PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
5.64-ACRE PARCEL OF VACANT LAND
WEST SIDE OF MONTROSE ROAD BETWEEN MCLEOD ROAD AND CHARNWOOD AVENUE
NIAGARA FALLS, ONTARIO

Submitted to:

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1.0 EXECUTIVE SUMMARY

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Ltd. (Wood) (formerly Amec Foster Wheeler Environment & Infrastructure, a Division of Amec Foster Wheeler Americas Limited) was retained by Mariano's Holdings Inc. (the Client) to conduct a Phase Two Environmental Site Assessment (ESA) of a property located on the west side of Montrose Road between McLeod Road and Charnwood Avenue in Niagara Falls, Ontario (the Phase Two Property). The Phase Two Property does not have a current municipal address. The UTM coordinates (NAD 83) for the centroid of the Phase Two Property are 652681 E and 4770951 N. The Phase Two Property, which is presently vacant, was previously part of a former municipal landfill site which has been decommissioned.

A Phase One ESA report dated June 11, 2018 and finalized November 26, 2018 (Phase One ESA, Wood 2018), was completed by Wood to the standards outlined in Ontario Regulation 153/04 (*O. Reg. 153/04*) as amended. The Phase One ESA indicated potentially contaminating activities (PCAs) and resulting areas of potential concern (APECs) on the Phase One Property.

Wood also completed a Soil Remediation Program (SRP) at the Phase Two Property to address metal-impacted soil

The Client retained Wood to provide an evaluation of known and possible environmental issues at the Phase Two Property for the future development of the property for residential use. It is Wood's understanding that a Record of Site Condition (RSC) is required by the Client for the development of the Phase Two Property under 04 *Records of Site Condition, Part XV.1 of the Environmental Protection Act* (EPA), as amended (*O. Reg. 153/04*, as amended).

This Phase Two ESA was carried out in accordance with Wood's proposal dated February 12, 2018 and authorization to proceed, signed by the Client on February 13, 2018.

The primary findings of this Phase Two ESA are as follows:

- Wood excavated twenty-one testpits, drilled five boreholes, installed and monitored three monitoring wells, and completed hydrogeological testing and an elevation survey between March 5th and June 20th, 2018. The locations of the boreholes and monitoring wells were selected to address areas of APECs resulting from PCAs.

- The subsurface condition encountered at the Phase Two Property are described as having a topsoil layer in several of the boreholes and testpits ranging in depths from 0.10 to 0.20 metres below ground surface (mbgs). A fill layer of various thickness and substrate was

encountered in all testpits and boreholes starting at or near the surface and ranging from 2.0 to 6.1 mbgs. The fill material was heterogeneous across the Phase Two Property, consisting of crushed limestone, blast rock, silty clay, silty sand, and concrete. Native soils, consisting of silty clay/clayey silt, were present beneath the fill layer in all borehole locations, and in Testpits 1, 2, 3, 4, 5, 15, and 21.

- Trace amounts of debris including garbage, plastics, rubber, metal, wood, boulders, and construction debris were found in Testpits 1, 2, 11, and 16.

- Visual or olfactory evidence of petroleum hydrocarbon or other chemical impacts were not observed by Wood during the drilling and testpitting programs.

- It is Wood's opinion that the results of the combustible organic vapour (COV) and total organic vapour (TOV) head space screening program suggest a low potential for the presence of significant combustible soil headspace vapour levels in the boreholes and all testpits.

- On June 20, 2018, following the completion of hydrogeological testing, the depth to ground water measured from surface ranged from approximately 3.06 to 4.44 mbgs which corresponds to geodetic elevations ranging from 188.29 to 192.42 metres above sea level (mASL). Using the three-point method, the horizontal ground water flow was calculated to be towards the east which is towards Montrose Road with a gradient of approximately 0.04 metres/metre (m/m). The vertical hydraulic gradient was not measured as there was only one geologic unit. Based on falling head tests conducted in each of the three monitoring wells, the estimated hydraulic conductivity was 2.1×10^{-7} metres per second (m/s) in BH/MW1, 1.3×10^{-7} m/s in BH/MW2, and 1.6×10^{-6} m/s in BH/MW3.

- The assessment criteria applicable to the Phase Two Property, if a RSC was to be filed for the Phase Two Property are the Table 3 Site Condition Standards (SCS) for use in a non-potable ground water condition, residential/parkland/institutional property use for medium and fine textured soils.

- The results of the soil testing indicated an exceedance of the Table 3 SCS for cadmium and zinc in TP4 at a depth of 1.25 mbgs. No other exceedances of Table 3 SCS for metals, electrical conductivity (EC), sodium adsorption ratio (SAR), volatile organic compounds (VOCs), petroleum hydrocarbons (PHC) (F1-F4), polycyclic aromatic hydrocarbons (PAHs) or polychlorinated biphenyls (PCBs) were found at the Phase Two Property.

- The results of the ground water testing indicated no exceedances of the Table 3 SCS for metals, PHC (F1-F4), or Benzene, Ethylbenzene, Toluene, and Xylenes (BTEX) at the Phase Two Property.

As such, upon completion of the Phase Two ESA, following a SRP, the Phase Two Property meets the Table 3 SCS and a RSC can be filed.

2.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Ltd. (Wood) was retained by Mariano's Holdings Inc. (the Client) to conduct a Phase Two Environmental Site Assessment (ESA) of a property located on the west side of Montrose Road between McLeod Road and Charnwood Avenue in Niagara Falls, Ontario (the Phase Two Property). The Phase Two Property does not have a current municipal address. The UTM coordinates (NAD 83) for the centroid of the Phase Two Property are 652681 E and 4770951 N. A key plan showing the location of the Phase Two Property is provided in **Figure 1**. The Phase Two Property, which is presently vacant, was previously part of a former municipal landfill site which has been decommissioned. **Figure 2** illustrates the lot configuration of the Phase Two Property.

The Client retained Wood to provide an evaluation of known and possible environmental issues at the Phase Two Property for the potential redevelopment of the of the Phase Two Property for residential use. A Record of Site Condition (RSC) will be required by the Regional Municipality of Niagara (RMON) prior to the planned redevelopment of the Phase Two Property.

A Phase One ESA report dated June 11, 2018 and finalized November 26, 2018 (Phase One ESA, Wood 2018), was completed by Wood to the standards outlined in Ontario Regulation 153/04 (*O. Reg. 153/04*) as amended. The Phase One ESA indicated potentially contaminating activities (PCAs) and resulting areas of potential concern (APECs) on the Phase One Property.

Wood also completed a Soil Remediation Program (SRP) at the Phase Two Property to address metal-impacted soil which was reported separately (**Appendix A**). The SRP is referred to in various sections within this report.

A Phase Two ESA in support of a RSC is legislated under *O. Reg. 153/04* as amended. The regulation outlines the procedure to follow to complete Phase One and Two ESAs including the requirement to complete a Phase One ESA prior to completing a Phase Two ESA.

A RSC under *O. Reg. 153/04*, as amended is required to change the property use to residential to allow for the redevelopment of the Phase Two Property. As such all work completed under this project was performed in general accordance with standard engineering practices and the following documents:

- Ministry of the Environment (MOE) document entitled *"Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04"* dated June 2011;

- Ministry of the Environment and Energy (MOEE) document entitled *"Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario"*, dated December 1996;

- MOE document entitled *"Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act"* issued by the Laboratory Services Branch of the MOE and dated March 9, 2004, amended as of July 1, 2011 (Analytical Protocol); and

- All analytical results were compared to the appropriate Site Condition Standards (SCS) identified in the Ministry of the Environment, Conservation and Parks (MECP) document entitled; *"Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act"* dated April 15, 2011 (MECP SCS).

This Phase Two ESA was carried out in accordance with Wood's proposal dated February 9, 2018 (Phase Two ESA) and authorization to proceed, signed by the Client on February 13, 2018.

2.1 Site Description

The Phase Two Property is located on the west side of Montrose Road, between McLeod Road and Charnwood Avenue, in Niagara Falls, Ontario. The Phase Two Property lies in an urban setting in an area of mixed residential and commercial land use. **Figure 2** illustrates the property boundaries of the Phase Two Property. The Phase Two Property is legally described as Part of Township Lot 163 (Part 2, RP 59R-13537) in the City of Niagara Falls (Stamford), RMON.

A legal survey of the property was provided by the Client. Currently, the Phase Two Property is owned by the Client and at the time of the investigation, was vacant with no buildings. The Phase Two Property is 2.28 hectares(ha) (5.64 acres) in area.

2.2 Property Ownership

The property ownership and Client contact information is as follows:

Owner & Client	Mariano's Holding's Inc.	2140 Allanport Road Allanburg, Ontario L0S 1C0

2.3 Current and Proposed Future Uses

The Phase Two Property was vacant, with no buildings. The proposed future use is residential housing (residential property use).

2.4 Applicable Site Condition Standard

Under *O. Reg. 153/04* as amended, the MECP has outlined SCS in the document "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*" dated 15 April 2011. The SCS applicable to the Phase Two Property have been evaluated based on the following rationale:

- The proposed property use is residential and therefore the SCS for residential/parkland/institutional property use would apply;
- The results of the grain size tests indicated approximately 97% of the native material, and 82% of the fill surface material consisted of particles less than 75 micrometres (µm) in diameter (**Appendix B**). The soil at the Phase Two Property was classified as a medium and fine textured soil (i.e., contains 50% or more by mass of particles that are smaller than 75 µm (*O. Reg. 153/04, s.42 (2)*)). As more than 1/3 of the soil at the property consists of medium and fine textured soil, the soil/fill materials at the Phase Two Property have been classified as medium and fine textured (*O. Reg. 153/04, s.42 (1))*;
- Municipal services are located throughout the Phase Two Study Area. A domestic water well installed in 1950 is located approximately 195 m south-southwest of the Phase Two Property based on a search completed by Environmental Risk Information Services (ERIS) as part of their report 20180215246, dated February 23, 2018 and noted in the Phase One ESA, Wood 2018. This area has since been redeveloped as commercial land and is municipally-serviced. Therefore, it is assumed that this well was decommissioned or abandoned;
- In accordance with *O. Reg. 153/04*, the Phase Two Property does not include land that is within 30 m of a "water body";
- The depth to bedrock is greater than 2 metres (m); and
- The Phase Two Property is not classified as an environmentally sensitive area under *O. Reg. 153/04* as amended, as:
    - The Phase Two Property does not appear to include land, or be within 30 m of land, that would be classified as an area of natural significance as defined by *O. Reg. 153/04* as amended; and
    - Soil pH values were reported between 7.5 and 7.8 in the 13 soil/fill samples (including two field duplicates) submitted from the testpit samples. The reported soil pH for all

soil samples was within 5.0 to 9.0 units for surface soil (surface to 1.5 metres below ground surface [mbgs] and 5.0 to 11.0 units for subsurface soil (below 1.5 mbgs) (**Table 2**).

Based on the above site characteristics, the SCS currently applicable to the Phase Two Property, for the purposes of filing a RSC, are the Table 3 Full Depth Generic SCS for a non-potable ground water condition, residential/parkland/institutional property use and medium and fine textured soils (the Table 3 SCS).

3.0 BACKGROUND INFORMATION

3.1 Physical Setting

The Phase Two Property lies at an approximate elevation of 190 m above sea level (mASL). The UTM coordinates (NAD 83) for the centroid of the Phase Two Property are 652702 E and 4770958 N. The topography across the Phase Two Property is irregular, with small rolling hills and dips. While it lies at similar elevations to the surrounding properties to the north, east and south, the property adjacent to the west is at a much higher elevation.

The surficial geology within the Phase Two Study Area is interpreted to consist of glaciolacustrine deposits of silt and clay, minor sand and basin and quiet water deposits ("*Quaternary Geology of Ontario, Southern Sheet*", Map 2556, Ministry of Northern Development and Mines, 1991).

Bedrock is anticipated be of the Middle and Lower Silurian Age, consisting of sandstone, shale, dolostone and siltstone of the Lockport Formation ("*Bedrock Geology of Ontario, Southern Sheet*", Map 2544, Ministry of Northern Development and Mines, 1991). Bedrock is anticipated to be encountered at approximately 12 mbgs according to water well records detailed in the ERIS report.

The regional ground water flow direction, based on topographic features and knowledge gained from other sites in the area, is expected to be to the southeast towards the Welland River. Locally, however, the shallow ground water flow may be influenced by underground utility trenches, conduits, and structures, variations in soil type, and minor fluctuations in topography.

Surface water at the Phase Two Property would flow across the Phase Two Property to the east towards a ditch running along Montrose Road.

3.2 Past Investigations

Background materials relevant to the discussion provided herein are documented in more detail in the Phase One ESA, Wood 2018.

Based on the Phase One ESA, Wood 2018, APECs resulting from current or former PCAs associated with the Phase One Property and the surrounding properties are as follows:

Area of Potential Environmental Concern	Location of APEC on Phase Two Property	Potentially Contaminating Activity*	Location of PCA	Contaminants of Potential Concern	Media Potentially Impacted
APEC-1: Fill Materials	Entire Phase One Property is covered by 3 to 6 metres of spoil fill from the construction of the Chippawa Power Canal	#30 - Importation of Fill Material of Unknown Quality	On-Site	Metals, As, Sb, Se, PHCs, BTEX	Soil Ground Water
APEC-2: Waste Disposal	Entire Phase One Property was historically part of a municipal landfill (no landfill operations occurred on-site)	#58 - Waste Disposal and Waste Management, including Thermal Treatment, Landfilling and Transfer of Waste; Other than use of Biosoils as Soil Conditioners	On-Site	Metals, As, Sb, Se, PHCs, BTEX	Soil Ground Water

*Potentially Contaminating Activity (PCA) described specifically for the Phase One Property with reference to the applicable item number in the Table of Potentially Contaminating Activities provided in Schedule D of *O. Reg. 153/04* as amended, where applicable

As such, Wood completed the following scope of work for the Phase Two ESA.

4.0 SCOPE OF THE INVESTIGATION

4.1 Overview of Site Investigation

The investigation consisted of the following activities:

- Developing a Health & Safety Plan and a Sampling and Analysis Plan for the intrusive work at the Phase Two Property. In accordance with Schedule E of *O. Reg. 153/04 as amended*, a copy of the Sampling and Analysis Plan is provided in **Appendix C**;

- Undertaking clearance of all public underground utility services (i.e., telephone, hydro, natural gas, cable television and sewer/water). In addition, Wood retained a private utility locate contractor to identify the location of any private services on the Phase Two Property. Wood requested that the owner identify any privately-owned services as well prior to commencement of the work;

- Excavating a total of twenty-one testpits to depths between 2.0 and 5.0 mbgs to address the fill material at the Phase Two Property using a Doosan 140 LC Excavator;

- Advancing a total of five boreholes (BH/MW1 to BH/MW3, BH4, and BH5) at the Phase Two Property to maximum depths to 10.7 mbgs using a Geoprobe 7822 DT;

- Field screening all soil samples collected during the testpitting and drilling activities both visually and measuring Combustible Organic Vapours (COVs) and Total Organic Vapours (TOVs) utilizing a RKI Eagle 2, equipped with dual sensors; the sensors were calibrated to a known isobutylene standard (for TOV sensor) and to a known hexane standard (for COV sensor);

- Installing ground water monitoring wells in three boreholes (BH/MW1, BH/MW2, and BH/MW3) and developing the wells after installation;

- Conducting ground water monitoring at the monitoring wells including measuring ground water levels and checking for light non-aqueous phase liquids (LNAPL) and dense non-aqueous phase liquids (DNAPL);

- Purging the monitoring wells using a low flow sampling technique with dedicated sampling equipment prior to collecting ground water samples;

- Submitting selected soil and ground water samples for laboratory analyses for contaminants of potential concern (COPCs) including: metals including hydrides, pH, electrical conductivity (EC), sodium adsorption ratio (SAR), volatile organic compounds (VOCs), including benzene, toluene, ethylbenzene and xylenes (collectively known as BTEX), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and petroleum hydrocarbons (PHC) in the F1 to F4 ranges;
- Completing a hydrogeological assessment in the newly installed monitoring wells;
- Completing an elevation survey of all testpits and boreholes (including all newly installed monitoring wells);
- Evaluating the results of the chemical analyses against the applicable assessment criteria; and
- Preparing a Phase Two ESA report documenting the findings of the investigation.

4.2 Media Investigated

As the COPCs included VOCs and PHC (F1-F4) which can become mobilized and potentially be transported to the ground water, ground water media was sampled. Ground water samples were collected in three monitoring wells installed during the Phase Two ESA.

No sediment samples were analyzed because no water bodies are present on the Phase Two Property.

4.3 Phase One ESA Conceptual Site Model

The rationale for the development of the Phase One Conceptual Site Model (CSM) is provided in the Phase One ESA, Wood 2018. The summary of the physical setting included in the Phase One CSM is as provided in Section 3.1 of this report.

There are no buildings present on the Phase Two Property. There are overhead utility poles and lines running along the east boundary of the Phase Two Property.

Based on the Phase One ESA, APECs resulting from current or former PCAs associated with the Phase One Property and the surrounding properties are as follows:

Area of Potential Environmental Concern	Location of APEC on Phase Two Property	Potentially Contaminating Activity*	Location of PCA	Contaminants of Potential Concern	Media Potentially Impacted
APEC-1: Fill Materials	Entire Phase One Property is covered by 3 to 6 metres of spoil fill from the construction of the Chippawa Power Canal	#30 - Importation of Fill Material of Unknown Quality	On-Site	Metals, As, Sb, Se, PHCs, BTEX	Soil Ground Water
APEC-2: Waste Disposal	Entire Phase One Property was historically part of a municipal landfill (no landfill operations occurred on-site)	#58 - Waste Disposal and Waste Management, including Thermal Treatment, Landfilling and Transfer of Waste; Other than use of Biosoils as Soil Conditioners	On-Site	Metals, As, Sb, Se, PHCs, BTEX	Soil Ground Water

*Potentially Contaminating Activity (PCA) described specifically for the Phase One Property with reference to the applicable item number in the Table of Potentially Contaminating Activities provided in Schedule D of *O. Reg. 153/04* as amended, where applicable

A Phase Two ESA was required due to the identified APECs.

4.4 Deviations from Sampling and Analysis Plan

The Sampling and Analysis Plan is included in **Appendix C**.

There were no deviations from the Sampling and Analysis Plan.

4.5 Impediments

There were no physical impediments or denial of access during the Phase Two ESA.

5.0 INVESTIGATION METHOD

5.1 General

This section describes the methods used during this subsurface investigation work, including all conventional testpitting, drilling, soil sampling, monitoring well installation and ground water monitoring activities. Quality Assurance/Quality Control (QA/QC) procedures are also discussed. The testpitting, borehole drilling, monitoring well installations, ground water monitoring, and hydrogeological testing activities were undertaken between March 5 and June 20, 2018.

The investigation activities were conducted in accordance with Wood's SOPs as of July 2011 and updated in October 2013. The Sampling and Analysis Plan (**Appendix C**) lists the relevant SOPs.

5.2 Testpitting

Twenty-one testpits were excavated between March 5 and 6, 2018 by Demar Construction Inc. of Allanburg, Ontario. The testpits were excavated to maximum depths between 2.0 and 5.0 mbgs. Discrete samples were taken at intervals of 0.5 m. The locations of the testpits are indicated on **Figure 2**. The sampling equipment was cleaned between each sample to minimize the potential for cross-contamination.

The testpit logs are included in **Appendix B**.

The testpits were backfilled using the material originally removed from the testpit.

5.3 Drilling

Five boreholes (BH/MW1 to BH/MW3, BH4, and BH5) were drilled on August 18, 2017 by Direct Environmental Drilling Inc. (DED) of St. Thomas, Ontario (MECP License Number 7320). The boreholes were advanced to a maximum depth of 10.7 mbgs using a Geoprobe 7722 DT. Continuous core samples of 1.5 m lengths were obtained throughout the borehole advancement using the Geoprobe's macro core sampling system, which uses dedicated (disposable) sample liners to prevent cross contamination. Three boreholes (BH/MW1 to BH/MW3) were completed as ground water monitoring wells to depths of 7.6 to 10.7 mbgs. The locations of the boreholes/monitoring wells are indicated on **Figure 2**. The sampling equipment was cleaned between each sample to minimize the potential for cross-contamination.

The borehole logs are included in **Appendix B**.

Soil cuttings generated during the borehole investigation were stored in 205 litre (L) drums.

Residue Management is discussed in Section 5.10 and **Appendix D**.

5.4 Soil: Sampling

Soil samples collected during drilling and excavating activities were split into duplicate fractions upon recovery. The primary sample fractions were placed into laboratory supplied vials with 2 millilitre (mL) of preservative and unpreserved glass jars with Teflon-lined lids and subsequently stored in coolers on ice for future potential laboratory analysis. The duplicate sample fractions were placed in resealable plastic sample bags and stored at ambient temperature for subsequent field vapour screening. All soil samples were collected in accordance with strict environmental sampling protocols to minimize loss of volatile organics and to ensure reliable and representative results. All soil sampling equipment (including trowels, spatulas, spoons, etc.) was thoroughly decontaminated between soil sample locations to prevent potential cross-contamination.

The subsurface conditions encountered at the Phase Two Property are described in the testpit and borehole logs provided in **Appendix B**.

Visual or olfactory evidence of petroleum hydrocarbon or other chemical impacts were not observed by Wood during the drilling or testpitting programs.

The cross-section lines are shown on **Figure 2**. Representative cross-sections orientated north to south are provided in **Figures 3 and 7**, while cross sections orientated west to east are provided in **Figures 4, 5, and 6**.

5.5 Field Screening Measurements

All soil samples collected during drilling were screened in the field for gross evidence of negative environmental impact including staining and odours. Soil sample headspace screening was also performed to facilitate sample selections for laboratory analysis and to provide an assessment of the vertical contaminant distributions at each location. The duplicate soil sample fractions were screened for COV and TOV concentrations using the sample headspace method. COV and TOV concentrations were measured using an RKI EAGLE 2^{TM} combustible vapour analyzer equipped with dual sensors and calibrated to known hexane and isobutylene standards and operated in methane elimination mode. The RKI EAGLE 2^{TM} can detect 0-11,000 parts per million (ppm) and 0-100 % Lower Explosive Limit (LEL) with an accuracy of +/- 5% and the calibration standard is Hexane. The equipment is calibrated every day prior to the commencement of fieldwork.

The TOV/COV screening measures the cumulative organic/combustible vapour present within sample headspace. TOV/COV results are semi-quantitative at best and are generally only used for relative sample comparison purposes when selecting samples from individual boreholes for laboratory analysis.

Soil samples were selected for laboratory analysis based on observations in the field. The depth intervals of samples selected for analysis and the parameters they were submitted for are included in the Tables appendix at the end of this report.

The soil vapour concentrations are included in the testpit and borehole logs in **Appendix B**. There were no deviations from the field screening method from the Sampling and Analysis Plan.

5.6 Ground Water: Monitoring Well Installation

Overburden monitoring wells were installed in three of the boreholes (BH/MW1, BH/MW2 and BH/MW3) on March 7, 2018 to obtain hydrogeologic and ground water quality information from the hydrostratigraphic zone. The monitoring wells were installed by DED using a Geoprobe 7722 DT to depths ranging from 7.6 to 10.7 mbgs. The monitoring wells were installed by using 83 millimetre (mm) diameter hollow probing rods (casing). The casings are washed prior to coming to the Phase Two Property and drilling proceeds from the least to inferred most contaminated borehole to reduce the potential for cross-contamination. No ground water samples were collected during drilling.

The monitoring wells were constructed using 31 mm diameter, schedule 40, flush-joint threaded PVC monitoring well supplies. The monitoring wells were completed with a 1.5 m length of #10 mil slotted intake screen. The tops of the intake screens were then extended beyond the ground surface using solid riser pipe. A silica sand filter pack was placed between the intake screen and the wall of the borehole. The filter pack was extended approximately 0.3 m above the top of the well screen. A bentonite seal was placed above the sand pack to surface. The wells were completed with stick up casings. The locations of the monitoring wells are shown in **Figure 2**. Details of the monitoring well constructions are included in the borehole logs in **Appendix B**.

The ground water monitoring wells installed were instrumented with dedicated Waterra^{TM} foot valve inertial pumps fitted with polyethylene tubing to facilitate well development. The wells were developed by removing at least three well volumes or purging dry using dedicated instrumentation (i.e., foot valve and tubing) on March 13, 2018. Wood recorded the stabilization parameters (including pH, conductivity and temperature) as outlined in Woods's SOPs. During development, an oil/water interface meter was used to measure potential accumulations of LNAPL or DNAPL, and ground water levels in the wells.

5.7 Ground Water: Field Measurement of Water Quality Parameters

The wells (BH/MW1, BH/MW2, and BH/MW3) were purged on March 16, 2018 using low flow sampling techniques until the pH, conductivity and temperature had reached stabilization criteria as outlined in Wood's SOPs. During purging, LNAPL, DNAPL, and ground water levels were monitored.

5.8 Ground Water: Sampling

Following monitoring and purging activities, Wood collected ground water samples (BH/MW1, BH/MW2 and BH/MW3) on March 16, 2018 using low flow sampling techniques. The samples were collected into laboratory-provided containers using the dedicated instrumentation. Ground water samples for metals were field-filtered. All samples were stored in coolers on ice after collection and during transportation to the laboratory where they were delivered under continuous Chain of Custody documentation.

Representative ground water samples collected during the investigation in the wells were submitted for laboratory analysis of suspect COPC. The sampling methodology including jar, bottle and preservative requirements followed the Analytical Protocol. Field duplicate samples as well as other QA/QC samples including field, trip and spike blanks were collected as required throughout the assessment work.

Ground water elevation measurements were collected on March 13, 16 and June 20, 2018 in all wells and are further discussed in Section 6.2.

5.9 Sediment: Sampling

No sediment samples were collected during the Phase Two ESA.

5.10 Analytical Testing

Wood collected soil/fill and ground water samples which were submitted to Paracel Laboratories Ltd. (Paracel), an ISO 17025-certified laboratory located in Ottawa, Ontario for laboratory analysis.

5.11 Residue Management Procedures

The soil cuttings generated during the drilling investigation were placed in 205 L steel drums on-site. Liquid wastes generated during the investigation (well development and purged water) were stored on-site in a drum. Residue management is discussed further in **Appendix D**.

5.12 Elevation Surveying

An elevation survey was completed by Wood on March 21, 2018. The ground surface elevations at the testpits, as well as the borehole and monitoring well locations were surveyed and referenced to a local base station part of the TopNet Live RTK Network which refers to the Canadian Geodetic Vertical Datum of 2013 (CGVD2013).

5.13 Quality Assurance and Quality Control Measures

Soil samples collected during the testpitting and drilling programs were split into duplicate fractions upon recovery. The primary sample fractions were placed into laboratory supplied unpreserved glass jars with Teflon-lined lids and subsequently stored in coolers on ice for future potential laboratory analysis. Samples that were potentially going to be submitted for analysis for PHC F1 and VOCs were collected in 40 mL vials and field preserved. Samples for analysis for metals and other parameters were placed into 250 mL glass jars with Teflon-lined lids and subsequently stored in coolers on ice packs for future potential laboratory analysis. Each sample was labelled using a unique identifier except for blind duplicate samples that were assigned aliases. All samples were delivered to the laboratory under continuous Chain of Custody documentation. No deviations from the Sampling and Analysis Plan were noted.

The sampling methodology including jar, bottle and preservative requirements followed Analytical Protocol. Field duplicate soil and ground water samples as well as other QA/QC samples including field, trip and spike blanks for ground water samples were to be collected as required throughout the assessment work. A minimum of one field duplicate for every ten samples in soil was submitted. The field instruments were calibrated daily.

All soil sampling equipment was thoroughly decontaminated between soil sample locations to prevent potential cross-contamination. Decontamination activities included:

- Physical removal of any adhered debris;
- Wash/scrub in "Alconox" soap solution;
- Distilled water rinse; and
- Methanol rinse/air drying.

In addition to field activities pertaining to quality assurance (decontamination of non-dedicated equipment, blind duplicate samples, instrument calibration, etc.), an analytical quality assurance program was also implemented.

The chemical analyses completed on selected soil samples were carried out at Paracel.

The validity of the analytical results reported for the samples collected during this investigation has been assessed using the criteria presented in the Analytical Protocol.

The Analytical Protocol establishes Acceptance Limits for use when assessing the reliability of data reported by analytical laboratories. These include maximum hold times for the storage of samples/sample extracts between collection and analysis, specified/approved analytical methods, required field and/or laboratory quality assurance samples such as blanks and field and laboratory duplicates, specified recovery ranges for spiked samples and surrogates (compounds added to samples in known concentrations for data validation purposes), required Reporting Limits (RL, maximum allowable detection limits) and specified precision required when analyzing laboratory duplicate samples.

The results of the analytical quality assurance program are discussed in Section 6.9.

6.0 REVIEW AND EVALUATION

6.1 Geology

The subsurface condition encountered at the Phase Two Property are described as having a topsoil layer in several of the boreholes and testpits ranging in depths from 0.10 to 0.20 mbgs. A fill layer of various thickness and substrate was encountered in all testpits and boreholes starting at or near the surface and ranging from 2.0 to 6.1 mbgs. The fill material was heterogeneous across the Phase Two Property, consisting of crushed limestone, blast rock, silty clay, silty sand, and concrete. Native soils, consisting of silty clay/clayey silt, were present beneath the fill layer in all borehole locations, and in Testpits 1, 2, 3, 4, 5, 15, and 21. Trace amounts of debris including garbage, plastics, rubber, metal, wood, boulders, and construction debris were found in Testpits 1, 2, 11, and 16.

Bedrock was not encountered during the testpitting or drilling programs.

The Phase Two ESA included the investigation of one geologic unit (considered an aquifer) and as the geologic unit consists of a low permeability silty clay/clayey silt, with fine sand in BH/MW3 between 6.7 and 7.6 mbgs), the mobility of DNAPLs or petroleum related contaminants (if any) were minimal and therefore, additional aquifers or aquitards were not investigated.

The aquifer thickness ranged from surface to completion of boreholes to depths of 10.6 mbgs. The relative elevations of the top of the geologic unit ranged from 191.4 to 195.5 mASL and the relative water level elevations of the geologic unit are 188.59 mASL (BH/MW1), 188.29 mASL (BH/MW2) and 192.42 mASL (BH/MW3).

6.2 Ground Water: Elevations and Flow Direction

The screened intervals of the monitoring wells at the Phase Two Property were placed to assess the native overburden soils directly above bedrock. Details of the ground water monitoring wells and measured ground water levels are included in **Table 1**. No LNAPL or DNAPL was noted in the monitoring wells.

On June 20, 2018, following the completion of hydrogeological testing, the depth to ground water measured from surface ranged from approximately 3.06 to 4.44 mbgs which corresponds to geodetic elevations ranging from 188.29 to 192.42 mASL as seen in **Figure 8**.

The water levels in these monitoring wells have been used to infer a horizontal ground water flow direction. The ground water flow direction was determined by creating a line of equivalent ground water level from the well with the intermediate head value and intersecting a line between the other two monitoring wells. Ground water flow is perpendicular to this line of equivalent ground water level, moving from higher head to lower head. The ground water flow direction as determined by this method was towards the east which is towards Montrose Road.

The hydraulic gradient was estimated by taking the difference in water level elevation between two contours and dividing by the distance between. The hydraulic gradient was estimated to be approximately 0.04 metres/metre (m/m).

6.3 Ground Water: Hydraulic Gradients

Hydraulic conductivity testing (single well response tests) was undertaken to provide an representative estimate of the hydraulic conductivity of the native overburden soil at the Phase Two Property.

A falling head test was conducted at all monitoring well locations by adding a volume of water sufficient to cause a displacement of the water level in the monitoring well and allowing it to recover back to equilibrium. A non-vented pressure transducer programmed to record pressure readings at five second intervals was placed in the monitoring wells prior to the start of the tests and recorded throughout the tests. Manual water levels were measured in the monitoring wells to match the transducer data to the measured manual water levels, which provides a continuous record of the water level in the monitoring well during the tests.

The falling head tests were initiated and completed on June 20, 2018. The hydraulic test recovery data for each test was analysed using the Bouwer-Rice method (Bouwer & Rice, 1976) in AQTESOLV version 4.5. The software incorporates transducer water level data collected during the hydraulic conductivity testing as well as monitoring well construction details in the estimation of the hydraulic conductivity of the screened soils. Due to the presence of fine sand at the bottom of BH/MW-3, this test has been analyzed as a confined condition.

The estimated hydraulic conductivities were 2.1×10^{-7} m/s in BH/MW1, 1.3×10^{-7} m/s in BH/MW2, and 2.9×10^{-6} m/s in BH/MW3.

The results of the hydraulic conductivity testing seem reasonable based on the lithologies descriptions in the borehole logs. The results of the analysis can be found in **Appendix E.**

6.4 Medium and Fine Soil Texture

Based on the soil conditions encountered during the fieldwork program, the native soil consists of silty clay/clayey silt. A sample of the surface material (i.e., Sandy Silty Fill) (BH/MW1-1) and a sample of the native material (i.e. Silty Clay/Clayey Silt) (BH/MW1-7) were submitted for grain size analysis. Based on the results of the grain size hydrometer analyses, approximately 82% of the particles in the surface material, and 97% of the particles from the native material were determined to be less than 75 µm in diameter which classifies the soil as medium and fine textured ((i.e., 50% or more by mass of particles that are smaller than 75 µm in mean diameter (*O. Reg. 153/04, s.42 (2)*). As such, Wood utilized the SCS for medium and fine textured soils. The grain size plot is included in **Appendix B.**

6.5 Soil: Field Screening

COV concentration headspace measurements recorded in the soil samples collected from the testpits and boreholes ranged from non-detectable to 25 parts per million (ppm). TOV concentrations ranged from non-detectable to 112 ppm. The COV and TOV concentrations headspace measurements are summarized in the testpit and borehole logs in **Appendix B**.

It is Wood's opinion that the results of the screening program suggested a potential for the presence of elevated combustible soil headspace vapour levels in TP16. Laboratory analysis was required to confirm or refute, and if required, quantify these field screening results (details follow).

Visual or olfactory evidence of petroleum hydrocarbon or other chemical impacts were not observed by Wood during the testpitting and drilling program.

6.6 Soil Quality

The results of the soil sample analyses and their respective Table 3 SCS are summarized in **Tables 2, 3 and 4**. The laboratory certificates of analysis are included in **Appendix F**.

In accordance with Schedule E of *O. Reg. 153/04 as amended*, **Table 5** lists the maximum concentration for each tested parameter on the soil samples, which also includes the location of each corresponding sample.

The soil analytical results of this Phase Two ESA are summarized below:

Soil pH was determined for the following samples (depth of sample in brackets):

- TP2-2 (0.75 mbgs),

- TP3-6 (2.75 mbgs),
- TP5-4 (3.75 mbgs),
- TP11-2 (0.75 mbgs),
- TP12-7 (3.25 mbgs),
- TP15-10 (4.75 mbgs),
- TP18-2 (0.75 mbgs),
- TP20-1 (1.0 mbgs),
- TP21-9 (4.25 mbgs)

Soil pH ranged from 6.7 to 7.7 for surficial soils and from 8.0 to 8.1 for subsurface soils (**Table 2**).

EC and SAR testing was completed on the following samples (depth of sample in brackets):

- TP2-2 (0.75 mbgs),
- TP11-2 (0.75 mbgs), and
- TP18-2 (0.75 mbgs)

EC and SAR concentrations (**Table 2**) were reported below the Table 3 SCS at all locations tested.

Metals including hydride testing was completed on the following samples (depth of sample in brackets):

- TP1-2 (0.75 mbgs),
- TP2-2 (0.75 mbgs),
- TP3-3 (1.25 mbgs),
- TP3-4 (1.75 mbgs),
- TP4-2 (0.75 mbgs),
- TP4-3 (1.25 mbgs),
- TP4-4 (1.75 mbgs),
- TP5-4 (3.75 mbgs),
- TP6-8 (3.75 mbgs),
- TP7-1 (0.25 mbgs),
- TP8-1 (1.25 mbgs),
- TP9-1 (1.75 mbgs),
- TP11-2 (0.75 mbgs),
- TP12-7 (3.25 mbgs),
- TP13-3 (1.25 mbgs),
- TP14-3 (1.25 mbgs),
- TP15-10 (4.75 mbgs),

- TP16-3 (1.25 mbgs),
- TP17-8 (3.75 mbgs),
- TP19-6 (2.75 mbgs),
- TP21-3 (1.25 mbgs),
- BH/MW1-5c (6.1 – 7.6 mbgs),
- BH/MW2-2c (6.1 – 7.6 mbgs),
- BH/MW3-1c (4.6 – 6.1 mbgs),
- BH/MW3-2 (6.1 – 7.6 mbgs),
- BH4-3c (6.1 – 7.6 mbgs),
- BH5-3c (6.1 – 7.6 mbgs)

Metals including hydride concentrations (**Table 2**) were reported below the Table 3 SCS at all locations tested, except sample TP4-3, which exceeded the Table 3 SCS for cadmium and zinc.

Chromium VI, boron (available), and mercury testing was completed on the following samples (depth of sample in brackets):

- TP2-2 (0.75 mbgs), and
- TP11-2 (0.75 mbgs).

Chromium VI, boron (available) and mercury concentrations (**Table 2**) were reported below the Table 3 SCS at all locations tested.

PHC (F1 to F4) and BTEX/VOC testing was completed on samples (depth of sample in brackets):

- TP2-2 (0.75 mbgs),
- TP3-3 (1.25 mbgs),
- TP4-3 (1.25 mbgs),
- TP11-2 (0.75 mbgs),
- TP16-3 (1.25 mbgs),
- TP21-3 (1.25 mbgs)
- BH/MW1-5d (7.5 mbgs), and
- BH/MW3-1d (4.8 mbgs).

PHC and BTEX/VOC concentrations (**Table 3**) were reported below the Table 3 SCS at all locations tested.

The sample locations and sample analyses are indicated on **Figures 9A to 9G**. No chemical or biological transformations were noted in the analysis nor did the results indicate that the soil/fill at the Phase Two Property is a contaminant mass contributing to ground water impact. No LNAPL or DNAPL was noted in the monitoring wells.

6.7 Ground Water Quality

The results of the ground water sample analyses collected from the newly installed monitoring wells, and their respective Table 3 SCS, are summarized in **Tables 6, and 7**. The laboratory certificates of analysis are included in **Appendix F**.

In accordance with Schedule E of *O. Reg. 153/04,* **Table 8** lists the maximum concentration for each tested parameter on the ground water samples including their location and the screened depth of the well for each corresponding sample.

Ground water samples were collected from BH/MW1, BH/MW2 and BH/MW3. The ground water sample depth interval was 7.6 to 10.7 mbgs, 6.1 to 9.2 mbgs and 4.6 to 7.6 mbgs in BH/MW1, BH/MW2 and BH/MW3, respectively. The samples for metals analysis were field filtered. The ground water analytical results of this Phase Two ESA are summarized below:

- Metals concentrations (**Table 6**) were reported below the Table 3 SCS at all locations tested; and
- All BTEX and PHC (F1-F4) concentrations (**Table 7**) were reported below the Table 3 SCS at all locations tested.

The sample locations and sample analyses are indicated on **Figures 10A and 10B**. No chemical or biological transformations were noted in the analysis nor did the results indicate that the soil/fill at the Phase Two Property is a contaminant mass contributing to ground water impact. No LNAPL or DNAPL was noted in the monitoring wells.

6.8 Sediment Quality

Sediment was not assessed as part of the Phase Two ESA.

6.9 Quality Assurance and Quality Control Results

Field QA/QC Program - Soil

The field QA/QC program consisted of analyzing two field duplicate soil/fill samples for pH, three soil/fill samples for metals, and one soil/fill sample for SAR, EC, VOCs, PHC (F1-F4), PAHs and PCBs.

Duplicate samples are analyzed to assess the precision of the field sampling and laboratory analytical processes. To accurately calculate a statistically valid relative percent difference (RPD) for the duplicate sample, the concentration of the analytes found in both the original and duplicate sample must be greater than five (5) times the MDL. The field duplicate samples are summarized as follows:

- The duplicate Dup 3 was a duplicate of sample TP2-2 for pH, SAR, EC, metals and PAHs, PCBs, PHC (F1-F4), and VOCs; Dup 12 was a duplicate of TP5-4 for pH, and metals; and Dup 11 was a duplicate of TP14-3 for pH. An assessment of the RPDs for the duplicate samples was completed (**Tables 2, 3 and 4**).

- The RPD between Dup 3 and TP2-2 was above the RPD Limit for EC (18%), Chromium (50%), Copper (31%), Lead (60%), Fluoranthene (45%), Phenanthrene (45%), F3 PHCs (46%), and F4 PHCs (47%).

- The RPD between Dup 12 and TP5-4 was above the RPD limit for Barium (48%), Boron (41%), Chromium (40%), Cobalt (37%), Copper (45%), Lead (30%), Nickel (38%), and Vanadium (38%).

- The RPDs were otherwise not calculable as both values were not greater than 5 times the MDL or were below the RPD limit.

It is noted that the RPD values in the Analytical Protocol are for duplicate samples collected at the laboratory and are used for comparison to the RPDs calculated for field duplicates.

Field QA/QC Program – Ground Water

The field QA/QC program consisted of analyzing one (1) field duplicate ground water sample for metals, BTEX, and PHC (F1-F4). Duplicate samples are analyzed to assess the precision of the field sampling and laboratory analytical processes. The field duplicate samples are summarized as follows:

- The field ground water duplicate (Dup A) was a duplicate of sample BH/MW3 for metals, BTEX, and PHC (F1-F4). An assessment of the RPDs for the duplicate sample was completed (**Tables 6, 7**). The RPDs were either not calculable as both values were not greater than 5 times the MDL or were below the RPD limit (20% for metals and 30% for BTEX, and PHCs).

It is noted that the RPD values in the Analytical Protocol are for duplicate samples collected at the laboratory and are used for comparison to the RPDs calculated for field duplicates.

A field blank sample was submitted for analysis of BTEX. Field blanks are samples of laboratory provided reverse osmosis deionized (RODI) water, which is poured into a set of sample bottles at the same time and in the same general area as the samples are collected. The field blank is used to determine if there is presence of contamination as a result of field handling. The field blank was non-detectable for all parameters analyzed, indicating that the field activities did not bias the reported results.

A trip blank was submitted for analysis for BTEX. A trip blank is a sample of RODI water prepared and filled into the relevant sample bottles by the laboratory. The sample is sent with the bottle shipment, taken out to the field and then shipped back with the collected samples for analysis (not opened at any time by field staff). All parameters were found to be non-detectable in the trip blank.

A trip spike was submitted for analysis for BTEX. A trip spike is a sample of RODI water to which a known amount of analyte of interest and appropriate preservative has been added by the laboratory. This sample is also sent with the bottle shipment, taken out to the field and then shipped back with the collected samples for analysis (not opened at any time by field staff). The spike recovery was outside acceptance limits for the MS and/or MSD, however the batch was accepted based on other acceptable QC.

Laboratory QA/QC Program - Soil

The laboratory results for soil samples obtained during Wood's investigation met the Acceptance Limits of the Analytical Protocol except for laboratory qualifiers noted by the laboratory **Appendix F**. All samples were analyzed within laboratory hold times and preservation method, storage requirements and container type were utilized as the Analytical Protocol. No issues with the QA/QC that would impact the results of the assessment were noted. The results of the QA/QC analyses are included on the laboratory Certificates of Analyses presented in **Appendix F** and in **Tables 2, 3 and 4**.

Laboratory QA/QC Program – Ground Water

The laboratory results for soil and ground water samples obtained during Wood's investigation met the Acceptance Limits of the Analytical Protocol except for laboratory qualifiers noted by the laboratory **Appendix F**. No issues with the QA/QC that would impact the results of the assessment were noted. All samples were analyzed within laboratory hold times and preservation method, storage requirements and container type were utilized as the Analytical Protocol. The results of the QA/QC analyses are included on the laboratory Certificates of Analyses presented in **Appendix F** and in **Tables 6, and 7.**

Certification of Analytical Results

Based on the review of the QA/QC results for soil, the Chain of Custody forms and the laboratory Certificates of Analysis, it is concluded that:

- All Certificates of Analysis received pursuant to Section 47(2) of *O. Reg. 153/04* complies with Section 47(3) of *O. Reg. 153/04*;
- A Certificate of Analysis has been received for each sample submitted for analysis; and
- Copies of all Certificates of Analysis are provided in **Appendix F** of this report.

No issues with the analytical results affected decision-making or prevented the overall objectives of the investigation from being met.

6.10 Phase Two Conceptual Site Model

The Phase Two CSM is provided below:

Regulatory Requirement	Phase Two Property Information
i. Areas where potentially contaminating activity has occurred, areas of potential environmental concern and subsurface structures and utilities that may affect contaminant distribution and transport.	The location of Phase Two Property is shown in **Figure 1**. **Figure 2** illustrates the property boundaries of the Phase Two Property. Based on the findings of the Phase One ESA, APECs associated with PCAs are present on the Phase Two Property (**Figure 11**) as follows: - APEC #1 – Fill Materials (PCA #30 – Importation of Fill Material of Unknown Quality); and - APEC #2 – Waste Disposal (PCA #58 – Waste Disposal and Waste Management, including Thermal Treatment, Landfilling and Transfer of Waste, Other than use of Biosoils as Soil Conditioners). APEC #1 relates to the importation of fill material (PCA #30) to the Phase Two Property during the excavation of the Queenston-Chippawa Power Canal in the 1920s-1930s. The spoils from the excavation work were spread across the Phase Two Property and surrounding properties and consisted of concrete, blast rock, silty clay/clayey silt and the fill material spread was noted to be between 3 to 6 metres (m) thick based on documentation reviewed during the Phase One ESA and observations during the Phase Two ESA. APEC #2 relates to the municipal landfill (PCA #58) that operated in the 1930s to 1960s that included the Phase Two Property and surrounding properties to the north, west and south. Based on the Phase One ESA findings and review of a previous report for the landfill which includes the Phase Two Property, the landfill cells and refuse did not extend to the Phase Two Property. This was confirmed by testing completed in 2006 that included the excavation of 44 testpits to depths ranging between 2.4 to 4.6 mbgs which is the same sampling interval range as the Phase Two

Regulatory Requirement	Phase Two Property Information
	ESA. The contaminants of concern were inorganics, PHCs and BTEX in the previous testpitting programs and were also address in the current Phase Two ESA. There are monitoring wells associated with the landfill cells installed previously by others and no indication of off-site impact (towards the Phase Two Property) was indicated in the report reviewed. The monitoring well BH04-05 installed closest to the Phase Two Property in 2004 reported no refuse, methane readings and the ground water sampling met the then applicable standards (Table B) and current Table 3 SCS when tested for metals, nutrients and VOCs. The testpitting and drilling program completed by Wood during the Phase Two included similar locations to the previous testing locations. No refuse or evidence of landfill waste was noted during Wood's Phase Two ESA. APEC #1 and APEC #2 were addressed by sampling soil in TP1 to TP21, BH/MW1 to BH/MW3, BH4, and BH5 for contaminants of potential concern (COPC) including metals, As, Se, Sb and PHC (F1-F4) including BTEX based on previous testing at the Phase Two Property and surrounding lands. Additional parameters were tested for Site characterization and included pH, SAR, Electrical Conductivity (EC), Hg, Cr (VI), B-HWS, VOCs, PAHs, and PCBs; as well as sampling the ground water in BH/MW1 to BH/MW3 for COPC including metals, As, Se, SB, BTEX and PHC (F1-F4). There are no buildings present on the Phase Two Property. There are overhead utility poles and lines running along the east boundary of the Phase Two Property but no underground utilities or structures that would impact contaminant distribution. No RSCs have been filed on the Phase Two Property.
ii. Description and figures illustrating the physical setting of the property including, stratigraphy, hydrogeological characteristics, depth to bedrock, depth to water table, aspect related to Section 41 or 43.1 that apply to the property, areas where soil has been brought onto the property, location of any proposed buildings.	The cross-section lines are shown on **Figure 2**. The stratigraphy at the Phase Two Property is depicted on the cross sections (**Figures 3, 4, 5, 6 and 7**) and in general, a topsoil layer was present in several of the boreholes and testpits ranging in depths from 0.10 to 0.20 metres below ground surface (mbgs). The topsoil layer (where applicable) was underlain by a fill layer(aquifer) which was encountered in all testpits and boreholes starting at or near the surface and ranging in maximum depth from 2.0 to 6.1 mbgs. The fill material (imported from the construction of the canal) was heterogeneous across the Phase Two Property, consisting of crushed limestone, blast rock, silty clay/clayey silt (aquitard), and concrete. The fill material was underlain by native soils, consisting of silty clay/clayey silt (aquitard), which were present beneath the fill layer in all borehole locations, and in Testpits 1, 2, 3, 4, 5, 15, and 21 (remaining testpits terminated in fill material) to the maximum depth of the aforementioned testpits or borehole ranging from 2.0 to 10.7 m Bedrock is anticipated be of the Middle and Lower Silurian Age, consisting of sandstone, shale, dolostone and siltstone of the Lockport Formation. Bedrock is anticipated to be encountered at approximately 12 mbgs according to water well records detailed in the EcoLog ERIS report. Bedrock was not encountered during the testpitting and drilling programs. The property was vacant at the time of the Phase Two ESA. The owner intends to develop the Phase Two Property for residential land use. There are currently no development plans for the future use of the Phase Two Property. On-Site vapour intrusion is not considered a concern at the Phase Two Property as no volatile contaminants of concern (COCs) were identified on the property during the Phase Two ESA. The regional ground water flow direction, based on topographic features and knowledge gained from other sites in the area, is expected to be to the southeast

Regulatory Requirement	Phase Two Property Information
	towards the Welland River. Locally, the shallow ground water flow may be influenced by underground utility trenches, conduits, and structures, variations in soil type, and minor fluctuations in topography. As shown in **Figure 8**, the interpreted ground water flow is east, based on water level readings taken on June 20, 2018. The Phase Two Property is not located within or within 30 m of an Area of Natural Significance which would classify it as a sensitive site under *O. Reg. 153/04*, as amended. Wood reviewed the City of Niagara Fall's Official Plan and the Regional Municipality of Niagara (RMON) Core Natural Heritage Map. The Phase Two Property does not appear to be in or within 30 m of a designated protected area. There are no conditions that would apply to the Phase Two Property under Section 41 (Environmentally Sensitive Areas). The Phase Two Property does not include land that is within 30 m of a water body as described in *O.Reg.153/04*, as amended. The Phase Two Property is not considered a shallow soil property as the depth to bedrock is greater than 2 m [1/3 or more of the area consists of soil equal to or less than 2 m in depth beneath the soil surface, excluding any non-soil surface treatment such as asphalt, concrete or aggregate]. Therefore, there are no conditions that would apply to the Phase Two Property under Section 43.1. On June 20, 2018 the depth to ground water measured from surface ranged from approximately 3.06 to 4.44 mbgs which corresponds to geodetic elevations ranging from 188.29 to 192.42 metres above sea level (mASL). Using the three-point method, the horizontal ground water flow was calculated to be towards the east which is towards Montrose Road with a horizontal gradient of approximately 0.04 m/m. The vertical hydraulic gradient was not calculated as only one geologic unit was assessed. The estimated hydraulic conductivity was 2.1 x 10^{-7} metres per second (m/s) in BH/MW1, 1.3 x 10^{-7} m/s in BH/MW2, and 1.6 x 10^{-6} m/s in BH/MW3. The ground water levels are noted to be above the screened interval in the monitoring wells. The water levels range from approximately 2.5 to 4.5 m above the screened intervals. The ground water wells are screened within a confining aquifer layer (silty clay/clayey silt) and therefore are likely under the influence of head pressure. There was no PHC or VOC impacts noted in the soil and ground water and no dense non-aqueous phase liquids (DNAPL) and light non-aqueous phase liquids (LNAPL) observed during monitoring. Imported material is present at the Phase Two Property ranging in depth from 2.0 to 6.1 mbgs was noted at the Phase Two Property. The soil remediation excavation was not backfilled following soil removal. The standards used for the identification of COCs were Table 3 SCS for use in a non-potable ground water condition, residential/parkland/institutional and medium and fine textured soils.
iii. Contaminants on the Site	The only exceedances of the Table 3 SCS were found in TP4 (Sample TP4-3) at a depth of 1.25 mbgs for cadmium and zinc. The estimated area of the impact was 5 m by 5 m. The exceedance is likely associated with the previous infilling activities at the Phase Two Property. No other exceedances of the Table 3 SCS for metals, EC, SAR, B-HWS, Cr (VI), Hg, VOCs, PHC (F1-F4), PAHs or PCBs were noted in soil in the Phase Two ESA. The soil sample parameters analyzed in the various testpits and boreholes are indicated on **Figures 9A to 9G.** These metal parameters are not considered mobile in soil and ground water and therefore are not anticipated to be affected by preferential pathways. This

Regulatory Requirement	Phase Two Property Information
	contamination is not impacted by temporal fluctuations in ground water levels. Furthermore, there were no exceedances of the Table 3 SCS for metals, BTEX, or PHC (F1-F4), noted in the ground water in the Phase Two ESA. In addition, no LNAPL or DNAPL were observed at the time of development, purging or sampling in any of the monitoring wells. The ground water sample parameters analyzed in the various monitoring wells are indicated on **Figures 10A and 10B.** The results of the combustible organic vapour (COV) and total organic vapour (TOV) head space screening program suggested a low potential for the presence of elevated combustible soil headspace vapour levels in the boreholes and testpits which was confirmed by the laboratory results. A soil remediation program was undertaken to remove the soils at TP4 that exceeded the Table 3 SCS. An actual area of impact of 5.3 m by 5.0 m was excavated during the soil remediation program. The remediation included the removal and transportation of 33.47 cubic metres of impacted soil/fill to the Niagara Waste System Limited (NWSL) landfill in Thorold, Ontario. Confirmatory soil samples were collected upon the completion of the remediation. Six (6) samples, plus one (1) field duplicate, were submitted to Paracel for laboratory analysis of metals. All confirmatory samples submitted for laboratory analysis had metals parameter concentrations that were non-detectable or were below the Table 3 SCS. The confirmatory samples are indicated on **Figure 14** and meet the Table 3 - Minimum Confirmation Sampling Requirements for Excavations.
iv. Cross-Sections and distribution of contaminants, depth to water, stratigraphy, subsurface structures or utilities affecting distribution. For areas of contamination, release mechanisms, transport pathways, receptors, exposure points and routes of exposure.	The cross-sections provided on **Figures 3, 4, 5, 6 and 7** identify the stratigraphy (topsoil and/or fill over silty clay/clayey silt) and that there are no significant subsurface features. The Interpreted Ground Water Flow Plan (**Figure 8**) identifies the depth to water on June 20, 2018 (ranged from 3.06 to 4.44 mbgs). **Figures 12 and 13** illustrate the Human Health and Ecological Exposure Conceptual Models. These models are described as follows: <u>Source:</u> The sources of the COCs at the Phase Two Property was Fill Material on the Phase Two Property. <u>Potential Release Mechanism:</u> - Wind Erosion - Uptake by Plants and Intake by Prey - Volatilization <u>Contaminant Transport Pathways (exposure route);</u> - Dermal Contact, Stem/Foliar Contact - Ingestion - Inhalation of airborne particles - Ingestion by Plants and Prey <u>Human and Ecological Receptors:</u> Potential human receptors include future residents and visitors and construction workers and potential ecological receptors include terrestrial plants, invertebrates, mammals, and birds. <u>Receptor Exposure Points:</u>

Regulatory Requirement	Phase Two Property Information
	Human exposure (resident, visitor) to COCs in soil via dermal contact, ingestion, inhalation of airborne particles. No contaminants were found in ground water and no complete exposure pathway is present. Ecological exposure (terrestrial plants) anticipated through root uptake and inhalation via wind erosion. The exposure to COCs by terrestrial invertebrates is expected through soil ingestion and dermal contact. The exposure to COCs of terrestrial mammals and birds is expected through soil ingestion, dermal contact, ingestion of plans and prey and inhalation via wind erosion. No contaminants were found in ground water and no complete exposure pathway is present.

The Phase Two CSM is shown in **Figure 11.**

7.0 CONCLUSIONS

Wood was retained by the Client to conduct a Phase Two ESA of a vacant property located on the west side of Montrose Road between McLeod Road and Charnwood Avenue in Niagara Falls, Ontario (the Phase Two Property). Currently, the property is owned by the Client. There were no buildings on the Phase Two Property.

A Phase One ESA report dated June 11, 2018 (Phase One ESA, Wood 2018), was completed by Wood to the standards outlined in Ontario Regulation 153/04 (*O. Reg. 153/04*) as amended. The Phase One ESA indicated PCAs and resulting APECs on the Phase One Property.

Amec Foster Wheeler also completed a SRP at the Phase Two Property to address metal-impacted soil.

The Client retained Wood to provide an evaluation of known and possible environmental issues at the Phase Two Property for the future development of the property for residential use. It is Wood's understanding that a RSC is required by the Client for the development of the Phase Two Property under 04 *Records of Site Condition, Part XV.1 of the Environmental Protection Act* (EPA), as amended (*O. Reg. 153/04*, as amended).

The primary findings of this Phase Two ESA are as follows:

- Wood excavated twenty-one testpits, drilled five boreholes, installed and monitored three monitoring wells, and completed hydrogeological testing and an elevation survey between March 5th and June 20th, 2018. The locations of the boreholes and monitoring wells were selected to address APECs which resulted from PCAs.

- The subsurface condition encountered at the Phase Two Property are described as having a topsoil layer in several of the boreholes and testpits ranging in depths from 0.10 to 0.20 mbgs. A Fill layer of various thickness and substrate was encountered in all testpits and boreholes starting at or near the surface and ranging from 2.0 to 6.1 mbgs. The fill material was heterogeneous across the Phase Two Property, consisting of crushed limestone, blast rock, silty clay, silty sand, and concrete. Native soils, consisting of silty clay/clayey silt, were present beneath the fill layer in all borehole locations, and in Testpits 1, 2, 3, 4, 5, 15, and 21.

- Trace amounts of debris including garbage, plastics, rubber, metal, wood, boulders, and construction debris were found in Testpits 1, 2, 11, and 16.

- Visual or olfactory evidence of petroleum hydrocarbon or other chemical impacts were not observed by Wood during the drilling and testpitting programs.

- It is Wood's opinion that the results of the combustible organic vapour (COV) and total organic vapour (TOV) head space screening program suggest a low potential for the presence of significant combustible soil headspace vapour levels in the boreholes and all testpits except TP4, where a TOV vapour reading of 112 ppm was measured, however, the laboratory results for this sample refute these findings.

- On June 20, 2018, following the completion of hydrogeological testing, the depth to ground water measured from surface ranged from approximately 3.14 to 4.50 mbgs which corresponds to geodetic elevations ranging from 188.23 to 192.34 mASL. Using the three-point method, the horizontal ground water flow was calculated to be towards the east which is towards Montrose Road with a gradient of approximately 0.04 metres/metre (m/m). The vertical hydraulic gradient was not measured as there was only one geologic unit. Based on falling head tests conducted in each of the three monitoring wells, the estimated hydraulic conductivity was 2.1×10^{-7} metres per second (m/s) in BH/MW1, 1.3×10^{-7} m/s in BH/MW2, and 1.6×10^{-6} m/s in BH/MW3.

- The assessment criteria applicable to the Phase Two Property, if a RSC was to be filed for the Phase Two Property are the Table 3 SCS for use in a non-potable ground water condition, residential/parkland/institutional property use for medium and fine textured soils.

- The results of the soil testing indicated an exceedance of the Table 3 SCS for cadmium and zinc in TP4 at a depth of 1.25 mbgs. No other exceedances of Table 3 SCS for metals, EC, SAR, VOCs, PHC (F1-F4), PAHs or PCBs were found at the Phase Two Property.

- The results of the ground water testing indicated no exceedances of the Table 3 SCS for metals, PHC (F1-F4), or BTEX at the Phase Two Property.

As such, upon completion of the Phase Two ESA, following a SRP, the Phase Two Property meets the Table 3 SCS and a RSC can be filed.

7.1 Signatures

The undersigned carried out the Phase Two ESA documented herein, including developed the Sampling and Analysis Plan, supervised all field activities, reviewing the resulting data and prepared this report, including the findings and conclusions presented herein, acting either as a Qualified Person or under the supervision of a Qualified Person. Any practice of geoscience documented within this report was undertaken by or under the supervision of a Professional Engineer or Professional Geoscientist licensed in the Province of Ontario.

This report was prepared for the exclusive use of Mariano's Holdings Inc. and is intended to provide information regarding the property located on Montrose Road between McLeod Road and Charnwood Avenue in Niagara Falls, Ontario at the time of the site field work. Wood shall provide written confirmation to any third party identified by Mariano's Holdings Inc. that such party may rely on any reports, documents and materials generated by Wood during this Project. Any use which an unauthorized third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third party. Should additional parties require reliance on this report, written authorization from Wood will be required.

The investigation undertaken by Wood with respect to this report and any conclusions or recommendations made in this report reflect Wood's judgment based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information available at the time of preparation of this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site, which were unavailable for direct investigation, which were not investigated directly. Wood has used its professional judgment in analyzing this information and formulating these conclusions.

Wood makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.

This Report is also subject to the further Standard Limitations attached in **Appendix H.**

We trust that the information presented in this report meets your current requirements. Should you have any questions or require further information, please contact the undersigned.

Yours truly,

Wood Environment & Infrastructure Solutions,
a Division of Wood Canada Limited.

Prepared by:

Cameron McCann, M.Sc.
Environmental Scientist

Reviewed by:

Patrick Shriner, P.Geo.
Associate, Environmental Geoscientist

8.0 REFERENCES

Wood Environment & Infrastructure Solutions, *Phase One Environmental Site Assessment, 5.64-Acre Parcel of Vacant Land, West Side of Montrose Road Between McLeod Road and Charnwood Avenue, Niagara Falls, Ontario,* dated November 26, 2018, prepared for Mariano's Holdings Inc.

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Precambrian Geology and Engineering and Terrain Geology, Ontario Geological Survey;. Map 2544. *Bedrock Geology of Ontario, Southern Sheet.* [Map]. 1991. 1:1,000,000.

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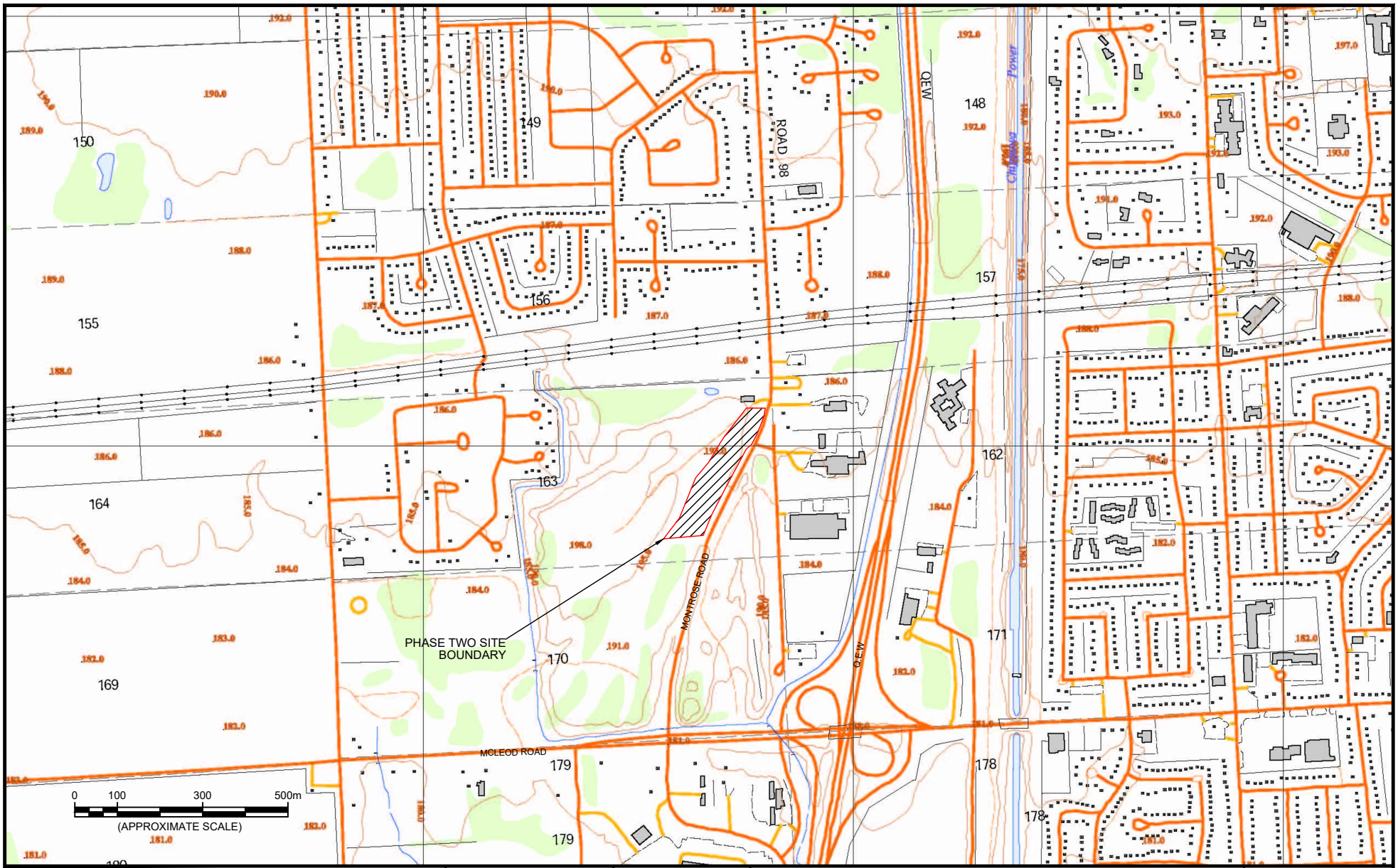
FIGURES



CLIENT: MARIANOS HOLDINGS INC.		DWN BY: ZF	PROJECT: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT MONTROSE ROAD, NIAGARA FALLS, ON
Wood Environment & Infrastructure Solutions 3300 Merrittville Hwy, Unit 5 Thorold, Ontario	wood.	CHK'D BY: PS	
		DATUM: NAD 83	
		PROJECTION: UTM ZONE 17T	TITLE: SITE LOCATION PLAN
		SCALE: AS SHOWN	

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	1

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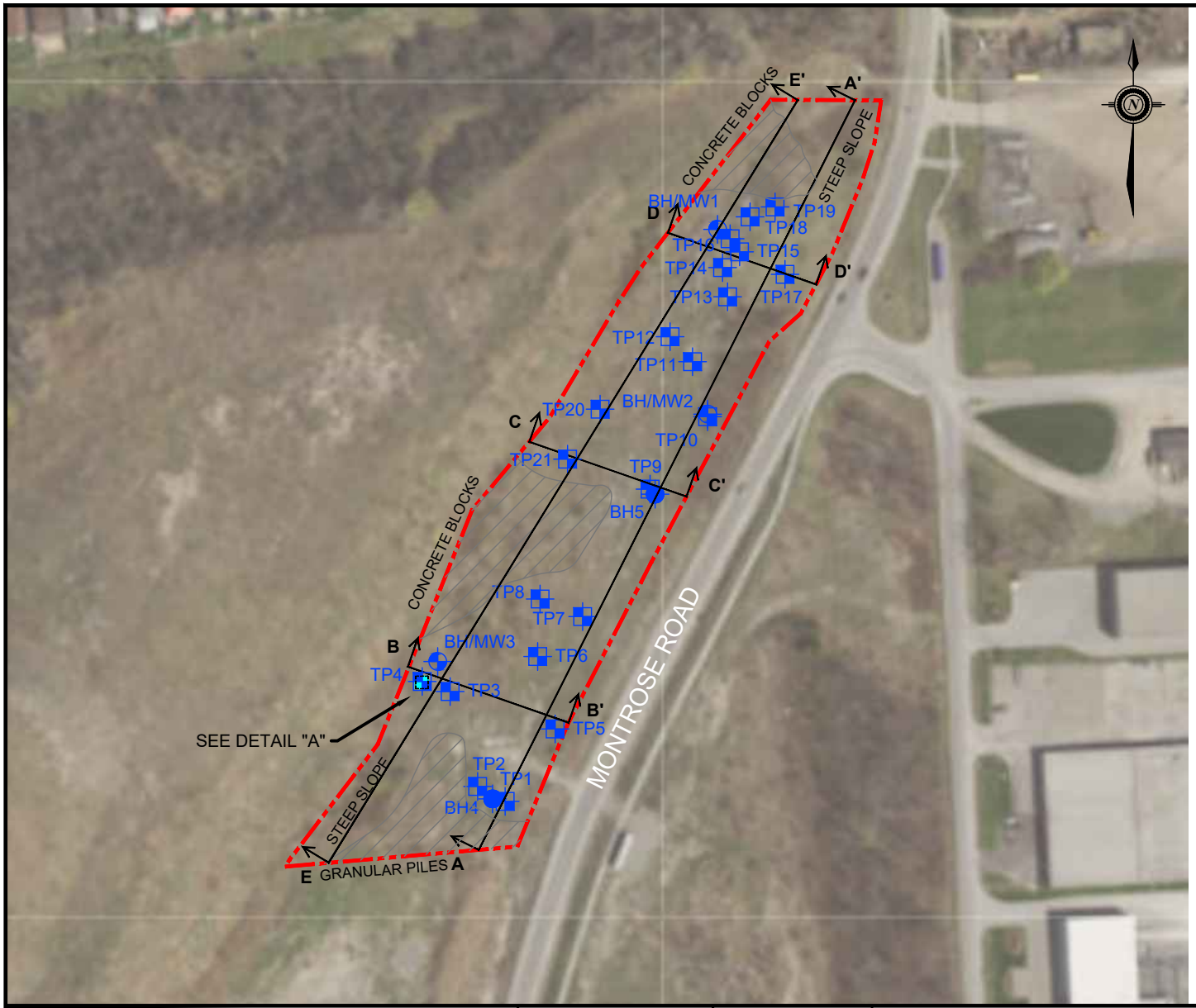
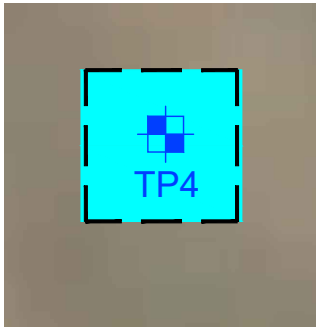


LEGEND:

- PHASE TWO PROPERTY BOUNDARY
- BOREHOLE
- BOREHOLE WITH MONITORING WELL
- TESTPIT
- CROSS SECTION LINE
- GRANULAR PILES (IMPORTED FROM QUARRY) / CONCRETE BLOCKS
- ACTUAL METAL IMPACTED SOIL REMOVED OFF-SITE DURING SOIL REMEDIATION PROGRAM
- ESTIMATED METAL IMPACTED SOIL REMOVED OFF-SITE DURING SOIL REMEDIATION PROGRAM

DETAIL A



0 5 10 15m

SCALE 1:250

REFERENCE: Base plan provided by Niagara Navigator.

0 50 100 150m

SCALE 1:2,500

CLIENT: MARIANOS HOLDINGS INC.		DWN BY: ZF	REV. NO.: A
Wood Environment & Infrastructure Solutions 3300 Merrittville Hwy, Unit 5 Thorold, Ontario	wood.	CHK'D BY: PS	DATE: AUGUST 2018
		DATUM: NAD 83	PROJECT NO: TG181021
		PROJECTION: UTM ZONE 17T	FIGURE No. 2
		SCALE: AS SHOWN	

PROJECT: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE: BOREHOLE, MONITORING WELL AND TESTPIT LOCATION PLAN

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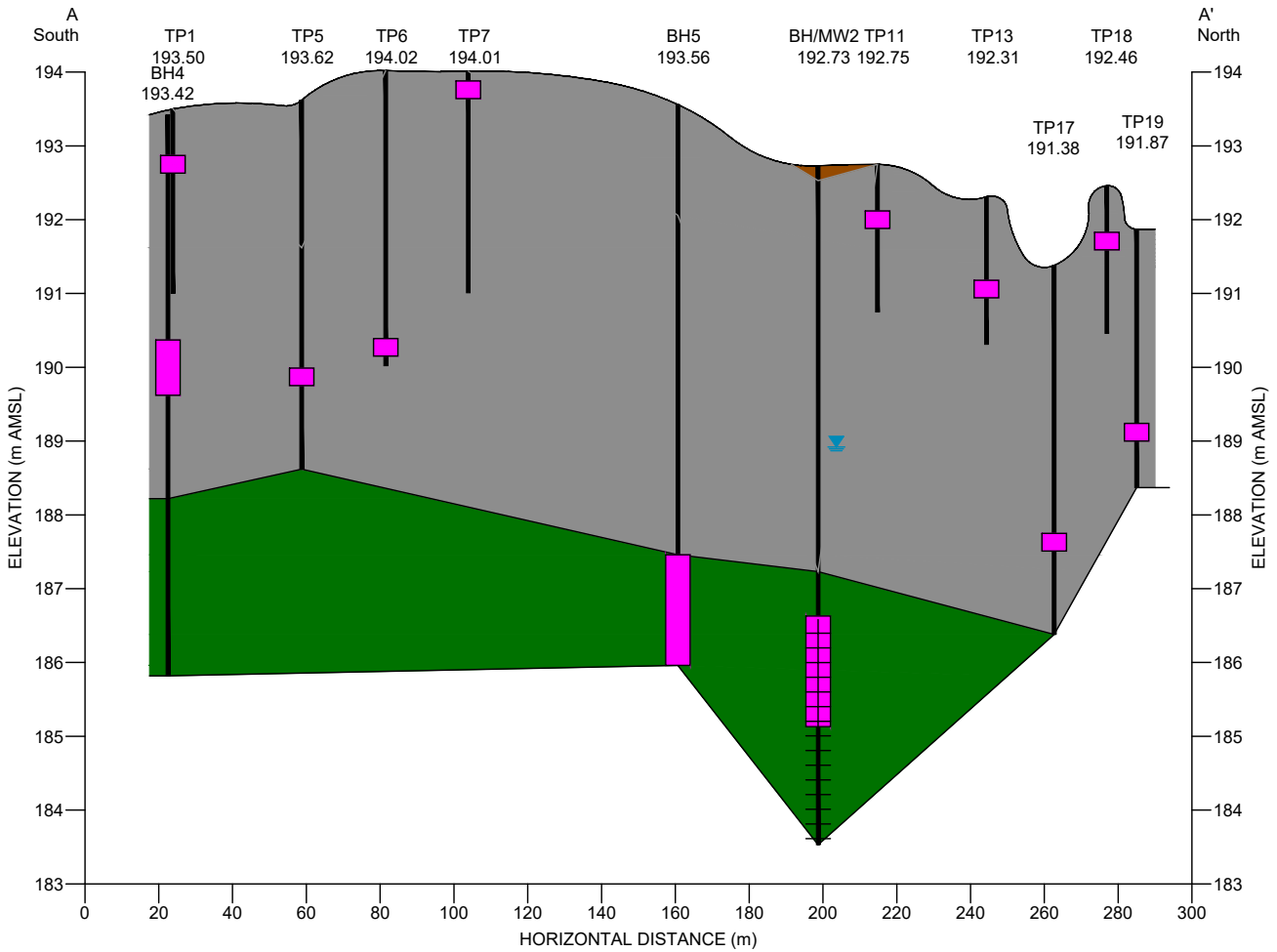

LEGEND:

- TOPSOIL
- FILL
- SILTY CLAY / CLAYEY SILT
- SCREEN INTERVAL
- GROUND WATER ELEVATION (JUNE 20, 2018)
- SAMPLE LOCATION FOR METALS ANALYSIS

CLIENT: MARIANOS HOLDINGS INC.	DWN BY: ZF	PROJECT: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT MONTROSE ROAD, NIAGARA FALLS, ON	REV. NO.: A
Wood Environment & Infrastructure Solutions 3300 Merrittville Hwy, Unit 5 Thorold, Ontario	CHK'D BY: PS		DATE: AUGUST 2018
wood.	DATUM: NAD 83		PROJECT NO: TG181021
	PROJECTION: UTM ZONE 17T	TITLE: CROSS SECTION A-A'	FIGURE No. 3
	SCALE: AS SHOWN		

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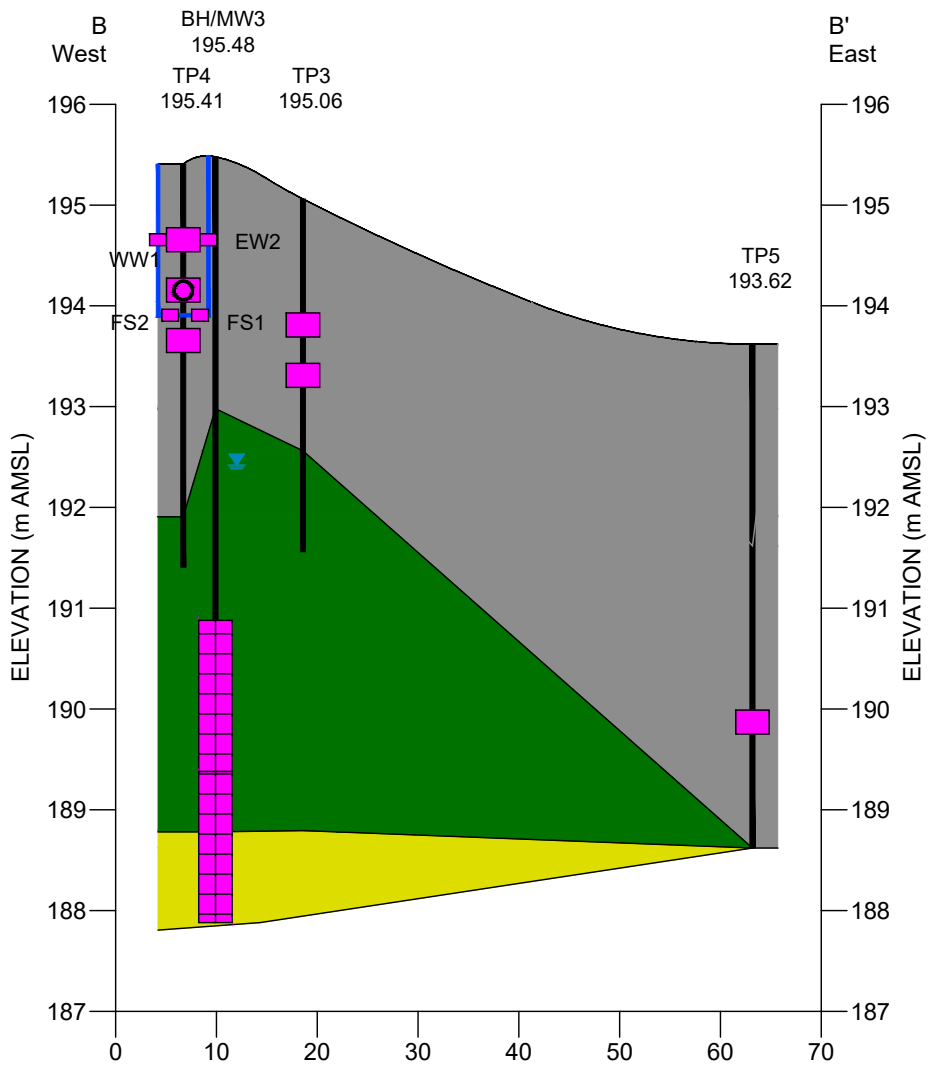

LEGEND:

- FILL
- SILTY CLAY / CLAYEY SILT
- SAND
- SCREEN INTERVAL
- GROUND WATER ELEVATION (JUNE 20, 2018)
- SAMPLE LOCATION FOR METALS ANALYSIS
- SAMPLE LOCATION FOR METALS ANALYSIS WITH TABLE 3 SCS EXCEEDANCE
- ACTUAL & ESTIMATED METAL-IMPACTED SOIL REMOVED OFF-SITE DURING SOIL REMEDIATION PROGRAM

CLIENT
MARIANOS HOLDINGS INC.

Wood Environment & Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

wood.

DWN BY:	ZF
CHK'D BY:	PS
DATUM:	NAD 83
PROJECTION:	UTM ZONE 17T
SCALE:	AS SHOWN

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE
CROSS SECTION B-B'

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	4

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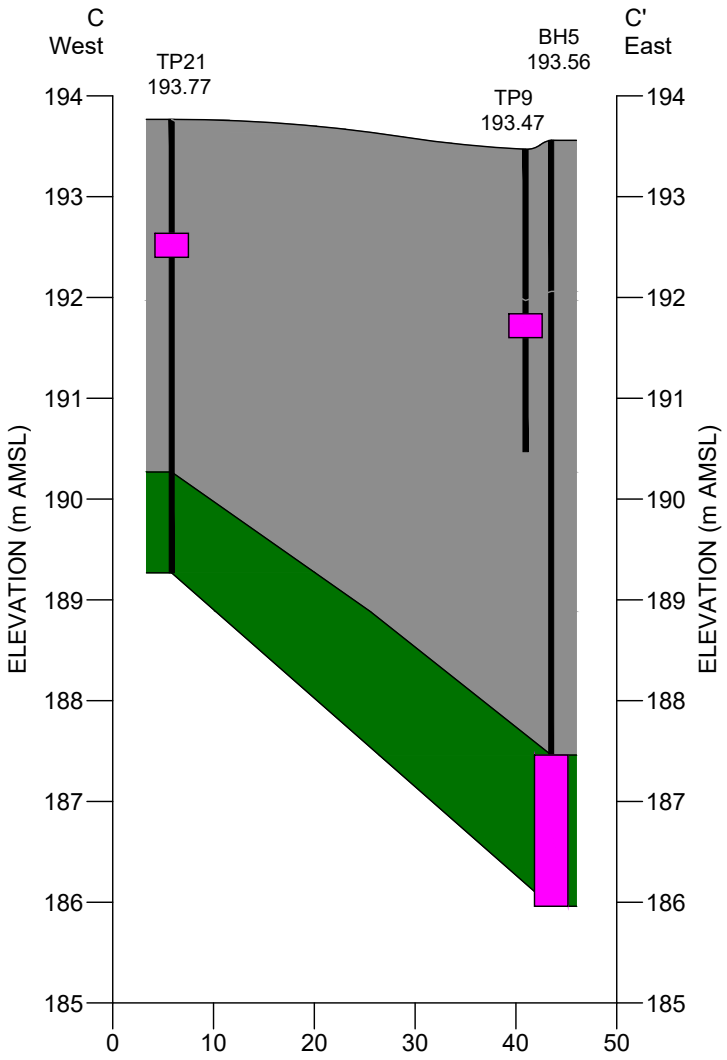

LEGEND:

- FILL
- SILTY CLAY / CLAYEY SILT
- SCREEN INTERVAL
- SAMPLE LOCATION FOR METALS ANALYSIS

CLIENT: MARIANOS HOLDINGS INC.		DWN BY: ZF	PROJECT: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT MONTROSE ROAD, NIAGARA FALLS, ON
Wood Environment & Infrastructure Solutions 3300 Merrittville Hwy, Unit 5 Thorold, Ontario	wood.	CHK'D BY: PS DATUM: NAD 83 PROJECTION: UTM ZONE 17T SCALE: AS SHOWN	TITLE: CROSS SECTION C-C'

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	5

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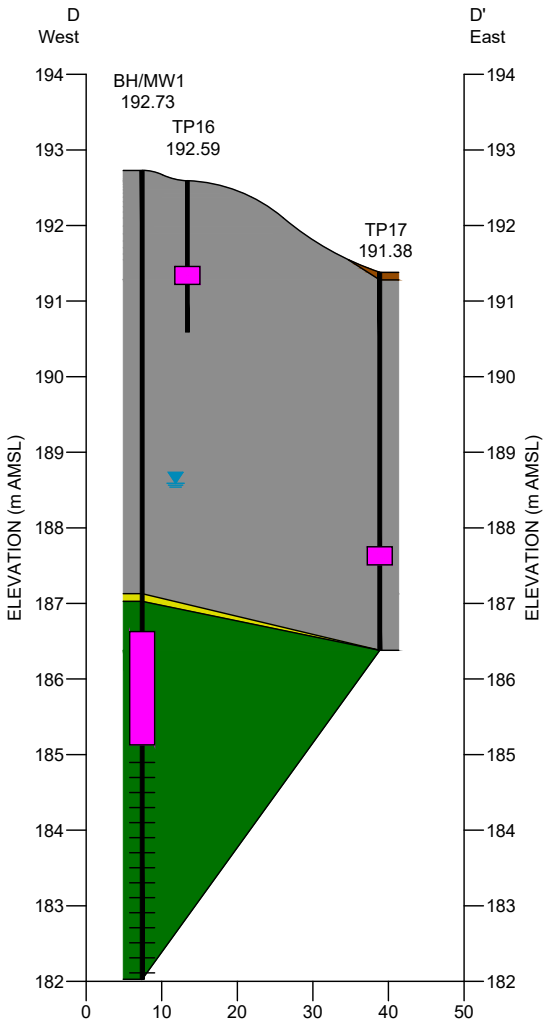

LEGEND:

- TOPSOIL
- FILL
- SILTY CLAY / CLAYEY SILT
- SAND
- SCREEN INTERVAL
- GROUND WATER ELEVATION (JUNE 20, 2018)
- SAMPLE LOCATION FOR METALS ANALYSIS

CLIENT: MARIANOS HOLDINGS INC.		DWN BY: ZF	PROJECT: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT MONTROSE ROAD, NIAGARA FALLS, ON	REV. NO.: A
		CHK'D BY: PS		DATE: AUGUST 2018
Wood Environment & Infrastructure Solutions 3300 Merrittville Hwy, Unit 5 Thorold, Ontario	wood.	DATUM: NAD 83		PROJECT NO: TG181021
		PROJECTION: UTM ZONE 17T	TITLE: CROSS SECTION D-D'	FIGURE No. 6
		SCALE: AS SHOWN		

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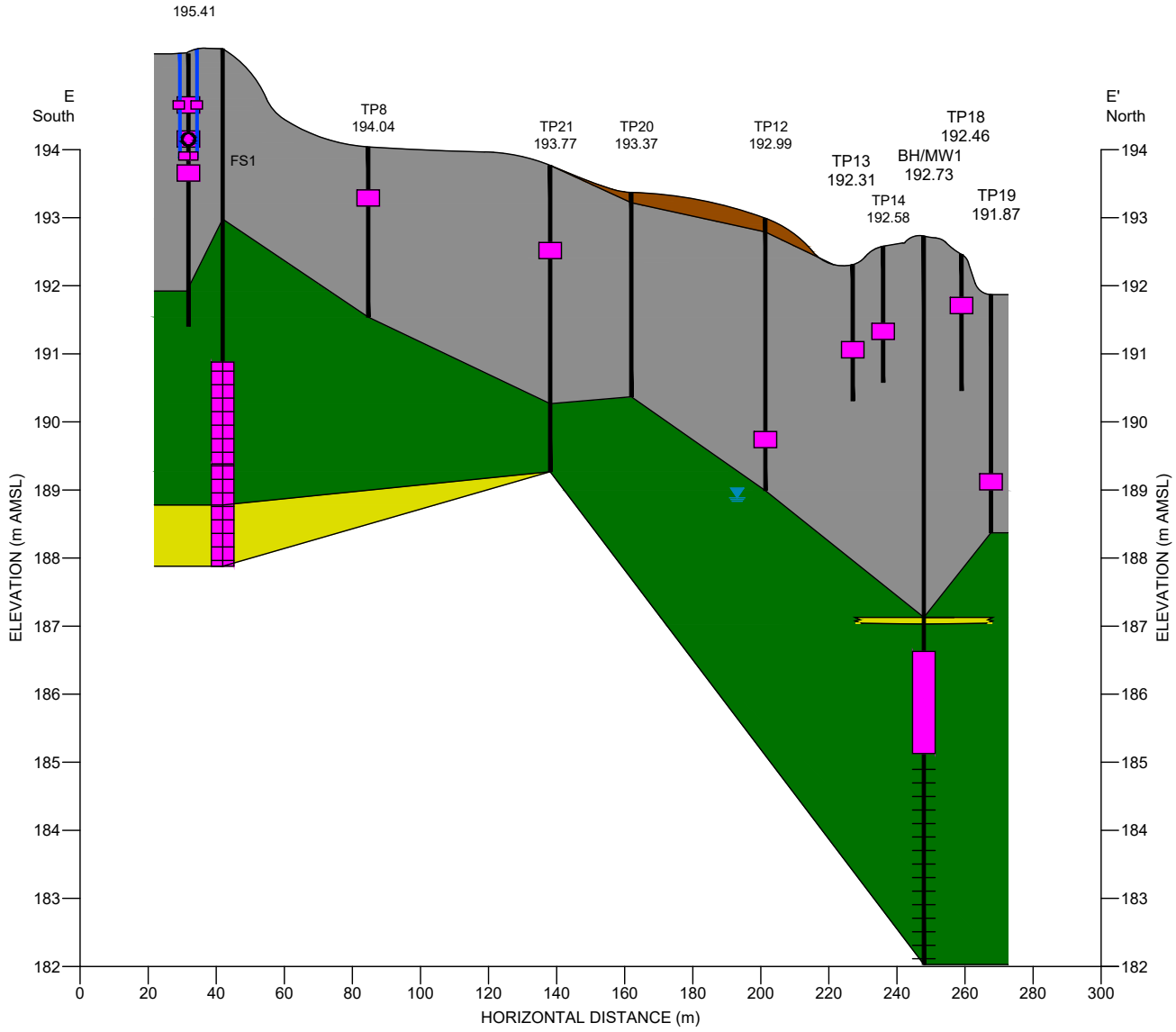

LEGEND:

- FILL
- SILTY CLAY / CLAYEY SILT
- SAND
- SCREEN INTERVAL
- GROUND WATER ELEVATION (JUNE 20, 2018)
- SAMPLE LOCATION FOR METALS ANALYSIS
- SAMPLE LOCATION FOR METALS ANALYSIS WITH TABLE 3 SCS EXCEEDANCE
- ACTUAL & ESTIMATED METAL-IMPACTED SOIL REMOVED OFF-SITE DURING SOIL REMEDIATION PROGRAM

CLIENT
MARIANOS HOLDINGS INC.

Wood Environment & Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

wood.

DWN BY:	ZF
CHK'D BY:	PS
DATUM:	NAD 83
PROJECTION:	UTM ZONE 17T
SCALE:	AS SHOWN

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE
CROSS SECTION E-E'

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	7

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LEGEND:

- PHASE TWO PROPERTY BOUNDARY
- BOREHOLE WITH MONITORING WELL
- 192.42 GROUND WATER ELEVATION
- INTERPRETED GROUND WATER FLOW DIRECTION

REFERENCE: Base plan provided by Niagara Navigator.

0 50 100 150m

SCALE 1:2,500

CLIENT

MARIANOS HOLDINGS INC.

Wood Environment & Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

wood.

DWN BY:	8
CHK'D BY:	PS
DATUM:	NAD 83
PROJECTION:	UTM ZONE 17T
SCALE:	AS SHOWN

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE

INTERPRETED GROUND WATER FLOW PLAN - JUNE 20, 2018

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	8

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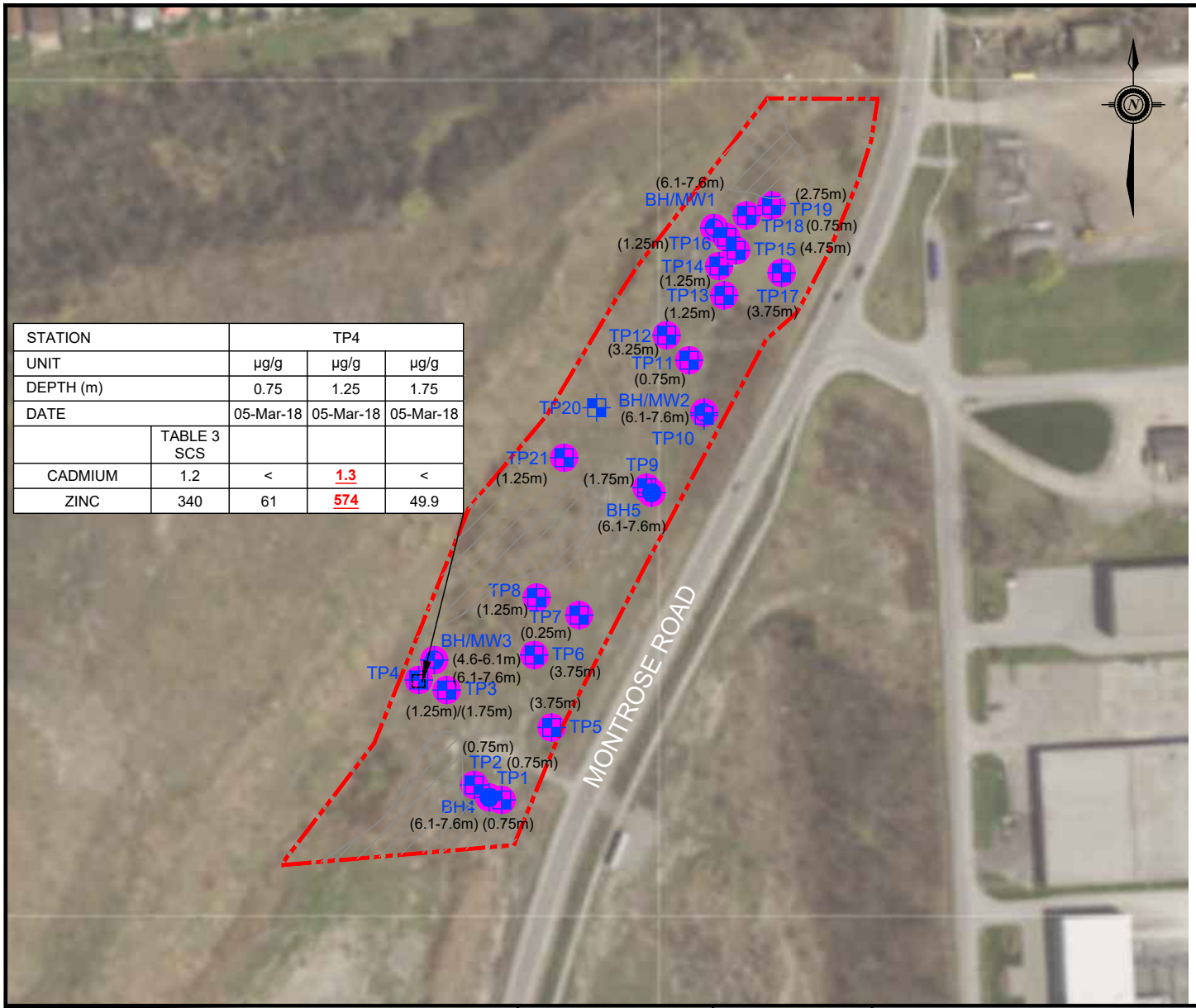
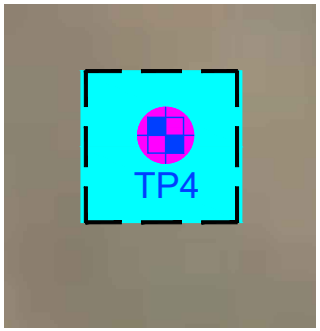


STATION		TP4		
UNIT		µg/g	µg/g	µg/g
DEPTH (m)		0.75	1.25	1.75
DATE		05-Mar-18	05-Mar-18	05-Mar-18
	TABLE 3 SCS			
CADMIUM	1.2	<	1.3	<
ZINC	340	61	574	49.9

LEGEND:

- PHASE TWO PROPERTY BOUNDARY
- BOREHOLE
- BOREHOLE WITH MONITORING WELL
- TESTPIT
- (0.1m) DEPTHS OF SOIL SAMPLE INDICATED IN METRES
- 180 INDICATES VALUE EXCEEDS THE TABLE 3 SCS IN MICROGRAMS PER GRAM (µg/g) (REMEDIATED DURING SOIL REMEDIATION PROGRAM)
- SAMPLED FOR METALS, As, Se. Sb
- ACTUAL METAL IMPACTED SOIL REMOVED OFF-SITE DURING SOIL REMEDIATION PROGRAM
- ESTIMATED METAL IMPACTED SOIL REMOVED OFF-SITE DURING SOIL REMEDIATION PROGRAM

DETAIL A



REFERENCE: Base plan provided by Niagara Navigator.

0 50 100 150m

SCALE 1:2,500

CLIENT

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Wood Environment & Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

wood.

DWN BY:	ZF
CHK'D BY:	PS
DATUM:	NAD 83
PROJECTION:	UTM ZONE 17T
SCALE:	AS SHOWN

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE

SOIL SAMPLE LOCATIONS AND TABLE 3 EXCEEDANCES FOR METALS, As, Se, Sb

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	9A

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LEGEND:

- PHASE TWO PROPERTY BOUNDARY
- BOREHOLE
- BOREHOLE WITH MONITORING WELL
- TESTPIT
- (0.1m) DEPTHS OF SOIL SAMPLE INDICATED IN METRES
- SAMPLED FOR EC & SAR

REFERENCE: Base plan provided by Niagara Navigator.

0 50 100 150m

SCALE 1:2,500

CLIENT

MARIANOS HOLDINGS INC.

Wood Environment & Infrastructure Solutions

3300 Merrittville Hwy, Unit 5
Thorold, Ontario

wood.

DWN BY:	ZF
CHK'D BY:	PS
DATUM:	NAD 83
PROJECTION:	UTM ZONE 17T
SCALE:	AS SHOWN

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE

SOIL SAMPLE LOCATIONS - EC AND SAR

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	9B

C:\Users\zhanna.furman\appdata\local\temp\AcPublish_1660\TG181021.dwg – Figure 9B – Dec. 06, 2018 9:46am – zhanna.furman

LEGEND:

- PHASE TWO PROPERTY BOUNDARY
- BOREHOLE
- BOREHOLE WITH MONITORING WELL
- TESTPIT
- (0.1m) DEPTHS OF SOIL SAMPLE INDICATED IN METRES
- SAMPLED FOR VOCs
- SOIL FOR BTEX

REFERENCE: Base plan provided by Niagara Navigator.

0 50 100 150m

SCALE 1:2,500

CLIENT

MARIANOS HOLDINGS INC.

Wood Environment & Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

wood.

DWN BY:	ZF
CHK'D BY:	PS
DATUM:	NAD 83
PROJECTION:	UTM ZONE 17T
SCALE:	AS SHOWN

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE

SOIL SAMPLE LOCATIONS - VOCs

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	9C

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LEGEND:

- PHASE TWO PROPERTY BOUNDARY
- BOREHOLE
- BOREHOLE WITH MONITORING WELL
- TESTPIT
- (0.1m) DEPTHS OF SOIL SAMPLE INDICATED IN METRES
- SAMPLED FOR PHCs

REFERENCE: Base plan provided by Niagara Navigator.

0 50 100 150m

SCALE 1:2,500

CLIENT

MARIANOS HOLDINGS INC.

Wood Environment & Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

wood.

DWN BY:	ZF
CHK'D BY:	PS
DATUM:	NAD 83
PROJECTION:	UTM ZONE 17T
SCALE:	AS SHOWN

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE

SOIL SAMPLE LOCATIONS - PHCs

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	9D

C:\Users\zhanna.furman\appdata\local\temp\AcPublish_1660\TG181021.dwg – Figure 9D – Dec. 06, 2018 9:46am – zhanna.furman

LEGEND:

- PHASE TWO PROPERTY BOUNDARY
- BOREHOLE
- BOREHOLE WITH MONITORING WELL
- TESTPIT
- (0.1m) DEPTHS OF SOIL SAMPLE INDICATED IN METRES
- SAMPLED FOR PCBs

REFERENCE: Base plan provided by Niagara Navigator.

0 50 100 150m

SCALE 1:2,500

CLIENT

MARIANOS HOLDINGS INC.

Wood Environment & Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

wood.

DWN BY:	ZF
CHK'D BY:	PS
DATUM:	NAD 83
PROJECTION:	UTM ZONE 17T
SCALE:	AS SHOWN

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE

SOIL SAMPLE LOCATIONS - PCBs

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	9E

C:\Users\zhanna.furman\appdata\local\temp\AcPublish_1660\TG181021.dwg – Figure 9E – Dec. 06, 2018 9:46am – zhanna.furman

LEGEND:

- PHASE TWO PROPERTY BOUNDARY
- BOREHOLE
- BOREHOLE WITH MONITORING WELL
- TESTPIT
- (0.1m) DEPTHS OF SOIL SAMPLE INDICATED IN METRES
- SAMPLED FOR PAHs

REFERENCE: Base plan provided by Niagara Navigator.

0 50 100 150m

SCALE 1:2,500

CLIENT

MARIANOS HOLDINGS INC.

Wood Environment & Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

wood.

DWN BY:	ZF
CHK'D BY:	PS
DATUM:	NAD 83
PROJECTION:	UTM ZONE 17T
SCALE:	AS SHOWN

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE

SOIL SAMPLE LOCATIONS - PAHs

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	9F

C:\Users\zhanna.furman\appdata\local\temp\AcPublish_1660\TG181021.dwg – Figure 9F – Dec. 06, 2018 9:46am – zhanna.furman

LEGEND:

- PHASE TWO PROPERTY BOUNDARY
- BOREHOLE
- BOREHOLE WITH MONITORING WELL
- TESTPIT
- (0.1m) DEPTHS OF SOIL SAMPLE INDICATED IN METRES
- SAMPLED FOR Cr(VI), Hg AND B-HWS

REFERENCE: Base plan provided by Niagara Navigator.

0 50 100 150m

SCALE 1:2,500

CLIENT

MARIANOS HOLDINGS INC.

Wood Environment & Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

wood.

DWN BY:	ZF
CHK'D BY:	PS
DATUM:	NAD 83
PROJECTION:	UTM ZONE 17T
SCALE:	AS SHOWN

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE

SOIL SAMPLE LOCATIONS - Cr(VI), Hg AND B-HWS

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	9G

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LEGEND:

- PHASE TWO PROPERTY BOUNDARY
- BOREHOLE WITH MONITORING WELL
- (7.6-10.7m) SCREEN INTERVAL IN METRES
- SAMPLED FOR METALS

REFERENCE: Base plan provided by Niagara Navigator.

0 50 100 150m

SCALE 1:2,500

CLIENT MARIANOS HOLDINGS INC.		DWN BY: ZF	PROJECT PHASE TWO ENVIRONMENTAL SITE ASSESSMENT MONTROSE ROAD, NIAGARA FALLS, ON	REV. NO.: A
		CHK'D BY: PS		DATE: AUGUST 2018
Wood Environment & Infrastructure Solutions 3300 Merrittville Hwy, Unit 5 Thorold, Ontario	wood.	DATUM: NAD 83		PROJECT NO: TG181021
		PROJECTION: UTM ZONE 17T	TITLE GROUND WATER SAMPLE LOCATIONS - METALS	FIGURE No. 10A
		SCALE: AS SHOWN		

C:\Users\zhanna.furman\appdata\local\temp\AcPublish_1660\TG181021.dwg – Figure 10A – Dec. 06, 2018 9:46am – zhanna.furman

LEGEND:

- PHASE TWO PROPERTY BOUNDARY
- BOREHOLE WITH MONITORING WELL
- (7.6-10.7m) SCREEN INTERVAL IN METRES
- SAMPLED FOR BTEX/PHCs

REFERENCE: Base plan provided by Niagara Navigator.

0 50 100 150m

SCALE 1:2,500

CLIENT

MARIANOS HOLDINGS INC.

Wood Environment & Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

wood.

DWN BY:	ZF
CHK'D BY:	PS
DATUM:	NAD 83
PROJECTION:	UTM ZONE 17T
SCALE:	AS SHOWN

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE

GROUND WATER SAMPLE LOCATIONS - BTEX/PHCs

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	10B

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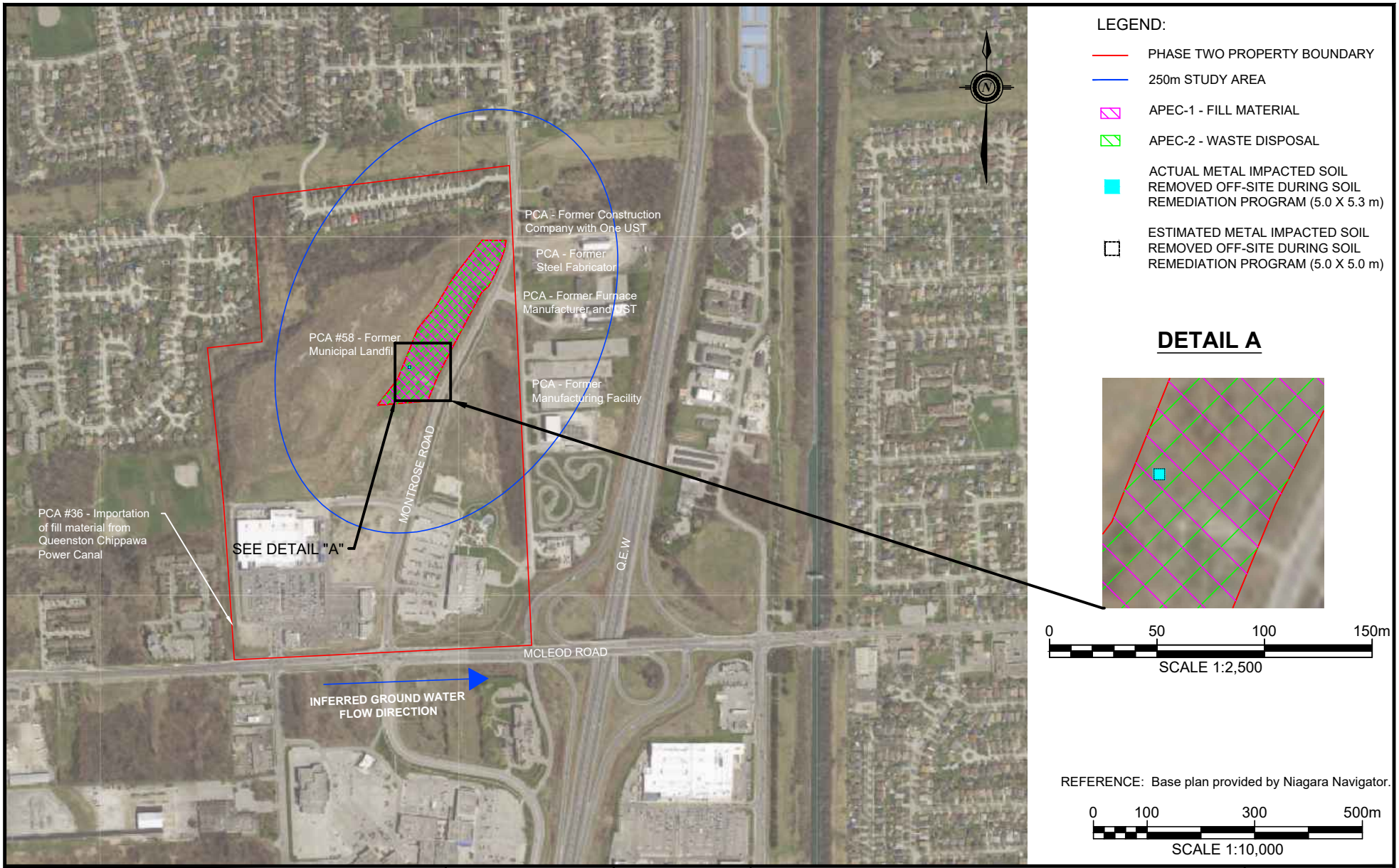


CLIENT

MARIANOS HOLDINGS INC.

Wood Environment & Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

wood.

DWN BY:	ZF
CHK'D BY:	PS
DATUM:	NAD 83
PROJECTION:	UTM ZONE 17T
SCALE:	AS SHOWN

PROJECT

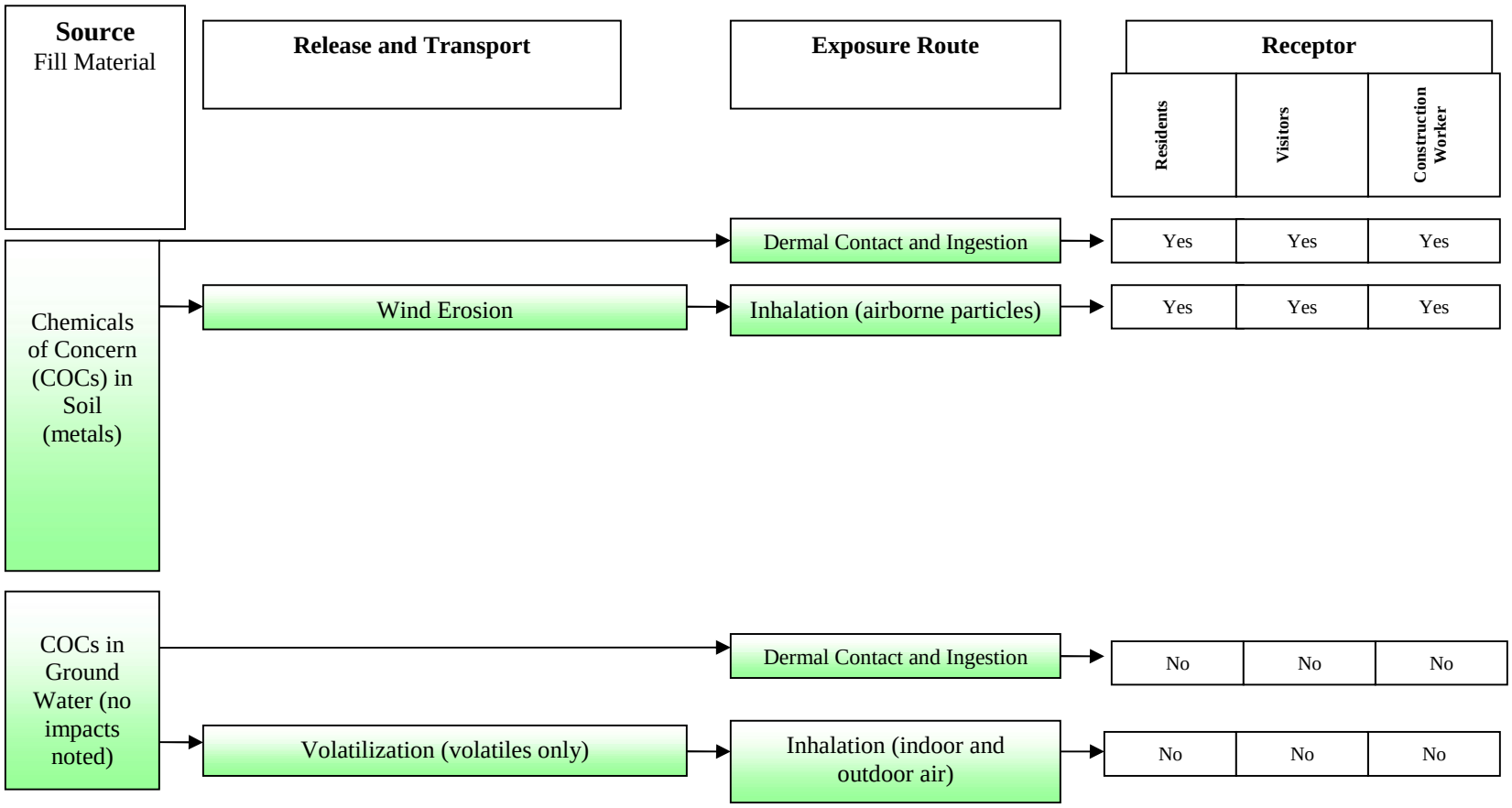
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
MONTROSE ROAD, NIAGARA FALLS, ON

TITLE

CONCEPTUAL SITE MODEL

REV. NO.:	A
DATE:	AUGUST 2018
PROJECT NO:	TG181021
FIGURE No.	11

R:\2018\Projects_Other\TG181021_Phase Two ESA\TG181021_CSM.dwg – Figure 11 – Dec. 06, 2018 11:52am – zhanna.furman



Legend: Yes – complete exposure pathway; No – incomplete exposure pathway (no receptor present); NA – not applicable.

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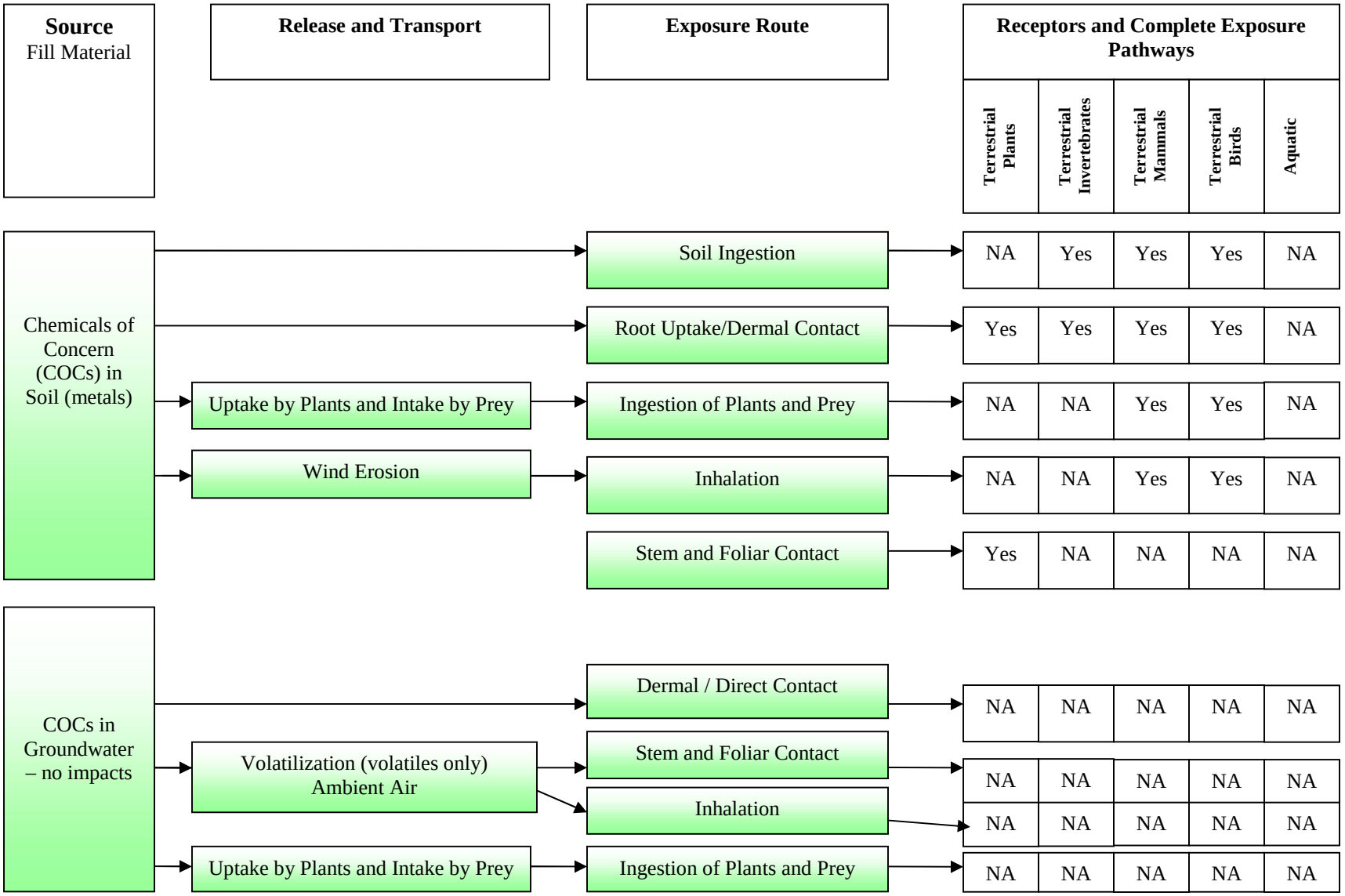
Figure 12: Human Health Conceptual Model
West Side of Montrose Road, Niagara Falls, Ontario

Project No.: TG181021

Date: August 2018



Legend: Yes – complete exposure pathway; NA – Not applicable / incomplete exposure pathway.

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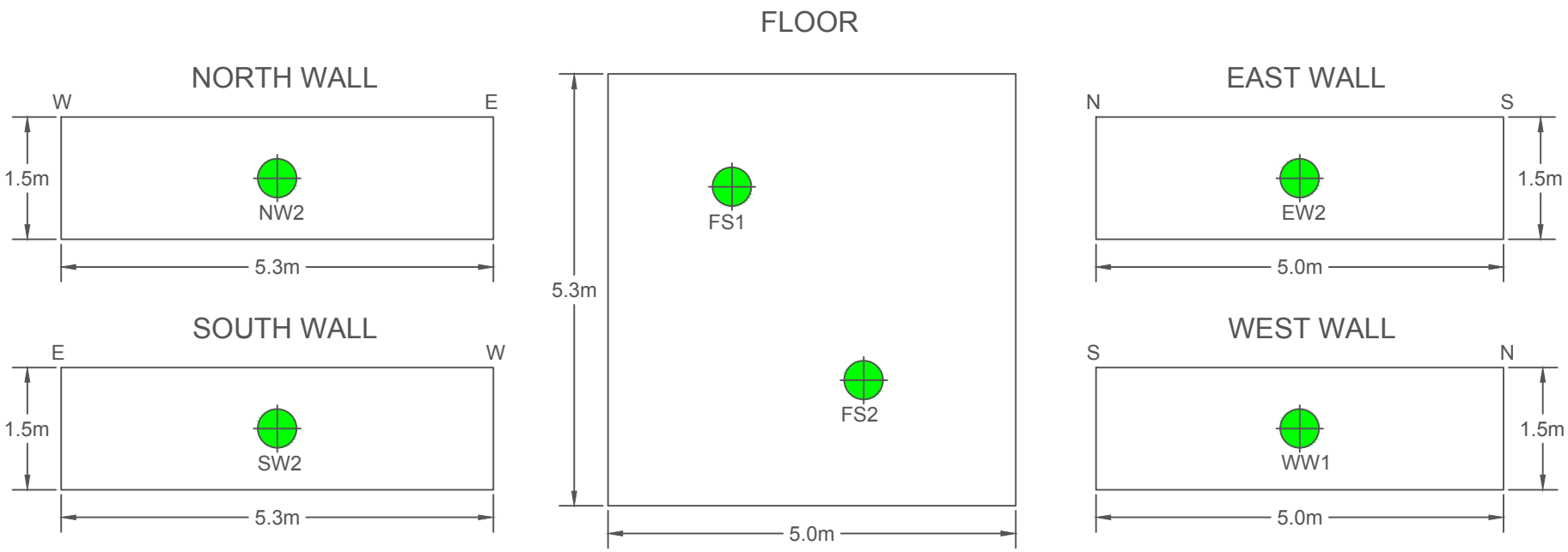
Figure 13: Ecological Conceptual Model
West Side of Montrose Road, Niagara Falls, Ontario

Project No.: TG181021

Date: August 2018



REFERENCE: Base plan provided by Niagara Navigator.

FOR ILLUSTRATION PURPOSES ONLY.

CLIENT:
Marianos Holdings Inc.

Wood Environment
Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

LEGEND:
SOIL SAMPLE SUBMITTED FOR LABORATORY ANALYSIS OF METALS

DWN BY: KH
CHK'D BY: PS
DATUM: NAD83
PROJECTION: UTM Zone 17
SCALE: AS SHOWN

PROJECT:
SOIL REMEDIATION PROGRAM
MONTROSE ROAD,
NIAGARA FALLS, ONTARIO

TITLE:
REMEDIATION AREA SAMPLING PLAN

REV. NO.: A
DATE: JULY 2018
PROJECT NO: TG181021
NO. :
FIGURE 14

TABLES

Table 1: Ground Water Elevation Data

Client: Marianos Holdings Inc.
Site: Montrose Road, Niagara Falls, ON
Project: TG181021

Well ID	Date Installed	Screen Length (m)	Top of screen (mbgs)	Surface Elevation (mASL)	TOR Elevation (mASL)	Difference between Surface and TOR Elevations	13-Mar-2018 Prior to Well Development			16-Mar-2018 Prior to Sampling			20-Jun-2018 Prior to Hydro G		
							GW Level (mbTOR)	GW Level (mbgs)	GW Elevation (mASL)	GW Level (mbTOR)	GW Level (mbgs)	GW Elevation (mASL)	GW Level (mbTOR)	GW Level (mbgs)	GW Elevation (mASL)
BH/MW1	7-Mar-18	3.05	7.62	192.78	193.91	1.13	4.73	3.60	189.18	4.45	3.32	189.46	5.32	4.19	188.59
BH/MW2	7-Mar-18	3.05	6.10	192.73	193.97	1.24	4.96	3.72	189.01	5.48	4.24	188.49	5.68	4.44	188.29
BH/MW3	7-Mar-18	3.05	4.57	195.48	196.76	1.28	3.77	2.49	192.99	3.81	2.53	192.95	4.34	3.06	192.42

Note: "m" means metres. "mbgs" means metres below ground surface. "mags" means metres above ground surface. "TOR" means top of riser. "mbTOR" means metres below top of riser pipe.

Table 2: Summary of Soil Analyses for General Inorganics and Metals

Client: Marianos Holdings Inc.
Site: Montrose Road, Niagara Falls, ON
Project: TG181021

Sample ID				TP1-2	TP2-2	Dup 3	Duplicate Average	RPD	TP3-3	TP3-4	TP3-6	TP4-2	TP4-3	TP4-4	TP5-4	Dup 12	Duplicate Average	RPD	TP6-8	TP7-1	TP8-1	TP9-1	TP11-2	TP12-7	TP13-3
Sample Depth (m)				0.75	0.75	Field Duplicate of TP2-2			1.25	1.75	2.75	0.75	1.25	1.75	3.75	Field Duplicate of TP5-4			3.75	0.25	1.25	1.75	0.75	3.25	1.25
Date Collected				6-Mar-18	5-Mar-18	6-Mar-18			5-Mar-18	5-Mar-18	5-Mar-18	5-Mar-18	5-Mar-18	5-Mar-18	6-Mar-18	6-Mar-18			5-Mar-18	6-Mar-18	5-Mar-18	6-Mar-18	6-Mar-18	6-Mar-18	6-Mar-18
Laboratory ID				1810288-01	1810288-02	1810288-23			1811259-01	1810288-03	1810288-04	1811259-02	1810288-05	1811259-03	1810288-06	1810288-25			1810288-07	1810288-08	1810288-09	1810288-10	1810288-11	1810288-12	1810288-13
Date Analyzed - SAR				-	12-Mar-18	12-Mar-18			-	-	-	-	12-Mar-18	-	-	-			-	-	-	-	12-Mar-18	-	-
Date Analyzed - Conductivity				-	9-Mar-18	9-Mar-18			-	-	-	-	9-Mar-18	-	-	-			-	-	-	-	9-Mar-18	-	-
Date Analyzed - pH				-	8-Mar-18	8-Mar-18			-	-	8-Mar-18	-	8-Mar-18	-	8-Mar-18	8-Mar-18			-	-	-	-	8-Mar-18	8-Mar-18	-
Date Analyzed - ICP Metals				10-Mar-18	10-Mar-18	10-Mar-18			16-Mar-18	10-Mar-18	-	16-Mar-18	10-Mar-18	16-Mar-18	10-Mar-18	10-Mar-18			10-Mar-18	10-Mar-18	10-Mar-18	10-Mar-18	10-Mar-18	10-Mar-18	10-Mar-18
Date Analyzed - Boron, available				-	10-Mar-18	10-Mar-18			-	-	-	-	-	-	-	-			-	-	-	-	10-Mar-18	-	-
Date Analyzed - Chromium VI				-	9-Mar-18	9-Mar-18			-	-	-	-	-	-	-	-			-	-	-	-	9-Mar-18	-	-
Date Analyzed - Mercury				-	10-Mar-18	10-Mar-18			-	-	-	-	-	-	-	-			-	-	-	-	10-Mar-18	-	-
Parameter	**Units**	**MDL**	**Table 3 SCS[a]**																						
General Inorganics																									
SAR	-	0.01	5	-	0.12	0.11	0.1	8%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06	-	-
Conductivity	µS/cm	5	700	-	531	624	578	**18%**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	165	-	-
pH	pH units	0.05	+	-	7.5	7.6	7.6	0.1 pH Units	-	-	7.8	-	-	-	7.7	7.7	7.7	0.0 pH Units	-	-	-	-	7.6	7.5	-
Metals																									
Antimony	µg/g	1.0	7.5	<	<	<	<	NC	<	<	-	<	<	<	<	<	<	NC	<	<	<	<	<	<	<
Arsenic	µg/g	1.0	18	4.6	4.9	3.7	4.3	NC	4.8	6.1	-	<	4.3	<	4.2	2.6	3.4	NC	3.8	5.3	2.6	6.1	5.0	4.2	2.6
Barium	µg/g	1.0	390	279	109	122	116	12%	102	132	-	111	107	109	147	77.0	112	**48%**	90.8	99.3	130	134	105	104	72.8
Beryllium	µg/g	1.0	5	<	<	<	<	NC	<	<	-	<	<	<	<	<	<	NC	<	<	<	<	<	<	<
Boron	µg/g	1.0	120	17.6	10.7	9.5	10.1	11%	8.4	12.0	-	12.6	14.3	14.6	10.7	6.3	8.5	**41%**	10.1	9.2	11.7	13.9	13.0	12.8	6.9
Boron, available	µg/g	0.5	1.5	-	0.6	0.6	0.6	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<	-	-
Cadmium	µg/g	0.5	1.2	<	<	<	<	NC	<	<	-	<	**1.3**	<	<	<	<	NC	<	<	<	<	<	<	<
Chromium	µg/g	1.0	160	47.3	23.2	34.9	29.1	**50%**	14.2	33.1	-	22.9	22.3	21.2	16.6	10.0	13.3	**40%**	15.4	17.5	19.1	24.6	20.4	19.2	10.6
Chromium (VI)	µg/g	0.2	10	-	<	<	<	NC	**-**	-	-	-	-	-	-	-	-	-	-	-	-	-	<	-	-
Cobalt	µg/g	1.0	22	12.2	9.1	8.6	8.9	5%	7.7	13.0	-	12.7	11.2	11.0	9.0	5.7	7.4	**37%**	8.7	9.0	10.1	11.9	10.3	10.1	6.0
Copper	µg/g	1.0	180	46.4	31.5	41.3	36.4	**31%**	11.8	23.1	-	20.1	19.9	18.3	14.5	8.0	11.3	**45%**	13.1	17.2	19.2	22.1	20.2	20.2	9.5
Lead	µg/g	1.0	120	21.7	19.1	30.5	24.8	**60%**	8.7	14.7	-	12.8	11.8	11.0	7.3	5.1	6.2	**30%**	6.4	18.8	13.2	15.0	16.9	17.6	4.8
Mercury	µg/g	0.1	1.8	-	<	<	<	NC	**-**	-	-	-	-	-	-	-	-	-	-	-	-	-	<	-	-
Molybdenum	µg/g	1.0	6.9	1.4	<	<	<	NC	**<**	<	-	<	<	<	<	<	<	NC	<	<	<	<	<	<	<
Nickel	µg/g	1.0	130	27.9	20.8	19.1	20.0	8%	16.1	32.6	-	25.8	24.9	24.9	19.0	11.8	15.4	**38%**	18.7	19.1	23.8	28.5	21.7	22.2	12.8
Selenium	µg/g	1.0	2.4	<	<	1.1	1.1	NC	<	<	-	<	<	<	<	<	<	NC	<	<	<	<	<	<	<
Silver	µg/g	0.5	25	<	<	<	<	NC	<	<	-	<	<	<	<	<	<	NC	<	<	<	<	<	<	<
Thallium	µg/g	1.0	1	<	<	<	<	NC	<	<	-	<	<	<	<	<	<	NC	<	<	<	<	<	<	<
Uranium	µg/g	1.0	23	<	<	<	<	NC	<	<	-	<	<	<	<	<	<	NC	<	<	<	<	<	<	<
Vanadium	µg/g	1.0	86	33.6	26.2	23.3	24.8	11%	21.3	38.7	-	32.3	32.8	30.0	24.8	15.5	20.2	**38%**	23.2	25.8	27.9	36.6	32.0	30.1	17.5
Zinc	µg/g	1.0	340	196	79.1	73.5	76.3	7%	35.6	61.0	-	61.000	**574**	49.9	40.4	30.2	35.3	25%	38.1	50.0	52.6	71.2	60.6	57.7	30.2

Notes:
"a" - Table 3: Full Depth Generic Site Condition Standards for residential property use; established in "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the* Environmental Protection Act", Ontario Ministry of the Environment and Climate Change, 15 April 2011 (MOECC). SCS for medium to fine textured soils utilized.

Bolded values exceed the Table 3 SCS.

"µg/g" - micrograms per gram, parts per million.

"MDL" - method detection limit.

"<" - sample results less than the MDL.

"-" - not applicable or parameter not analyzed.

"Duplicate Average" - average of results of sample and it's field duplicate; where parameter <MDL, MDL used to calculate average. Note: the duplicate average must exceed the SCS for there to be an exceedance.

"RPD" - relative percent difference.

"NC" - RPD not calculable as both values are not greater than 5x the MDL.

Bold - means RPD outside of the sample duplicate value as outlined in the 2011 Analytical Protocol (Metals 30%, Chromium (VI) 35%, Mercury 30%, pH 0.3 pH units, Conductivity 10%,).

"+" means as per O. Reg. 153/04 as amended, in order to apply the generic Site Condition Standards, pH for surface soil (<1.5 mbgs) should be between 5 and 9 and pH for subsurface soil (>1.5 mbgs) should be between 5 and 11.

Table 2: Summary of Soil Analyses for General Inorganics and Metals

Client: Marianos Holdings Inc.
Site: Montrose Road, Niagara Falls, ON
Project: TG181021

Sample ID				TP14-3	Dup 11	Duplicate Average	RPD	TP15-10	TP16-3	TP17-8	TP18-2	TP19-6	TP20-1	TP21-3	TP21-9	BH/MW1-5c	BH/MW2-2c	BH/MW3-1c	BH/MW3-2	BH4-3c	BH5-3c
Sample Depth (m)				1.25	Field Duplicate of TP14-3			4.75	1.25	3.75	0.75	2.75	1.0	1.25	4.25	6.1-7.6	6.1-7.6	4.6-6.1	6.1-7.6	6.1-7.6	6.1-7.6
Date Collected				6-Mar-18	6-Mar-18			5-Mar-18	6-Mar-18	5-Mar-18	6-Mar-18	6-Mar-18	6-Mar-18	6-Mar-18	6-Mar-18	7-Mar-18	7-Mar-18	7-Mar-18	7-Mar-18	7-Mar-18	7-Mar-18
Laboratory ID				1810288-14	1810288-24			1810288-15	1810288-16	1810288-17	1810288-18	1810288-19	1810288-20	1810288-21	1810288-22	1810374-02	1810374-03	1810374-05	1811261-01	1810374-06	1810374-07
Date Analyzed - SAR				-	-			-	-	-	12-Mar-18	-	-	-	-	-	-	-	-	-	-
Date Analyzed - Conductivity				-	-			-	-	-	9-Mar-18	-	-	-	-	-	-	-	-	-	-
Date Analyzed - pH				-	-	(Average between TP14-3 and Dup 11)	(Between TP14-3 and Dup 11)	8-Mar-18	-	-	8-Mar-18	-	8-Mar-18	-	8-Mar-18	-	-	-	-	-	-
Date Analyzed - ICP Metals				10-Mar-18	10-Mar-18			10-Mar-18	10-Mar-18	10-Mar-18	10-Mar-18	10-Mar-18	-	10-Mar-18	-	10-Mar-18	10-Mar-18	10-Mar-18	16-Mar-18	10-Mar-18	10-Mar-18
Date Analyzed - Boron, available				-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Date Analyzed - Chromium VI				-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Date Analyzed - Mercury				-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parameter	**Units**	**MDL**	**Table 3 SCS[a]**																		
General Inorganics																					
SAR	-	0.01	5	-	-	-	-	-	-	-	0.09	-	-	-	-	-	-	-	-	-	-
Conductivity	µS/cm	5	700	-	-	-	-	-	-	-	171	-	-	-	-	-	-	-	-	-	-
pH	pH units	0.05	+	-	-	-	-	7.6	-	-	7.6	-	7.6	-	7.6	-	-	-	-	-	-
Metals																					
Antimony	µg/g	1.0	7.5	<	<	<	NC	<	<	<	<	<	-	<	-	<	<	<	<	<	<
Arsenic	µg/g	1.0	18	5.8	4.0	4.9	NC	3.5	4.8	2.6	4.0	3.7	-	6.4	-	5.4	4.0	4.6	<	5.2	6.6
Barium	µg/g	1.0	390	107	81.2	94.1	24%	123	106	29.9	95.6	71.7	-	100	-	140	146	107	63.1	119	119
Beryllium	µg/g	1.0	5	<	<	<	NC	<	<	<	<	<	-	<	-	<	<	<	<	<	<
Boron	µg/g	1.0	120	9.7	10.5	10.1	8%	9.4	8.5	3.2	9.1	4.9	-	13.9	-	20.1	14.1	12.5	7.0	14.4	14.5
Boron, available	µg/g	0.5	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	µg/g	0.5	1.2	<	<	<	NC	<	<	<	<	<	-	<	-	<	<	<	<	<	<
Chromium	µg/g	1.0	160	20.2	19.2	19.7	5%	24.7	17.5	4.8	18.8	11.8	-	60.4	-	23.3	17.1	18.1	12.9	22.7	19.7
Chromium (VI)	µg/g	0.2	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	µg/g	1.0	22	12.0	9.6	10.8	20%	10.9	8.8	3.1	9.7	5.9	-	11.8	-	13.0	9.0	9.9	6.6	10.9	9.6
Copper	µg/g	1.0	180	17.4	17.9	17.7	3%	19.4	19.9	4.5	15.5	8.4	-	43.4	-	20.1	14.2	14.8	12.4	19.0	17.4
Lead	µg/g	1.0	120	12.0	10.4	11.2	13%	10.8	19.2	2.5	9.9	6.2	-	47.7	-	10.5	7.4	7.6	5.4	9.0	9.2
Mercury	µg/g	0.1	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	µg/g	1.0	6.9	<	<	<	NC	<	<	<	<	<	-	<	-	<	<	<	<	<	<
Nickel	µg/g	1.0	130	23.0	21.5	22.3	7%	26.4	19.1	5.8	20.6	11.6	-	28.4	-	25.7	19.3	21.2	14.1	24.1	21.7
Selenium	µg/g	1.0	2.4	<	<	<	NC	<	<	<	<	<	-	<	-	<	<	<	<	<	<
Silver	µg/g	0.5	25	<	<	<	NC	<	<	<	<	<	-	<	-	<	<	<	<	<	<
Thallium	µg/g	1.0	1	<	<	<	NC	<	<	<	<	<	-	<	-	<	<	<	<	<	<
Uranium	µg/g	1.0	23	<	<	<	NC	<	<	<	<	<	-	<	-	<	<	<	<	<	<
Vanadium	µg/g	1.0	86	29.8	28.5	29.2	4%	36.0	26.5	10.3	29.3	19.8	-	35.0	-	34.2	26.6	27.6	20.2	35.1	30.1
Zinc	µg/g	1.0	340	50.6	47.5	49.1	6%	50.7	65.2	12.7	50.4	30.1	-	91.7	-	52.6	39.6	41.0	30.3	46.7	50.6

Notes:
"a" - Table 3: Full Depth Generic Site Condition Standards for residential property u

Bolded values exceed the Table 3 SCS.

"µg/g" - micrograms per gram, parts per million.

"MDL" - method detection limit.

"<" - sample results less than the MDL.

"-" - not applicable or parameter not analyzed.

"Duplicate Average" - average of results of sample and it's field duplicate; where pa

"RPD" - relative percent difference.

"NC" - RPD not calculable as both values are not greater than 5x the MDL.

Bold - means RPD outside of the sample duplicate value as outlined in the 2011 A

"+" means as per O. Reg. 153/04 as amended, in order to apply the generic Site Co

Table 3: Summary of Soil Analyses for PAHs and PCBs

Client: Marianos Holdings Inc.
Site: Montrose Road, Niagara Falls, ON
Project: TG181021

Sample ID				TP2-2	Dup 3	Duplicate Average	RPD	TP11-2
Sample Depth (m)				0.75	Field Duplicate of TP2-2	(Average between TP2-2 and Dup 3)	(Between TP2-2 and Dup 3)	0.75
Date Collected				5-Mar-18	6-Mar-18			6-Mar-18
Laboratory ID				**1810288-02**	**1810288-23**			**1810288-11**
Date Analyzed - PAHs				10-Mar-18	10-Mar-18			10-Mar-18
Date Analyzed - PCBs				10-Mar-18	10-Mar-18			10-Mar-18
Parameter	**Units**	**MDL**	**Table 3 SCS[a]**					
Semi-Volatiles								
Acenaphthene	µg/g	0.02	58	<	<	<	NC	<
Acenaphthylene	µg/g	0.02	0.17	<	0.02	0.02	NC	<
Anthracene	µg/g	0.02	0.74	0.04	0.05	0.05	NC	<
Benzo[a]anthracene	µg/g	0.02	0.63	0.09	0.12	0.11	NC	<
Benzo[a]pyrene	µg/g	0.02	0.3	0.08	0.12	0.10	NC	<
Benzo[b]fluoranthene	µg/g	0.02	0.78	0.10	0.14	0.12	NC	0.02
Benzo[g,h,i]perylene	µg/g	0.02	7.8	0.04	0.09	0.07	NC	<
Benzo[k]fluoranthene	µg/g	0.02	0.78	0.05	0.08	0.07	NC	<
Chrysene	µg/g	0.02	7.8	0.11	0.13	0.12	18%	<
Dibenzo[a,h]anthracene	µg/g	0.02	0.1	<	0.02	0.02	NC	<
Fluoranthene	µg/g	0.02	0.69	0.22	0.32	0.27	**45%**	0.04
Fluorene	µg/g	0.02	69	<	<	<	NC	<
Indeno[1,2,3-cd]pyrene	µg/g	0.02	0.48	0.05	0.08	0.07	NC	<
1-Methylnaphthalene	µg/g	0.02	3.4	<	<	<	NC	<
2-Methylnaphthalene	µg/g	0.02	3.4	0.03	0.02	0.03	NC	<
Methylnaphthalene (1&2)	µg/g	0.04	3.4	0.04	<	0.04	NC	<
Naphthalene	µg/g	0.01	0.75	0.01	0.02	0.02	NC	<
Phenanthrene	µg/g	0.02	7.8	0.11	0.16	0.14	**45%**	0.02
Pyrene	µg/g	0.02	78	0.22	0.27	0.25	23%	0.03
PCBs								
PCBs, total	µg/g	0.05	0.35	<	<	<	NC	<

Notes:

"a" - Table 3: Full Depth Generic Site Condition Standards for residential property use; established in "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the* Environmental Protection Act", Ontario Ministry of the Environment and Climate Change, 15 April 2011 (MOECC). SCS for medium to fine textured soils utilized.

Bolded values exceed the Table 3 SCS.

"µg/g" - micrograms per gram, parts per million.

"MDL" - method detection limit.

"<" - sample results less than the MDL.

"-" - not applicable or parameter not analyzed.

"Duplicate Average" - average of results of sample and it's field duplicate; where parameter <MDL, MDL used to calculate average. Note: the duplicate average must exceed the SCS for there to be an exceedance.

"RPD" - relative percent difference.

"NC" - RPD not calculable as both values are not greater than 5x the MDL.

Bold - means RPD outside of the sample duplicate value as outlined in the 2011 Analytical Protocol (PAHs 40%, PCBs 40%).

Table 4: Summary of Soil Analyses for PHCs, VOCs, and BTEX

Client: Marianos Holdings Inc.
Site: Montrose Road, Niagara Falls, ON
Project: TG181021

Sample ID				TP2-2	Dup 3	Duplicate Average	RPD	TP3-3	TP4-3	TP11-2	TP16-3	TP21-3	BH/MW1-5d	BH/MW3-1d
					Field Duplicate of TP2-2									
Sample Depth (m)				0.75		(Average between TP2-2 and Dup 3)	(Between TP2-2 and Dup 3)	1.25	1.25	0.75	1.25	1.25	7.5	4.8
Date Collected				5-Mar-18	6-Mar-18			5-Mar-18	5-Mar-18	6-Mar-18	6-Mar-18	6-Mar-18	7-Mar-18	7-Mar-18
Laboratory ID				**1810288-02**	**1810288-23**			**1810288-26**	**1810288-05**	**1810288-11**	**1810288-16**	**1810288-21**	**1810374-01**	**1810374-04**
Date Analyzed - PHCs (F1)				10-Mar-18	10-Mar-18			10-Mar-18	10-Mar-18	10-Mar-18	10-Mar-18	10-Mar-18	11-Mar-18	11-Mar-18
Date Analyzed - PHCs (F2-F4)				9-Mar-18	9-Mar-18			9-Mar-18	9-Mar-18	9-Mar-18	9-Mar-18	9-Mar-18	11-Mar-18	11-Mar-18
Date Analyzed - VOCs				10-Mar-18	10-Mar-18			-	-	-	10-Mar-18	-	11-Mar-18	11-Mar-18
Date Analyzed - BTEX				-	**-**			**-**	10-Mar-18	10-Mar-18	**-**	10-Mar-18	**-**	**-**
Parameter	**Units**	**MDL**	**Table 3 SCS[a]**											
Petroleum Hydrocarbons (PHCs)														
F1 PHCs (C6-C10)	µg/g	7	65	<	<	<	NC	<	<	<	<	<	<	<
F2 PHCs (C10-C16)	µg/g	4	250	8	8	8	NC	<	<	<	60	11	<	<
F3 PHCs (C16-C34)	µg/g	8	2500	674	983	829	**46%**	59	<	41	64	417	<	<
F4 PHCs (C34-C50)	µg/g	6	6600	62	91	77	**47%**	115	<	25	15	177	<	<
Volatile Organic Carbons (VOCs)														
Acetone	µg/g	0.50	28	<	<	<	NC	-	-	-	<	-	<	<
Benzene	µg/g	0.02	0.4	<	<	<	NC	-	<	<	<	<	<	<
Bromodichloromethane	µg/g	0.05	1.9	<	<	<	NC	-	-	-	<	-	<	<
Bromoform	µg/g	0.05	1.7	<	<	<	NC	-	-	-	<	-	<	<
Bromomethane	µg/g	0.05	0.05	<	<	<	NC	-	-	-	<	-	<	<
Carbon Tetrachloride	µg/g	0.05	0.71	<	<	<	NC	-	-	-	<	-	<	<
Chlorobenzene	µg/g	0.05	2.7	<	<	<	NC	-	-	-	<	-	<	<
Chloroform	µg/g	0.05	0.18	<	<	<	NC	-	-	-	<	-	<	<
Dibromochloromethane	µg/g	0.05	2.9	<	<	<	NC	-	-	-	<	-	<	<
Dichlorodifluoromethane	µg/g	0.05	25	<	<	<	NC	-	-	-	<	-	<	<
1,2-Dichlorobenzene	µg/g	0.05	1.7	<	<	<	NC	-	-	-	<	-	<	<
1,3-Dichlorobenzene	µg/g	0.05	12	<	<	<	NC	-	-	-	<	-	<	<
1,4-Dichlorobenzene	µg/g	0.05	0.57	<	<	<	NC	-	-	-	<	-	<	<
1,1-Dichloroethane	µg/g	0.05	0.6	<	<	<	NC	-	-	-	<	-	<	<
1,2-Dichloroethane	µg/g	0.05	0.05	<	<	<	NC	-	-	-	<	-	<	<
1,1-Dichloroethylene	µg/g	0.05	0.48	<	<	<	NC	-	-	-	<	-	<	<
cis-1,2-Dichloroethylene	µg/g	0.05	2.5	<	<	<	NC	-	-	-	<	-	<	<
trans-1,2-Dichloroethylene	µg/g	0.05	2.5	<	<	<	NC	-	-	-	<	-	<	<
1,2-Dichloropropane	µg/g	0.05	0.68	<	<	<	NC	-	-	-	<	-	<	<
cis-1,3-Dichloropropylene	µg/g	0.05	-	<	<	<	NC	-	-	-	<	-	<	<
trans-1,3-Dichloropropylene	µg/g	0.05	-	<	<	<	NC	-	-	-	<	-	<	<
1,3-Dichloropropene, total	µg/g	0.05	0.081	<	<	<	NC	-	-	-	<	-	<	<
Ethylbenzene	µg/g	0.05	1.6	<	<	<	NC	-	<	<	0.08	<	<	<
Ethylene dibromide (dibromoetha	µg/g	0.05	0.05	<	<	<	NC	-	-	-	<	-	<	<
Hexane	µg/g	0.05	88	<	<	<	NC	-	-	-	<	-	<	<
Methyl Ethyl Ketone (2-Butanone	µg/g	0.50	88	<	<	<	NC	-	-	-	<	-	<	<
Methyl Isobutyl Ketone	µg/g	0.50	210	<	<	<	NC	-	-	-	<	-	<	<
Methyl tert-butyl ether	µg/g	0.05	2.3	<	<	<	NC	-	-	-	<	-	<	<
Methylene Chloride	µg/g	0.05	2	<	<	<	NC	-	-	-	<	-	<	<
Styrene	µg/g	0.05	43	<	<	<	NC	-	-	-	<	-	<	<
1,1,1,2-Tetrachloroethane	µg/g	0.05	0.11	<	<	<	NC	-	-	-	<	-	<	<
1,1,2,2-Tetrachloroethane	µg/g	0.05	0.094	<	<	<	NC	-	-	-	<	-	<	<
Tetrachloroethylene	µg/g	0.05	2.5	<	<	<	NC	-	-	-	<	-	<	<
Toluene	µg/g	0.05	9	<	<	<	NC	-	<	<	<	<	<	<
1,1,1-Trichloroethane	µg/g	0.05	12	<	<	<	NC	-	-	-	<	-	<	<
1,1,2-Trichloroethane	µg/g	0.05	0.11	<	<	<	NC	-	-	-	<	-	<	<
Trichloroethylene	µg/g	0.05	0.61	<	<	<	NC	-	-	-	<	-	<	<
Trichlorofluoromethane	µg/g	0.05	5.8	<	<	<	NC	-	-	-	<	-	<	<
Vinyl Chloride	µg/g	0.02	0.25	<	<	<	NC	-	-	-	<	-	<	<
m/p-Xylene	µg/g	0.05	-	<	<	<	NC	-	<	<	<	<	<	<
o-Xylene	µg/g	0.05	-	<	<	<	NC	-	<	<	0.08	<	<	<
Xylenes, total	µg/g	0.05	30	<	<	<	NC	-	<	<	0.08	<	<	<

Notes:
"a" - Table 3: Full Depth Generic Site Condition Standards for residential property use; established in "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the* Environmental Protection Act", Ontario Ministry of the Environment and Climate Change, 15 April 2011 (MOECC). SCS for medium to fine textured soils utilized.

Bolded values exceed the Table 3 SCS.

"µg/g" - micrograms per gram, parts per million.

"MDL" - method detection limit.

"NV" - no value derived

"<" - sample results less than the MDL.

"-" - not applicable or parameter not analyzed.

"Duplicate Average" - average of results of sample and it's field duplicate; where parameter <MDL, MDL used to calculate average. Note: the duplicate average must exceed the SCS for there to be an exceedance.

"RPD" - relative percent difference.

"NC" - RPD not calculable as both values are not greater than 5x the MDL.

Bold - means RPD outside of the sample duplicate value as outlined in the 2011 Analytical Protocol (VOCs - 50%, PHCs - 30%).

Table 5: Maximum Concentrations for Analytical Results in Soil

Client: Marianos Holdings Inc.
Site: Montrose Road, Niagara Falls, Ontario
Project: TG181021

Parameter	Sample ID	Location	Maximum Concentration (µg/g)
General Inorganics			
SAR	TP2-2	Southeastern Section of Phase Two Property	0.12
Conductivity	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	624.0
Metals			
Antimony	All Sample Locations	Throughout the Phase Two Property	<1.0
Arsenic	TP21-3	Western Section of Phase Two Property	6.4
Barium	TP1-2	Southeastern Section of Phase Two Property	279
Beryllium	All Sample Locations	Throughout the Phase Two Property	<1.0
Boron	TP1-2	Southeastern Section of Phase Two Property	17.6
Boron, available	TP2-2	Southeastern Section of Phase Two Property	0.6
Cadmium	TP4-3	Southwestern Section of Phase Two Property	1.3
Chromium	TP21-3	Western Section of Phase Two Property	60.4
Chromium (VI)	All Sample Locations	Throughout the Phase Two Property	<0.2
Cobalt	TP3-4	Southwestern Section of Phase Two Property	13.0
Copper	TP1-2	Southeastern Section of Phase Two Property	46.4
Lead	TP21-3	Western Section of Phase Two Property	47.7
Mercury	All Sample Locations	Throughout the Phase Two Property	<0.1
Molybdenum	TP1-2	Southeastern Section of Phase Two Property	1.4
Nickel	TP21-3	Western Section of Phase Two Property	28.4
Selenium	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	1.1
Silver	All Sample Locations	Throughout the Phase Two Property	<0.5
Thallium	All Sample Locations	Throughout the Phase Two Property	<1.0
Uranium	All Sample Locations	Throughout the Phase Two Property	<1.0
Vanadium	TP3-4	Southwestern Section of Phase Two Property	38.7
Zinc	TP4-3	Southwestern Section of Phase Two Property	574
Petroleum Hydrocarbons			
F1 PHCs (C6-C10)	All Sample Locations	Throughout the Phase Two Property	<7
F2 PHCs (C10-C16)	TP16-3	Northern Section of the Phase Two Property	60
F3 PHCs (C16-C34)	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	983
F4 PHCs (C34-C50)	TP21-3	Western Section of Phase Two Property	177
Volatile Organic Compounds			
Acetone	All Sample Locations	Throughout the Phase Two Property	<0.5
Benzene	All Sample Locations	Throughout the Phase Two Property	<0.02
Bromodichloromethane	All Sample Locations	Throughout the Phase Two Property	<0.05
Bromoform	All Sample Locations	Throughout the Phase Two Property	<0.05
Bromomethane	All Sample Locations	Throughout the Phase Two Property	<0.05
Carbon Tetrachloride	All Sample Locations	Throughout the Phase Two Property	<0.05
Chlorobenzene	All Sample Locations	Throughout the Phase Two Property	<0.05
Chloroform	All Sample Locations	Throughout the Phase Two Property	<0.05
Dibromochloromethane	All Sample Locations	Throughout the Phase Two Property	<0.05
Dichlorodifluoromethane	All Sample Locations	Throughout the Phase Two Property	<0.05
1,2-Dichlorobenzene	All Sample Locations	Throughout the Phase Two Property	<0.05
1,3-Dichlorobenzene	All Sample Locations	Throughout the Phase Two Property	<0.05
1,4-Dichlorobenzene	All Sample Locations	Throughout the Phase Two Property	<0.05
1,1-Dichloroethane	All Sample Locations	Throughout the Phase Two Property	<0.05
1,2-Dichloroethane	All Sample Locations	Throughout the Phase Two Property	<0.05
1,1-Dichloroethylene	All Sample Locations	Throughout the Phase Two Property	<0.05
cis-1,2-Dichloroethylene	All Sample Locations	Throughout the Phase Two Property	<0.05
trans-1,2-Dichloroethylene	All Sample Locations	Throughout the Phase Two Property	<0.05
1,2-Dichloropropane	All Sample Locations	Throughout the Phase Two Property	<0.05
cis-1,3-Dichloropropylene	All Sample Locations	Throughout the Phase Two Property	<0.05
trans-1,3-Dichloropropylene	All Sample Locations	Throughout the Phase Two Property	<0.05
1,3-Dichloropropene, total	All Sample Locations	Throughout the Phase Two Property	<0.05
1,2-Dibromoethane	All Sample Locations	Throughout the Phase Two Property	<0.05
Ethylbenzene	TP16-3	Northern Section of the Phase Two Property	0.08
Hexane	All Sample Locations	Throughout the Phase Two Property	<0.05
Methyl Ethyl Ketone (2-Butanone)	All Sample Locations	Throughout the Phase Two Property	<0.5
Methyl Isobutyl Ketone	All Sample Locations	Throughout the Phase Two Property	<0.5
Methyl tert-butyl ether	All Sample Locations	Throughout the Phase Two Property	<0.05
Methylene Chloride	All Sample Locations	Throughout the Phase Two Property	<0.05
Styrene	All Sample Locations	Throughout the Phase Two Property	<0.05
1,1,1,2-Tetrachloroethane	All Sample Locations	Throughout the Phase Two Property	<0.05
1,1,2,2-Tetrachloroethane	All Sample Locations	Throughout the Phase Two Property	<0.05
Tetrachloroethylene	All Sample Locations	Throughout the Phase Two Property	<0.05
Toluene	All Sample Locations	Throughout the Phase Two Property	<0.05
1,1,1-Trichloroethane	All Sample Locations	Throughout the Phase Two Property	<0.05
1,1,2-Trichloroethane	All Sample Locations	Throughout the Phase Two Property	<0.05
Trichloroethylene	All Sample Locations	Throughout the Phase Two Property	<0.05
Trichlorofluoromethane	All Sample Locations	Throughout the Phase Two Property	<0.05
Vinyl Chloride	All Sample Locations	Throughout the Phase Two Property	<0.02
m/p-Xylene	All Sample Locations	Throughout the Phase Two Property	<0.05
o-Xylene	TP16-3	Northern Section of the Phase Two Property	0.08
Xylenes, total	TP16-3	Northern Section of the Phase Two Property	0.08
Parameter	**Sample ID**	**Location**	**Maximum Concentration (µg/g)**
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	All Sample Locations	Throughout the Phase Two Property	<0.02
Acenaphthylene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.02
Anthracene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.05
Benzo[a]anthracene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.12
Benzo[a]pyrene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.12
Benzo[b]fluoranthene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.14
Benzo[g,h,i]perylene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.09
Benzo[k]fluoranthene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.08
Chrysene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.13
Dibenzo[a,h]anthracene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.02
Fluoranthene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.32
Fluorene	All Sample Locations	Throughout the Phase Two Property	<0.02
Indeno[1,2,3-cd]pyrene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.08
1-Methylnaphthalene	All Sample Locations	Throughout the Phase Two Property	<0.02
2-Methylnaphthalene	TP2-2	Southeastern Section of Phase Two Property	0.03
Methylnaphthalene (1&2)	TP2-2	Southeastern Section of Phase Two Property	0.04
Naphthalene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.02
Phenanthrene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.16
Pyrene	Dup 3 from TP2-2	Southeastern Section of Phase Two Property	0.27
Polycyclic Aromatic Hydrocarbons			
PCBs	All Sample Locations	Throughout the Phase Two Property	<0.05

Table 6: Summary of Ground Water Analyses for Metals
Client: Marianos Holdings Inc.
Site: Montrose Road, Niagara Falls, ON
Project: TG181021

Sample ID				BH/MW1	BH/MW2	BH/MW3	Dup A	RPD
							Field Duplicate of BH/MW3	(Between BH/MW3 and Dup A)
Date Collected				**16-Mar-18**	**16-Mar-18**	**16-Mar-18**	**16-Mar-18**	
Laboratory ID				1812086-01	1812086-02	1812086-03	1812086-04	
Date Analyzed - Metals				21-Mar-18	21-Mar-18	21-Mar-18	21-Mar-18	
Parameter	**Units**	**MDL**	**Table 3 SCS[a]**					
Metals								
Antimony	µg/L	0.5	20,000	<	<	<	<	NC
Arsenic	µg/L	1	1,900	7	3	2	2	NC
Barium	µg/L	1	29,000	107	36	40	40	0%
Beryllium	µg/L	0.5	67	<	<	<	<	NC
Boron	µg/L	10	45,000	95	80	94	85	10%
Cadmium	µg/L	0.1	2.7	<	<	<	<	NC
Chromium	µg/L	1	810	<	<	<	<	NC
Cobalt	µg/L	0.5	66	3.7	2.7	5.1	5.4	6%
Copper	µg/L	0.5	87	<	0.7	<	0.6	NC
Lead	µg/L	0.1	25	<	<	<	<	NC
Molybdenum	µg/L	0.5	9,200	10.1	4.2	3.5	3.5	0%
Nickel	µg/L	1	490	7	4	5	5	NC
Selenium	µg/L	1	63	<	<	<	<	NC
Silver	µg/L	0.1	1.5	<	<	<	<	NC
Thallium	µg/L	0.1	510	<	<	<	<	NC
Uranium	µg/L	0.1	420	6.7	5.8	6.9	7.3	6%
Vanadium	µg/L	0.5	250	<	<	<	<	NC
Zinc	µg/L	5	1,100	8	9	<	<	NC

"a" - Table 3: Full Depth Generic Site Condition Standards for all types of property use; established in "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", Ontario Ministry of the Environment and Climate Change, 15 April 2011 (MOECC).

Bolded values exceed the Table 3 SCS.

"µg/L" - micrograms per Litre, parts per billion.

"MDL" - method detection limit.

"<" - sample results less than the MDL.

"-" - not applicable or parameter not analyzed.

"RPD" - relative percent difference.

"NC" - RPD not calculable as both values are not greater than 5x the MDL.

Bold - means RPD outside of the sample duplicate value as outlined in the 2011 Analytical Protocol (Metals - 20%,).

Table 7: Summary of Ground Water Analyses for PHCs and VOCs

Client: Marianos Holdings Inc.
Site: Montrose Road, Niagara Falls, ON
Project: TG181021

Sample ID				BH/MW1	BH/MW2	BH/MW3	Dup A	RPD	Trip Blank	Trip Spike	Field Blank
							Field Duplicate of BH/MW3				
Date Collected				**16-Mar-18**	**16-Mar-18**	**16-Mar-18**	**16-Mar-18**	(Between BH/MW3 and Dup A)	**13-Mar-18**	**13-Mar-18**	**16-Mar-18**
Laboratory ID				1812086-01	1812086-02	1812086-03	1812086-04		1812086-05	1812086-06	1812086-07
Date Analyzed - PHCs (F1)				21-Mar-18	21-Mar-18	21-Mar-18	21-Mar-18		-	-	-
Date Analyzed - PHCs (F2-F4)				21-Mar-18	21-Mar-18	21-Mar-18	21-Mar-18		-	-	-
Date Analyzed - BTEX				21-Mar-18	21-Mar-18	21-Mar-18	21-Mar-18		21-Mar-18	21-Mar-18	21-Mar-18
Parameter	**Units**	**MDL**	**Table 3 SCS**								
Petroleum Hydrocarbons (PHCs)											
F1 PHCs (C6-C10)	µg/L	25	750	<	<	<	<	NC	-	-	-
F2 PHCs (C10-C16)	µg/L	100	150	<	<	<	<	NC	-	-	-
F3 PHCs (C16-C34)	µg/L	100	500	<	<	<	<	NC	-	-	-
F4 PHCs (C34-C50)	µg/L	100	500	<	<	<	<	NC	-	-	-
BTEX											
Benzene	µg/L	0.5	44	<	<	<	<	NC	<	29.2	<
Ethylbenzene	µg/L	0.5	2,300	<	<	<	<	NC	<	38.6	<
Toluene	µg/L	0.5	18,000	<	<	<	<	NC	<	36.0	<
m/p-Xylene	µg/L	0.5		<	<	<	<	NC	<	76.1	<
o-Xylene	µg/L	0.5		<	<	<	<	NC	<	39.6	<
Xylenes, total	µg/L	0.5	4,200	<	<	<	<	NC	<	116	<

Notes:

"a" - Table 3: Full Depth Generic Site Condition Standards for all types of property use; established in "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", Ontario Ministry of the Environment and Climate Change, 15 April 2011 (MOECC).

Bolded values exceed the Table 3 SCS.

"µg/L" - micrograms per Litre, parts per billion.

"MDL" - method detection limit.

"<" - sample results less than the MDL.

"-" - not applicable or parameter not analyzed.

"RPD" - relative percent difference.

"NC" - RPD not calculable as both values are not greater than 5x the MDL.

Bold - means RPD outside of the sample duplicate value as outlined in the 2011 Analytical Protocol (BTEX 30%, PHCs 30%).

Table 8: Maximum Concentrations for Analytical Results in Ground Water

Client: Marianos Holdings Inc.
Site: Montrose Road, Niagara Falls, Ontario
Project: TG181021

Parameter	Sample ID	Location	Maximum Concentration (µg/L)
Metals			
Antimony	All Sample Locations	Throughout the Phase Two Property	<0.5
Arsenic	BH/MW1	Northern Section of Phase Two Property	7.0
Barium	BH/MW1	Northern Section of Phase Two Property	107
Beryllium	All Sample Locations	Throughout the Phase Two Property	<0.5
Boron	BH/MW1	Northern Section of Phase Two Property	95
Cadmium	All Sample Locations	Throughout the Phase Two Property	<0.1
Chromium	All Sample Locations	Throughout the Phase Two Property	<1.0
Cobalt	Dup A from BH/MW3	Southern Section of Phase Two Property	5.4
Copper	BH/MW2	Eastern Section of Phase Two Property	0.7
Lead	All Sample Locations	Throughout the Phase Two Property	<0.1
Molybdenum	BH/MW1	Northern Section of Phase Two Property	10.1
Nickel	BH/MW1	Northern Section of Phase Two Property	7
Selenium	All Sample Locations	Throughout the Phase Two Property	<1.0
Silver	All Sample Locations	Throughout the Phase Two Property	<0.1
Thallium	All Sample Locations	Throughout the Phase Two Property	<0.1
Uranium	Dup A from BH/MW3	Southern Section of Phase Two Property	7.3
Vanadium	All Sample Locations	Throughout the Phase Two Property	<0.5
Zinc	BH/MW2	Eastern Section of Phase Two Property	9
Petroleum Hydrocarbons			
F1 PHCs (C6-C10)	All Sample Locations	Throughout the Phase Two Property	<25
F2 PHCs (C10-C16)	All Sample Locations	Throughout the Phase Two Property	<100
F3 PHCs (C16-C34)	All Sample Locations	Throughout the Phase Two Property	<100
F4 PHCs (C34-C50)	All Sample Locations	Throughout the Phase Two Property	<100
BTEX			
Benzene	All Sample Locations	Throughout the Phase Two Property	<0.5
Ethylbenzene	All Sample Locations	Throughout the Phase Two Property	<0.5
Toluene	All Sample Locations	Throughout the Phase Two Property	<0.5
Xylenes, total	All Sample Locations	Throughout the Phase Two Property	<0.5

APPENDIX A

SOIL REMEDIATION REPORT

July 19, 2018

Project TG181021

Marianos Holdings Inc.
2140 Allanport Road,
Allanburg, Ontario
L0S 1A0

Attention: Mr. Dimitri Marianos

Re: Soil Remediation Program
Montrose Road, Niagara Falls, Ontario

Dear Mr. Marianos:

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood) was retained by Marianos Holdings Inc. (the Client) to provide environmental services at the property located at Montrose Road, in Niagara Falls, Ontario (the "Property"; **Figure 1**). The environmental services include the documentation of a Soil Remediation Program (SRP), including collection of confirmatory wall and floor samples, laboratory analysis and reporting. The SRP was required based on the results of Wood's Phase Two Environmental Site Assessment (ESA), which indicated metals were present in the soil at levels above the applicable Ministry of the Environment and Conservation and Parks (MOECP) Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non-Potable Ground Water Condition for residential property use (i.e., Table 3 SCS). It is Wood's understanding that a Record of Site Condition (RSC) is required for the redevelopment of the Property for residential use. In order to file a RSC, there can be no exceedances of the applicable Table 3 SCS, and as such, the Client elected to complete the SRP.

This work program is required for compliance with Ontario Regulation 153/04 (*O. Reg. 153/04)*, as amended. As such all work completed under this project was performed in general accordance with standard engineering practices and the following documents:

- Ministry of the Environment (MOE) document entitled "*Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04*" dated June 2011;

Wood Environment &
Infrastructure Solutions
3300 Merrittville Hwy., Unit 5
Thorold, ON L2V 4Y6
Phone: 905-687-6616
Fax: 905-687-6620
www.woodplc.com

- Ministry of the Environment and Energy (MOEE) document entitled "*Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*", dated December 1996;
- MOE document entitled "*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*" issued by the Laboratory Services Branch of the MOE and dated March 9, 2004, amended as of July 1, 2011 (Analytical Protocol); and
- All analytical results were compared to the appropriate standards identified in the MOECP document entitled; *"Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act"* dated April 15, 2011 (MOECP SCS).

All work completed during the SRP was carried out in accordance with the proposal sent via email and signed by the Client on May 4, 2018.

SOIL REMEDIATION PROGRAM

Landfill Acceptance Testing

To determine the disposal requirements of the metals-impacted materials, Wood submitted a representative sample (labelled "TCLP") that was collected during the testpitting program from within the proposed remediation areas (Remediation Area centered around sample location TP04). The sample was submitted to Paracel Laboratories Ltd. (Paracel) for laboratory analysis. Paracel is accredited by the Standards Council of Canada/Canadian Association for Laboratory Accreditation Inc. (CALA) in accordance with ISO/IEC 17025:2005 – *"General Requirements for the Competence of Testing and Calibration Laboratories"* for the tested parameters and has met the standards for proficiency testing developed by the Standards Council of Canada for parameters set out in the Soil, Ground Water and Sediment Standards.

The sample was submitted for Ontario Regulation 558 (*O. Reg. 558*) Toxicity Characteristic Leaching Procedure (TCLP) testing for inorganics, Volatile Organic Compounds (VOCs), Polychlorinated Biphenyls (PCBs) and metals. The *O. Reg. 558* TCLP analysis amended the former Ontario Regulation 347 of the revised Regulation of Ontario, 1990 made under the Environmental Protection Act as of March 31, 2001. The above-referenced laboratory testing was required to obtain acceptance for disposal of the impacted materials at the Walkers Industries (Walkers) Landfill, located in Thorold, Ontario.

The TCLP results were compared to the Schedule 4 Leachate Quality Criteria provided in the MOE document entitled "*Registration Guidance Manual for Generators of Liquid Industrial and Hazardous Waste*," October 2000 (the "Schedule 4 Criteria"). The submitted sample was classified as non-hazardous under the revised *O. Reg. 558* Schedule 4 leachate quality criteria. The Laboratory Certificate of Analysis for the TCLP sample is included in **Appendix A**.

Wood and the Client arranged for acceptance and received approval for disposal of the impacted soil at Niagara Waste System Limited (NWSL) landfill in Thorold, Ontario.

Remediation Excavation

The Client provided excavation equipment (operated by Demar Construction) and arranged for MOECP-licensed transportation (tri-axle dump trucks) to transport the impacted soil/fill to the landfill. A total of 60.24 metric tonnes of impacted soil/fill was excavated and transported to the NWSL landfill. A copy of the weigh bills are included in **Appendix B**.

Based on the results of the Phase Two ESA, an excavation was to be completed around each sample location with a Table 3 SCS exceedance (TP04-metals). Vertical delineation was completed during the Phase Two ESA, the excavations were to be 1.5 metres below ground surface (mbgs) and extend to a 5 m by 5 m area.

Wood was on-Site to document the removal of impacted soil/fill materials and to collect confirmatory samples from the final limits of the excavations. The SRP was initiated on May 5, 2018 beginning with Remediation Area TP04. No visual or olfactory evidence of impacts were identified during excavation of the Remediation Area. Upon completion, Remediation Area TP4 was approximately 5 m by 5.3 m by 1.5 m in depth. Confirmatory samples were collected from the walls and floor of the excavation on June 22, 2018.

Confirmatory soil samples collected upon completion of the remediation were placed into laboratory supplied unpreserved 250 mL glass jars with Teflon-lined lids and were subsequently stored in coolers on ice for future potential laboratory analysis. All soil samples were collected in accordance with strict environmental sampling protocols to minimize loss of volatile organics and to ensure reliable and representative results. All soil sampling equipment was thoroughly decontaminated between soil sample locations to prevent potential cross-contamination. Each sample was labelled using a unique identifier except for blind duplicate samples that were assigned

aliases. All samples were delivered to the laboratory under continuous Chain of Custody documentation.

All soil samples were screened in the field for gross evidence of negative environmental impact including staining and odours.

Six (6) samples, plus one (1) field duplicate sample, were submitted to Paracel for laboratory analysis of metals. The location of the Remediation Area is shown on **Figure 2** and sample locations are presented on **Figure 3.** The quantity and locations of the confirmatory samples is compliant with Table 3 of the MOECP's *O. Reg*. 153/04, as amended.

Sample Logging and Handling

The soil samples retrieved during the excavation were examined, classified, and logged according to soil type, moisture content, colour, consistency, and presence of visual and/or olfactory indicators of negative impact. The samples were placed in appropriate laboratory sample jars subsequently stored in coolers under ice for future potential laboratory analysis.

All field sampling activities conducted follow Wood's standard field protocols for environmental soil and ground water investigations, which reflect the requirements of the previously referenced MOEE/MOECP documents.

REGULATORY FRAMEWORK

The MOECP SCS applicable to the Site were evaluated previously during the Phase Two ESA. The SCS currently applicable to the Phase Two Property, for the purposes of filing a RSC, are the Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, for residential and commercial property use and medium and fine textured soils (the Table 3 SCS).

ANALYTICAL RESULTS

As indicated in **Table 1**, all six confirmatory samples (plus one field duplicate) submitted from the final limits of Remediation Area TP04 had metals parameter concentrations that were non-detectable or were below the Table 3 SCS, with the exception of FS1. A duplicate sample of Sample FS1 was then resubmitted for laboratory analysis of metals after the initial submission. The average concentration of both of the FS1 samples submitted was below the Table 3 SCS.

The Laboratory Certificates of Analysis are included in **Appendix A**.

QUALITY ASSURANCE PROGRAM (ANALYTICAL)

The validity of the analytical results reported for the samples collected during this investigation has been assessed using the criteria presented in the Analytical Protocol.

The Analytical Protocol establishes Acceptance Limits for use when assessing the reliability of data reported by analytical laboratories. These include maximum hold times for the storage of samples/sample extracts between collection and analysis, specified/approved analytical methods, required field and/or laboratory quality assurance samples such as blanks and field and laboratory duplicates, specified recovery ranges for spiked samples and surrogates (compounds added to samples in known concentrations for data validation purposes), required Reporting Limits (RL, maximum allowable detection limits) and specified precision required when analyzing laboratory duplicate samples.

Data Validation

Field QA/QC Program

Field soil sample DUP A was a duplicate of sample FS1 (for metals). An assessment of the Relative Percent Difference (RPDs) for the duplicate sample was completed (**Table 1**). The RPDs were either not calculable as both values were not greater than 5 times the MDL or were lower than the respective RPD limit (30% for metals), with the exception of zinc and lead (37% and 90% respectively).

It is noted that the RPD values in the Analytical Protocol are for duplicate samples collected at the laboratory and are used for comparison to the RPDs calculated for field duplicates.

Laboratory QA/QC Program

All sample analyses were performed within the required sample/extract hold times.

All fieldwork was conducted in accordance with the applicable sampling guidelines, which included dedicated sampling equipment, disposable gloves, and sample preservation, where required. All testing was performed by a CALA certified laboratory.

CONCLUSIONS

Wood was on-Site June 22, 2018 to document the removal of the metals-impacted soil/fill from Remediation Area TP04, and to collect confirmatory floor and wall samples after the remediation was complete.

The confirmatory samples from the Remediation Area were submitted for metals analysis and met the Table 3 SCS.

CLOSURE

This report was prepared for the exclusive use of Marianos Holdings Inc. and is intended to provide documentation of the SRP for the property located at Montrose Road, in Niagara Falls, Ontario at the time of the Site visits. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third party. Should additional parties require reliance on this report, written authorization from Wood will be required. With respect to third parties, Wood has no liability or responsibility for losses of any kind whatsoever, including direct or consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The investigation undertaken by Wood with respect to this report and any conclusions or recommendations made in this report reflect Wood's judgment based on the Site conditions observed at the time of the Site inspection on the dates set out in this report and on information available at the time of preparation of this report. This report has been prepared for specific application to this Site and it is based, in part, upon visual observation of the Site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future Site conditions, portions of the Site, which were unavailable for direct investigation, subsurface locations, which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Wood has used its professional judgment in analysing this information and formulating these conclusions.

Wood makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein.

With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.

This Report is also subject to the further Standard Limitations contained in **Appendix C**.

We trust that the information presented in this report meets your current requirements. Should you have any questions, or concerns, please do not hesitate to contact this office.

Wood Environment & Infrastructure Solutions,
a Division of Wood Canada Limited.

Prepared by:

DRAFT

Kevin Haines, B.Eng.
Environmental Engineer in Training

Reviewed by:

DRAFT

Patrick Shriner, P.Geo.
Associate, Environmental Geoscientist

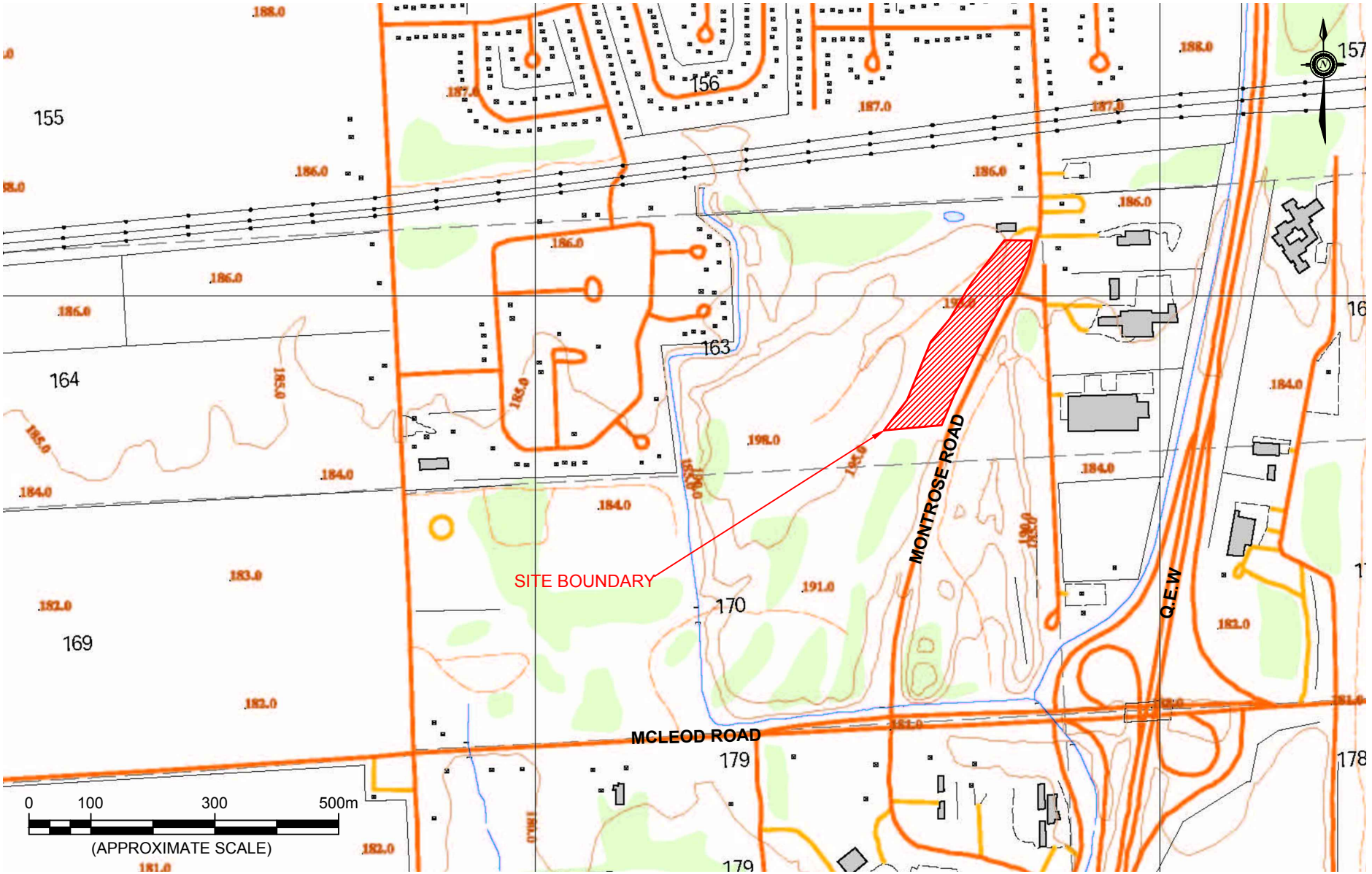
Attachments:

Figure 1: Site Location Plan
Figure 2: Site Layout and Excavation Location Plan
Figure 3: Remediation Area Sampling Plan

Table 1: Summary of Soil Analyses for Metals

Appendix A: Laboratory Certificates of Analysis
Appendix B: Weigh Bills
Appendix C: Limitations

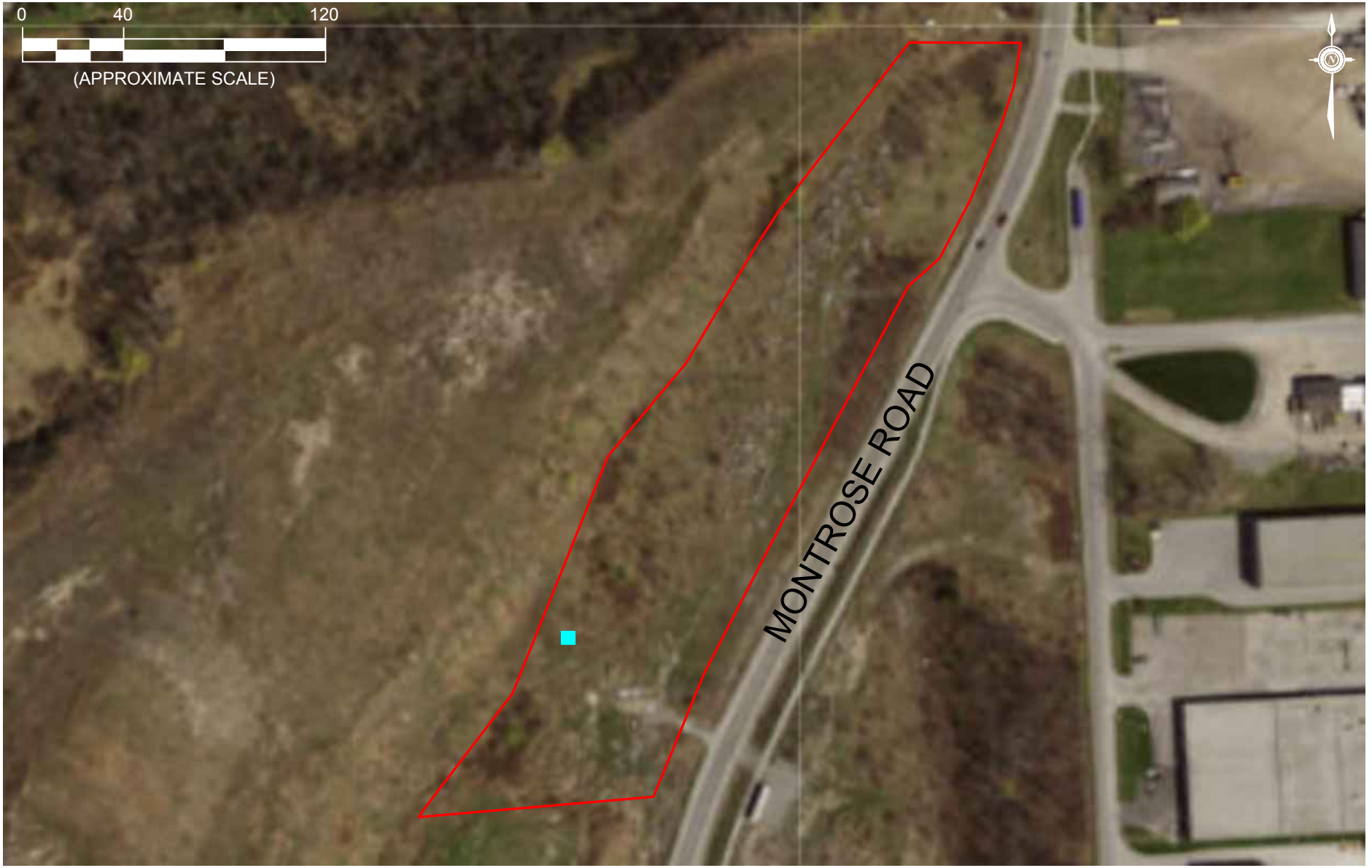
FIGURES



REFERENCE: Base plan provided by First Base Solutions.

FOR ILLUSTRATION PURPOSES ONLY. ALL LOCATIONS APPROXIMATE.

CLIENT: Marianos Holdings Inc.	DWN BY: KH CHK'D BY: PS	PROJECT: SOIL REMEDIATION PROGRAM MONTROSE ROAD, NIAGARA FALLS, ONTARIO	REV. NO.: A DATE: JULY 2018
Wood Environment & Infrastructure Solutions 3300 Merrittville Hwy, Unit 5 Thorold, Ontario	DATUM: NAD83 PROJECTION: UTM Zone 17 SCALE: AS SHOWN	TITLE: SITE LOCATION PLAN	PROJECT NO: TG181021 NO. : FIGURE 1



REFERENCE: Base plan provided by Niagara Navigator.

FOR ILLUSTRATION PURPOSES ONLY. ALL LOCATIONS APPROXIMATE.

CLIENT:
Marianos Holdings Inc.

Wood Environment
Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

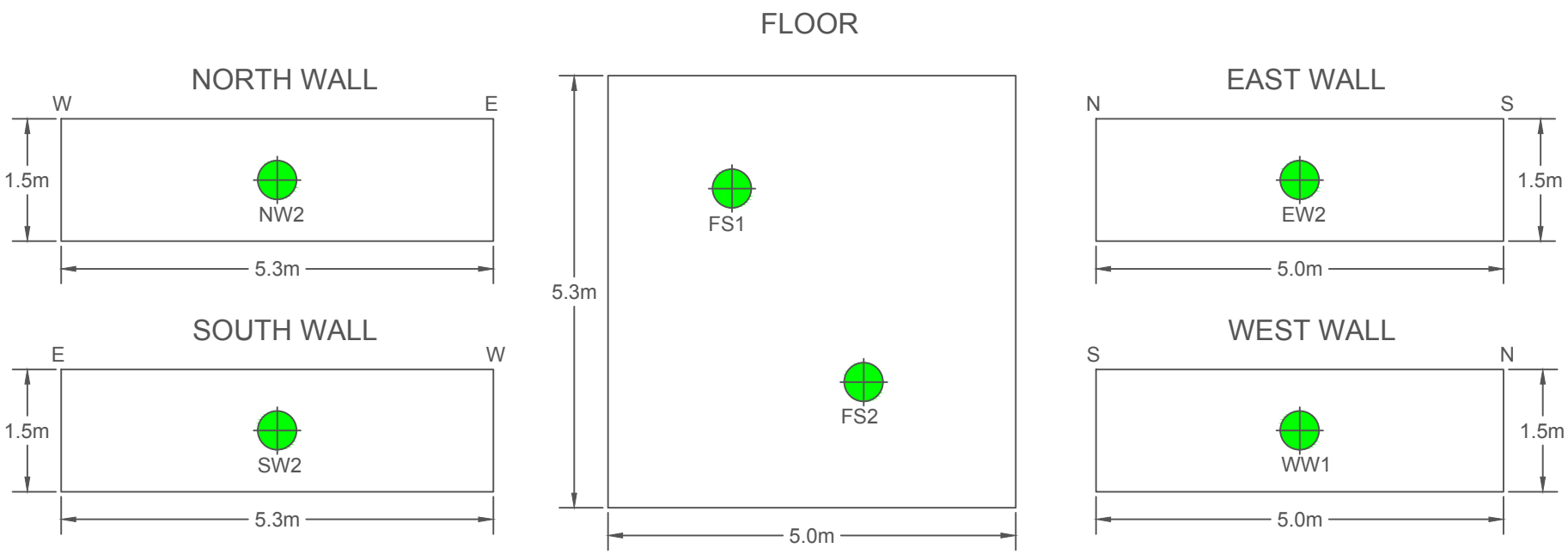
LEGEND:
- SITE BOUNDARY
- AREA OF EXCAVATION

DWN BY: KH
CHK'D BY: PS
DATUM: NAD83
PROJECTION: UTM Zone 17
SCALE: AS SHOWN

PROJECT:
SOIL REMEDIATION PROGRAM
MONTROSE ROAD,
NIAGARA FALLS, ONTARIO

TITLE:
SITE LAYOUT & EXCAVATION LOCATION PLAN

REV. NO.: A
DATE: JULY 2018
PROJECT NO: TG181021
NO. : FIGURE 2



REFERENCE: Base plan provided by Niagara Navigator.

FOR ILLUSTRATION PURPOSES ONLY. ALL LOCATIONS APPROXIMATE.

CLIENT:
Marianos Holdings Inc.

Wood Environment
Infrastructure Solutions
3300 Merrittville Hwy, Unit 5
Thorold, Ontario

LEGEND:
SOIL SAMPLE SUBMITTED FOR LABORATORY ANALYSIS OF METALS

DWN BY: KH
CHK'D BY: PS
DATUM: NAD83
PROJECTION: UTM Zone 17
SCALE: AS SHOWN

PROJECT:
SOIL REMEDIATION PROGRAM
MONTROSE ROAD,
NIAGARA FALLS, ONTARIO

TITLE:
REMEDIATION AREA
SAMPLING PLAN

REV. NO.: A
DATE: JULY 2018
PROJECT NO: TG181021
NO. : FIGURE 3

TABLES

Table 1: Summary of Soil Analyses for Metals

Client: Marianos Holdings Inc.
Site: Montrose Road, Niagara Falls, ON
Project: TG181021 Soil Remediation Program

Sample ID				FS1	FS1	Duplicate Average	Dup A	Duplicate Average	RPD	FS2	NW1	SW1	WW1	EW1
Sample Depth (m)				1.5	1.5	(Average between FS1 and FS1)	Field Duplicate of FS1	(Average between FS1 and Dup A)	(Between FS1 Avg. and Dup A)	1.5	0.75	0.75	0.75	0.75
Date Collected				22-Jun-18	22-Jun-18		22-Jun-18			22-Jun-18	22-Jun-18	22-Jun-18	22-Jun-18	22-Jun-18
Laboratory ID				1825727-01	1826666-01		1825727-07			1825727-02	1825727-03	1825727-04	1825727-05	1825727-06
Date Analyzed - ICP Metals				26-Jun-18	4-Jul-18		26-Jun-18			26-Jun-18	26-Jun-18	26-Jun-18	26-Jun-18	26-Jun-18
Parameter	**Units**	**MDL**	**Table 3 SCS[a]**											
Metals														
Antimony	µg/g	1.0	7.5	<	<	<	<	<	NC	<	<	<	<	<
Arsenic	µg/g	1.0	18	3.6	4.8	4.2	3.4	3.5	NC	3.6	3.2	1.4	3.3	3.1
Barium	µg/g	1.0	390	122	130	126	142	132	16%	133	177	85.8	127	126
Beryllium	µg/g	1.0	5	0.8	1.0	0.9	0.8	0.8	NC	0.8	0.9	<	0.7	0.7
Boron	µg/g	1.0	120	9.0	20.0	14.5	9.8	9.4	9%	8.2	12.2	<	5.9	7.0
Cadmium	µg/g	0.5	1.2	<	<	<	<	<	NC	<	<	<	<	<
Chromium	µg/g	1.0	160	26.2	26.3	26.3	28.5	27.4	9%	25.3	28.9	9.0	25.0	22.1
Cobalt	µg/g	1.0	22	13.9	12.4	13.2	14.2	14.1	2%	13.1	15.3	6.0	13.1	12.0
Copper	µg/g	1.0	180	22.5	20.7	21.6	23.5	23.0	4%	22.0	25.3	9.5	22.2	19.8
Lead	µg/g	1.0	120	144	12.7	78.4	14.8	79.4	**90%**	12.4	14.6	5.0	16.3	11.5
Molybdenum	µg/g	1.0	6.9	<	<	<	<	<	NC	<	<	<	<	<
Nickel	µg/g	1.0	130	31.6	25.9	28.8	33.9	32.8	7%	30.8	35.0	13.3	30.8	28.0
Selenium	µg/g	1.0	2.4	<	<	<	<	<	NC	<	<	<	<	<
Silver	µg/g	0.5	25	<	<	<	<	<	NC	<	<	<	<	<
Thallium	µg/g	1.0	1	<	<	<	<	<	NC	<	<	<	<	<
Uranium	µg/g	1.0	23	<	<	<	<	<	NC	<	<	<	<	<
Vanadium	µg/g	1.0	86	34.6	35.4	35.0	37.9	36.3	10%	34.1	38.7	14.3	33.4	30.0
Zinc	µg/g	1.0	340	73.5	80.9	77.2	101	87.3	**37%**	74.9	84.0	26.9	88.3	73.0

Notes:

"a" - Table 3: Full Depth Generic Site Condition Standards for residential property use; established in " *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the* Environmental Protection Act", Ontario Ministry of the Environment and Climate Change, 15 April 2011 (MOECC). SCS for medium to fine textured soils utilized.

Bolded values exceed the Table 3 SCS.

"µg/g" - micrograms per gram, parts per million.

"MDL" - method detection limit.

"<" - sample results less than the MDL.

"-" - not applicable or parameter not analyzed.

"Duplicate Average" - average of results of sample and it's field duplicate; where parameter <MDL, MDL used to calculate average. Note: the duplicate average must exceed the SCS for there to be an exceedance.

"RPD" - relative percent difference.

"NC" - RPD not calculable as both values are not greater than 5x the MDL.

Bold - means RPD outside of the sample duplicate value as outlined in the 2011 Analytical Protocol (Metals 30%, Chromium (VI) 35%, Mercury 30%, pH 0.3 pH units, Conductivity 10%,).

"+" means as per O. Reg. 153/04 as amended, in order to apply the generic Site Condition Standards, pH for surface soil (<1.5 mbgs) should be between 5 and 9 and pH for subsurface soil (>1.5 mbgs) should be between 5 and 11.

APPENDIX A

Laboratory Certificates of Analysis

PARACEL LABORATORIES LTD.
TRUSTED. RESPONSIVE. RELIABLE.

300 - 2319 St. Laurent Blvd
Ottawa, ON, K1G 4J8
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

Wood Environment & Infrastructure (Thorold)

3300 Merrittville Hwy, Unit 5
Thorold, ON L2V 4Y6
Attn: Kelly Patterson

Client PO:
Project: TG181021/1000
Custody: 41528

Report Date: 21-Jun-2018
Order Date: 7-May-2018

Revised Report

Order #: 1819087

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

Paracel ID	Client ID
1819087-01	TP4-3

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Wood Environment & Infrastructure (Thorold)
Client PO:

Report Date: 21-Jun-2018
Order Date: 7-May-2018
Project Description: TG181021/1000

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PCBs, total	SW846 8082A - GC-ECD	9-May-18	10-May-18
REG 558 - Cyanide	MOE E3015- Auto Colour	11-May-18	11-May-18
REG 558 - Fluoride	EPA 340.2 - ISE	11-May-18	11-May-18
REG 558 - Mercury by CVAA	EPA 7470A - Cold Vapour AA	11-May-18	11-May-18
REG 558 - Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	11-May-18	11-May-18
REG 558 - NO3/NO2	EPA 300.1 - IC	11-May-18	11-May-18
REG 558 - VOCs	EPA 624 - P&T GC-MS	10-May-18	11-May-18
Solids, %	Gravimetric, calculation	10-May-18	10-May-18

Certificate of Analysis

Client: Wood Environment & Infrastructure (Thorold)

Client PO:

Report Date: 21-Jun-2018

Order Date: 7-May-2018

Project Description: TG181021/1000

	Client ID:	TP4-3	-	-	-
	Sample Date:	05/07/2018 00:00	-	-	-
	Sample ID:	1819087-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	79.5	-	-	-
EPA 1311 - TCLP Leachate Inorganics					
Arsenic	0.05 mg/L	<0.05	-	-	-
Barium	0.05 mg/L	0.36	-	-	-
Boron	0.05 mg/L	0.07	-	-	-
Cadmium	0.01 mg/L	<0.01	-	-	-
Chromium	0.05 mg/L	<0.05	-	-	-
Lead	0.05 mg/L	<0.05	-	-	-
Mercury	0.005 mg/L	<0.005	-	-	-
Selenium	0.05 mg/L	<0.05	-	-	-
Silver	0.05 mg/L	<0.05	-	-	-
Uranium	0.05 mg/L	<0.05	-	-	-
Fluoride	0.05 mg/L	0.28	-	-	-
Nitrate as N	1 mg/L	<1	-	-	-
Nitrite as N	1 mg/L	<1	-	-	-
Cyanide, free	0.02 mg/L	<0.02	-	-	-
EPA 1311 - TCLP Leachate Organics					
Benzene	0.005 mg/L	<0.005	-	-	-
Carbon Tetrachloride	0.005 mg/L	<0.005	-	-	-
Chlorobenzene	0.004 mg/L	<0.004	-	-	-
Chloroform	0.006 mg/L	<0.006	-	-	-
1,2-Dichlorobenzene	0.004 mg/L	<0.004	-	-	-
1,4-Dichlorobenzene	0.004 mg/L	<0.004	-	-	-
1,2-Dichloroethane	0.005 mg/L	<0.005	-	-	-
1,1-Dichloroethylene	0.006 mg/L	<0.006	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.30 mg/L	<0.30	-	-	-
Methylene Chloride	0.04 mg/L	<0.04	-	-	-
Tetrachloroethylene	0.005 mg/L	<0.005	-	-	-
Trichloroethylene	0.004 mg/L	<0.004	-	-	-
Vinyl chloride	0.005 mg/L	<0.005	-	-	-
4-Bromofluorobenzene	Surrogate	105%	-	-	-
Dibromofluoromethane	Surrogate	94.9%	-	-	-
Toluene-d8	Surrogate	97.5%	-	-	-
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	-	-	-
Decachlorobiphenyl	Surrogate	116%	-	-	-

Certificate of Analysis
Client: Wood Environment & Infrastructure (Thorold)
Client PO:

Report Date: 21-Jun-2018
Order Date: 7-May-2018
Project Description: TG181021/1000

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Arsenic	ND	0.05	mg/L						
Barium	ND	0.05	mg/L						
Boron	ND	0.05	mg/L						
Cadmium	ND	0.01	mg/L						
Chromium	ND	0.05	mg/L						
Lead	ND	0.05	mg/L						
Mercury	ND	0.005	mg/L						
Selenium	ND	0.05	mg/L						
Silver	ND	0.05	mg/L						
Uranium	ND	0.05	mg/L						
Fluoride	ND	0.05	mg/L						
Nitrate as N	ND	1	mg/L						
Nitrite as N	ND	1	mg/L						
Cyanide, free	ND	0.02	mg/L						
PCBs									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	*0.122*		*ug/g*		*122*	*60-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Arsenic	ND	0.05	mg/L	ND			0.0	29	
Barium	1.08	0.05	mg/L	1.15			6.3	34	
Boron	0.090	0.05	mg/L	0.113			23.4	33	
Cadmium	ND	0.01	mg/L	ND			0.0	33	
Chromium	ND	0.05	mg/L	ND			0.0	32	
Lead	ND	0.05	mg/L	ND			0.0	32	
Mercury	ND	0.005	mg/L	ND			0.0	30	
Selenium	ND	0.05	mg/L	ND			0.0	28	
Silver	ND	0.05	mg/L	ND			0.0	28	
Uranium	ND	0.05	mg/L	ND			0.0	27	
Fluoride	0.32	0.05	mg/L	0.32			0.9	20	
Nitrate as N	ND	1	mg/L	ND			0.0	20	
Nitrite as N	ND	1	mg/L	ND				20	
Cyanide, free	ND	0.02	mg/L	ND				20	
EPA 1311 - TCLP Leachate Organics									
Benzene	ND	0.005	mg/L	ND				25	
Carbon Tetrachloride	ND	0.005	mg/L	ND				25	
Chlorobenzene	ND	0.004	mg/L	ND				25	
Chloroform	ND	0.006	mg/L	ND				25	
1,2-Dichlorobenzene	ND	0.004	mg/L	ND				25	
1,4-Dichlorobenzene	ND	0.004	mg/L	ND				25	
1,2-Dichloroethane	ND	0.005	mg/L	ND				25	
1,1-Dichloroethylene	ND	0.006	mg/L	ND				25	
Methyl Ethyl Ketone (2-Butanone)	ND	0.30	mg/L	ND				25	
Methylene Chloride	ND	0.04	mg/L	ND				25	
Tetrachloroethylene	ND	0.005	mg/L	ND				25	
Trichloroethylene	ND	0.004	mg/L	ND				25	
Vinyl chloride	ND	0.005	mg/L	ND				25	
Surrogate: 4-Bromofluorobenzene	*0.701*		*mg/L*		*102*	*83-134*			
Surrogate: Dibromofluoromethane	*0.726*		*mg/L*		*105*	*78-124*			
Surrogate: Toluene-d8	*0.662*		*mg/L*		*96.2*	*76-118*			
PCBs									
PCBs, total	ND	0.05	ug/g dry	ND				40	
Surrogate: Decachlorobiphenyl	*0.152*		*ug/g dry*		*121*	*60-140*			
Physical Characteristics									
% Solids	85.8	0.1	% by Wt.	85.0			1.0	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Arsenic	44.3		ug/L	0.247	88.1	83-119			
Barium	159		ug/L	115	88.9	83-116			
Boron	54.3		ug/L	11.3	86.0	71-128			
Cadmium	41.9		ug/L	0.259	83.4	78-119			
Chromium	48.1		ug/L	2.68	90.8	80-124			
Lead	45.8		ug/L	2.00	87.6	77-126			
Mercury	0.0321	0.005	mg/L	ND	107	70-130			
Selenium	42.9		ug/L	0.243	85.2	81-125			
Silver	41.4		ug/L	ND	82.7	70-128			
Uranium	46.2		ug/L	0.364	91.6	70-131			
Fluoride	0.81	0.05	mg/L	0.32	99.3	70-130			
Nitrate as N	10	1	mg/L	ND	105	81-112			
Nitrite as N	9	1	mg/L	ND	92.5	76-107			
Cyanide, free	0.055	0.02	mg/L	ND	110	60-136			
EPA 1311 - TCLP Leachate Organics									
Benzene	33.4		ug/L		83.6	55-141			
Carbon Tetrachloride	38.6		ug/L		96.4	49-149			
Chlorobenzene	36.0		ug/L		90.0	64-137			
Chloroform	36.5		ug/L		91.2	58-138			
1,2-Dichlorobenzene	36.3		ug/L		90.7	60-150			
1,4-Dichlorobenzene	35.8		ug/L		89.5	63-132			
1,2-Dichloroethane	32.2		ug/L		80.4	50-140			
1,1-Dichloroethylene	37.3		ug/L		93.3	43-153			
Methyl Ethyl Ketone (2-Butanone)	76.7		ug/L		76.7	26-153			
Methylene Chloride	39.8		ug/L		99.5	58-149			
Tetrachloroethylene	41.0		ug/L		102	51-145			
Trichloroethylene	33.0		ug/L		82.4	52-135			
Vinyl chloride	38.4		ug/L		96.0	31-159			
Surrogate: 4-Bromofluorobenzene	*0.0841*		*mg/L*		*105*	*83-134*			
PCBs									
PCBs, total	0.491	0.05	ug/g	ND	97.6	60-140			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

Revision 1 - this report includes an updated client Sample ID.

Other Report Notes:

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

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

Paracel ID: 1819087

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№ 41528

Page 1 of 1

Client Name: Wood Environment & Infrastructure Solutions	Project Reference: TG18021/1000
Contact Name: Kelly Patterson	Quote #: Tier 2 #18-016
Address: 3500 Merritville Hwy, Thorold, ON L2V4Y6	PO #:
Telephone: 905-687-6616	Email Address: Kelly.Patterson@woodplc.com

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required: _____

Criteria: ☐ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☒ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number:

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	Required Analyses: TCLP Inorganics	TCLP metals	TCLP VOCs	TCLP PCBs	
1	BH4-3	S		2	May 7/18		X	X	X	X	- 8x250 mL
2											
3											
4											
5											
6											
7											
8											
9											
10											

Comments: Governed by agreement SN07-003. Parameters to meet requirements of NWSL. (Niagara) Per Kelly Patterson

Method of Delivery: P/U

Relinquished By (Sign):	Received by Driver/Depot: B. Barton	Received at Lab: SUNREFORM DOMAI	Verified By:
Relinquished By (Print): Kevin Haines	Date/Time: May 7/18 12:25 pm	Date/Time: MAY 08 2018 11:05	Date/Time: 08/05/18 11:16
Date/Time: May 7, 2018	Temperature: 12 °C	Temperature: 10.4 °C	pH Verified [ ] By: NA

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Certificate of Analysis

Wood Environment & Infrastructure (Thorold)

3300 Merrittville Hwy, Unit 5
Thorold, ON L2V 4Y6
Attn: Kelly Patterson

Client PO:
Project: TG181021/1000
Custody: 41529

Report Date: 27-Jun-2018
Order Date: 22-Jun-2018

Order #: 1825727

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

Paracel ID	Client ID
1825727-01	FS1
1825727-02	FS2
1825727-03	NW1
1825727-04	SW1
1825727-05	WW1
1825727-06	EW1
1825727-07	Dup A

Approved By:

Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Wood Environment & Infrastructure (Thorold)
Client PO:

Report Date: 27-Jun-2018
Order Date: 22-Jun-2018
Project Description: TG181021/1000

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	26-Jun-18	26-Jun-18
Solids, %	Gravimetric, calculation	26-Jun-18	26-Jun-18

Certificate of Analysis

Client: Wood Environment & Infrastructure (Thorold)

Client PO:

Report Date: 27-Jun-2018

Order Date: 22-Jun-2018

Project Description: TG181021/1000

	Client ID:	FS1	FS2	NW1	SW1
	Sample Date:	06/22/2018 08:20	06/22/2018 08:25	06/22/2018 08:30	06/22/2018 08:35
	Sample ID:	1825727-01	1825727-02	1825727-03	1825727-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	79.5	79.6	80.0	90.9
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	3.6	3.6	3.2	1.4
Barium	1.0 ug/g dry	122	133	177	85.8
Beryllium	0.5 ug/g dry	0.8	0.8	0.9	<0.5
Boron	5.0 ug/g dry	9.0	8.2	12.2	<5.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	5.0 ug/g dry	26.2	25.3	28.9	9.0
Cobalt	1.0 ug/g dry	13.9	13.1	15.3	6.0
Copper	5.0 ug/g dry	22.5	22.0	25.3	9.5
Lead	1.0 ug/g dry	144	12.4	14.6	5.0
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	5.0 ug/g dry	31.6	30.8	35.0	13.3
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	10.0 ug/g dry	34.6	34.1	38.7	14.3
Zinc	20.0 ug/g dry	73.5	74.9	84.0	26.9

Certificate of Analysis

Client: Wood Environment & Infrastructure (Thorold)

Client PO:

Report Date: 27-Jun-2018

Order Date: 22-Jun-2018

Project Description: TG181021/1000

	Client ID:	WW1	EW1	Dup A	-
	Sample Date:	06/22/2018 08:40	06/22/2018 08:45	06/22/2018 00:00	-
	Sample ID:	1825727-05	1825727-06	1825727-07	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	82.0	84.2	76.4	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Arsenic	1.0 ug/g dry	3.3	3.1	3.4	-
Barium	1.0 ug/g dry	127	126	142	-
Beryllium	0.5 ug/g dry	0.7	0.7	0.8	-
Boron	5.0 ug/g dry	5.9	7.0	9.8	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Chromium	5.0 ug/g dry	25.0	22.1	28.5	-
Cobalt	1.0 ug/g dry	13.1	12.0	14.2	-
Copper	5.0 ug/g dry	22.2	19.8	23.5	-
Lead	1.0 ug/g dry	16.3	11.5	14.8	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Nickel	5.0 ug/g dry	30.8	28.0	33.9	-
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	-
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Vanadium	10.0 ug/g dry	33.4	30.0	37.9	-
Zinc	20.0 ug/g dry	88.3	73.0	101	-

Certificate of Analysis
Client: Wood Environment & Infrastructure (Thorold)
Client PO:

Report Date: 27-Jun-2018
Order Date: 22-Jun-2018
Project Description: TG181021/1000

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	4.1	1.0	ug/g dry	3.6			14.3	30	
Barium	134	1.0	ug/g dry	122			8.9	30	
Beryllium	0.8	0.5	ug/g dry	0.8			7.0	30	
Boron	13.2	5.0	ug/g dry	9.0			37.9	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium	29.4	5.0	ug/g dry	26.2			11.3	30	
Cobalt	15.0	1.0	ug/g dry	13.9			7.8	30	
Copper	24.3	5.0	ug/g dry	22.5			7.6	30	
Lead	161	1.0	ug/g dry	144			10.8	30	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	34.4	5.0	ug/g dry	31.6			8.6	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.3	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	1.0	1.0	ug/g dry	ND			0.0	30	
Vanadium	38.5	10.0	ug/g dry	34.6			10.6	30	
Zinc	79.4	20.0	ug/g dry	73.5			7.8	30	
Physical Characteristics									
% Solids	71.0	0.1	% by Wt.	63.9			10.5	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	41.1		ug/L	ND	82.2	70-130			
Arsenic	44.6		ug/L	1.4	86.3	70-130			
Barium	102		ug/L	48.9	107	70-130			
Beryllium	46.3		ug/L	ND	92.0	70-130			
Boron	51.3		ug/L	ND	95.5	70-130			
Cadmium	41.2		ug/L	ND	82.1	70-130			
Chromium	57.3		ug/L	10.5	93.5	70-130			
Cobalt	51.4		ug/L	5.5	91.8	70-130			
Copper	54.8		ug/L	9.0	91.5	70-130			
Lead	111		ug/L	57.8	107	70-130			
Molybdenum	40.7		ug/L	ND	81.1	70-130			
Nickel	58.6		ug/L	12.6	91.9	70-130			
Selenium	41.2		ug/L	ND	82.0	70-130			
Silver	40.1		ug/L	ND	80.1	70-130			
Thallium	50.0		ug/L	ND	99.8	70-130			
Uranium	51.6		ug/L	ND	102	70-130			
Vanadium	61.5		ug/L	13.8	95.3	70-130			
Zinc	72.4		ug/L	29.4	86.0	70-130			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

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Paracel ID: 1825727

Chain of Custody
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№ 41529

Page 1 of 1

Client Name: Wood Environment & Infrastructure Solutions	Project Reference: TG18021/1000	**Turnaround Time:**
Contact Name: Kelly Patterson	Quote # Tier 2 #18-06 KW	☐ 1 Day ☐ 3 Day
Address: 3300 Merritville Hwy., Thorold, ON L2V 4Y6	PO #	☐ 2 Day ☒ Regular
Telephone: 905-687-6616	Email Address: Kelly.Patterson@wood.com	Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1825727

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	Required Analyses: Metals (ICP/MS)									
1	FS1	S		1	June 22/18	8:20	X				250mL					✓
2	FS2	S		1		8:25	X									✓
3	NW1	S		1		8:30	X									✓
4	SW1	S		1		8:35	X									✓
5	WW1	S		1		8:40	X									✓
6	EW1	S		1		8:45	X									✓
7	DupA	S		1	↓	-	X				↓					✓
8																
9																
10																

Comments: Governed by SNH07-003. Hold samples.

Method of Delivery: walkin.

Relinquished By (Sign):	Received by Driver/Depot: Niagara	Received at Lab:	Verified By:
Relinquished By (Print): Kevin Haines	Date/Time: 22 Jun 18 18:45	Date/Time: June 23/18 12:00	Date/Time: 06/23/18 9:03
Date/Time: June 22, 2018	Temperature: 8.8 °C	Temperature: 8.3 °C	pH Verified [ ] By: NA

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Certificate of Analysis

Wood Environment & Infrastructure (Thorold)

3300 Merrittville Hwy, Unit 5
Thorold, ON L2V 4Y6
Attn: Kelly Patterson

Client PO:
Project: TG181021/1000
Custody: 41530

Report Date: 5-Jul-2018
Order Date: 29-Jun-2018

Order #: 1826666

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

Paracel ID	Client ID
1826666-01	FS1

Approved By: Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Wood Environment & Infrastructure (Thorold)
Client PO:

Report Date: 05-Jul-2018
Order Date: 29-Jun-2018
Project Description: TG181021/1000

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	4-Jul-18	4-Jul-18
Solids, %	Gravimetric, calculation	30-Jun-18	30-Jun-18

Certificate of Analysis

Client: Wood Environment & Infrastructure (Thorold)

Client PO:

Report Date: 05-Jul-2018

Order Date: 29-Jun-2018

Project Description: TG181021/1000

	Client ID:	FS1	-	-	-
	Sample Date:	06/29/2018 11:30	-	-	-
	Sample ID:	1826666-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	74.6	-	-	-
Metals					
Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	4.8	-	-	-
Barium	1.0 ug/g dry	130	-	-	-
Beryllium	0.5 ug/g dry	1.0	-	-	-
Boron	5.0 ug/g dry	20.0	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	5.0 ug/g dry	26.3	-	-	-
Cobalt	1.0 ug/g dry	12.4	-	-	-
Copper	5.0 ug/g dry	20.7	-	-	-
Lead	1.0 ug/g dry	12.7	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	5.0 ug/g dry	25.9	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	10.0 ug/g dry	35.4	-	-	-
Zinc	20.0 ug/g dry	80.9	-	-	-

Certificate of Analysis
Client: Wood Environment & Infrastructure (Thorold)
Client PO:

Report Date: 05-Jul-2018
Order Date: 29-Jun-2018
Project Description: TG181021/1000

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g dry	ND				30	
Arsenic	1.0	1.0	ug/g dry	1.0			1.5	30	
Barium	23.6	1.0	ug/g dry	24.0			1.5	30	
Beryllium	ND	0.5	ug/g dry	ND			0.0	30	
Boron	10.3	5.0	ug/g dry	8.8			16.0	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium	34.8	5.0	ug/g dry	35.6			2.3	30	
Cobalt	1.9	1.0	ug/g dry	2.0			0.5	30	
Copper	18.1	5.0	ug/g dry	18.2			0.4	30	
Lead	10.4	1.0	ug/g dry	9.6			8.2	30	
Molybdenum	1.5	1.0	ug/g dry	1.3			17.7	30	
Nickel	5.8	5.0	ug/g dry	12.5			74.0	30	QR-01
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.3	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND			0.0	30	
Vanadium	12.7	10.0	ug/g dry	13.1			2.5	30	
Zinc	53.3	20.0	ug/g dry	54.2			1.6	30	
Physical Characteristics									
% Solids	82.8	0.1	% by Wt.	82.8			0.0	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	48.3		ug/L	ND	96.7	70-130			
Arsenic	51.0		ug/L	ND	101	70-130			
Barium	58.6		ug/L	9.6	98.0	70-130			
Beryllium	56.1		ug/L	ND	112	70-130			
Boron	48.3		ug/L	ND	89.5	70-130			
Cadmium	49.5		ug/L	ND	99.0	70-130			
Chromium	60.7		ug/L	14.3	92.8	70-130			
Cobalt	48.7		ug/L	ND	95.9	70-130			
Copper	54.8		ug/L	7.3	95.0	70-130			
Lead	50.1		ug/L	3.8	92.5	70-130			
Molybdenum	49.0		ug/L	ND	97.1	70-130			
Nickel	52.4		ug/L	5.0	94.8	70-130			
Selenium	49.4		ug/L	ND	98.5	70-130			
Silver	48.4		ug/L	ND	96.8	70-130			
Thallium	47.1		ug/L	ND	94.1	70-130			
Uranium	51.6		ug/L	ND	103	70-130			
Vanadium	52.7		ug/L	ND	94.9	70-130			
Zinc	69.8		ug/L	21.7	96.2	70-130			

Qualifier Notes:

QC Qualifiers :

QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

Paracel ID: 1826666

PARACEL LABORATORIES LTD. | TRUSTED . RESPONSIV RELIABLE .

Chain of Custody (Lab Use Only)

№ 41530

Page 1 of 1

Client Name: Wood Environment & Infrastructure Solutions	Project Reference: TG181021 / 1000
Contact Name: Kelly Patterson	Quote # Tier 2
Address: 3300 Merrittville Hwy, Thorold, ON, L2V4Y6	PO #
	Email Address: Kelly.Patterson@woodplc.com
Telephone: 905-687-6616	

Turnaround Time:

☐ 1 Day ☐ 3 Day

☐ 2 Day ☒ Regular

Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ________ ☐ Other: ________

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1826666

Required Analyses

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Metals - ICP										
1	FS1	S		1	June 29/18	11:30	X										
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Comments: Governed by agreement SNA07-003.

Method of Delivery: walkin

Relinquished By (Sign): [signature]	Received by Driver/Depot: Bhmeniek	Received at Lab: [signature]	Verified By: [signature]
Relinquished By (Print): Kevin Haines	Date/Time: 29JUN18 13:15	Date/Time: June 30/18 11:45	Date/Time: 3/7/18 8:24
Date/Time: June 29/18	Temperature: 10.6 °C	Temperature: 11.3 °C	pH Verified [ ] By: NA

APPENDIX B

Copy of Weigh Bills

Niagara Waste, 3081 Taylor Rd
Niagara Falls, ON Tel: (905) 680-2495 x221

******** Reprinted Ticket ********

Ticket: NW3687212

Date: 6/22/2018

Time: 08:40:36 - 08:58:05

Cust: 050259-0015
Demar Const-Montrose/McLeod
Carr: DEC/Demar Construction
Truck: DEC02
Vehicle Type: 24/Triaxle
License: AJ30178
Manifest: # 18193
P.O.: KEN

Gross: **39800 kg In Scale 1**

Tare: **13250 kg Out Scale 2**

Net: **26550 kg**

Waste Type: 9390
COVER MATERIAL
Quantity: 26.55 Tonnes

Please check ticket before leaving scale
Have a nice day.

.

Niagara Waste, 3081 Taylor Rd
Niagara Falls, ON Tel: (905) 680-2495 x221

******** Reprinted Ticket ********

Ticket: NW3687271

Date: 6/22/2018

Time: 08:56:58 - 09:21:36

Cust: 050259-0015
Demar Const-Montrose/McLeod
Carr: DEC/Demar Construction
Truck: DEC01
Vehicle Type: 24/Triaxle
License: AM47720
Grid: 11/Cell 11
Manifest: # 18193
P.O.: ED

Gross:	**38750 kg**	**In**	**Scale 1**
Tare:	**13760 kg**	**Out**	**Scale 2**
Net:	**24990 kg**		

Waste Type: 9390
COVER MATERIAL
Quantity: 24.99 Tonnes

Please check ticket before leaving scale
Have a nice day.

.

Niagara Waste, 3081 Taylor Rd
Niagara Falls, ON Tel: (905) 680-2495 x221

******** Reprinted Ticket ********

Ticket: NW3687425

Date: 6/22/2018

Time: 10:11:15 - 10:29:54

Cust: 050259-0015
Demar Const-Montrose/McLeod
Carr: DEC/Demar Construction
Truck: DEC02
Vehicle Type: 24/Triaxle
License: AJ30178
Grid: 11/Cell 11
Manifest: # 18193
P.O.: KEN

Gross: 22500 kg In Scale 1
Tare: 13800 kg Out Scale 2
Net: 8700 kg

Waste Type: 9390
COVER MATERIAL
Quantity: 8.70 Tonnes

Please check ticket before leaving scale
Have a nice day.

.

APPENDIX C

LIMITATIONS

Limitations

1. The work performed in the preparation of this report and the conclusions presented are subject to the following:

   (a) The Standard Terms and Conditions which form a part of our Proposal dated May 4, 2018, and Authorization to Proceed, signed by the Client on May 4, 2018;

   (b) The Scope of Services;

   (c) Time and Budgetary limitations as described in our Contract; and,

   (d) The Limitations stated herein.

2. No other warranties or representations, either expressed or implied, are made as to the professional services provided under the terms of our Contract, or the conclusions presented.

3. The conclusions presented in this report were based, in part, on visual observations of the site and attendant structures. Our conclusions cannot and are not extended to include those portions of the site or structures which were not reasonably available, in Wood's opinion, for direct observation.

4. The environmental conditions at the site were assessed, within the limitations set out above, having due regard for applicable environmental regulations as of the date of the inspection. A review of compliance by past owners or occupants of the site with any applicable local, provincial or federal by-laws, orders-in-council, legislative enactments and regulations was not performed.

5. The site history research included obtaining information from third parties and employees or agents of the owner. No attempt has been made to verify the accuracy of any information provided, unless specifically noted in our report.

6. Where testing was performed, it was carried out in accordance with the terms of our contract providing for testing. Other substances, or different quantities of substances testing for, may be present on site and may be revealed by different of other testing not provided for in our contract.

7. Because of the limitations referred to above, different environmental conditions from those stated in our report may exist. Should such different conditions be encountered, Wood must be notified in order that it may determine if modifications to the conclusions in the report are necessary.

8. The utilization of Wood's services during the implementation of any remedial measures will allow Wood to observe compliance with the conclusions and recommendations contained in the report. Wood's involvement will also allow for changes to be made as necessary to suit field conditions as they are encountered.

9. This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or contract. Any use which any third party makes of the report, in whole or in part, or any reliance thereon, or decisions made based on any information of conclusions in the report, is the sole responsibility of such third party. Wood accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report or anything set out therein.

10. This report is not to be given over to any third party for any purpose whatsoever without the written permission of Wood.

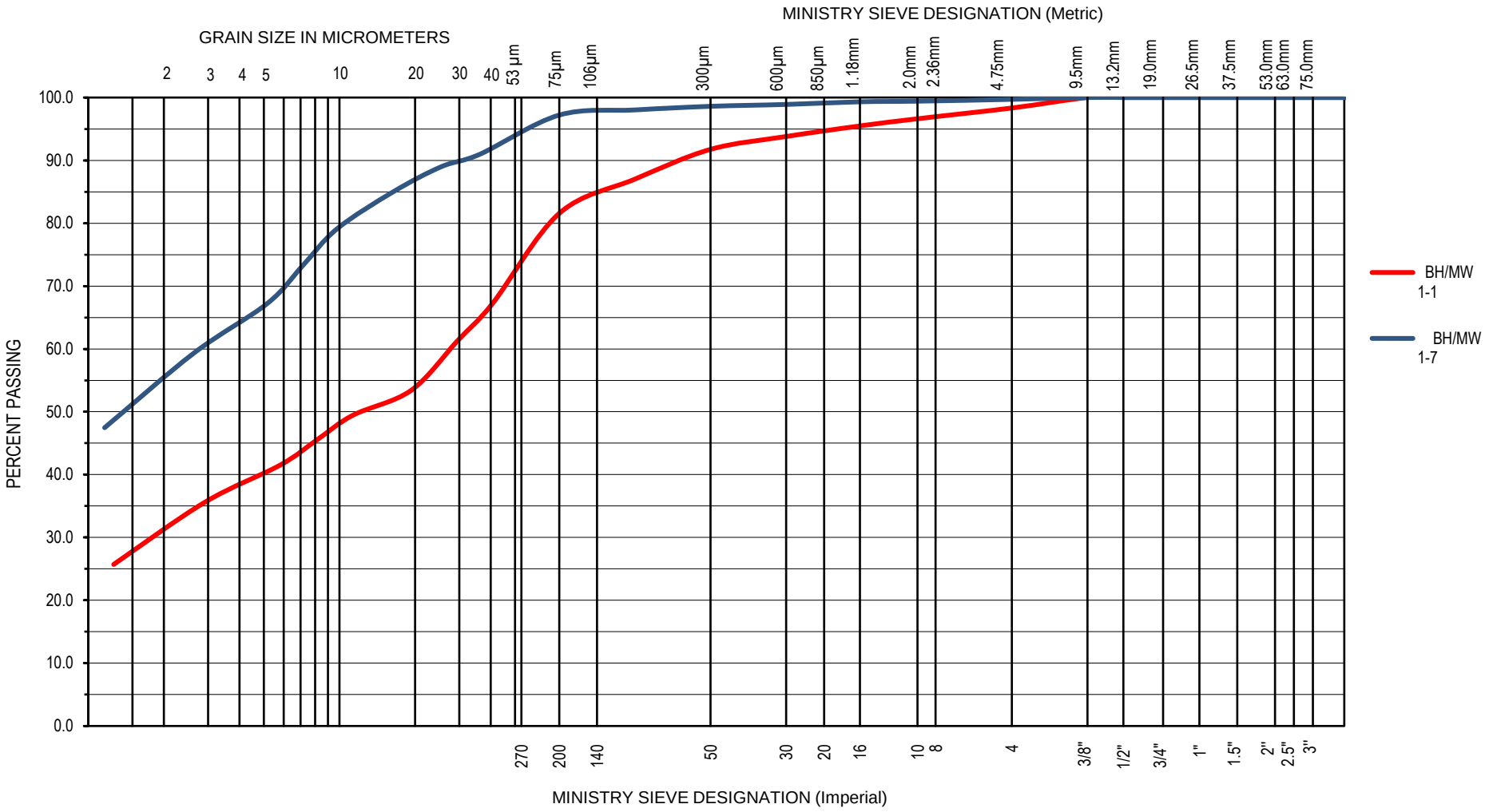
11. Provided that the report is still reliable, and less than 12 months old, Wood will issue a third-party reliance letter to parties Client identifies in writing, upon payment of the then current fee for such letters. All third parties relying on Wood's report, by such reliance agree to be bound by our proposal and Wood's standard reliance letter. Wood's standard reliance letter indicates that in no event shall Wood be liable for any damages, howsoever arising, relating to third-party reliance on Wood's report. No reliance by any party is permitted without such agreement.

APPENDIX B

GRAIN SIZE ANALYSIS, TESTPIT LOGS, AND BOREHOLE LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY & SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse



CLIENT: **Marianos Holdings Inc.**		PREPARED BY: AM	PROJECT: Montrose Rd., Niagara Falls, ON	DATE: March 12, 2018
Wood Environment & Infrastructure Solutions 3300 Merrittville Highway, Unit #5 Thorold, Ontario	wood.	CHECKED BY: KP	TITLE: Grain Size Distribution	PROJECT NO: TG181021 FIGURE NO:

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP01 **(652630, 4770813)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
-	0.25	No odour or staining	5/0	0.0-2.0	Brown, Silty Clay/Clayey Silt FILL, Some Sand and Gravel, DTPL
TP1-2 [Metals]	0.75	No odour or staining	25/0		
-	1.25	Black Staining, Unidentifiable Odour, Has Wood and Boulders	20/0		
-	1.75	No odour or staining	10/0		
-	2.25	No odour or staining	15/0	2.0-2.5	Brown, Silty Clay/Clayey Silt, Some Clay

Upon completion: Testpit terminated due to caving.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP02 **(652619, 4770819)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	Construction Debris (Bricks), No odour or staining	0/0	0.0-2.0	15cm Imported Topsoil over Brown, Silty Clay/Clayey Silt, FILL, Traces of Gravel, DTPL
TP2-2 + Dup 3 [pH, Conductivity, SAR, Metals, Hg, CrVI, HWS Boron, PHCs (F1-F4), VOCs, PAHs, PCBs]	0.75	Debris (Rubber Tire), No odour or staining	0/0		
3	1.25	Plastic Debris, Unidentifiable Odour	0/0		
4	1.75	Black Organics Staining	0/0		
5	2.25	Black Organics Staining	0/0	2.0-2.5	Brown, Clay Silt, FILL, Traces of Gravel, and Organics, Wet
6	2.75	No odour or staining	0/0	2.5-4.5	Brown, Clay Silt, NATIVE, Traces of Gravel, Cobbles, Sand, and Organics, Moist
7	3.25	No odour or staining	0/0		
8	3.75	No odour or staining	0/0		
9	4.25	No odour or staining	0/0		

Upon completion: Testpit remained open and dry.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: “mbgs” means metres below ground surface. “COV” means Combustible Organic Vapour, “TOV” means Total Organic Vapour, “ppm” means parts per million. “PHCs” means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. “BTEX” means benzene, toluene, ethylbenzene and xylenes. “DTPL” means Drier Than Plastic Limit. “APL” means At Plastic Limit. “WTPL” means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP03 **(652608, 4770857)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	0/0	0.0-2.5	15cm Imported Topsoil over Brown, Silty Clay/Clayey Silt, FILL, Some Gravel, Traces of Cobble and Organics, DTPL
2	0.75	No odour or staining	0/0		
TP3-3 [Metals, PHCs (F1-F4), BTEX]	1.25	No odour or staining	0/0		
TP3-4 [Metals]	1.75	Organics Odour and Staining	0/0		
5	2.25	No odour or staining	0/0		
TP3-6 [pH]	2.75	No odour or staining	0/0	2.5-3.0	Brown, Silty Clay/Clayey Silt, NATIVE, Traces of Gravel, DTPL
7	3.25	No odour or staining	0/0	3.0-3.5	Brown, Clayey Silt, NATIVE, Clay Seams, Moist

Upon completion: Testpit remained open with water entering.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP04 **(652597, 4770861)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	0/0	0.0-2.5	10cm Imported Topsoil over Brown, Silty Clay/Clayey Silt, FILL, Some Gravel, Traces of Cobbles and Organics, DTPL
TP4-2 [Metals]	0.75	No odour or staining	0/0		
TP4-3 [Metals, PHCs (F1-F4), BTEX]	1.25	Black Organics Staining	0/0		
TP4-4 [Metals]	1.75	No odour or staining	0/0		
5	2.25	No odour or staining	0/0		
6	2.75	No odour or staining	0/0	2.5-3.5	Brown, Silty Clay/Clayey Silt, NATIVE, Some Organics, APL
7	3.25	No odour or staining	0/0		
8	3.75	No odour or staining	0/0	3.5-4.0	Brown, Clayey Silt, NATIVE, Clay Seams, Moist

Upon completion: Testpit remained open with water entering.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP05 **(652650, 4770842)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
-	-	No odour or staining	-	0.0-2.0	Crushed Rock, Traces of Sand and Gravel
1	2.0	No odour or staining	5/0	2.0-2.5	Brown, Silty Sand, FILL, Moist
2	2.75	No odour or staining	5/0	2.5-4.5	Brown, Silty Sand, FILL, Some Gravel, Moist to Saturated
3	3.25	No odour or staining	0/0		
TP5-4 + Dup 12 [pH, Metals]	3.75	No odour or staining	20/0		
5	4.25	No odour or staining	5/0		
6	4.75	No odour or staining	0/0	4.5-5.0	Brown/Grey, Silty Clay/Clayey Silt, NATIVE, Traces of Gravel and Sand, WTPL

Upon completion: Testpit caving at 3.5 mbgs, water entering from surface.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP06 **(652643, 4770871)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	0/0	0.0-2.0	Brown, Clayey Silt, FILL, Traces of Gravel, Moist
2	0.75	No odour or staining	0/0		
3	1.25	No odour or staining	0/0		
4	1.75	No odour or staining	0/0		
5	2.25	No odour or staining	0/0	2.0-3.0	Brown, Clayey Silt, FILL, Clay Seams, Moist
6	2.75	No odour or staining	0/0		
7	3.25	No odour or staining	0/0	3.0-4.0	Brown, Silty Clay/Clayey Silt, FILL, Traces of Gravel, DTPL
TP6-8 [Metals]	3.75	No odour or staining	0/0		

Upon completion: Testpit terminated due to caving.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: “mbgs” means metres below ground surface. “COV” means Combustible Organic Vapour, “TOV” means Total Organic Vapour, “ppm” means parts per million. “PHCs” means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. “BTEX” means benzene, toluene, ethylbenzene and xylenes. “DTPL” means Drier Than Plastic Limit. “APL” means At Plastic Limit. “WTPL” means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP07 **(652661, 4770887)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
TP7-1 [Metals]	0.25	No odour or staining	0/0	0.0-1.0	10cm Imported Topsoil over Brown, Silty Clay/Clayey Silt, FILL, Some Sand and Gravel, DTPL
2	0.75	No odour or staining	0/0		
3	1.25	No odour or staining	0/0	1.0-1.5	Brown, Silty Clay/Clayey Silt, Some Gravel, Traces of Organics, DTPL
4	1.75	No odour or staining	0/0	1.5-2.0	Brown, Silty Sand/Sandy Silt, Traces of Clay and Organics, Moist
5	2.25	No odour or staining	0/0	2.0-2.5	Brown, Silty Clay/Clayey Silt, FILL, Some Sand, DTPL
6	2.75	No odour or staining	0/0	2.5-3.0	Brown, Silty Sand/Sandy Silt, FILL

Upon completion: Tespit terminated due to caving.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP08 **(652644, 4770894)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
-	-	-	-	0-1.0	Fill Pile/Topsoil
TP8-1 [Metals]	1.25	No odour or staining	0/0	1.0-1.5	Brown, Silty Clay/Clayey Silt, FILL, Traces of Gravel, DTPL
2	1.75	No odour or staining	0/0	1.5-2.5	Brown, Clayey Silt, FILL, Traces of Gravel, DTPL
3	2.25	No odour or staining	0/0		

Upon completion: Testpit terminated due to caving.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP09 **(652688, 4770938)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
-	-	-	-	0-1.5	Crushed Rock, Some Sand and Gravel
TP9-1 [Metals]	1.75	No odour or staining	0/0	1.5-2.0	Brown, Silty Clay/Clayey Silt, FILL, Some Sand and Gravel, DTPL
2	2.25	No odour or staining	0/0	2.0-3.0	Brown, Silty Sand/Sandy Silt, FILL, Traces of Clay, Moist to Saturated
3	2.75	No odour or staining	0/0		

Upon completion: Testpit terminated due to caving.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP10 **(652711, 4770967)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
-	-	Water at 2.5 mbgs.	-	0-3.5	20cm Imported Topsoil over Blast Rock, Some Concrete

Upon completion: Testpit terminated due to caving and water.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP11 **(652705, 4770989)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	-	0.0-1.0	10cm Imported Topsoil over Brown, Silty Clay/Clayey Silt, FILL, Traces of Sand and Gravel, DTPL
TP11-2 [pH, Conductivity, SAR, Metals, Hg, CrVI, HWS Boron, PHCs (F1-F4), BTEX, PAHs, PCBs]	0.75	Debris (Broken Pipe) No odour or staining	-		
3	1.25	No odour or staining	-	1.0-2.0	Brown, Silty Sand/Sandy Silt, FILL, Traces of Gravel and Clay, Moist
4	1.75	No odour or staining	-		

Upon completion: Testpit remained open and dry at 2.0 mbgs.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP12 **(652696, 4770999)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	0/0	0.0-2.0	20cm Topsoil over Brown. Silty Clay/Clayey Silt, FILL, Traces of Sand and Gravel
2	0.75	No odour or staining	0/0		
3	1.25	No odour or staining	0/0		
4	1.75	No odour or staining	0/0		
5	2.25	No odour or staining	0/0	2.0-4.0	Brown, Silty Sand/Sandy Silt, FILL, Traces of Gravel and Clay, Moist to Saturated
6	2.75	No odour or staining	0/0		
TP12-7 [pH, Metals]	3.25	No odour or staining	0/0		
8	3.75	No odour or staining	0/0		

Upon completion: Testpit terminated due to caving.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: “mbgs” means metres below ground surface. “COV” means Combustible Organic Vapour, “TOV” means Total Organic Vapour, “ppm” means parts per million. “PHCs” means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. “BTEX” means benzene, toluene, ethylbenzene and xylenes. “DTPL” means Drier Than Plastic Limit. “APL” means At Plastic Limit. “WTPL” means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP13 **(652719, 4771015)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	-	0.0-1.0	Brown, Silty Clay/Clayey Silt, FILL, Traces of Sand and Gravel, DTPL
2	0.75	No odour or staining	-		
TP13-3 [Metals]	1.25	No odour or staining	-	1.0-2.0	Brown, Silty Sand/Sandy Silt, FILL, Traces of Gravel, Moist
4	1.75	No odour or staining	-		

Upon completion: Testpit remained open and dry at 2.0 mbgs.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP14 **(652717, 4771027)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	0/0	0.0-2.0	Brown, Silty Clay/Clayey Silt, FILL, Traces of Sand and Gravel, DTPL
2	0.75	No odour or staining	0/0		
TP14-3 + Dup 11 [Metals]	1.25	No odour or staining	0/0		
4	1.75	No odour or staining	0/0		

Upon completion: Testpit remained open and dry at 2.0 mbgs.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP15 **(652724, 4771033)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	0/0	0.0-0.5	20cm Imported Topsoil over Brown, Silty Clay/Clayey Silt, FILL, Some Gravel, DTPL
2	0.75	No odour or staining	0/0	0.5-1.5	Brown, Clayey Silt, FILL, Traces of Gravel, Moist
3	1.25	No odour or staining	0/0		
4	1.75	No odour or staining	0/0	1.5-3.0	Brown, Silty Clay/Clayey Silt, FILL, Traces of Gravel, Sand and Organics, DTPL
5	2.25	No odour or staining	0/0		
6	2.75	No odour or staining	0/0		
7	3.25	No odour or staining	0/0	3.0-3.5	Brown, Clay Silt, FILL, Some Sand, Clay Seams, Moist
8	3.75	No odour or staining	0/0	3.5-5.0	Brown, Silty Clay/Clayey Silt, NATIVE, Traces of Sand and Gravel, DTPL to APL
9	4.25	No odour or staining	0/0		
TP15-10 [pH, Metals]	4.75	No odour or staining	0/0		

Upon completion: Testpit caving in with water entering.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP16 **(652720, 4771038)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	0/4	0.0-0.5	Brown, Silty Clay/Clayey Silt, FILL, Some Cobbles, DTPL
2	0.75	Concrete and Wood Debris	5/26	0.5-2.0	Brown, Silty Clay/Clayey Silt, FILL, Some Gravel, DTPL
TP16-3 [Metals, PHCs (F1-F4), VOCs]	1.25	Garbage, Plastic, and Wood Debris Black Staining with Strong Odour	0/112		
4	1.75	No odour or staining	0/0		

Upon completion: Testpit remained open and dry.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP17 **(652742, 4771024)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	0/0	0.0-2.0	10cm Imported Topsoil over Brown, Silty Clay/Clayey Silt, FILL, Some Gravel, Trace Organics, DTPL
2	0.75	No odour or staining	0/0		
3	1.25	No odour or staining	0/0		
4	1.75	Black Organics Staining, No Odour	0/0		
5	2.25	No odour or staining	0/0	2.0-4.5	Brown, Silty Sand/Sandy Silt, FILL, Traces of Clay, Moist
6	2.75	No odour or staining	0/0		
7	3.25	No odour or staining	0/0		
TP17-8 [Metals]	3.75	No odour or staining	0/0		
9	4.25	No odour or staining	0/0		
10	4.75	No odour or staining	0/0	4.5-5.0	Brown, Silty Sand/Sandy Silt, FILL, Traces of Clay and Wood, Moist

Upon completion: Testpit remained open with water entering at 5.0 mbgs.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP18 **(652728, 4771047)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	0/0	0.0-1.5	15cm Imported Topsoil over Brown, Silty Clay/Clayey Silt, FILL, Traces of Gravel, DTPL
TP18-2 [pH, Conductivity, SAR, Metals]	0.75	No odour or staining	0/0		
3	1.25	No odour or staining	0/0		
4	1.75	Organics Staining, No Odour	0/0	1.5-2.0	Brown/Grey, Silty Clay/Clayey Silt, FILL, Some Organics, DTPL

Upon completion: Testpit remained open and dry.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP19 **(652738, 4771051)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	0/0	0.0-1.5	15cm Imported Topsoil over Brown, Silty Clay/Clayey Silt, FILL, Traces of Sand and Gravel, DTPL
2	0.75	No odour or staining	0/0		
3	1.25	No odour or staining	0/0		
4	1.75	No odour or staining	0/0	1.5-3.5	Brown, Silty Sand/Sandy Silt, FILL, Traces of Clay, Gravel and Cobbles, Moist to Wet
5	2.25	No odour or staining	0/0		
TP19-6 [Metals]	2.75	No odour or staining	0/0		
7	3.25	No odour or staining	0/0		

Upon completion: Testpit remained open with water entering at 3.5 mbgs.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP20 **(652668, 4770970)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
-	-	-	-	0.0-1.0	15cm Imported Topsoil over Crushed Rock, Some Sand and Gravel
TP20-1 [pH]	1.0	No odour or staining	0/0	1.0-1.5	Brown, Silty Clay/Clayey Silt, FILL, Some Sand and Gravel, DTPL
2	1.75	No odour or staining	0/0	1.5-2.0	Brown, Silty Sand/Sandy Silt, FILL, Some Gravel and Clay, Moist
3	2.25	No odour or staining	0/0	2.0-2.5	Brown, Silty Clay/Clayey Silt, FILL, Traces of Sand and Gravel, DTPL
4	2.75	No odour or staining	0/0	2.5-3.0	Brown, Silty Sand/Sandy Silt, FILL, Some Clay, Saturated

Upon completion: Testpit remained open and dry at 3.0 mbgs.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

Delineation Testpitting & Ground Water Sampling Program
Site Location: Montrose Road
Job Number: TG181021
Date: March 5th and 6th, 2018

TESTPIT LOG: TP21 **(652655, 4770950)**

Sample Number	Depth (mbgs)	Comments (odour, staining, etc.)	COV/TOV (ppm)	Stratigraphy	
				Depth (mbgs)	Material Description
1	0.25	No odour or staining	0/0	0.0-1.0	15cm Imported Topsoil over Brown, Silty Clay/Clayey Silt, FILL, Some Sand and Gravel, DTPL
2	0.75	No odour or staining	0/0		
TP21-3 [Metals, PHCs (F1-F4), BTEX]	1.25	Black Organics Staining and Odour	0/2	1.0-1.5	Brown, Silty Clay/Clayey Silt, FILL, Some Gravel, Traces of Brick, DTPL
4	1.75	Black Organics Staining and Odour	0/2	1.5-2.0	Brown, Silty Sand/Sandy Silt, FILL, Some Clay, Moist
5	2.25	Black Organics Staining and Odour	0/0	2.0-2.5	Brown, Silty Clay/Clayey Silt, FILL, Traces of Gravel, DTPL
6	2.75	Black Staining, No Odour	0/0	2.5-3.5	Brown, Silty Sand/Sandy Silt, FILL, Traces of Clay, Moist
7	3.25	No odour or staining	0/0		
8	3.75	Black Organics Staining and Odour	0/0	3.5-4.5	Brown/Grey, Silty Clay/Clayey Silt, NATIVE, DTPL
TP21-9 [pH]	4.25	Black Organics Staining and Odour	0/0		

Upon completion: Testpit remained open with water entering at 4.5 mbgs.

Equipment: Doosan 140 LC Excavator

Originated by: DN
Compiled By: CM
Checked By: KP

Notes: "mbgs" means metres below ground surface. "COV" means Combustible Organic Vapour, "TOV" means Total Organic Vapour, "ppm" means parts per million. "PHCs" means fractionized Petroleum Hydrocarbons in the F1 to F4 ranges. "BTEX" means benzene, toluene, ethylbenzene and xylenes. "DTPL" means Drier Than Plastic Limit. "APL" means At Plastic Limit. "WTPL" means Wetter Than Plastic Limit.

RECORD OF BOREHOLE No. BH/MW1

Project Number:	TG181021	Drilling Method:	150 mm Direct Push		
Project Client:	Marianos Holdings Inc	Drilling Machine:	Track Mounted Drill		
Project Name:	Montrose Road, Phase II ESA	Date Started:	Mar 7, 18	Date Completed:	Mar 7, 18
Project Location:	Montrose Road	Logged by:	CM	Compiled by:	CM
Drilling Location:	4771042N; 652715E	Reviewed by:		Revision No.:	0, 8/24/18

wood.

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	SOIL SCREENING		
Lithology Plot	DESCRIPTION Local Ground Surface Elevation:	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value	DEPTH (m)	ELEVATION (m)	Penetration Testing ○ SPT ● DCPT 20 40 60 80	✳ Combustible Organic Vapour (ppm) ✥ Combustible Organic Vapour (%LEL) △ Total Organic Vapour (ppm) 100 200 300 400	INSTRUMENTATION INSTALLATION	COMMENTS
	0.3m Clay and Sandy Gravel FILL 0.0					0					
	0.3m Red/Brown Sandy FILL Moist 0.3										
	2.0m Red/Brown Sandy Silty FILL Moist 0.6	DT	1	72		1			0 0.0		
		DT	2	46		2			0 1.0		
	3.0m Red/Brown Sand FILL Saturated 2.6					3					
		DT	3	63		4			0 0.0		
		DT	4	54		5			0 0.0		
	0.1m Fine Gravel 5.6 Grey 5.7 **SILTY CLAY/CLAYEY SILT** With Traces of Gravel and Organics Mottled APL to WTPL					6					
		DT	5	100		7			0 0.0		Sample BH/MW1-5c submitted for laboratory analyses of ICP Metals. Sample BH/MW1-5d submitted for laboratory analyses of PHCs [F1-F4], and VOCs.
		DT	6	100		8			0 1.0		
		DT	7	100		9			0 1.0		
	BOREHOLE TERMINATED. 10.7					10					Upon Completion: Borehole Remained Open. Monitoring Well Installation: 3cm diameter schedule 40 pipe with 3.05m length #10 mil slotted screen, stick-up casing.

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present. Also, borehole information should be read in conjunction with the environmental report for which it was commissioned.

Scale: 1 : 72

RECORD OF BOREHOLE No. BH/MW2

Project Number:	TG181021	Drilling Method:	150 mm Direct Push		
Project Client:	Marianos Holdings Inc	Drilling Machine:	Track Mounted Drill		
Project Name:	Montrose Road, Phase II ESA	Date Started:	Mar 7, 18	Date Completed:	Mar 7, 18
Project Location:	Montrose Road	Logged by:	CM	Compiled by:	CM
Drilling Location:	4770968N; 652711E	Reviewed by:		Revision No.:	0, 8/24/18

wood.

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	SOIL SCREENING		
Lithology Plot	DESCRIPTION Local Ground Surface Elevation:	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value	DEPTH (m)	ELEVATION (m)	Penetration Testing ○ SPT ● DCPT 20 40 60 80	✳ Combustible Organic Vapour (ppm) ✥ Combustible Organic Vapour (%LEL) △ Total Organic Vapour (ppm) 100 200 300 400	INSTRUMENTATION INSTALLATION	COMMENTS
	0.2m Imported Topsoil 0.0					-1					
	4.4m Blast Rock and Concrete Blocks 0.2 0.0-3.5m Inferred from Testpit 10					0					
						1					
						2					
		DT		0		3					
						4					
	0.7m Red/Grey Clayey Silty FILL 4.6					5					
	0.2m Clayey Sandy FILL 5.3	DT	1	69					0 0.0		
	Red/Grey 5.5 **SILTY CLAY/CLAYEY SILT** With Traces of Gravel and Sand Mottled Sand Lens from 7.4-7.5 mbgs WTPL					6					
		DT	2	59		7			0 0.0		Sample BH/MW2-2c submitted for laboratory analyses of ICP Metals.
						8					
		DT	3	52					0 0.0		
						9					
	BORHEOLE TERMINATED 9.2										Upon Completion: Borehole Remained Open. Monitoring Well Installation: 3cm diameter schedule 40 pipe with 3.05m length #10 mil slotted screen, stick-up casing.

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present. Also, borehole information should be read in conjunction with the environmental report for which it was commissioned.

RECORD OF BOREHOLE No. BH/MW3

Project Number:	TG181021	Drilling Method:	150 mm Direct Push		
Project Client:	Marianos Holdings Inc	Drilling Machine:	Track Mounted Drill		
Project Name:	Montrose Road, Phase II ESA	Date Started:	Mar 7, 18	Date Completed:	Mar 7, 18
Project Location:	Montrose Road	Logged by:	CM	Compiled by:	CM
Drilling Location:	4770869N; 652603E	Reviewed by:		Revision No.:	0, 8/24/18

wood.

LITHOLOGY PROFILE			SOIL SAMPLING						FIELD TESTING	SOIL SCREENING		
Lithology Plot	DESCRIPTION Local Ground Surface Elevation:		Sample Type	Sample Number	Recovery (%)	SPT 'N' Value	DEPTH (m)	ELEVATION (m)	Penetration Testing ○ SPT ● DCPT 20 40 60 80	✳ Combustible Organic Vapour (ppm) ✥ Combustible Organic Vapour (%LEL) △ Total Organic Vapour (ppm) 100 200 300 400	INSTRUMENTATION INSTALLATION	COMMENTS
							-1					
	0.1m Imported Topsoil over Brown **SILTY CLAY FILL** With Some Gravel and Traces of Cobbles and Organics DTPL 0.0-4.0m Inferred from Testpit 04	0.0					0					
							1					
							2					
	Brown **SILTY CLAY / CLAYEY SILT** Some Organics APL	2.5					3					
	Brown **CLAYEY SILT** With Clay Seams Moist	3.5										
	Brown **SILTY CLAY/CLAYEY SILT** With Traces of Sand and Gravel Fissured APL to WTPL	4.0					4					
			DT	1	100		5			0 0.0		Sample BH/MW3-1d submitted for laboratory analyses of PHCs [F1-F4], and VOCs. Sample BH/MW3-1c submitted for laboratory analyses of ICP Metals.
							6					
	Brown **FINE SAND** Saturated	6.7	DT	2	77		7			0 0.0		Sample BH/MW3-2 submitted for laboratory analyses of ICP Metals.
	BOREHOLE TERMINATED	7.6										Upon Completion: Borehole Remained Open. Monitoring Well Installation: 3cm diameter schedule 40 pipe with 3.05m length #10 mil slotted screen, stick-up casing.

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Tel: (905) 687-6616
Fax: (905) 687-6620
www.woodplc.com

▽ No freestanding groundwater measured in open borehole on completion of drilling.

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present. Also, borehole information should be read in conjunction with the environmental report for which it was commissioned.

Scale: 1 : 56

RECORD OF BOREHOLE No. BH4

Project Number:	TG181021	Drilling Method:	150 mm Direct Push		
Project Client:	Marianos Holdings Inc	Drilling Machine:	Track Mounted Drill		
Project Name:	Montrose Road, Phase II ESA	Date Started:	Mar 7, 18	Date Completed:	Mar 7, 18
Project Location:	Montrose Road	Logged by:	CM	Compiled by:	CM
Drilling Location:	4770814N; 652625E	Reviewed by:		Revision No.:	0, 8/24/18

wood.

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	SOIL SCREENING		
Lithology Plot	DESCRIPTION Local Ground Surface Elevation:	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value	DEPTH (m)	ELEVATION (m)	Penetration Testing ○ SPT ● DCPT 20 40 60 80	✳ Combustible Organic Vapour (ppm) ✥ Combustible Organic Vapour (%LEL) △ Total Organic Vapour (ppm) 100 200 300 400	INSTRUMENTATION INSTALLATION	COMMENTS
						-1					
	2.5m Brown Silty Clay FILL 0.0 0.0-2.5m Inferred from Testpit 01					0					
						1					
		DT	1	41		2			0 0.0		
	2.2m Grey/Red Wet Clayey Sandy FILL 2.5										
		DT		0		3					
	0.5m Grey/Red Sandy Silty FILL 4.7					4					
	Grey/Red 5.2 **SILTY CLAY/CLAYEY SILT** With Traces of Sand MWTPL	DT	2	58		5			0 0.0		
						6					
		DT	3	47		7			0 0.0		Sample BH/MW4-3c submitted for laboratory analyses of ICP Metals.
	BOREHOLE TERMINATED. 7.6										

Wood Environment & Infrastructure Solutions

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Fax: (905) 687-6620
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▽ No freestanding groundwater measured in open borehole on completion of drilling.

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present. Also, borehole information should be read in conjunction with the environmental report for which it was commissioned.

Scale: 1 : 56

RECORD OF BOREHOLE No. BH5

Project Number:	TG181021	Drilling Method:	150 mm Direct Push		
Project Client:	Marianos Holdings Inc	Drilling Machine:	Track Mounted Drill		
Project Name:	Montrose Road, Phase II ESA	Date Started:	Mar 7, 18	Date Completed:	Mar 7, 18
Project Location:	Montrose Road	Logged by:	CM	Compiled by:	CM
Drilling Location:	4770936N; 652690E	Reviewed by:		Revision No.:	0, 8/24/18

wood.

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	SOIL SCREENING		
Lithology Plot	DESCRIPTION Local Ground Surface Elevation:	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value	DEPTH (m)	ELEVATION (m)	Penetration Testing ○ SPT ● DCPT 20 40 60 80	Combustible Organic Vapour (ppm) Combustible Organic Vapour (%LEL) Total Organic Vapour (ppm) 100 200 300 400	INSTRUMENTATION INSTALLATION	COMMENTS
						-1					
	1.5m Crushed Rock 0.0					0					
	0.5m Brown Silty Clayey FILL 1.5					1					
	0.0-3.0m Inferred from Testpit 09 1.0m Brown Silty Sandy FILL 2.0					2					
	2.0m Clayey Sandy FILL 3.0	DT	1	50		3			0 0.0		
	0.5m Sandy FILL 5.0					4					
	0.6m Moist Clayey Silt FILL 5.5	DT	2	35		5			0 1.0		
	Grey/Red 6.1 **SILTY CLAY/CLAYEY SILT** With Traces of Gravel Mottled APL to WTPL	DT	3	57		6			0 0.0		Sample BH/MW5-3c submitted for laboratory analyses of ICP Metals.
	BOREHOLE TERMINATED. 7.6					7					

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Fax: (905) 687-6620
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▽ No freestanding groundwater measured in open borehole on completion of drilling.

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present. Also, borehole information should be read in conjunction with the environmental report for which it was commissioned.

Scale: 1 : 56

APPENDIX C

SAMPLING AND ANALYSIS PLAN

Memo

To	**Field Staff**	File no	**TG181021**
From	**Patrick Shriner**	cc	**Kelly Patterson**
Tel	**905-687-6616**		
Fax	**905-687-6620**		
Date	**March 1, 2018**		

Subject **Phase Two ESA Sampling and Quality Assurance Plan**
West Side of Montrose Road, Niagara Falls, Ontario

Scope of Sampling Program

The proposed number of testpits and boreholes, along with the rationale for the location of each was determined by Wood. The soil/fill samples are to be analyzed for one or more of the following potential contaminants of concern (COCs): metals (including hydrides), PHCs, VOCs, PCBs and PAHs. The sample depths and parameters to be analyzed will be determined based on observations during the soil sampling programs and reviewed with the QP_{ESA} prior to submission. Field observations may indicate a need for additional numbers or types of samples, e.g., vertical and horizontal delineation. If such field observations are made, contact Patrick Shriner (905-687-6616) and report the observations. Water samples are to be taken from all monitoring wells installed on the Site. Ground Water Samples are to be analyzed for the following COCs: metals, PHCs, and BTEX.

Any deviations from the planned scope of work and the rationale for the deviation(s) are to be approved by Patrick Shriner and are to be recorded in the field notes.

Sampling Rationale and Procedures

Sampling locations have been assessed on the basis of areas of potential environmental concern (APECs) identified during the Phase One ESA.

The following Wood Standard Operating Procedures (SOPs) are to be followed during the Project and are incorporated herein by reference:

- SOP No. 1 - Equipment Calibration and Maintenece, Rev. No. 0, October 8, 2013;

Wood Enviroment and Infrastructure Solutions
3300 Merrittville Highway, Unit 5
Thorold, Ontario
Canada L2V 4Y6
Tel (905) 687-6616
Fax (905) 687-6620
www.amecfw.com

- SOP No. 2 - Equipment Decontamination, Rev. No. 0, October 8, 2013;
- SOP No. 3 – Sample Location Inspection and Monitoring, Rev. No. 0, October 8, 2013;
- SOP No. 4 – Measurement of Field Paramters, Rev. No. 0, October 8, 2013;
- SOP No. 8 - Subsurface Soil Sampling, Rev. No. 0, October 8, 2013;
- SOP No. 10 - Field Vapour Headspace Screening, Rev. No. 0, October 8, 2013;
- SOP No. 12 - Excavation of Exploratory Test Pits, Rev. No. 0, October 8, 2013;
- SOP No. 13 – Borehole Drilling and Soil Sampling, Rev. No. 0, October 8, 2013;
- SOP No. 14 – Monitoring Well Design and Construction, Rev. No. 0, October 8, 2013;
- SOP No. 16 – Ground Water and Liquid Level Monitoring, Rev. No. 0, October 8, 2013;
- SOP No. 17 – Ground Water Purging and Sampling, Rev. No. 0, October 8, 2013;
- SOP No. 18 – Ground Water Low Flow Sampling, Rev. No. 0, October 8, 2013;
- SOP No. 19 - Handling of Volatile Samples, Rev. No. 0, October 8, 2013;
- SOP No. 20 - Chain of Custody Completion, Rev. No. 0, October 8, 2013.; and
- SOP No. 21 – Aquifer Response Testing Bail / Slug Testing, Rev. No. 0, November 6, 2013;

Specifications regarding sampling procedures, well installations, field note-taking, instrument calibration, field measurements, surveying, collection of blind duplicate samples, etc., are provided in the SOPs. The remainder of this Section provides a brief summary of sampling procedures that are to be followed, which does not supersede the requirements of the SOPs with the exception of changes in sample handling/collection practices required under the *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*, March 2004, amended as of 01 July 2011, in order to document site-specific information (e.g., contact persons).

Soil/fill samples are to be collected as per *O. Reg. 153/04*. Soil samples are to be collected at standard sampling locations throughout the full vertical extent of each testpit and borehole.

Soil samples shall be submitted for analysis of parameters outlined above, as well as on the basis of the presence of fill material, visual or olfactory evidence of contamination, field screening results [PHCs and VOCs/BTEX], proximity to the apparent water table (LNAPLs) or the vicinity of the interface with a lower confining layer (DNAPLs). In the absence of any other indicators of impact, soil samples to be analyzed shall be collected from fill materials with the exception that samples for VOCs/BTEX may be collected from the vicinity of the water table or a lower confining

layer and samples for PHC F1 – F4 may be collected from the vicinity of the water table. Water samples shall be submitted for analysis of parameters outlined above. Any deviation from the sampling plan is to be approved by Patrick Shriner.

Samples are to be submitted for analysis with the Chain of Custody clearly marked "*O. Reg. 153/04*" and with Table 3 and RSC selected as the applicable criteria. *Soil samples to be analyzed for VOCs must be analyzed as per the revised Analytical Protocol which indicates field preservation in methanol.*

Quality Assurance Program

The SOPs cited previously specify decontamination procedures, protocols for the collection of duplicate samples, the use of blank samples and instrument calibration checks, etc. In addition, specific details regarding the quality assurance programs for soil sampling are provided in SOP No. 12, Excavation of Exploratory Test Pits, and specific dertails regarding the quality assurance programs for ground water sampling are provided in SOP No. 18, Ground Water Low Flow Sampling.

In the case of this Project, no non-dedicated sampling equipment, other than excavation equipment, is to be used.

Patrick Shriner, P.Geo.
Associate Geoscientist
patrick.shriner@woodplc.com

APPENDIX D

RESIDUE MANAGEMENT

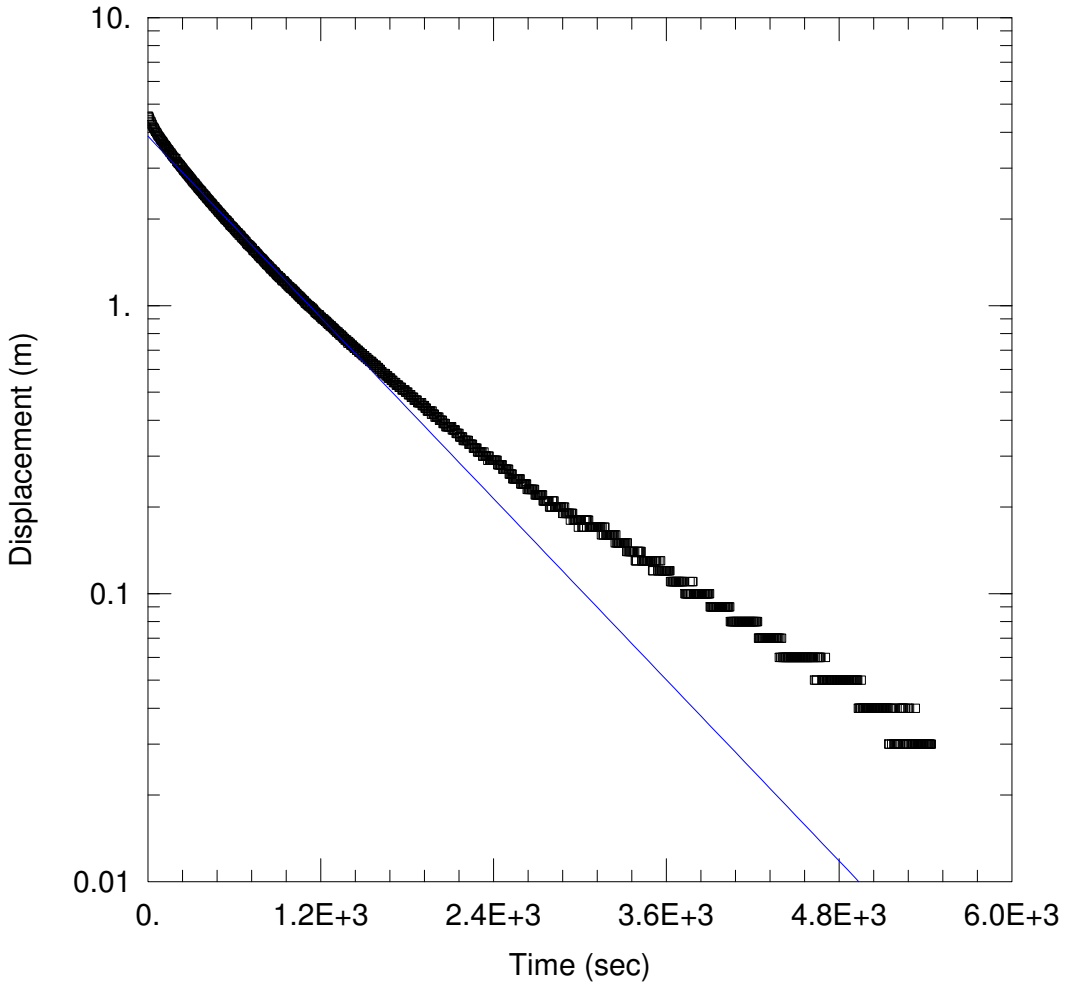
Residue Management

The soil cuttings generated during the drilling investigation were placed in 55-US gallon steel drum on-Site. The soil cuttings will be removed in the near future. The containers will be disposed by a MOECC-licensed waste hauler.

Liquid wastes generated during the investigation (well development and purge water) were placed in 55-US gallon steel drum and will be removed for off-site disposal by a MOECC-licensed waste hauler in the near future.

APPENDIX E

HYDRAULIC CONDUCTIVITY RESULTS



WELL TEST ANALYSIS

Data Set: P:\...\BHMW1.aqt
Date: 07/20/18 Time: 14:19:57

PROJECT INFORMATION

Company: Wood
Client: Marianos Holdings Inc.
Project: TG181021
Location: Montrose Road, Niagara Falls
Test Well: BH/MW1
Test Date: June 20, 2018

AQUIFER DATA

Saturated Thickness: 6.48 m Anisotropy Ratio (Kz/Kr): 0.1

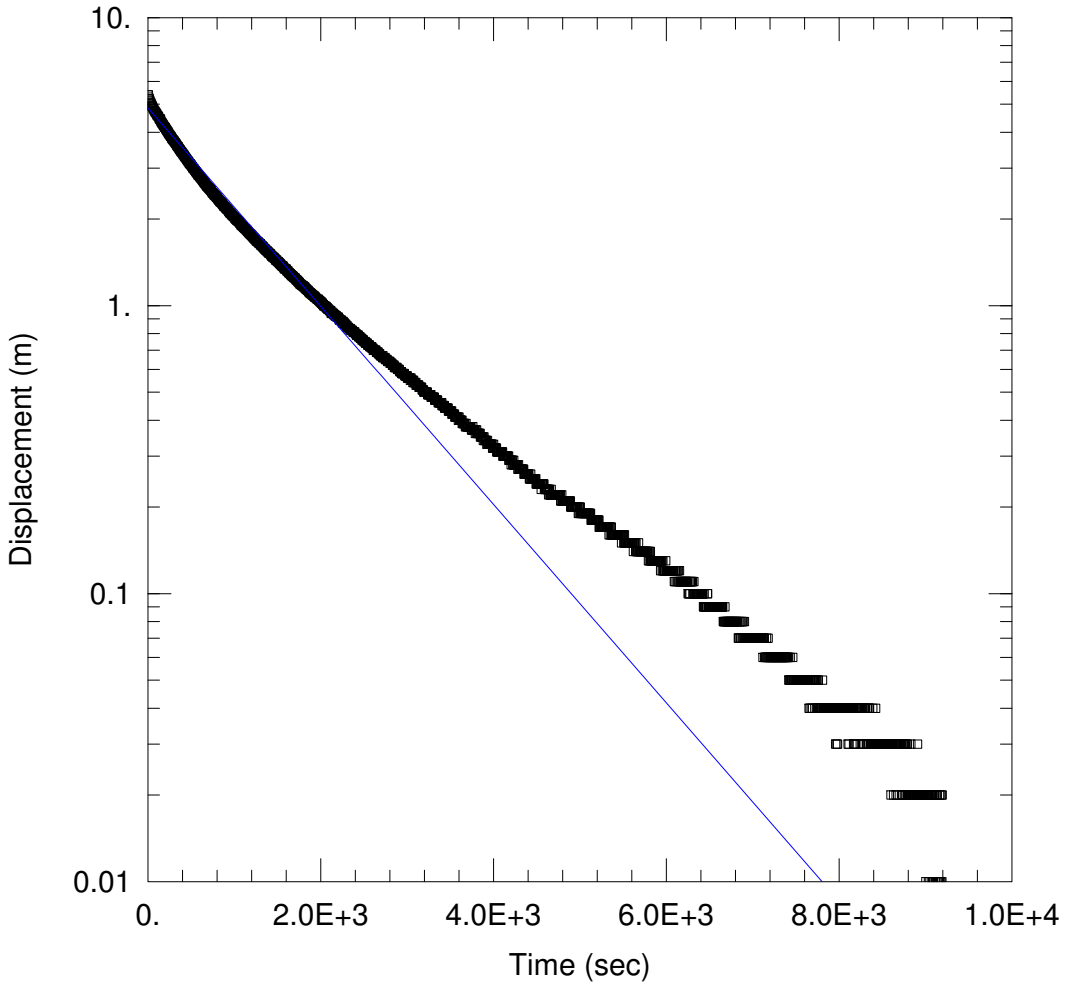
WELL DATA (BH/MW1)

Initial Displacement: 4.54 m
Total Well Penetration Depth: 6.48 m
Casing Radius: 0.016 m
Static Water Column Height: 6.48 m
Screen Length: 3.05 m
Well Radius: 0.075 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 2.144E-7 m/sec
y0 = 3.872 m



WELL TEST ANALYSIS

Data Set: P:\...\BHMW2.aqt
Date: 07/20/18 Time: 14:20:08

PROJECT INFORMATION

Company: Wood
Client: Marianos Holdings Inc.
Project: TG181021
Location: Montrose Road, Niagara Falls
Test Well: BH/MW2
Test Date: June 20, 2018

AQUIFER DATA

Saturated Thickness: 4.71 m Anisotropy Ratio (Kz/Kr): 0.1

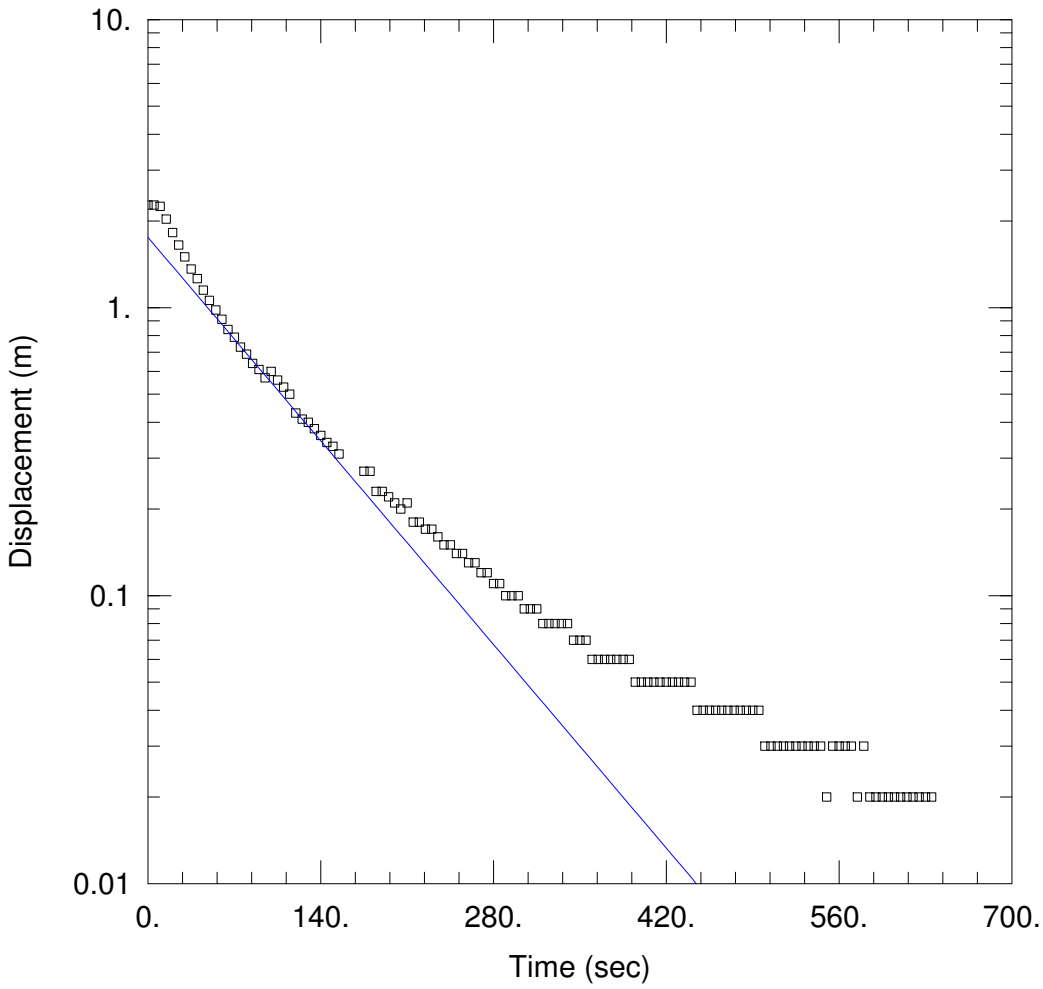
WELL DATA (BH/MW2)

Initial Displacement: 5.39 m
Total Well Penetration Depth: 4.71 m
Casing Radius: 0.016 m
Static Water Column Height: 4.71 m
Screen Length: 3.05 m
Well Radius: 0.075 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.341E-7 m/sec y0 = 4.859 m



WELL TEST ANALYSIS

Data Set: P:\...\BHMW3.aqt
Date: 07/20/18 Time: 14:20:19

PROJECT INFORMATION

Company: Wood
Client: Marianos Holdings Inc.
Project: TG181021
Location: Montrose Road, Niagara Falls
Test Well: BH/MW3
Test Date: June 20, 2018

AQUIFER DATA

Saturated Thickness: 0.92 m Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (BH/MW3)

Initial Displacement: 2.27 m
Total Well Penetration Depth: 0.92 m
Casing Radius: 0.016 m
Static Water Column Height: 4.56 m
Screen Length: 0.92 m
Well Radius: 0.075 m

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 2.929E-6 m/sec y0 = 1.754 m

APPENDIX F

LABORATORY CERTIFICATES OF ANALYSIS

SOIL

PARACEL ORDER #'s

1810288
1810374
1811259
1811261
1819087
1825727
1826666

GROUND WATER

PARACEL ORDER #'s

1812086

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Certificate of Analysis

Amec Foster Wheeler (Thorold)

3300 Merrittville Hwy, Unit 5
Thorold, ON L2V 4Y6
Attn: Kelly Patterson

Client PO:
Project: TG181021
Custody: 40731 to 40745

Report Date: 13-Mar-2018
Order Date: 7-Mar-2018

Order #: 1810288

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

Paracel ID	Client ID
1810288-01	TP1-2
1810288-02	TP2-2
1810288-03	TP3-4
1810288-04	TP3-6
1810288-05	TP4-3
1810288-06	TP5-4
1810288-07	TP6-8
1810288-08	TP7-1
1810288-09	TP8-1
1810288-10	TP9-1
1810288-11	TP11-2
1810288-12	TP12-7
1810288-13	TP13-3
1810288-14	TP14-3
1810288-15	TP15-10
1810288-16	TP16-3
1810288-17	TP17-8
1810288-18	TP18-2
1810288-19	TP19-6
1810288-20	TP20-1
1810288-21	TP21-3
1810288-22	TP21-9
1810288-23	Dup 3
1810288-24	Dup 11
1810288-25	Dup 12
1810288-26	TP3-3

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 7-Mar-2018
Project Description: TG181021

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.7 - ICP-OES	10-Mar-18	10-Mar-18
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	9-Mar-18	10-Mar-18
Chromium, hexavalent - soil	MOE E3056 - Extraction, colourimetric	7-Mar-18	9-Mar-18
Conductivity	MOE E3138 - probe @25 °C, water ext	9-Mar-18	9-Mar-18
Mercury by CVAA	EPA 7471B - CVAA, digestion	10-Mar-18	10-Mar-18
PCBs, total	SW846 8082A - GC-ECD	9-Mar-18	10-Mar-18
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	8-Mar-18	8-Mar-18
PHC F1	CWS Tier 1 - P&T GC-FID	9-Mar-18	10-Mar-18
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	8-Mar-18	9-Mar-18
REG 153: Metals by ICP/OES, soil	based on MOE E3470, ICP-OES	10-Mar-18	10-Mar-18
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	9-Mar-18	10-Mar-18
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	9-Mar-18	10-Mar-18
SAR	Calculated	10-Mar-18	12-Mar-18
Solids, %	Gravimetric, calculation	13-Mar-18	13-Mar-18

Certificate of Analysis

Client: Amec Foster Wheeler (Thorold)

Client PO:

Report Date: 13-Mar-2018

Order Date: 7-Mar-2018

Project Description: TG181021

	Client ID:	TP1-2	TP2-2	TP3-4	TP3-6
	Sample Date:	06-Mar-18	05-Mar-18	05-Mar-18	05-Mar-18
	Sample ID:	1810288-01	1810288-02	1810288-03	1810288-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	80.6	83.5	79.9	80.5
General Inorganics					
SAR	0.01 N/A	-	0.12	-	-
Conductivity	5 uS/cm	-	531	-	-
pH	0.05 pH Units	-	7.53	-	7.78
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Arsenic	1.0 ug/g dry	4.6	4.9	6.1	-
Barium	1.0 ug/g dry	279	109	132	-
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Boron	1.0 ug/g dry	17.6	10.7	12.0	-
Boron, available	0.5 ug/g dry	-	0.6	-	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Chromium	1.0 ug/g dry	47.3	23.2	33.1	-
Chromium (VI)	0.2 ug/g dry	-	<0.2	-	-
Cobalt	1.0 ug/g dry	12.2	9.1	13.0	-
Copper	1.0 ug/g dry	46.4	31.5	23.1	-
Lead	1.0 ug/g dry	21.7	19.1	14.7	-
Mercury	0.1 ug/g dry	-	<0.1	-	-
Molybdenum	1.0 ug/g dry	1.4	<1.0	<1.0	-
Nickel	1.0 ug/g dry	27.9	20.8	32.6	-
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Vanadium	1.0 ug/g dry	33.6	26.2	38.7	-
Zinc	1.0 ug/g dry	196	79.1	61.0	-
Volatiles					
Acetone	0.50 ug/g dry	-	<0.50	-	-
Benzene	0.02 ug/g dry	-	<0.02	-	-
Bromodichloromethane	0.05 ug/g dry	-	<0.05	-	-
Bromoform	0.05 ug/g dry	-	<0.05	-	-
Bromomethane	0.05 ug/g dry	-	<0.05	-	-
Carbon Tetrachloride	0.05 ug/g dry	-	<0.05	-	-
Chlorobenzene	0.05 ug/g dry	-	<0.05	-	-

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 7-Mar-2018
Project Description: TG181021

	Client ID:	TP1-2	TP2-2	TP3-4	TP3-6
	Sample Date:	06-Mar-18	05-Mar-18	05-Mar-18	05-Mar-18
	Sample ID:	1810288-01	1810288-02	1810288-03	1810288-04
	MDL/Units	Soil	Soil	Soil	Soil
Chloroform	0.05 ug/g dry	-	<0.05	-	-
Dibromochloromethane	0.05 ug/g dry	-	<0.05	-	-
Dichlorodifluoromethane	0.05 ug/g dry	-	<0.05	-	-
1,2-Dichlorobenzene	0.05 ug/g dry	-	<0.05	-	-
1,3-Dichlorobenzene	0.05 ug/g dry	-	<0.05	-	-
1,4-Dichlorobenzene	0.05 ug/g dry	-	<0.05	-	-
1,1-Dichloroethane	0.05 ug/g dry	-	<0.05	-	-
1,2-Dichloroethane	0.05 ug/g dry	-	<0.05	-	-
1,1-Dichloroethylene	0.05 ug/g dry	-	<0.05	-	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	-	<0.05	-	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	-	<0.05	-	-
1,2-Dichloropropane	0.05 ug/g dry	-	<0.05	-	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	-	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	-	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g dry	-	<0.05	-	-
Ethylbenzene	0.05 ug/g dry	-	<0.05	-	-
Ethylene dibromide (dibromoethan	0.05 ug/g dry	-	<0.05	-	-
Hexane	0.05 ug/g dry	-	<0.05	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	-	<0.50	-	-
Methyl Isobutyl Ketone	0.50 ug/g dry	-	<0.50	-	-
Methyl tert-butyl ether	0.05 ug/g dry	-	<0.05	-	-
Methylene Chloride	0.05 ug/g dry	-	<0.05	-	-
Styrene	0.05 ug/g dry	-	<0.05	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	-	<0.05	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	-	<0.05	-	-
Tetrachloroethylene	0.05 ug/g dry	-	<0.05	-	-
Toluene	0.05 ug/g dry	-	<0.05	-	-
1,1,1-Trichloroethane	0.05 ug/g dry	-	<0.05	-	-
1,1,2-Trichloroethane	0.05 ug/g dry	-	<0.05	-	-
Trichloroethylene	0.05 ug/g dry	-	<0.05	-	-
Trichlorofluoromethane	0.05 ug/g dry	-	<0.05	-	-
Vinyl chloride	0.02 ug/g dry	-	<0.02	-	-
m,p-Xylenes	0.05 ug/g dry	-	<0.05	-	-
o-Xylene	0.05 ug/g dry	-	<0.05	-	-
Xylenes, total	0.05 ug/g dry	-	<0.05	-	-
4-Bromofluorobenzene	Surrogate	-	107%	-	-

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 7-Mar-2018
Project Description: TG181021

	Client ID:	TP1-2	TP2-2	TP3-4	TP3-6
	Sample Date:	06-Mar-18	05-Mar-18	05-Mar-18	05-Mar-18
	Sample ID:	1810288-01	1810288-02	1810288-03	1810288-04
	MDL/Units	Soil	Soil	Soil	Soil
Dibromofluoromethane	Surrogate	-	80.6%	-	-
Toluene-d8	Surrogate	-	109%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	-	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	-	8	-	-
F3 PHCs (C16-C34)	8 ug/g dry	-	674	-	-
F4 PHCs (C34-C50)	6 ug/g dry	-	62	-	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	<0.02	-	-
Acenaphthylene	0.02 ug/g dry	-	<0.02	-	-
Anthracene	0.02 ug/g dry	-	0.04	-	-
Benzo [a] anthracene	0.02 ug/g dry	-	0.09	-	-
Benzo [a] pyrene	0.02 ug/g dry	-	0.08	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	-	0.10	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	-	0.04	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	-	0.05	-	-
Chrysene	0.02 ug/g dry	-	0.11	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	<0.02	-	-
Fluoranthene	0.02 ug/g dry	-	0.22	-	-
Fluorene	0.02 ug/g dry	-	<0.02	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	0.05	-	-
1-Methylnaphthalene	0.02 ug/g dry	-	<0.02	-	-
2-Methylnaphthalene	0.02 ug/g dry	-	0.03	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	-	0.04	-	-
Naphthalene	0.01 ug/g dry	-	0.01	-	-
Phenanthrene	0.02 ug/g dry	-	0.11	-	-
Pyrene	0.02 ug/g dry	-	0.22	-	-
2-Fluorobiphenyl	Surrogate	-	110%	-	-
Terphenyl-d14	Surrogate	-	107%	-	-
PCBs					
PCBs, total	0.05 ug/g dry	-	<0.05	-	-
Decachlorobiphenyl	Surrogate	-	83.4%	-	-

Certificate of Analysis

Client: Amec Foster Wheeler (Thorold)

Client PO:

Report Date: 13-Mar-2018

Order Date: 7-Mar-2018

Project Description: TG181021

	Client ID:	TP4-3	TP5-4	TP6-8	TP7-1
	Sample Date:	05-Mar-18	06-Mar-18	05-Mar-18	06-Mar-18
	Sample ID:	1810288-05	1810288-06	1810288-07	1810288-08
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	83.4	83.9	85.9	88.9
General Inorganics					
pH	0.05 pH Units	-	7.74	-	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	4.3	4.2	3.8	5.3
Barium	1.0 ug/g dry	107	147	90.8	99.3
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	14.3	10.7	10.1	9.2
Cadmium	0.5 ug/g dry	1.3	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	22.3	16.6	15.4	17.5
Cobalt	1.0 ug/g dry	11.2	9.0	8.7	9.0
Copper	1.0 ug/g dry	19.9	14.5	13.1	17.2
Lead	1.0 ug/g dry	11.8	7.3	6.4	18.8
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	24.9	19.0	18.7	19.1
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	32.8	24.8	23.2	25.8
Zinc	1.0 ug/g dry	574	40.4	38.1	50.0
Volatiles					
Benzene	0.02 ug/g dry	<0.02	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
Toluene-d8	Surrogate	111%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-

Certificate of Analysis

Client: Amec Foster Wheeler (Thorold)

Client PO:

Report Date: 13-Mar-2018

Order Date: 7-Mar-2018

Project Description: TG181021

	Client ID:	TP8-1	TP9-1	TP11-2	TP12-7
	Sample Date:	05-Mar-18	06-Mar-18	06-Mar-18	06-Mar-18
	Sample ID:	1810288-09	1810288-10	1810288-11	1810288-12
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	80.1	82.7	82.7	81.4
General Inorganics					
SAR	0.01 N/A	-	-	0.06	-
Conductivity	5 uS/cm	-	-	165	-
pH	0.05 pH Units	-	-	7.59	7.52
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	2.6	6.1	5.0	4.2
Barium	1.0 ug/g dry	130	134	105	104
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	11.7	13.9	13.0	12.8
Boron, available	0.5 ug/g dry	-	-	<0.5	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	19.1	24.6	20.4	19.2
Chromium (VI)	0.2 ug/g dry	-	-	<0.2	-
Cobalt	1.0 ug/g dry	10.1	11.9	10.3	10.1
Copper	1.0 ug/g dry	19.2	22.1	20.2	20.2
Lead	1.0 ug/g dry	13.2	15.0	16.9	17.6
Mercury	0.1 ug/g dry	-	-	<0.1	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	23.8	28.5	21.7	22.2
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	27.9	36.6	32.0	30.1
Zinc	1.0 ug/g dry	52.6	71.2	60.6	57.7
Volatiles					
Benzene	0.02 ug/g dry	-	-	<0.02	-
Ethylbenzene	0.05 ug/g dry	-	-	<0.05	-
Toluene	0.05 ug/g dry	-	-	<0.05	-
m,p-Xylenes	0.05 ug/g dry	-	-	<0.05	-
o-Xylene	0.05 ug/g dry	-	-	<0.05	-
Xylenes, total	0.05 ug/g dry	-	-	<0.05	-
Toluene-d8	Surrogate	-	-	111%	-

Certificate of Analysis

Client: Amec Foster Wheeler (Thorold)

Client PO:

Report Date: 13-Mar-2018

Order Date: 7-Mar-2018

Project Description: TG181021

	Client ID:	TP8-1	TP9-1	TP11-2	TP12-7
	Sample Date:	05-Mar-18	06-Mar-18	06-Mar-18	06-Mar-18
	Sample ID:	1810288-09	1810288-10	1810288-11	1810288-12
	MDL/Units	Soil	Soil	Soil	Soil
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	-	-	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	-	-	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	-	-	41	-
F4 PHCs (C34-C50)	6 ug/g dry	-	-	25	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	-	<0.02	-
Acenaphthylene	0.02 ug/g dry	-	-	<0.02	-
Anthracene	0.02 ug/g dry	-	-	<0.02	-
Benzo [a] anthracene	0.02 ug/g dry	-	-	<0.02	-
Benzo [a] pyrene	0.02 ug/g dry	-	-	<0.02	-
Benzo [b] fluoranthene	0.02 ug/g dry	-	-	0.02	-
Benzo [g,h,i] perylene	0.02 ug/g dry	-	-	<0.02	-
Benzo [k] fluoranthene	0.02 ug/g dry	-	-	<0.02	-
Chrysene	0.02 ug/g dry	-	-	<0.02	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	-	<0.02	-
Fluoranthene	0.02 ug/g dry	-	-	0.04	-
Fluorene	0.02 ug/g dry	-	-	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	-	<0.02	-
1-Methylnaphthalene	0.02 ug/g dry	-	-	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	-	-	<0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	-	-	<0.04	-
Naphthalene	0.01 ug/g dry	-	-	<0.01	-
Phenanthrene	0.02 ug/g dry	-	-	0.02	-
Pyrene	0.02 ug/g dry	-	-	0.03	-
2-Fluorobiphenyl	Surrogate	-	-	117%	-
Terphenyl-d14	Surrogate	-	-	122%	-
PCBs					
PCBs, total	0.05 ug/g dry	-	-	<0.05	-
Decachlorobiphenyl	Surrogate	-	-	61.8%	-

Certificate of Analysis

Client: Amec Foster Wheeler (Thorold)

Client PO:

Report Date: 13-Mar-2018

Order Date: 7-Mar-2018

Project Description: TG181021

	Client ID:	TP13-3	TP14-3	TP15-10	TP16-3
	Sample Date:	06-Mar-18	06-Mar-18	05-Mar-18	06-Mar-18
	Sample ID:	1810288-13	1810288-14	1810288-15	1810288-16
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	85.4	80.1	83.2	87.8
General Inorganics					
pH	0.05 pH Units	-	-	7.60	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	2.6	5.8	3.5	4.8
Barium	1.0 ug/g dry	72.8	107	123	106
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	6.9	9.7	9.4	8.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	10.6	20.2	24.7	17.5
Cobalt	1.0 ug/g dry	6.0	12.0	10.9	8.8
Copper	1.0 ug/g dry	9.5	17.4	19.4	19.9
Lead	1.0 ug/g dry	4.8	12.0	10.8	19.2
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	12.8	23.0	26.4	19.1
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	17.5	29.8	36.0	26.5
Zinc	1.0 ug/g dry	30.2	50.6	50.7	65.2
Volatiles					
Acetone	0.50 ug/g dry	-	-	-	<0.50
Benzene	0.02 ug/g dry	-	-	-	<0.02
Bromodichloromethane	0.05 ug/g dry	-	-	-	<0.05
Bromoform	0.05 ug/g dry	-	-	-	<0.05
Bromomethane	0.05 ug/g dry	-	-	-	<0.05
Carbon Tetrachloride	0.05 ug/g dry	-	-	-	<0.05
Chlorobenzene	0.05 ug/g dry	-	-	-	<0.05
Chloroform	0.05 ug/g dry	-	-	-	<0.05
Dibromochloromethane	0.05 ug/g dry	-	-	-	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	-	-	-	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	-	-	-	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	-	-	-	<0.05

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
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Project Description: TG181021

	Client ID:	TP13-3	TP14-3	TP15-10	TP16-3
	Sample Date:	06-Mar-18	06-Mar-18	05-Mar-18	06-Mar-18
	Sample ID:	1810288-13	1810288-14	1810288-15	1810288-16
	MDL/Units	Soil	Soil	Soil	Soil
1,4-Dichlorobenzene	0.05 ug/g dry	-	-	-	<0.05
1,1-Dichloroethane	0.05 ug/g dry	-	-	-	<0.05
1,2-Dichloroethane	0.05 ug/g dry	-	-	-	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	-	-	-	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	-	-	-	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	-	-	-	<0.05
1,2-Dichloropropane	0.05 ug/g dry	-	-	-	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	-	-	-	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	-	-	-	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	-	-	-	<0.05
Ethylbenzene	0.05 ug/g dry	-	-	-	0.08
Ethylene dibromide (dibromoethar	0.05 ug/g dry	-	-	-	<0.05
Hexane	0.05 ug/g dry	-	-	-	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	-	-	-	<0.50
Methyl Isobutyl Ketone	0.50 ug/g dry	-	-	-	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	-	-	-	<0.05
Methylene Chloride	0.05 ug/g dry	-	-	-	<0.05
Styrene	0.05 ug/g dry	-	-	-	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	-	-	-	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	-	-	-	<0.05
Tetrachloroethylene	0.05 ug/g dry	-	-	-	<0.05
Toluene	0.05 ug/g dry	-	-	-	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	-	-	-	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	-	-	-	<0.05
Trichloroethylene	0.05 ug/g dry	-	-	-	<0.05
Trichlorofluoromethane	0.05 ug/g dry	-	-	-	<0.05
Vinyl chloride	0.02 ug/g dry	-	-	-	<0.02
m,p-Xylenes	0.05 ug/g dry	-	-	-	<0.05
o-Xylene	0.05 ug/g dry	-	-	-	0.08
Xylenes, total	0.05 ug/g dry	-	-	-	0.08
4-Bromofluorobenzene	Surrogate	-	-	-	92.3%
Dibromofluoromethane	Surrogate	-	-	-	102%
Toluene-d8	Surrogate	-	-	-	107%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	-	-	-	<7

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 7-Mar-2018
Project Description: TG181021

	Client ID:	TP13-3	TP14-3	TP15-10	TP16-3
	Sample Date:	06-Mar-18	06-Mar-18	05-Mar-18	06-Mar-18
	Sample ID:	1810288-13	1810288-14	1810288-15	1810288-16
	MDL/Units	Soil	Soil	Soil	Soil
F2 PHCs (C10-C16)	4 ug/g dry	-	-	-	60
F3 PHCs (C16-C34)	8 ug/g dry	-	-	-	64
F4 PHCs (C34-C50)	6 ug/g dry	-	-	-	15

	Client ID:	TP17-8	TP18-2	TP19-6	TP20-1
	Sample Date:	05-Mar-18	06-Mar-18	06-Mar-18	06-Mar-18
	Sample ID:	1810288-17	1810288-18	1810288-19	1810288-20
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	83.0	83.8	81.5	87.5
General Inorganics					
SAR	0.01 N/A	-	0.09	-	-
Conductivity	5 uS/cm	-	171	-	-
pH	0.05 pH Units	-	7.61	-	7.55
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Arsenic	1.0 ug/g dry	2.6	4.0	3.7	-
Barium	1.0 ug/g dry	29.9	95.6	71.7	-
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Boron	1.0 ug/g dry	3.2	9.1	4.9	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Chromium	1.0 ug/g dry	4.8	18.8	11.8	-
Cobalt	1.0 ug/g dry	3.1	9.7	5.9	-
Copper	1.0 ug/g dry	4.5	15.5	8.4	-
Lead	1.0 ug/g dry	2.5	9.9	6.2	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Nickel	1.0 ug/g dry	5.8	20.6	11.6	-
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Vanadium	1.0 ug/g dry	10.3	29.3	19.8	-
Zinc	1.0 ug/g dry	12.7	50.4	30.1	-

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 7-Mar-2018
Project Description: TG181021

	Client ID:	TP21-3	TP21-9	Dup 3	Dup 11
	Sample Date:	06-Mar-18	06-Mar-18	06-Mar-18	06-Mar-18
	Sample ID:	1810288-21	1810288-22	1810288-23	1810288-24
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	79.0	81.9	85.3	82.9
General Inorganics					
SAR	0.01 N/A	-	-	0.11	-
Conductivity	5 uS/cm	-	-	624	-
pH	0.05 pH Units	-	7.58	7.62	-
Metals					
Antimony	1.0 ug/g dry	<1.0	-	<1.0	<1.0
Arsenic	1.0 ug/g dry	6.4	-	3.7	4.0
Barium	1.0 ug/g dry	100	-	122	81.2
Beryllium	1.0 ug/g dry	<1.0	-	<1.0	<1.0
Boron	1.0 ug/g dry	13.9	-	9.5	10.5
Boron, available	0.5 ug/g dry	-	-	0.6	-
Cadmium	0.5 ug/g dry	<0.5	-	<0.5	<0.5
Chromium	1.0 ug/g dry	60.4	-	34.9	19.2
Chromium (VI)	0.2 ug/g dry	-	-	<0.2	-
Cobalt	1.0 ug/g dry	11.8	-	8.6	9.6
Copper	1.0 ug/g dry	43.4	-	41.3	17.9
Lead	1.0 ug/g dry	47.7	-	30.5	10.4
Mercury	0.1 ug/g dry	-	-	<0.1	-
Molybdenum	1.0 ug/g dry	<1.0	-	<1.0	<1.0
Nickel	1.0 ug/g dry	28.4	-	19.1	21.5
Selenium	1.0 ug/g dry	<1.0	-	1.1	<1.0
Silver	0.5 ug/g dry	<0.5	-	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	-	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	-	<1.0	<1.0
Vanadium	1.0 ug/g dry	35.0	-	23.3	28.5
Zinc	1.0 ug/g dry	91.7	-	73.5	47.5
Volatiles					
Acetone	0.50 ug/g dry	-	-	<0.50	-
Benzene	0.02 ug/g dry	-	-	<0.02	-
Bromodichloromethane	0.05 ug/g dry	-	-	<0.05	-
Bromoform	0.05 ug/g dry	-	-	<0.05	-
Bromomethane	0.05 ug/g dry	-	-	<0.05	-
Carbon Tetrachloride	0.05 ug/g dry	-	-	<0.05	-
Chlorobenzene	0.05 ug/g dry	-	-	<0.05	-

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 7-Mar-2018
Project Description: TG181021

	Client ID:	TP21-3	TP21-9	Dup 3	Dup 11
	Sample Date:	06-Mar-18	06-Mar-18	06-Mar-18	06-Mar-18
	Sample ID:	1810288-21	1810288-22	1810288-23	1810288-24
	MDL/Units	Soil	Soil	Soil	Soil
Chloroform	0.05 ug/g dry	-	-	<0.05	-
Dibromochloromethane	0.05 ug/g dry	-	-	<0.05	-
Dichlorodifluoromethane	0.05 ug/g dry	-	-	<0.05	-
1,2-Dichlorobenzene	0.05 ug/g dry	-	-	<0.05	-
1,3-Dichlorobenzene	0.05 ug/g dry	-	-	<0.05	-
1,4-Dichlorobenzene	0.05 ug/g dry	-	-	<0.05	-
1,1-Dichloroethane	0.05 ug/g dry	-	-	<0.05	-
1,2-Dichloroethane	0.05 ug/g dry	-	-	<0.05	-
1,1-Dichloroethylene	0.05 ug/g dry	-	-	<0.05	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	-	-	<0.05	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	-	-	<0.05	-
1,2-Dichloropropane	0.05 ug/g dry	-	-	<0.05	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	-	-	<0.05	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	-	-	<0.05	-
1,3-Dichloropropene, total	0.05 ug/g dry	-	-	<0.05	-
Ethylbenzene	0.05 ug/g dry	-	-	<0.05	-
Ethylene dibromide (dibromoethar	0.05 ug/g dry	-	-	<0.05	-
Hexane	0.05 ug/g dry	-	-	<0.05	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	-	-	<0.50	-
Methyl Isobutyl Ketone	0.50 ug/g dry	-	-	<0.50	-
Methyl tert-butyl ether	0.05 ug/g dry	-	-	<0.05	-
Methylene Chloride	0.05 ug/g dry	-	-	<0.05	-
Styrene	0.05 ug/g dry	-	-	<0.05	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	-	-	<0.05	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	-	-	<0.05	-
Tetrachloroethylene	0.05 ug/g dry	-	-	<0.05	-
Toluene	0.05 ug/g dry	-	-	<0.05	-
1,1,1-Trichloroethane	0.05 ug/g dry	-	-	<0.05	-
1,1,2-Trichloroethane	0.05 ug/g dry	-	-	<0.05	-
Trichloroethylene	0.05 ug/g dry	-	-	<0.05	-
Trichlorofluoromethane	0.05 ug/g dry	-	-	<0.05	-
Vinyl chloride	0.02 ug/g dry	-	-	<0.02	-
m,p-Xylenes	0.05 ug/g dry	-	-	<0.05	-
o-Xylene	0.05 ug/g dry	-	-	<0.05	-
Xylenes, total	0.05 ug/g dry	-	-	<0.05	-

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 7-Mar-2018
Project Description: TG181021

	Client ID:	TP21-3	TP21-9	Dup 3	Dup 11
	Sample Date:	06-Mar-18	06-Mar-18	06-Mar-18	06-Mar-18
	Sample ID:	1810288-21	1810288-22	1810288-23	1810288-24
	MDL/Units	Soil	Soil	Soil	Soil
4-Bromofluorobenzene	Surrogate	-	-	111%	-
Dibromofluoromethane	Surrogate	-	-	87.2%	-
Toluene-d8	Surrogate	-	-	109%	-
Benzene	0.02 ug/g dry	<0.02	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
Toluene-d8	Surrogate	109%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	-	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	11	-	8	-
F3 PHCs (C16-C34)	8 ug/g dry	417	-	983	-
F4 PHCs (C34-C50)	6 ug/g dry	177	-	91	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	-	<0.02	-
Acenaphthylene	0.02 ug/g dry	-	-	0.02	-
Anthracene	0.02 ug/g dry	-	-	0.05	-
Benzo [a] anthracene	0.02 ug/g dry	-	-	0.12	-
Benzo [a] pyrene	0.02 ug/g dry	-	-	0.12	-
Benzo [b] fluoranthene	0.02 ug/g dry	-	-	0.14	-
Benzo [g,h,i] perylene	0.02 ug/g dry	-	-	0.09	-
Benzo [k] fluoranthene	0.02 ug/g dry	-	-	0.08	-
Chrysene	0.02 ug/g dry	-	-	0.13	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	-	0.02	-
Fluoranthene	0.02 ug/g dry	-	-	0.32	-
Fluorene	0.02 ug/g dry	-	-	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	-	0.08	-
1-Methylnaphthalene	0.02 ug/g dry	-	-	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	-	-	0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	-	-	<0.04	-
Naphthalene	0.01 ug/g dry	-	-	0.02	-
Phenanthrene	0.02 ug/g dry	-	-	0.16	-
Pyrene	0.02 ug/g dry	-	-	0.27	-

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 7-Mar-2018
Project Description: TG181021

	Client ID:	TP21-3	TP21-9	Dup 3	Dup 11
	Sample Date:	06-Mar-18	06-Mar-18	06-Mar-18	06-Mar-18
	Sample ID:	1810288-21	1810288-22	1810288-23	1810288-24
	MDL/Units	Soil	Soil	Soil	Soil
2-Fluorobiphenyl	Surrogate	-	-	114%	-
Terphenyl-d14	Surrogate	-	-	106%	-
PCBs					
PCBs, total	0.05 ug/g dry	-	-	<0.05	-
Decachlorobiphenyl	Surrogate	-	-	73.4%	-

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 7-Mar-2018
Project Description: TG181021

	Client ID:	Dup 12	TP3-3	-	-
	Sample Date:	06-Mar-18	05-Mar-18	-	-
	Sample ID:	1810288-25	1810288-26	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	80.8	86.3	-	-
General Inorganics					
pH	0.05 pH Units	7.66	-	-	-
Metals					
Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	2.6	-	-	-
Barium	1.0 ug/g dry	77.0	-	-	-
Beryllium	1.0 ug/g dry	<1.0	-	-	-
Boron	1.0 ug/g dry	6.3	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	1.0 ug/g dry	10.0	-	-	-
Cobalt	1.0 ug/g dry	5.7	-	-	-
Copper	1.0 ug/g dry	8.0	-	-	-
Lead	1.0 ug/g dry	5.1	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	1.0 ug/g dry	11.8	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.5 ug/g dry	<0.5	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	1.0 ug/g dry	15.5	-	-	-
Zinc	1.0 ug/g dry	30.2	-	-	-
Volatiles					
Benzene	0.02 ug/g dry	-	<0.02	-	-
Ethylbenzene	0.05 ug/g dry	-	<0.05	-	-
Toluene	0.05 ug/g dry	-	<0.05	-	-
m,p-Xylenes	0.05 ug/g dry	-	<0.05	-	-
o-Xylene	0.05 ug/g dry	-	<0.05	-	-
Xylenes, total	0.05 ug/g dry	-	<0.05	-	-
Toluene-d8	Surrogate	-	108%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	-	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	-	<4	-	-
F3 PHCs (C16-C34)	8 ug/g dry	-	59	-	-
F4 PHCs (C34-C50)	6 ug/g dry	-	115	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Conductivity	ND	5	uS/cm						
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						
PCBs									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	*0.153*		*ug/g*		*76.6*	*60-140*			
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	*1.43*		*ug/g*		*107*	*50-140*			
Surrogate: Terphenyl-d14	*1.48*		*ug/g*		*111*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 7-Mar-2018
Project Description: TG181021

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Ethylene dibromide (dibromoethane	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: 4-Bromofluorobenzene	*8.40*		*ug/g*		*105*	*50-140*			
Surrogate: Dibromofluoromethane	*6.29*		*ug/g*		*78.7*	*50-140*			
Surrogate: Toluene-d8	*8.76*		*ug/g*		*110*	*50-140*			
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*8.76*		*ug/g*		*110*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
SAR	0.06	0.01	N/A	0.06			0.0	200	
Conductivity	163	5	uS/cm	165			1.3	6.2	
pH	7.76	0.05	pH Units	7.78			0.3	10	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	8			0.0	30	
F3 PHCs (C16-C34)	258	8	ug/g dry	674			89.2	30	QR-04
F4 PHCs (C34-C50)	21	6	ug/g dry	62			98.1	30	QR-04
Metals									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	4.96	1.0	ug/g dry	4.89			1.3	30	
Barium	115	1.0	ug/g dry	109			5.1	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron, available	ND	0.5	ug/g dry	ND			0.0	35	
Boron	11.7	1.0	ug/g dry	10.7			8.7	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	24.7	1.0	ug/g dry	23.2			6.1	30	
Cobalt	9.85	1.0	ug/g dry	9.13			7.6	30	
Copper	32.7	1.0	ug/g dry	31.5			3.8	30	
Lead	20.1	1.0	ug/g dry	19.1			5.2	30	
Mercury	ND	0.1	ug/g dry	ND			0.0	30	
Molybdenum	1.02	1.0	ug/g dry	ND			0.0	30	
Nickel	21.7	1.0	ug/g dry	20.8			4.2	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	1.79	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND				30	
Vanadium	27.5	1.0	ug/g dry	26.2			5.1	30	
Zinc	78.7	1.0	ug/g dry	79.1			0.5	30	
PCBs									
PCBs, total	ND	0.05	ug/g dry	ND			0.0	40	
Surrogate: Decachlorobiphenyl	*0.249*		*ug/g dry*		*104*	*60-140*			
Physical Characteristics									
% Solids	79.7	0.1	% by Wt.	80.6			1.2	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g dry	ND				40	
Acenaphthylene	ND	0.02	ug/g dry	ND				40	
Anthracene	ND	0.02	ug/g dry	ND				40	
Benzo [a] anthracene	ND	0.02	ug/g dry	ND				40	
Benzo [a] pyrene	ND	0.02	ug/g dry	ND				40	
Benzo [b] fluoranthene	ND	0.02	ug/g dry	ND				40	
Benzo [g,h,i] perylene	ND	0.02	ug/g dry	ND				40	
Benzo [k] fluoranthene	ND	0.02	ug/g dry	ND				40	
Chrysene	ND	0.02	ug/g dry	ND				40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g dry	ND				40	
Fluoranthene	ND	0.02	ug/g dry	ND				40	
Fluorene	ND	0.02	ug/g dry	ND				40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g dry	ND				40	
1-Methylnaphthalene	ND	0.02	ug/g dry	ND				40	
2-Methylnaphthalene	ND	0.02	ug/g dry	ND				40	
Naphthalene	ND	0.01	ug/g dry	ND				40	
Phenanthrene	ND	0.02	ug/g dry	ND				40	
Pyrene	ND	0.02	ug/g dry	ND			0.0	40	
Surrogate: 2-Fluorobiphenyl	*1.44*		*ug/g dry*		*91.4*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Surrogate: Terphenyl-d14	*1.47*		*ug/g dry*		*93.9*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g dry	ND				50	
Benzene	ND	0.02	ug/g dry	ND				50	
Bromodichloromethane	ND	0.05	ug/g dry	ND				50	
Bromoform	ND	0.05	ug/g dry	ND				50	
Bromomethane	ND	0.05	ug/g dry	ND				50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND				50	
Chlorobenzene	ND	0.05	ug/g dry	ND				50	
Chloroform	ND	0.05	ug/g dry	ND				50	
Dibromochloromethane	ND	0.05	ug/g dry	ND				50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND				50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Ethylene dibromide (dibromoethane	ND	0.05	ug/g dry	ND				50	
Hexane	ND	0.05	ug/g dry	ND				50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND				50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND				50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND				50	
Methylene Chloride	ND	0.05	ug/g dry	ND				50	
Styrene	ND	0.05	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND				50	
Trichloroethylene	ND	0.05	ug/g dry	ND				50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND				50	
Vinyl chloride	ND	0.02	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: 4-Bromofluorobenzene	*9.69*		*ug/g dry*		*108*	*50-140*			
Surrogate: Dibromofluoromethane	*7.17*		*ug/g dry*		*79.8*	*50-140*			
Surrogate: Toluene-d8	*10.0*		*ug/g dry*		*111*	*50-140*			
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*10.0*		*ug/g dry*		*111*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	211	7	ug/g		106	80-120			
F2 PHCs (C10-C16)	116	4	ug/g	8	100	60-140			
F3 PHCs (C16-C34)	498	8	ug/g	674	-78.9	60-140			QM-06
F4 PHCs (C34-C50)	198	6	ug/g	62	91.6	60-140			
Metals									
Antimony	226		ug/L	ND	90.4	70-130			
Arsenic	359		ug/L	97.9	104	70-130			
Barium	2400		ug/L	2190	85.3	70-130			
Beryllium	226		ug/L	1.50	89.7	70-130			
Boron, available	4.13	0.5	ug/g	ND	82.7	70-122			
Boron	444		ug/L	214	92.4	70-130			
Cadmium	222		ug/L	2.25	88.0	70-130			
Chromium (VI)	4.6	0.2	ug/g		91.5	70-130			
Chromium	679		ug/L	464	86.2	70-130			
Cobalt	392		ug/L	183	83.8	70-130			
Copper	844		ug/L	629	86.1	70-130			
Lead	610		ug/L	382	90.9	70-130			
Mercury	1.48	0.1	ug/g	ND	98.7	70-130			
Molybdenum	225		ug/L	15.5	83.7	70-130			
Nickel	617		ug/L	416	80.5	70-130			
Selenium	197		ug/L	ND	78.7	70-130			
Silver	216		ug/L	1.26	85.8	70-130			
Thallium	211		ug/L	ND	84.5	70-130			
Uranium	295		ug/L	ND	118	70-130			
Vanadium	748		ug/L	523	90.1	70-130			
Zinc	1760		ug/L	1580	70.3	70-130			
PCBs									
PCBs, total	0.488	0.05	ug/g	ND	102	60-140			
Surrogate: Decachlorobiphenyl	*0.205*		*ug/g*		*85.6*	*60-140*			
Semi-Volatiles									
Acenaphthene	0.224	0.02	ug/g	ND	114	50-140			
Acenaphthylene	0.191	0.02	ug/g	ND	97.3	50-140			
Anthracene	0.174	0.02	ug/g	ND	88.6	50-140			
Benzo [a] anthracene	0.156	0.02	ug/g	ND	79.3	50-140			
Benzo [a] pyrene	0.152	0.02	ug/g	ND	77.2	50-140			
Benzo [b] fluoranthene	0.231	0.02	ug/g	ND	118	50-140			
Benzo [g,h,i] perylene	0.179	0.02	ug/g	ND	91.0	50-140			
Benzo [k] fluoranthene	0.203	0.02	ug/g	ND	103	50-140			
Chrysene	0.197	0.02	ug/g	ND	101	50-140			
Dibenzo [a,h] anthracene	0.178	0.02	ug/g	ND	90.6	50-140			
Fluoranthene	0.193	0.02	ug/g	ND	98.4	50-140			
Fluorene	0.215	0.02	ug/g	ND	109	50-140			
Indeno [1,2,3-cd] pyrene	0.180	0.02	ug/g	ND	91.7	50-140			
1-Methylnaphthalene	0.214	0.02	ug/g	ND	109	50-140			
2-Methylnaphthalene	0.237	0.02	ug/g	ND	121	50-140			
Naphthalene	0.218	0.01	ug/g	ND	111	50-140			
Phenanthrene	0.196	0.02	ug/g	ND	100	50-140			
Pyrene	0.200	0.02	ug/g	ND	102	50-140			
Volatiles									
Acetone	9.82	0.50	ug/g		98.2	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzene	4.39	0.02	ug/g		110	60-130			
Bromodichloromethane	3.77	0.05	ug/g		94.1	60-130			
Bromoform	3.72	0.05	ug/g		93.1	60-130			
Bromomethane	3.58	0.05	ug/g		89.4	50-140			
Carbon Tetrachloride	4.49	0.05	ug/g		112	60-130			
Chlorobenzene	3.54	0.05	ug/g		88.5	60-130			
Chloroform	4.27	0.05	ug/g		107	60-130			
Dibromochloromethane	3.35	0.05	ug/g		83.7	60-130			
Dichlorodifluoromethane	4.36	0.05	ug/g		109	50-140			
1,2-Dichlorobenzene	3.98	0.05	ug/g		99.5	60-130			
1,3-Dichlorobenzene	3.90	0.05	ug/g		97.4	60-130			
1,4-Dichlorobenzene	3.70	0.05	ug/g		92.4	60-130			
1,1-Dichloroethane	4.51	0.05	ug/g		113	60-130			
1,2-Dichloroethane	4.69	0.05	ug/g		117	60-130			
1,1-Dichloroethylene	3.73	0.05	ug/g		93.3	60-130			
cis-1,2-Dichloroethylene	4.28	0.05	ug/g		107	60-130			
trans-1,2-Dichloroethylene	4.27	0.05	ug/g		107	60-130			
1,2-Dichloropropane	4.44	0.05	ug/g		111	60-130			
cis-1,3-Dichloropropylene	4.00	0.05	ug/g		99.9	60-130			
trans-1,3-Dichloropropylene	3.90	0.05	ug/g		97.5	60-130			
Ethylbenzene	3.67	0.05	ug/g		91.8	60-130			
Ethylene dibromide (dibromoethane	3.55	0.05	ug/g		88.7	60-130			
Hexane	4.92	0.05	ug/g		123	60-130			
Methyl Ethyl Ketone (2-Butanone)	8.29	0.50	ug/g		82.9	50-140			
Methyl Isobutyl Ketone	8.88	0.50	ug/g		88.8	50-140			
Methyl tert-butyl ether	8.21	0.05	ug/g		82.1	50-140			
Methylene Chloride	3.47	0.05	ug/g		86.9	60-130			
Styrene	3.72	0.05	ug/g		93.0	60-130			
1,1,1,2-Tetrachloroethane	3.69	0.05	ug/g		92.2	60-130			
1,1,2,2-Tetrachloroethane	3.63	0.05	ug/g		90.7	60-130			
Tetrachloroethylene	3.74	0.05	ug/g		93.5	60-130			
Toluene	2.96	0.05	ug/g		73.9	60-130			
1,1,1-Trichloroethane	4.46	0.05	ug/g		112	60-130			
1,1,2-Trichloroethane	3.20	0.05	ug/g		80.1	60-130			
Trichloroethylene	3.65	0.05	ug/g		91.2	60-130			
Trichlorofluoromethane	3.72	0.05	ug/g		92.9	50-140			
Vinyl chloride	4.14	0.02	ug/g		104	50-140			
m,p-Xylenes	7.21	0.05	ug/g		90.2	60-130			
o-Xylene	3.65	0.05	ug/g		91.3	60-130			
Benzene	4.39	0.02	ug/g		110	60-130			
Ethylbenzene	3.67	0.05	ug/g		91.8	60-130			
Toluene	2.96	0.05	ug/g		73.9	60-130			
m,p-Xylenes	7.21	0.05	ug/g		90.2	60-130			
o-Xylene	3.65	0.05	ug/g		91.3	60-130			

Qualifier Notes:

QC Qualifiers :

QM-06 : Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

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

Paracel ID: 1810288

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Chain of Custody (Lab Use Only)
№ 40731

Page 1 of 15

Client Name: Amec Foster Wheeler	Project Reference: TG181021	**Turnaround Time:**	
Contact Name: Kelly Patterson	Quote # 2018 Standing Offer #18-016	☐ 1 Day	☐ 3 Day
Address: 3300 Merritville Hwy, Unit 5, Thorold, ON L2V 4Y6	PO #	☐ 2 Day	☒ Regular
Telephone: 905-687-6616	Email Address: kelly.patterson@amecfw.com	Date Required:	

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

	Paracel Order Number: 1810288 / Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/IMS Metals	EC	SAR	pH	Hg	CrVI	HWS Boron	PHC (F1-F4)	VOC	PAHs	PCBs
1	TP 1-1	S		1	03/06/18	2:35											
2	TP 1-2 ✓	↓		2	↓	2:40 ✓	X✓	XX	XX					250mL+1vial			
3	TP 1-3			2		2:45											
4	TP 1-4			2		2:50											
5	TP 1-5			1		2:55											
6	TP 2-1			2	03/05/18	10:25								250mL+1vial			
7	TP 2-2 ✓			2	↓ ✓	10:30 ✓	X✓	X✓	X✓	X✓	X✓	X✓	X✓	X✓	X✓	X✓	X✓
8	TP 2-3			2		10:35											
9	TP 2-4			1		10:40											
10	TP 2-5	↓		1	↓	10:45											

Comments: Governed by Terms and Conditions of SNA07-003.
Hold remaining samples for future analysis/delineation. Niagara

Method of Delivery: P/U

Relinquished By (Sign): Kelly Patterson	Received by Driver/Depot: Niagara B. Barton	Received at Lab: SUNEEPORN DOKMAI
Relinquished By (Print): Kelly Patterson	Date/Time: Mar 7/18 1:00pm	Date/Time: Mar 08, 2018 10.10
Date/Time: March 7/18	Temperature: 10.9 °C	Temperature: 9.3 °C

Verified By: Rachel Subject
Date/Time: Mar 8/18
pH Verified [ ] By: NA 10:57

Chain of Custody (Blank) - Rev 0.4 Feb 2016 TP3-4 missing vial. ON HOLD SAMPLES AT DEPOT

Paracel ID: 1810288

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Chain of Custody (Lab Use Only)

№ 40732

Page 2 of 15

Client Name: See Pg 1	Project Reference: TG181021
Contact Name:	Quote #
Address:	PO #
	Email Address:
Telephone:	

Turnaround Time: ☐ 1 Day ☐ 3 Day ☐ 2 Day ☒ Regular

Date Required: ____________

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ________ ☐ Other: ________

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

Required Analyses

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/HS Metals	PHC (F1-F4)	BTEX	pH	
1	TP 2-6	S		1	03/05/18	10:50					
2	TP 2-7	↓		1	↓	10:55					
3	TP 2-8			1		11:06					
4	TP 2-9			1		11:05					
5	TP 3-1			1		11:10					
6	TP 3-2			2		11:15					
7	TP 3-3			2 ✓		11:20					- 250mL+ 1vial-
8	TP 3-4 ✓			1? ✓		11:25 ✓	X ✓	X ✓	X ✓		250mL
9	TP 3-5			1		11:30					[illegible]
10	TP 3-6 ✓			1		11:35 ✓				X ✓	250mL

Comments: TP 3-7 | 1 | 11:40

See page 1

Cancel PHC+Btex off TP3-4 and add to TP3-3 -RS.

Method of Delivery: P/U.

Relinquished By (Sign): Kelly Patto	Received by Driver/Depot: Niagara B. Barton	Received at Lab: SUNEEPORN DOKMAI	Verified By: Rachel Subject
Relinquished By (Print):	Date/Time: Mar 7/18 1:00pm	Date/Time: MAR 08, 2018 10.10	Date/Time: Mar 8/18 10:57
Date/Time: March 7/18	Temperature: 10.9 °C	Temperature: 9.3 °C	pH Verified [ ] By: NA

Chain of Custody (Blank) - Rev 0.4 Feb 2016

Paracel ID: 1810288

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Chain of Custody (Lab Use Only)

№ 40733

Page 3 of 15

Client Name: See Pg 1	Project Reference: TC-181021	**Turnaround Time:**
Contact Name:	Quote #	☐ 1 Day ☐ 3 Day
Address:	PO #	☐ 2 Day ☒ Regular
	Email Address:	Date Required:
Telephone:		

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/MS Metals	PHC (F1-F4)	BTEX	Required Analyses
1	TP 4-1	S		1	05/05/18	11:50				
2	TP 4-2			2		11:55				
3	TP 4-3			2		12:00	X	X	X	250ml 1 vial
4	TP 4-4			1		12:05				
5	TP 4-5			1		12:10				
6	TP 4-6			1		12:15				
7	TP 4-7			1		12:20				
8	TP 4-8			1		12:35				
9										
10										

Comments: see notes pg 1

Method of Delivery: P/U

Niagara

Relinquished By (Sign): Kelly Patt	Received by Driver/Depot: B. Barton	Received at Lab: SUNDERLAND DOCMAI	Verified By: Rachel subject
Relinquished By (Print):	Date/Time: Mar 7/18 1:00pm	Date/Time: MAR 08, 2018 10:10	Date/Time: Mar 8/18
Date/Time: Mar 7/18	Temperature: 10.9 °C	Temperature: 9.3 °C	pH Verified [ ] By: NA 10:5

Paracel ID: 1810288

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Chain of Custody (Lab Use Only)
№ 40734

Page 4 of 15

Client Name: See Pg 1	Project Reference: TC 18102	**Turnaround Time:**
Contact Name:	Quote #	☐ 1 Day ☐ 3 Day
Address:	PO #	☐ 2 Day ☒ Regular
	Email Address:	Date Required:
Telephone:		

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

	Paracel Order Number: 1810288 / Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/MS Metals	pH										
1	TP 5 - 1	S		2	03/06/18	3:26												
2	TP 5 - 2			1		3:25												
3	TP 5 - 3			2		2:30												
4	TP 5 - 4 ✓			1	✓	3:35 ✓	X	X									-250ml-	
5	TP 5 - 5			1		3:40												
6	TP 5 - 6			1		3:45												
7	TP 6 - 1			1	03/05/18	12:40												
8	TP 6 - 2			2		12:45												
9	TP 6 - 3			2		12:50												
10	TP 6 - 4			1		12:55												

Comments: See notes pg 1

Method of Delivery: P/U

Niagara

Relinquished By (Sign): Tilly Pabla	Received by Driver/Depot: D. Barton	Received at Lab: SUNEEP ORW RON MAI
Relinquished By (Print):	Date/Time: Mar 7/18 1:00p	Date/Time: MAR 08, 2018 10.10
Date/Time: March 7/18	Temperature: 10.9°C	Temperature: 4.3 °C

Verified By: Rachel Subject
Date/Time: Mar 8/18
pH Verified [ ] By: NA 10:57

Paracel ID: 1810288

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Chain of Custody (Lab Use Only) Nº 40735

Page 5 of 15

Client Name: See Pg 1	Project Reference: TC-18021	**Turnaround Time:**
Contact Name:	Quote #	☐ 1 Day ☐ 3 Day
Address:	PO #	☐ 2 Day ☒ Regular
Telephone:	Email Address:	Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analyses: ICP/MS Metals											
1	TP 6-5	S		1	03/05/18	1:00												
2	TP 6-6			1		1:05												
3	TP 6-7			1		1:10												
4	TP 6-8 ✓			1	✓	1:15 ✓	X ✓											
5	TP 7-1 ✓			2 ✓	03/06/18	1:59	X ✓											
6	TP 7-2			1		2:00												
7	TP 7-3			2		2:05												
8	TP 7-4			1		2:10												
9	TP 7-5			1		2:15												
10	TP 7-6	✓		1	✓	2:20												

-250mL ✓
250mL + Jar ✓

Comments: see pg1

Method of Delivery: P/U

Niagara

Relinquished By (Sign): Kelly Patt	Received by Driver/Depot: B. Barton	Received at Lab: SUMEPORN ROKMAI	Verified By: Rachel Subject
Relinquished By (Print):	Date/Time: Mar 7/18 1:00 pm	Date/Time: MARCH 8, 2018 10.10	Date/Time: Mar 8/18
Date/Time: March 7/18	Temperature: 10.9 °C	Temperature: 9.3 °C	pH Verified [ ] By: NA 10:57

Paracel ID: 1810288

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Chain of Custody (Lab Use Only) Nº 40736

Page 6 of 15

Client Name: See Pg 1	Project Reference: TK-181021	**Turnaround Time:**
Contact Name:	Quote #	☐ 1 Day ☐ 3 Day
Address:	PO #	☐ 2 Day ☒ Regular
Telephone:	Email Address:	Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/HS Metals	EC	SAR	pH	Hg	CrVI	HWS Boron	PHC (F1-F4)	~~PHC~~ BTEX	PAHs	PCBs
1	TP 8-1	S		2	03/05/18	1:40	X					-	250ml+1 vial	-			
2	TP 8-2	↓		3	↓	1:45											
3	TP 8-3			1	↓	1:50											
4	TP 9-1			1	03/06/18	1:30	X						250ml+				
5	TP 9-2			2	↓	1:35											
6	TP 9-3			2	↓	1:40											
7	TP 11-1			1	03/06/18	10:50							250ml+1 vial				
8	TP 11-2			2	↓	10:55	X	X	X	X	X	X	X	X	X	X	X
9	TP 11-3			2	↓	11:00											
10	TP 11-4	↓		1	↓	11:05											

Comments: see notes pg 1

Method of Delivery: P/U

N. agawa

Relinquished By (Sign): Kelly Pate	Received by Driver/Depot: B. Barton	Received at Lab: SUNREP ORN DEKMAI
Relinquished By (Print):	Date/Time: Mar 7/18 3:00pm	Date/Time: MAR 08, 2018 10:16
Date/Time: March 7/18	Temperature: 10.9 °C	Temperature: 9.9 °C
		Verified By: Rachel subject
		Date/Time: Mar 8/18
		pH Verified [ ] By: NA 10:57

Paracel ID: 1810288

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Chain of Custody (Lab Use Only)

№ 40737

Page 7 of 15

Client Name: See Pg 1	Project Reference: TC-181021
Contact Name:	Quote #
Address:	PO #
	Email Address:
Telephone:	

Turnaround Time: ☐ 1 Day ☐ 3 Day ☐ 2 Day ☒ Regular

Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table L ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

#	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time	ICP/MS Metals	pH									
1	TP 12-1	S		1	03/06/18	10:10											
2	TP 12-2	↓		1	↓	10:15											
3	TP 12-3			1		10:20											
4	TP 12-4			2		10:25											
5	TP 12-5			2		10:30											
6	TP 12-6			1		10:35											
7	TP 12-7 ✓			1 ✓		10:40 ✓	X ✓	X						250ml			
8	TP 12-8	↓		1	↓	10:45											
9																	
10																	

Comments: see notes pg1

Method of Delivery: P/U

Relinquished By (Sign): Kelly Patt	Received by Driver/Depot: D. Barton (Niagara)	Received at Lab: SUNPERPORN DOKMAI	Verified By: Rachel subject
Relinquished By (Print):	Date/Time: Mar 7/18 1:00 pm	Date/Time: MAR 08, 2018 10.10	Date/Time: Mar 8/18 10:57
Date/Time: March 7/18	Temperature: 10.9 °C	Temperature: 9.3 °C	pH Verified [ ] By: NA

Chain of Custody (Blank) - Rev 0.4 Feb 2016

Paracel ID: 1810288

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Chain of Custody (Lab Use Only) № 40738

Client Name: See Pg 1	Project Reference: TG18021
Contact Name:	Quote #
Address:	PO #
	Email Address:
Telephone:	

Turnaround Time: ☐ 1 Day ☐ 3 Day ☐ 2 Day ☒ Regular
Date Required: ____

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ____ ☐ Other: ____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/MS Metals										
1	TP 13-1	S		1	03/06/18	9:40											
2	TP 13-2			2		9:15							-250ml-				
3	TP 13-3 ✓			1 ✓		9:50 ✓	X ✓										
4	TP 13-4			2		9:55											
5	TP 14-1			1	03/06/18	9:20											
6	TP 14-2			2		9:25							-250ml-				
7	TP 14-3 ✓			1 ✓		9:30 ✓	X ✓										
8	TP 14-4	↓		2	↓	9:35											
9																	
10																	

Comments: see notes pg 1

Method of Delivery: P/U.

Relinquished By (Sign): Kelly Patt	Received by Driver/Depot: Niagara B Barton	Received at Lab: Sunezporn Dokmai	Verified By: Rachel subject
Relinquished By (Print):	Date/Time: Mar 7/18 1:00pm	Date/Time: MAR 8, 2018 10.10	Date/Time: Mar 8/18 10:57
Date/Time: March 7/18	Temperature: 10.9 °C	Temperature: 9.9 °C	pH Verified [ ] By: NA

Paracel ID: 1810288

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Chain of Custody
(Lab Use Only)
№ 40759

Page 9 of 15

Client Name: See Pg 1	Project Reference: TC-18102
Contact Name:	Quote #
Address:	PO #
Telephone:	Email Address:

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required: _____

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/MS Metals	pH	Required Analyses
1	TP 15-1	S		1	03/05/18	2:40			
2	TP 15-2			2		2:45			
3	TP 15-3			1		2:50			
4	TP 15-4			2		2:55			
5	TP 15-5			1		3:00			
6	TP15-6			1		3:05			
7	TP15-7			1		3:10			
8	TP15-8			1		3:15			
9	TP15-9			1		3:20			
10	TP15-10 ✓	✓		1 ✓	✓	3:25 ✓	X ✓	X	

Comments: see notes Pg 1

Method of Delivery: P/U

Relinquished By (Sign): Kelly Patto	Received by Driver/Depot: B Baxter	Received at Lab: SUNEEP ORN DOLMAI	Verified By: Rachel Subject
Relinquished By (Print):	Date/Time: Mar 7/18 1:00pm	Date/Time: Mar 08, 2018 10.10	Date/Time: Mar 8/18
Date/Time: March 7/18	Temperature: 10.9 °C	Temperature: 9.8 °C	pH Verified [ ] By: NA 10:57

Paracel ID: 1810288

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Chain of Custody (Lab Use Only) Nº 40740

Page 10 of 15

Client Name: See Pg 1	Project Reference: TC18102
Contact Name:	Quote #
Address:	PO #
Telephone:	Email Address:

Turnaround Time: ☐ 1 Day ☐ 3 Day ☐ 2 Day ☒ Regular Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/HS Metals	PHC (F1-F4)	VOC								
1	TP16 - 1	S		1	03/05/18	9:00											
2	TP16 - 2			2		9:05											
3	TP16 - 3 ✓			2✓		9:10✓	X✓	X✓	X✓								
4	TP16 - 4			2		9:15											
5	TP17 - 1			1	03/05/18	3:45											
6	TP 17 - 2			2		3:50											
7	TP 17 - 3			2		3:55											
8	TP 17 - 4			1		4:00											
9	TP 17 - 5			1		4:05											
10	TP 17 - 6			1		4:10											

Comments: See notes pg 1

Method of Delivery: P/U.

Relinquished By (Sign): Kelly Patt	Received by Driver/Depot: B. Barton	Received at Lab: GUNEEPORN DOK MAI
Relinquished By (Print):	Date/Time: Mar 7/18 1:00 pm	Date/Time: Mar 08,2018 10.10
Date/Time: March 7/18	Temperature: 10.9°C	Temperature: 9.3 °C

Verified By: Rachel Subject
Date/Time: Mar 8/18
pH Verified [ ] By: NA 10:57

Paracel ID: 1810288

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Chain of Custody (Lab Use Only)

Nº 40741

Page 11 of 15

Client Name: ~~[illegible]~~ See Pg 1	Project Reference: TC-181021	**Turnaround Time:**	
Contact Name:	Quote #	☐ 1 Day	☐ 3 Day
Address:	PO #	☐ 2 Day	☒ Regular
Telephone:	Email Address:	Date Required:	

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ______ ☐ Other: ______

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/MS Metals	EC	SAR	pH								
1	TP 17-7	S		1	03/05/18	4:15												
2	TP 17-8 ✓	↓		1 ✓	↓	4:20 ✓	X ✓							850ml				
3	TP 17-9			1		4:25												
4	TP 17-10			1		4:30												
5	TP 18-1			1	03/06/18	8:40												
6	TP 18-2 ✓			2 ✓		8:45 ✓	X ✓	X ✓	X	X				850ml + 1 vial				
7	TP 18-3			2		8:50												
8	TP 18-4	↓		1	↓	8:55												
9																		
10																		

Comments: see notes pg 1

Method of Delivery: P/U.

Relinquished By (Sign): [signature]	Received by Driver/Depot: B. Barton (Niagara)	Received at Lab: SUNEEPORN ROKIMAI	Verified By: Rachel subject
Relinquished By (Print):	Date/Time: Mar 7/18 1:00pm	Date/Time: MAR 08, 2018 10.10	Date/Time: Mar 8/18
Date/Time: March 7/18	Temperature: 0.9 °C	Temperature: 9.3 °C	pH Verified [ ] By: NA 10:57

Paracel ID: 1810288

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Chain of Custody (Lab Use Only) № 40742

Page 12 of 15

Client Name: See Pg 1	Project Reference: TC-181021
Contact Name:	Quote #
Address:	PO #
Telephone:	Email Address:

Turnaround Time: ☐ 1 Day ☐ 3 Day ☐ 2 Day ☒ Regular Date Required: _____

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/MS Metals	pH									
1	TP 19-1	S		1	03/06/18	8:10											
2	TP 19-2			2		8:15											
3	TP 19-3			1		8:20											
4	TP 19-4			2		8:25											
5	TP 19-5			1		8:30											
6	TP 19-6 ✓			1		8:35 ✓	X										
7	TP 19-7			1		8:40											
8	TP 20-1 ✓			1	03/06/18	12:55 ✓	X	X									
9	TP 20-2			3		1:00											
10	TP 20-3			2		1:05											
	TP 20-4			1		1:10											

Comments: see notes pg1

Method of Delivery: P/U. Niagara

Relinquished By (Sign): Kelly Patto	Received by Driver/Depot: B. Barton	Received at Lab: SUNEEPORN ROKMAI	Verified By: Rachel subject
Relinquished By (Print):	Date/Time: Mar 7/18 1:00pm	Date/Time: MAR 08, 2018 10.10	Date/Time: Mar 8/18
Date/Time: March 7/18	Temperature: 10.9 °C	Temperature: 9.3 °C	pH Verified [ ] By: NA 10:57

Chain of Custody (Blank) - Rev 0.4 Feb 2016

Paracel ID: 1810288

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Chain of Custody (Lab Use Only) № 40743

Page 13 of 15

Client Name: See Pg 1	Project Reference: TC18102	**Turnaround Time:**
Contact Name:	Quote #	☐ 1 Day ☐ 3 Day
Address:	PO #	☐ 2 Day ☒ Regular
	Email Address:	Date Required:
Telephone:		

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP (MS Metals)	BTEX	PHC (F1-F4)	pH							
1	TP 21 - 1	S		1	03/06/18	11:50											
2	TP 21 - 2			2		11:55											
3	TP 21 - 3			2		12:00	X	X	X				-250ml+1vial-				
4	TP 21 - 4			2		12:05											
5	TP 21 - 5			2		12:10											
6	TP 21 - 6			2		12:15											
7	TP 21 - 7			1		12:20											
8	TP 21 - 8			1		12:25											
9	TP 21 - 9			1		12:30				X			-250ml-				
10																	

Comments: see notes pg1

Method of Delivery: P/U, Niagara

Relinquished By (Sign): Kelly Pattle	Received by Driver/Depot: D. Barton	Received at Lab: SUNEEP ORAN DOKMAI	Verified By: Rachel Short
Relinquished By (Print):	Date/Time: Mar 7/18 1:00pm	Date/Time: MAR 08, 2018 10.10	Date/Time: Mar 8/18
Date/Time: March 7/18	Temperature: 10.9 °C	Temperature: 9.3 °C	pH Verified [ ] By: NA 10:57

Paracel ID: 1810288

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Chain of Custody (Lab Use Only)
№ 40744

Page 14 of ~~14~~ 15

Client Name: See Pg 1	Project Reference: TG-181021
Contact Name:	Quote #
Address:	PO #
	Email Address:
Telephone:	

Turnaround Time: ☐ 1 Day ☐ 3 Day ☐ 2 Day ☒ Regular
Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/HS Metals	EC	SAR	pH	Hg	CrVI	HWS Boron	PHC (F1-F4)	VOC	PAHs	PCBs
1	DUP 1	S		2													
2	DUP 2	↓		1													
3	DUP 3 ✓			2	✓	✓	X✓	X✓	X✓	X✓	X✓	X✓	X✓	X	X	X	X
4	DUP 4			1									+85ml(+1Vial)				
5	DUP 5			1													
6	DUP 6			1													
7	DUP 7			1													
8	DUP 8			2													
9	DUP 9			1													
10	DUP 10	↓		1													

Comments: see notes pg 1

Method of Delivery: P/U

Relinquished By (Sign): [signature]	Received by Driver/Depot: B. Baxter (Niagara)	Received at Lab: SV NEEP ORN DEV MAI	Verified By: Rachel Subject
Relinquished By (Print):	Date/Time: Mar 7/18 1:00pm	Date/Time: MAR 08, 2018 10:10	Date/Time: Mar 8/18 10:57
Date/Time: March 7/18	Temperature: 10.9 °C	Temperature: 9.3 °C	pH Verified [ ] By: NA

Paracel ID: 1810288

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Chain of Custody (Lab Use Only)

№ 40745

Page 15 of 15

Client Name: See Pg 1	Project Reference: TG-181021
Contact Name:	Quote #
Address:	PO #
	Email Address:
Telephone:	

Turnaround Time: ☐ 1 Day ☐ 3 Day ☐ 2 Day ☒ Regular

Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1810288

Required Analyses

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/MS Metals	pH									
1	DUP 11	S		1			X					- 250 mL -					
2	DUP 12			1			X	X									
3	DUP 13			2													
4	DUP 14			2													
5	DUP 15			2													
6																	
7																	
8																	
9																	
10																	

Comments: see notes pg 1

Method of Delivery: P/U

Relinquished By (Sign): [signature]	Received by Driver/Depot: B. Barton (Niagara)	Received at Lab: SUNEEL PORN DOK MAI	Verified By: Rachel Subject
Relinquished By (Print):	Date/Time: Mar 7/18 1:00pm	Date/Time: MAR 08, 2018 10:10	Date/Time: Mar 8/18 10:57
Date/Time: March 7/18	Temperature: 10.9 °C	Temperature: 9.3 °C	pH Verified [ ] By: NA

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Ottawa, ON, K1G 4J8
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

Amec Foster Wheeler (Thorold)

3300 Merrittville Hwy, Unit 5
Thorold, ON L2V 4Y6
Attn: Kelly Patterson

Client PO:
Project: TG181021
Custody: 40761, 762, 763

Report Date: 13-Mar-2018
Order Date: 8-Mar-2018

Order #: 1810374

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

Paracel ID	Client ID
1810374-01	BH/MW1-5d
1810374-02	BH/MW1-5c
1810374-03	BH/MW2-2c
1810374-04	BH/MW3-1d
1810374-05	BH/MW3-1c
1810374-06	BH/MW4-3c
1810374-07	BH/MW5-3c

Approved By:

Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 8-Mar-2018
Project Description: TG181021

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHC F1	CWS Tier 1 - P&T GC-FID	9-Mar-18	11-Mar-18
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	9-Mar-18	11-Mar-18
REG 153: Metals by ICP/OES, soil	based on MOE E3470, ICP-OES	10-Mar-18	10-Mar-18
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	9-Mar-18	11-Mar-18
Solids, %	Gravimetric, calculation	13-Mar-18	13-Mar-18

Certificate of Analysis

Client: Amec Foster Wheeler (Thorold)

Client PO:

Report Date: 13-Mar-2018

Order Date: 8-Mar-2018

Project Description: TG181021

	Client ID:	BH/MW1-5d	BH/MW1-5c	BH/MW2-2c	BH/MW3-1d
	Sample Date:	07-Mar-18	07-Mar-18	07-Mar-18	07-Mar-18
	Sample ID:	1810374-01	1810374-02	1810374-03	1810374-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	80.8	76.5	83.3	79.9
Metals					
Antimony	1.0 ug/g dry	-	<1.0	<1.0	-
Arsenic	1.0 ug/g dry	-	5.4	4.0	-
Barium	1.0 ug/g dry	-	140	146	-
Beryllium	1.0 ug/g dry	-	<1.0	<1.0	-
Boron	1.0 ug/g dry	-	20.1	14.1	-
Cadmium	0.5 ug/g dry	-	<0.5	<0.5	-
Chromium	1.0 ug/g dry	-	23.3	17.1	-
Cobalt	1.0 ug/g dry	-	13.0	9.0	-
Copper	1.0 ug/g dry	-	20.1	14.2	-
Lead	1.0 ug/g dry	-	10.5	7.4	-
Molybdenum	1.0 ug/g dry	-	<1.0	<1.0	-
Nickel	1.0 ug/g dry	-	25.7	19.3	-
Selenium	1.0 ug/g dry	-	<1.0	<1.0	-
Silver	0.5 ug/g dry	-	<0.5	<0.5	-
Thallium	1.0 ug/g dry	-	<1.0	<1.0	-
Uranium	1.0 ug/g dry	-	<1.0	<1.0	-
Vanadium	1.0 ug/g dry	-	34.2	26.6	-
Zinc	1.0 ug/g dry	-	52.6	39.6	-
Volatiles					
Acetone	0.50 ug/g dry	<0.50	-	-	<0.50
Benzene	0.02 ug/g dry	<0.02	-	-	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	-	-	<0.05
Bromoform	0.05 ug/g dry	<0.05	-	-	<0.05
Bromomethane	0.05 ug/g dry	<0.05	-	-	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	-	-	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	-	-	<0.05
Chloroform	0.05 ug/g dry	<0.05	-	-	<0.05
Dibromochloromethane	0.05 ug/g dry	<0.05	-	-	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	-	-	<0.05

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 8-Mar-2018
Project Description: TG181021

	Client ID:	BH/MW1-5d	BH/MW1-5c	BH/MW2-2c	BH/MW3-1d
	Sample Date:	07-Mar-18	07-Mar-18	07-Mar-18	07-Mar-18
	Sample ID:	1810374-01	1810374-02	1810374-03	1810374-04
	MDL/Units	Soil	Soil	Soil	Soil
1,2-Dichloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	-	-	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	-	-	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	<0.05
Ethylene dibromide (dibromoethan	0.05 ug/g dry	<0.05	-	-	<0.05
Hexane	0.05 ug/g dry	<0.05	-	-	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	-	-	<0.50
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	-	-	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	-	-	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	-	-	<0.05
Styrene	0.05 ug/g dry	<0.05	-	-	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
Tetrachloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
Toluene	0.05 ug/g dry	<0.05	-	-	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	-	-	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	-	-	<0.02
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	<0.05
o-Xylene	0.05 ug/g dry	<0.05	-	-	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	-	-	<0.05
4-Bromofluorobenzene	Surrogate	106%	-	-	106%
Dibromofluoromethane	Surrogate	100%	-	-	81.2%
Toluene-d8	Surrogate	111%	-	-	111%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	-	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	-	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	<6

Certificate of Analysis

Client: Amec Foster Wheeler (Thorold)

Client PO:

Report Date: 13-Mar-2018

Order Date: 8-Mar-2018

Project Description: TG181021

	Client ID:	BH/MW3-1c	BH/MW4-3c	BH/MW5-3c	-
	Sample Date:	07-Mar-18	07-Mar-18	07-Mar-18	-
	Sample ID:	1810374-05	1810374-06	1810374-07	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	80.1	79.1	79.2	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Arsenic	1.0 ug/g dry	4.6	5.2	6.6	-
Barium	1.0 ug/g dry	107	119	119	-
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Boron	1.0 ug/g dry	12.5	14.4	14.5	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Chromium	1.0 ug/g dry	18.1	22.7	19.7	-
Cobalt	1.0 ug/g dry	9.9	10.9	9.6	-
Copper	1.0 ug/g dry	14.8	19.0	17.4	-
Lead	1.0 ug/g dry	7.6	9.0	9.2	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Nickel	1.0 ug/g dry	21.2	24.1	21.7	-
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Vanadium	1.0 ug/g dry	27.6	35.1	30.1	-
Zinc	1.0 ug/g dry	41.0	46.7	50.6	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						
Volatiles									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Ethylene dibromide (dibromoethane	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: 4-Bromofluorobenzene	*8.40*		*ug/g*		*105*	*50-140*			
Surrogate: Dibromofluoromethane	*6.29*		*ug/g*		*78.7*	*50-140*			
Surrogate: Toluene-d8	*8.76*		*ug/g*		*110*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Metals									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	4.96	1.0	ug/g dry	4.89			1.3	30	
Barium	115	1.0	ug/g dry	109			5.1	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron	11.7	1.0	ug/g dry	10.7			8.7	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium	24.7	1.0	ug/g dry	23.2			6.1	30	
Cobalt	9.85	1.0	ug/g dry	9.13			7.6	30	
Copper	32.7	1.0	ug/g dry	31.5			3.8	30	
Lead	20.1	1.0	ug/g dry	19.1			5.2	30	
Molybdenum	1.02	1.0	ug/g dry	ND			0.0	30	
Nickel	21.7	1.0	ug/g dry	20.8			4.2	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	1.79	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND				30	
Vanadium	27.5	1.0	ug/g dry	26.2			5.1	30	
Zinc	78.7	1.0	ug/g dry	79.1			0.5	30	
Physical Characteristics									
% Solids	79.7	0.1	% by Wt.	80.6			1.2	25	
Volatiles									
Acetone	ND	0.50	ug/g dry	ND				50	
Benzene	ND	0.02	ug/g dry	ND				50	
Bromodichloromethane	ND	0.05	ug/g dry	ND				50	
Bromoform	ND	0.05	ug/g dry	ND				50	
Bromomethane	ND	0.05	ug/g dry	ND				50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND				50	
Chlorobenzene	ND	0.05	ug/g dry	ND				50	
Chloroform	ND	0.05	ug/g dry	ND				50	
Dibromochloromethane	ND	0.05	ug/g dry	ND				50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND				50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Ethylene dibromide (dibromoethane	ND	0.05	ug/g dry	ND				50	
Hexane	ND	0.05	ug/g dry	ND				50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND				50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND				50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND				50	
Methylene Chloride	ND	0.05	ug/g dry	ND				50	
Styrene	ND	0.05	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Tetrachloroethylene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND				50	
Trichloroethylene	ND	0.05	ug/g dry	ND				50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND				50	
Vinyl chloride	ND	0.02	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: 4-Bromofluorobenzene	*9.69*		*ug/g dry*		*108*	*50-140*			
Surrogate: Dibromofluoromethane	*7.17*		*ug/g dry*		*79.8*	*50-140*			
Surrogate: Toluene-d8	*10.0*		*ug/g dry*		*111*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	211	7	ug/g		106	80-120			
F2 PHCs (C10-C16)	144	4	ug/g	ND	104	60-140			
F3 PHCs (C16-C34)	308	8	ug/g	ND	108	60-140			
F4 PHCs (C34-C50)	209	6	ug/g	ND	110	60-140			
Metals									
Antimony	226		ug/L	ND	90.4	70-130			
Arsenic	359		ug/L	97.9	104	70-130			
Barium	2400		ug/L	2190	85.3	70-130			
Beryllium	226		ug/L	1.50	89.7	70-130			
Boron	444		ug/L	214	92.4	70-130			
Cadmium	222		ug/L	2.25	88.0	70-130			
Chromium	679		ug/L	464	86.2	70-130			
Cobalt	392		ug/L	183	83.8	70-130			
Copper	844		ug/L	629	86.1	70-130			
Lead	610		ug/L	382	90.9	70-130			
Molybdenum	225		ug/L	15.5	83.7	70-130			
Nickel	617		ug/L	416	80.5	70-130			
Selenium	197		ug/L	ND	78.7	70-130			
Silver	216		ug/L	1.26	85.8	70-130			
Thallium	211		ug/L	ND	84.5	70-130			
Uranium	295		ug/L	ND	118	70-130			
Vanadium	748		ug/L	523	90.1	70-130			
Zinc	1760		ug/L	1580	70.3	70-130			
Volatiles									
Acetone	9.82	0.50	ug/g		98.2	50-140			
Benzene	4.39	0.02	ug/g		110	60-130			
Bromodichloromethane	3.77	0.05	ug/g		94.1	60-130			
Bromoform	3.72	0.05	ug/g		93.1	60-130			
Bromomethane	3.58	0.05	ug/g		89.4	50-140			
Carbon Tetrachloride	4.49	0.05	ug/g		112	60-130			
Chlorobenzene	3.54	0.05	ug/g		88.5	60-130			
Chloroform	4.27	0.05	ug/g		107	60-130			
Dibromochloromethane	3.35	0.05	ug/g		83.7	60-130			
Dichlorodifluoromethane	4.36	0.05	ug/g		109	50-140			
1,2-Dichlorobenzene	3.98	0.05	ug/g		99.5	60-130			
1,3-Dichlorobenzene	3.90	0.05	ug/g		97.4	60-130			
1,4-Dichlorobenzene	3.70	0.05	ug/g		92.4	60-130			
1,1-Dichloroethane	4.51	0.05	ug/g		113	60-130			
1,2-Dichloroethane	4.69	0.05	ug/g		117	60-130			
1,1-Dichloroethylene	3.73	0.05	ug/g		93.3	60-130			
cis-1,2-Dichloroethylene	4.28	0.05	ug/g		107	60-130			
trans-1,2-Dichloroethylene	4.27	0.05	ug/g		107	60-130			
1,2-Dichloropropane	4.44	0.05	ug/g		111	60-130			
cis-1,3-Dichloropropylene	4.00	0.05	ug/g		99.9	60-130			
trans-1,3-Dichloropropylene	3.90	0.05	ug/g		97.5	60-130			
Ethylbenzene	3.67	0.05	ug/g		91.8	60-130			
Ethylene dibromide (dibromoethane	3.55	0.05	ug/g		88.7	60-130			
Hexane	4.92	0.05	ug/g		123	60-130			
Methyl Ethyl Ketone (2-Butanone)	8.29	0.50	ug/g		82.9	50-140			
Methyl Isobutyl Ketone	8.88	0.50	ug/g		88.8	50-140			
Methyl tert-butyl ether	8.21	0.05	ug/g		82.1	50-140			

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 13-Mar-2018
Order Date: 8-Mar-2018
Project Description: TG181021

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Methylene Chloride	3.47	0.05	ug/g		86.9	60-130			
Styrene	3.72	0.05	ug/g		93.0	60-130			
1,1,1,2-Tetrachloroethane	3.69	0.05	ug/g		92.2	60-130			
1,1,2,2-Tetrachloroethane	3.63	0.05	ug/g		90.7	60-130			
Tetrachloroethylene	3.74	0.05	ug/g		93.5	60-130			
Toluene	2.96	0.05	ug/g		73.9	60-130			
1,1,1-Trichloroethane	4.46	0.05	ug/g		112	60-130			
1,1,2-Trichloroethane	3.20	0.05	ug/g		80.1	60-130			
Trichloroethylene	3.65	0.05	ug/g		91.2	60-130			
Trichlorofluoromethane	3.72	0.05	ug/g		92.9	50-140			
Vinyl chloride	4.14	0.02	ug/g		104	50-140			
m,p-Xylenes	7.21	0.05	ug/g		90.2	60-130			
o-Xylene	3.65	0.05	ug/g		91.3	60-130			
Surrogate: 4-Bromofluorobenzene	*8.35*		*ug/g*		*104*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

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

PARACEL LABORATORIES LTD.

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Chain of Custody
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Nº 40761

Page 1 of 3

Client Name: Amec Foster Wheeler	Project Reference: TG181021
Contact Name: Kelly Patterson	Quote # 2018 Standing Offer
Address: 3300 Merrittville Hwy, Unit 5 Thorold, ON L2V 4Y6	PO #
Telephone: 905-687-6616	Email Address: kelly.patterson@amecfw.com

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) **GW** (Ground Water) **SW** (Surface Water) **SS** (Storm/Sanitary Sewer) **P** (Paint) **A** (Air) **O** (Other)

Paracel Order Number: 1810374

Required Analyses

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/MS Metals	PHC (F1-F4)	BTEX VOC								
1	BH/MW1-1d	S		2	Mr 7/18	10:00											
2	BH/MW1-1c	S		1		10:00											
3	BH/MW1-2	S		1		10:05											
4	BH/MW1-3	S		1		10:10											
5	BH/MW1-4	S		1		10:15											
6	BH/MW1-5d	S		2		10:25		X	X			-250mL+1V(9)-					
7	BH/MW1-5c	S		1		10:25	X					-250mL-					
8	BH/MW1-6	S		1		10:35											
9	BH/MW1-7d	S		2		11:10											
10	BH/MW1-7c	S		1		11:10											

Comments: governed by the T/C of SNA07-003
hold all samples for future analysis W: cagoren

Method of Delivery: P/U.

Relinquished By (Sign): C.McC	Received by Driver/Depot: B. Baxter	Received at Lab: SUNEEPORN DOK MAI	Verified By: Rachel Schott
Relinquished By (Print): Cameron McCann	Date/Time: Mar 8/18 2:25pm	Date/Time: MAR 09, 2018 10:40	Date/Time: Mar 9/18
Date/Time: Mr 8/18 - 9am	Temperature: 7 °C	Temperature: 8.9 °C	pH Verified ☒ By: N/A 11:40

Chain of Custody (Blank) - Rev 0.4 Feb 2016

PARACEL LABORATORIES LTD.

Paracel ID: 1810374

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Chain of Custody
(Lab Use Only)
№ 40762

Page 2 of 3

Client Name: Arrec Foster Wheeler	Project Reference: TG181021
Contact Name: Kelly Patterson	Quote # 2018 Standing Offer
Address: 3300 Merritville Hwy, Unit 5, Thorold ON L2V 4Y6	PO #
Telephone: 905-687-6616	Email Address: Kelly.patterson@arrecfw.com

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required: _____

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

	Paracel Order Number: 1810374 / Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/MS Metals	PHC (F1-F4)	VOCs								
1	BH/MW2-1	S		1	Mar 7/18	13:15											
2	BH/MW2-2d	S		2		13:20											
3	BH/MW2-2c	S		1		13:20	X						250ml-				
4	BH/MW2-3	S		1		13:25											
5	BH/MW3-1d	S		2		14:50		X	X				250ml(+3vial)-				
6	BH/MW3-1c	S		1		14:50	X						250ml-				
7	BH/MW3-2	S		1		14:55											
8	BH/MW4-1	S		1		15:55											
9	BH/MW4-2	S		1		16:10											
10	BH/MW4-3d	S		2		16:15											

Comments: please see Page #1

Method of Delivery: P/U

Relinquished By (Sign): C. McCann
Relinquished By (Print): Cameron McCann
Date/Time: Mar 8/18 - 9am

Received by Driver/Depot: Magog
B. Barton
Date/Time: Mar 8/18 2:25pm
Temperature: 8.5°C

Received at Lab: DUMEPORN DOKMAI
Date/Time: MAR 09, 2018 10:40
Temperature: 8.9°C

Verified By: Rachel Subject
Date/Time: Mar 9/18
pH Verified ☒ By: N/A 11:40

PARACEL LABORATORIES LTD.

Paracel ID: 1810374

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Chain of Custody
(Lab Use Only)
№ 40763

Page 3 of 3

Client Name: Amec Foster Wheeler	Project Reference: TG181021	**Turnaround Time:**
Contact Name: Kelly Patterson	Quote #: 2018 Standard offer	☐ 1 Day ☐ 3 Day
Address: 3300 Merritville Hwy, Unit 5, Thorold ON L2V 4Y6	PO #	☐ 2 Day ☒ Regular
Telephone: 905-687-6616	Email Address: kelly.patterson@amecfw.com	Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1810374.

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	ICP/MS Hot Tab										
1	BH/MW4-3c	S		1	Mar 7/18	16:15	X						250ml				
2	BH/MW 5-1	S		1		16:50											
3	BH/MW 5-2	S		1		16:55											
4	BH/MW 5-3d	S		2		17:05											
5	BH/MW 5-3c	S		1		17:05	X						250ml				
6	Dup AA	S		2													
7	Dup AB	S		1													
8	Dup AC	S		2													
9	Dup AD	S		1													
10																	

Comments: please see Page #1

* :- Sample ID on Lid read = BH4-3C.
** :- " " = BH 5-3C.

Method of Delivery: P/U.

Relinquished By (Sign):	Received by Driver/Depot: B. Barton	Received at Lab: SUNEETORN DOHMAI	Verified By: Rachel subject
Relinquished By (Print): Cameron McCann	Date/Time: Mar 9/18 2:25pm	Date/Time: MAR09,2018 10:40	Date/Time: Mar 9/18
Date/Time: Mar 8/18 - 9am	Temperature: 9°C	Temperature: 5.9 °C	pH Verified ☒ By: NA 11:40

Chain of Custody (Blank) - Rev 0.4 Feb 2016

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Certificate of Analysis

Amec Foster Wheeler (Thorold)

3300 Merrittville Hwy, Unit 5
Thorold, ON L2V 4Y6
Attn: Kelly Patterson

Client PO:
Project: TG181021
Custody: 40732/40733

Report Date: 16-Mar-2018
Order Date: 14-Mar-2018

Order #: 1811259

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

Paracel ID	Client ID
1811259-01	TP3-3
1811259-02	TP4-2
1811259-03	TP4-4

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 16-Mar-2018
Order Date: 14-Mar-2018
Project Description: TG181021

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: Metals by ICP/OES, soil	based on MOE E3470, ICP-OES	16-Mar-18	16-Mar-18
Solids, %	Gravimetric, calculation	15-Mar-18	15-Mar-18

Certificate of Analysis

Client: Amec Foster Wheeler (Thorold)

Client PO:

Report Date: 16-Mar-2018

Order Date: 14-Mar-2018

Project Description: TG181021

	Client ID:	TP3-3	TP4-2	TP4-4	-
	Sample Date:	05-Mar-18	05-Mar-18	05-Mar-18	-
	Sample ID:	1811259-01	1811259-02	1811259-03	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	85.2	83.7	82.0	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Arsenic	1.0 ug/g dry	4.8	<1.0	<1.0	-
Barium	1.0 ug/g dry	102	111	109	-
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Boron	1.0 ug/g dry	8.4	12.6	14.6	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Chromium	1.0 ug/g dry	14.2	22.9	21.2	-
Cobalt	1.0 ug/g dry	7.7	12.7	11.0	-
Copper	1.0 ug/g dry	11.8	20.1	18.3	-
Lead	1.0 ug/g dry	8.7	12.8	11.0	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Nickel	1.0 ug/g dry	16.1	25.8	24.9	-
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Vanadium	1.0 ug/g dry	21.3	32.3	30.0	-
Zinc	1.0 ug/g dry	35.6	61.0	49.9	-

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 16-Mar-2018
Order Date: 14-Mar-2018
Project Description: TG181021

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	ND	1.0	ug/g dry	ND				30	
Barium	45.0	1.0	ug/g dry	48.8			8.2	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron	7.61	1.0	ug/g dry	9.79			25.0	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium	12.3	1.0	ug/g dry	11.4			7.0	30	
Cobalt	5.96	1.0	ug/g dry	5.57			6.6	30	
Copper	11.9	1.0	ug/g dry	10.9			8.6	30	
Lead	8.38	1.0	ug/g dry	9.15			8.8	30	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	11.2	1.0	ug/g dry	10.5			6.2	30	
Selenium	ND	1.0	ug/g dry	ND				30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND				30	
Vanadium	19.7	1.0	ug/g dry	18.8			4.6	30	
Zinc	30.8	1.0	ug/g dry	28.3			8.3	30	
Physical Characteristics									
% Solids	81.8	0.1	% by Wt.	85.6			4.6	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	269		ug/L	ND	108	70-130			
Arsenic	301		ug/L	ND	121	70-130			
Barium	1200		ug/L	976	90.7	70-130			
Beryllium	254		ug/L	ND	101	70-130			
Boron	438		ug/L	196	96.7	70-130			
Cadmium	250		ug/L	2.06	99.0	70-130			
Chromium	472		ug/L	229	97.3	70-130			
Cobalt	345		ug/L	111	93.4	70-130			
Copper	461		ug/L	218	97.2	70-130			
Lead	416		ug/L	183	93.4	70-130			
Molybdenum	243		ug/L	5.52	95.0	70-130			
Nickel	440		ug/L	210	91.7	70-130			
Selenium	238		ug/L		95.2	70-130			
Silver	226		ug/L	ND	90.4	70-130			
Thallium	246		ug/L	ND	98.3	70-130			
Uranium	293		ug/L	ND	117	70-130			
Vanadium	625		ug/L	376	99.5	70-130			
Zinc	785		ug/L	567	87.2	70-130			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

Paracel ID: 1811259

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№ 40732

Page 2 of 15

Client Name: See Pg 1	Project Reference: TC181021	**Turnaround Time:**
Contact Name:	Quote #:	☐ 1 Day ☐ 3 Day
Address:	PO #:	☐ 2 Day ☒ Regular
Telephone:	Email Address:	Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1811259 ~~1810288~~

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	ICP/HS Metals	PHC (F1-F4)	BTEX	pH
1	TP 2-6	S		1	03/05/18	10:50				
2	TP 2-7			1		10:55				
3	TP 2-8			1		11:00				
4	TP 2-9			1		11:05				
5	TP 3-1			1		11:10				
6	TP 3-2			2		11:15				
7	TP 3-3			2		11:20	X			
8	TP 3-4 ✓			1		11:25 ✓	X ✓	X ✓	X ✓	
9	TP 3-5			1		11:30				
10	TP 3-6 ✓			1		11:35 ✓				X ✓
	TP 3-7			1		11:40				

Comments: Kelly Patterson
Additional metals ICP to TP3-3, TP4-2 & TP4-4 on Mar 14, 2018
See page 1

Method of Delivery: P/U

Relinquished By (Sign): Kelly Patt	Received by Driver/Depot: Niagara B. Barton	Received at Lab: SUNNIE PORN DEKMAI	Verified By: Rachel subject
Relinquished By (Print):	Date/Time: Mar 7/18 1:00pm	Date/Time: MARCH 9 2018 10.00	Date/Time: Mar 15/18
Date/Time: March 7/18	Temperature:	Temperature: 6.9 °C	pH Verified ✓ By: NA 1019

Paracel ID: 1811259

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Chain of Custody (Lab Use Only)
Nº 40733

Page 3 of 15

Client Name: See Pg 1	Project Reference: TC-181021		**Turnaround Time:**
Contact Name:	Quote #		☐ 1 Day ☐ 3 Day
Address:	PO #		☐ 2 Day ☒ Regular
Telephone:	Email Address:		Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ____ ☐ Other: ____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1811259 ~~1810288~~

Required Analyses

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	ICP/MS Metals	PHC (F1-F4)	BTEX								
1	TP 4-1	S		1	03/05/18	11:50											
2	TP 4-2	↓		2	↓	11:55	X						- 250mL -				/
3	TP 4-3			2		12:00	X	X	X								
4	TP 4-4			1		12:05	X						-250mL·				/
5	TP 4-5			1		12:10											
6	TP 4-6			1		12:15											
7	TP 4-7			1		12:20											
8	TP 4-8	↓		1	↓	12:25											
9																	
10																	

Comments: see notes pg 1

Niagara

Method of Delivery: P/U

Relinquished By (Sign): Kelly Patts	Received by Driver/Depot: B. Barton	Received at Lab: SUN EPPORN WONMAI	Verified By: Rachel subject
Relinquished By (Print):	Date/Time: Mar 7/18 1:00pm	Date/Time: MAR 15, 2018 10.00	Date/Time: Mar 15/18 10:19
Date/Time: Mar 7/18	Temperature: °C	Temperature: 6.9 °C	pH Verified ☒ By: NA

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Certificate of Analysis

Amec Foster Wheeler (Thorold)

3300 Merrittville Hwy, Unit 5
Thorold, ON L2V 4Y6
Attn: Kelly Patterson

Client PO:
Project: TG181021
Custody: 40762

Report Date: 16-Mar-2018
Order Date: 14-Mar-2018

Order #: 1811261

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

Paracel ID	Client ID
1811261-01	BH/MW3-2

Approved By: Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 16-Mar-2018
Order Date: 14-Mar-2018
Project Description: TG181021

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: Metals by ICP/OES, soil	based on MOE E3470, ICP-OES	16-Mar-18	16-Mar-18
Solids, %	Gravimetric, calculation	15-Mar-18	15-Mar-18

Certificate of Analysis

Client: Amec Foster Wheeler (Thorold)

Client PO:

Report Date: 16-Mar-2018

Order Date: 14-Mar-2018

Project Description: TG181021

	Client ID:	BH/MW3-2	-	-	-
	Sample Date:	07-Mar-18	-	-	-
	Sample ID:	1811261-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	82.4	-	-	-
Metals					
Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	<1.0	-	-	-
Barium	1.0 ug/g dry	63.1	-	-	-
Beryllium	1.0 ug/g dry	<1.0	-	-	-
Boron	1.0 ug/g dry	7.0	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	1.0 ug/g dry	12.9	-	-	-
Cobalt	1.0 ug/g dry	6.6	-	-	-
Copper	1.0 ug/g dry	12.4	-	-	-
Lead	1.0 ug/g dry	5.4	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	1.0 ug/g dry	14.1	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.5 ug/g dry	<0.5	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	1.0 ug/g dry	20.2	-	-	-
Zinc	1.0 ug/g dry	30.3	-	-	-

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 16-Mar-2018
Order Date: 14-Mar-2018
Project Description: TG181021

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	ND	1.0	ug/g dry	ND				30	
Barium	45.0	1.0	ug/g dry	48.8			8.2	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron	7.61	1.0	ug/g dry	9.79			25.0	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium	12.3	1.0	ug/g dry	11.4			7.0	30	
Cobalt	5.96	1.0	ug/g dry	5.57			6.6	30	
Copper	11.9	1.0	ug/g dry	10.9			8.6	30	
Lead	8.38	1.0	ug/g dry	9.15			8.8	30	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	11.2	1.0	ug/g dry	10.5			6.2	30	
Selenium	ND	1.0	ug/g dry	ND				30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND				30	
Vanadium	19.7	1.0	ug/g dry	18.8			4.6	30	
Zinc	30.8	1.0	ug/g dry	28.3			8.3	30	
Physical Characteristics									
% Solids	81.8	0.1	% by Wt.	85.6			4.6	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	269		ug/L	ND	108	70-130			
Arsenic	301		ug/L	ND	121	70-130			
Barium	1200		ug/L	976	90.7	70-130			
Beryllium	254		ug/L	ND	101	70-130			
Boron	438		ug/L	196	96.7	70-130			
Cadmium	250		ug/L	2.06	99.0	70-130			
Chromium	472		ug/L	229	97.3	70-130			
Cobalt	345		ug/L	111	93.4	70-130			
Copper	461		ug/L	218	97.2	70-130			
Lead	416		ug/L	183	93.4	70-130			
Molybdenum	243		ug/L	5.52	95.0	70-130			
Nickel	440		ug/L	210	91.7	70-130			
Selenium	238		ug/L		95.2	70-130			
Silver	226		ug/L	ND	90.4	70-130			
Thallium	246		ug/L	ND	98.3	70-130			
Uranium	293		ug/L	ND	117	70-130			
Vanadium	625		ug/L	376	99.5	70-130			
Zinc	785		ug/L	567	87.2	70-130			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

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№ 40762

Page 2 of 3

Client Name: Amec Foster Wheeler	Project Reference: TG191021	**Turnaround Time:**	
Contact Name: Kelly Patterson	Quote #: 2018 Standing Offer	☐ 1 Day	☐ 3 Day
Address: 3300 Merritville Hwy, Unit 5, Thorold ON L2V 4Y6	PO #:	☐ 2 Day	☒ Regular
Telephone: 905-687-6616	Email Address: kelly.patterson@amecfw.com	Date Required:	

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Paracel Order Number: 1811261 / Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	ICP/MS Metals	PHC (F1-F4)	VOCs	Required Analyses
1	BH/MW2-1	S		1	Mar 7/18	13:15				
2	BH/MW2-2d	S		2		13:20				
3	BH/MW2-2c	S		1		13:20	X			
4	BH/MW2-3	S		1		13:25				
5	BH/MW3-1d	S		2		14:50		X	X	
6	BH/MW3-1c	S		1		14:50	X			
7	BH/MW3-2	S		1		14:55	X			1x250ml
8	BH/MW4-1	S		1		15:55				
9	BH/MW4-2	S		1		16:10				
10	BH/MW4-3d	S		2		16:15				

Comments: please see Page #1 addional metals BH/MW3-2 as per Kelly Magnus

Method of Delivery: P/U

Relinquished By (Sign):	Received by Driver/Depot: B. Barton	Received at Lab: SUNEPORN DOUMAS	Verified By: Rachel subject
Relinquished By (Print): Cameron McCann	Date/Time: Mar 8/18 2:25p	Date/Time: Mar 15, 2018 10:00	Date/Time: Mar 15/18
Date/Time: Mar 8/18 - 9am	Temperature: 8.5°C	Temperature: 6.9 °C	pH Verified ☒ By: N/A 10:20

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Certificate of Analysis

Wood Environment & Infrastructure (Thorold)

3300 Merrittville Hwy, Unit 5
Thorold, ON L2V 4Y6
Attn: Kelly Patterson

Client PO:
Project: TG181021/1000
Custody: 41528

Report Date: 21-Jun-2018
Order Date: 7-May-2018

Revised Report

Order #: 1819087

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

Paracel ID	Client ID
1819087-01	TP4-3

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Wood Environment & Infrastructure (Thorold)
Client PO:

Report Date: 21-Jun-2018
Order Date: 7-May-2018
Project Description: TG181021/1000

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PCBs, total	SW846 8082A - GC-ECD	9-May-18	10-May-18
REG 558 - Cyanide	MOE E3015- Auto Colour	11-May-18	11-May-18
REG 558 - Fluoride	EPA 340.2 - ISE	11-May-18	11-May-18
REG 558 - Mercury by CVAA	EPA 7470A - Cold Vapour AA	11-May-18	11-May-18
REG 558 - Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	11-May-18	11-May-18
REG 558 - NO3/NO2	EPA 300.1 - IC	11-May-18	11-May-18
REG 558 - VOCs	EPA 624 - P&T GC-MS	10-May-18	11-May-18
Solids, %	Gravimetric, calculation	10-May-18	10-May-18

Certificate of Analysis

Client: Wood Environment & Infrastructure (Thorold)

Client PO:

Report Date: 21-Jun-2018

Order Date: 7-May-2018

Project Description: TG181021/1000

	Client ID:	TP4-3	-	-	-
	Sample Date:	05/07/2018 00:00	-	-	-
	Sample ID:	1819087-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	79.5	-	-	-
EPA 1311 - TCLP Leachate Inorganics					
Arsenic	0.05 mg/L	<0.05	-	-	-
Barium	0.05 mg/L	0.36	-	-	-
Boron	0.05 mg/L	0.07	-	-	-
Cadmium	0.01 mg/L	<0.01	-	-	-
Chromium	0.05 mg/L	<0.05	-	-	-
Lead	0.05 mg/L	<0.05	-	-	-
Mercury	0.005 mg/L	<0.005	-	-	-
Selenium	0.05 mg/L	<0.05	-	-	-
Silver	0.05 mg/L	<0.05	-	-	-
Uranium	0.05 mg/L	<0.05	-	-	-
Fluoride	0.05 mg/L	0.28	-	-	-
Nitrate as N	1 mg/L	<1	-	-	-
Nitrite as N	1 mg/L	<1	-	-	-
Cyanide, free	0.02 mg/L	<0.02	-	-	-
EPA 1311 - TCLP Leachate Organics					
Benzene	0.005 mg/L	<0.005	-	-	-
Carbon Tetrachloride	0.005 mg/L	<0.005	-	-	-
Chlorobenzene	0.004 mg/L	<0.004	-	-	-
Chloroform	0.006 mg/L	<0.006	-	-	-
1,2-Dichlorobenzene	0.004 mg/L	<0.004	-	-	-
1,4-Dichlorobenzene	0.004 mg/L	<0.004	-	-	-
1,2-Dichloroethane	0.005 mg/L	<0.005	-	-	-
1,1-Dichloroethylene	0.006 mg/L	<0.006	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.30 mg/L	<0.30	-	-	-
Methylene Chloride	0.04 mg/L	<0.04	-	-	-
Tetrachloroethylene	0.005 mg/L	<0.005	-	-	-
Trichloroethylene	0.004 mg/L	<0.004	-	-	-
Vinyl chloride	0.005 mg/L	<0.005	-	-	-
4-Bromofluorobenzene	Surrogate	105%	-	-	-
Dibromofluoromethane	Surrogate	94.9%	-	-	-
Toluene-d8	Surrogate	97.5%	-	-	-
PCBs					
PCBs, total	0.05 ug/g dry	<0.05	-	-	-
Decachlorobiphenyl	Surrogate	116%	-	-	-

Certificate of Analysis
Client: Wood Environment & Infrastructure (Thorold)
Client PO:

Report Date: 21-Jun-2018
Order Date: 7-May-2018
Project Description: TG181021/1000

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Arsenic	ND	0.05	mg/L						
Barium	ND	0.05	mg/L						
Boron	ND	0.05	mg/L						
Cadmium	ND	0.01	mg/L						
Chromium	ND	0.05	mg/L						
Lead	ND	0.05	mg/L						
Mercury	ND	0.005	mg/L						
Selenium	ND	0.05	mg/L						
Silver	ND	0.05	mg/L						
Uranium	ND	0.05	mg/L						
Fluoride	ND	0.05	mg/L						
Nitrate as N	ND	1	mg/L						
Nitrite as N	ND	1	mg/L						
Cyanide, free	ND	0.02	mg/L						
PCBs									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	*0.122*		*ug/g*		*122*	*60-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Arsenic	ND	0.05	mg/L	ND			0.0	29	
Barium	1.08	0.05	mg/L	1.15			6.3	34	
Boron	0.090	0.05	mg/L	0.113			23.4	33	
Cadmium	ND	0.01	mg/L	ND			0.0	33	
Chromium	ND	0.05	mg/L	ND			0.0	32	
Lead	ND	0.05	mg/L	ND			0.0	32	
Mercury	ND	0.005	mg/L	ND			0.0	30	
Selenium	ND	0.05	mg/L	ND			0.0	28	
Silver	ND	0.05	mg/L	ND			0.0	28	
Uranium	ND	0.05	mg/L	ND			0.0	27	
Fluoride	0.32	0.05	mg/L	0.32			0.9	20	
Nitrate as N	ND	1	mg/L	ND			0.0	20	
Nitrite as N	ND	1	mg/L	ND				20	
Cyanide, free	ND	0.02	mg/L	ND				20	
EPA 1311 - TCLP Leachate Organics									
Benzene	ND	0.005	mg/L	ND				25	
Carbon Tetrachloride	ND	0.005	mg/L	ND				25	
Chlorobenzene	ND	0.004	mg/L	ND				25	
Chloroform	ND	0.006	mg/L	ND				25	
1,2-Dichlorobenzene	ND	0.004	mg/L	ND				25	
1,4-Dichlorobenzene	ND	0.004	mg/L	ND				25	
1,2-Dichloroethane	ND	0.005	mg/L	ND				25	
1,1-Dichloroethylene	ND	0.006	mg/L	ND				25	
Methyl Ethyl Ketone (2-Butanone)	ND	0.30	mg/L	ND				25	
Methylene Chloride	ND	0.04	mg/L	ND				25	
Tetrachloroethylene	ND	0.005	mg/L	ND				25	
Trichloroethylene	ND	0.004	mg/L	ND				25	
Vinyl chloride	ND	0.005	mg/L	ND				25	
Surrogate: 4-Bromofluorobenzene	*0.701*		*mg/L*		*102*	*83-134*			
Surrogate: Dibromofluoromethane	*0.726*		*mg/L*		*105*	*78-124*			
Surrogate: Toluene-d8	*0.662*		*mg/L*		*96.2*	*76-118*			
PCBs									
PCBs, total	ND	0.05	ug/g dry	ND				40	
Surrogate: Decachlorobiphenyl	*0.152*		*ug/g dry*		*121*	*60-140*			
Physical Characteristics									
% Solids	85.8	0.1	% by Wt.	85.0			1.0	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Arsenic	44.3		ug/L	0.247	88.1	83-119			
Barium	159		ug/L	115	88.9	83-116			
Boron	54.3		ug/L	11.3	86.0	71-128			
Cadmium	41.9		ug/L	0.259	83.4	78-119			
Chromium	48.1		ug/L	2.68	90.8	80-124			
Lead	45.8		ug/L	2.00	87.6	77-126			
Mercury	0.0321	0.005	mg/L	ND	107	70-130			
Selenium	42.9		ug/L	0.243	85.2	81-125			
Silver	41.4		ug/L	ND	82.7	70-128			
Uranium	46.2		ug/L	0.364	91.6	70-131			
Fluoride	0.81	0.05	mg/L	0.32	99.3	70-130			
Nitrate as N	10	1	mg/L	ND	105	81-112			
Nitrite as N	9	1	mg/L	ND	92.5	76-107			
Cyanide, free	0.055	0.02	mg/L	ND	110	60-136			
EPA 1311 - TCLP Leachate Organics									
Benzene	33.4		ug/L		83.6	55-141			
Carbon Tetrachloride	38.6		ug/L		96.4	49-149			
Chlorobenzene	36.0		ug/L		90.0	64-137			
Chloroform	36.5		ug/L		91.2	58-138			
1,2-Dichlorobenzene	36.3		ug/L		90.7	60-150			
1,4-Dichlorobenzene	35.8		ug/L		89.5	63-132			
1,2-Dichloroethane	32.2		ug/L		80.4	50-140			
1,1-Dichloroethylene	37.3		ug/L		93.3	43-153			
Methyl Ethyl Ketone (2-Butanone)	76.7		ug/L		76.7	26-153			
Methylene Chloride	39.8		ug/L		99.5	58-149			
Tetrachloroethylene	41.0		ug/L		102	51-145			
Trichloroethylene	33.0		ug/L		82.4	52-135			
Vinyl chloride	38.4		ug/L		96.0	31-159			
Surrogate: 4-Bromofluorobenzene	*0.0841*		*mg/L*		*105*	*83-134*			
PCBs									
PCBs, total	0.491	0.05	ug/g	ND	97.6	60-140			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

Revision 1 - this report includes an updated client Sample ID.

Other Report Notes:

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

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

Paracel ID: 1819087

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Page 1 of 1

Client Name: Wood Environment & Infrastructure Solutions	Project Reference: TG18021/1000
Contact Name: Kelly Patterson	Quote #: Tier 2 #18-016
Address: 3500 Merritville Hwy, Thorold, ON L2V4Y6	PO #:
Telephone: 905-687-6616	Email Address: Kelly.Patterson@woodplc.com

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required: _____

Criteria: ☐ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☒ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number:

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	Required Analyses: TCLP Inorganics	TCLP metals	TCLP VOCs	TCLP PCBs	
1	BH4-3	S		2	May 7/18		X	X	X	X	- 8x250 mL
2											
3											
4											
5											
6											
7											
8											
9											
10											

Comments: Governed by agreement SN07-003. Parameters to meet requirements of NWSL. (Niagara) Per Kelly Patterson

Method of Delivery: P/U

Relinquished By (Sign):	Received by Driver/Depot: B. Barton	Received at Lab: SUNREFORM DOMAI	Verified By:
Relinquished By (Print): Kevin Haines	Date/Time: May 7/18 12:25 pm	Date/Time: MAY 08 2018 11:05	Date/Time: 08/05/18 11:16
Date/Time: May 7, 2018	Temperature: 12 °C	Temperature: 10.4 °C	pH Verified [ ] By: NA

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Certificate of Analysis

Wood Environment & Infrastructure (Thorold)

3300 Merrittville Hwy, Unit 5
Thorold, ON L2V 4Y6
Attn: Kelly Patterson

Client PO:
Project: TG181021/1000
Custody: 41529

Report Date: 27-Jun-2018
Order Date: 22-Jun-2018

Order #: 1825727

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

Paracel ID	Client ID
1825727-01	FS1
1825727-02	FS2
1825727-03	NW1
1825727-04	SW1
1825727-05	WW1
1825727-06	EW1
1825727-07	Dup A

Approved By:

Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Wood Environment & Infrastructure (Thorold)
Client PO:

Report Date: 27-Jun-2018
Order Date: 22-Jun-2018
Project Description: TG181021/1000

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	26-Jun-18	26-Jun-18
Solids, %	Gravimetric, calculation	26-Jun-18	26-Jun-18

Certificate of Analysis

Client: Wood Environment & Infrastructure (Thorold)

Client PO:

Report Date: 27-Jun-2018

Order Date: 22-Jun-2018

Project Description: TG181021/1000

	Client ID:	FS1	FS2	NW1	SW1
	Sample Date:	06/22/2018 08:20	06/22/2018 08:25	06/22/2018 08:30	06/22/2018 08:35
	Sample ID:	1825727-01	1825727-02	1825727-03	1825727-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	79.5	79.6	80.0	90.9
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	3.6	3.6	3.2	1.4
Barium	1.0 ug/g dry	122	133	177	85.8
Beryllium	0.5 ug/g dry	0.8	0.8	0.9	<0.5
Boron	5.0 ug/g dry	9.0	8.2	12.2	<5.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	5.0 ug/g dry	26.2	25.3	28.9	9.0
Cobalt	1.0 ug/g dry	13.9	13.1	15.3	6.0
Copper	5.0 ug/g dry	22.5	22.0	25.3	9.5
Lead	1.0 ug/g dry	144	12.4	14.6	5.0
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	5.0 ug/g dry	31.6	30.8	35.0	13.3
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	10.0 ug/g dry	34.6	34.1	38.7	14.3
Zinc	20.0 ug/g dry	73.5	74.9	84.0	26.9

Certificate of Analysis

Client: Wood Environment & Infrastructure (Thorold)

Client PO:

Report Date: 27-Jun-2018

Order Date: 22-Jun-2018

Project Description: TG181021/1000

	Client ID:	WW1	EW1	Dup A	-
	Sample Date:	06/22/2018 08:40	06/22/2018 08:45	06/22/2018 00:00	-
	Sample ID:	1825727-05	1825727-06	1825727-07	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	82.0	84.2	76.4	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Arsenic	1.0 ug/g dry	3.3	3.1	3.4	-
Barium	1.0 ug/g dry	127	126	142	-
Beryllium	0.5 ug/g dry	0.7	0.7	0.8	-
Boron	5.0 ug/g dry	5.9	7.0	9.8	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Chromium	5.0 ug/g dry	25.0	22.1	28.5	-
Cobalt	1.0 ug/g dry	13.1	12.0	14.2	-
Copper	5.0 ug/g dry	22.2	19.8	23.5	-
Lead	1.0 ug/g dry	16.3	11.5	14.8	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Nickel	5.0 ug/g dry	30.8	28.0	33.9	-
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	-
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Vanadium	10.0 ug/g dry	33.4	30.0	37.9	-
Zinc	20.0 ug/g dry	88.3	73.0	101	-

Certificate of Analysis
Client: Wood Environment & Infrastructure (Thorold)
Client PO:

Report Date: 27-Jun-2018
Order Date: 22-Jun-2018
Project Description: TG181021/1000

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	4.1	1.0	ug/g dry	3.6			14.3	30	
Barium	134	1.0	ug/g dry	122			8.9	30	
Beryllium	0.8	0.5	ug/g dry	0.8			7.0	30	
Boron	13.2	5.0	ug/g dry	9.0			37.9	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium	29.4	5.0	ug/g dry	26.2			11.3	30	
Cobalt	15.0	1.0	ug/g dry	13.9			7.8	30	
Copper	24.3	5.0	ug/g dry	22.5			7.6	30	
Lead	161	1.0	ug/g dry	144			10.8	30	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	34.4	5.0	ug/g dry	31.6			8.6	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.3	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	1.0	1.0	ug/g dry	ND			0.0	30	
Vanadium	38.5	10.0	ug/g dry	34.6			10.6	30	
Zinc	79.4	20.0	ug/g dry	73.5			7.8	30	
Physical Characteristics									
% Solids	71.0	0.1	% by Wt.	63.9			10.5	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	41.1		ug/L	ND	82.2	70-130			
Arsenic	44.6		ug/L	1.4	86.3	70-130			
Barium	102		ug/L	48.9	107	70-130			
Beryllium	46.3		ug/L	ND	92.0	70-130			
Boron	51.3		ug/L	ND	95.5	70-130			
Cadmium	41.2		ug/L	ND	82.1	70-130			
Chromium	57.3		ug/L	10.5	93.5	70-130			
Cobalt	51.4		ug/L	5.5	91.8	70-130			
Copper	54.8		ug/L	9.0	91.5	70-130			
Lead	111		ug/L	57.8	107	70-130			
Molybdenum	40.7		ug/L	ND	81.1	70-130			
Nickel	58.6		ug/L	12.6	91.9	70-130			
Selenium	41.2		ug/L	ND	82.0	70-130			
Silver	40.1		ug/L	ND	80.1	70-130			
Thallium	50.0		ug/L	ND	99.8	70-130			
Uranium	51.6		ug/L	ND	102	70-130			
Vanadium	61.5		ug/L	13.8	95.3	70-130			
Zinc	72.4		ug/L	29.4	86.0	70-130			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

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Paracel ID: 1825727

Chain of Custody
(Lab Use Only)
№ 41529

Page 1 of 1

Client Name: Wood Environment & Infrastructure Solutions	Project Reference: TG18021/1000	**Turnaround Time:**
Contact Name: Kelly Patterson	Quote # Tier 2 #18-06 KW	☐ 1 Day ☐ 3 Day
Address: 3300 Merritville Hwy., Thorold, ON L2V 4Y6	PO #	☐ 2 Day ☒ Regular
Telephone: 905-687-6616	Email Address: Kelly.Patterson@wood.com	Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1825727

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	Required Analyses: Metals (ICP/MS)									
1	FS1	S		1	June 22/18	8:20	X				250mL					✓
2	FS2	S		1		8:25	X									✓
3	NW1	S		1		8:30	X									✓
4	SW1	S		1		8:35	X									✓
5	WW1	S		1		8:40	X									✓
6	EW1	S		1		8:45	X									✓
7	DupA	S		1	↓	-	X				↓					✓
8																
9																
10																

Comments: Governed by SNH07-003. Hold samples.

Method of Delivery: walkin.

Relinquished By (Sign):	Received by Driver/Depot: Niagara	Received at Lab:	Verified By:
Relinquished By (Print): Kevin Haines	Date/Time: 22 Jun 18 18:45	Date/Time: June 23/18 12:00	Date/Time: 06/23/18 9:03
Date/Time: June 22, 2018	Temperature: 8.8 °C	Temperature: 8.3 °C	pH Verified [ ] By: NA

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Certificate of Analysis

Wood Environment & Infrastructure (Thorold)

3300 Merrittville Hwy, Unit 5
Thorold, ON L2V 4Y6
Attn: Kelly Patterson

Client PO:
Project: TG181021/1000
Custody: 41530

Report Date: 5-Jul-2018
Order Date: 29-Jun-2018

Order #: 1826666

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

Paracel ID	Client ID
1826666-01	FS1

Approved By: Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Wood Environment & Infrastructure (Thorold)
Client PO:

Report Date: 05-Jul-2018
Order Date: 29-Jun-2018
Project Description: TG181021/1000

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	4-Jul-18	4-Jul-18
Solids, %	Gravimetric, calculation	30-Jun-18	30-Jun-18

Certificate of Analysis

Client: Wood Environment & Infrastructure (Thorold)

Client PO:

Report Date: 05-Jul-2018

Order Date: 29-Jun-2018

Project Description: TG181021/1000

	Client ID:	FS1	-	-	-
	Sample Date:	06/29/2018 11:30	-	-	-
	Sample ID:	1826666-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	74.6	-	-	-
Metals					
Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	4.8	-	-	-
Barium	1.0 ug/g dry	130	-	-	-
Beryllium	0.5 ug/g dry	1.0	-	-	-
Boron	5.0 ug/g dry	20.0	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	5.0 ug/g dry	26.3	-	-	-
Cobalt	1.0 ug/g dry	12.4	-	-	-
Copper	5.0 ug/g dry	20.7	-	-	-
Lead	1.0 ug/g dry	12.7	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	5.0 ug/g dry	25.9	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	10.0 ug/g dry	35.4	-	-	-
Zinc	20.0 ug/g dry	80.9	-	-	-

Certificate of Analysis
Client: Wood Environment & Infrastructure (Thorold)
Client PO:

Report Date: 05-Jul-2018
Order Date: 29-Jun-2018
Project Description: TG181021/1000

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g dry	ND				30	
Arsenic	1.0	1.0	ug/g dry	1.0			1.5	30	
Barium	23.6	1.0	ug/g dry	24.0			1.5	30	
Beryllium	ND	0.5	ug/g dry	ND			0.0	30	
Boron	10.3	5.0	ug/g dry	8.8			16.0	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium	34.8	5.0	ug/g dry	35.6			2.3	30	
Cobalt	1.9	1.0	ug/g dry	2.0			0.5	30	
Copper	18.1	5.0	ug/g dry	18.2			0.4	30	
Lead	10.4	1.0	ug/g dry	9.6			8.2	30	
Molybdenum	1.5	1.0	ug/g dry	1.3			17.7	30	
Nickel	5.8	5.0	ug/g dry	12.5			74.0	30	QR-01
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.3	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND			0.0	30	
Vanadium	12.7	10.0	ug/g dry	13.1			2.5	30	
Zinc	53.3	20.0	ug/g dry	54.2			1.6	30	
Physical Characteristics									
% Solids	82.8	0.1	% by Wt.	82.8			0.0	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	48.3		ug/L	ND	96.7	70-130			
Arsenic	51.0		ug/L	ND	101	70-130			
Barium	58.6		ug/L	9.6	98.0	70-130			
Beryllium	56.1		ug/L	ND	112	70-130			
Boron	48.3		ug/L	ND	89.5	70-130			
Cadmium	49.5		ug/L	ND	99.0	70-130			
Chromium	60.7		ug/L	14.3	92.8	70-130			
Cobalt	48.7		ug/L	ND	95.9	70-130			
Copper	54.8		ug/L	7.3	95.0	70-130			
Lead	50.1		ug/L	3.8	92.5	70-130			
Molybdenum	49.0		ug/L	ND	97.1	70-130			
Nickel	52.4		ug/L	5.0	94.8	70-130			
Selenium	49.4		ug/L	ND	98.5	70-130			
Silver	48.4		ug/L	ND	96.8	70-130			
Thallium	47.1		ug/L	ND	94.1	70-130			
Uranium	51.6		ug/L	ND	103	70-130			
Vanadium	52.7		ug/L	ND	94.9	70-130			
Zinc	69.8		ug/L	21.7	96.2	70-130			

Qualifier Notes:

QC Qualifiers :

QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

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Paracel ID: 1826666

Chain of Custody (Lab Use Only)

№ 41530

Page 1 of 1

Client Name: Wood Environment & Infrastructure Solutions	Project Reference: TG181021 / 1000
Contact Name: Kelly Patterson	Quote #: Tier 2
Address: 3300 Merrittville Hwy, Thorold, ON, L2V4Y6	PO #:
Telephone: 905-687-6616	Email Address: Kelly.Patterson@woodplc.com

Turnaround Time: ☐ 1 Day ☐ 3 Day ☐ 2 Day ☒ Regular

Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ________ ☐ Other: ________

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1826666

Required Analyses

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Metals - 18										
1	FS1	S		1	June 29/18	11:30	X										
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Comments: Governed by agreement SNA07-003.

Method of Delivery: walkin

Relinquished By (Sign): [signature]	Received by Driver/Depot: Bhmeniek	Received at Lab: [signature]	Verified By: [signature]
Relinquished By (Print): Kevin Haines	Date/Time: 29JUN18 13:15	Date/Time: June 30/18 11:45	Date/Time: 3/7/18 8:24
Date/Time: June 29/18	Temperature: 10.6 °C	Temperature: 11.3 °C	pH Verified [ ] By: NA

Chain of Custody (Blank) - Rev 0.4 Feb 2016

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Certificate of Analysis

Amec Foster Wheeler (Thorold)

3300 Merrittville Hwy, Unit 5
Thorold, ON L2V 4Y6
Attn: Kelly Patterson

Client PO:
Project: TG181021
Custody: 40764

Report Date: 22-Mar-2018
Order Date: 19-Mar-2018

Order #: 1812086

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

Paracel ID	Client ID
1812086-01	BH/MW1
1812086-02	BH/MW2
1812086-03	BH/MW3
1812086-04	Dup A
1812086-05	Trip Blank
1812086-06	Trip Spike
1812086-07	Field Blanks

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 22-Mar-2018
Order Date: 19-Mar-2018
Project Description: TG181021

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	21-Mar-18	21-Mar-18
Metals, ICP-MS	EPA 200.8 - ICP-MS	21-Mar-18	21-Mar-18
PHC F1	CWS Tier 1 - P&T GC-FID	21-Mar-18	21-Mar-18
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	21-Mar-18	21-Mar-18

Certificate of Analysis

Client: Amec Foster Wheeler (Thorold)

Client PO:

Report Date: 22-Mar-2018

Order Date: 19-Mar-2018

Project Description: TG181021

	Client ID:	BH/MW1	BH/MW2	BH/MW3	Dup A
	Sample Date:	16-Mar-18	16-Mar-18	16-Mar-18	16-Mar-18
	Sample ID:	1812086-01	1812086-02	1812086-03	1812086-04
	MDL/Units	Water	Water	Water	Water
Metals					
Antimony	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Arsenic	1 ug/L	7	3	2	2
Barium	1 ug/L	107	36	40	40
Beryllium	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Boron	10 ug/L	95	80	94	85
Cadmium	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Chromium	1 ug/L	<1	<1	<1	<1
Cobalt	0.5 ug/L	3.7	2.7	5.1	5.4
Copper	0.5 ug/L	<0.5	0.7	<0.5	0.6
Lead	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Molybdenum	0.5 ug/L	10.1	4.2	3.5	3.5
Nickel	1 ug/L	7	4	5	5
Selenium	1 ug/L	<1	<1	<1	<1
Silver	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Thallium	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Uranium	0.1 ug/L	6.7	5.8	6.9	7.3
Vanadium	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Zinc	5 ug/L	8	9	<5	<5
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene-d8	Surrogate	105%	104%	104%	105%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100

Certificate of Analysis

Client: Amec Foster Wheeler (Thorold)

Client PO:

Report Date: 22-Mar-2018

Order Date: 19-Mar-2018

Project Description: TG181021

	Client ID:	Trip Blank	Trip Spike	Field Blanks	-
	Sample Date:	13-Mar-18	13-Mar-18	16-Mar-18	-
	Sample ID:	1812086-05	1812086-06	1812086-07	-
	MDL/Units	Water	Water	Water	-
Volatiles					
Benzene	0.5 ug/L	<0.5	29.2 [3]	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	38.6 [3]	<0.5	-
Toluene	0.5 ug/L	<0.5	36.0 [3]	<0.5	-
m,p-Xylenes	0.5 ug/L	<0.5	76.1 [3]	<0.5	-
o-Xylene	0.5 ug/L	<0.5	39.6 [3]	<0.5	-
Xylenes, total	0.5 ug/L	<0.5	116 [3]	<0.5	-
Toluene-d8	Surrogate	103%	90.4%	104%	-

Certificate of Analysis
Client: Amec Foster Wheeler (Thorold)
Client PO:

Report Date: 22-Mar-2018
Order Date: 19-Mar-2018
Project Description: TG181021

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Metals									
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Surrogate: Toluene-d8	*83.6*		*ug/L*		*105*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND				30	
Metals									
Antimony	1.19	0.5	ug/L	0.57			71.1	20	QR-01
Arsenic	ND	1	ug/L	ND			0.0	20	
Barium	88.2	1	ug/L	99.4			11.9	20	
Beryllium	ND	0.5	ug/L	ND			0.0	20	
Boron	38	10	ug/L	35			7.6	20	
Cadmium	ND	0.1	ug/L	ND			0.0	20	
Chromium	ND	1	ug/L	ND			0.0	20	
Cobalt	ND	0.5	ug/L	ND			0.0	20	
Copper	0.81	0.5	ug/L	0.96			17.0	20	
Lead	ND	0.1	ug/L	0.11			0.0	20	
Molybdenum	3.00	0.5	ug/L	3.13			4.1	20	
Nickel	1.3	1	ug/L	1.3			2.2	20	
Selenium	ND	1	ug/L	ND			0.0	20	
Silver	ND	0.1	ug/L	1.04			0.0	20	
Thallium	ND	0.1	ug/L	ND			0.0	20	
Uranium	0.4	0.1	ug/L	0.4			2.9	20	
Vanadium	1.06	0.5	ug/L	1.13			6.1	20	
Zinc	7	5	ug/L	7			0.1	20	
Volatiles									
Benzene	ND	0.5	ug/L	ND			0.0	30	
Ethylbenzene	ND	0.5	ug/L	ND			0.0	30	
Toluene	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND			0.0	30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: Toluene-d8	*82.7*		*ug/L*		*103*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1830	25	ug/L		91.3	68-117			
F2 PHCs (C10-C16)	1580	100	ug/L		88.0	60-140			
F3 PHCs (C16-C34)	2970	100	ug/L		79.7	60-140			
F4 PHCs (C34-C50)	2100	100	ug/L		84.6	60-140			
Metals									
Antimony	49.2		ug/L		98.5	80-120			
Arsenic	55.2		ug/L		110	80-120			
Barium	53.1		ug/L		106	80-120			
Beryllium	48.9		ug/L		97.8	80-120			
Boron	62		ug/L		123	80-120			QS-02
Cadmium	53.4		ug/L		107	80-120			
Chromium	54.4		ug/L		109	80-120			
Cobalt	53.2		ug/L		106	80-120			
Copper	51.9		ug/L		104	80-120			
Lead	51.3		ug/L		103	80-120			
Molybdenum	50.3		ug/L		101	80-120			
Nickel	52.8		ug/L		106	80-120			
Selenium	54.1		ug/L		108	80-120			
Silver	53.2		ug/L		106	80-120			
Thallium	52.3		ug/L		105	80-120			
Uranium	53.2		ug/L		106	80-120			
Vanadium	54.7		ug/L		109	80-120			
Zinc	53		ug/L		106	80-120			
Volatiles									
Benzene	31.4	0.5	ug/L		78.4	60-130			
Ethylbenzene	43.6	0.5	ug/L		109	60-130			
Toluene	38.0	0.5	ug/L		95.1	60-130			
m,p-Xylenes	79.4	0.5	ug/L		99.2	60-130			
o-Xylene	40.8	0.5	ug/L		102	60-130			
Surrogate: Toluene-d8	*73.6*		*ug/L*		*92.0*	*50-140*			

Qualifier Notes:

Sample Qualifiers :

3 : VOC Trip Spike prepared at 40 ug/L for all parameters, except for m/p-Xylene which is at 80 ug/L and ketones at 100 ug/L.

QC Qualifiers :

QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

QS-02 : Spike level outside of control limits. Analysis batch accepted based on other QC included in the batch.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

CCME PHC additional information:

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

PARACEL LABORATORIES LTD.

Paracel ID: 1812086

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racel@paracellabs.com

Chain of Custody
(Lab Use Only)
№ 40764

Page 1 of 1

Client Name: Amec Foster Wheeler	Project Reference: TG18021
Contact Name: Kelly Patterson	Quote #: 2018 Standing offer
Address: 3300 Merritville Hwy, Unit 5, Thorold, ON L2V 4Y6	PO #:
Telephone: 905-687-6616	Email Address: kelly.patterson@amecfw.com

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required: _____

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 1 ☒ RSC Filing ☐ O. Reg 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1812082.

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analyses: ICP MS Metals	~~VOC~~ BTEX	PHC (F1-F4)	PAH on HOLD
1	BH/MW1	W		5	Mar 16/18	11:30	X	X	X	X
2	BH/MW2	W		5	↓	12:25	X	X	X	X
3	BH/MW3	W		5	↓	13:25	X	X	X	X
4	Dup A	W		5	↓		X	X	X	X
5	Trip Blank	W		1	MAR13,18			X		
6	Trip Spike	W		1	MAR13,18			X		
7	Field Blank	W		2	March 16/18	12:50		X		
8										
9										
10										

Comments: Governed by the T/C of SNA07-003
Hold remaining sample for future analysis

Niagara

Method of Delivery: P/U.

Relinquished By (Sign):	Received by Driver/Depot: B. Barton	Received at Lab: SURREY BDMMS
Relinquished By (Print): Cameron McCann	Date/Time: Mar 19/18 2:45p	Date/Time: MAR 20, 2018 10:55
Date/Time: March 16/18 - 3pm	Temperature: 9.5°C	Temperature: 6.9 °C

Verified By: Rachel Subject
Date/Time: Mar 20/18
pH Verified ☐ By: RS 11:19.

APPENDIX G

LIMITATIONS

Limitations

1. The work performed in the preparation of this report and the conclusions presented are subject to the following:
   (a) The Standard Terms and Conditions which form a part of Wood's proposal dated February 9, 2018 and authorization to proceed, signed by the Client on February13, 2018.
   (b) The Scope of Services;
   (c) Time and Budgetary limitations as described in our Contract; and,
   (d) The Limitations stated herein.
2. No other warranties or representations, either expressed or implied, are made as to the professional services provided under the terms of our Contract, or the conclusions presented.
3. The conclusions presented in this report were based, in part, on visual observations of the site and attendant structures. Our conclusions cannot and are not extended to include those portions of the site or structures which were not reasonably available, in Wood's opinion, for direct observation.
4. The environmental conditions at the site were assessed, within the limitations set out above, having due regard for applicable environmental regulations as of the date of the inspection. A review of compliance by past owners or occupants of the site with any applicable local, provincial or federal by-laws, orders-in-council, legislative enactments and regulations was not performed.
5. The site history research included obtaining information from third parties and employees or agents of the owner. No attempt has been made to verify the accuracy of any information provided, unless specifically noted in our report.
6. Where testing was performed, it was carried out in accordance with the terms of our contract providing for testing. Other substances, or different quantities of substances testing for, may be present on site and may be revealed by different of other testing not provided for in our contract.
7. Because of the limitations referred to above, different environmental conditions from those stated in our report may exist. Should such different conditions be encountered, Wood must be notified in order that it may determine if modifications to the conclusions in the report are necessary.
8. The utilization of Wood's services during the implementation of any remedial measures will allow Wood to observe compliance with the conclusions and recommendations contained in the report. Wood's involvement will also allow for changes to be made as necessary to suit field conditions as they are encountered.
9. This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or contract. Any use which any third party makes of the report, in whole or in part, or any reliance thereon, or decisions made based on any information of conclusions in the report, is the sole responsibility of such third party. Wood accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report or anything set out therein.
10. This report is not to be given over to any third party for any purpose whatsoever without the written permission of Wood.
11. Provided that the report is still reliable, and less than 12 months old, Wood will issue a third-party reliance letter to parties Client identifies in writing, upon payment of the then current fee for such letters. All third parties relying on Wood's report, by such reliance agree to be bound by our proposal and Wood's standard reliance letter. Wood's standard reliance letter indicates that in no event shall Wood be liable for any damages, howsoever arising, relating to third-party reliance on Wood's report. No reliance by any party is permitted without such agreement.