Soil Management Plan

112 Montreal Road, Ottawa, Ontario

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1 Introduction

This Soil Management Plan (SMP) has been prepared for excess soil that may be generated during the planned excavations for the 112 Montreal Road site redevelopment project. It is estimated that up to 12,000 cubic metres may be excavated over the course of the project which will start in 2023. The site location is shown on Figure 1 in Appendix A.

The SMP addresses:

1) Handling of soils including known and potentially contaminated soils during earthwork at the Project Area;
2) Excavation of soils for site redevelopment;
3) Export of excess soils and potentially contaminated soils at the Project Area;
4) Conditions for reuse of on-Site soils at the Project Area; and,
5) Import of non-engineered granular soils at the Project Area.

This SMP was prepared to address the requirements in Ontario's Environmental Protection Act, O. Reg. 406/19 (On Site and Excess Soil Management), and the Rules for Soil Management and Excess Quality Standards (Soil Rules) and O.Reg 153/04 (Record of Site Condition). This SMP is not intended to provide a detailed work plan for soil remediation or general earthwork. This SMP is intended as a procedural document for soil excavation, stockpiling, handling, on-site reuse, off-site export for beneficial reuse and/or disposal and import of clean fill.

Expected earthwork activities at the Site include but are not limited to:

- Site preparation, stripping and installation of erosion and sediment controls; and,
- Construction earthworks, including removal of impacted and non-impacted soils.

Soil management and off-Site export for disposal or reuse; as well as the import of soil, shall be managed in accordance with Ontario Regulation (O. Reg.) 153/04, as amended – Records of Site Condition (also referred to as RSC Regulations); O. Reg. 347, as amended – General Waste Management and O. Reg. 406/19 – On-Site and Excess Soil Management (also referred to as Excess Soil Regulations).

No soil will remain on the site. Soil testing results for export of excess soil off-site for beneficial reuse or the import of clean backfill shall be compared to the Excess Soil Quality Standards (EESQS) established in the MECP document "Rules for Soil Management and Excess Soil Quality Standards," dated December 8, 2020 and adopted by reference in O. Reg. 406/19, hereafter referred to as "Excess Soil Quality Standards." This SMP is intended for earthwork to commence after January 1, 2023, following the implementation of Excess Soil Planning and Tracking Requirements of the Excess Soils Regulation.

The SMP is to be communicated and made available to all Site personnel involved in the proposed redevelopment activities involving earthworks. A copy of the SMP shall remain on the Site at all times.

It is understood that impacted and non-impacted excess soils are scheduled to be disposed of at either the Waste Connections Canada landfill in Navan or the Waste Management landfill on Carp Road. An alternative reuse site for unimpacted excess soils has not been identified.

2 Summary of Previous Findings

Previous relevant reports prepared for the Project Area are listed below:

- EXP Services Inc. (December 2013), *Phase One Environmental Site Assessment, 112 Montreal Road, Ottawa Ontario.*
- EXP Services Inc. (January 2014), *Phase Two Environmental Site Assessment, 112 Montreal Road, Ottawa Ontario.*
- EXP Services Inc. (November 21, 2020), *Soil Characterization Report, 112 Montreal Road, Ottawa Ontario.*
- EXP Services Inc. (November 23, 2020), *Geotechnical Investigation, 112 Montreal Road, Ottawa Ontario*

Based on the results and findings of the Soil Characterization Report (SCR) from the above listed reports, the following Areas of Potential Environmental Concern (APEC) were identified within the Project Area:

Table 2.1- Summary of Areas of Potential Environmental Concern

Area of Potential Environmental Concern (APEC)	Location of APEC on Project Area	Potentially Contaminating Activity (PCA)(1)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
APEC #1 112 Montreal Road	Entire site	Potential use of fill material of unknown quality *(PCA #30 - Importation of Fill material of Unknown Quality)*	Metals and inorganics (M&I) [incl. electrical conductivity, pH, chloride, sodium absorption ratio], petroleum hydrocarbons (PHC), benzene, toluene, ethylbenzene, xylenes (BTEX)	Soil
APEC #2 120 Montreal Road (adjacent east)	Northeast	Active gasoline retail outlet since 1930s *(PCA#28 - Gasoline and Associated Products Storage in Fixed Tanks)*	PHC and BTEX and volatile organic compounds (VOC)	Groundwater
APEC #3 94 Montreal Road (adjacent northwest)	Northwest	Drycleaner for almost 60 years *(PCA #37 - Operation of Dry-Cleaning Equipment)*	VOC	Groundwater
APEC #4 296 Kendall Avenue (30 m east)	East	Former bulk fuel depot in 1970s *(PCA#28 - Gasoline and Associated Products Storage in Fixed Tanks)*	BTEX and PHC	Groundwater
APEC #5 283 Kendall Avenue (300 m east)	East	Former automotive garage in 1960s *(PCA #10 - Commercial Autobody Shops) &*	Metals, BTEX and PHC	Groundwater

(1) Potentially contaminating activity means a use or activity set out in Column A of Table 2 of Schedule D (O.Reg.153/04, as amended) that is occurring or has occurred in an assessment of past uses study area

In 2013 and 2014, EXP completed a geotechnical investigation and a Phase II Environmental site assessment at the site. At that time the site was occupied by several low rise buildings. The geotechnical investigation consisted of drilling 9 boreholes across the site and revealed that below 0.2 m to 2.7 m of fill, compact to very dense silty sand till was contacted and extended to depths of 2.1 m to 3.3 m depth. Limestone bedrock underlies the till and extends to the entire depth investigated, i.e., to 5.6 m to 8.1 m. The groundwater table at the site was established at 2.4 m to 4.2 m depth. The results of the Phase II ESA showed that petroleum parameters were either non-detect or below the MECP Table 3 residential standards, with the exception of some exceedances in some of the fill and till samples in some of the boreholes.

Since the previous investigations, all the structures have been removed. Currently part of the site is paved and used for parking, whereas the rest is fenced with a soil berm constructed along the boundary between the paved parking and the east part of the site. The soil in the berm was from soil in the east part of the site. The east part of the site has been excavated to the bedrock surface.

Based on the current development plans, it is estimated that 12,000 m^3 of excess soil will be generated, 55 in-situ soil samples are required. Therefore, since six soil samples were previously analyzed, 49 more soil samples were required, plus five blind duplicate soil samples. These samples were submitted for analysis of benzene, toluene, ethylbenzene, xylenes (BTEX), petroleum hydrocarbons (PHC), metals, sodium absorption ratio (SAR) and electrical conductivity (EC). In addition, eight leachate tests for analysis of metals were submitted.

As part of the Site Characterization report, in 2022, nine (9) test pits (TP1 to TP9) were excavated at the Site using a rubber tired excavator. An additional six (6) boreholes (BH-1 to BH-6) and ten auger holes (AH1 to AH10) were advanced at the Site by a licensed well contractor. The test pits were excavated to a maximum depth of 2.2 m bsg or refusal due to the presence of bedrock. The boreholes were drilled to a maximum depth of 4.4 m bsg or refusal due to the presence of bedrock. Bedrock was cored in all six boreholes to a maximum depth of 15.3 m for geotechnical purposes. The auger holes were drilled to a maximum depth of 2.9 m.

To provide options for potential on -site and off-Site re-use, the current and previous soil sample analytical results were compared to the following Ministry of Environment, Conservation and parks (MECP) soil quality standards (ESQS): Table 3, Table 2.1 ESQS and Table 3.1 ESQS for Industrial/Commercial/Community Property Use.

Based on the results of the investigation, twenty (20) of the thirty-one (31) locations had at least one exceedance of the soil quality standards for various parameters in various land use settings. These exceedances are summarized in Section 4.1 of EXP Services Inc. (November 2022), *Soil Characterization Report, 112 Montreal Road, Ottawa Ontario:*

- Soil samples from the south half of the soil berm and some areas east of the berm met the applicable MECP Table 3, 3.1 or 2.1 SCS and can be beneficially re-used at sites requiring those levels of soil quality. The borehole locations are shown on Figure 2 in Appendix A.
- All remaining excess must be disposed of off-site at a licensed landfill facility as impacted waste unless additional characterization is completed which demonstrates compliance with the ESQS that would allow disposal at a beneficial reuse site.
- Figures showing the areas of impacted soil are presented as Figures 3 and 4 in Appendix A.

3 Anticipated Soil Management Activities During Redevelopment

For soil management purposes, the following multiple earthwork activities will likely occur at various locations with the Project Area:

- Installation of erosion and sediment controls;
- Dewatering, where required;
- Site preparation, and site grading; and,
- Soil excavation and removal for site re-development.

Based on the current laboratory results (49 samples) and the previous assessment at the Site (six samples), metals and PHC impacted soil is present at the Site. Twenty-five of the 55 soil samples exceeded the MECP Table 2.1 and 3.1 SQS, and five of the 55 soil samples exceeded the MECP Table 2.1 and 3.1 SQS.

The areas of soil that exceed the MECP Table 2.1 SQS are shown on Figure 3 and have an estimated volume of 17,150 m^3. The areas of soil that exceed the MECP Table 3.1 SQS are shown on Figure 4 and have an estimated volume of 16,670 m^3. It is assumed that all of the soil on the Site will be removed during site re-development. This will be followed by bedrock excavation to accommodate underground parking.

The soil on the Site that exceeds the MECP Table 3.1 and 2.1 will require disposal at a licensed landfill (CWW or Waste Management).

Excess soil that is generated during construction is scheduled to be disposed of at a licensed landfill site for soils exceeding Table 3.1/Table 2.1 or further segregated and sampled to support disposal at either site or an alternative reuse site. Depending on the location and volume of the specific excavation, additional sampling may be required as described in Section 6.2.1, with sampling parameters being agreed upon by the alternative receiver site. Liquid soils will be disposed of as waste at a waste contractor's facility under their Environmental Compliance Approval.

4 Earthwork Best Management Practices

This section of the SMP pertains to any situation where soils are excavated or exposed, and workers or visitors are potentially in contact with soils.

4.1 Administrative Controls

Administrative controls during earthworks include measures to control hazards, vehicular traffic, Site accessibility and minimize dust resulting from excavation, stockpiling and on-Site transportation operations. Administrative controls include the following measures:

i) A Site-specific Health and Safety Plan will be implemented during earthwork activities. The HASP will include emergency contact information, a hazard assessment for likely on-Site activities and mitigation measures. Each contractor or sub-contractor is responsible for providing a HASP for on-Site employees.

ii) Restriction of employee vehicles to designated parking areas. Employee vehicles will not be permitted within the construction areas of the Site, except in the case of emergencies. The location of the designated parking areas shall be identified by the contractor responsible for the on-Site work.

iii) Construction hoarding (e.g., fencing) around the construction area shall be present to prevent public access. Access to construction areas shall be provided only to authorized personnel.

iv) The Contractor shall prepare and implement a *Traffic and Transportation Management Plan* that specifies requirements for:

   a. Location and configuration of Site entrances;

   b. Truck queueing and parking;

   c. Haul routes between source and receiving sites (including temporary storage or transfer sites, if applicable).

4.2 Dust Control and Storm Water Management

There is a potential for nuisance dust from exposed soil to be carried off of the Site by vehicles and/or equipment, via airborne dust or in the form of surface runoff. Therefore, the following measures shall be implemented at the Site during earthworks:

i) Erosion and sediment control and installation of storm water management features shall be conducted in conformance with the Site-specific plans.

ii) To minimize on-Site traffic, workers' vehicles will be parked in a designated area.

iii) Vehicular speed shall be limited within the construction area to minimize generation of dust.

iv) The Site Supervisor will ensure that off-Site roadways used by construction-related vehicles are maintained such that debris, dust and dirt are minimized to the extent reasonably practicable. Maintenance and control measures may include road sweeping, cleaning and wetting with potable water.

v) All equipment/vehicles shall be inspected prior to departure off-Site.

vi) The Site Supervisor shall be responsible for control of dust emissions, generated from on-Site vehicular traffic or other construction activities. Dust suppression techniques may include misting with potable water or use of dust suppressant.

vii) In the event of high wind conditions that cannot be addressed through the above measures, work shall be restricted until conditions are less likely to generate visible dust.

viii) Soil stockpiles pending off-Site disposal shall be surrounded by silt fencing or equivalent erosion control measures to prevent storm water runoff. If necessary, soil stockpiles shall be covered to minimize dust production.

ix) Trucks transporting soil off-Site shall be covered prior to leaving the Site and during transport.

Dust emissions shall be monitored daily during Site work by the Site Supervisor, or designated personnel, and observations should be recorded in the Daily Inspection Checklist as outlined in Appendix B.

4.3 Decontamination

In addition to dust control measures discussed in Section 4.2, decontamination measures will be implemented to prevent the movement or tracking of previously identified impacted soils into non-impacted areas. The following decontamination measures shall be implemented during remediation activities:

i) Trucks shall be positioned outside excavation areas, whenever possible.

ii) To aid in decontamination, visual inspection of equipment and physical removal of solids prior to washing will be conducted (if required).

iii) All equipment/vehicles shall be inspected prior to departure off-Site.

iv) Excavation equipment and/or hand tools shall be decontaminated over the stockpile or waste container when possible so that wash water and residues are co-managed with soil.

v) Decontamination only requiring physical removal of solid residues and the use of clean water rinse, water may be allowed to drain back into like soils on-Site or utilized for dust suppression.

vi) Solid or liquid decontamination residues that cannot be co-managed with like soils, shall be recovered and placed into appropriate containers for off-Site management.

Record keeping shall include the completion of the Daily Inspection Checklist as outlined in Appendix B.

5 Soil Excavation, Stockpiling and Management

5.1 Soil Excavation and Stockpiling

The following procedures will be followed for the excavation, segregation, and stockpiling of soils.

i) Soil excavation, material handling and stockpiling shall be performed in a manner that limits mixing of different categories of soil. Excavated soils shall be reused on the Site to the extent feasible. It is noted that trace amounts of organic material in the backfill should not prevent this material from being reused on site.

ii) Excavated soils will typically be direct loaded into trucks for haulage to the receiver sites as described in Section 3.

iii) If required, soils shall be segregated based on the known soil category or field observations and stockpiled in discrete piles in a way that limits the potential for mixing of different soil types or contamination. Soils shall be visually examined for staining or olfactory evidence of contamination.

iv) The vertical and horizontal extent of impacted soils has been described in the Soil Characterization Report; however, the discovery of previously unidentified impacted soils may occur during construction. Soil characterization may be required to delineate the extent of soil impacts. If required, confirmatory sampling at the lateral and vertical limits of any remedial excavations shall be conducted under the supervision of a Qualified Person in Environmental Site Assessments (QP_{ESA}).

v) Impacted soils or soils suspected to be impacted shall be direct loaded into trucks for haulage to the licensed landfill site.

vi) If needed, soils shall be temporarily stockpiled in a clearly designated on-Site stockpile area pending reuse or off-Site export.

a. The soil must be stored in stockpiles and the maximum size of each stockpile shall not exceed 2,500 cubic metres

b. Soil shall be managed in such a way as to prevent any adverse effects associated with the receiving, processing, storage and movement of soil, including management of:

i. noise;

ii. dust;

iii. mud tracking;

iv. leaching;

v. run-off and erosion; and

vi. potential outdoor air impact(s), including odour issue(s).

c. The soil stored must not be stored at a location:

i. within 30 metres of a waterbody; and

ii. within 10 metres of the property line (boundary), unless any of the following apply:

1. 500 m3 or less of excess soil will be stored at any one time on the project area;

2. Excess soil storage at the project area will be for a period of time of less than 1 week;

3. The storage location has a physical barrier (e.g., concrete wall) between the excess soil and the property boundary; or

4. The storage is taking place in a public road right-of-way

vii) Stockpiles shall be surrounded by erosion and sediment control barriers in accordance with Site-specific plans. When not in use, stockpiled soils or containers shall be covered by an impermeable material and secured. The Contractor shall periodically inspect and repair or replace damaged or dislodged covers and/or erosion controls.

viii) Soils suitable for on-Site re-use, as determined by the QP_{ESA}, will be reused to the extent possible. Soils excavated during earthworks or exhibiting staining or olfactory evidence of contamination shall not be reused on-Site without the approval of the QP_{ESA}.

ix) Dewatering of groundwater is unlikely during construction, however pumping of accumulated precipitation within excavations may be required.

5.2 Liquid Soils

Liquid soil is any saturated soils that have lost their strength and composition and is defined in O. Reg. 406/19 as *soil that has a slump of more than 150 millimeters using the Test Method for the Determination of "Liquid Waste" (slump test) set out in Schedule 9 to Regulation 347*.

It is expected that only minor amounts of liquid waste will be removed from the site. If required, liquid soil shall be managed as follows:

i) The removal of liquid soil shall be completed by a licensed contractor under their environmental compliance approval (ECA).

ii) The removal, storage and processing locations of liquid soils, including processed, dewatered and processed residues, shall be accessible and available for inspection by a provincial officer at any given time.

iii) All liquid soil must be stored in a leakproof container or on an impermeable surface, in a matter that stops the material from migrating on or into the natural environment.

Alternatively, when mixing solid soils with liquid soils for the purposes of dewatering or solidifying liquid soils, the following requirements apply:

i) Mixing must not be for the purpose of reducing exposure to or the mobility of contaminants.

ii) The soil being mixed must originate from the source Site.

iii) The material being mixed is not a waste for which processing would otherwise not be permitted, primarily in the instance of processing hazardous soil.

iv) The amount of material being mixed must be limited to the amount that can be transported to the re-use site or re-used at the source Site. It can also not exceed the amount recommended by the product manufacturer or distributor.

v) Soil must be sampled for characterization prior to mixing of liquid soils, if the QP_{ESA} believes that the mixing will change the outcome of the analytical results.

5.3 Soil Storage

Soil stored at a project area, or at a re-use Site, before it is placed at its final destination, must be stored in accordance with the following:

i) If required for the project area, soils shall be temporarily stored in a manner to be protected from the elements.

ii) Soils shall be visually examined for staining or olfactory evidence of impact. Soil shall be managed in a way that reduces and prevents any adverse effects associated with moving the soil, including: noise, dust, mud tracking, leaching, run-off and erosion, and potential indoor/outdoor air impacts.

iii) Stockpiles must not exceed a maximum size of 2,500 m^3.

iv) Soil must be stored in a way that prevents contaminants from leaching into groundwater. This can be achieved by placing in on impermeable boundaries and/or covering the stockpiles to avoid water infiltration.

v) Records containing the location of where the excess soil originated, the dates the soils were received, the quantity and quality of the soil, the date the reuse Site can accept the soil and the confirmed reuse Site for the stockpiled must be available to the MECP upon request as of January 1, 2023. The daily inspection checklist provided in Appendix B includes these record-keeping requirements.

5.4 Suspected Environmental Impacts

If the Contractor encounters previously unidentified visibly contaminated soil or groundwater, soil exhibiting a strong odour, soil saturated with petroleum product, or other indicators of soil or groundwater contamination, the Contractor shall stop excavation or dewatering in the area of the observed contamination. The Contractor will notify the QP_{ESA} to determine whether sampling or soil segregation is necessary.

Should sampling and analytical results identify concentrations of chemical parameters outside acceptable limits for remaining in place or reuse on-Site, the material will be excavated and segregated pending acceptance at an appropriate facility or temporary storage area.

5.5 Suspected Geotechnically Unsuitable Material

Soils have previously been characterized in the geotechnical investigation (EXP November 2022). If, based on visual observations, material is suspected to not be geotechnically suitable for on-Site re-use due to reasons including but not limited to excessive moisture, frozen material, organic content, debris, deleterious or compressible material, the material shall be directed to a segregated pile within the designated stockpile area. Photographs will be taken of the soil and a sample will be collected for further review by a geotechnical engineer. Should the material be deemed geotechnically suitable for re-use at the Site, the material may be re-used in accordance with project specifications and drawings, providing the soil is also suitable for re-use from an environmental quality perspective. Should the material be deemed geotechnically unsuitable for re-use at the Site, the material shall be transported to a suitable receiving facility approved by the QP_{ESA} in accordance with applicable regulations.

5.6 Soil Tracking

Starting on January 1, 2023, the locations and quality of any excavated or stockpiled soil, if applicable, must be documented. Additional tracking requirements are set out in Section 6.4.

6 Soil Export

6.1 Off-Site Export of Soil

The contractor will be responsible for the excavation and off-Site transport and re-use/disposal of soil from the Site. Excess soil that is generated during construction is scheduled to be disposed of at a licensed landfill site for soils exceeding Table 3.1/2.1 (Waste Management) or at an alternative off-site reuse site for soils exceeding Table 1 but meeting Table 3.1. Soils exceeding Table 1 but meeting Table 3.1/2.1 may also be disposed of at CWW or Waste Management, if a suitable reuse site is not feasible or readily available.

EXP can provide field support of off-Site transport of impacted soils and excess soils. EXP will review and provide monthly summaries of the soil which will be reviewed by EXP's QP, who will then upload to the registry.

If the soil is not sent to a licensed landfill facility, the Contractor shall provide the name, address, current permits and sampling requirements of the proposed receiving facilities for soils to be transported off of the Site. Receiving facilities are subject to approval by the QPESA and the Owner. Based on soil testing results, the QPESA will provide advice as to the authorized re-use and/or disposal options for the soils. The QPESA shall issue a letter to the intended receiving facility providing a summary of the soil testing results and a professional opinion regarding the suitability of the soil for off-Site re-use or disposal.

6.2 Soil Sampling Requirements

6.2.1 Soil Sampling Frequency and Analysis

The results of the soil sampling completed to date for this project have been documented in the EXP Services Inc. (November 2022), *Soil Characterization Report, 112 Montreal Road, Ottawa Ontario*. To date, fifty-five (55) soil samples have been collected at various locations within the Project Area (Figure 2).

The following additional rules will apply to samples collected using an in-situ sampling approach (in relation to the area identified where sampling is required):

i) A minimum of three soil samples shall be analyzed if less than 600 cubic metres of soil will be excavated.

ii) The parameters selected for bulk analysis and SPLP will be selected by the project and reuse use QP, and based on a review of the previous testing and APU for the particular location,

iii) If more than 600 cubic metres of soil will be excavated, at least one soil sample shall be analyzed for each 200 cubic metres of soil for the first 10,000 cubic metres of soil to be excavated;

iv) At least one soil sample shall be analyzed for each additional 450 cubic metres after the first 10,000 cubic metres of soil to be excavated; and

v) At least one soil sample shall be analyzed for each additional 2,000 cubic metres after the first 40,000 cubic metres of soil to be excavated.

The following additional rules apply to samples collected using a stockpile sampling approach:

i) A sufficient number of samples shall be collected at different depths within a stockpile to characterize the depth profile and the spatial variation, laterally and vertically, of the contaminant of potential concern (COPC) within the stockpile;

ii) Soil samples shall not be collected from the surface of the stockpile; rather, techniques and equipment need to allow for collection of samples from the entire stockpile, including the core; and

iii) The sampling frequencies specified in Table 2 of Schedule E, to O. Reg. 153/04, Minimum Stockpile Sampling Frequency shall be followed (Appendix C).

6.2.2 Soil Categories

Given that a volume of greater than 350 m^3 of excess soil are anticipated to being generated as part of development activities, Tables 2.1 to 9.1 must be applied under the 2019 excess soil regulations, unless the MECP Table 1 Standards apply. If the Table 1 Standards apply, no leachate sampling is required for excess soil.

1. Soils that meet Table 1 SCS may be disposed of at any off-site reuse site.
2. Soils shall be beneficially reused in accordance with the excess soil quality standards applicable to the selected reuse site(s).
3. Soil that does not meet the ESQS criteria for reuse at a receiving site shall be transported to an MECP licensed waste treatment or disposal facility. Soils designated for transport to MECP licensed facilities are subject to applicable leachate analyses for waste classification purposes in accordance with O. Reg. 347 (as amended).
4. Eight (8) soil samples were selected for Synthetic Precipitation Leaching Procedure (SPLP). No samples for Toxicity Characteristic Leaching Procedure (TCLP) analyses were completed. The SPLP would be submitted if the soils are to go to a reuse site, where TCLP would be required if the soil is to go to a licensed landfill site. Consequently, if the soil is to be disposed of at Waste Management, TCLP testing needs to be completed.

It is noted that off-Site re-use/disposal options outlined above are also subject to approval from the individual receiving site authorities, who may conduct an independent review of the chemical analyses for the subject materials prior to disposal. It is the responsibility of the earthwork contractor to source suitable receiving sites for all excavated materials requiring off-Site transport.

6.2.3 Soil Disposal Characterization

Soil characterization for off-Site reuse/disposal shall be conducted in accordance with O. Reg. 153/04, as amended – Records of Site Condition; O. Reg. 347, as amended – General Waste Management, O. Reg. 406/19 – On-Site and Excess Soil Management, Excess Soil Rules, this Soil Management Plan and the proposed receiving facility's Fill Management Plan, if applicable. The frequency of soil sampling and parameters analyzed shall be based on the receiving facility's acceptance requirements, the source Site QP_{ESA}'s recommendations, and applicable regulations, as discussed in Section 6.2.1.

EXP completed the Soil Characterization Report in November 2022. Based on the results of the investigation, twenty (20) of the thirty-one (31) locations had at least one exceedance of the soil quality standards for various parameters in various land use settings. Soil samples from the south half of the soil berm and some areas east of the berm met the applicable MECP Table 2.1 or 3.1 SCS and may be re-used at Table 2.1 and 3.1 sites. All remaining excess must be disposed of off-site at a licensed landfill facility as impacted waste unless additional characterization is completed which demonstrates compliance with the ESQS that would allow disposal at a beneficial reuse site.

In the case where the receiving facility does not have specific sampling requirements, soil testing shall be conducted based on the professional judgement of the source Site QP_{ESA} to properly characterize the materials to demonstrate compliance with excess soil standards. It is recommended that all receiving sites conduct an independent review of the chemical data and physical soil composition to confirm the materials are suitable for re-use at the specific receiving Site.

The criteria used to assess the quality of soil remaining on the Site shall be ESQS deemed relevant by the QP_{ESA}, as presented in the MECP document "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011.

Soil testing results for off-Site export shall be compared to Excess Soil Quality Standards established in the MECP document "Rules for Soil Management and Excess Soil Quality Standards," dated November 19, 2019 and adopted by reference in O. Reg. 406/19 or Site-specific criteria provided by the proposed receiving facility.

6.3 Soil Tracking

A record keeping system shall be implemented to document the quantity of soil transported off of the Site. Prior to initiating the tracking mechanism, an account will need to be setup by the Project Leader through the Resource Productivity and Recovery Authority (RPPA) website with access provided to the QP_{ESA}.

The record keeping shall include:

i) Volume/Number of trucks departing the Site;

ii) General description/category (quality) of soil transported off-Site;

iii) Name of intended receiving facility;

iv) Weight slip or Bill of Lading signed by receiving facility acknowledging receipt of each load of soil and documenting volume and/or weight records; and,

v) The volume and/or weight of soil leaving the Site shall be cross referenced with the volume and/or weight of soil received at the receiving site.

Records shall be kept on-file by the Owner for a minimum of seven (7) years, in accordance with RSC Regulations and Excess Soil Regulations.

As of January 1, 2023, the following additional tracking requirements will be required:

i) The date and time the excess soil left the Site;

ii) The person from the Site responsible for overseeing the loading of the excess soil for transportation;

iii) The name of the corporation, partnership or firm transporting the excess soil, the name of the driver of the vehicle and the number plates issued for the vehicle under the *Highway Traffic Act*;

iv) The date and time the excess soil was received at the receiving site where the excess soil has been deposited;

v) The contact information of the person who acknowledged receipt of the load of excess soil on behalf of the receiving site where the excess soil was deposited;

vi) Confirmation that the vehicle that deposited the excess soil and the volume of soil received at the site where the excess soil was deposited is the same as that which left the Site; and,

vii) General description/category of soil transported off of the Site.

The tracking system must also:

i) Be capable of tracking information in respect of the total number of vehicles and total volume of excess soil that has left the Site for a receiving site at which the excess is to be deposited and confirmation that the total number of trucks and volume of excess soil received at the receiving site is the same as that which left the Site.

ii) Be able to produce reports upon request to respond to any inquiries with respect to the information of each load of excess soil to be tracked.

iii) Include procedures or other methods to verify the accuracy of the information required to be tracked in respect of each load of excess soil that is to be removed from the Site.

iv) Include procedures or other methods to prevent any form of fraud or other wrongdoing in the management and transportation of excess soil.

7 Soil Import

Earth fill that is imported to the Site from an off-Site source shall be conducted based on the requirements of the Excess Soil Rules and the Excess Fill Acceptance Protocol outlined below.

7.1 Import of Non-Excess Soil Materials

In accordance with the Excess Soil Rules and given that the Receiving Site is not a Record of Site Condition property, materials sourced from the following locations are excluded from the Excess Fill Acceptance Protocol and do not require testing prior to import on-Site.

i) Granular materials meeting the definition of soil sourced as virgin material from a pit or quarry licensed by the Ontario Ministry of Natural Resources;

ii) Crushed rock that does not meet the definition of soil per O. Reg. 153/04, as amended; and,

iii) Recycled concrete and asphalt (i.e., non-aggregate materials) do not meet the definition of soil and are not included in the scope of this ESMP.

7.2 Imported Excess Fill Acceptance Protocol

Soil intended to be imported and used at the Site must be sampled, analyzed and deemed appropriate for reuse at the Site by a Qualified Person in Environmental Site Assessment (QP_{ESA}) prior to importation in accordance with the Excess Soil Regulations (O. Reg. 406/19, as amended), as they pertain to excess soil management. For the purpose of the Excess Fill Acceptance Protocol, the “Source site” refers to the original location of the excess soil; and “Receiving Site” refers to the Site subject to this SMP. It is not expected that soil will be imported to the site. At least 3 m of bedrock will be excavated to accommodate underground parking.

The Project Leader overseeing this SMP must provide written approval of the soil prior to importation. Soil shall not be imported without written approval from the Project Leader overseeing this SMP.

7.3 Monitoring and Recordkeeping

Daily monitoring of earthworks should be conducted by the Site Supervisor or designated personnel to ensure continued compliance with the SMP and for record keeping purposes. This includes filling out the Daily Inspection Checklist provided in Appendix B and outlining any relevant details or notes pertaining to how the suggested measures were carried out. The Daily Inspection Checklist should include a brief description of that day’s work activities including approximate location and depth of excavation activities, if any.

Records should be kept of any complaints received related to site construction activities and what measures were taken to deal with the issue(s), if any.

7.4 Document Retention

The Owner must retain a copy of all records relating to the SMP, including documentation related to soil disposal such as bills of lading and/or weigh bills, for a minimum period of seven (7) years.

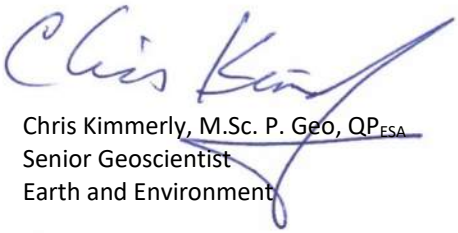
8 Closure and Qualified Professional Certification

We trust this SMP is sufficient for your present requirements. Please do not hesitate to contact the undersigned should additional concerns be raised.

Yours very truly,

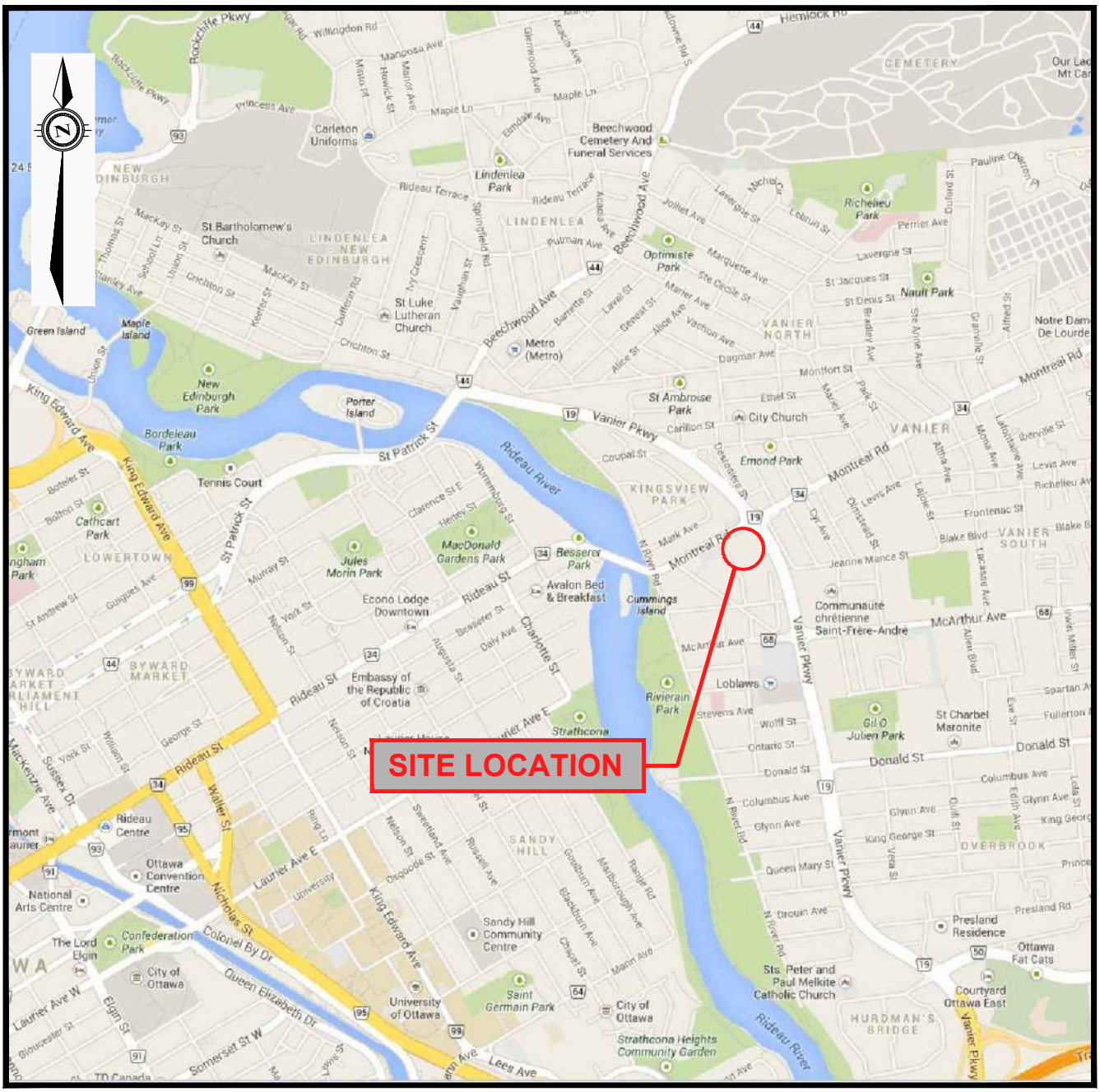
EXP Services Inc.

Mark McCalla, B.Sc. P. Geo, QP_{ESA}.
Senior Geoscientist
Earth and Environment



Chris Kimmerly, M.Sc. P. Geo, QP_{ESA}
Senior Geoscientist
Earth and Environment

Appendix A: Figures

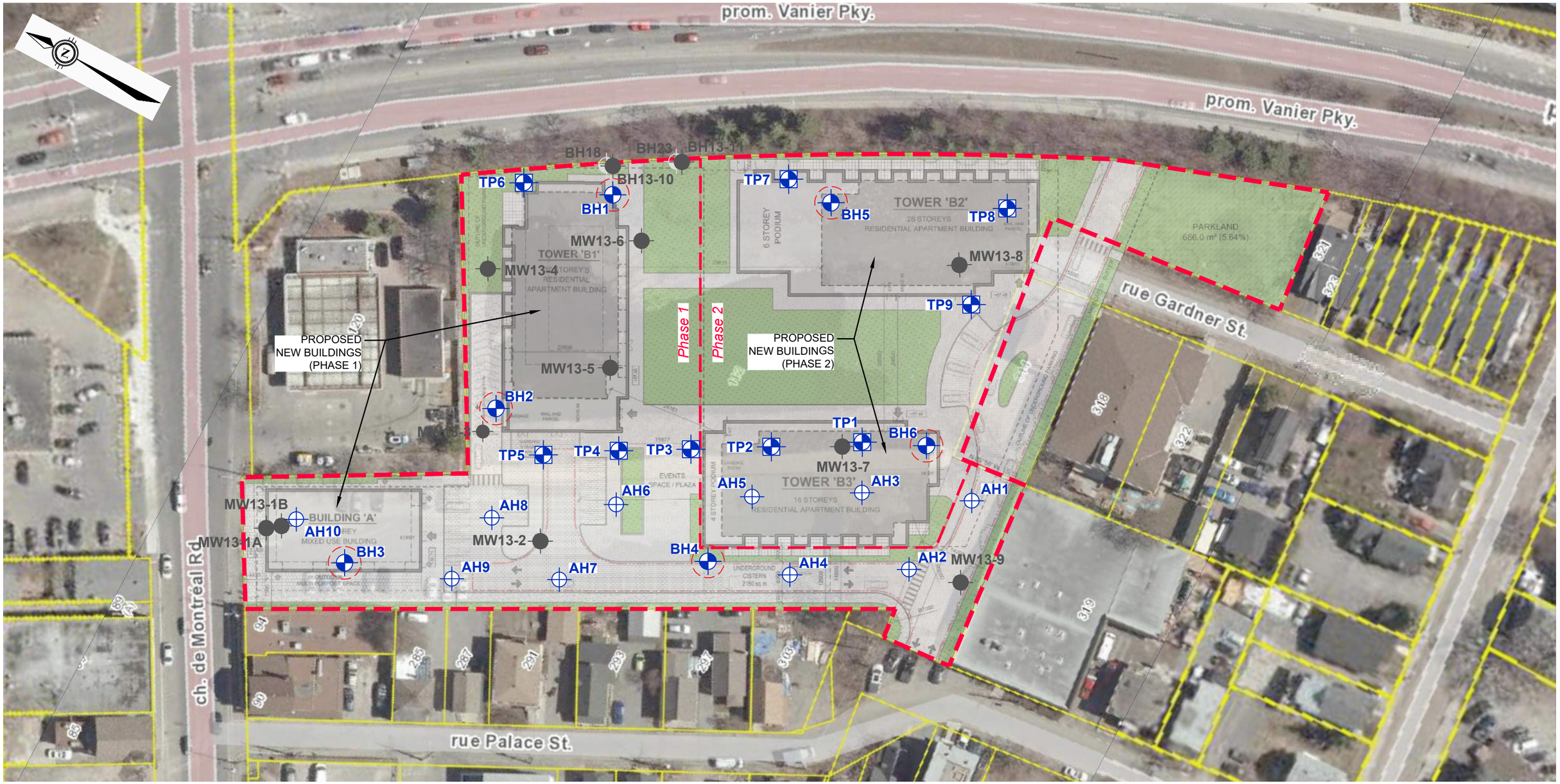


0 200m 400m 800m

HORIZONTAL 1:20,000

exp Services Inc. **www.exp.com**
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

scale 1:20,000	CLIENT: 2705460 ONTARIO INCORPORATED	project no. OTT-00214936-C0
date DECEMBER 2022	TITLE: SITE LOCATION PLAN 112 MONTREAL ROAD, OTTAWA, ONTARIO	FIG 1
drawn by P. G. / A.S.		



LEGEND

- PROPERTY BOUNDARY
- MW13-1A — MONITORING WELL LOCATION & NUMBER (*EXP*, 2013)
- BH1 — BOREHOLE (TO 15m)
- AH8 — AUGER HOLE (T0 1.8m)
- TP4 — TEST PIT (TO 5m)

0 5m 10m 30m

HORIZONTAL 1:750

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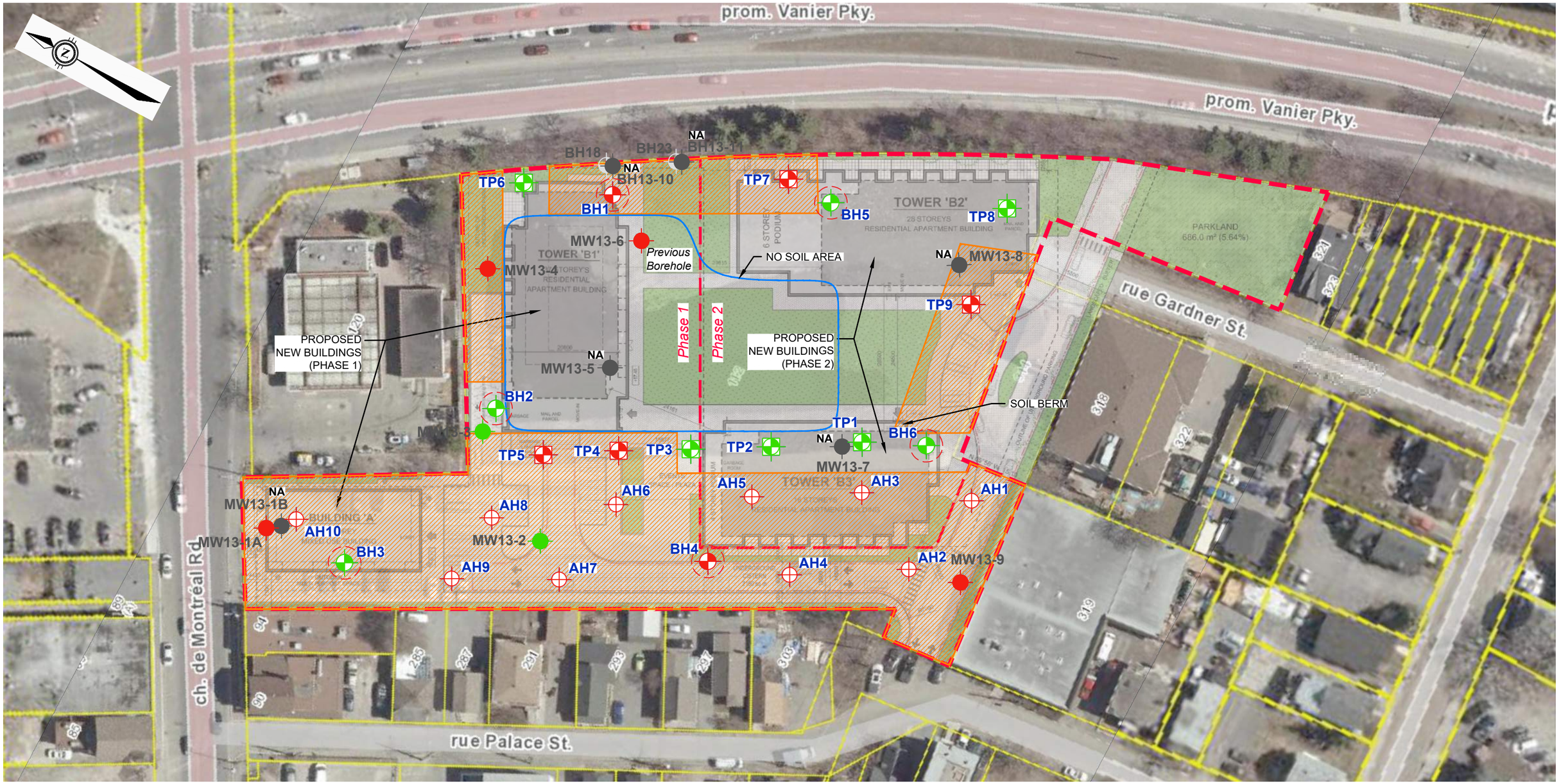
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

DATE: DECEMBER 2022	CLIENT: 2705460 ONTARIO INCORPORATED		project no. OTT-00214936-C0
DESIGN: MM	CHECKED: IT		scale 1:750
DRAWN BY: AS	TITLE: BOREHOLE LOCATION PLAN 112 MONTREAL ROAD, OTTAWA, ONTARIO		FIG 2



LEGEND

- PROPERTY BOUNDARY
- MW13-1A — MONITORING WELL LOCATION & NUMBER (*EXP*, 2013)
- BH1 — BOREHOLE (TO 15m)
- AH8 — AUGER HOLE (T0 1.8m)
- TP4 — TEST PIT (TO 5m)
- SOIL QUALITY EXCEEDS MECP TABLE 2.1 SQS
- SOIL QUALITY SATISFIES MECP TABLE 2.1 SQS
- ESTIMATED AREA OF IMPACTED SOIL
- NA — NO SOIL SAMPLES SUBMITTED

0 5m 10m 30m
HORIZONTAL 1:750

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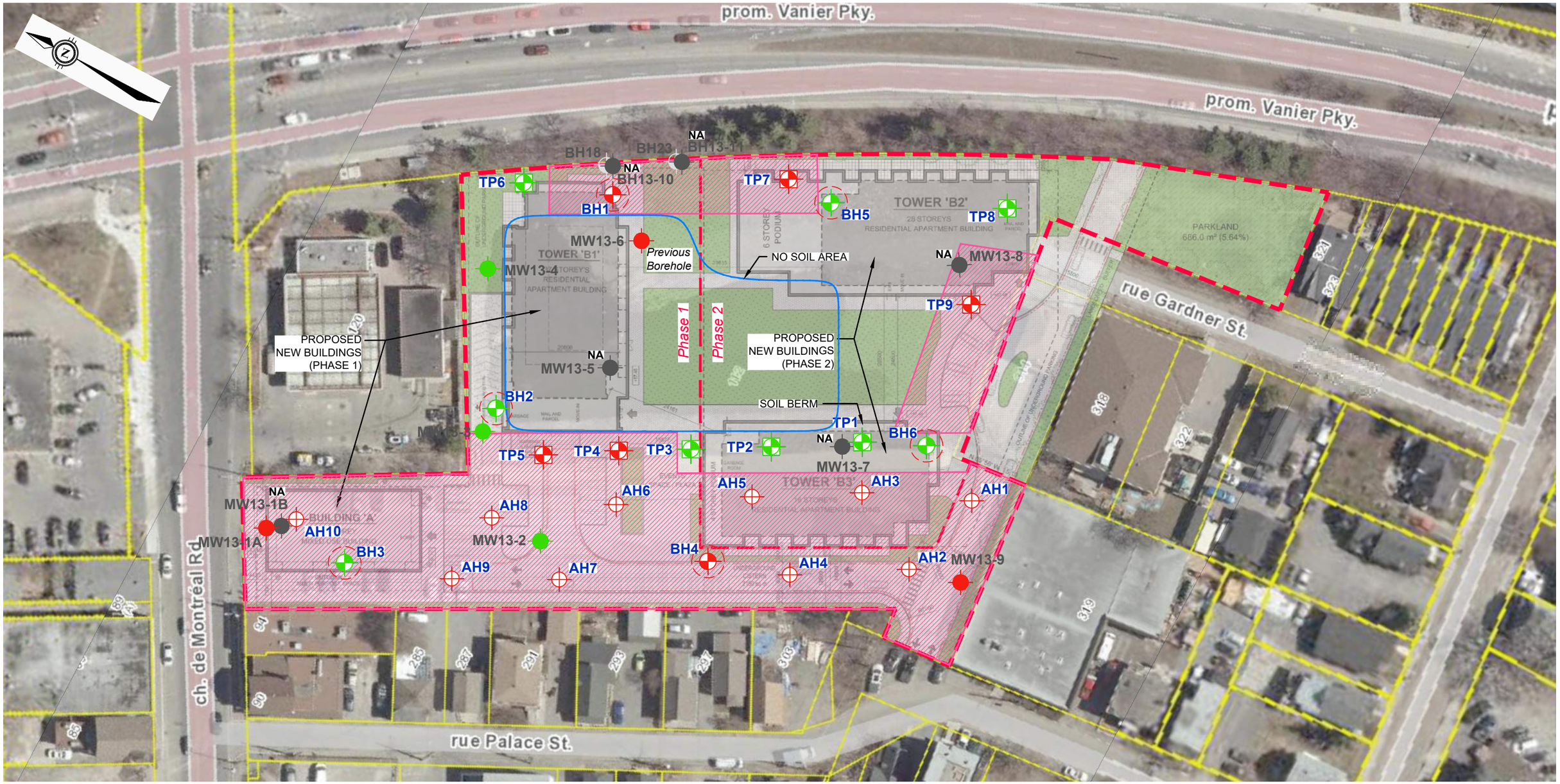
DATE: DECEMBER 2022	CLIENT: 2705460 ONTARIO INCORPORATED		project no. OTT-00214936-C0
DESIGN: MM / CHECKED: IT			scale 1:750
DRAWN BY: AS	TITLE: MECP TABLE 2.1 SOIL EXCEEDENCES 112 MONTREAL ROAD, OTTAWA, ONTARIO		FIG 3



LEGEND

- PROPERTY BOUNDARY
- MW13-1A — MONITORING WELL LOCATION & NUMBER (*EXP*, 2013)
- BH1 — BOREHOLE (TO 15m)
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- SOIL QUALITY EXCEEDS MECP TABLE 3.1 SQS
- SOIL QUALITY SATISFIES MECP TABLE 3.1 SQS
- ESTIMATED AREA OF IMPACTED SOIL
- NA — NO SOIL SAMPLES SUBMITTED

0 5m 10m 30m
HORIZONTAL 1:750

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DESIGN: MM / CHECKED: IT			scale 1:750
DRAWN BY: AS	TITLE: MECP TABLE 3.1 SOIL EXCEEDENCES 112 MONTREAL ROAD, OTTAWA, ONTARIO		FIG 4

Appendix B: Daily Inspection Checklist

Soil Management Plan - Daily Inspection Checklist			
Name of Inspector:			
Date:			
Description of Field Work Activities:			
Weather and Site Conditions:			
	Suggested Measures	**Status**	**Notes**
Administrative Considerations	- Designated area for employee parking away from work area.		
	- Construction fencing surrounding site.		
Dust Control and Runoff Management	- Limit vehicular speed within construction area.		
	- Visual inspection and implementation of sweeping, cleaning and/or watering of off-site roadways.		
	- Placement and maintenance of larger aggregate and/or mud mats at site entrances/exits and vehicle traffic routes on-site.		
	- Minimize dust emissions with potable water misting or use of dust suppressant, as needed.		
	- Limit soil handling during periods of high winds.		
	- Limit height of stockpiles, if any. Tarp stockpiles that are to remain at grade for an extended period.		
	- Placement and maintenance of silt fencing around site.		
	- Visual inspection of vehicles/equipment and manual removal of excess soil prior to exiting site. Implementation of tire/equipment washing station, if required.		
Off-Site Export of Soil	- Export trucks are to be covered during transport.		
	- Confirm tracking of all soil loads, including information regarding number of loads (weight/volume) and receiving site receipt as outlined in SMP.		
Soil Import	- Inspect all loads of soil imported. Document number of loads (weight/volume), name/address of source site, general area of soil placement, approximate volume of soil placed in each area.		
Record keeping	- Document any complaints received regarding site activities.		

Appendix C: O.Reg. 153/04 Sampling Frequency Table

Table 2
Minimum Stockpile Sampling Frequency

Item	Column 1 Stockpile Volume (m^3)	Column 2 Minimum Number of Samples
1.	≤ 130	3
2.	> 130 to 220	4
3.	> 220 to 320	5
4.	> 320 to 430	6
5.	> 430 to 550	7
6.	> 550 to 670	8
7.	> 670 to 800	9
8.	> 800 to 950	10
9.	> 950 to 1100	11
10.	> 1100 to 1250	12
11.	> 1250 to 1400	13
12.	> 1400 to 1550	14
13.	> 1550 to 1700	15
14.	> 1700 to 1850	16
15.	> 1850 to 2050	17
16.	> 2050 to 2200	18
17.	> 2200 to 2350	19
18.	> 2350 to 2500	20
19.	> 2500 to 2700	21
20.	> 2700 to 2900	22
21.	> 2900 to 3100	23
22.	> 3100 to 3300	24
23.	> 3300 to 3500	25
24.	> 3501 to 3700	26
25.	> 3700 to 3900	27
26.	> 3900 to 4100	28
27.	> 4100 to 4300	29
28.	> 4300 to 4500	30
29.	> 4500 to 4700	31
30.	> 4700 to 5000	32
31.	> 5000	The amount determined by applying the formula set out in paragraph 6 of section 36 of this Schedule[1].

[1]$N = 32 + (V - 5000)/300$

TABLE 3
Minimum Confirmation Sampling Requirements for Excavation

Floor Area (m^2)	Floor Samples	Sidewall Samples - should not all be taken from the same wall, and should represent worst-case
<25	2	2
>25-50	2	3
>50-100	3	3
>100-250	3	5
>250-500	4	6
>500-750	4	7
>750-1000	5	