SITE PLAN

FIGURE 2

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 2 Site Plan.mxd



Acronym	Parameter	Standard
Other Related Parameters		
EC	Electrical Conductivity (mS/cm)	0.7
SAR	Sodium Absorption Ratio	5

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

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PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
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LEGEND

- Property Boundary
- Approximate Area of ORP Impacted Soil
- EC Impacted Area - Excavated in 2020
- Floor Verification Sample (WSP, 2020)
- Wall Verification Sample (WSP, 2020)
- Test Pit (WSP, 2020)
- Test Pit (WSP, 2016)
- Test Pit (WSP, 2013)
- Borehole (WSP, 2013)
- Monitoring Well (WSP, 2013)
- Borehole (WSP, 2016)
- Monitoring Well (WSP, 2016-2017)
- Monitoring Well (WSP, 2019)
- Monitoring Well (WSP, 2020)
- Monitoring Well (Paterson, 2017)
- Test Pit (Paterson, 2017)
- Surface Soil Sample (WSP, 2020)

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SCALE: 1:1,516	

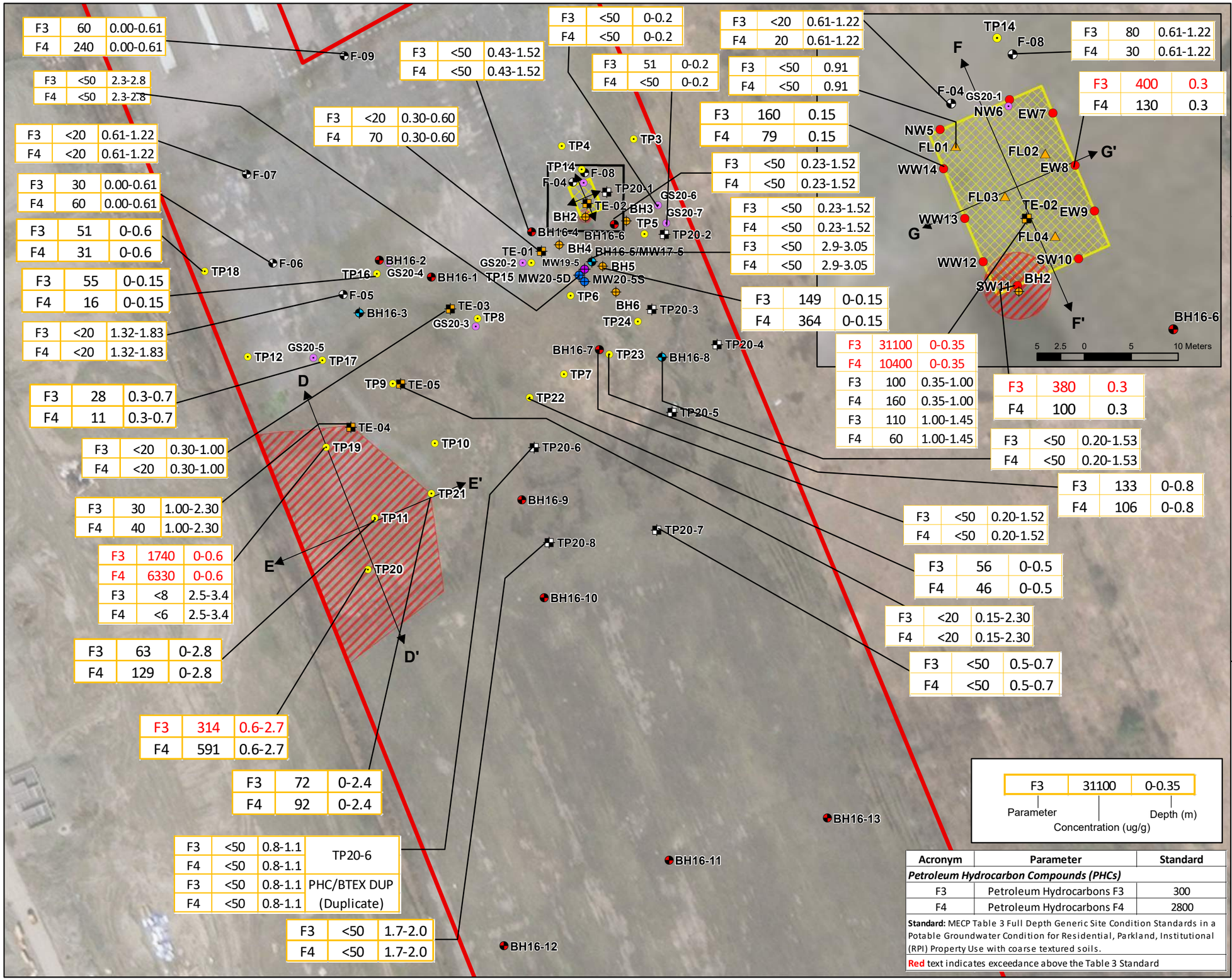
20 10 0 20 40 Meters
NAD1983 ZONE 18

TITLE

CONTAMINANT DISTRIBUTION OF OTHER REGULATED PARAMETERS IN SOIL

FIGURE 3

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 3 Other Regulated Parameters in Soil.mxd



Acronym	Parameter	Standard
Petroleum Hydrocarbon Compounds (PHCs)		
F3	Petroleum Hydrocarbons F3	300
F4	Petroleum Hydrocarbons F4	2800

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

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PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
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LEGEND

- Property Boundary
- Cross Sections
- Area Remediated in 2016
- Approximate Area of PHC Impacted Soil
- Test Pit (WSP, 2020)
- Test Pit (WSP, 2013)
- Borehole (WSP, 2013)
- Monitoring Well (WSP, 2013)
- Borehole (WSP, 2016)
- Monitoring Well (WSP, 2016-2017)
- Monitoring Well (WSP, 2019)
- Monitoring Well (WSP, 2020)
- Monitoring Well (Paterson, 2017)
- Test Pit (Paterson, 2017)
- Floor Verification Samples
- Wall Verification Samples
- Surface Soil Sample (WSP, 2020)

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
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SCALE: 1:1,500	

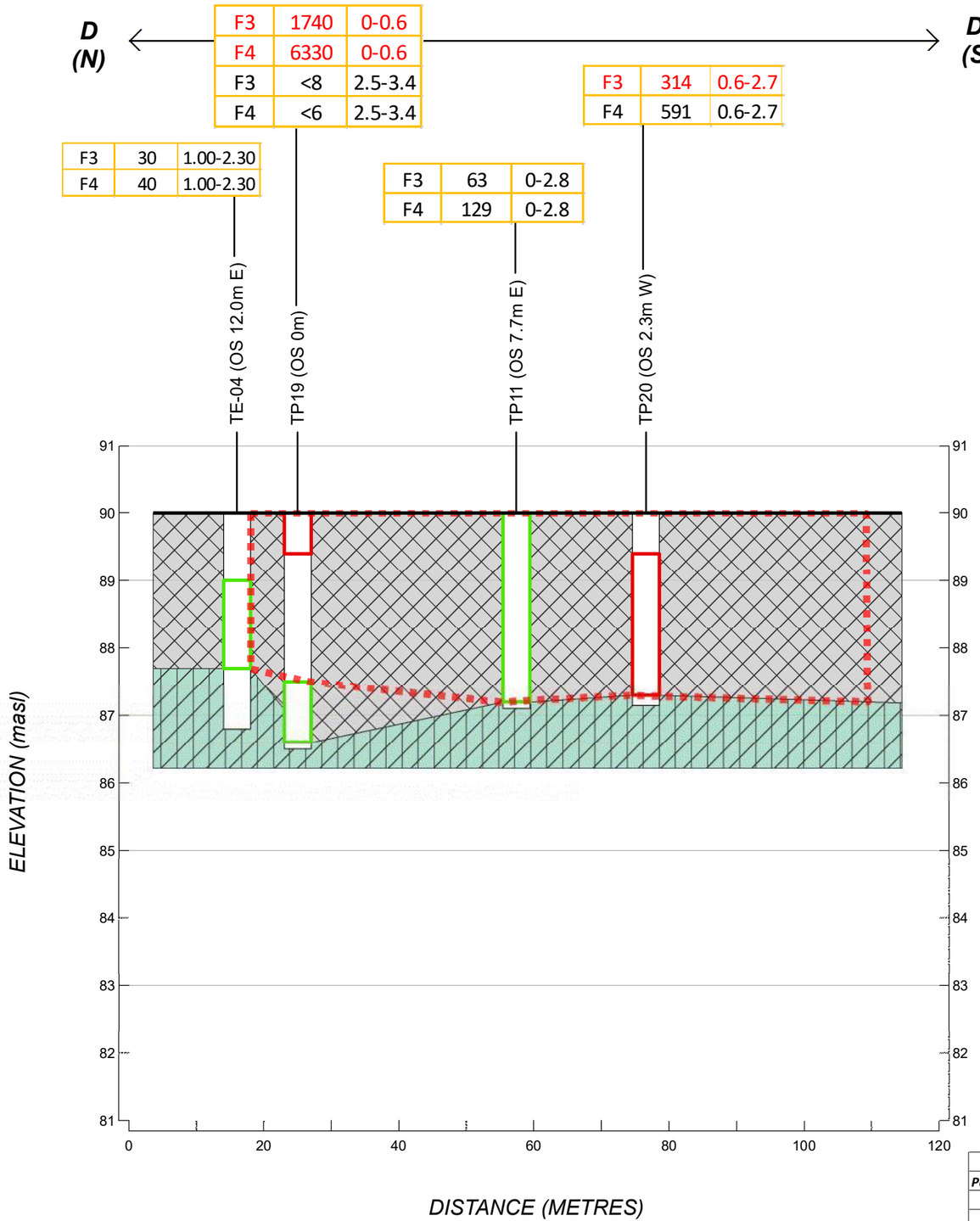
20 10 0 20 40 Meters
NAD1983 ZONE 18

TITLE

CONTAMINANT DISTRIBUTION OF PHCS IN SOIL

FIGURE 4

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 4 PHCs in Soil.mxd



F3 | 31100 | 0-0.35

Parameter | Concentration (ug/g) | Depth (m)

Acronym	Parameter	Standard
Petroleum Hydrocarbon Compounds (PHCs)		
F3	Petroleum Hydrocarbons F3	300
F4	Petroleum Hydrocarbons F4	2800

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

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PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
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LEGEND

- Ground Surface
- Boreholes
- Topsoil
- Fill (Within APEC)
- Gravel
- Sandy Gravel
- Clayey Silt
- Silty Clay
- Clay
- Bedrock
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS
- Approximate Area of PHC Impacted Soil

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
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SCALE: 1:750 10X HORIZONTAL EXAG.	

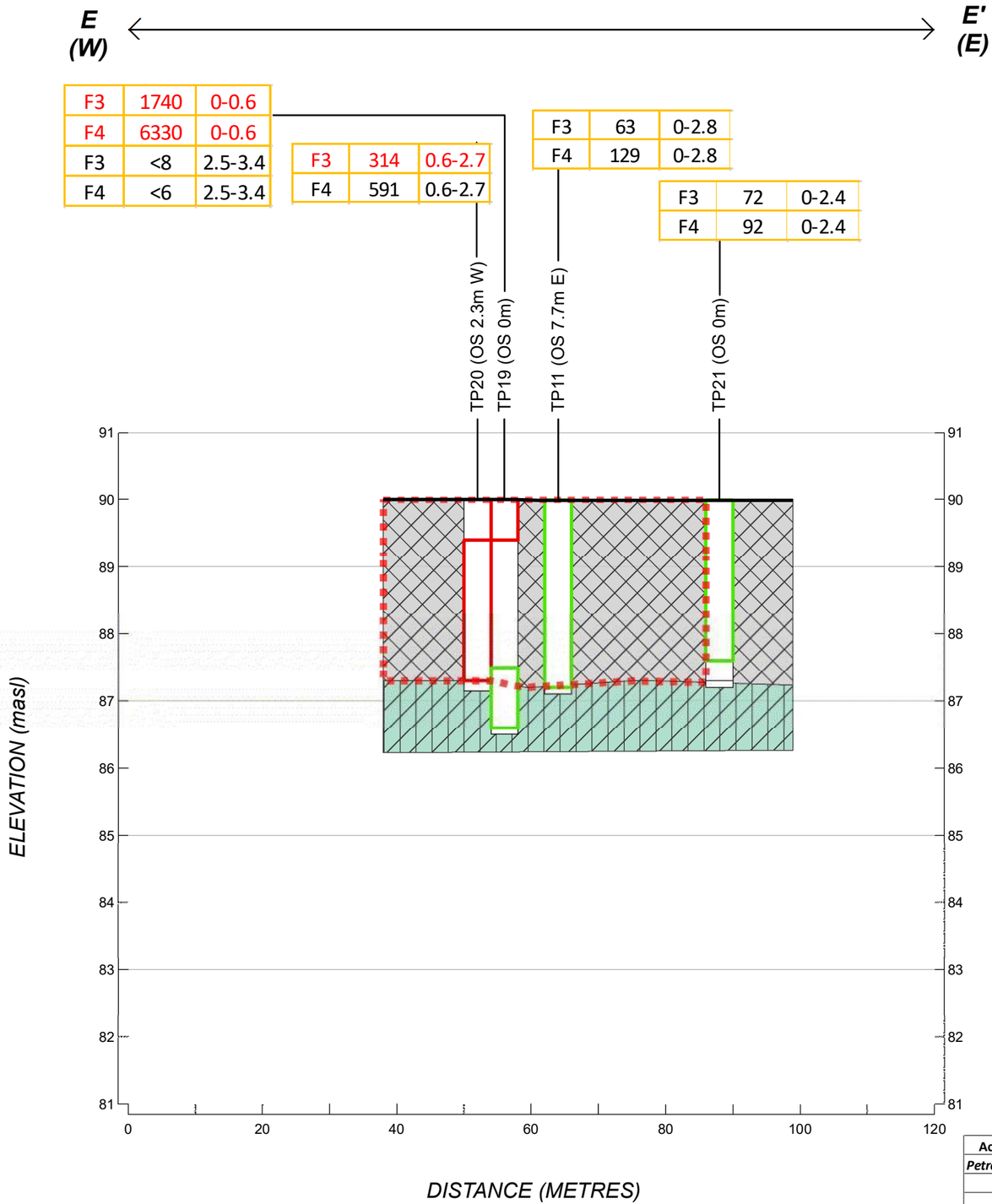
0 5 10 20 30 40 Meters

TITLE

CROSS SECTION D - D'
PHCS IN SOIL

FIGURE 4-1

Path: J:\1442 Projects by Job Number\2016\33164428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 4-1 Cross Section D-D' PHCs in Soil.mxd



F3 | 31100 | 0-0.35

Parameter | Concentration (ug/g) | Depth (m)

Acronym	Parameter	Standard
Petroleum Hydrocarbon Compounds (PHCs)		
F3	Petroleum Hydrocarbons F3	300
F4	Petroleum Hydrocarbons F4	2800

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

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PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Ground Surface
- Boreholes
- Topsoil
- Fill (Within APEC)
- Gravel
- Sandy Gravel
- Clayey Silt
- Silty Clay
- Clay
- Bedrock
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS
- Approximate Area of PHC Impacted Soil

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:750 10X HORIZONTAL EXAG.	

0 5 10 20 30 40 Meters

TITLE

CROSS SECTION E - E'
PHCS IN SOIL

FIGURE 4-2

Path: J:\1442 Projects by Job Number\2016\33164428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 4-2 Cross Section E-E' PHCs in Soil.mxd

F (N)

E' (S)

F3	160	0.15
F4	79	0.15

F3	31100	0-0.35
F4	10400	0-0.35

Contamination removed during 2016 remediation.

F3	100	0.35-1.00
F4	160	0.35-1.00
F3	110	1.00-1.45
F4	60	1.00-1.45

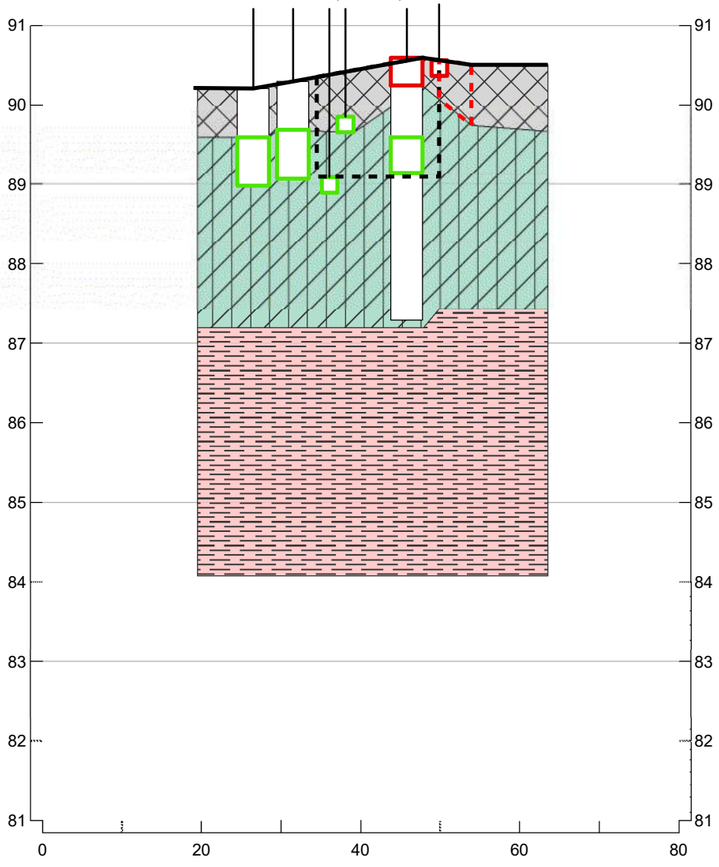
F3	<50	0.91
F4	<50	0.91

F3	<20	0.61-1.22
F4	20	0.61-1.22

F3	80	0.61-1.22
F4	30	0.61-1.22

F3	380	0.3
F4	100	0.3

F-08 (OS 5.1m E)
F-04 (OS 2.8m W)
FL01 (OS 4.2m W)
WW14 (OS 6.4m W)
TE-02 (OS 0m)
SW11 (OS 4.2m W)



ELEVATION (masl)

DISTANCE (METRES)

ELEVATION (masl)

F3 | 31100 | 0-0.35

Parameter | Concentration (ug/g) | Depth (m)

Acronym	Parameter	Standard
Petroleum Hydrocarbon Compounds (PHCs)		
F3	Petroleum Hydrocarbons F3	300
F4	Petroleum Hydrocarbons F4	2800

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

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GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Ground Surface
- Boreholes
- Topsoil
- Fill (Within APEC)
- Gravel
- Sandy Gravel
- Clayey Silt
- Silty Clay
- Clay
- Bedrock
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS
- Approximate Area of PHC Impacted Soil
- Area Remediated in 2016

PROJECT NUMBER: 17M-01348-00 | DATE: FEBRUARY 2021

DRAWN BY: NN

CHECKED BY: NC

SCALE: 1:750
10X HORIZONTAL EXAG.

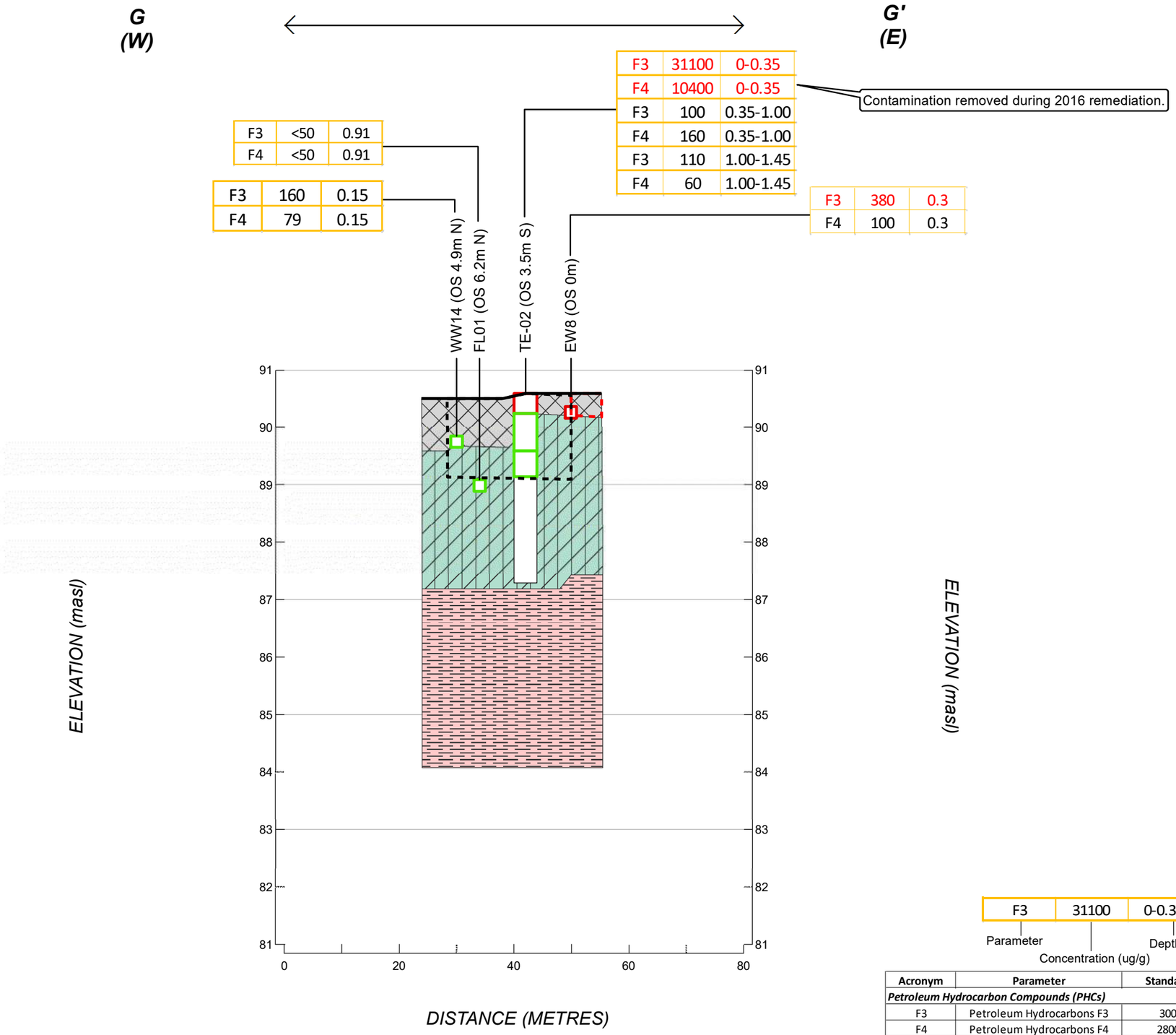
0 5 10 20 30 40 Meters

TITLE

CROSS SECTION F - F'
PHCS IN SOIL

FIGURE 4-3

Path: J:\17442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 4-3 Cross Section F-F' PHCs in Soil.mxd



F3 | 31100 | 0-0.35

Parameter | Concentration (ug/g) | Depth (m)

Acronym	Parameter	Standard
Petroleum Hydrocarbon Compounds (PHCs)		
F3	Petroleum Hydrocarbons F3	300
F4	Petroleum Hydrocarbons F4	2800

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

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PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Ground Surface
- Boreholes
- Topsoil
- Fill (Within APEC)
- Gravel
- Sandy Gravel
- Clayey Silt
- Silty Clay
- Clay
- Bedrock
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS
- Approximate Area of PHC Impacted Soil
- Area Remediated in 2016

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:750 10X HORIZONTAL EXAG.	

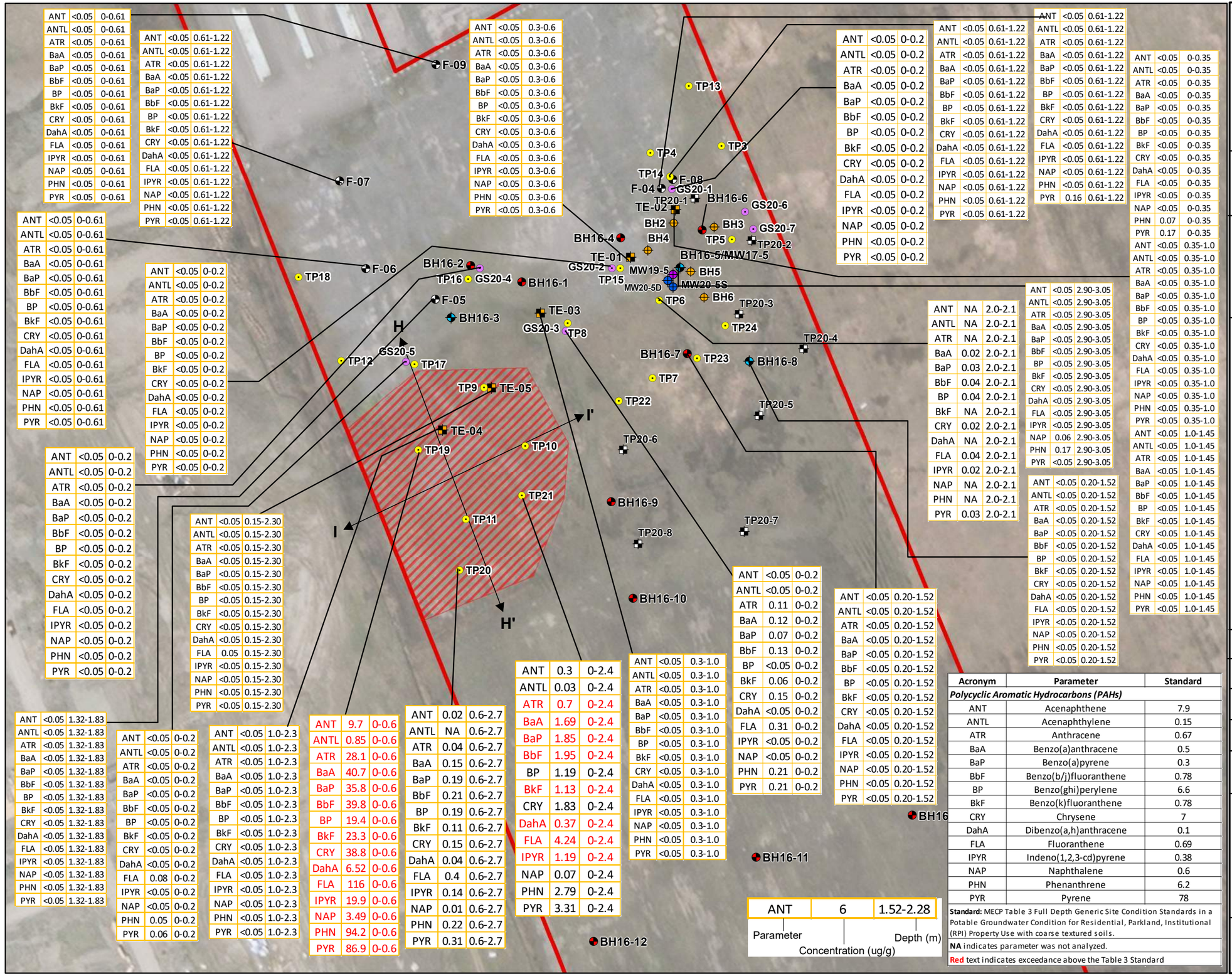
0 5 10 20 30 40 Meters

TITLE

CROSS SECTION G - G'
PHCS IN SOIL

FIGURE 4-4

Path: J:\1442 Projects by Job Number\2016\33164428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 4-4 Cross Section G-G' PHCs in Soil.mxd



ANT	<0.05	0-0.61
ANTL	<0.05	0-0.61
ATR	<0.05	0-0.61
BaA	<0.05	0-0.61
BaP	<0.05	0-0.61
BbF	<0.05	0-0.61
BP	<0.05	0-0.61
BkF	<0.05	0-0.61
CRY	<0.05	0-0.61
DahA	<0.05	0-0.61
FLA	<0.05	0-0.61
IPYR	<0.05	0-0.61
NAP	<0.05	0-0.61
PHN	<0.05	0-0.61
PYR	<0.05	0-0.61

ANT	<0.05	0.61-1.22
ANTL	<0.05	0.61-1.22
ATR	<0.05	0.61-1.22
BaA	<0.05	0.61-1.22
BaP	<0.05	0.61-1.22
BbF	<0.05	0.61-1.22
BP	<0.05	0.61-1.22
BkF	<0.05	0.61-1.22
CRY	<0.05	0.61-1.22
DahA	<0.05	0.61-1.22
FLA	<0.05	0.61-1.22
IPYR	<0.05	0.61-1.22
NAP	<0.05	0.61-1.22
PHN	<0.05	0.61-1.22
PYR	<0.05	0.61-1.22

ANT	<0.05	0.3-0.6
ANTL	<0.05	0.3-0.6
ATR	<0.05	0.3-0.6
BaA	<0.05	0.3-0.6
BaP	<0.05	0.3-0.6
BbF	<0.05	0.3-0.6
BP	<0.05	0.3-0.6
BkF	<0.05	0.3-0.6
CRY	<0.05	0.3-0.6
DahA	<0.05	0.3-0.6
FLA	<0.05	0.3-0.6
IPYR	<0.05	0.3-0.6
NAP	<0.05	0.3-0.6
PHN	<0.05	0.3-0.6
PYR	<0.05	0.3-0.6

ANT	<0.05	0-0.2
ANTL	<0.05	0-0.2
ATR	<0.05	0-0.2
BaA	<0.05	0-0.2
BaP	<0.05	0-0.2
BbF	<0.05	0-0.2
BP	<0.05	0-0.2
BkF	<0.05	0-0.2
CRY	<0.05	0-0.2
DahA	<0.05	0-0.2
FLA	<0.05	0-0.2
IPYR	<0.05	0-0.2
NAP	<0.05	0-0.2
PHN	<0.05	0-0.2
PYR	<0.05	0-0.2

ANT	<0.05	0.61-1.22
ANTL	<0.05	0.61-1.22
ATR	<0.05	0.61-1.22
BaA	<0.05	0.61-1.22
BaP	<0.05	0.61-1.22
BbF	<0.05	0.61-1.22
BP	<0.05	0.61-1.22
BkF	<0.05	0.61-1.22
CRY	<0.05	0.61-1.22
DahA	<0.05	0.61-1.22
FLA	<0.05	0.61-1.22
IPYR	<0.05	0.61-1.22
NAP	<0.05	0.61-1.22
PHN	<0.05	0.61-1.22
PYR	0.16	0.61-1.22

ANT	<0.05	0-0.35
ANTL	<0.05	0-0.35
ATR	<0.05	0-0.35
BaA	<0.05	0-0.35
BaP	<0.05	0-0.35
BbF	<0.05	0-0.35
BP	<0.05	0-0.35
BkF	<0.05	0-0.35
CRY	<0.05	0-0.35
DahA	<0.05	0-0.35
FLA	<0.05	0-0.35
IPYR	<0.05	0-0.35
NAP	<0.05	0-0.35
PHN	0.07	0-0.35
PYR	0.17	0-0.35
ANT	<0.05	0.35-1.0
ANTL	<0.05	0.35-1.0
ATR	<0.05	0.35-1.0
BaA	<0.05	0.35-1.0
BaP	<0.05	0.35-1.0
BbF	<0.05	0.35-1.0
BP	<0.05	0.35-1.0
BkF	<0.05	0.35-1.0
CRY	<0.05	0.35-1.0
DahA	<0.05	0.35-1.0
FLA	<0.05	0.35-1.0
IPYR	<0.05	0.35-1.0
NAP	<0.05	0.35-1.0
PHN	<0.05	0.35-1.0
PYR	<0.05	0.35-1.0
ANT	<0.05	1.0-1.45
ANTL	<0.05	1.0-1.45
ATR	<0.05	1.0-1.45
BaA	<0.05	1.0-1.45
BaP	<0.05	1.0-1.45
BbF	<0.05	1.0-1.45
BP	<0.05	1.0-1.45
BkF	<0.05	1.0-1.45
CRY	<0.05	1.0-1.45
DahA	<0.05	1.0-1.45
FLA	<0.05	1.0-1.45
IPYR	<0.05	1.0-1.45
NAP	<0.05	1.0-1.45
PHN	<0.05	1.0-1.45
PYR	<0.05	1.0-1.45

ANT	<0.05	0-0.2
ANTL	<0.05	0-0.2
ATR	<0.05	0-0.2
BaA	<0.05	0-0.2
BaP	<0.05	0-0.2
BbF	<0.05	0-0.2
BP	<0.05	0-0.2
BkF	<0.05	0-0.2
CRY	<0.05	0-0.2
DahA	<0.05	0-0.2
FLA	<0.05	0-0.2
IPYR	<0.05	0-0.2
NAP	<0.05	0-0.2
PHN	<0.05	0-0.2
PYR	<0.05	0-0.2

ANT	<0.05	0.61-1.22
ANTL	<0.05	0.61-1.22
ATR	<0.05	0.61-1.22
BaA	<0.05	0.61-1.22
BaP	<0.05	0.61-1.22
BbF	<0.05	0.61-1.22
BP	<0.05	0.61-1.22
BkF	<0.05	0.61-1.22
CRY	<0.05	0.61-1.22
DahA	<0.05	0.61-1.22
FLA	<0.05	0.61-1.22
IPYR	<0.05	0.61-1.22
NAP	<0.05	0.61-1.22
PHN	<0.05	0.61-1.22
PYR	<0.05	0.61-1.22

ANT	<0.05	0.15-2.30
ANTL	<0.05	0.15-2.30
ATR	<0.05	0.15-2.30
BaA	<0.05	0.15-2.30
BaP	<0.05	0.15-2.30
BbF	<0.05	0.15-2.30
BP	<0.05	0.15-2.30
BkF	<0.05	0.15-2.30
CRY	<0.05	0.15-2.30
DahA	<0.05	0.15-2.30
FLA	0.05	0.15-2.30
IPYR	<0.05	0.15-2.30
NAP	<0.05	0.15-2.30
PHN	<0.05	0.15-2.30
PYR	<0.05	0.15-2.30

ANT	NA	2.0-2.1
ANTL	NA	2.0-2.1
ATR	NA	2.0-2.1
BaA	0.02	2.0-2.1
BaP	0.03	2.0-2.1
BbF	0.04	2.0-2.1
BP	0.04	2.0-2.1
BkF	NA	2.0-2.1
CRY	0.02	2.0-2.1
DahA	NA	2.0-2.1
FLA	0.04	2.0-2.1
IPYR	0.02	2.0-2.1
NAP	NA	2.0-2.1
PHN	NA	2.0-2.1
PYR	0.03	2.0-2.1

ANT	<0.05	2.90-3.05
ANTL	<0.05	2.90-3.05
ATR	<0.05	2.90-3.05
BaA	<0.05	2.90-3.05
BaP	<0.05	2.90-3.05
BbF	<0.05	2.90-3.05
BP	<0.05	2.90-3.05
BkF	<0.05	2.90-3.05
CRY	<0.05	2.90-3.05
DahA	<0.05	2.90-3.05
FLA	<0.05	2.90-3.05
IPYR	<0.05	2.90-3.05
NAP	0.06	2.90-3.05
PHN	0.17	2.90-3.05
PYR	<0.05	2.90-3.05

ANT	<0.05	0.20-1.52
ANTL	<0.05	0.20-1.52
ATR	<0.05	0.20-1.52
BaA	<0.05	0.20-1.52
BaP	<0.05	0.20-1.52
BbF	<0.05	0.20-1.52
BP	<0.05	0.20-1.52
BkF	<0.05	0.20-1.52
CRY	<0.05	0.20-1.52
DahA	<0.05	0.20-1.52
FLA	<0.05	0.20-1.52
IPYR	<0.05	0.20-1.52
NAP	<0.05	0.20-1.52
PHN	<0.05	0.20-1.52
PYR	<0.05	0.20-1.52

ANT	<0.05	0-0.2
ANTL	<0.05	0-0.2
ATR	0.11	0-0.2
BaA	0.12	0-0.2
BaP	0.07	0-0.2
BbF	0.13	0-0.2
BP	<0.05	0-0.2
BkF	0.06	0-0.2
CRY	0.15	0-0.2
DahA	<0.05	0-0.2
FLA	0.31	0-0.2
IPYR	<0.05	0-0.2
NAP	<0.05	0-0.2
PHN	0.21	0-0.2
PYR	0.21	0-0.2

ANT	<0.05	0.20-1.52
ANTL	<0.05	0.20-1.52
ATR	<0.05	0.20-1.52
BaA	<0.05	0.20-1.52
BaP	<0.05	0.20-1.52
BbF	<0.05	0.20-1.52
BP	<0.05	0.20-1.52
BkF	<0.05	0.20-1.52
CRY	<0.05	0.20-1.52
DahA	<0.05	0.20-1.52
FLA	<0.05	0.20-1.52
IPYR	<0.05	0.20-1.52
NAP	<0.05	0.20-1.52
PHN	<0.05	0.20-1.52
PYR	<0.05	0.20-1.52

ANT	<0.05	1.32-1.83
ANTL	<0.05	1.32-1.83
ATR	<0.05	1.32-1.83
BaA	<0.05	1.32-1.83
BaP	<0.05	1.32-1.83
BbF	<0.05	1.32-1.83
BP	<0.05	1.32-1.83
BkF	<0.05	1.32-1.83
CRY	<0.05	1.32-1.83
DahA	<0.05	1.32-1.83
FLA	<0.05	1.32-1.83
IPYR	<0.05	1.32-1.83
NAP	<0.05	1.32-1.83
PHN	<0.05	1.32-1.83
PYR	<0.05	1.32-1.83

ANT	<0.05	0-0.2
ANTL	<0.05	0-0.2
ATR	<0.05	0-0.2
BaA	<0.05	0-0.2
BaP	<0.05	0-0.2
BbF	<0.05	0-0.2
BP	<0.05	0-0.2
BkF	<0.05	0-0.2
CRY	<0.05	0-0.2
DahA	<0.05	0-0.2
FLA	0.08	0-0.2
IPYR	<0.05	0-0.2
NAP	<0.05	0-0.2
PHN	0.05	0-0.2
PYR	0.06	0-0.2

ANT	<0.05	1.0-2.3
ANTL	<0.05	1.0-2.3
ATR	<0.05	1.0-2.3
BaA	<0.05	1.0-2.3
BaP	<0.05	1.0-2.3
BbF	<0.05	1.0-2.3
BP	<0.05	1.0-2.3
BkF	<0.05	1.0-2.3
CRY	<0.05	1.0-2.3
DahA	<0.05	1.0-2.3
FLA	<0.05	1.0-2.3
IPYR	<0.05	1.0-2.3
NAP	<0.05	1.0-2.3
PHN	<0.05	1.0-2.3
PYR	<0.05	1.0-2.3

ANT	9.7	0-0.6
ANTL	0.85	0-0.6
ATR	28.1	0-0.6
BaA	40.7	0-0.6
BaP	35.8	0-0.6
BbF	39.8	0-0.6
BP	19.4	0-0.6
BkF	23.3	0-0.6
CRY	38.8	0-0.6
DahA	6.52	0-0.6
FLA	116	0-0.6
IPYR	19.9	0-0.6
NAP	3.49	0-0.6
PHN	94.2	0-0.6
PYR	86.9	0-0.6

ANT	0.02	0.6-2.7
ANTL	NA	0.6-2.7
ATR	0.04	0.6-2.7
BaA	0.15	0.6-2.7
BaP	0.19	0.6-2.7
BbF	0.21	0.6-2.7
BP	0.19	0.6-2.7
BkF	0.11	0.6-2.7
CRY	0.15	0.6-2.7
DahA	0.04	0.6-2.7
FLA	0.4	0.6-2.7
IPYR	0.14	0.6-2.7
NAP	0.01	0.6-2.7
PHN	0.22	0.6-2.7
PYR	0.31	0.6-2.7

ANT	0.3	0-2.4
ANTL	0.03	0-2.4
ATR	0.7	0-2.4
BaA	1.69	0-2.4
BaP	1.85	0-2.4
BbF	1.95	0-2.4
BP	1.19	0-2.4
BkF	1.13	0-2.4
CRY	1.83	0-2.4
DahA	0.37	0-2.4
FLA	4.24	0-2.4
IPYR	1.19	0-2.4
NAP	0.07	0-2.4
PHN	2.79	0-2.4
PYR	3.31	0-2.4

ANT	<0.05	0.3-1.0
ANTL	<0.05	0.3-1.0
ATR	<0.05	0.3-1.0
BaA	<0.05	0.3-1.0
BaP	<0.05	0.3-1.0
BbF	<0.05	0.3-1.0
BP	<0.05	0.3-1.0
BkF	<0.05	0.3-1.0
CRY	<0.05	0.3-1.0
DahA	<0.05	0.3-1.0
FLA	<0.05	0.3-1.0
IPYR	<0.05	0.3-1.0
NAP	<0.05	0.3-1.0
PHN	<0.05	0.3-1.0
PYR	<0.05	0.3-1.0

ANT	6	1.52-2.28

Parameter — Concentration (ug/g) — Depth (m)

Acronym	Parameter	Standard
Polycyclic Aromatic Hydrocarbons (PAHs)		
ANT	Acenaphthene	7.9
ANTL	Acenaphthylene	0.15
ATR	Anthracene	0.67
BaA	Benzo(a)anthracene	0.5
BaP	Benzo(a)pyrene	0.3
BbF	Benzo(b/j)fluoranthene	0.78
BP	Benzo(ghi)perylene	6.6
BkF	Benzo(k)fluoranthene	0.78
CRY	Chrysene	7
DahA	Dibenzo(a,h)anthracene	0.1
FLA	Fluoranthene	0.69
IPYR	Indeno(1,2,3-cd)pyrene	0.38
NAP	Naphthalene	0.6
PHN	Phenanthrene	6.2
PYR	Pyrene	78

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

NA indicates parameter was not analyzed.

Red text indicates exceedance above the Table 3 Standard

100 COMMERCE VALLEY DR W,
THORNHILL, ONTARIO
CANADA, L3T 0A1
WWW.WSPGROUP.COM

CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Property Boundary
- Approximate Area of PAH Impacted Soil
- Cross Sections
- Test Pit (WSP, 2013)
- Borehole (WSP, 2013)
- Monitoring Well (WSP, 2013)
- Borehole (WSP, 2016)
- Monitoring Well (WSP, 2016-2017)
- Monitoring Well (WSP, 2019)
- Monitoring Well (WSP, 2020)
- Monitoring Well (Paterson, 2017)
- Test Pit (Paterson, 2017)
- Test Pit (WSP, 2020)
- Surface Soil Sample (WSP, 2020)

PROJECT NUMBER: 17M-01348-00

DATE: FEBRUARY 2021

DRAWN BY: JS/NN

CHECKED BY: NC

SCALE: 1:1,516

20 10 0 20 40 Meters

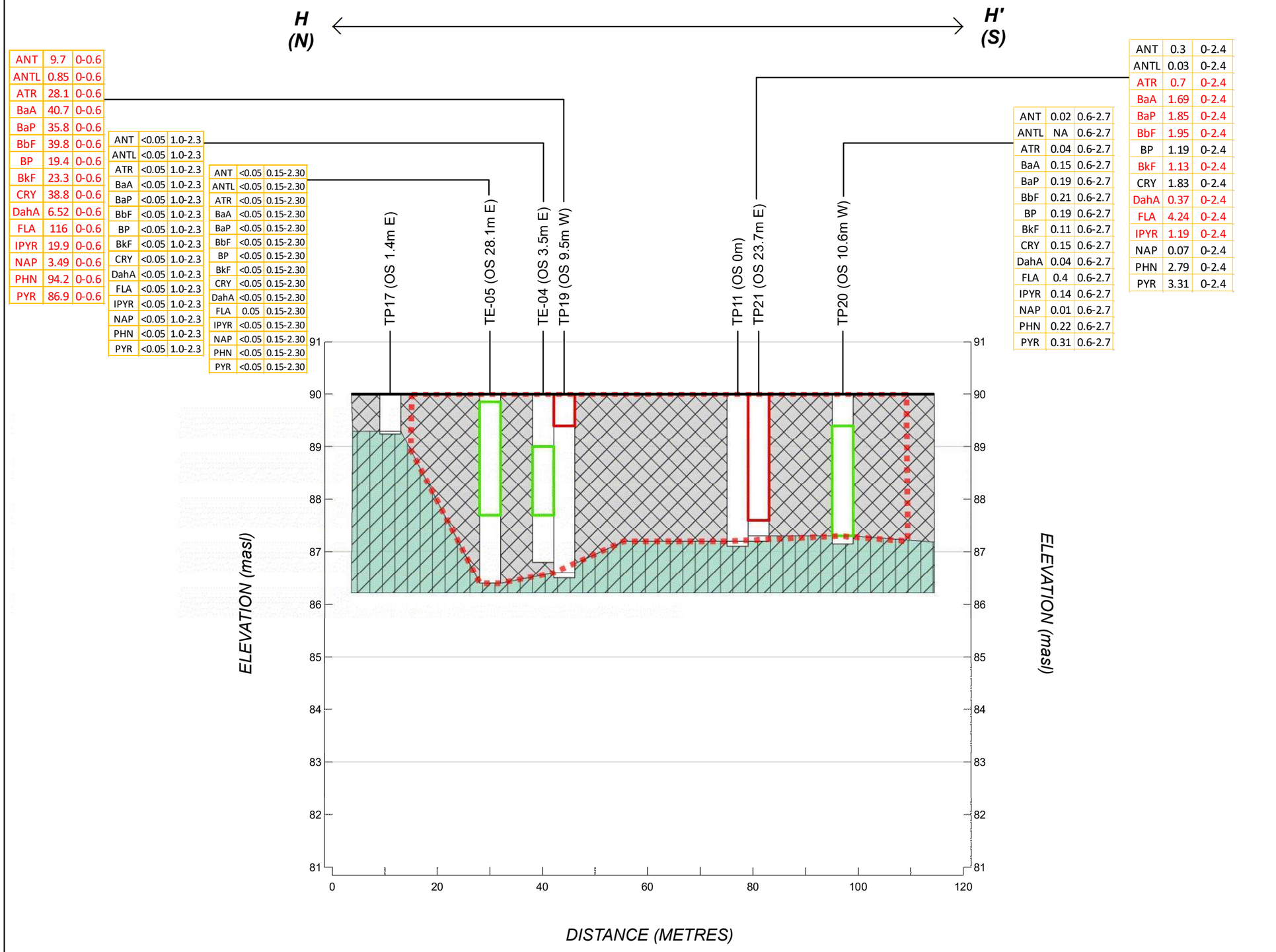
NAD1983 ZONE 18

TITLE

CONTAMINANT DISTRIBUTION OF PAHS IN SOIL

FIGURE 5

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 5 PAHs in Soil.mxd



100 COMMERCE VALLEY DR W,
THORNHILL, ONTARIO
CANADA, L3T 0A1
WWW.WSPGROUP.COM

CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Ground Surface
- Boreholes
- Topsoil
- Fill (Within APEC)
- Gravel
- Sandy Gravel
- Clayey Silt
- Silty Clay
- Clay
- Bedrock
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS
- Approximate Area of PAH Impacted Soil

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:750 10X HORIZONTAL EXAG.	

0 5 10 20 30 40 Meters

TITLE

CROSS SECTION H - H'
PAHS IN SOIL

FIGURE 5-1

Path: J:\1442 Projects by Job Number\2016\33116428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 5-1 Cross Section H-H' PAHs in Soil.mxd

I (W) ⟷ I' (E)

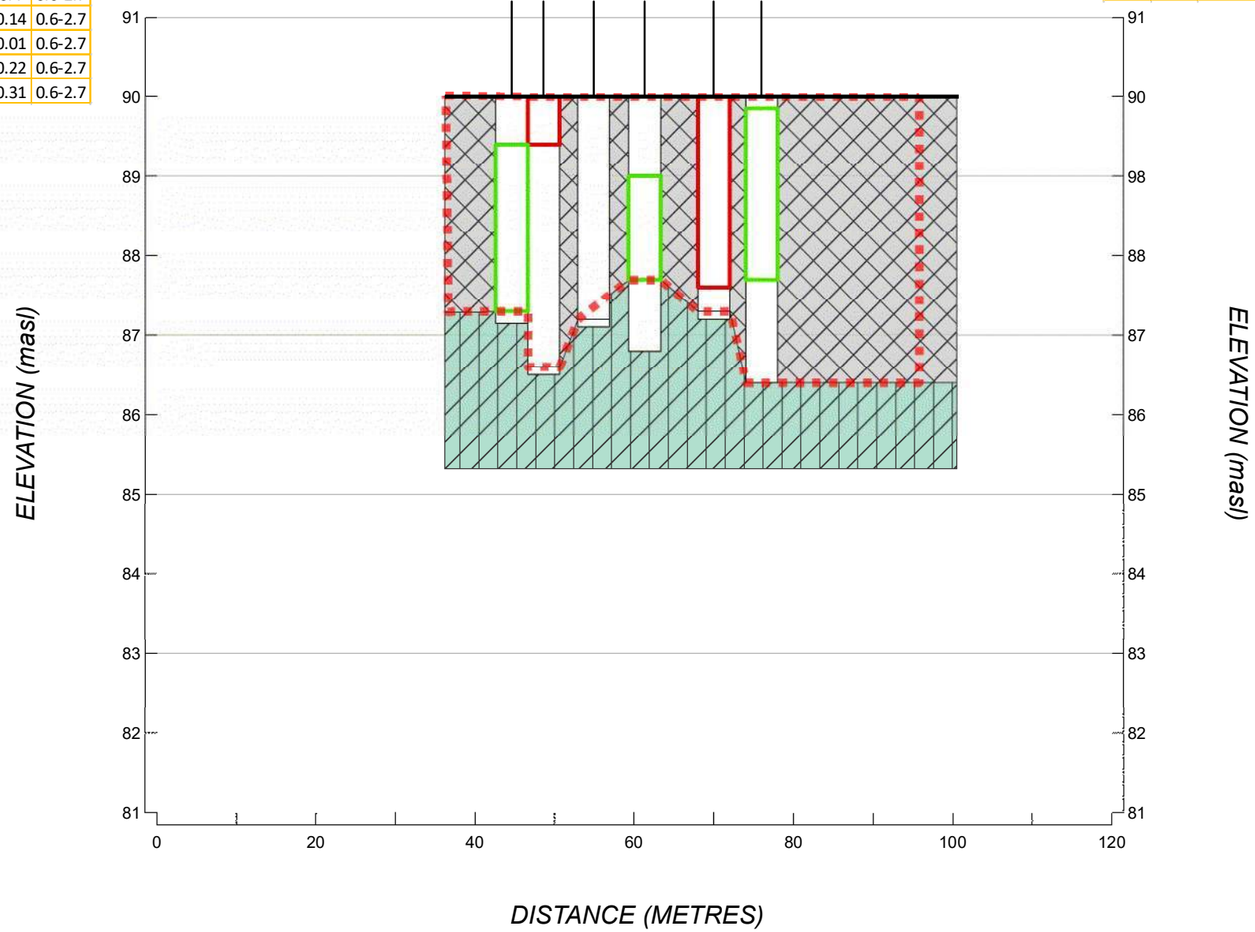
ANT	9.7	0-0.6
ANTL	0.85	0-0.6
ATR	28.1	0-0.6
BaA	40.7	0-0.6
BaP	35.8	0-0.6
BbF	39.8	0-0.6
BP	19.4	0-0.6
BkF	23.3	0-0.6
CRY	38.8	0-0.6
DahA	6.52	0-0.6
FLA	116	0-0.6
IPYR	19.9	0-0.6
NAP	3.49	0-0.6
PHN	94.2	0-0.6
PYR	86.9	0-0.6

ANT	0.02	0.6-2.7
ANTL	NA	0.6-2.7
ATR	0.04	0.6-2.7
BaA	0.15	0.6-2.7
BaP	0.19	0.6-2.7
BbF	0.21	0.6-2.7
BP	0.19	0.6-2.7
BkF	0.11	0.6-2.7
CRY	0.15	0.6-2.7
DahA	0.04	0.6-2.7
FLA	0.4	0.6-2.7
IPYR	0.14	0.6-2.7
NAP	0.01	0.6-2.7
PHN	0.22	0.6-2.7
PYR	0.31	0.6-2.7

ANT	<0.05	0.15-2.30
ANTL	<0.05	0.15-2.30
ATR	<0.05	0.15-2.30
BaA	<0.05	0.15-2.30
BaP	<0.05	0.15-2.30
BbF	<0.05	0.15-2.30
BP	<0.05	0.15-2.30
BkF	<0.05	0.15-2.30
CRY	<0.05	0.15-2.30
DahA	<0.05	0.15-2.30
FLA	0.05	0.15-2.30
IPYR	<0.05	0.15-2.30
NAP	<0.05	0.15-2.30
PHN	<0.05	0.15-2.30
PYR	<0.05	0.15-2.30

ANT	0.3	0-2.4
ANTL	0.03	0-2.4
ATR	0.7	0-2.4
BaA	1.69	0-2.4
BaP	1.85	0-2.4
BbF	1.95	0-2.4
BP	1.19	0-2.4
BkF	1.13	0-2.4
CRY	1.83	0-2.4
DahA	0.37	0-2.4
FLA	4.24	0-2.4
IPYR	1.19	0-2.4
NAP	0.07	0-2.4
PHN	2.79	0-2.4
PYR	3.31	0-2.4

ANT	<0.05	1.0-2.3
ANTL	<0.05	1.0-2.3
ATR	<0.05	1.0-2.3
BaA	<0.05	1.0-2.3
BaP	<0.05	1.0-2.3
BbF	<0.05	1.0-2.3
BP	<0.05	1.0-2.3
BkF	<0.05	1.0-2.3
CRY	<0.05	1.0-2.3
DahA	<0.05	1.0-2.3
FLA	<0.05	1.0-2.3
IPYR	<0.05	1.0-2.3
NAP	<0.05	1.0-2.3
PHN	<0.05	1.0-2.3
PYR	<0.05	1.0-2.3



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CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Ground Surface
- Boreholes
- Topsoil
- Fill (Within APEC)
- Gravel
- Sandy Gravel
- Clayey Silt
- Silty Clay
- Clay
- Bedrock
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS
- Approximate Area of PAH Impacted Soil

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:750 10X HORIZONTAL EXAG.	

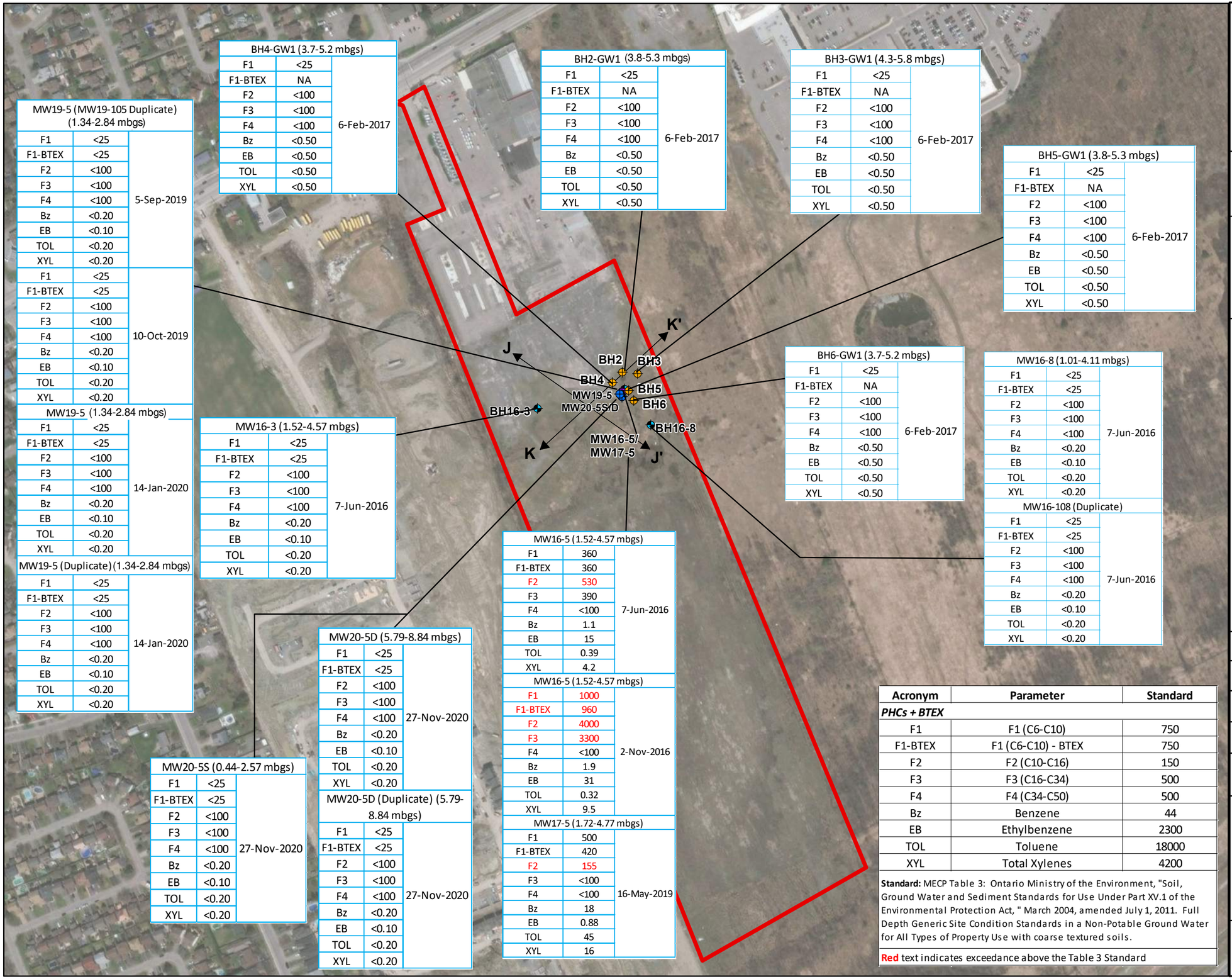
0 5 10 20 30 40 Meters

TITLE

CROSS SECTION I - I'
PAHS IN SOIL

FIGURE 5-2

Path: J:\1442 Projects by Job Number\2016\33164428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 5-2 Cross Section I-I' PAHs in Soil.mxd



BH4-GW1 (3.7-5.2 mbgs)		
F1	<25	6-Feb-2017
F1-BTEX	NA	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.50	
EB	<0.50	
TOL	<0.50	
XYL	<0.50	

BH2-GW1 (3.8-5.3 mbgs)		
F1	<25	6-Feb-2017
F1-BTEX	NA	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.50	
EB	<0.50	
TOL	<0.50	
XYL	<0.50	

BH3-GW1 (4.3-5.8 mbgs)		
F1	<25	6-Feb-2017
F1-BTEX	NA	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.50	
EB	<0.50	
TOL	<0.50	
XYL	<0.50	

BH5-GW1 (3.8-5.3 mbgs)		
F1	<25	6-Feb-2017
F1-BTEX	NA	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.50	
EB	<0.50	
TOL	<0.50	
XYL	<0.50	

MW19-5 (MW19-105 Duplicate) (1.34-2.84 mbgs)		
F1	<25	5-Sep-2019
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
F1	<25	10-Oct-2019
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
MW19-5 (1.34-2.84 mbgs)		
F1	<25	14-Jan-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
MW19-5 (Duplicate) (1.34-2.84 mbgs)		
F1	<25	14-Jan-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

MW16-3 (1.52-4.57 mbgs)		
F1	<25	7-Jun-2016
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

MW20-5S (0.44-2.57 mbgs)		
F1	<25	27-Nov-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

MW20-5D (5.79-8.84 mbgs)		
F1	<25	27-Nov-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
MW20-5D (Duplicate) (5.79-8.84 mbgs)		
F1	<25	27-Nov-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

MW16-5 (1.52-4.57 mbgs)		
F1	360	7-Jun-2016
F1-BTEX	360	
F2	530	
F3	390	
F4	<100	
Bz	1.1	
EB	15	
TOL	0.39	
XYL	4.2	
MW16-5 (1.52-4.57 mbgs)		
F1	1000	2-Nov-2016
F1-BTEX	960	
F2	4000	
F3	3300	
F4	<100	
Bz	1.9	
EB	31	
TOL	0.32	
XYL	9.5	
MW17-5 (1.72-4.77 mbgs)		
F1	500	16-May-2019
F1-BTEX	420	
F2	155	
F3	<100	
F4	<100	
Bz	18	
EB	0.88	
TOL	45	
XYL	16	

BH6-GW1 (3.7-5.2 mbgs)		
F1	<25	6-Feb-2017
F1-BTEX	NA	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.50	
EB	<0.50	
TOL	<0.50	
XYL	<0.50	

MW16-8 (1.01-4.11 mbgs)		
F1	<25	7-Jun-2016
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
MW16-108 (Duplicate)		
F1	<25	7-Jun-2016
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

Acronym	Parameter	Standard
PHCs + BTEX		
F1	F1 (C6-C10)	750
F1-BTEX	F1 (C6-C10) - BTEX	750
F2	F2 (C10-C16)	150
F3	F3 (C16-C34)	500
F4	F4 (C34-C50)	500
Bz	Benzene	44
EB	Ethylbenzene	2300
TOL	Toluene	18000
XYL	Total Xylenes	4200

Standard: MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards in a Non-Potable Ground Water for All Types of Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

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CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Property Boundary
- Cross Sections
- Monitoring Well (Paterson, 2017)
- Monitoring Well (WSP, 2013)
- Monitoring Well (WSP, 2016-2017)
- Monitoring Well (WSP, 2019)
- Monitoring Well (WSP, 2020)

ID (Screened Interval mbgs)		
Parameter	Concentration	Date

PROJECT NUMBER: 17M-01348-00 | DATE: FEBRUARY 2021

DRAWN BY: JS/NN

CHECKED BY: NC

SCALE: 1:4,000

50 25 0 50 100 150 Meters

NAD1983 ZONE 18

TITLE

CONTAMINANT DISTRIBUTION OF PHCS IN GROUNDWATER

FIGURE 6

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 6 PHCs in GW.mxd

MW16-5 (1.52-4.57 mbgs)		
F1	360	7-Jun-2016
F1-BTEX	360	
F2	530	
F3	390	
F4	<100	
Bz	1.1	
EB	15	
TOL	0.39	
XYL	4.2	
MW16-5 (1.52-4.57 mbgs)		
F1	1000	2-Nov-2016
F1-BTEX	960	
F2	4000	
F3	3300	
F4	<100	
Bz	1.9	
EB	31	
TOL	0.32	
XYL	9.5	
MW17-5 (1.72-4.77 mbgs)		
F1	500	16-May-2019
F1-BTEX	420	
F2	155	
F3	<100	
F4	<100	
Bz	18	
EB	0.88	
TOL	45	
XYL	16	

MW19-5 (MW19-105 Duplicate) (1.32-2.84 mbgs)		
F1	<25	5-Sep-2019
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
F1	<25	10-Oct-2019
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
MW19-5 (1.32-2.84 mbgs)		
F1	<25	14-Jan-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
MW19-5 (Duplicate) (1.32-2.84 mbgs)		
F1	<25	14-Jan-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

MW16-3 (1.52-4.57 mbgs)		
F1	<25	7-Jun-2016
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

MW20-5D (5.79-8.84 mbgs)		
F1	<25	27-Nov-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

MW20-5D (Duplicate) (5.79-8.84 mbgs)		
F1	<25	27-Nov-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

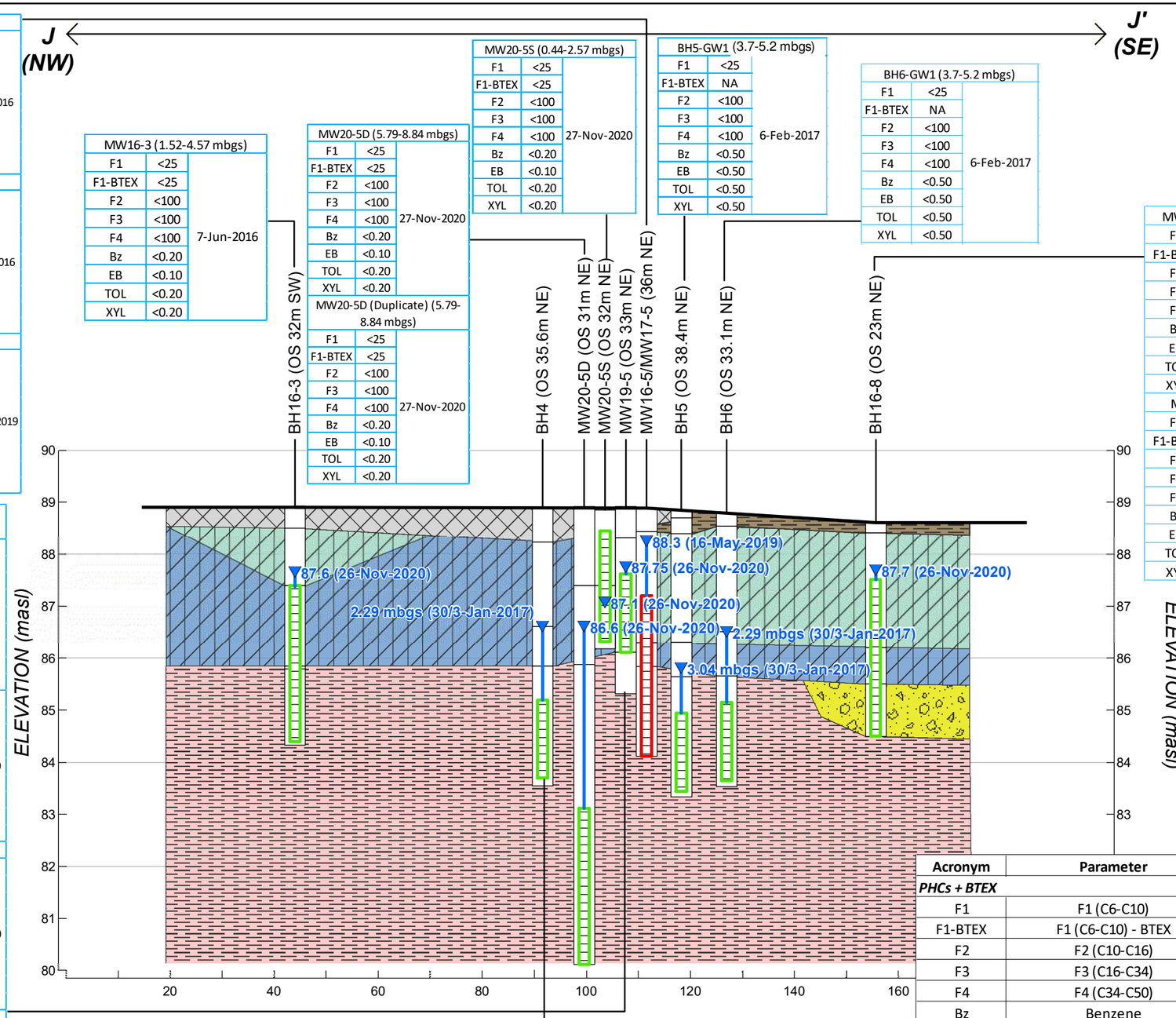
MW20-5S (0.44-2.57 mbgs)		
F1	<25	27-Nov-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

BH5-GW1 (3.7-5.2 mbgs)		
F1	<25	6-Feb-2017
F1-BTEX	NA	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.50	
EB	<0.50	
TOL	<0.50	
XYL	<0.50	

BH6-GW1 (3.7-5.2 mbgs)		
F1	<25	6-Feb-2017
F1-BTEX	NA	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.50	
EB	<0.50	
TOL	<0.50	
XYL	<0.50	

MW16-8 (1.01-4.11 mbgs)		
F1	<25	7-Jun-2016
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
MW16-108 (Duplicate)		
F1	<25	7-Jun-2016
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

BH4-GW1 (3.7-5.2 mbgs)		
F1	<25	6-Feb-2017
F1-BTEX	NA	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.50	
EB	<0.50	
TOL	<0.50	
XYL	<0.50	



ID (Screened Interval mbgs)		
Parameter	Concentration	Date

Acronym	Parameter	Standard
PHCs + BTEX		
F1	F1 (C6-C10)	750
F1-BTEX	F1 (C6-C10) - BTEX	750
F2	F2 (C10-C16)	150
F3	F3 (C16-C34)	500
F4	F4 (C34-C50)	500
Bz	Benzene	44
EB	Ethylbenzene	2300
TOL	Toluene	18000
XYL	Total Xylenes	4200

Standard: MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards in a Non-Potable Ground Water for All Types of Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

100 COMMERCE VALLEY DR W,
THORNHILL, ONTARIO
CANADA, L3T 0A1
WWW.WSPGROUP.COM

CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Ground Surface
- Monitoring Well Screens
- Groundwater Elevation (masl)
- Boreholes
- Topsoil
- Fill
- Gravel
- Sandy Gravel
- Clayey Silt
- Silty Clay
- Clay
- Bedrock
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:900 10X HORIZONTAL EXAG.	

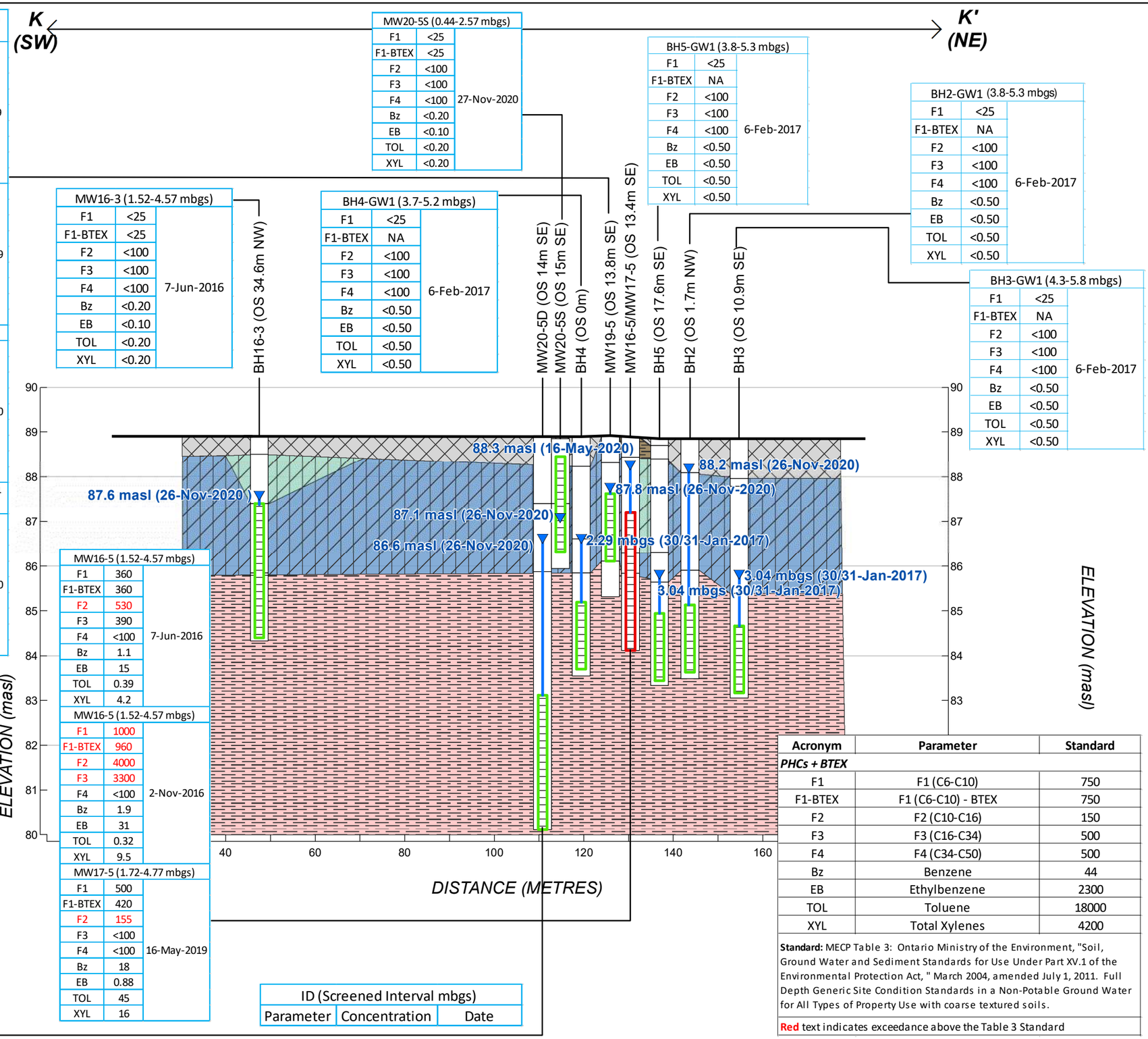
0 5 10 20 30 40 Meters

TITLE

CONTAMINANT DISTRIBUTION OF PHCS IN GROUNDWATER CROSS SECTION J - J'

FIGURE 6-1

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 6-1 Cross Section J-J' PHCs in GW.mxd



MW19-5 (MW19-105 Duplicate) (1.34-2.84 mbgs)		
F1	<25	5-Sep-2019
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
F1	<25	10-Oct-2019
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
MW19-5 (1.34-2.84 mbgs)		
F1	<25	14-Jan-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
MW19-5 (Duplicate) (1.34-2.84 mbgs)		
F1	<25	14-Jan-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

MW20-5D (5.79-8.84 mbgs)		
F1	<25	27-Nov-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	
MW20-5D (Duplicate) (5.79-8.84 mbgs)		
F1	<25	27-Nov-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

MW16-3 (1.52-4.57 mbgs)		
F1	<25	7-Jun-2016
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

MW20-5S (0.44-2.57 mbgs)		
F1	<25	27-Nov-2020
F1-BTEX	<25	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.20	
EB	<0.10	
TOL	<0.20	
XYL	<0.20	

BH4-GW1 (3.7-5.2 mbgs)		
F1	<25	6-Feb-2017
F1-BTEX	NA	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.50	
EB	<0.50	
TOL	<0.50	
XYL	<0.50	

BH5-GW1 (3.8-5.3 mbgs)		
F1	<25	6-Feb-2017
F1-BTEX	NA	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.50	
EB	<0.50	
TOL	<0.50	
XYL	<0.50	

BH2-GW1 (3.8-5.3 mbgs)		
F1	<25	6-Feb-2017
F1-BTEX	NA	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.50	
EB	<0.50	
TOL	<0.50	
XYL	<0.50	

BH3-GW1 (4.3-5.8 mbgs)		
F1	<25	6-Feb-2017
F1-BTEX	NA	
F2	<100	
F3	<100	
F4	<100	
Bz	<0.50	
EB	<0.50	
TOL	<0.50	
XYL	<0.50	

MW16-5 (1.52-4.57 mbgs)		
F1	360	7-Jun-2016
F1-BTEX	360	
F2	530	
F3	390	
F4	<100	
Bz	1.1	
EB	15	
TOL	0.39	
XYL	4.2	
MW16-5 (1.52-4.57 mbgs)		
F1	1000	2-Nov-2016
F1-BTEX	960	
F2	4000	
F3	3300	
F4	<100	
Bz	1.9	
EB	31	
TOL	0.32	
XYL	9.5	
MW17-5 (1.72-4.77 mbgs)		
F1	500	16-May-2019
F1-BTEX	420	
F2	155	
F3	<100	
F4	<100	
Bz	18	
EB	0.88	
TOL	45	
XYL	16	

ID (Screened Interval mbgs)		
Parameter	Concentration	Date

Acronym	Parameter	Standard
PHCs + BTEX		
F1	F1 (C6-C10)	750
F1-BTEX	F1 (C6-C10) - BTEX	750
F2	F2 (C10-C16)	150
F3	F3 (C16-C34)	500
F4	F4 (C34-C50)	500
Bz	Benzene	44
EB	Ethylbenzene	2300
TOL	Toluene	18000
XYL	Total Xylenes	4200

Standard: MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards in a Non-Potable Ground Water for All Types of Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

100 COMMERCE VALLEY DR W,
THORNHILL, ONTARIO
CANADA, L3T 0A1
WWW.WSPGROUP.COM

CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Ground Surface
- Monitoring Well Screens
- Groundwater Elevation (masl)
- Boreholes
- Topsoil
- Fill
- Gravel
- Sandy Gravel
- Clayey Silt
- Silty Clay
- Clay
- Bedrock
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:900 10X HORIZONTAL EXAG.	

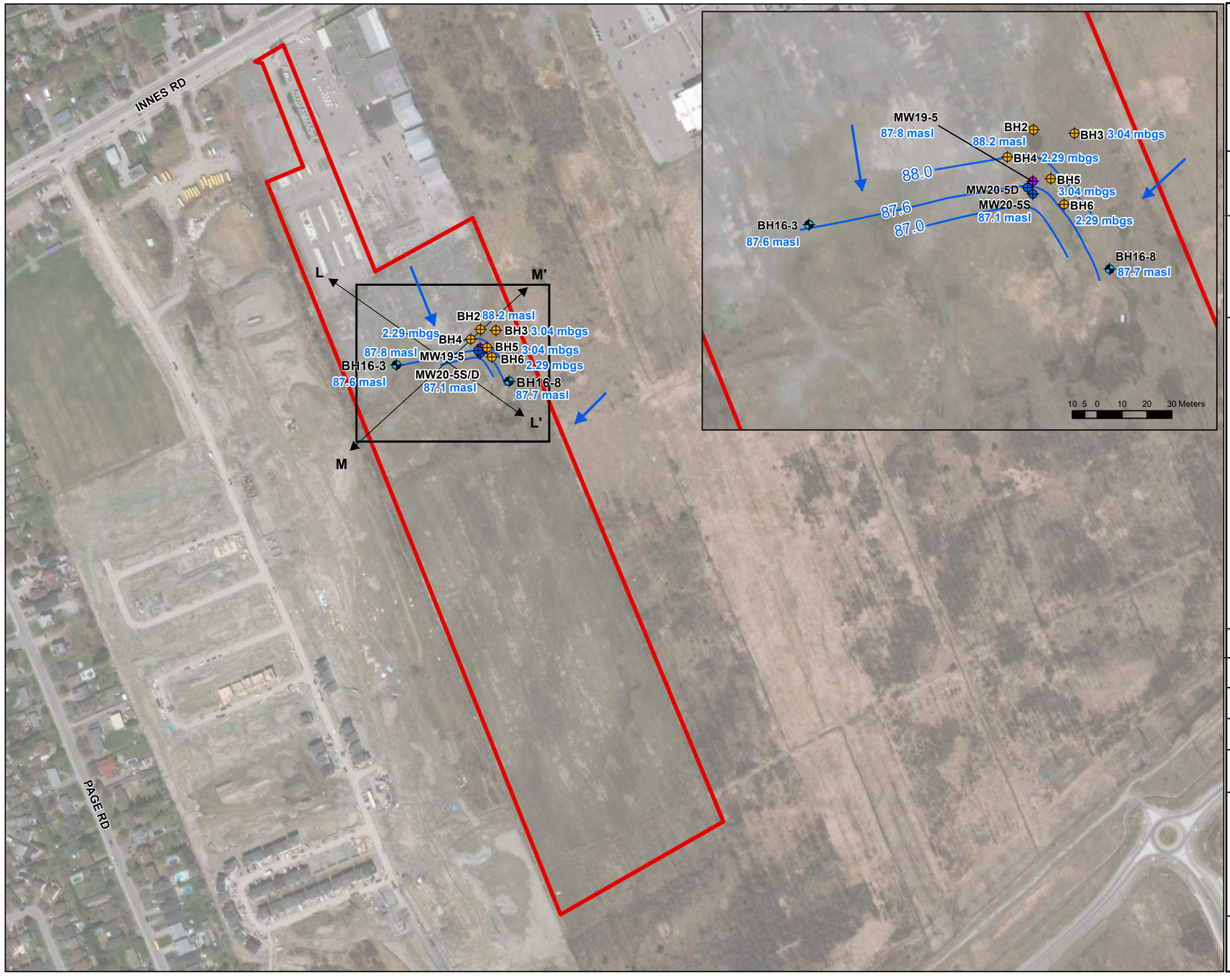
0 5 10 20 30 40 Meters

TITLE

CONTAMINANT DISTRIBUTION OF PHCS IN GROUNDWATER CROSS SECTION K - K'

FIGURE 6-2

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 6-2 Cross Section K-K' PHCs in GW.mxd



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CANADA, L3T 0A1
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CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Property Boundary
- Hydrogeological Cross Section
- Interpreted Groundwater Contours
- Monitoring Well (WSP 2016)
- Monitoring Well (Patterson 2017)
- Monitoring Well (WSP 2019)
- Monitoring Well (WSP 2020)
- 88.44 Groundwater Elevation Measured November 26, 2020 Patterson Locations BH3 to BH6 Measured January 30-31, 2017
- Interpreted Direction of Shallow Groundwater Flow

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: JS/NN	
CHECKED BY: NC	
SCALE: 1:4,000	

50 25 0 50 100 150 Meters

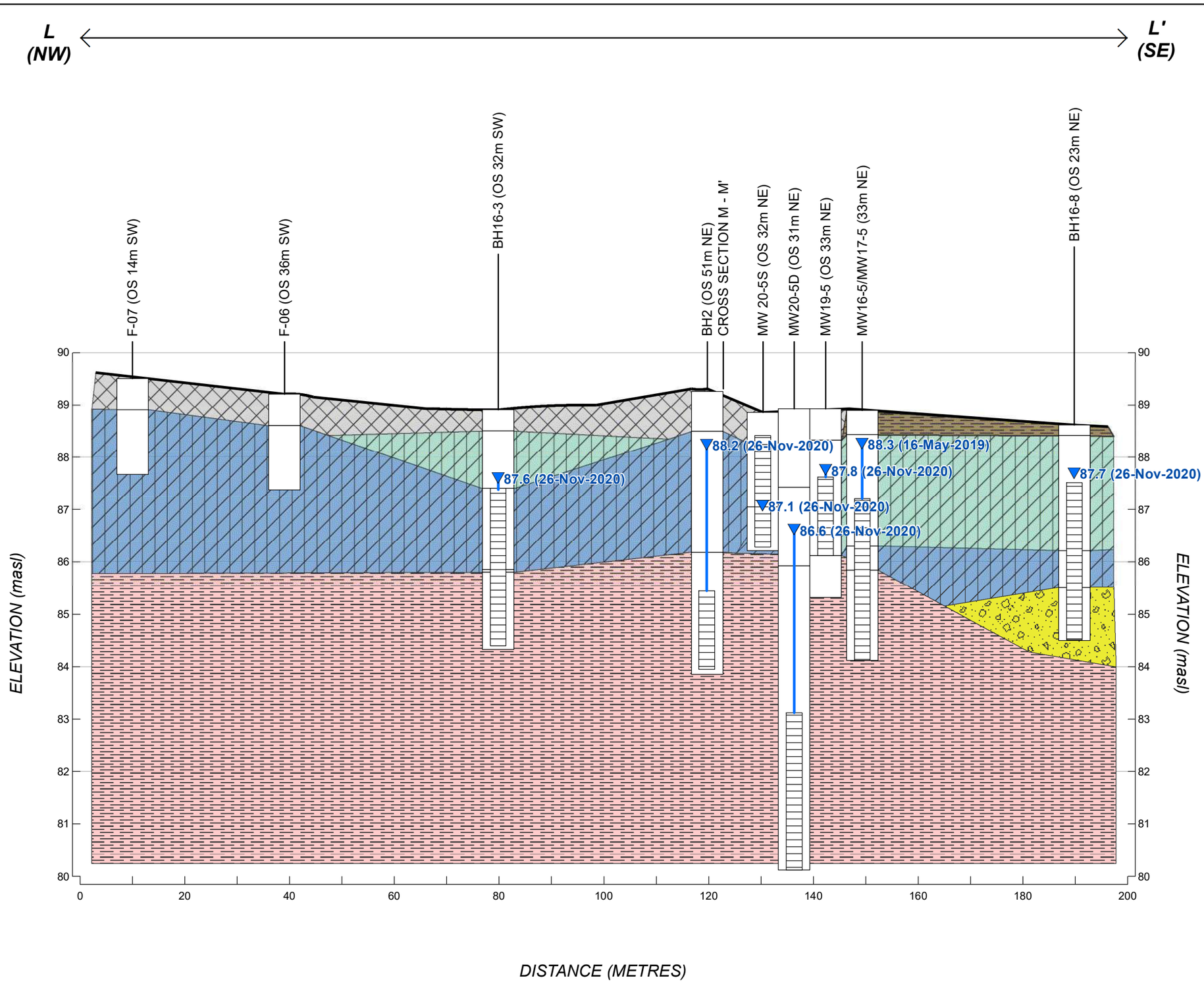
NAD1983 ZONE 18

TITLE

GROUNDWATER CONTOUR PLAN

FIGURE 7

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 7 Groundwater Contour Plan.mxd



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THORNHILL, ONTARIO
CANADA, L3T 0A1
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PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Ground Surface
- Monitoring Well Screens
- Groundwater Elevation (masl)
- Boreholes
- Topsoil
- Fill
- Gravel
- Sandy Gravel
- Clayey Silt
- Silty Clay
- Clay
- Bedrock

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:750 10X HORIZONTAL EXAG.	

0 5 10 20 30 40 Meters

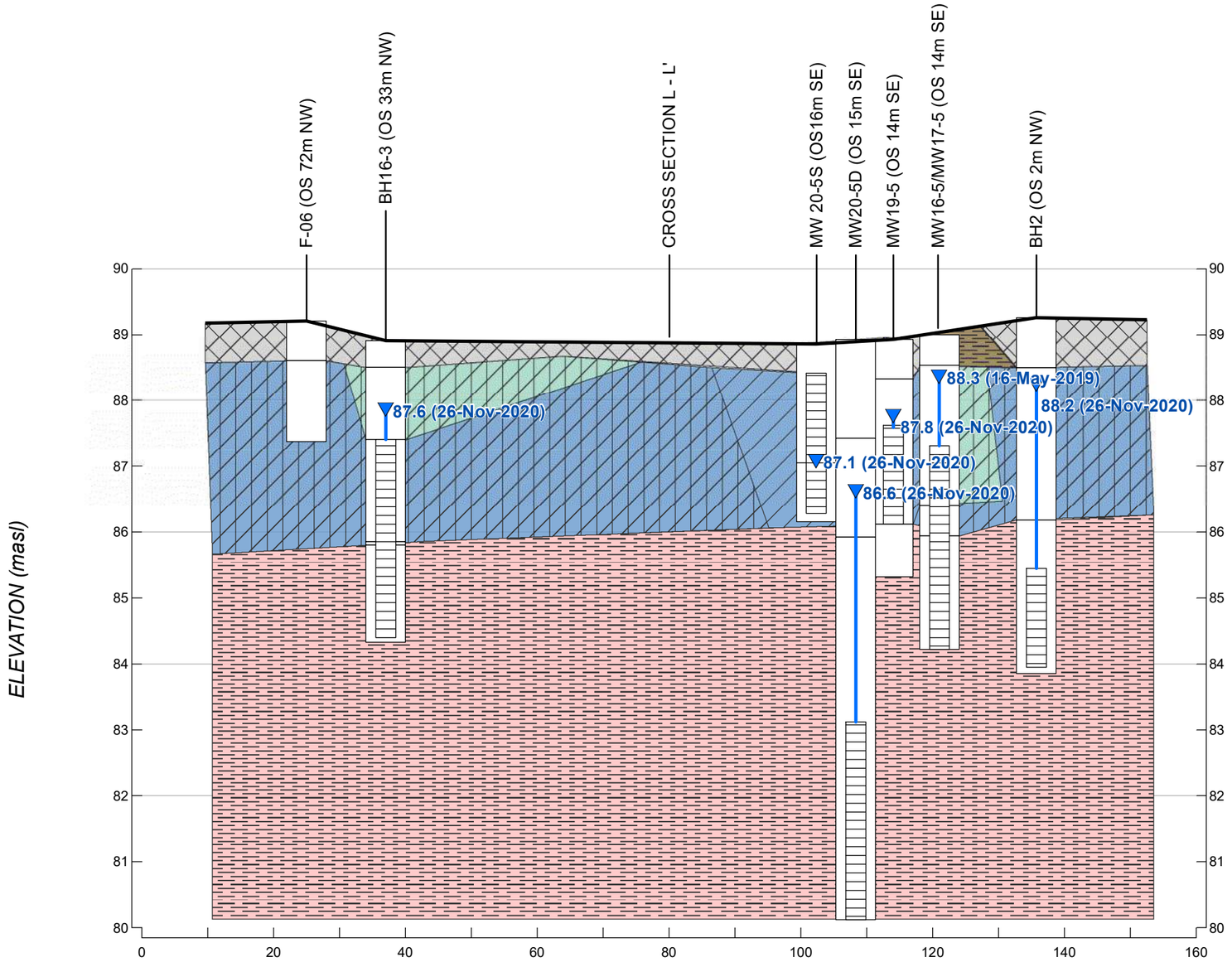
TITLE

HYDROGEOLOGICAL
CROSS SECTION L - L'

FIGURE 7-1

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 7-1 Hydrogeological Cross Section L-L'.mxd

M (SW) ⟷ **M' (NE)**



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CANADA, L3T 0A1
WWW.WSPGROUP.COM

CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Ground Surface
- Monitoring Well Screens
- Groundwater Elevation (masl)
- Boreholes
- Topsoil
- Fill
- Clayey Silt
- Silty Clay
- Clay
- Bedrock

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:750 10X HORIZONTAL EXAG.	

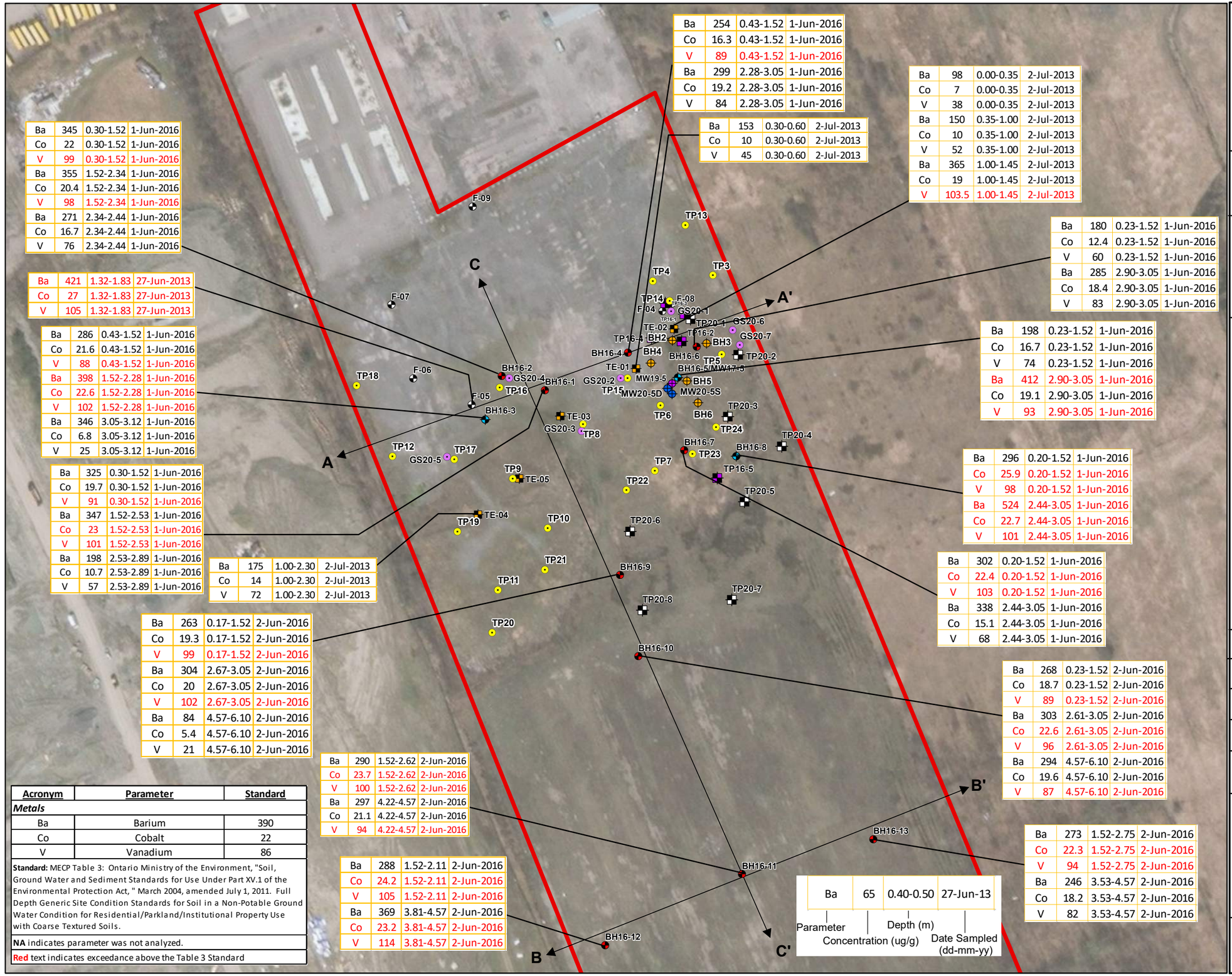
0 5 10 20 30 40 Meters

TITLE

HYDROGEOLOGICAL CROSS SECTION M - M'

FIGURE 7-2

Path: J:\1442 Projects by Job Number\2016\33164428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 7-2 Hydrogeological Cross Section M-M'.mxd



Ba	254	0.43-1.52	1-Jun-2016
Co	16.3	0.43-1.52	1-Jun-2016
V	89	0.43-1.52	1-Jun-2016
Ba	299	2.28-3.05	1-Jun-2016
Co	19.2	2.28-3.05	1-Jun-2016
V	84	2.28-3.05	1-Jun-2016

Ba	153	0.30-0.60	2-Jul-2013
Co	10	0.30-0.60	2-Jul-2013
V	45	0.30-0.60	2-Jul-2013

Ba	98	0.00-0.35	2-Jul-2013
Co	7	0.00-0.35	2-Jul-2013
V	38	0.00-0.35	2-Jul-2013
Ba	150	0.35-1.00	2-Jul-2013
Co	10	0.35-1.00	2-Jul-2013
V	52	0.35-1.00	2-Jul-2013
Ba	365	1.00-1.45	2-Jul-2013
Co	19	1.00-1.45	2-Jul-2013
V	103.5	1.00-1.45	2-Jul-2013

Ba	345	0.30-1.52	1-Jun-2016
Co	22	0.30-1.52	1-Jun-2016
V	99	0.30-1.52	1-Jun-2016
Ba	355	1.52-2.34	1-Jun-2016
Co	20.4	1.52-2.34	1-Jun-2016
V	98	1.52-2.34	1-Jun-2016
Ba	271	2.34-2.44	1-Jun-2016
Co	16.7	2.34-2.44	1-Jun-2016
V	76	2.34-2.44	1-Jun-2016

Ba	180	0.23-1.52	1-Jun-2016
Co	12.4	0.23-1.52	1-Jun-2016
V	60	0.23-1.52	1-Jun-2016
Ba	285	2.90-3.05	1-Jun-2016
Co	18.4	2.90-3.05	1-Jun-2016
V	83	2.90-3.05	1-Jun-2016

Ba	421	1.32-1.83	27-Jun-2013
Co	27	1.32-1.83	27-Jun-2013
V	105	1.32-1.83	27-Jun-2013

Ba	198	0.23-1.52	1-Jun-2016
Co	16.7	0.23-1.52	1-Jun-2016
V	74	0.23-1.52	1-Jun-2016
Ba	412	2.90-3.05	1-Jun-2016
Co	19.1	2.90-3.05	1-Jun-2016
V	93	2.90-3.05	1-Jun-2016

Ba	286	0.43-1.52	1-Jun-2016
Co	21.6	0.43-1.52	1-Jun-2016
V	88	0.43-1.52	1-Jun-2016
Ba	398	1.52-2.28	1-Jun-2016
Co	22.6	1.52-2.28	1-Jun-2016
V	102	1.52-2.28	1-Jun-2016
Ba	346	3.05-3.12	1-Jun-2016
Co	6.8	3.05-3.12	1-Jun-2016
V	25	3.05-3.12	1-Jun-2016

Ba	296	0.20-1.52	1-Jun-2016
Co	25.9	0.20-1.52	1-Jun-2016
V	98	0.20-1.52	1-Jun-2016
Ba	524	2.44-3.05	1-Jun-2016
Co	22.7	2.44-3.05	1-Jun-2016
V	101	2.44-3.05	1-Jun-2016

Ba	325	0.30-1.52	1-Jun-2016
Co	19.7	0.30-1.52	1-Jun-2016
V	91	0.30-1.52	1-Jun-2016
Ba	347	1.52-2.53	1-Jun-2016
Co	23	1.52-2.53	1-Jun-2016
V	101	1.52-2.53	1-Jun-2016
Ba	198	2.53-2.89	1-Jun-2016
Co	10.7	2.53-2.89	1-Jun-2016
V	57	2.53-2.89	1-Jun-2016

Ba	175	1.00-2.30	2-Jul-2013
Co	14	1.00-2.30	2-Jul-2013
V	72	1.00-2.30	2-Jul-2013

Ba	302	0.20-1.52	1-Jun-2016
Co	22.4	0.20-1.52	1-Jun-2016
V	103	0.20-1.52	1-Jun-2016
Ba	338	2.44-3.05	1-Jun-2016
Co	15.1	2.44-3.05	1-Jun-2016
V	68	2.44-3.05	1-Jun-2016

Ba	263	0.17-1.52	2-Jun-2016
Co	19.3	0.17-1.52	2-Jun-2016
V	99	0.17-1.52	2-Jun-2016
Ba	304	2.67-3.05	2-Jun-2016
Co	20	2.67-3.05	2-Jun-2016
V	102	2.67-3.05	2-Jun-2016
Ba	84	4.57-6.10	2-Jun-2016
Co	5.4	4.57-6.10	2-Jun-2016
V	21	4.57-6.10	2-Jun-2016

Ba	268	0.23-1.52	2-Jun-2016
Co	18.7	0.23-1.52	2-Jun-2016
V	89	0.23-1.52	2-Jun-2016
Ba	303	2.61-3.05	2-Jun-2016
Co	22.6	2.61-3.05	2-Jun-2016
V	96	2.61-3.05	2-Jun-2016
Ba	294	4.57-6.10	2-Jun-2016
Co	19.6	4.57-6.10	2-Jun-2016
V	87	4.57-6.10	2-Jun-2016

Ba	290	1.52-2.62	2-Jun-2016
Co	23.7	1.52-2.62	2-Jun-2016
V	100	1.52-2.62	2-Jun-2016
Ba	297	4.22-4.57	2-Jun-2016
Co	21.1	4.22-4.57	2-Jun-2016
V	94	4.22-4.57	2-Jun-2016

Ba	273	1.52-2.75	2-Jun-2016
Co	22.3	1.52-2.75	2-Jun-2016
V	94	1.52-2.75	2-Jun-2016
Ba	246	3.53-4.57	2-Jun-2016
Co	18.2	3.53-4.57	2-Jun-2016
V	82	3.53-4.57	2-Jun-2016

Ba	288	1.52-2.11	2-Jun-2016
Co	24.2	1.52-2.11	2-Jun-2016
V	105	1.52-2.11	2-Jun-2016
Ba	369	3.81-4.57	2-Jun-2016
Co	23.2	3.81-4.57	2-Jun-2016
V	114	3.81-4.57	2-Jun-2016

Acronym	Parameter	Standard
Metals		
Ba	Barium	390
Co	Cobalt	22
V	Vanadium	86

Standard: MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards for Soil in a Non-Potable Ground Water Condition for Residential/Parkland/Institutional Property Use with Coarse Textured Soils.

NA indicates parameter was not analyzed.

Red text indicates exceedance above the Table 3 Standard

Ba	65	0.40-0.50	27-Jun-13
Parameter	Concentration (ug/g)	Depth (m)	Date Sampled (dd-mm-yy)

100 COMMERCE VALLEY DR W,
THORNHILL, ONTARIO
CANADA, L3T 0A1
WWW.WSPGROUP.COM

CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Property Boundary
- Cross Sections
- Test Pit (WSP, 2020)
- Test Pit (WSP, 2013)
- Test Pit (WSP, 2016)
- Borehole (WSP, 2013)
- Monitoring Well (WSP, 2013)
- Borehole (WSP, 2016)
- Monitoring Well (WSP, 2016-2017)
- Monitoring Well (WSP, 2019)
- Monitoring Well (WSP, 2020)
- Monitoring Well (Paterson, 2017)
- Test Pit (Paterson, 2017)
- Surface Soil Sample (WSP, 2020)

PROJECT NUMBER: 17M-01348-00

DATE: FEBRUARY 2021

DRAWN BY: JS/NN

CHECKED BY: NC

SCALE: 1:1,800

20 10 0 20 40 Meters

NAD1983 ZONE 18

TITLE

NATURALLY OCCURRING METALS
IN FILL AND NATIVE SOILS
ON SITE

FIGURE 8

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 8 Naturally Occurring Metals in Soil.mxd

A (W) ← → **A' (E)**

Ba	286	0.43-1.52	1-Jun-2016
Co	21.6	0.43-1.52	1-Jun-2016
V	88	0.43-1.52	1-Jun-2016
Ba	398	1.52-2.28	1-Jun-2016
Co	22.6	1.52-2.28	1-Jun-2016
V	102	1.52-2.28	1-Jun-2016
Ba	346	3.05-3.12	1-Jun-2016
Co	6.8	3.05-3.12	1-Jun-2016
V	25	3.05-3.12	1-Jun-2016

Ba	345	0.30-1.52	1-Jun-2016
Co	22	0.30-1.52	1-Jun-2016
V	99	0.30-1.52	1-Jun-2016
Ba	355	1.52-2.34	1-Jun-2016
Co	20.4	1.52-2.34	1-Jun-2016
V	98	1.52-2.34	1-Jun-2016
Ba	271	2.34-2.44	1-Jun-2016
Co	16.7	2.34-2.44	1-Jun-2016
V	76	2.34-2.44	1-Jun-2016

Ba	325	0.30-1.52	1-Jun-2016
Co	19.7	0.30-1.52	1-Jun-2016
V	91	0.30-1.52	1-Jun-2016
Ba	347	1.52-2.53	1-Jun-2016
Co	23	1.52-2.53	1-Jun-2016
V	101	1.52-2.53	1-Jun-2016
Ba	198	2.53-2.89	1-Jun-2016
Co	10.7	2.53-2.89	1-Jun-2016
V	57	2.53-2.89	1-Jun-2016

Ba	198	0.23-1.52	1-Jun-2016
Co	16.7	0.23-1.52	1-Jun-2016
V	74	0.23-1.52	1-Jun-2016
Ba	412	2.90-3.05	1-Jun-2016
Co	19.1	2.90-3.05	1-Jun-2016
V	93	2.90-3.05	1-Jun-2016

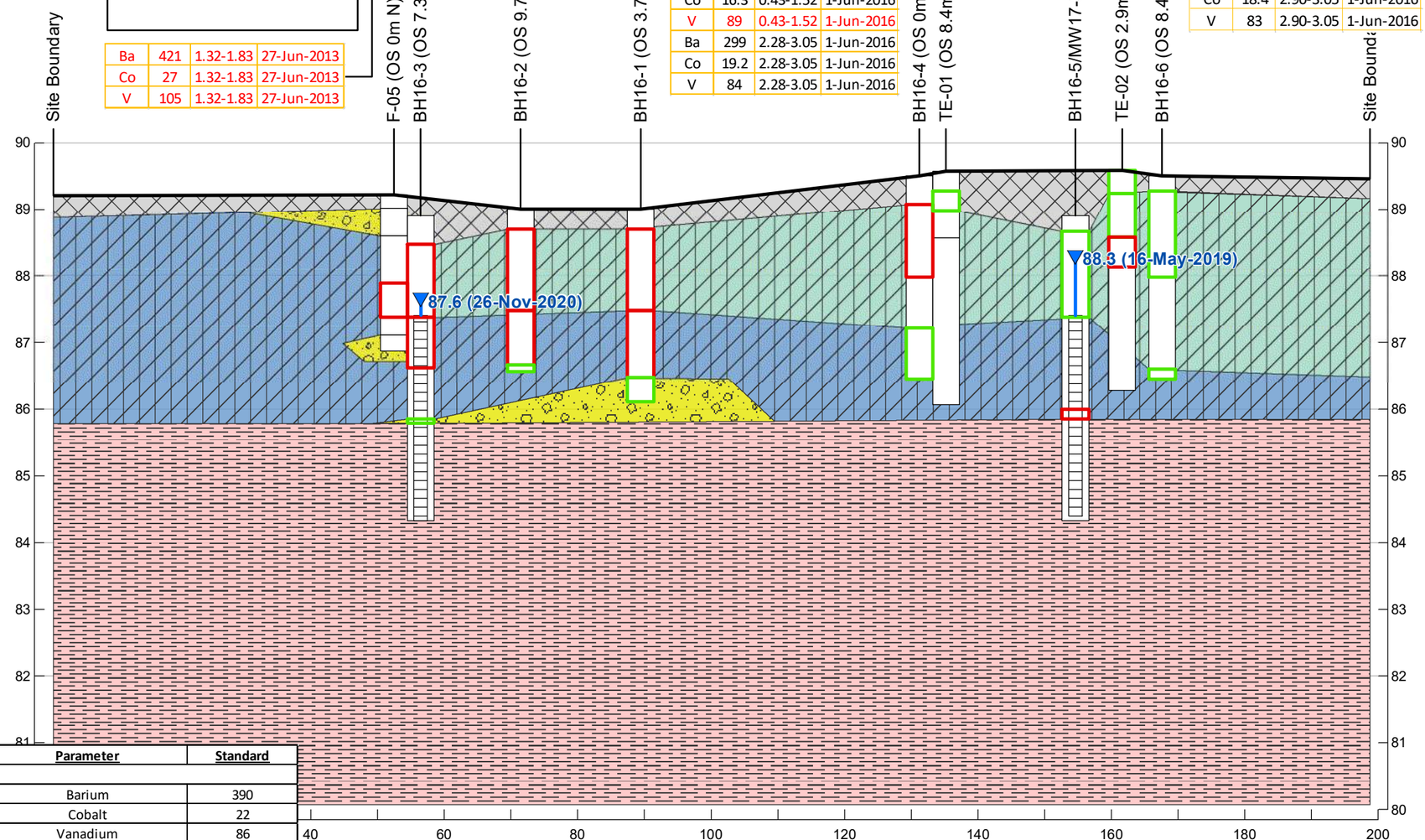
Ba	98	0.00-0.35	2-Jul-2013
Co	7	0.00-0.35	2-Jul-2013
V	38	0.00-0.35	2-Jul-2013
Ba	150	0.35-1.00	2-Jul-2013
Co	10	0.35-1.00	2-Jul-2013
V	52	0.35-1.00	2-Jul-2013
Ba	365	1.00-1.45	2-Jul-2013
Co	19	1.00-1.45	2-Jul-2013
V	103.5	1.00-1.45	2-Jul-2013

Ba	180	0.23-1.52	1-Jun-2016
Co	12.4	0.23-1.52	1-Jun-2016
V	60	0.23-1.52	1-Jun-2016
Ba	285	2.90-3.05	1-Jun-2016
Co	18.4	2.90-3.05	1-Jun-2016
V	83	2.90-3.05	1-Jun-2016

Ba	153	0.30-0.60	2-Jul-2013
Co	10	0.30-0.60	2-Jul-2013
V	45	0.30-0.60	2-Jul-2013

Ba	254	0.43-1.52	1-Jun-2016
Co	16.3	0.43-1.52	1-Jun-2016
V	89	0.43-1.52	1-Jun-2016
Ba	299	2.28-3.05	1-Jun-2016
Co	19.2	2.28-3.05	1-Jun-2016
V	84	2.28-3.05	1-Jun-2016

Ba	421	1.32-1.83	27-Jun-2013
Co	27	1.32-1.83	27-Jun-2013
V	105	1.32-1.83	27-Jun-2013



Acronym	Parameter	Standard
Metals		
Ba	Barium	390
Co	Cobalt	22
V	Vanadium	86

Standard: MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards for Soil in a Non-Potable Ground Water Condition for Residential/Parkland/Institutional Property Use with Coarse Textured Soils.

NA indicates parameter was not analyzed.

Red text indicates exceedance above the Table 3 Standard

Ba	65	0.40-0.50	27-Jun-13

Parameter; Concentration (ug/g); Depth (m); Date Sampled (dd-mm-yy)

100 COMMERCE VALLEY DR W,
THORNHILL, ONTARIO
CANADA, L3T 0A1
WWW.WSPGROUP.COM

CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Ground Surface
- Monitoring Well Screens
- Groundwater Elevation (masl)
- Boreholes
- Topsoil
- Fill
- Gravel
- Sandy Gravel
- Clayey Silt
- Silty Clay
- Clay
- Bedrock
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:750 10X HORIZONTAL EXAG.	

0 5 10 20 30 40 Meters

TITLE

CROSS SECTION A - A'
NATURALLY OCCURRING METALS IN FILL AND NATIVE SOILS

FIGURE 8-1

Path: J:\1442 Projects by Job Number\2016\33164428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 8-1 Cross Section A-A' Metals in Soil.mxd

B (W) ⟷ **B' (E)**

Ba	288	1.52-2.11	2-Jun-2016
Co	24.2	1.52-2.11	2-Jun-2016
V	105	1.52-2.11	2-Jun-2016
Ba	369	3.81-4.57	2-Jun-2016
Co	23.2	3.81-4.57	2-Jun-2016
V	114	3.81-4.57	2-Jun-2016

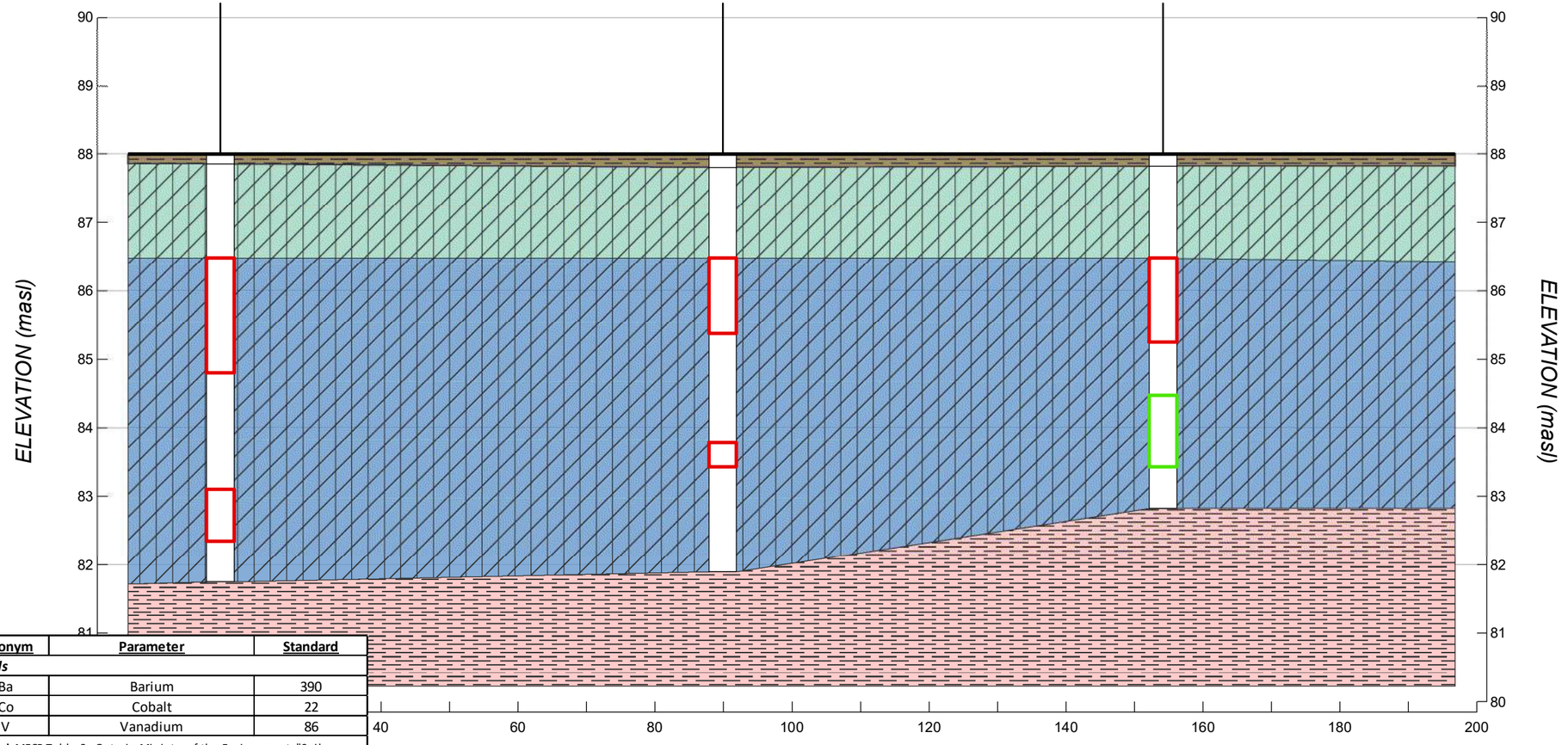
BH16-12 (OS 6.0m S)

Ba	290	1.52-2.62	2-Jun-2016
Co	23.7	1.52-2.62	2-Jun-2016
V	100	1.52-2.62	2-Jun-2016
Ba	297	4.22-4.57	2-Jun-2016
Co	21.1	4.22-4.57	2-Jun-2016
V	94	4.22-4.57	2-Jun-2016

BH16-11 (OS 0m)

Ba	273	1.52-2.75	2-Jun-2016
Co	22.3	1.52-2.75	2-Jun-2016
V	94	1.52-2.75	2-Jun-2016
Ba	246	3.53-4.57	2-Jun-2016
Co	18.2	3.53-4.57	2-Jun-2016
V	82	3.53-4.57	2-Jun-2016

BH16-13 (OS 6.1m S)



Acronym	Parameter	Standard
Metals		
Ba	Barium	390
Co	Cobalt	22
V	Vanadium	86

Standard: MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards for Soil in a Non-Potable Ground Water Condition for Residential/Parkland/Institutional Property Use with Coarse Textured Soils.

NA indicates parameter was not analyzed.

Red text indicates exceedance above the Table 3 Standard

100 COMMERCE VALLEY DR W,
THORNHILL, ONTARIO
CANADA, L3T 0A1
WWW.WSPGROUP.COM

CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Ground Surface
- Boreholes
- Topsoil
- Fill
- Gravel
- Sandy Gravel
- Clayey Silt
- Silty Clay
- Clay
- Bedrock
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS

Ba	65	0.40-0.50	27-Jun-13
Parameter	Concentration (ug/g)	Depth (m)	Date Sampled (dd-mm-yy)

PROJECT NUMBER: 17M-01348-00	**DATE:** FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:750 10X HORIZONTAL EXAG.	

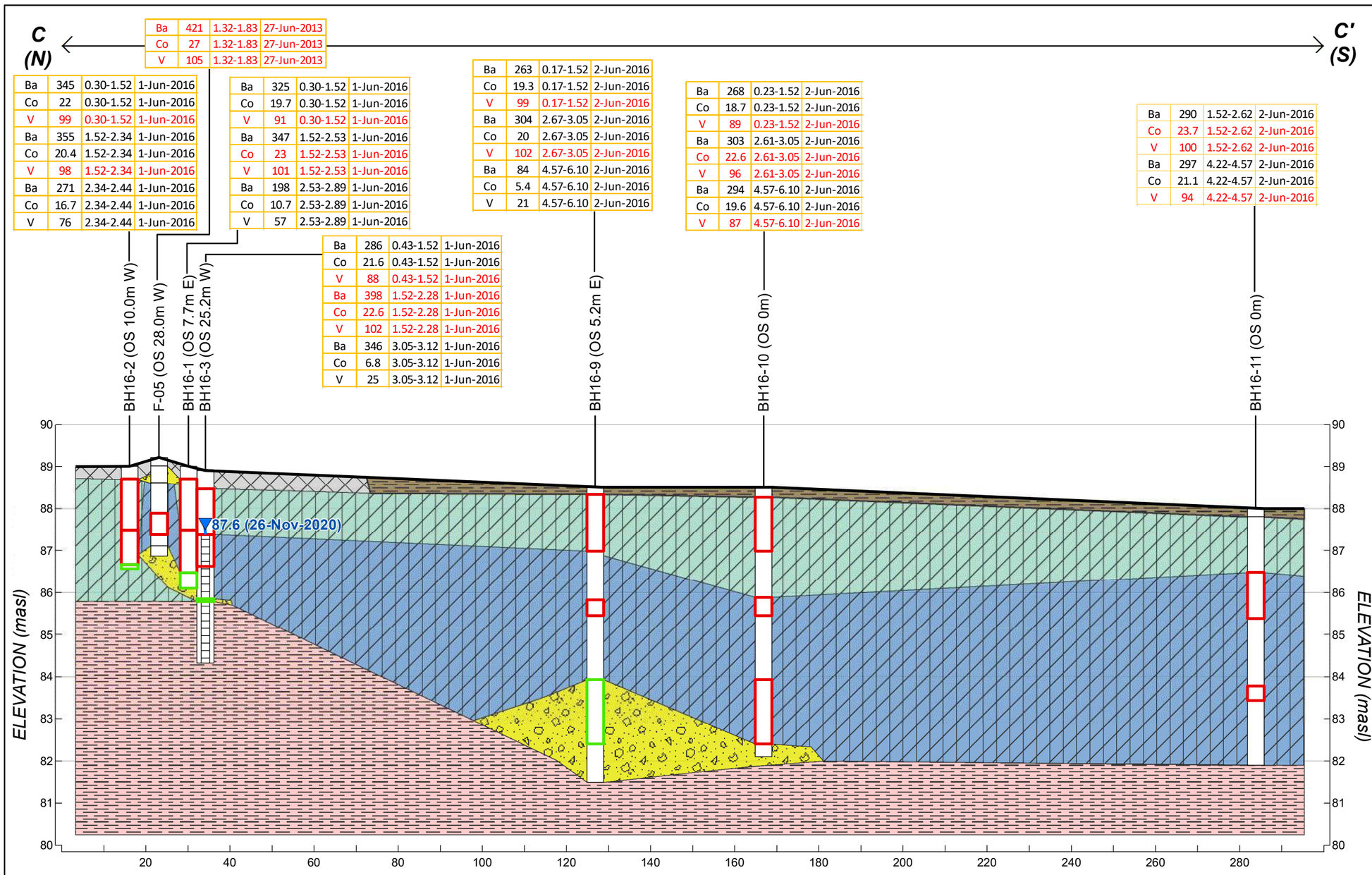
0 5 10 20 30 40 Meters

TITLE

CROSS SECTION B - B'
NATURALLY OCCURRING METALS IN FILL AND NATIVE SOILS

FIGURE 8-2

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 8-2 Cross Section B-B' Metals in Soil.mxd



Acronym	Parameter	Standard
Metals		
Ba	Barium	390
Co	Cobalt	22
V	Vanadium	86

Standard: MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards for Soil in a Non-Potable Ground Water Condition for Residential/Parkland/Institutional Property Use with Coarse Textured Soils.

NA indicates parameter was not analyzed.

Red text indicates exceedance above the Table 3 Standard

Ba	65	0.40-0.50	27-Jun-13

Parameter; Concentration (ug/g); Depth (m); Date Sampled (dd-mm-yy)

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PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Ground Surface
- Monitoring Well Screens
- Groundwater Elevation (masl)
- Boreholes
- Topsoil
- Fill
- Gravel
- Sandy Gravel
- Clayey Silt
- Silty Clay
- Clay
- Bedrock
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:1,000 10X HORIZONTAL EXAG.	

0 5 10 20 30 40 Meters

TITLE

CROSS SECTION C - C'
NATURALLY OCCURRING METALS IN FILL AND NATIVE SOILS

FIGURE 8-3

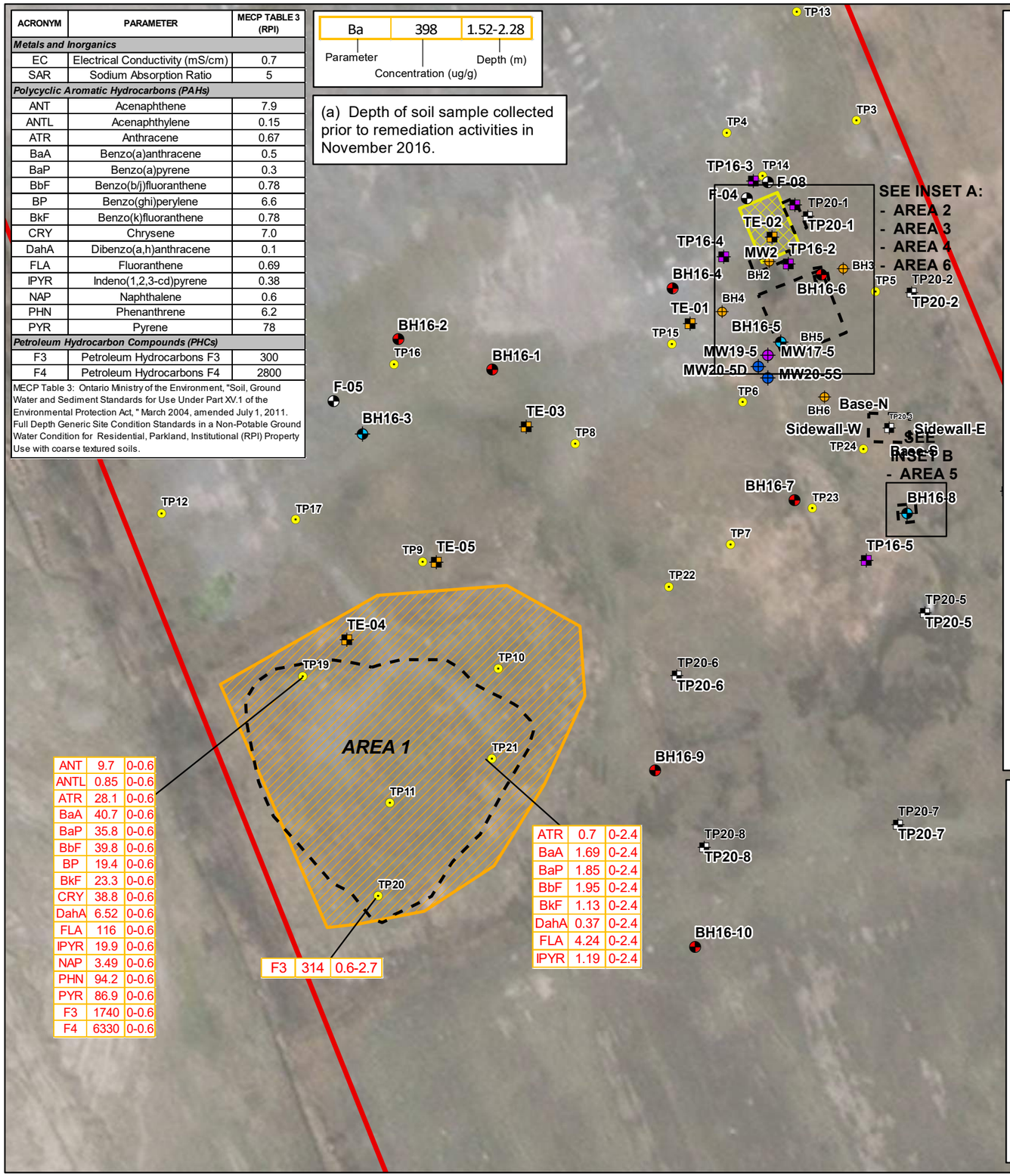
Path: J:\1442 Projects by Job Number\2016\33164428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 8-3 Cross Section C-C' Metals in Soil.mxd

ACRONYM	PARAMETER	MECP TABLE 3 (RPI)
Metals and Inorganics		
EC	Electrical Conductivity (mS/cm)	0.7
SAR	Sodium Absorption Ratio	5
Polycyclic Aromatic Hydrocarbons (PAHs)		
ANT	Acenaphthene	7.9
ANTL	Acenaphthylene	0.15
ATR	Anthracene	0.67
BaA	Benzo(a)anthracene	0.5
BaP	Benzo(a)pyrene	0.3
BbF	Benzo(b/j)fluoranthene	0.78
BP	Benzo(ghi)perylene	6.6
BkF	Benzo(k)fluoranthene	0.78
CRY	Chrysene	7.0
DahA	Dibenzo(a,h)anthracene	0.1
FLA	Fluoranthene	0.69
IPYR	Indeno(1,2,3-cd)pyrene	0.38
NAP	Naphthalene	0.6
PHN	Phenanthrene	6.2
PYR	Pyrene	78
Petroleum Hydrocarbon Compounds (PHCs)		
F3	Petroleum Hydrocarbons F3	300
F4	Petroleum Hydrocarbons F4	2800

MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act," March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Ba	398	1.52-2.28
Parameter	Concentration (ug/g)	Depth (m)

(a) Depth of soil sample collected prior to remediation activities in November 2016.

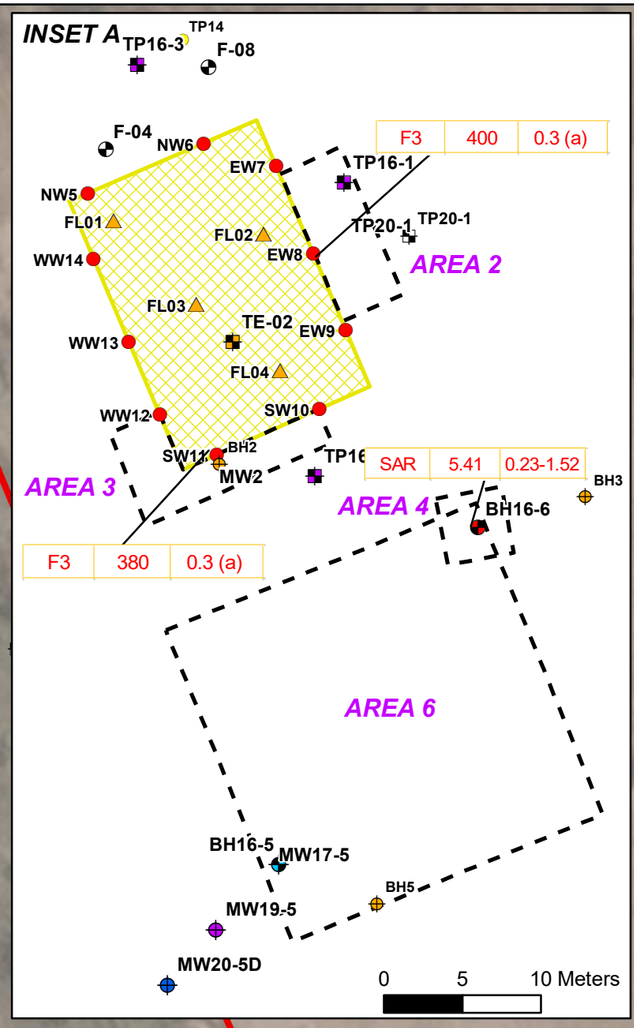


ANT	9.7	0-0.6
ANTL	0.85	0-0.6
ATR	28.1	0-0.6
BaA	40.7	0-0.6
BaP	35.8	0-0.6
BbF	39.8	0-0.6
BP	19.4	0-0.6
BkF	23.3	0-0.6
CRY	38.8	0-0.6
DahA	6.52	0-0.6
FLA	116	0-0.6
IPYR	19.9	0-0.6
NAP	3.49	0-0.6
PHN	94.2	0-0.6
PYR	86.9	0-0.6
F3	1740	0-0.6
F4	6330	0-0.6

ATR	0.7	0-2.4
BaA	1.69	0-2.4
BaP	1.85	0-2.4
BbF	1.95	0-2.4
BkF	1.13	0-2.4
DahA	0.37	0-2.4
FLA	4.24	0-2.4
IPYR	1.19	0-2.4

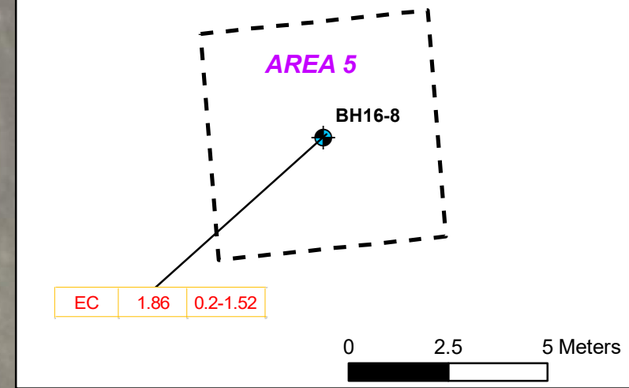
F3	314	0.6-2.7

INSET A



F3	400	0.3 (a)
SAR	5.41	0.23-1.52
F3	380	0.3 (a)

INSET B



EC	1.86	0.2-1.52

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PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Property Boundary
- Test Pit (WSP, 2013)
- Borehole (WSP, 2013)
- Monitoring Well (WSP, 2013)
- Test Pit (WSP, 2016)
- Borehole (WSP, 2016)
- Monitoring Well (WSP, 2016-2017)
- Monitoring Well (WSP, 2019)
- Monitoring Well (WSP, 2020)
- Monitoring Well (Patterson, 2017)
- Test Pit (Patterson, 2017)
- Floor Verification Samples
- Wall Verification Samples
- Area to be Remediated
- Area of observed debris (0.61 m bgs)
- Area Remediated in 2016

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SCALE: 1:1,000	

0 5 10 20 30 40 50 Meters

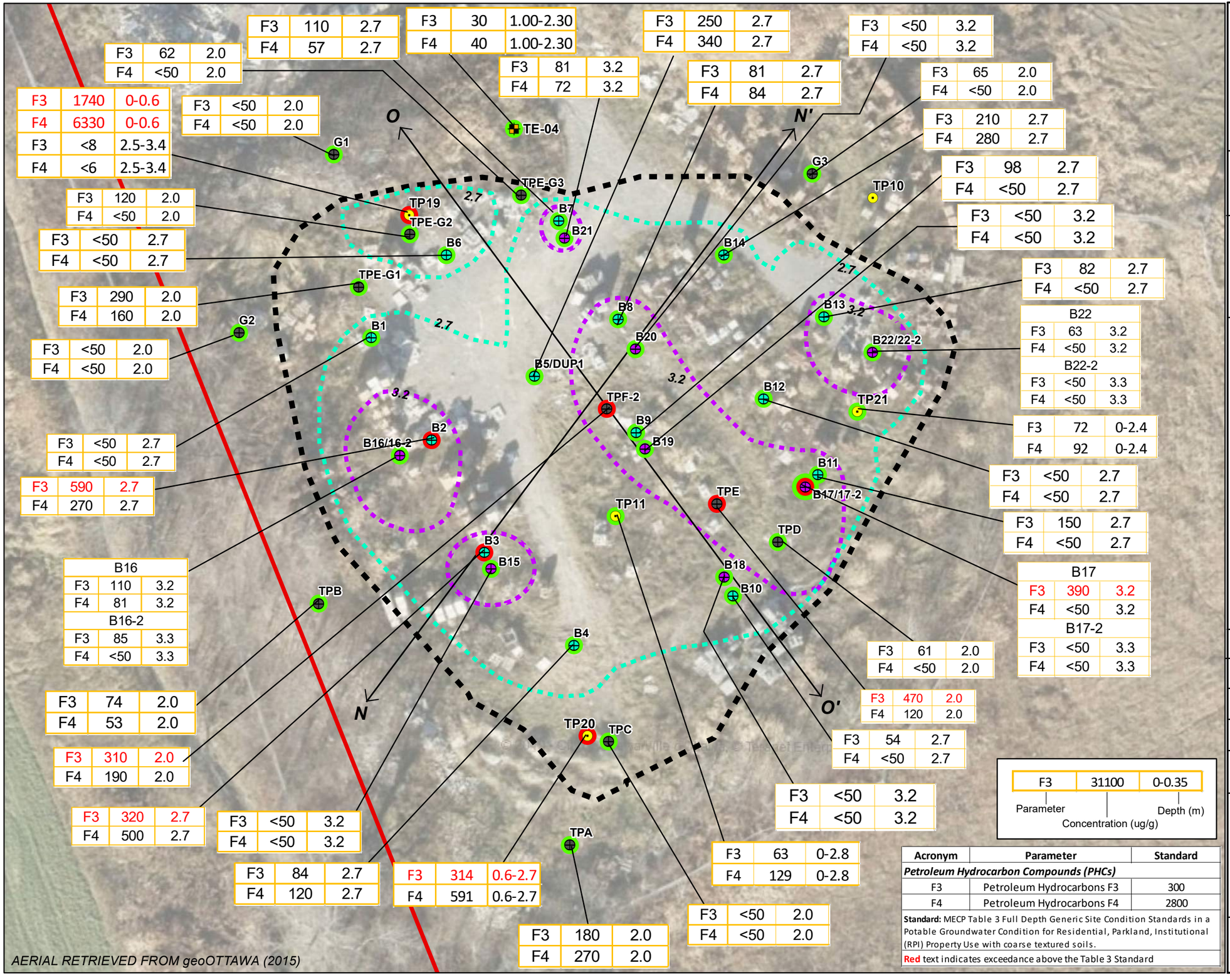
NAD1983 ZONE 18

TITLE

PLAN OVERVIEW OF REMEDIATION AREAS SHOWING CONTAMINANT LOCATIONS

FIGURE 9

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 9 Plan Overview of Remediation Areas Showing Contaminant Locations.mxd



Acronym	Parameter	Standard
Petroleum Hydrocarbon Compounds (PHCs)		
F3	Petroleum Hydrocarbons F3	300
F4	Petroleum Hydrocarbons F4	2800

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

wsp

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PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Property Boundary
- Cross Sections
- Limit of Remediation Area 1 (1st Round = 2.0 m)
- 2nd Round Excavation = 2.7 m total
- 3rd Round Excavation = 3.2 m total
- 1st Round Sample at 2.0 m
- 2nd Round Sample at 2.7 m
- 3rd Round Sample at 3.2 m
- Test Pit (Paterson, 2017)
- Test Pit (WSP, 2013)
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS
- Shallow Sample Exceeds and Deeper Sample Meets Table 3 SCS

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:350	

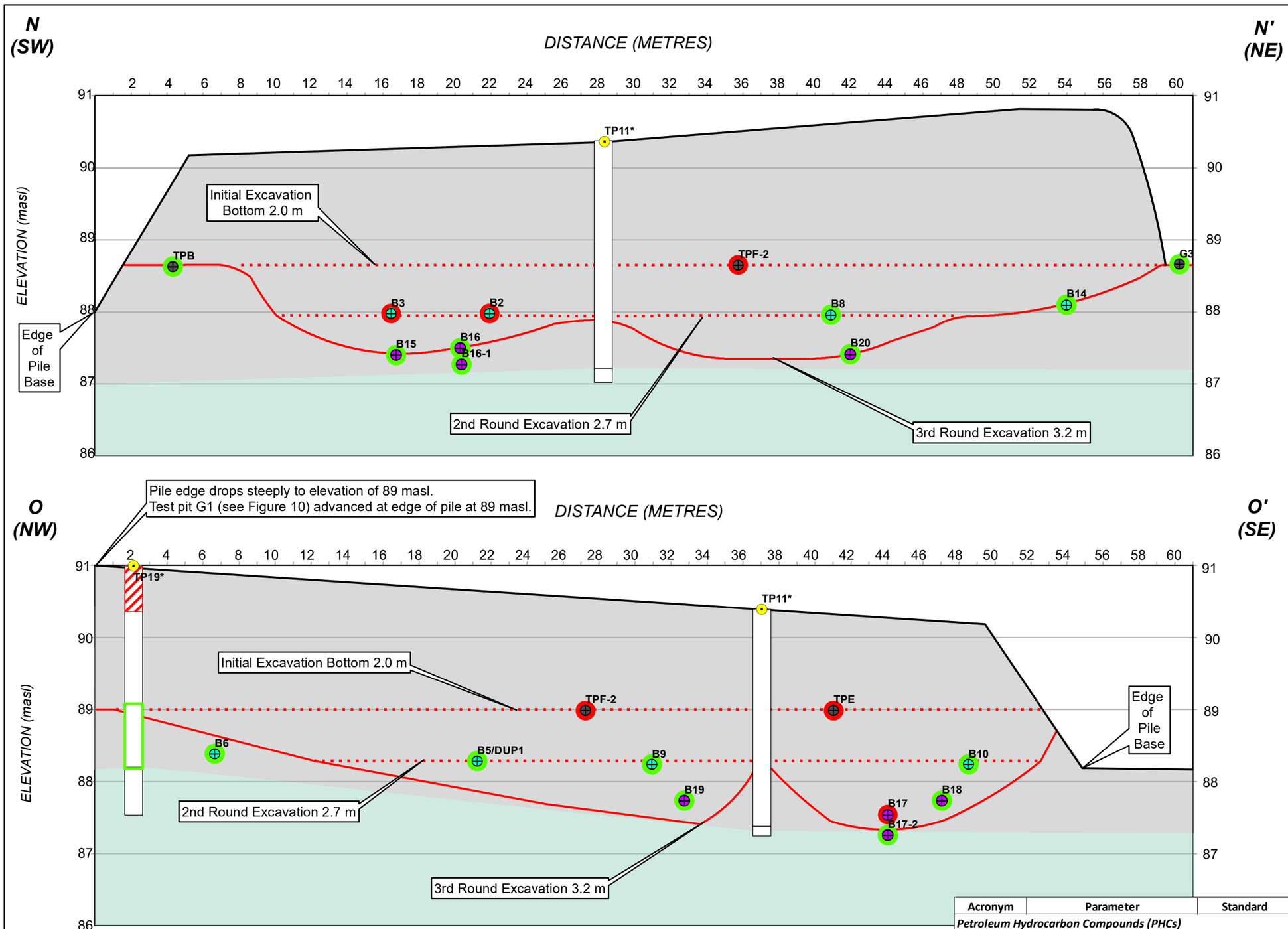
5 2.5 0 5 10 15 Meters
NAD1983 ZONE 18

TITLE

REMEDIATION AREA 1
PHCS IN SOIL

FIGURE 10

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 10 Remediation Area 1 PHCs.mxd



Note: For contaminant concentrations, see Figure 10.

F3 | 31100 | 0-0.35
Parameter | Concentration (ug/g) | Depth (m)

Acronym	Parameter	Standard
Petroleum Hydrocarbon Compounds (PHCs)		
F3	Petroleum Hydrocarbons F3	300
F4	Petroleum Hydrocarbons F4	2800

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

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PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Final Bottom of Excavation
- Previous Excavation Bottom
- Ground Surface - Top of Pile
- 1st Round Sample
- 2nd Round Sample
- 3rd Round Sample
- Test Pit (Paterson, 2017)
- Sample MeetsTable 3 SCS
- Sample Exceeds 3 SCS
- Sampling Locations Prior to 2019 Remediation
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS - Soil Removed

Stratigraphy

- Fill
- Clayey Silt

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DRAWN BY:	NN		
CHECKED BY:	NC		
SCALE:	1:220 4X HORIZONTAL EXAG.		

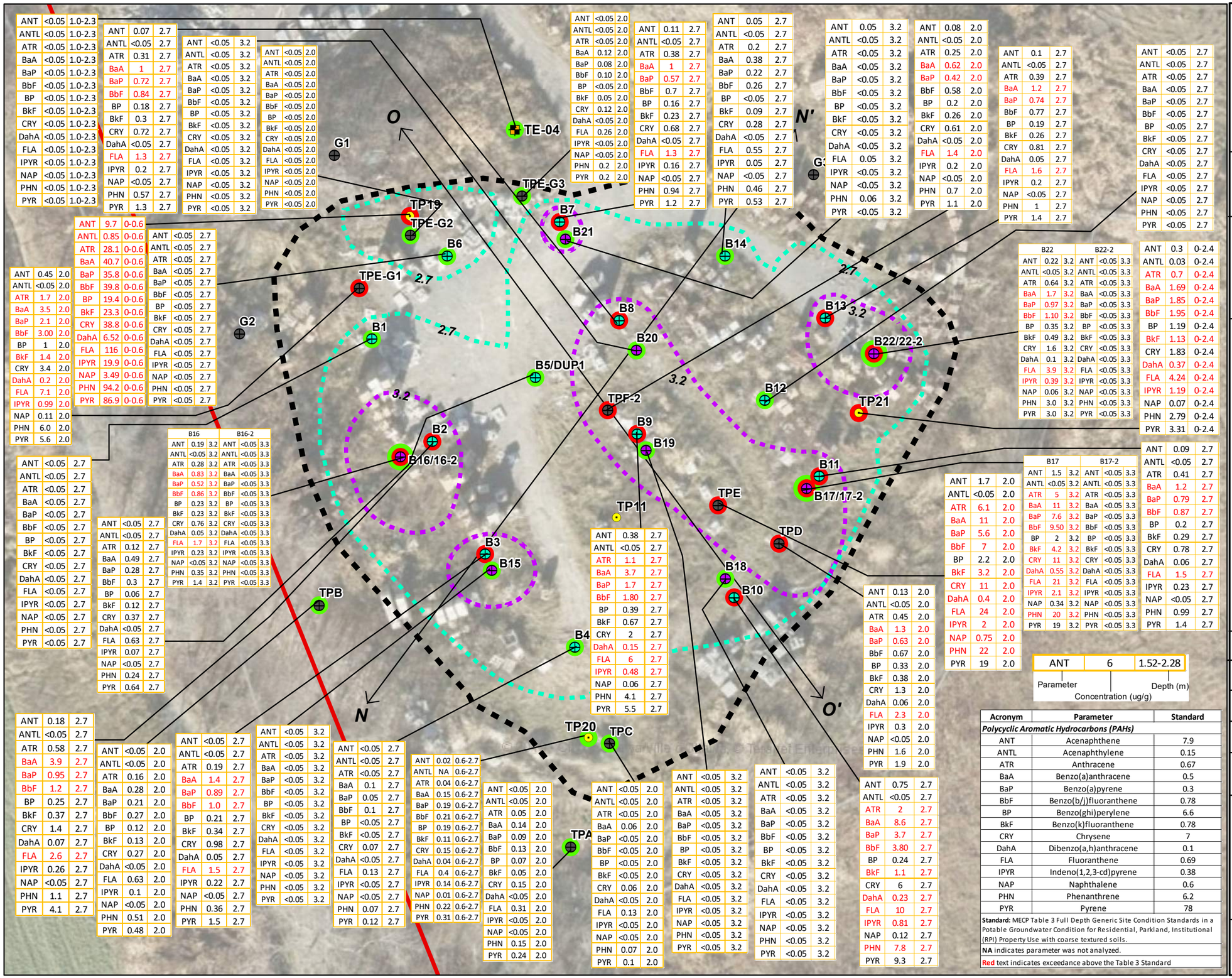
2 1 0 2 4 6 Meters
NAD1983 ZONE 18

TITLE

REMEDIATION AREA 1
CROSS SECTIONS
PHCS IN SOIL

FIGURE 10-1

Path: J:\17442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 10-1 Remediation Area 1 Cross Sections PHCs.mxd



ANT	<0.05	1.0-2.3
ANTL	<0.05	1.0-2.3
ATR	<0.05	1.0-2.3
BaA	<0.05	1.0-2.3
BaP	<0.05	1.0-2.3
BbF	<0.05	1.0-2.3
BP	<0.05	1.0-2.3
BkF	<0.05	1.0-2.3
CRY	<0.05	1.0-2.3
DahA	<0.05	1.0-2.3
FLA	<0.05	1.0-2.3
IPYR	<0.05	1.0-2.3
NAP	<0.05	1.0-2.3
PHN	<0.05	1.0-2.3
PYR	<0.05	1.0-2.3

ANT	0.07	2.7
ANTL	<0.05	2.7
ATR	0.31	2.7
BaA	1	2.7
BaP	0.72	2.7
BbF	0.84	2.7
BP	0.18	2.7
BkF	0.3	2.7
CRY	0.72	2.7
DahA	<0.05	2.7
FLA	1.3	2.7
IPYR	0.2	2.7
NAP	<0.05	2.7
PHN	0.57	2.7
PYR	1.3	2.7

ANT	<0.05	3.2
ANTL	<0.05	3.2
ATR	<0.05	3.2
BaA	<0.05	3.2
BaP	<0.05	3.2
BbF	<0.05	3.2
BP	<0.05	3.2
BkF	<0.05	3.2
CRY	<0.05	3.2
DahA	<0.05	3.2
FLA	<0.05	3.2
IPYR	<0.05	3.2
NAP	<0.05	3.2
PHN	<0.05	3.2
PYR	<0.05	3.2

ANT	<0.05	2.0
ANTL	<0.05	2.0
ATR	<0.05	2.0
BaA	<0.05	2.0
BaP	<0.05	2.0
BbF	<0.05	2.0
BP	<0.05	2.0
BkF	<0.05	2.0
CRY	<0.05	2.0
DahA	<0.05	2.0
FLA	<0.05	2.0
IPYR	<0.05	2.0
NAP	<0.05	2.0
PHN	<0.05	2.0
PYR	<0.05	2.0

ANT	0.11	2.7
ANTL	<0.05	2.7
ATR	0.38	2.7
BaA	1	2.7
BaP	0.57	2.7
BbF	0.7	2.7
BP	0.16	2.7
BkF	0.23	2.7
CRY	0.68	2.7
DahA	<0.05	2.7
FLA	1.3	2.7
IPYR	0.16	2.7
NAP	<0.05	2.7
PHN	0.94	2.7
PYR	1.2	2.7

ANT	0.05	2.7
ANTL	<0.05	2.7
ATR	0.2	2.7
BaA	0.38	2.7
BaP	0.22	2.7
BbF	0.26	2.7
BP	<0.05	2.7
BkF	0.09	2.7
CRY	0.28	2.7
DahA	<0.05	2.7
FLA	0.55	2.7
IPYR	0.05	2.7
NAP	<0.05	2.7
PHN	0.46	2.7
PYR	0.53	2.7

ANT	0.05	3.2
ANTL	<0.05	3.2
ATR	<0.05	3.2
BaA	<0.05	3.2
BaP	<0.05	3.2
BbF	<0.05	3.2
BP	<0.05	3.2
BkF	<0.05	3.2
CRY	<0.05	3.2
DahA	<0.05	3.2
FLA	0.05	3.2
IPYR	<0.05	3.2
NAP	<0.05	3.2
PHN	0.06	3.2
PYR	<0.05	3.2

ANT	0.08	2.0
ANTL	<0.05	2.0
ATR	0.25	2.0
BaA	0.62	2.0
BaP	0.42	2.0
BbF	0.58	2.0
BP	0.2	2.0
BkF	0.26	2.0
CRY	0.61	2.0
DahA	<0.05	2.0
FLA	1.4	2.0
IPYR	0.2	2.0
NAP	<0.05	2.0
PHN	0.7	2.0
PYR	1.1	2.0

ANT	0.1	2.7
ANTL	<0.05	2.7
ATR	0.39	2.7
BaA	1.2	2.7
BaP	0.74	2.7
BbF	0.77	2.7
BP	0.19	2.7
BkF	0.26	2.7
CRY	0.81	2.7
DahA	0.05	2.7
FLA	1.6	2.7
IPYR	0.2	2.7
NAP	<0.05	2.7
PHN	1	2.7
PYR	1.4	2.7

ANT	<0.05	2.7
ANTL	<0.05	2.7
ATR	<0.05	2.7
BaA	<0.05	2.7
BaP	<0.05	2.7
BbF	<0.05	2.7
BP	<0.05	2.7
BkF	<0.05	2.7
CRY	<0.05	2.7
DahA	<0.05	2.7
FLA	<0.05	2.7
IPYR	<0.05	2.7
NAP	<0.05	2.7
PHN	<0.05	2.7
PYR	<0.05	2.7

ANT	9.7	0-0.6
ANTL	0.85	0-0.6
ATR	28.1	0-0.6
BaA	40.7	0-0.6
BaP	35.8	0-0.6
BbF	39.8	0-0.6
BP	19.4	0-0.6
BkF	23.3	0-0.6
CRY	38.8	0-0.6
DahA	6.52	0-0.6
FLA	116	0-0.6
IPYR	19.9	0-0.6
NAP	3.49	0-0.6
PHN	94.2	0-0.6
PYR	86.9	0-0.6

ANT	<0.05	2.7
ANTL	<0.05	2.7
ATR	<0.05	2.7
BaA	<0.05	2.7
BaP	<0.05	2.7
BbF	<0.05	2.7
BP	<0.05	2.7
BkF	<0.05	2.7
CRY	<0.05	2.7
DahA	<0.05	2.7
FLA	<0.05	2.7
IPYR	<0.05	2.7
NAP	<0.05	2.7
PHN	<0.05	2.7
PYR	<0.05	2.7

ANT	0.45	2.0
ANTL	<0.05	2.0
ATR	1.7	2.0
BaA	3.5	2.0
BaP	2.1	2.0
BbF	3.00	2.0
BP	1	2.0
BkF	1.4	2.0
CRY	3.4	2.0
DahA	0.2	2.0
FLA	7.1	2.0
IPYR	0.99	2.0
NAP	0.11	2.0
PHN	6.0	2.0
PYR	5.6	2.0

B16			B16-2		
ANT	0.19	3.2	ANT	<0.05	3.3
ANTL	<0.05	3.2	ANTL	<0.05	3.3
ATR	0.28	3.2	ATR	<0.05	3.3
BaA	0.83	3.2	BaA	<0.05	3.3
BaP	0.52	3.2	BaP	<0.05	3.3
BbF	0.86	3.2	BbF	<0.05	3.3
BP	0.23	3.2	BP	<0.05	3.3
BkF	0.23	3.2	BkF	<0.05	3.3
CRY	0.76	3.2	CRY	<0.05	3.3
DahA	0.05	3.2	DahA	<0.05	3.3
FLA	1.7	3.2	FLA	<0.05	3.3
IPYR	0.23	3.2	IPYR	<0.05	3.3
NAP	<0.05	3.2	NAP	<0.05	3.3
PHN	0.35	3.2	PHN	<0.05	3.3
PYR	1.4	3.2	PYR	<0.05	3.3

B22			B22-2		
ANT	0.22	3.2	ANT	<0.05	3.3
ANTL	<0.05	3.2	ANTL	<0.05	3.3
ATR	0.64	3.2	ATR	<0.05	3.3
BaA	1.7	3.2	BaA	<0.05	3.3
BaP	0.97	3.2	BaP	<0.05	3.3
BbF	1.10	3.2	BbF	<0.05	3.3
BP	0.35	3.2	BP	<0.05	3.3
BkF	0.49	3.2	BkF	<0.05	3.3
CRY	1.6	3.2	CRY	<0.05	3.3
DahA	0.1	3.2	DahA	<0.05	3.3
FLA	3.9	3.2	FLA	<0.05	3.3
IPYR	0.39	3.2	IPYR	<0.05	3.3
NAP	0.06	3.2	NAP	<0.05	3.3
PHN	3.0	3.2	PHN	<0.05	3.3
PYR	3.0	3.2	PYR	<0.05	3.3

ANT	0.3	0-2.4
ANTL	0.03	0-2.4
ATR	0.7	0-2.4
BaA	1.69	0-2.4
BaP	1.85	0-2.4
BbF	1.95	0-2.4
BP	1.19	0-2.4
BkF	1.13	0-2.4
CRY	1.83	0-2.4
DahA	0.37	0-2.4
FLA	4.24	0-2.4
IPYR	1.19	0-2.4
NAP	0.07	0-2.4
PHN	2.79	0-2.4
PYR	3.31	0-2.4

ANT	0.09	2.7
ANTL	<0.05	2.7
ATR	0.41	2.7
BaA	1.2	2.7
BaP	0.79	2.7
BbF	0.87	2.7
BP	0.2	2.7
BkF	0.29	2.7
CRY	0.78	2.7
DahA	0.06	2.7
FLA	1.5	2.7
IPYR	0.23	2.7
NAP	<0.05	2.7
PHN	0.99	2.7
PYR	1.4	2.7

B17			B17-2		
ANT	1.5	3.2	ANT	<0.05	3.3
ANTL	<0.05	3.2	ANTL	<0.05	3.3
ATR	5	3.2	ATR	<0.05	3.3
BaA	11	3.2	BaA	<0.05	3.3
BaP	7.6	3.2	BaP	<0.05	3.3
BbF	9.50	3.2	BbF	<0.05	3.3
BP	2	3.2	BP	<0.05	3.3
BkF	4.2	3.2	BkF	<0.05	3.3
CRY	11	3.2	CRY	<0.05	3.3
DahA	0.55	3.2	DahA	<0.05	3.3
FLA	21	3.2	FLA	<0.05	3.3
IPYR	2.1	3.2	IPYR	<0.05	3.3
NAP	0.34	3.2	NAP	<0.05	3.3
PHN	20	3.2	PHN	<0.05	3.3
PYR	19	3.2	PYR	<0.05	3.3

ANT	1.7	2.0
ANTL	<0.05	2.0
ATR	6.1	2.0
BaA	11	2.0
BaP	5.6	2.0
BbF	7	2.0
BP	2.2	2.0
BkF	3.2	2.0
CRY	11	2.0
DahA	0.4	2.0
FLA	24	2.0
IPYR	2	2.0
NAP	0.75	2.0
PHN	22	2.0
PYR	19	2.0

ANT	0.13	2.0
ANTL	<0.05	2.0
ATR	0.45	2.0
BaA	1.3	2.0
BaP	0.63	2.0
BbF	0.67	2.0
BP	0.33	2.0
BkF	0.38	2.0
CRY	1.3	2.0
DahA	0.06	2.0
FLA	2.3	2.0
IPYR	0.3	2.0
NAP	<0.05	2.0
PHN	1.6	2.0
PYR	1.9	2.0

ANT	0.75	2.7
ANTL	<0.05	2.7
ATR	2	2.7
BaA	8.6	2.7
BaP	3.7	2.7
BbF	3.80	2.7
BP	0.24	2.7
BkF	1.1	2.7
CRY	6	2.7
DahA	0.23	2.7
FLA	10	2.7
IPYR	0.81	2.7
NAP	0.12	2.7
PHN	7.8	2.7
PYR	9.3	2.7

ANT	<0.05	2.7
ANTL	<0.05	2.7
ATR	<0.05	2.7
BaA	<0.05	2.7
BaP	<0.05	2.7
BbF	<0.05	2.7
BP	<0.05	2.7
BkF	<0.05	2.7
CRY	<0.05	2.7
DahA	<0.05	2.7
FLA	<0.05	2.7
IPYR	<0.05	2.7
NAP	<0.05	2.7
PHN	0.12	2.7
PYR	0.64	2.7

ANT	0.38	2.7
ANTL	<0.05	2.7
ATR	1.1	2.7
BaA	3.7	2.7
BaP	1.7	2.7
BbF	1.80	2.7
BP	0.39	2.7
BkF	0.67	2.7
CRY	2	2.7
DahA	0.15	2.7
FLA	6	2.7
IPYR	0.48	2.7
NAP	0.06	2.7
PHN	4.1	2.7
PYR	5.5	2.7

ANT	0.18	2.7
ANTL	<0.05	2.7
ATR	0.58	2.7
BaA	3.9	2.7
BaP	0.95	2.7
BbF	1.2	2.7
BP	0.25	2.7
BkF	0.37	2.7
CRY	1.4	2.7
DahA	0.07	2.7
FLA	2.6	2.7
IPYR	0.26	2.7
NAP	<0.05	2.7
PHN	1.1	2.7
PYR	4.1	2.7

ANT	<0.05	2.0
ANTL	<0.05	2.0
ATR	0.16	2.0
BaA	0.28	2.0
BaP	0.21	2.0
BbF	0.27	2.0
BP	0.12	2.0
BkF	0.13	2.0
CRY	0.27	2.0
DahA	<0.05	2.0
FLA	0.63	2.0
IPYR	0.1	2.0
NAP	<0.05	2.0
PHN	0.51	2.0
PYR	0.48	2.0

ANT	<0.05	2.7
ANTL	<0.05	2.7
ATR	0.19	2.7
BaA	1.4	2.7
BaP	0.89	2.7
BbF	1.0	2.7
BP	0.21	2.7
BkF	0.34	2.7
CRY	0.98	2.7
DahA	0.05	2.7
FLA	1.5	2.7
IPYR	0.22	2.7
NAP	<0.05	2.7
PHN	0.36	2.7
PYR	1.5	2.7

ANT	<0.05	3.2
ANTL	<0.05	3.2
ATR	<0.05	3.2
BaA	<0.05	3.2
BaP	<0.05	3.2
BbF	<0.05	3.2
BP	<0.05	3.2
BkF	<0.05	3.2
CRY	<0.05	3.2
DahA	<0.05	3.2
FLA	<0.05	3.2
IPYR	<0.05	3.2
NAP	<0.05	3.2
PHN	<0.05	3.2
PYR	<0.05	3.2

ANT	<0.05	2.7
ANTL	<0.05	2.7
ATR	<0.05	2.7
BaA	0.1	2.7
BaP	0.05	2.7
BbF	0.1	2.7
BP	<0.05	2.7
BkF	<0.05	2.7
CRY	0.07	2.7
DahA	<0.05	2.7
FLA	0.13	2.7
IPYR	<0.05	2.7
NAP	<0.05	2.7
PHN	0.07	2.7
PYR	0.12	2.7

ANT	0.02	0.6-2.7
ANTL	NA	0.6-2.7
ATR	0.04	0.6-2.7
BaA	0.15	0.6-2.7
BaP	0.19	0.6-2.7
BbF	0.21	0.6-2.7
BP	0.19	0.6-2.7
BkF	0.11	0.6-2.7
CRY	0.15	0.6-2.7
DahA	0.04	0.6-2.7
FLA	0.4	0.6-2.7
IPYR	0.14	0.6-2.7
NAP	0.01	0.6-2.7
PHN	0.22	0.6-2.7
PYR	0.31	0.6-2.7

ANT	<0.05	2.0
ANTL	<0.05	2.0
ATR	0.05	2.0
BaA	0.14	2.0
BaP	0.09	2.0
BbF	0.13	2.0
BP	0.07	2.0
BkF	0.05	2.0
CRY	0.15	2.0
DahA	<0.05	2.0
FLA	0.31	2.0
IPYR	<0.05	2.0
NAP	<0.05	2.0
PHN	0.15	2.0
PYR	0.24	2.0

ANT	<0.05	2.0
ANTL	<0.05	2.0
ATR	<0.05	2.0
BaA	0.06	2.0
BaP	<0.05	2.0
BbF	<0.05	2.0
BP	<0.05	2.0
BkF	<0.05	2.0
CRY	0.06	2.0
DahA	<0.05	2.0
FLA	0.13	2.0
IPYR	<0.05	2.0
NAP	<0.05	2.0
PHN	0.07	2.0
PYR	0.1	2.0

ANT	<0.05	3.2
ANTL	<0.05	3.2
ATR	<0.05	3.2
BaA	<0.05	3.2
BaP	<0.05	3.2
BbF	<0.05	3.2
BP	<0.05	3.2
BkF	<0.05	3.2
CRY	<0.05	3.2
DahA	<0.05	3.2
FLA	<0.05	3.2
IPYR	<0.05	3.2
NAP	<0.05	3.2
PHN	<0.05	3.2
PYR	<0.05	3.2

ANT	<0.05	3.2
ANTL	<0.05	3.2
ATR	<0.05	3.2
BaA	<0.05	3.2
BaP	<0.05	3.2
BbF	<0.05	3.2
BP	<0.05	3.2
BkF	<0.05	3.2
CRY	<0.05	3.2
DahA	<0.05	3.2
FLA	<0.05	3.2
IPYR	<0.05	3.2
NAP	<0.05	3.2
PHN	<0.05	3.2
PYR	<0.05	3.2

ANT | 6 | 1.52-2.28
Parameter | Concentration (ug/g) | Depth (m)

Acronym	Parameter	Standard
Polycyclic Aromatic Hydrocarbons (PAHs)		
ANT	Acenaphthene	7.9
ANTL	Acenaphthylene	0.15
ATR	Anthracene	0.67
BaA	Benzo(a)anthracene	0.5
BaP	Benzo(a)pyrene	0.3
BbF	Benzo(b/j)fluoranthene	0.78
BP	Benzo(ghi)perylene	6.6
BkF	Benzo(k)fluoranthene	0.78
CRY	Chrysene	7
DahA	Dibenzo(a,h)anthracene	0.1
FLA	Fluoranthene	0.69
IPYR	Indeno(1,2,3-cd)pyrene	0.38
NAP	Naphthalene	0.6
PHN	Phenanthrene	6.2
PYR	Pyrene	78

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

NA indicates parameter was not analyzed.

Red text indicates exceedance above the Table 3 Standard

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CLIENT:

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PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Property Boundary
- Cross Sections
- Limit of Remediation Area 1 (1st Round = 2.0 m)
- 2nd Round Excavation = 2.7 m total
- 3rd Round Excavation = 3.2 m total
- 1st Round Sample at 2.0 m
- 2nd Round Sample at 2.7 m
- 3rd Round Sample at 3.2 m
- Test Pit (Paterson, 2017)
- Test Pit (WSP, 2013)
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS
- Shallow Sample Exceeds and Deeper Sample Meets Table 3 SCS

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: 1:350	

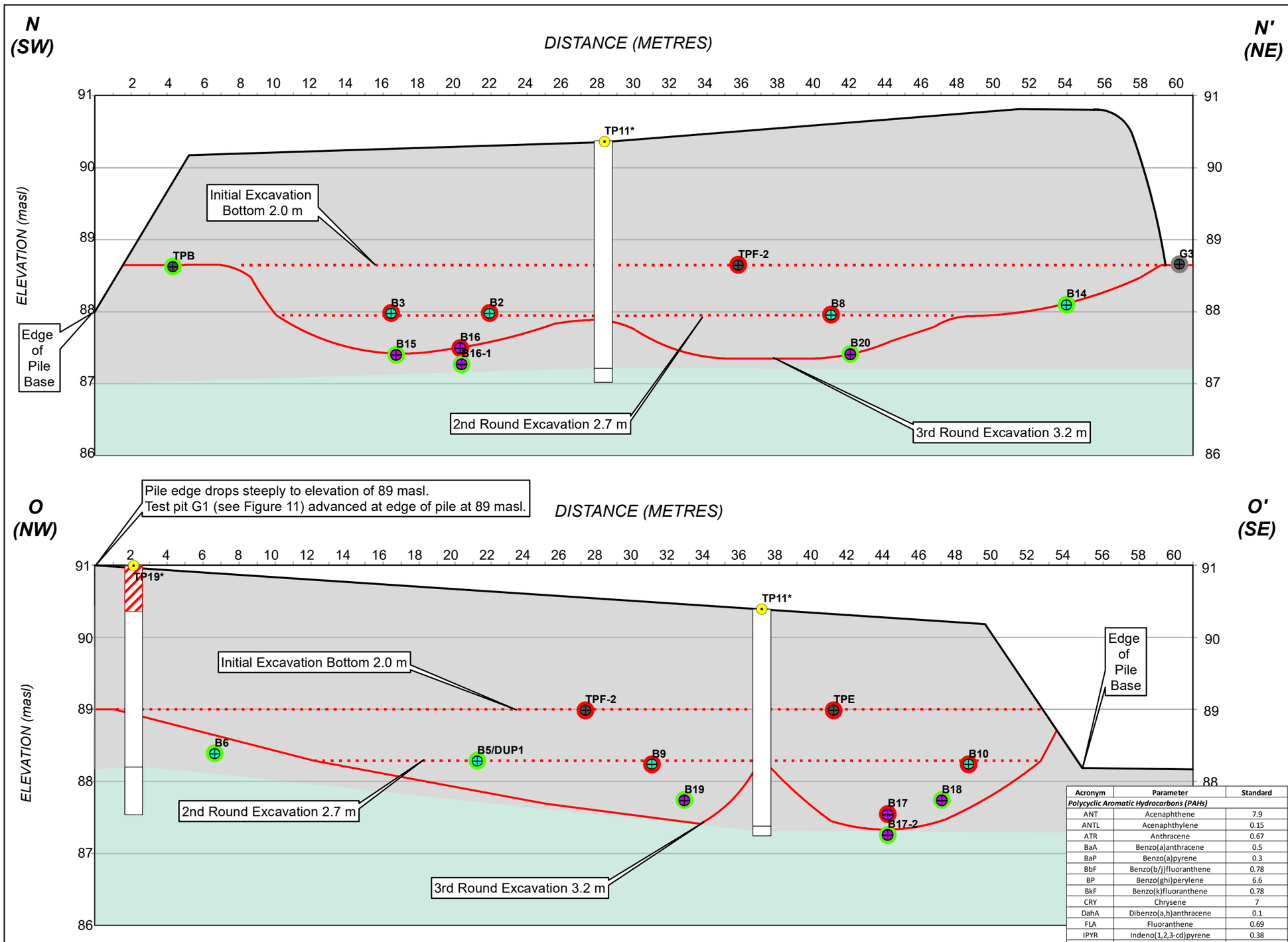
5 2.5 0 5 10 15 Meters
NAD1983 ZONE 18

TITLE

REMEDIATION AREA 1
PAHS IN SOIL

FIGURE 11

Path: J:\1442 Projects by Job Number\2016\33164428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 11 Remediation Area 1 PAHs.mxd



Note: For contaminant concentrations, see Figure 11.

Acronym	Parameter	Standard
Polycyclic Aromatic Hydrocarbons (PAHs)		
ANT	Acenaphthene	7.9
ANTL	Acenaphthylene	0.15
ATR	Anthracene	0.67
BaA	Benzo(a)anthracene	0.5
BaP	Benzo(a)pyrene	0.3
BbF	Benzo(b/j)fluoranthene	0.78
BP	Benzo(ghi)perylene	6.6
BkF	Benzo(k)fluoranthene	0.78
CRY	Chrysene	7
DahA	Dibenzo(a,h)anthracene	0.1
FLA	Fluoranthene	0.69
IPYR	Indeno(1,2,3-cd)pyrene	0.38
NAP	Naphthalene	0.6
PHN	Phenanthrene	6.2
PYR	Pyrene	78

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

NA indicates parameter was not analyzed.

Red text indicates exceedance above the Table 3 Standard

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PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Final Bottom of Excavation
- Previous Excavation Bottom
- Ground Surface - Top of Pile
- 1st Round Sample
- 2nd Round Sample
- 3rd Round Sample
- Test Pit (Paterson, 2017)
- Sample Meets Tabe 3 SCS
- Sample Exceeds Tabe 3 SCS
- Sample Not Analyzed for PAHs
- Sampling Locations Prior to 2019 Remediation
- Sample Exceeds Table 3 SCS - Soil Removed

Stratigraphy

- Fill
- Clayey Silt

PROJECT NUMBER:	17M-01348-00	DATE:	FEBRUARY 2021
DRAWN BY:	NN		
CHECKED BY:	NC		
SCALE:	1:220 4X HORIZONTAL EXAG.		

2 1 0 2 4 6 Meters

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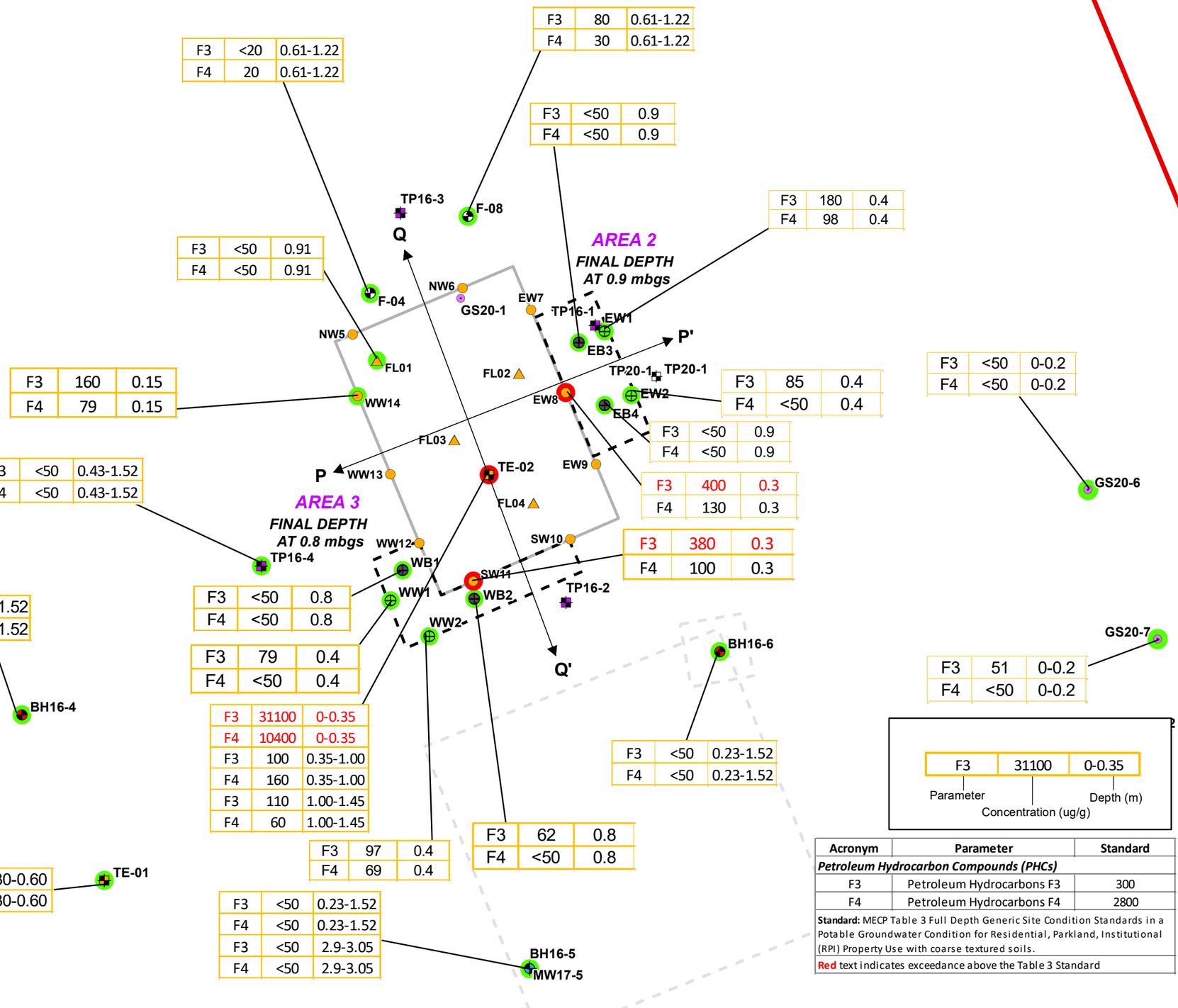
TITLE

REMEDIATION AREA 1
CROSS SECTIONS
PAHS IN SOIL

FIGURE 11-1

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 11-1 Remediation Area 1 Cross Sections PAHs.mxd



Acronym	Parameter	Standard
Petroleum Hydrocarbon Compounds (PHCs)		
F3	Petroleum Hydrocarbons F3	300
F4	Petroleum Hydrocarbons F4	2800

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

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PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Property Boundary
- Remediaton Areas
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS
- Floor Verification Samples
- Wall Verification Samples
- Base Sample
- Wall Sample
- Test Pit (WSP, 2013)
- Test Pit (WSP, 2016)
- Test Pit (Paterson, 2017)
- Test Pit (WSP, 2020)
- Surface Soil Sample (WSP, 2020)
- Borehole (WSP, 2013)
- Monitoring Well (WSP, 2013)
- Borehole (WSP, 2016)
- Monitoring Well (WSP, 2016-2017)
- Monitoring Well (Paterson, 2017)
- Monitoring Well (WSP, 2019)
- Monitoring Well (WSP, 2020)

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SCALE: VARIABLE	

2 1 0 2 4 6 Meters

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TITLE

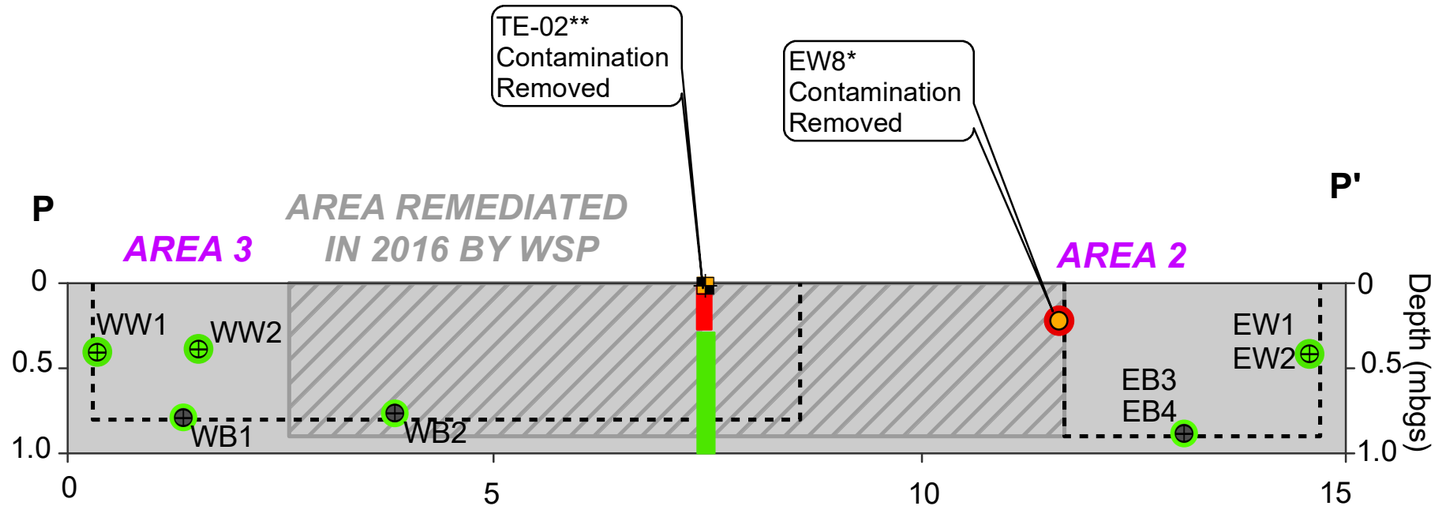
REMEDIATION AREAS 2 AND 3 PHCS IN SOIL

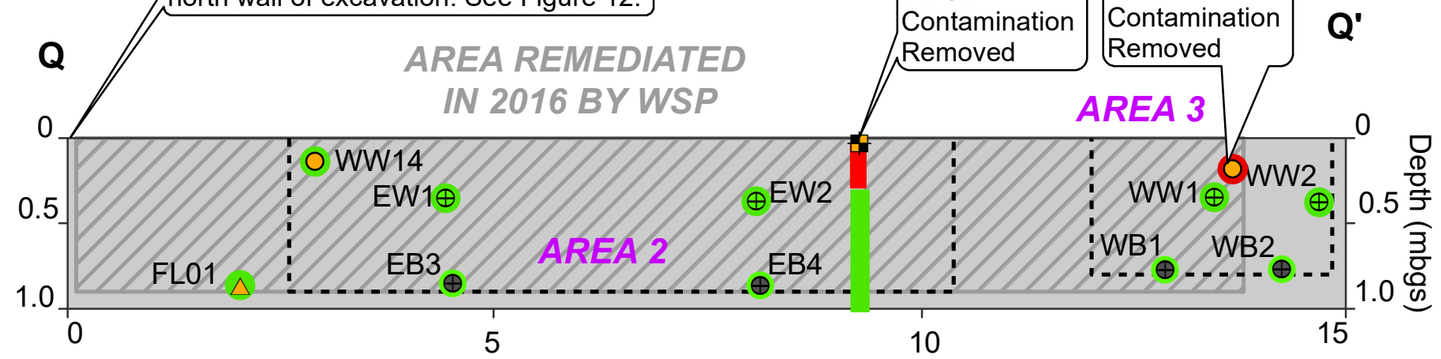
FIGURE 12

Path: J:\17442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 12 Remediation Area 2 3 PHCs.mxd

AREA 2 AND 3 CROSS SECTIONS

SCALE: 1:70 (Horizontal) 1:35 (Vertical)





* Sampling locations prior to 2019 remediation.

F3 | 31100 | 0-0.35

Parameter | Concentration (ug/g) | Depth (m)

Acronym	Parameter	Standard
Petroleum Hydrocarbon Compounds (PHCs)		
F3	Petroleum Hydrocarbons F3	300
F4	Petroleum Hydrocarbons F4	2800

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

Note: See contaminant concentrations on Figure 12.

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PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Property Boundary
- Remediaton Areas
- Area Remediated in 2016
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS
- Floor Verification Samples
- Wall Verification Samples
- Base Sample
- Wall Sample
- Test Pit (WSP, 2013)
- Test Pit (WSP, 2016)
- Test Pit (Paterson, 2017)
- Test Pit (WSP, 2020)
- Surface Soil Sample (WSP, 2020)
- Borehole (WSP, 2013)
- Monitoring Well (WSP, 2013)
- Borehole (WSP, 2016)
- Monitoring Well (WSP, 2016-2017)
- Monitoring Well (Paterson, 2017)
- Monitoring Well (WSP, 2019)
- Monitoring Well (WSP, 2020)

Stratigraphy
- Fill Within APEC

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SCALE: VARIABLE	

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TITLE

REMEDIATION AREAS 2 AND 3
CROSS SECTIONS
PHCS IN SOIL

FIGURE 12-1

Path: J:\17442 Projects by Job Number\2016\33164\28-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 12-1 Remediation Area 2 3 PHCs.mxd

NOTE: SAR and EC exceedances are exempt from consideration as contaminants under Section 49.1 of O. Reg. 153/04.

Acronym	Parameter	Standard
Other Related Parameters		
EC	Electrical Conductivity (mS/cm)	0.7
SAR	Sodium Absorption Ratio	5

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

Parameter	Concentraton	Depth (mbgs)
EC	0.458	1.52-2.28

TE-01

TP15

EC	0.57	0.23-1.52	
SAR	5.41	0.23-1.52	

R

BH3

N5 / N6

BH16-6

AREA 4

N3 / N4

E7 / E8

N1 / N2

SAR	1.26	2.5	

R' E5 / E6

EC	NA	1.7-2.0	TP20-2
SAR	0.483	1.7-2.0	
EC	NA	1.7-2.0	SAR DUP
SAR	0.262	1.7-2.0	(Duplicate)

TP20-2

W1 / W2

E3 / E4

AREA 6

W3

E1 / E2

BH16-5/ MW17-5

W4 / W5

SW4 / SW5

SW3

SW1 / SW2

BH5

MW19-5

MW20-5D

MW20-5S

EC	0.325	0.23-1.52	BH16-5-1B
SAR	0.657	0.23-1.52	

EC	0.56	1.5	
SAR	NA	1.5	

EC	0.767	0.9-1.2	
SAR	NA	0.9-1.2	

NOTE: Although there was excavation in 2020 around TP20-3, this soil remains on-site, replaced in the excavation.

TP6

Base-N

Sidewall-W

TP20-3

Sidewall-E

TP20-3 EXCAVATION

Base-S

TP24

EC	0.49	0.9-1.2	
SAR	NA	0.9-1.2	

EC	0.72	0.8-1.1	
SAR	NA	0.8-1.1	

EC	0.533	1.5	
SAR	NA	1.5	

EC	0.579	0.20-1.52	
SAR	1.02	0.20-1.52	

EC	1.86	0.20-1.52	BH16-8-1
SAR	4.79	0.20-1.52	
EC	0.91	0.20-1.52	TP16-5 SA1
SAR	NA	0.20-1.52	(Duplicate)

BH16-7

TP20-4

T

AREA 5

B1

BH16-8

S'

S

SW2 B2

SW1

T'

TP23

EC	0.324	2.0	

EC	0.298	2.0	

EC	0.338	1.0	

EC	0.286	1.0	

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PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Property Boundary
- Test Pit (WSP, 2013)
- Borehole (WSP, 2013)
- Monitoring Well (WSP, 2013)
- Test Pit (WSP, 2016)
- Borehole (WSP, 2016)
- Monitoring Well (WSP, 2016-2017)
- Monitoring Well (WSP, 2019)
- Monitoring Well (WSP, 2020)
- Floor Verification Sample
- Wall Verification Sample
- Base Sample
- Wall Sample

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: VARIABLE	

3 1.5 0 3 6 9 Meters

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TITLE

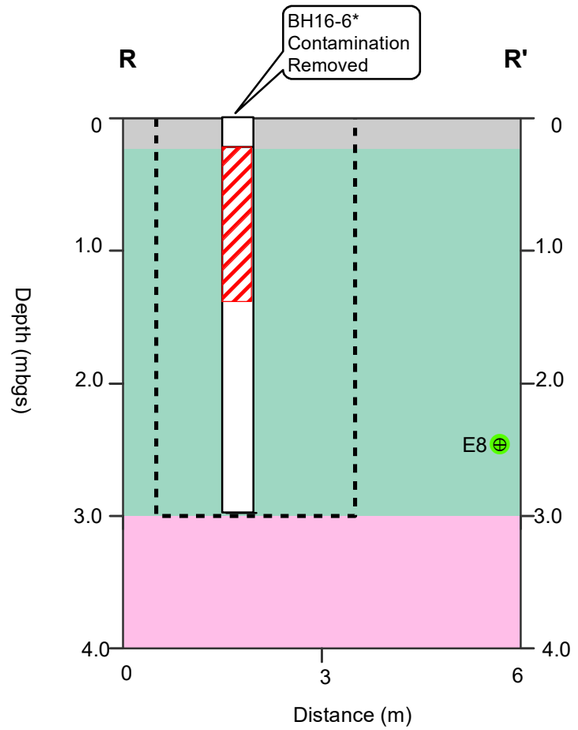
REMEDIATION AREAS 4 AND 5
SAR AND EC IN SOIL

FIGURE 13

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 13 Remediation Area 4 5 EC SAR.mxd

AREA 4 CROSS SECTION

HORIZONTAL SCALE: 1:90
VERTICAL SCALE: 1:45



NOTE: See Figure 13 for Contaminant Concentrations

Parameter	Concentraton	Depth (mbgs)
EC	0.458	1.52-2.28

Acronym	Parameter	Standard
Other Related Parameters		
EC	Electrical Conductivity (mS/cm)	0.7
SAR	Sodium Absorption Ratio	5

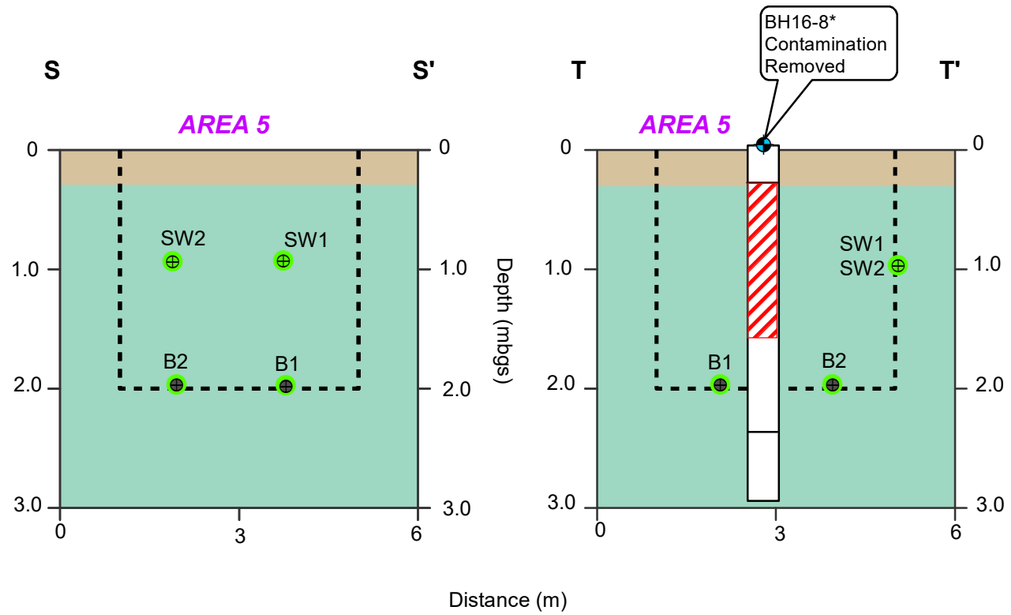
Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

AREA 5 CROSS SECTIONS

HORIZONTAL SCALE: 1:100
VERTICAL SCALE: 1:50

* Sampling locations prior to 2019 remediation.



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PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Remedial Excavation
- Fill (Within APEC)
- Topsoil
- Clayey Silt
- Bedrock
- Base Sample
- Wall Sample
- Sample Meets Table 3 SCS
- Sample Exceeds Table 3 SCS - Removed During Excavation

PROJECT NUMBER: 17M-01348-00	DATE: FEBRUARY 2021
DRAWN BY: NN	
CHECKED BY: NC	
SCALE: VARIABLE	

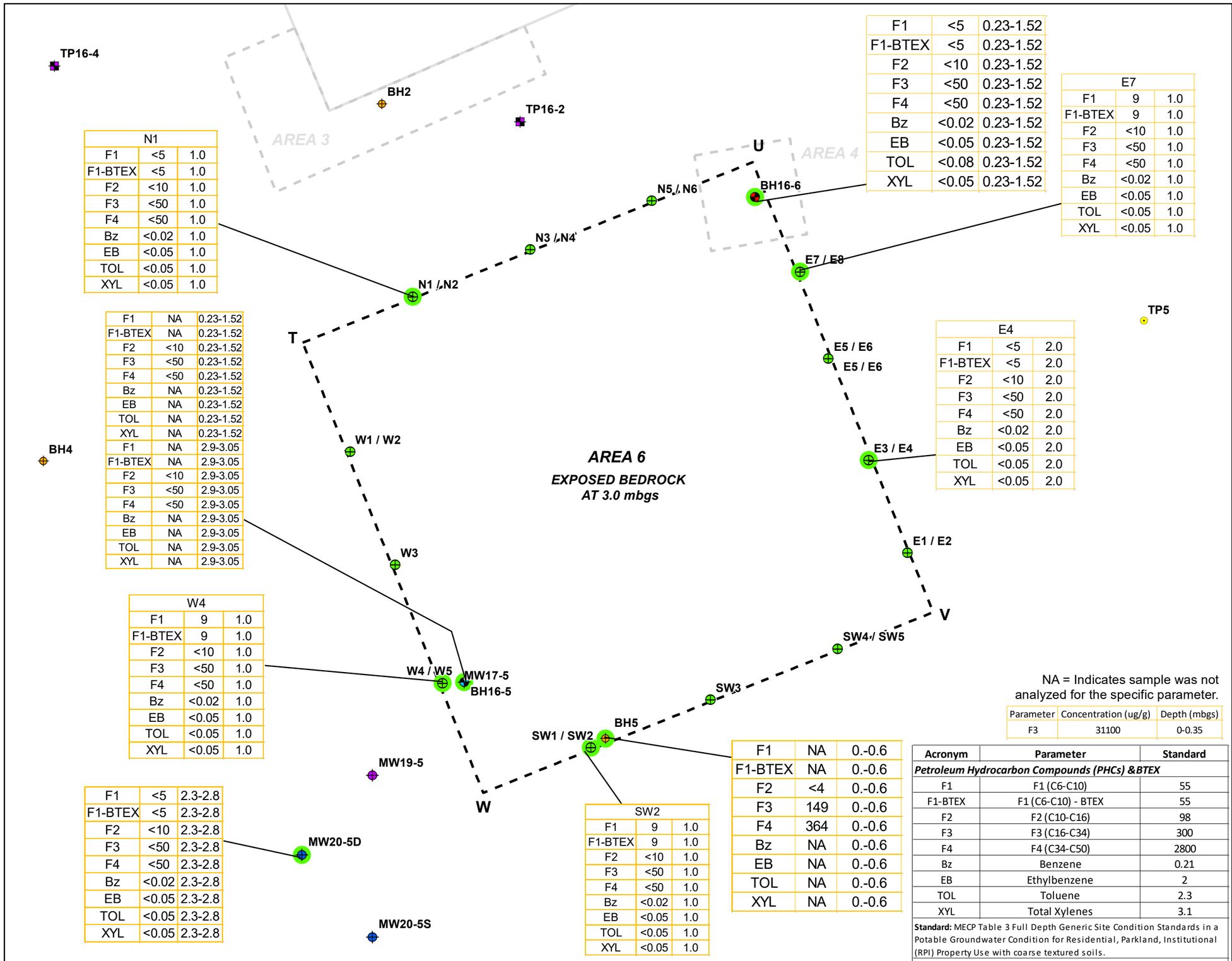
NAD1983 ZONE 18

TITLE

REMEDIATION AREAS 4 AND 5
CROSS SECTIONS
SAR AND EC IN SOIL

FIGURE 13-1

Path: J:\1442 Projects by Job Number\2016\33164428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 13-1 Remediation Area 4 5 ECSAR.mxd



N1		
F1	<5	1.0
F1-BTEX	<5	1.0
F2	<10	1.0
F3	<50	1.0
F4	<50	1.0
Bz	<0.02	1.0
EB	<0.05	1.0
TOL	<0.05	1.0
XYL	<0.05	1.0

F1	<5	0.23-1.52
F1-BTEX	<5	0.23-1.52
F2	<10	0.23-1.52
F3	<50	0.23-1.52
F4	<50	0.23-1.52
Bz	<0.02	0.23-1.52
EB	<0.05	0.23-1.52
TOL	<0.08	0.23-1.52
XYL	<0.05	0.23-1.52

E7		
F1	9	1.0
F1-BTEX	9	1.0
F2	<10	1.0
F3	<50	1.0
F4	<50	1.0
Bz	<0.02	1.0
EB	<0.05	1.0
TOL	<0.05	1.0
XYL	<0.05	1.0

F1	NA	0.23-1.52
F1-BTEX	NA	0.23-1.52
F2	<10	0.23-1.52
F3	<50	0.23-1.52
F4	<50	0.23-1.52
Bz	NA	0.23-1.52
EB	NA	0.23-1.52
TOL	NA	0.23-1.52
XYL	NA	0.23-1.52
F1	NA	2.9-3.05
F1-BTEX	NA	2.9-3.05
F2	<10	2.9-3.05
F3	<50	2.9-3.05
F4	<50	2.9-3.05
Bz	NA	2.9-3.05
EB	NA	2.9-3.05
TOL	NA	2.9-3.05
XYL	NA	2.9-3.05

E4		
F1	<5	2.0
F1-BTEX	<5	2.0
F2	<10	2.0
F3	<50	2.0
F4	<50	2.0
Bz	<0.02	2.0
EB	<0.05	2.0
TOL	<0.05	2.0
XYL	<0.05	2.0

W4		
F1	9	1.0
F1-BTEX	9	1.0
F2	<10	1.0
F3	<50	1.0
F4	<50	1.0
Bz	<0.02	1.0
EB	<0.05	1.0
TOL	<0.05	1.0
XYL	<0.05	1.0

F1	<5	2.3-2.8
F1-BTEX	<5	2.3-2.8
F2	<10	2.3-2.8
F3	<50	2.3-2.8
F4	<50	2.3-2.8
Bz	<0.02	2.3-2.8
EB	<0.05	2.3-2.8
TOL	<0.05	2.3-2.8
XYL	<0.05	2.3-2.8

SW2		
F1	9	1.0
F1-BTEX	9	1.0
F2	<10	1.0
F3	<50	1.0
F4	<50	1.0
Bz	<0.02	1.0
EB	<0.05	1.0
TOL	<0.05	1.0
XYL	<0.05	1.0

F1	NA	0.-0.6
F1-BTEX	NA	0.-0.6
F2	<4	0.-0.6
F3	149	0.-0.6
F4	364	0.-0.6
Bz	NA	0.-0.6
EB	NA	0.-0.6
TOL	NA	0.-0.6
XYL	NA	0.-0.6

NA = Indicates sample was not analyzed for the specific parameter.

Parameter	Concentration (ug/g)	Depth (mbgs)
F3	31100	0-0.35

Acronym	Parameter	Standard
Petroleum Hydrocarbon Compounds (PHCs) & BTEX		
F1	F1 (C6-C10)	55
F1-BTEX	F1 (C6-C10) - BTEX	55
F2	F2 (C10-C16)	98
F3	F3 (C16-C34)	300
F4	F4 (C34-C50)	2800
Bz	Benzene	0.21
EB	Ethylbenzene	2
TOL	Toluene	2.3
XYL	Total Xylenes	3.1

Standard: MECP Table 3 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for Residential, Parkland, Institutional (RPI) Property Use with coarse textured soils.

Red text indicates exceedance above the Table 3 Standard

100 COMMERCE VALLEY DR W,
THORNHILL, ONTARIO
CANADA, L3T 0A1
WWW.WSPGROUP.COM

CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Property Boundary
- Test Pit (WSP, 2013)
- Borehole (WSP, 2013)
- Monitoring Well (WSP, 2013)
- Test Pit (WSP, 2016)
- Borehole (WSP, 2016)
- Monitoring Well (WSP, 2016-2017)
- Monitoring Well (WSP, 2019)
- Monitoring Well (WSP, 2020)
- Monitoring Well (Paterson, 2017)
- Test Pit (Paterson, 2017)
- Test Pit (WSP, 2020)
- Surface Soil Sample (WSP, 2020)
- Base Sample
- Wall Sample
- Sample Meets Table 3 SCS

PROJECT NUMBER: 17M-01348-00
DATE: FEBRUARY 2021
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SCALE: 1:250

2 1 0 2 4 Meters
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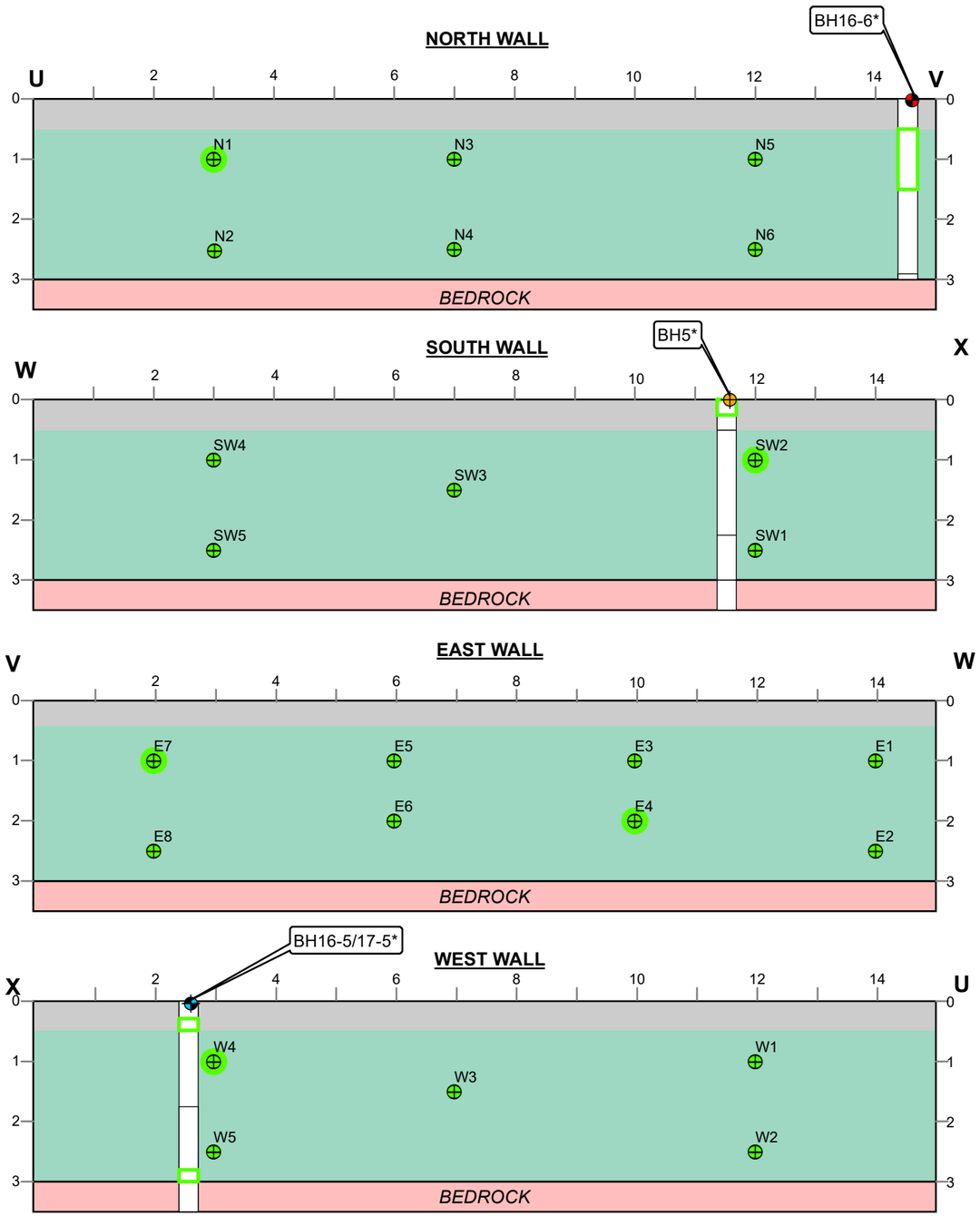
TITLE

REMEDIATION AREA 6
PHCs & BTEX IN SOIL

FIGURE 14

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 14 Remediation Area 6 Sampling Plan.mxd



AREA 6 CROSS SECTIONS

SCALE: 1:90

100 COMMERCE VALLEY DR W,
THORNHILL, ONTARIO
CANADA, L3T 0A1
WWW.WSPGROUP.COM

CLIENT:

GLENVIEW HOMES (INNES) LTD.

PROJECT:

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF LOT 4, CONCESSION 3 (OTTAWA FRONT)
GLOUCESTER
(3610 INNES ROAD, OTTAWA, ONTARIO)

LEGEND

- Property Boundary
- Limit of Remediation Area 6
- Soil Sample Meets Table 3 SCS
- Wall Sample
- Fill
- Clayey Silt
- Bedrock

* Sampling locations prior to 2019 remediation

PROJECT NUMBER:	17M-01348-00	DATE:	FEBRUARY 2021
DRAWN BY:	NN		
CHECKED BY:	NC		
SCALE:	1:90		

NAD1983 ZONE 18

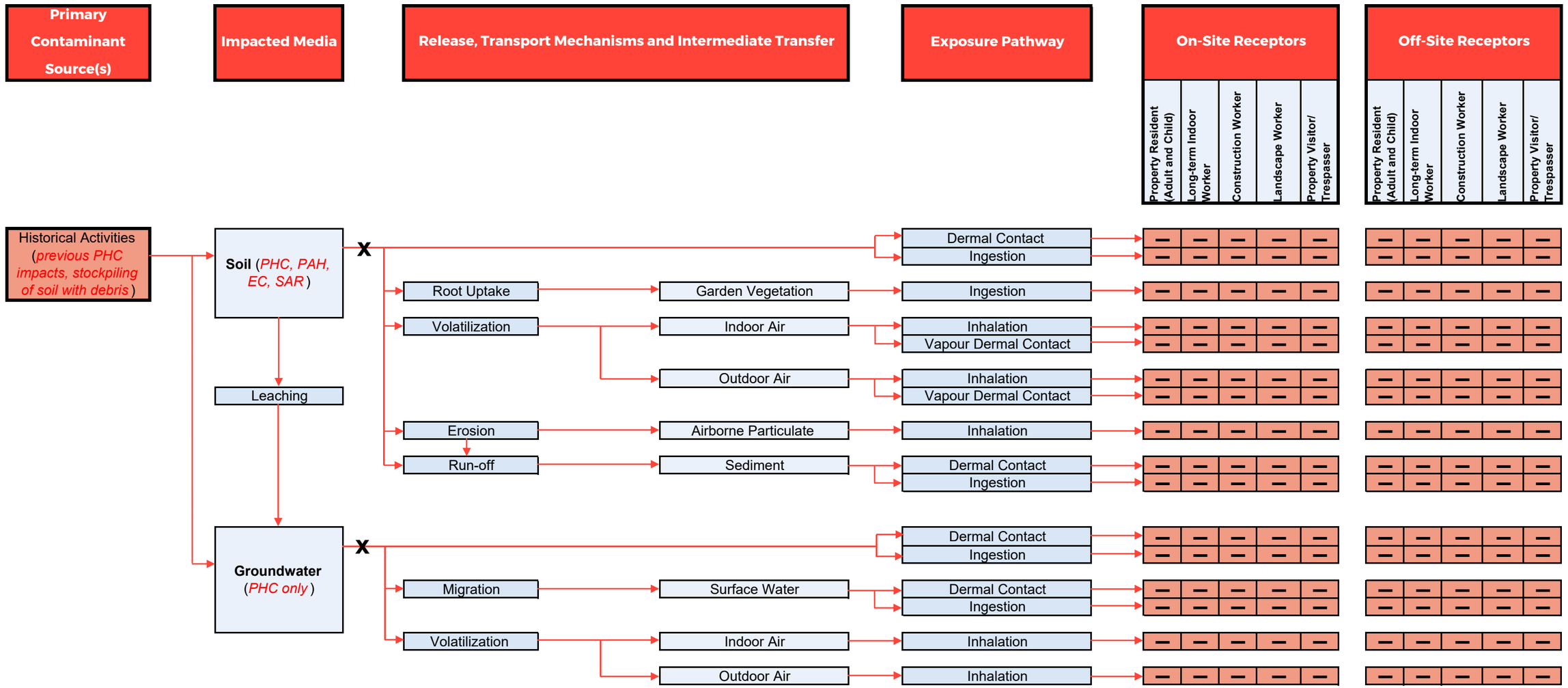
TITLE

REMEDIATION AREA 6
CROSS SECTIONS
PHCs & BTEX IN SOIL

FIGURE 14-1

Path: J:\1442 Projects by Job Number\2016\3316428-001 3636 Innes Road Ottawa\Mapping\MXD\Phase II ESA 2021-02\Figure 14-1 Remediation Area 6 Cross Section.mxd

CONTAMINANT TRANSPORT DIAGRAM - HUMAN HEALTH EXPOSURE

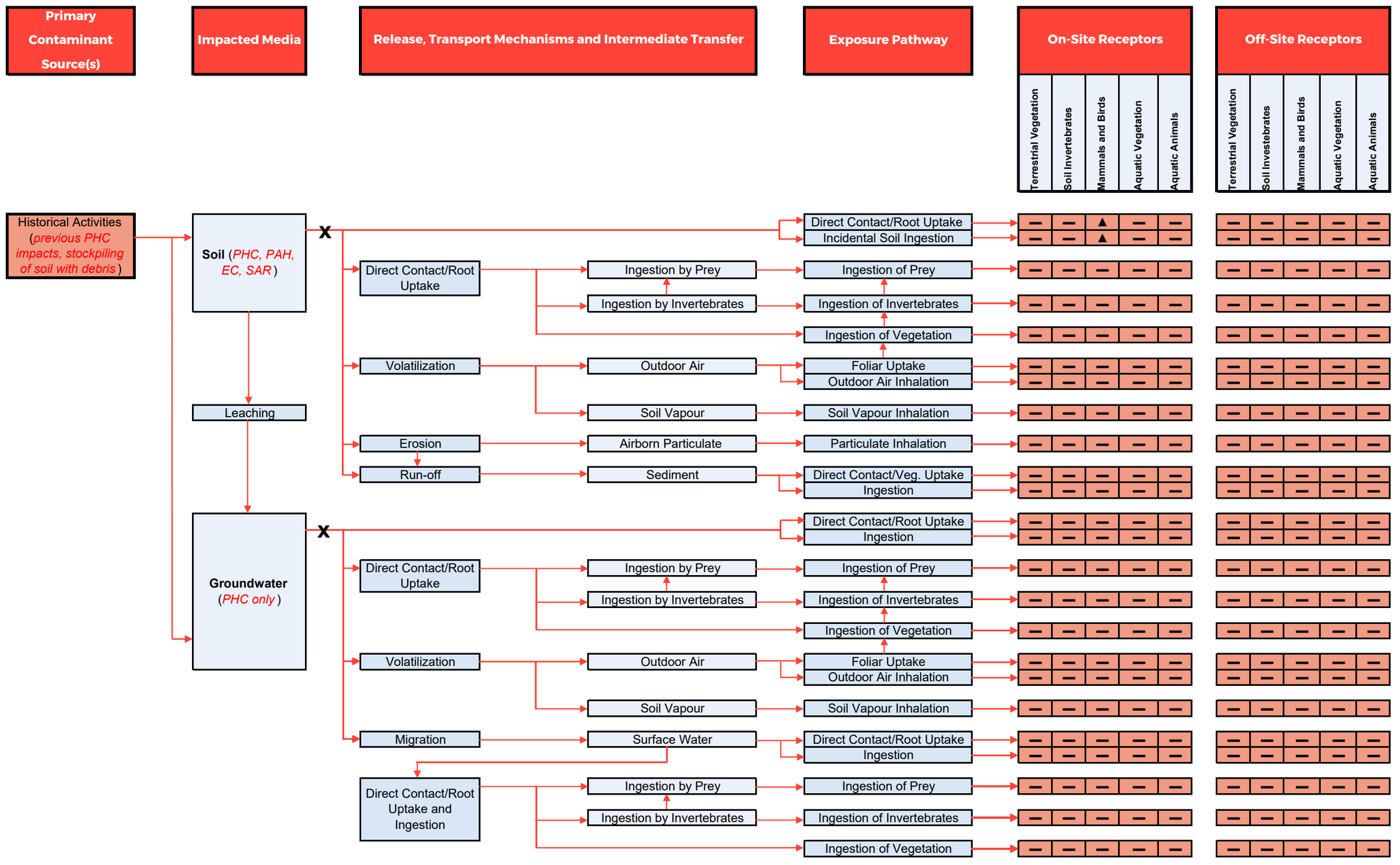


LEGEND:

[—] - NO Receptor considered to be present and/or Pathway Incomplete
[▲] - Receptor is considered to be present and Pathway Complete
~~X~~ - Exposure Pathway considered blocked (Risk assessment and/or Remediation)

Project No.: *17M-01348-00*		**Figure No.:** 15
Project: *3610 Innes Road, Ottawa*		
Date: *Feb 2021*	**Drawn:** AM	**Approved:** CA

CONTAMINANT TRANSPORT DIAGRAM - ECOLOGICAL EXPOSURE



LEGEND:

[—] - NO Receptor considered to be present and/or Pathway Incomplete
[▲] - Receptor is considered to be present and Pathway Complete
X - Exposure Pathway considered blocked (Risk Management and/or Remediation)

Project No.: *17M-01348-00*		**Figure No.:** 16
Project: *3610 Innes Road, Ottawa*		
Date: *Feb 2021*	**Drawn:** *AM*	**Approved:** *CA*