Stage 2 Preliminary Site Investigation
931, 980, 990 and 1000 Beckwith Avenue
Saanich, BC

Prepared For;
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EXECUTIVE SUMMARY

This report summarizes the results of a Stage 2 Preliminary Site Investigation (Stage 2) for the property at 931, 980, 990 and 1000 Beckwith Avenue, Saanich, BC (herein referred to as the 'Site'). The Stage 2 was prepared for Don Mann Excavating (Don Mann) by Active Earth Engineering Ltd. (Active Earth) in order to assess the presence or absence of contamination following a Stage 1 Preliminary Site investigation (Stage 1) completed by Active Earth in April 2016. The Stage 1identified two Areas of Potential Environmental Concern (APECs), as follows:

Summary of Site APECs and PCOCs

APEC	PCOC
APEC 1a – Fuel ASTs	**Soil:** LEPH, HEPH, PAH, BTEX/VPH **Groundwater:** LEPHw, PAH, BTEX/VPH **Soil Vapour:** Gasoline & Diesel Volatiles
APEC 1b – Oil and Lubricants Storage Shed	**Soil:** LEPH, HEPH, PAH, BTEX/VPH, Metals, Glycols **Groundwater:** LEPHw, PAH, BTEX/VPH, Dissolved Metals, Glycols **Soil Vapour:** Gasoline & Diesel Volatiles
APEC 2 - Service Garage	**Soil:** LEPH, HEPH, PAH, VOC/VPH, Metals, Glycols **Groundwater:** LEPHw, PAH, VOC/VPH, Metals, Glycols **Soil Vapour:** Gasoline & Diesel Volatiles

LEPH/HEPH – Light/Heavy Extractable Petroleum Hydrocarbons PAH – Polycyclic Aromatic Hydrocarbons
BTEX – Benzene, Toluene, Ethylbenzene, Xylenes VPH – Volatile Petroleum Hydrocarbons
VOC – Volatile Organic Compounds

A service garage with a service pit was located near the southeast corner of the Site. The service garage has been in operation since the late 1970's and constitutes a CSR Schedule 2 use. To the west of the service garage were three fuelling aboveground storage tanks (ASTs - no longer in use) as well as a storage shed containing oils and lubricants. The former operation of these AST's constitutes a CSR Schedule 2 use. Some surficial staining was noted in the area of the shed and ASTs. No other issues of environmental concern were identified for the Site.

The objective of the Stage 2 was to assess the presence/absence of contamination associated with the identified APECs. The Stage 2 included the excavation of five test pits and the installation of three boreholes, completed with three groundwater monitoring wells, and two soil vapour probes.

The geology of the Site was found to consist of:

- Unit A – FILL, typically comprised of angular crush gravel to a maximum 0.6m depth; underlain by,
- Unit B – Native SAND, dense with some silt and trace to some gravel to the maximum depth investigated (approximately 3.4m); underlain by,
- Unit C – BEDROCK, encountered between 1.7m and 3.4m depth.

Groundwater was encountered at approximately 1.3m to 1.7m below surface grade, within the native sand unit, when measured on September 7, 2016. The groundwater flow direction was measured to be southeast, and the hydraulic gradient was determined to be approximately 4.2%. There was a minimal saturated thickness of approximately 0.13m measured in AE16-MW3, with that increasing to approximately 1.97m at AE16-MW1. This is representative of late summer conditions, and winter conditions are inferred to have a greater saturated thickness. No investigation of the bedrock hydrogeological conditions was undertaken during the Stage 2.

APEC 1a – Fuel AST

The fuel AST (APEC 1a) has secondary containment, however, the valve was noted to be open allowing the concrete basin to drain directly onto the adjacent gravel surface. The drain for the secondary containment and the fueling nozzle are located at the same place, and this is where surficial staining and hydrocarbon odours were observed. Test pit AE16-TP1, monitoring well AE16-MW3 and soil vapour well AE16-SV3 are all located within the stained area.

The results for soil analyses to assess APEC 1a indicated that all PCOCs were less than the applicable CSR standards (current Industrial - IL and future proposed Urban Park - UP) and/or regional background concentrations.

The results for groundwater analyses to assess APEC 1a indicated that all PCOCs were less than the Aquatic Life – Freshwater (AWfw) and Drinking Water (DW) standards, with the exception of LEPHw. The concentration of LEPHw was 830ug/L at AE16-MW3, which exceeds the AWfw standard of 500ug/L. The groundwater contamination is inferred to be the result of fueling activities and the combined impact of several minor spills (since no large spills were reported to have occurred).

The results for soil vapour analyses to assess APEC 1a indicated that concentrations of all PCOCs were below the applicable CSR standards when attenuated for the current and future exposure scenarios.

APEC 1b – Oil and Lubricants Storage Shed

The storage shed (APEC 1b) beside the fuel AST is used to store oil and lubricants, and is constructed of wood without secondary containment. Beside the storage shed is a gravel parking area with significant oil staining on the ground surface. This location was targeted for the Stage 2 investigations. No contamination was identified associated with APEC 1b. The staining was only associated with larger gravel particles and not the finer particles considered “soil”.

APEC 2 – Service Garage

The service garage (APEC 2) consists of an older wooden barn structure with an oil change pit. The building was largely being used for storage at the time of the investigations, and no direct evidence of potential contamination was observed.

The results for soil analyses to assess APEC 2 indicated that all PCOCs were less than the applicable CSR standards (current IL and future proposed UP).

The results for groundwater analyses to assess APEC 2 indicated that all PCOCs were less than the AWfw and DW standards.

The results for soil vapour analyses to assess APEC 2 indicated that concentrations of all PCOCs were below the applicable CSR standards when attenuated for the current and future exposure scenarios.

The Stage 2 investigations identified groundwater contamination adjacent to the fuel AST (APEC 1a). No other contamination was identified on the Site in any media (soil, groundwater and soil vapour).

Based on these findings, further investigation in the form of Detailed Site Investigation (DSI) is recommended to delineate the lateral and vertical extents of the groundwater contamination.

LIST OF ACRONYMS

AEC	Area of Environmental Concern
APEC	Area of Potential Environmental Concern
AST	Above Ground Storage Tank
AW	Aquatic Life Standards
BC MOE	BC Ministry of Environment
BC MOTI	BC Ministry of Transportation and Infrastructure
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CL	Commercial Land Use Standards
CoC	Certificate of Compliance
COC	Contaminant of Concern
CSM	Conceptual Site Model
CSR	Contaminated Sites Regulation
DO	Dissolved Oxygen
DSI	Detailed Site Investigation
DW	Drinking Water Standard
EMA	Environmental Management Act
EPH	Extractable Petroleum Hydrocarbons
HDPE	High-Density Polyethylene
HEPH	Heavy Extractable Petroleum Hydrocarbons
HWR	BC Hazardous Waste Regulation
IW	Irrigation Water Standards
LEPH	Light Extractable Petroleum Hydrocarbons
LW	Livestock Watering Standards
MDL	Method Detection Limit
MTBE	Methyl Tertiary Butyl Ether
NIR	Notification of Independent Remediation
ORP	Oxidation / Reduction Potential
PAH	Polycylic Aromatic Hydrocarbons
PCOC	Potential Contaminant of Concern
PERC	Tetrachloroethylene
PSI	Preliminary Site Investigation
RL	Residential Land Use Standards
TCE	Trichloroethylene
VOC	Volatile Organic Compounds
VPH	Volatile Petroleum Hydrocarbons
UST	Underground Storage Tank

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ATTACHMENTS

1.0 INTRODUCTION

Active Earth Engineering Ltd. (Active Earth) was retained by Don Mann Excavating (Don Mann) to complete a Stage 2 Preliminary Site Investigation (Stage 2) at 931, 980, 990 and 1000 Beckwith Avenue, Saanich, BC (herein referred to as the 'Site'). The Stage 2 follows a Stage 1 Preliminary Site Investigation (Stage 1) completed by Active Earth in April 2016.

The purpose of the Stage 2 was to assess the presence / absence of contamination by targeting Areas of Potential Environmental Concern (APEC) identified in the Stage 1.

2.0 SITE DETAILS

2.1 Location and Zoning

The Site is comprised of four individual legal lots located on both the north and south sides of Beckwith Drive. The general area of the Site is shown on Figure 1. The properties located at 931, 980 and 990 Beckwith Avenue are currently zoned RS-8 which allows low-density residential usage[1]. The property at 1000 Beckwith Avenue is currently zoned as A-1 (Rural) which allows for rural usage[1].

The cartographic co-ordinates for the centre of the Site are approximately 123° 22' 08.16" west and 49° 28' 56.12" north. Figure 2 shows the Site and current surrounding land uses.

The Site is irregular in shape with a combined total area of approximately 26,000m^2.

2.2 Legal Description

The Site consists of four legal parcels, owned and described as follows:

Legal Description

PID	Civic Address	Legal Description	Owner
018-981-861	931 Beckwith Avenue	LOT 3 SECTION 65 VICTORIA DISTRICT PLAN VIP59979	ELISE HOLDINGS LTD.
000-142-191	980 Beckwith Avenue	LOT 11 SECTION 65 VICTORIA DISTRICT PLAN 40354	PENINSULA BULLDOZING LTD., INC.
000-142-204	990 Beckwith Avenue	LOT 12 SECTION 65 VICTORIA DISTRICT PLAN 40354	SAANICH PENINSULA BULLDOZING LTD., INC.
000-200-689	1000 Beckwith Avenue	LOT A SECTION 65/6 VICTORIA DISTRICT PLAN 27670	DON MANN EXCAVATING LTD.

[1] City of Saanich Zoning Bylaws (http://www.saanich.ca/living/pdf/zone8200.pdf#page=8)

The legal lot boundaries are approximated on Figures 2 and 3, as transcribed from base plans obtained from the District of Saanich. The current land title and legal lot plan are provided in the Stage 1 report.

3.0 PREVIOUS INVESTIGATIONS

A Stage 1 was completed by Active Earth in April 2016. The Stage 1 identified the following Areas of Potential Environmental Concern (APECs) and Potential Contaminants of Concern (PCOCs):

Summary of Areas of Potential Environmental Concern and Potential Contaminants of Concern

APEC	PCOC
APEC 1a – Fuel ASTs	**Soil:** LEPH, HEPH, PAH, BTEX/VPH **Groundwater:** LEPHw, PAH, BTEX/VPH **Soil Vapour:** Gasoline & Diesel Volatiles
APEC 1b – Oil and Lubricants Storage Shed	**Soil:** LEPH, HEPH, PAH, BTEX/VPH, Metals, Glycols **Groundwater:** LEPHw, PAH, BTEX/VPH, Dissolved Metals, Glycols **Soil Vapour:** Gasoline & Diesel Volatiles
APEC 2 – Service Garage	**Soil:** LEPH, HEPH, PAH, VOC/VPH, Metals, Glycols **Groundwater:** LEPHw, PAH, VOC/VPH, Metals, Glycols **Soil Vapour:** Gasoline & Diesel Volatiles

LEPH/HEPH – Light/Heavy Extractable Petroleum Hydrocarbons
PAH – Polycyclic Aromatic Hydrocarbons
BTEX – Benzene, Toluene, Ethylbenzene, Xylenes
VPH – Volatile Petroleum Hydrocarbons
VOC – Volatile Organic Compounds

Figures 2 and 3 indicate the locations of the above APECs.

Active Earth recommended that a Stage 2 Preliminary Site Investigation be completed to assess the presence or absence of contamination at the Site. The APECs are located on the southeast corner of the northern portion of the legal parcel at 1000 Beckwith Avenue. Since no APECs were identified for the remaining three parcels comprising the Site, the Stage 2 investigations are limited to the northern portion of 1000 Beckwith Avenue.

4.0 STAGE 2 WORK PLAN OVERVIEW

The overall objective of the Stage 2 was to assess the potential for soil, groundwater and/or soil vapour contamination associated with the identified APECs. The scope of work included targeting the most likely contaminated, and accessible, areas for sampling, field screening and laboratory analysis, and comparing laboratory analytical results to applicable numerical standards outlined in the BC Contaminated Sites Regulation (CSR).

The following scope of work was completed:

- Excavated five test pits (AE16-TP1 through AE16-TP5);
- Installed three boreholes and completed three groundwater monitoring wells (AE16-MW1, AE16-MW2 and AE16-MW3), and two soil vapour wells (AE16-SV1 and AE16-SV2);
- Collected and field-screened representative soil samples, and submitted select samples for laboratory analysis of PCOCs;
- Developed the monitoring wells and collected representative groundwater samples for laboratory analysis of PCOCs;
- Collected soil vapour samples for laboratory analysis of PCOCs; and,
- Incorporated our findings into this report.

Additional scope and methodology details are presented in Section 6 (Methodology).

5.0 REGULATORY ASSESSMENT CRITERIA

In British Columbia, environmental matters pertaining to contaminated sites generally fall under the jurisdiction of the BC Ministry of Environment (BC MOE), pursuant to the *Environmental Management Act* (SBC 2003), including amendments.

The two key regulations under the *Environmental Management Act* relating to the assessment and remediation of contaminated sites are:

- *Contaminated Sites Regulation* (CSR, BC Reg. 375/96, including amendments (effective February 1, 2014); and,
- *Hazardous Waste Regulation* (HWR, BC Reg. 63/88, O.C. 268/88 including amendments up to BC Reg. 261/2006, updated to September 21, 2006).

5.1 Soil Standards

The northern portion of the parcel at 1000 Beckwith Avenue is occupied by a single residence and a service garage. To the west of the service garage was three fueling ASTs as well as a storage shed. This portion of the Site is currently zoned as A1 (Rural), which allows for a range of rural uses.

It is understood that future development will likely include this portion of the Site being designated as park land. As such, the Urban Park Land Use (PL) soil standards were considered to apply, as provided in Schedules 4, 5, and 10 of the CSR. Residential Land Use (RL) and Industrial Land Use (IL) standards have also been referenced throughout, for information purposes.

Generic numerical standards are listed in Schedules 4 and 10, while matrix-based numerical standards are listed in Schedule 5. For the matrix-based numerical standards, the following site-specific factors were applied:

- Human Health Protection – Intake of contaminated soils.
- Environmental Protection – Toxicity to soil invertebrates and plants, and groundwater flow to surface water used by aquatic life.

In addition, matrix-based numerical standards are dependent on groundwater use. The rationale for determining groundwater use is discussed below.

Standards triggering Contaminated Soil Relocation Agreements (SRA) are specified in Schedule 7 of the CSR. If contaminant concentrations in soils exceed these standards, soils may only be transported to a permitted facility or via an SRA to a non-permitted site. Soils that exceed SRA standards, but are within the applicable Standards set out in Schedules 4, 5, and 10, are not considered contaminated for the purposes of obtaining a Determination from the MOE. The Schedule 7 Column II Standards have been included for information purposes.

5.2 Groundwater Standards

Groundwater standards, listed in Schedules 6 and 10 of the CSR, and the matrix-based soil standards depend on the following:

- The uses of groundwater or surface water at the Site or on neighbouring properties; and,
- The potential for groundwater or surface water at the Site to flow to surface water bodies that support aquatic life.

Active Earth identified the following nearby water uses:

- The closest surface water body is Beckwith Creek, located approximately 100m southeast (down-gradient) of the Site.
- A search of water wells on the BC Water Resource Atlas revealed two water wells within 500m of the Site. These are both deep, bedrock wells, screened below 100m total depth with limited overburden.

MOE Technical Guidance 6 (TG6) indicates that Aquatic Life Standards (AW) generally apply to all groundwater located within 500m of a surface water body containing aquatic life. Investigations must show that groundwater containing substances at concentrations greater than the applicable aquatic life water use standards does not have the potential to migrate to within 500m of a surface

water body used by aquatic life, considering preferential flow corridors. Based on the location of Beckwith Creek, the CSR freshwater Aquatic Life (AWfw) standards are considered to apply.

TG6 further indicates that Drinking Water (DW) standards generally apply where current drinking water sources are within 500m of the outer extent of a groundwater contamination source. If the groundwater flow direction has been reliably determined, this distance is limited to 100m up-gradient (remaining at 500m down-gradient) of the outer extent of a contamination source.

Future drinking water use must also be considered in the evaluation of whether or not DW applies at a site. This includes evaluation of the underlying aquifer to assess hydraulic parameters including yield and hydraulic conductivity. If the aquifer underlying a site has a hydraulic conductivity greater than $1X10^{-6}$ m/s, and a yield greater than or equal to 1.3 L/min, then DW are considered to apply.

Exceptions to the application of DW include situations where the natural groundwater quality is considered unsuitable for drinking water use based on elevated Total Dissolved Solids (TDS ≥ 4,000 mg/L); or where groundwater is contained within organic soils or muskeg. Also, in situations where there exists a confining geological unit that adequately protects the aquifer, DW does not apply. DW standards are considered to conservatively apply to the Site given the observed deep bedrock aquifer in the area.

Irrigation (IW) and Livestock Watering (LW) uses are considered to apply where these resources are potentially present within 500m down-gradient and 100m in an up-gradient direction. Agricultural activities are identified to the immediate east of the Site, and therefore, Irrigation (IW) standards are considered to apply.

The Stage 8 Amendments to the CSR (effective January 24, 2013) specify CSR Schedule 2 activities for which dissolved Iron and Manganese standards are applicable. These standards are outlined in Schedules 6 and 10 of the CSR, specific to IW and DW uses. None of the specified Schedule 2 activities have been noted in relation to the Site. As such, CSR standards for dissolved Iron and Manganese in groundwater are not considered to apply to the Site.

5.3 Soil Vapour Standards

The CSR provides Generic Numerical Standards (Schedule 11) for use in the assessment of vapour quality at sites subject to investigation and remediation. Vapour standards are divided into three categories based on land use and include standards for Agricultural/ Urban Park/ Residential use (AG/PL/RL), Commercial use (CL) and Industrial use (IL). Based on the potential future park land use of the Site at grade, the PL standards are considered to apply. The IL standards have been referenced throughout, for information purposes.

5.4 Hazardous Waste Regulation

The BC Hazardous Waste Regulation (HWR) provides standards to determine if material qualifies as Hazardous Waste based on toxicity equivalency (TEQ), concentration, leachability. TEQ-

based standards are provided for Dioxins & Furans and PAHs, while concentration limits are specified for both Oil & Grease and Tetrachloroethylene. Leachability refers to the concentration of particular contaminants in dissolved form following the subjugation of soil to a strong acid solution during a standardized Toxicity Characteristic Leachate Procedure (TCLP) test. Where applicable, leachate concentrations are compared to standards outlined Table 1 of Schedule 4 therein.

5.5 Regulatory Standards Summary

The following table summarizes applicable regulatory standards at the Site:

Summary of Applicable Regulatory Assessment Criteria

Pathway	Land-Use	Standard
Soil	Urban Park	CSR Schedule 4 – Generic Numerical
		CSR Schedule 5 – Intake of Contaminated Soil
		CSR Schedule 5 – Toxicity to Soil Invertebrates and Plants
		CSR Schedule 5 – Groundwater used for Drinking Water
		CSR Schedule 5 – Groundwater Flow to Surface Water Used by Freshwater Aquatic Life
	-	Hazardous Waste TEQ, Leachate, and other Standards
	-	CSR Schedule 7 – Soil Relocation to Non-Agricultural Land (Column II)
Groundwater	-	CSR Schedule 6 – Drinking Water
	-	CSR Schedule 6 – Freshwater Aquatic Life
	-	CSR Schedule 6 – Irrigation Water
	-	CSR Schedule 6 – Standards that apply irrespective of water use
Soil Vapour	Urban Park	CSR Schedule 11 – Generic Numerical

6.0 METHODOLOGY

Field sampling methodology for all media followed Active Earth's standard practice and protocols. These are described briefly in the following sub-sections.

6.1 Utility Locates

Prior to undertaking intrusive field investigations, standard utility location protocols were followed. This included contacting BC One Call, in order to obtain relevant utility information for the Site. A professional utility locate contractor (Kelly's 1st Call Locating) was employed to identify and mark all underground services beneath the Site.

The utility locate contractor also undertook a Ground Penetrating Radar (GPR) survey of accessible areas of the Site prior to drilling.

6.2 Test Pitting

Five test pits were excavated at the Site on June 2, 2016, utilizing a rubber-tired backhoe operated by Don Mann Excavating. The lithology encountered was logged by Active Earth, and soil samples were collected directly from the walls of the test pits. The test pits were then backfilled with the excavated material.

Test pit logs attached in Appendix A.

6.3 Borehole Drilling and Monitoring Well Installation

Three boreholes were advanced at the Site on September 1, 2016, utilizing a track-mounted auger drill rig operated by Drillwell Enterprises. Monitoring wells were constructed with 50mm and 25mm schedule 40 PVC with a machine slotted screen section at the bottom (0.010 inch slot width) and solid pipe above the screen to ground surface. Monitoring wells were installed at locations AE16-MW1, AE16-MW2 and AE16-MW3. Generally, where monitoring wells were installed, the borehole annulus was backfilled as follows:

- Silica sand was placed from the bottom of the screened interval to 0.3 m above the screened interval to provide a sand-pack around the well screen;
- Bentonite was placed above the sand-pack to provide a hydraulic seal; and,
- Approximately 0.3 m of concrete was placed at ground surface.

Well completion details are shown on the borehole logs attached in Appendix A.

The regulatory compliance aspects of the monitoring well installations are discussed in Section 6.7, below.

6.4 Soil Sampling

Soil samples collected during test pitting and drilling were recovered directly from the walls of the test pits and directly from the drill cores at regular intervals, changes in stratigraphy or where other evidence of contamination was noted (odours, staining, or elevated vapours). All soil samples were immediately placed into laboratory supplied sample jars. The sample jars were completely filled with soil to minimize loss of volatile constituents. Select samples were immediately preserved using laboratory-supplied Methanol preservation kits. To minimize the potential for cross contamination, Active Earth's field representative wore fresh nitrile sampling gloves prior to collecting each soil sample.

The sample jars were placed in a cooler, on ice, and delivered under chain of custody protocol to AGAT Laboratories in Burnaby, BC.

Headspace measurement samples were collected by filling sealable plastic bags approximately one-third full of soil, and letting the soil and air within the bags reach equilibrium. The headspace of the resulting volatile organic vapour concentrations were then measured using a MiniRae™ Portable Ionization Detector (PID). The PID was supplier-calibrated before field use. Headspace vapour measurements are indicated on the borehole logs in Appendix A.

The soil analytical program is discussed in Section 8, below.

6.5 Groundwater Monitoring and Sampling

Monitoring wells AE16-MW1, AE16-MW2 and AE16-MW3 were developed by removing up to five well volumes and monitoring baseline parameters including conductivity, temperature and pH to ensure stable conditions had been reached. Development was completed using dedicated HDPE Waterra™ tubing and a compatible foot-valve. The wells were then left to recover for approximately 24 hours prior to purging and sample collection.

Prior to sample collection, additional purging was completed using dedicated HDPE Waterra™ tubing and a compatible foot-valve. The static depth to groundwater was measured in the monitoring wells prior to purging. The wells were then purged by removing up to three well volumes, and were monitored to ensure stable indicator parameters including pH, temperature and conductivity. The wells were then left to recover for approximately one hour prior to sample collection. Groundwater samples were collected using dedicated HDPE bailers, affixed with VOC sampling tips designed to reduce volatilization during sample collection.

Groundwater samples were collected directly into laboratory supplied sample containers. The sample containers were placed in a cooler, on ice, and delivered under chain of custody protocol to AGAT Laboratories in Burnaby, BC. Samples were field filtered and/or preserved according to laboratory protocols.

The groundwater analytical program is discussed in Section 8, below.

6.6 Soil Vapour Assessment

6.6.1. Conceptual Site Model and Attenuation

The Site is currently used for fueling equipment, storage of oils and lubricants and contains a service garage. Future land use is understood to be parkland.

Under the current and potential future Site conditions, potential vapour exposure pathways were considered to include migration to current and future indoor and outdoor air receptors.

Attenuation factors have been used to predict vapour concentrations at the point of exposure for the current and future indoor and outdoor air receptors, as provided in MOE Technical Guidance 4 (TG4).

As stated in TG4, the use of attenuation factors is not permitted when evaluating indoor air exposure where a building foundation is in contact with groundwater, or where groundwater is

actively drawn down to prevent such contact. Groundwater was observed at the Site below approximately 1.2m depth (see Section 8.1). As such, the use of attenuation factors is allowed when evaluating the current indoor air exposure scenario.

6.6.2 Vapour Sampling Methodology

The vapour sampling methodology follows MOE Technical Guidance 4 (TG4), Vapour Investigation and Remediation, as outlined below.

Soil vapour probes were nested with the groundwater monitoring wells, and are referred to as AE16-SV1 (installed at AE16-MW1), and AE16-SV3 (installed at AE16-MW3).

The vapour probes consisted of a stainless steel screen measuring 0.15m in length, installed at approximately 1.0m depth. The probes were fitted to 6mm diameter nylon tubing. Silica sand was placed around the screens, and hydrated bentonite seals were placed between the shallow and deep sand packs, and at the ground surface. Vapour probe installation details are shown on the borehole logs included in Appendix A.

Soil vapour samples were collected at AE16-SV1 and AE16-SV3. Prior to sampling, recent precipitation records were reviewed to ensure that no rain had fallen within the preceding 24 hours. Polyethylene sheeting was placed as a surface seal at the probes at least 48 hours prior to sample collection.

Prior to sampling, leak tests were conducted using Helium as a tracer gas, and a hand-held Helium detector. Helium was pumped into a 20L pail, inverted over the vapour probe, until Helium concentrations reached at least 50% within the pail. The nylon sampling tubing was connected to a Tedlar® sample bag placed inside a vacuum chamber. The vacuum chamber was connected to a laboratory-supplied Air-Check® XD5000 pump, generating negative pressure within the vacuum chamber, and drawing a sample of soil vapour into the Tedlar® bag. The Helium concentration within the bag was then measured. A Helium concentration of less than 1% of the concentration detected within the sample bag was considered acceptable. No unacceptable leakage was detected.

Following leak detection, the vapour probes were purged to remove minimum one probe volume (approximately 0.5L). Purging and sampling was undertaken using the laboratory-supplied pump, calibrated to draw 0.1L/minute. Field flow rates were measured and recorded, and a Thermal Desorption (TD) sampling tube was placed in-line and exposed to the air flow for the calculated sampling time. The observed flow rates and sampling times was reported to the laboratory for use during final sample concentration calculations.

The vacuum pressure generated during purging and sampling was measured using a Dwyer® Magnahelic differential pressure gauge placed between the TD sample tube and the air flow gauge. The gauge was monitored for 10 minutes to confirm that pressure within the sample train remained within 10 inches' water equivalent, to ensure minimal stripping of volatile constituents from the surrounding soils.

Once sampling was complete, sample tubes were capped and transported to Agat Laboratories in Burnaby, under chain of custody, for analysis of the relevant PCOCs.

Additional regulatory compliance aspects of the vapour probe installations are discussed in Section 6.7, below. The soil vapour analytical program is discussed in Section 8, below.

6.7 Compliance with Guidance

6.7.1 Sample Frequency

MOE Technical Guidance 1 (TG1) was used as a guideline to determine the sample spacing between investigation locations. According to TG1, Stage 2 investigations require that samples be collected for each APEC, with samples collected over a coarse grid with 20m to 50m spacing between sampling locations (1 sample per 400m^2 to 2500m^2).

The Stage 2 sampling frequency for each APEC is summarized in the following table:

Summary of Sample Frequency

APEC	Potentially Impacted on-Site Area (m^2)	Media	No. Investigation Locations	Frequency (m^2 per Investigation Location)
APEC 1a – Fuel ASTs	100	Soil	2	50
		Groundwater	1	100
		Soil Vapour	1	100
APEC 1b – Oil and Lubricants Storage Shed	100	Soil	2	50
		Groundwater	1	100
		Soil Vapour	1	100
APEC 2 – Service Garage	600	Soil	3	200
		Groundwater	1	600
		Soil Vapour	1	600

Based on the summary above, the required Stage 2 sampling frequency/spacing was achieved at each APEC.

6.7.2 Monitoring Well Construction

MOE Technical Guidance 8 (TG8) presents recommendations for the installation of valid groundwater monitoring wells. This guidance recommends a maximum saturated well screen length of 1.8m (including sand pack).

In addition, monitoring wells that are intended to assess hydrocarbon contamination sources should be screened across the water table surface to assess the likely worst case conditions and determine the presence/thickness of Light Non-Aqueous Phase Liquids (LNAPL). Monitoring wells that are intended to assess dry-cleaning solvents should typically be screened below the water table surface, immediately above zones of likely low-permeability soils, to assess the likely

worst case conditions and determine the presence/thickness of Dense Non-Aqueous Phase Liquids (DNAPL).

The maximum saturated well screen length for all monitoring wells installed on-Site was 1.8m (including sand pack). Monitoring wells AE16-MW and AE16-MW3 were used to assess potential contamination associated with the identified APECs. These wells were installed as follows (see borehole logs included in Appendix A):

- Monitoring well AE16-MW1 was screened immediately overtop of the bedrock and screened to assess potential groundwater impacts associated with the service garage. The top of the well screen is slightly below the water table (approximately 0.7m), however, the well is considered suitable for assessing presence/absence of dissolved phase contaminants.
- Monitoring well AE16-MW3 was screened immediately overtop of the bedrock and across the water table to assess potential groundwater impacts associated with the fuel storage and dispensing from the AST. This monitoring well was suitable for assessing presence/absence of LNAPL and worst-case dissolved phase contaminants.

Based on this assessment, the screen placements and monitoring well construction details were considered appropriate and in accordance with TG8.

6.7.3 Soil Vapour Assessment

All vapour probes installed during the Stage 2 were screened within unsaturated soil. Probes were installed with the top of the screen placed at approximately 1m depth, which was considered sufficient to assess the current and future exposure pathways discussed in Section 6.5.

The soil vapour samples were collected in the dry summer months, when the water table would be expected to be near its seasonal low. Under these conditions, soil vapour contaminant concentrations would be expected to be at their highest as previously saturated zones are dry out and residual contamination is allowed to partition from liquid to vapour.

7.0 QUALITY ASSURANCE / QUALITY CONTROL

The Quality Assurance / Quality Control measures applicable to this report included:

- Use of a CALA (Canadian Association for Laboratory Accreditation Inc.) accredited laboratory;
- Use of electronically transferred data into tables to minimize manual entry;
- Use of unique sample identification for each sample;
- Recording of the date and time of sample collection;
- Recording the source of sample (including name, location, and sample type);
- Use of preservative as required;

- Accurate completion of chain of custody forms; and,
- Submission of samples within recommended holding times.

A review of the QA/QC program completed by the laboratory indicated that the sample results were valid and no systemic issues were identified that would compromise the dataset. The laboratory's internal sample replicate analysis results were within the acceptable limits, and the laboratory Quality Control assessment of Lab Control Samples, Method Blanks, Reference Materials and Reference Spikes were within the acceptable ranges.

Active Earth supplemented the internal laboratory evaluation of precision with an external evaluation using blind field duplicates for soil. Field duplicate results are evaluated using Relative Percentage Difference (RPD) screening values from the BC Environmental Laboratory Manual outlined in the following table.

BCELM Recommended RPDs

Parameter Category	Recommended RPD at Concentrations Exceeding 5X MDL
Organics in solids • PAHs • Volatile Organics (including VPH) • EPH	 50% 40% 40%
Organics in Water	30%
Metals in Solids	30%
Metals in Water	20%
General Inorganics in Solids	30%
General Inorganics in Water	20%

One soil sample/duplicate pair (AE16-MW1-4 and AE16-MW1-5) was analyzed for LEPH, HEPH and PAHs. As all results were within the laboratory method detection limits (MDL), the RPDs could not be calculated.

The collection of groundwater and soil vapour duplicates were not deemed to be necessary given the small number of samples (two each).

Based on this assessment, the analytical results were considered to be valid and reliable. No systematic problems with the sampling and/or analysis have been identified that would compromise the dataset.

8.0 INVESTIGATION FINDINGS

8.1 Geology and Hydrogeology

The geology of the Site was found to consist of:

- Unit A – FILL, typically comprised of angular crush gravel to a maximum 0.6m depth; underlain by,
- Unit B – Native SAND, dense with some silt and trace to some gravels to the maximum depth investigated (approximately 3.4m); underlain by,
- Unit C – BEDROCK, encountered between 1.7m and 3.4m depth.

Further lithology details are provided on the boreholes logs attached as Appendix A.

Groundwater was encountered at approximately 1.3m to 1.7m below surface grade, within the native sand of Unit B, when measured on September 7, 2016.

Groundwater below the Site is inferred to flow generally to the southeast within the overburden soils. Measurement of groundwater elevations on September 7, 2016 confirmed this flow direction and the hydraulic gradient was determined to be approximately 4.2%. The groundwater monitoring report is included as Appendix B. There was a minimal saturated thickness of approximately 0.13m measured in AE16-MW3 on this date, with that increasing to approximately 1.97m at AE16-MW1. This is representative of late summer conditions and is illustrated on the cross-section in Figure 7. Winter conditions are inferred to have a greater saturated thickness.

No investigation of the bedrock hydrogeological conditions was undertaken during the Stage 2.

8.2 Field Evidence of Contamination

Soil samples were field screened for organic vapours and inspected for indications of contamination, as discussed. All vapours measured were less than 100ppm.

Hydrocarbon staining and odours were observed in shallow soil surrounding APEC 1, specifically at AE16-TP1, AE16-TP2 and AE16-MW3. Some debris (bricks) was observed in shallow fills encountered at AE16-TP5.

No odours, LNAPLs, DNAPLs or other indications of contamination were observed on purge water while developing and sampling the monitoring wells.

8.3 Soil Analytical Results

The soil analytical program and results are summarized in the following table, by APEC:

Soil Analyses and Results Summary

APEC	Soil PCOC	Sample Location	Sample Depth (m)	Soil Type	Results
APEC 1a and 1b - Fuel ASTs and Oil/Lubricant Storage Shed	LEPH, HEPH, PAH	AE16-TP1	0.3	Fill	<UP/RL/IL
		AE16-TP1	0.9	Native	<UP/RL/IL
		AE16-TP2	0.3	Fill	<UP/RL/IL
		AE16-TP2	0.45	Native	<UP/RL/IL
	BTEX/VPH	AE16-TP1	0.3	Fill	<UP/RL/IL
		AE16-TP2	0.3	Fill	<UP/RL/IL
		AE16-MW3	1.7	Native	<UP/RL/IL
	VOC	AE16-TP1	0.3	Fill	<UP/RL/IL
		AE16-TP2	0.45	Native	<UP/RL/IL
	Metals	AE16-TP1	0.3	Fill	<P4 Background
		AE16-TP2	0.3	Fill	<P4 Background
APEC 2 – Service Garage	LEPH, HEPH, PAH	AE16-TP3	0.75	Native	<UP/RL/IL
		AE16-TP4	0.75	Native	<UP/RL/IL
		AE16-TP4	1.05	Native	<UP/RL/IL
		AE16-TP5	0.3	Fill	<UP/RL/IL
		AE16-TP5	0.6	Native	<UP/RL/IL
		AE16-MW1	1.2	Native	<UP/RL/IL
		AE16-MW1	2.9	Native	<UP/RL/IL
	BTEX/VPH	AE16-TP4	0.75	Native	<UP/RL/IL
		AE16-TP5	0.3	Fill	<UP/RL/IL
		AE16-TP5	0.6	Native	<UP/RL/IL
		AE16-MW1	1.2	Native	<UP/RL/IL
	VOC	AE16-TP3	0.75	Native	<UP/RL/IL
		AE16-TP4	1.05	Native	<UP/RL/IL
		AE16-TP5	0.3	Fill	<UP/RL/IL
		AE16-MW1	1.2	Native	<UP/RL/IL
	Metals	AE16-TP3	0.75	Native	<UP/RL/IL
		AE16-TP4	0.3	Fill	<UP/RL/IL
		AE16-TP4	1.05	Native	<UP/RL/IL
		AE16-MW1	0.2	Fill	<UP/RL/IL
	Glycols	AE16-TP4	1.05	Native	<UP/RL/IL
		AE16-TP5	0.6	Native	<UP/RL/IL

All results were within the UP, RL and IL standards with the exception of metals in fill at AE16-TP1 and AE16-TP2, where Chromium and Copper exceeded the IL and SRA standards, respectively. However, both parameters are below the regional background concentrations. The fill metals results are discussed further in Section 9.

It is noted that glycols in soil are considered a secondary PCOC for APEC 1, and were therefore not analyzed during the Stage 2. The results of the primary PCOCs being below the applicable CSR standards preclude the need for analysis of the secondary PCOC for this APEC.

Based on the summary above, all PCOCs were evaluated in soil for each APEC at the appropriate soil units/depths.

Soil analytical results are summarized on Tables 1, 2 and 3 and Figure 4 (attached). Laboratory reports are provided as Appendix C.

8.4 Groundwater Analytical Results

The groundwater analytical program and results are summarized in the following table, by APEC:

Groundwater Analyses and Results Summary

APEC	Groundwater PCOC	Sample Location	Screen Interval (m)	Screen Placement	Results
APEC 1a and 1b - Fuel ASTs and Oil/Lubricant Storage Shed	LEPHw, PAH, BTEX/VPH, Metals, Glycols	AE16-MW3	1.5 - 1.8	Across native sands, across water table surface, above bedrock	< AWfw / DW, except **LEPHw > AWfw**
APEC 2 – Service Garage	LEPHw, PAH, VOC/VPH, Metals, Glycols	AE16-MW1	2.1 - 3.3	Across native sands, slightly below summer water table surface, above bedrock	< AWfw / DW

It is noted that glycols are considered a secondary PCOC, and were therefore not analyzed during the Stage 2.

All results were within the AWfw and DW standards with the exception of LEPHw at AE16-MW3. This groundwater sample was collected from the up-gradient portion of the aquifer on the Site, and is noted to have minimal saturated thickness in the late summer (0.13m on September 7, 2016).

Based on the summary above, all PCOCs were evaluated in groundwater for each APEC, collected from monitoring wells installed at the appropriate depths.

Groundwater analytical results are summarized on Tables 4, 5 and 6, and Figure 5 (attached). Laboratory reports are provided as Appendix C.

8.5 Soil Vapour Analytical Results

The soil vapour analytical program and results are summarized in the following table, by APEC:

Soil Vapour Analyses and Results Summary

APEC	Soil Vapour PCOC	Sample Location	Screen Interval (m)	Screen Placement	Attenuated Results
APEC 1a and 1b - Fuel ASTs and Oil/Lubricant Storage Shed	Gas and Deisel Volatiles	AE16-SV3	0.9-1.05	Across unsaturated native sands	< UP / RL / IL
APEC 2 – Service Garage	Gas and Deisel Volatiles and Waste Oil Volatiles	AE16-SV1	1.05-1.2	Across unsaturated native sands	< UP / RL / IL

The following raw results exceeded the UP and/or IL standards:

- AE16-SV1: VPHv, Benzene, Chloroform, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, and Xylene exceeded the UP standards, and Chloroform also exceeded the IL standard. It is noted that the laboratory MDL exceeded the UP standard for several parameters.
- AE16-SV3: No exceedences were identified, however, the laboratory MDL exceeded the UP standard for several parameters.

When the appropriate depth-dependent attenuation factors were used to evaluate the current and future indoor and outdoor air exposure scenarios, all results were within the UP and IL standards.

Soil vapour analytical results are presented on Table 7 and Figure 6, attached. The laboratory reports are provided in Appendix C.

9.0 DISCUSSION

The results of the Stage 2 investigation are discussed below, in relation to each APEC.

9.1 APEC 1a – Fuel AST

The fuel AST has secondary containment, however, the valve was noted to be open allowing the concrete basin to drain directly onto the adjacent gravel surface. The drain for the secondary containment and the fueling nozzle are located at the same place, and this is where surficial

staining and hydrocarbon odours were observed. Test pit AE16-TP1, monitoring well AE16-MW3 and soil vapour well AE16-SV3 were all located within the stained area.

In soil, all PCOCs were less than the UP, RL and IL standards, with the exception of Chromium and Copper. These metals exceeded the respective IL and SRA standards, however, all concentrations were below the regional background levels specified in Protocol 4 for Vancouver Island. The surficial soil containing the elevated metals is comprised of clear crushed aggregate. It is noted that there were detectable hydrocarbon concentrations, but the results were below all applicable standards. We understand that the aggregate was locally derived and therefore the application of Background Estimates is reasonable.

In groundwater, all PCOCs were less than the AWfw and DW standards, with the exception of LEPHw. The concentration of LEPHw was 830ug/L at AE16-MW3, which exceeds the AWfw standard of 500ug/L. Detectable HEPH, Pyrene and Acetone were also noted in the sample, but below all applicable standards. The groundwater contamination is inferred to be the result of fueling activities and the combined impact of several minor spills (since no major spills have been reported).

In soil vapour, raw (un-attenuated) concentrations of all PCOCs from AE16-SV3 were below the CSR UP and IL standards, however, six parameters are noted to have laboratory detection limits that exceed the applicable CSR standards. When attenuated for the current and future exposure scenarios, all results were within UP and IL standards.

As a result of the groundwater contamination identified at APEC 1a, further investigation is recommended to delineate the lateral and vertical extents of the contamination.

9.2 APEC 1b – Oil and Lubricant Storage Shed

The storage shed beside the AST is used to store oil and lubricants, and is constructed of wood without secondary containment. Beside the storage shed is a gravel parking area with significant oil staining on the ground surface. This location was targeted for the Stage 2 investigations, including the excavation of test pit AE16-TP2. Monitoring well AE16-MW3 and soil vapour well AE16-SV3 are all located in sufficient proximity to APEC 1b, and are relied upon for the assessment of groundwater and soil vapour. Bedrock was encountered at 0.75m depth at AE16-TP2.

In soil, all PCOCs were less than the UP, RL and IL standards with the exception of Chromium, which exceeded the IL and standard but was below the regional background levels specified in Protocol 4 for Vancouver Island. The surficial soil containing the elevated metals is comprised of clear crushed aggregate. It is noted that there were detectable hydrocarbon concentrations, but the results were below all applicable standards. We understand that the aggregate was locally derived and therefore the application of Background Estimates is reasonable.

Groundwater and soil vapour results are discussed above for APEC 1a. The investigations are also applicable to APEC 1b, however, the identified groundwater contamination is inferred to be

the result of fueling activities associated with APEC 1a. As such, no further investigation of APEC 1b is considered necessary.

9.3 APEC 2 – Service Garage

The Service Garage consists of an older wooden barn structure with an oil change pit. The building was largely being used for storage at the time of the investigations, and no direct evidence of potential contamination was observed. Test pits AE16-TP3, AE16-TP4 and AE16-TP5 were excavated around the building to assess soil quality. Monitoring well AE16-MW1 was located at the down-gradient side of the building to assess groundwater quality, and AE16-MW2 was situated to determine the groundwater flow direction at the Site. Soil vapour well AE16-SV3 was located in the potential worst case location at the downgradient side of the building immediately adjacent to the garage bay doors.

In soil, all PCOCs were less than the UP, RL and IL standards. Minor detectable hydrocarbon concentrations are noted in tests AE16-TP4 and AE16-TP5.

In groundwater, all PCOCs were less than the AWfw and DW standards. Minor detectable Toluene and Acetone concentrations were noted.

In soil vapour, raw (un-attenuated) concentrations of several PCOCs from AE16-SV1 exceeded the CSR UP and/or IL standards. In addition, several other parameters are noted to have laboratory detection limits that exceed the applicable CSR standards. When attenuated for the current and future exposure scenarios, all results were within UP and IL standards.

No soil, groundwater, or soil vapour contamination was identified at APEC 2. No further investigation of this APEC is warranted.

10.0 CONCLUSIONS AND RECOMMENDATIONS

The Stage 2 investigations identified groundwater contamination adjacent to the fuel AST (APEC 1a). No other contamination was identified on the Site in any media (soil, groundwater and soil vapour).

Based on these findings, further investigation in the form of Detailed Site Investigation (DSI) is recommended to delineate the lateral and vertical extents of the groundwater contamination.

11.0 PROFESSIONAL STATEMENT

All documentation contained in this report has been prepared in accordance with all requirements of the BC Environmental Management Act and its regulations. The persons signing this report have demonstrable experience in assessment and remediation of the type of contamination associated with this type of property to which this report and statement apply. Matt Pye, P.Eng. has more than 18 years of direct experience conducting and managing contaminated site assessment and remediation projects throughout BC. Jeff Taylor, P.Eng., CSAP has more than

18 years of direct experience conducting and managing contaminated site assessment and remediation projects throughout BC.

12.0 LIMITATIONS

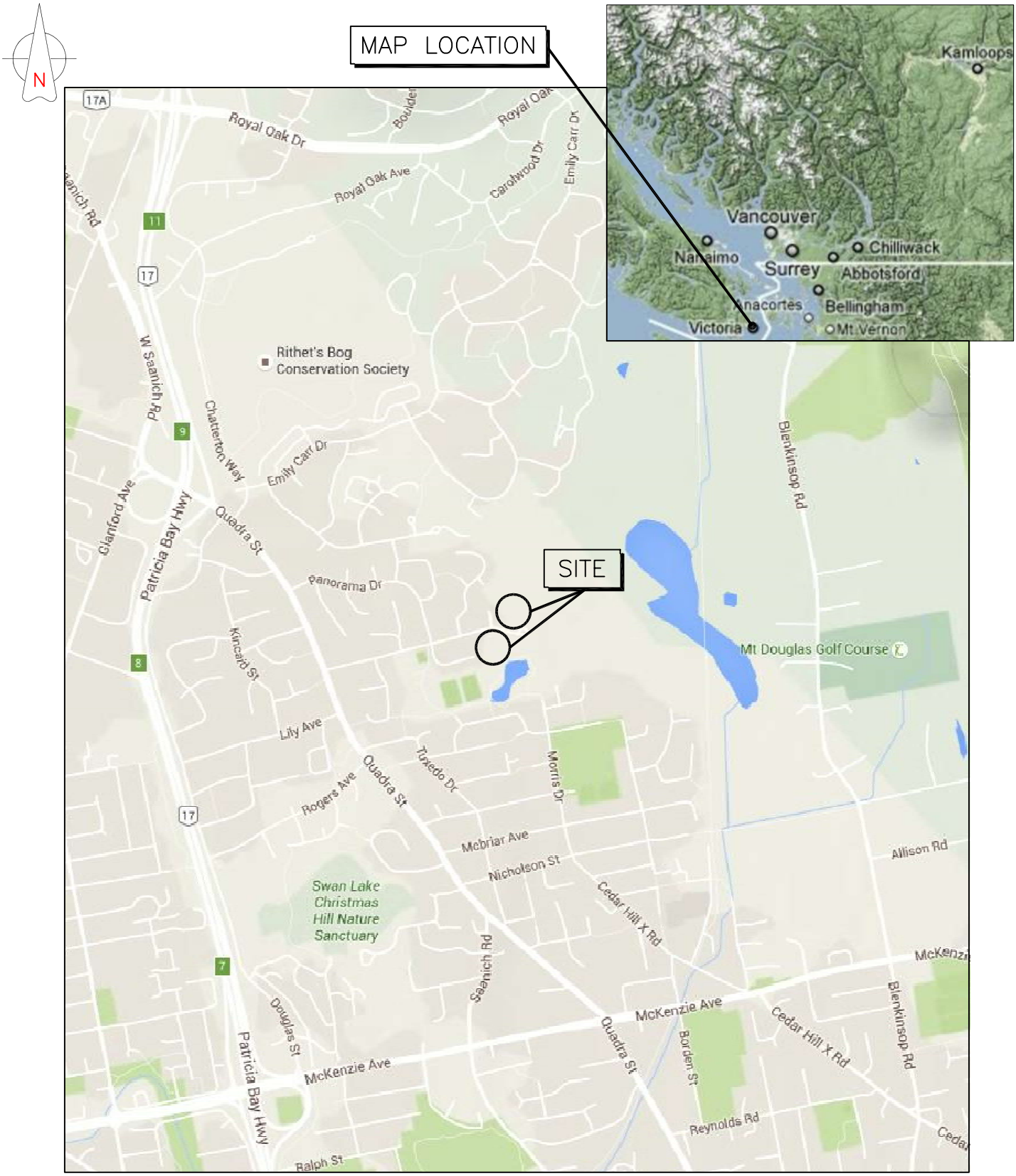
This report has been prepared by Active Earth Engineering Ltd. exclusively for Don Mann Excavating (the client) based on information obtained through limited soil, soil vapour and groundwater sampling. This report may be relied upon by Don Mann Excavating, the BC Ministry of Environment, and the District of Saanich.

Active Earth has relied on reports, data, studies, plans, specifications and documents prepared by others, and accepts no responsibility for information contained in them. The environmental investigations were limited to those areas and contaminants specifically addressed in the report.

This report is believed to provide a reasonable representation of general environmental condition at the Site. The conclusions made in this report reflect Active Earth's best judgment in light of the information available at the time of reporting. Should additional information become available or Site conditions change, the conclusions and recommendations of this report may be subject to change.

Any use which the client or a third party, other than those specifically listed above, makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such parties. Active Earth accepts no responsibility for damages, if any, suffered by third parties as a result of business decisions made or actions based on this report.

DRAWINGS



LOCATION PLAN

REFERENCE: GOOGLE MAPS

SCALE: N.T.S.

DON MANN EXCAVATING

Active Earth Engineering Ltd

LOCATION PLAN
931, 980, 990 & 1000 BECKWITH AVE
SAANICH, BC

date: APR 16	scale: N.T.S.
	drawn: GM
	checked: JT
	file: 1126-1
drawing no: FIGURE 1	issue: A

LEGEND

APPROXIMATE LEGAL LOT LINE

EXPECTED REGIONAL GROUNDWATER FLOW DIRECTION

1:2000 0 40 120m

REFERENCE: CITY OF SAANICH – SAANICH GIS MAP SERVICE

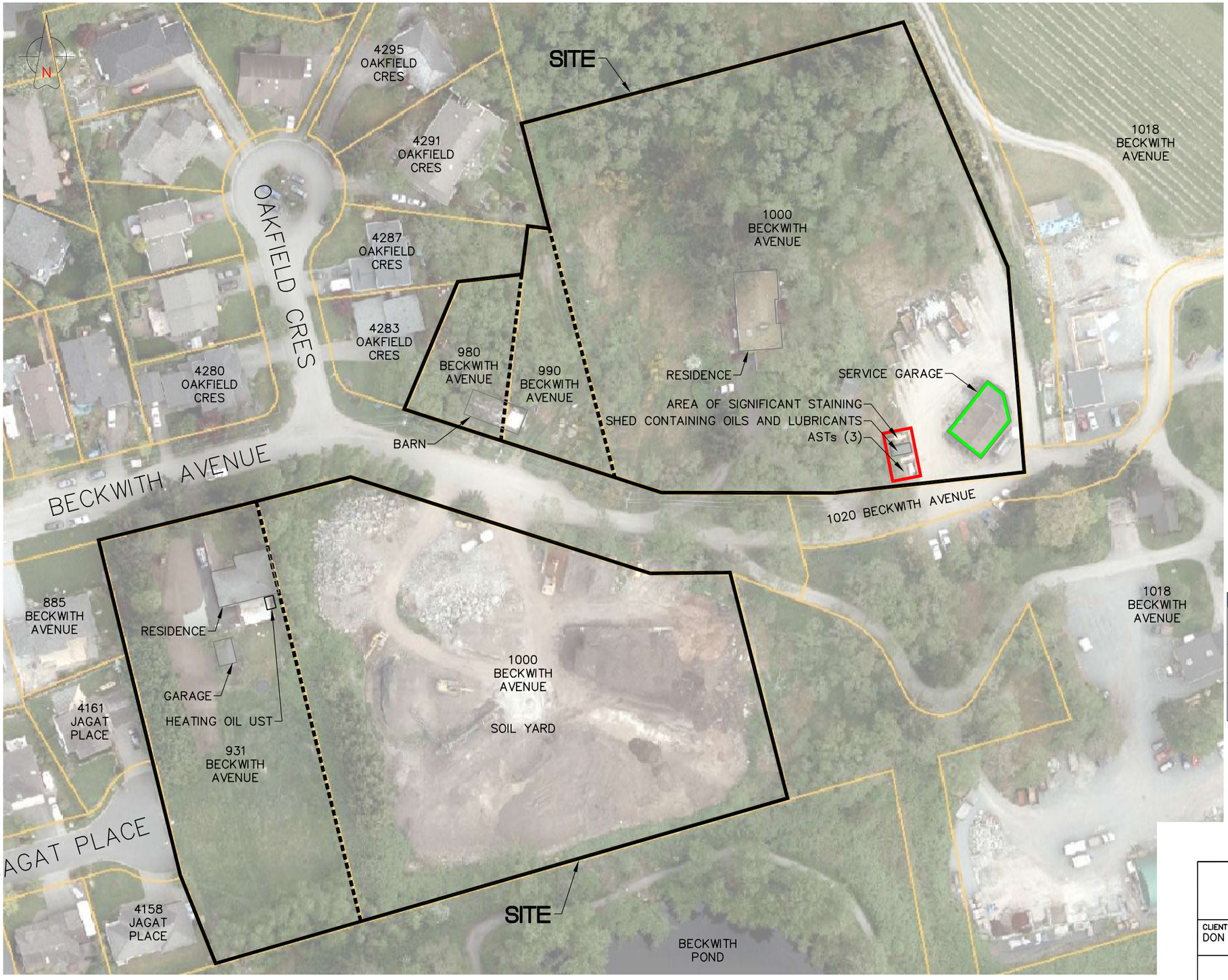
PATH:

Active Earth Engineering Ltd

CLIENT NAME: DON MANN EXCAVATING	PROJECT LOCATION: SAANICH, BC

SURROUNDING LAND USE PLAN
931, 980, 990 & 1000 BECKWITH

DWN BY: GM	DWG NAME: 1126–2	DATE: 2016–04–25	FIGURE 2
CHK'D: JT	PLOT:	CADFILE: 1126	



LEGEND

APPROXIMATE LEGAL LOT LINE

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN – ON-SITE

APEC	PCOC
APEC 1a – Fuel ASTs	**Soil:** LEPH, HEPH, PAH, BTEX/VPH **Groundwater:** LEPHw, PAH, BTEX/VPH **Soil Vapour:** Gasoline & Diesel Volatiles
APEC 1b – Oil and Lubricants Storage Shed	**Soil:** LEPH, HEPH, PAH, BTEX/VPH, Metals, Glycols **Groundwater:** LEPHw, PAH, BTEX/VPH, Dissolved Metals, Glycols **Soil Vapour:** Gasoline & Diesel Volatiles
APEC 2 - Service Garage	**Soil:** LEPH, HEPH, PAH, VOC/VPH, Metals, Glycols **Groundwater:** LEPHw, PAH, VOC/VPH, Metals, Glycols **Soil Vapour:** Gasoline & Diesel Volatiles

REFERENCE: CITY OF SAANICH – SAANICH GIS MAP SERVICE

1:1000 0 20 60m

PATH:

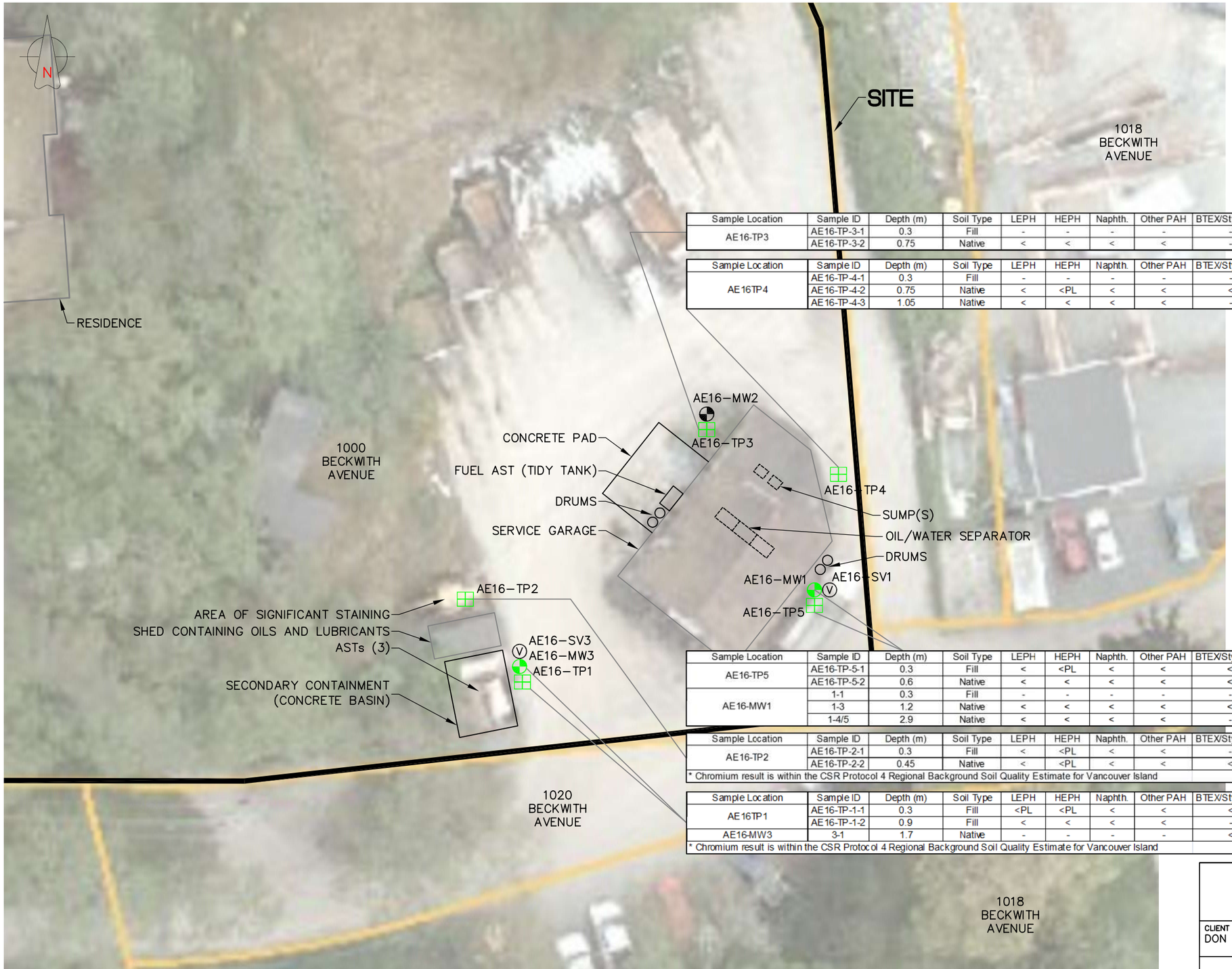
Active Earth Engineering Ltd

CLIENT NAME: DON MANN EXCAVATING

PROJECT LOCATION: SAANICH, BC

SITE PLAN
931, 980, 990 & 1000 BECKWITH

DWN BY: GM	DWG NAME: 1126-3	DATE: 2016-04-25	FIGURE 3
CHK'D: JT	PLOT:	CADFILE: 1126	



LEGEND

- APPROXIMATE LEGAL LOT LINE
- BOREHOLE
- MONITORING WELL
- TEST PIT
- SOIL VAPOUR WELL

Sample Location	Sample ID	Depth (m)	Soil Type	LEPH	HEPH	Naphth.	Other PAH	BTEX/Sty/MTBE	Other VOCs	VPH	Glycols	Chromium	Copper	Other Metals
AE16-TP3	AE16-TP-3-1	0.3	Fill	-	-	-	-	-	-	-	-	<PL	<PL	<PL
	AE16-TP-3-2	0.75	Native	<	<	<	<	-	<	-	-	-	-	-

Sample Location	Sample ID	Depth (m)	Soil Type	LEPH	HEPH	Naphth.	Other PAH	BTEX/Sty/MTBE	Other VOCs	VPH	Glycols	Chromium	Copper	Other Metals
AE16TP4	AE16-TP-4-1	0.3	Fill	-	-	-	-	-	-	-	-	<PL	<PL	<PL
	AE16-TP-4-2	0.75	Native	<	<PL	<	<	<	-	<	-	-	-	-
	AE16-TP-4-3	1.05	Native	<	<	<	<	-	<	-	<	<PL	<PL	<PL

SOIL ANALYTICAL RESULTS

GREEN ≤ CSR PL
BLUE > CSR PL ≤ CSR IL
RED > CSR IL
MAGENTA > HWR

NO RESULT FOR THIS PARAMETER
BELOW LABORATORY METHOD DETECTION LIMIT (MDL)
RESULT IS DETECTABLE, BUT LESS THAN CSR PL STANDARDS
RESULT EXCEEDS CSR PL STANDARDS
RESULT EXCEEDS CSR IL STANDARDS

ANALYTICAL TABLE KEY

-	
<	
<PL	
##	
##	

Sample Location	Sample ID	Depth (m)	Soil Type	LEPH	HEPH	Naphth.	Other PAH	BTEX/Sty/MTBE	Other VOCs	VPH	Glycols	Chromium	Copper	Other Metals
AE16-TP5	AE16-TP-5-1	0.3	Fill	<	<PL	<	<	<	<	<	-	-	-	-
	AE16-TP-5-2	0.6	Native	<	<	<	<	<	-	<	<	-	-	-
AE16-MW1	1-1	0.3	Fill	-	-	-	-	-	-	-	-	<PL	<PL	<PL
	1-3	1.2	Native	<	<	<	<	<	<	<	-	-	-	-
	1-4/5	2.9	Native	<	<	<	<	-	-	-	-	-	-	-

Sample Location	Sample ID	Depth (m)	Soil Type	LEPH	HEPH	Naphth.	Other PAH	BTEX/Sty/MTBE	Other VOCs	VPH	Glycols	Chromium	Copper	Other Metals
AE16-TP2	AE16-TP-2-1	0.3	Fill	<	<PL	<	<	-	-	-	-	88*	<PL	<PL
	AE16-TP-2-2	0.45	Native	<	<PL	<	<	<	<	<	-	-	-	-

* Chromium result is within the CSR Protocol 4 Regional Background Soil Quality Estimate for Vancouver Island

Sample Location	Sample ID	Depth (m)	Soil Type	LEPH	HEPH	Naphth.	Other PAH	BTEX/Sty/MTBE	Other VOCs	VPH	Glycols	Chromium	Copper	Other Metals
AE16TP1	AE16-TP-1-1	0.3	Fill	<PL	<PL	<	<	<	<	<	-	62*	<PL	<PL
	AE16-TP-1-2	0.9	Fill	<	<	<	<	-	-	-	-	-	-	-
AE16-MW3	3-1	1.7	Native	-	-	-	-	<	-	<	-	-	-	-

* Chromium result is within the CSR Protocol 4 Regional Background Soil Quality Estimate for Vancouver Island

REFERENCE: CITY OF SAANICH – SAANICH GIS MAP SERVICE

1:300 0 6 18m

PATH:

Active Earth Engineering Ltd

CLIENT NAME: DON MANN EXCAVATING

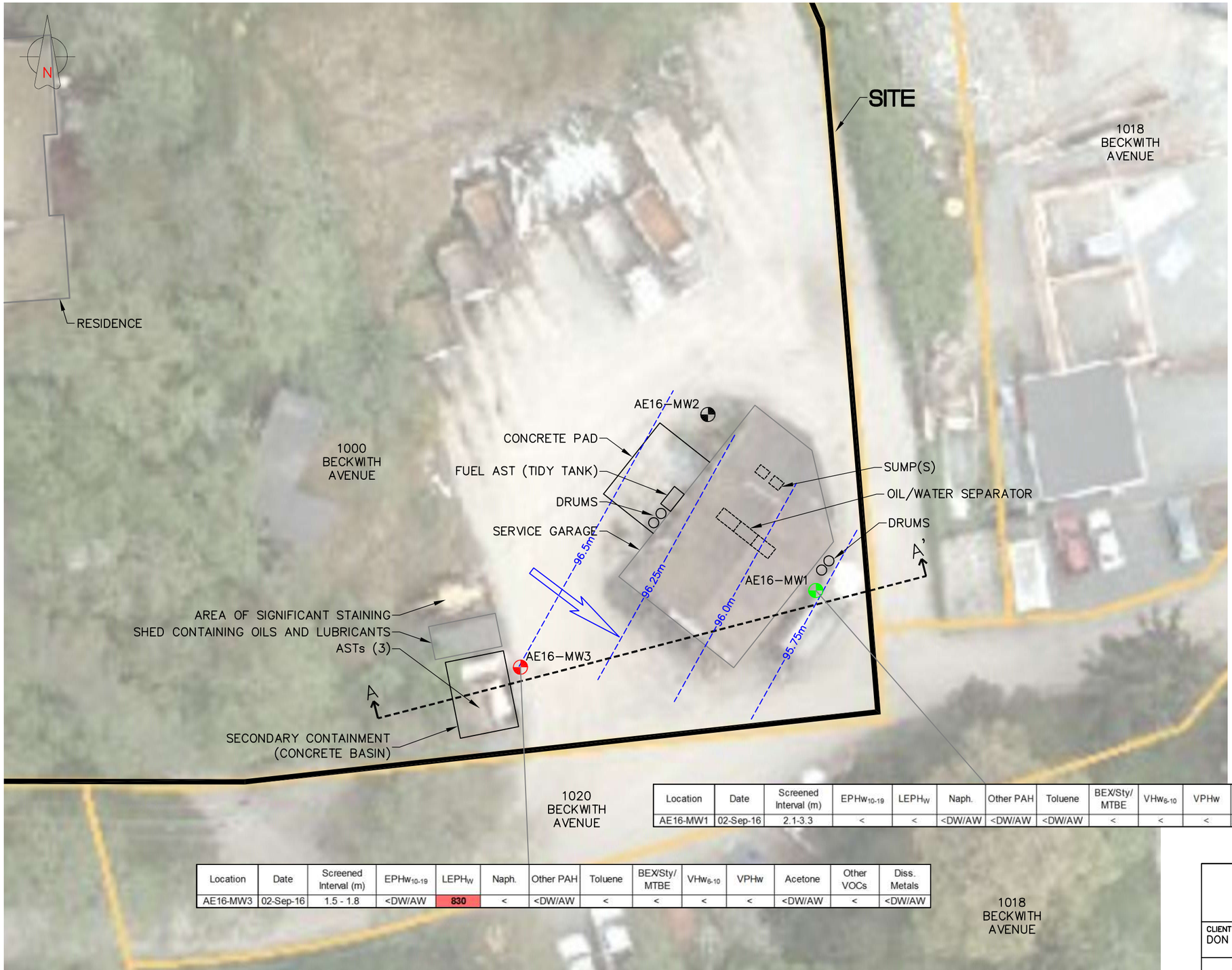
PROJECT LOCATION: SAANICH, BC

SOIL ANALYTICAL RESULTS
931, 980, 990 & 1000 BECKWITH

DWN BY: GM | DWG NAME: 1126–4 | DATE: 2016–09–14

CHK'D: MP | PLOT: | CADFILE: 1126

FIGURE 4



LEGEND

- APPROXIMATE LEGAL LOT LINE
- MONITORING WELL
- GROUNDWATER FLOW DIRECTION
- POTENTIOMETRIC CONTOURS
- ELEV X.XXXm GROUNDWATER ELEVATION (ASSUMED) SEPTEMBER 7, 2016

GROUNDWATER ANALYTICAL RESULTS

- GREEN < CSR STANDARDS
- BLUE > CSR DW
- RED > CSR AW
- MAGENTA > MULTIPLE CSR STANDARDS

- NO RESULT FOR THIS PARAMETER
- BELOW LABORATORY METHOD DETECTION LIMIT (MDL)
- RESULT IS DETECTABLE, BUT LESS THAN CSR AW AND DW STANDARDS
- RESULT EXCEEDS CSR DW STANDARDS
- RESULT EXCEEDS CSR AW STANDARDS

ANALYTICAL TABLE KEY: - | < | <AW/DW | # | #

Location	Date	Screened Interval (m)	$EPHw_{10-19}$	$LEPH_W$	Naph.	Other PAH	Toluene	BEX/Sty/ MTBE	VHw_{6-10}	VPHw	Acetone	Other VOCs	Diss. Metals
AE16-MW1	02-Sep-16	2.1-3.3	<	<	<DW/AW	<DW/AW	<DW/AW	<	<	<	<DW/AW	<	<DW/AW

Location	Date	Screened Interval (m)	$EPHw_{10-19}$	$LEPH_W$	Naph.	Other PAH	Toluene	BEX/Sty/ MTBE	VHw_{6-10}	VPHw	Acetone	Other VOCs	Diss. Metals
AE16-MW3	02-Sep-16	1.5 - 1.8	<DW/AW	**830**	<	<DW/AW	<	<	<	<	<DW/AW	<	<DW/AW

1:300 0 6 18m

REFERENCE: CITY OF SAANICH – SAANICH GIS MAP SERVICE

PATH:

Active Earth Engineering Ltd

CLIENT NAME: DON MANN EXCAVATING

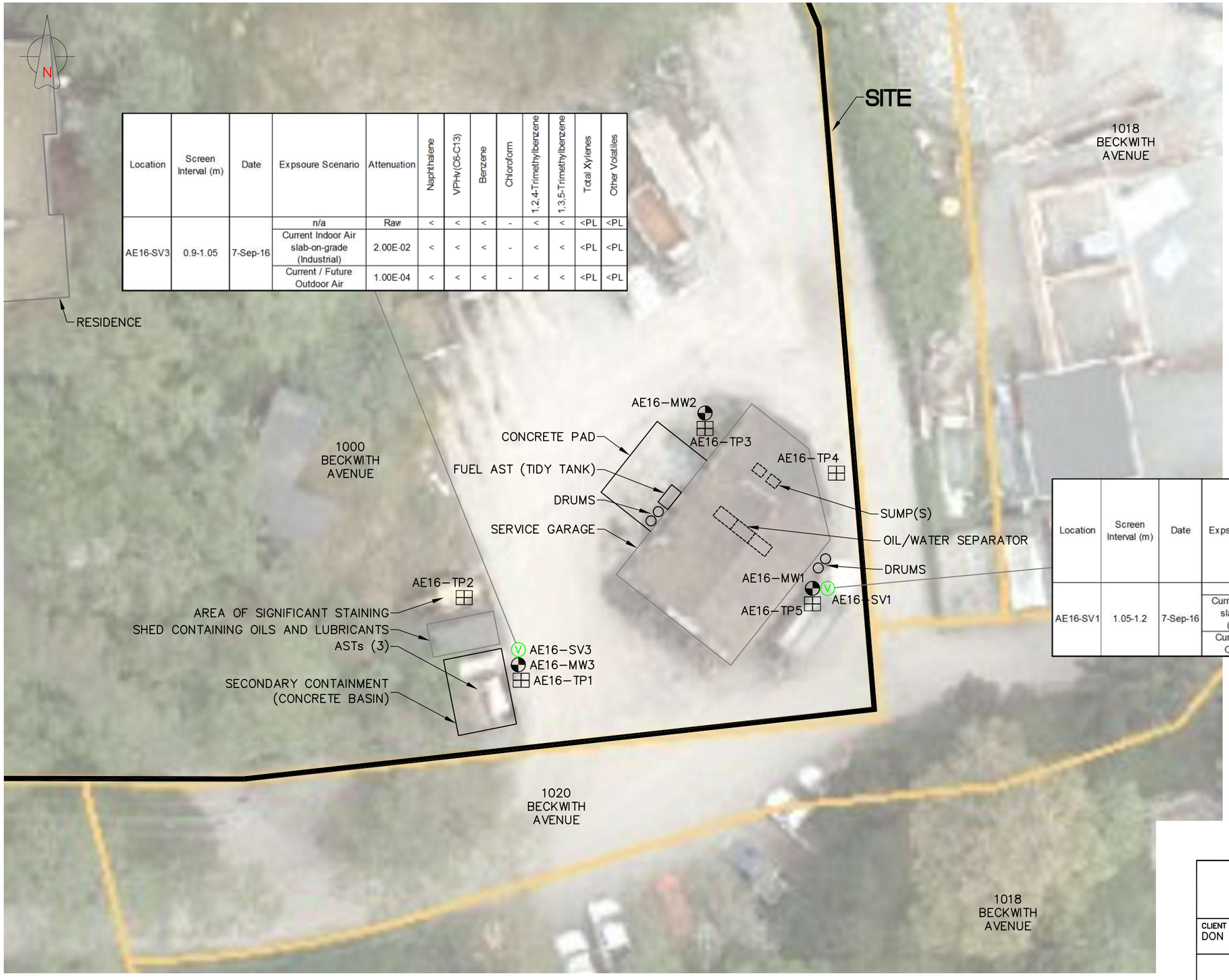
PROJECT LOCATION: SAANICH, BC

GROUNDWATER ANALYTICAL RESULTS 931, 980, 990 & 1000 BECKWITH

DWN BY: GM | DWG NAME: 1126–5 | DATE: 2016–09–14

CHK'D: MP | PLOT: | CADFILE: 1126

FIGURE 5



Location	Screen Interval (m)	Date	Expsoure Scenario	Attenuation	Naphthalene	VPHv(C6-C13)	Benzene	Chloroform	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	Other Volatiles
AE16-SV3	0.9-1.05	7-Sep-16	n/a	Raw	<	<	<	-	<	<	<PL	<PL
			Current Indoor Air slab-on-grade (Industrial)	2.00E-02	<	<	<	-	<	<	<PL	<PL
			Current / Future Outdoor Air	1.00E-04	<	<	<	-	<	<	<PL	<PL

LEGEND

- APPROXIMATE LEGAL LOT LINE
- BOREHOLE
- MONITORING WELL
- TEST PIT
- SOIL VAPOUR WELL

SOIL VAPOUR ANALYTICAL RESULTS

GREEN < CSR STANDARDS
BLUE > AG/UP/RL < CSR CL
RED > CSR CL
MAGENTA > CSR IL

Location	Screen Interval (m)	Date	Expsoure Scenario	Attenuation Factor	Naphthalene	VPHv(C6-C13)	Benzene	Chloroform	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	Other Volatiles
AE16-SV1	1.05-1.2	7-Sep-16	n/a	Raw	<	6660	9	4	42	47	200	<PL
			Current Indoor Air slab-on-grade (Industrial)	3.70E-04	<	<PL	<PL	<PL	<PL	<PL	<PL	<PL
			Current / Future Outdoor Air	1.50E-06	<	<PL	<PL	<PL	<PL	<PL	<PL	<PL

NO RESULT FOR THIS PARAMETER
BELOW LABORATORY METHOD DETECTION LIMIT (MDL)
RESULT IS DETECTABLE, BUT LESS THAN CSR PL STANDARDS
RESULT EXCEEDS CSR PL STANDARDS
RESULT EXCEEDS CSR IL STANDARDS

ANALYTICAL TABLE KEY

-
<
<PL
##
##

REFERENCE: CITY OF SAANICH – SAANICH GIS MAP SERVICE

1:300 0 6 18m

PATH:

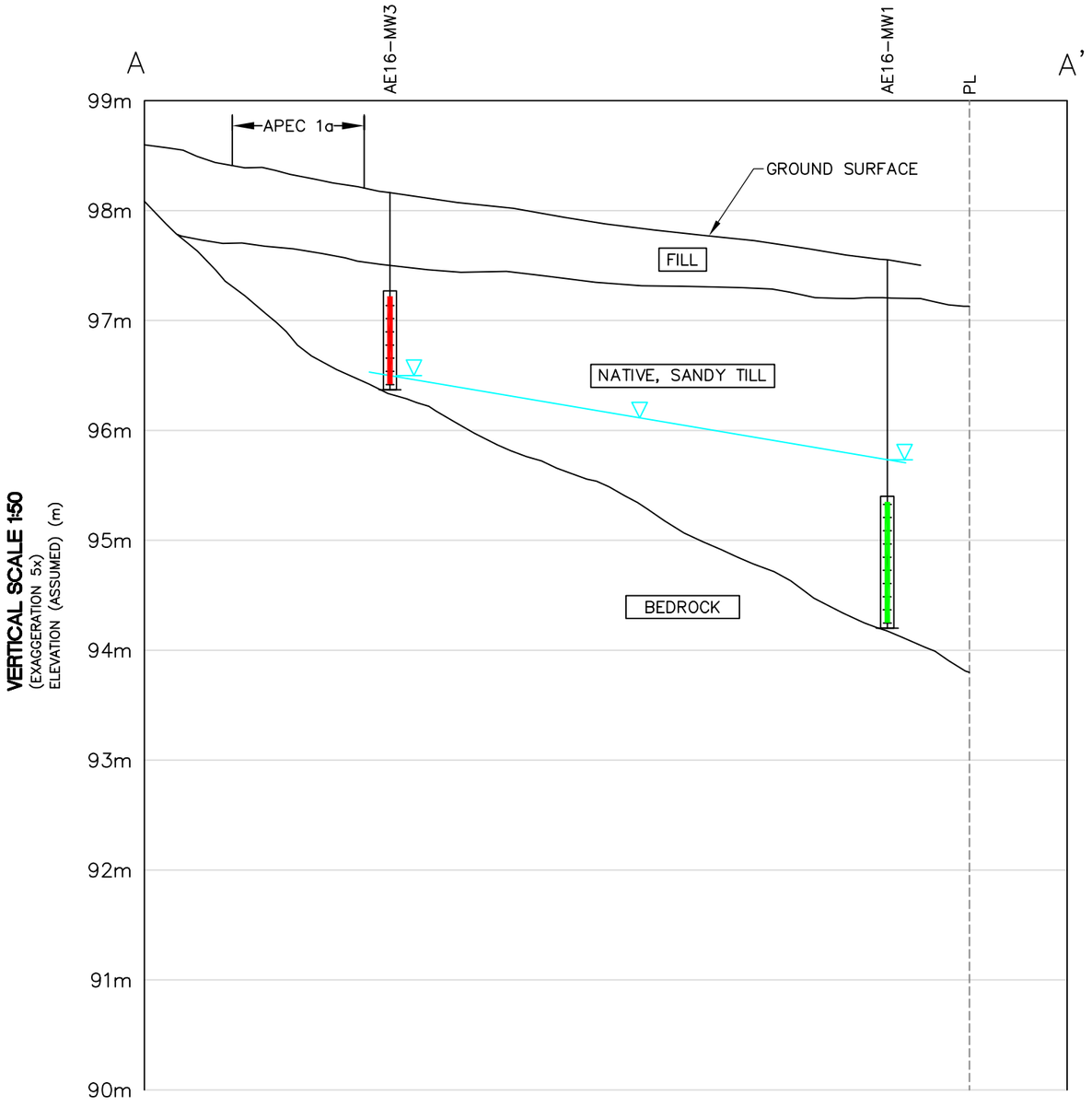
Active Earth Engineering Ltd

CLIENT NAME: DON MANN EXCAVATING
PROJECT LOCATION: SAANICH, BC

SOIL VAPOUR ANALYTICAL RESULTS
931, 980, 990 & 1000 BECKWITH

DWN BY: GM | DWG NAME: 1126–6 | DATE: 2016–09–14
CHK'D: MP | PLOT: | CADFILE: 1126

FIGURE 6



LEGEND

- GROUNDWATER ELEVATION
- X–X SOIL SAMPLE LOCATION (BLACK SAMPLE INDICATES SAMPLE NOT ANALYZED)
- MONITORING WELL

GROUNDWATER ANALYTICAL RESULTS

GREEN	< CSR STANDARDS
BLUE	> CSR DW
RED	> CSR AW
MAGENTA	> MULTIPLE CSR STANDARDS

Active Earth Engineering Ltd

CLIENT NAME: DON MANN EXCAVATING	PROJECT LOCATION: SAANICH, BC

CROSS SECTION A-A'
931, 980, 990 & 1000 BECKWITH

DWN BY: GM	DWG NAME: 1126–7	DATE: 2016–09–12	FIGURE 7
CHK'D: MP	PLOT:	CADFILE: 1126	

PATH:

TABLES

Analytical Table Footnotes: Analytical Results for Soil

	All concentrations in ug/g, except pH.
	All terms defined within the body of Active Earth's report.
"<"	Result is less than the laboratory detection limit indicated.
"-"	Parameter not analyzed or no standard or guideline applies.
*	RPDs are not normally calculated where one or more concentrations are less than five times MDL.
(1)	BC Contaminated Sites Regulation (CSR BC Reg. 375/96 includes amendments up to BC Reg. 4/2014) Generic Numerical Soil Standards (Schedules 4 and 10) and Matrix Numerical Soil Standards (Schedule 5), considering the site specific factors of toxicity to soil invertebrates and plants, intake of contaminated soil, groundwater flow to surface water used by Freshwater Aquatic Life, and groundwater used for drinking water, for Urban Park (UP) Land Use. Standards for Residential (RL) and Industrial (IL) Land Use are included for information purposes.
(2)	BC Contaminated Sites Regulation (CSR BC Reg. 375/96 includes amendments up to BC Reg. 4/2014) Standards Triggering Contaminated Soil Relocation Agreements (Schedule 7) for Soil Relocation to Non-Agricultural Lands (Column II). If soils exceed these standards, an authorization is required to dispose of these soils (e.g. disposal to a permitted landfill or via a Soil Relocation Agreement).
(3)	The standards referenced are for light extractable petroleum hydrocarbons (LEPH) and heavy extractable petroleum hydrocarbons (HEPH), which are corrected for polyaromatic hydrocarbons (PAHs). EPH (c 10 - c 19) and EPH (c19 - c32) are uncorrected for PAH.
(4)	BC Hazardous Waste Regulation, Schedule 4, Table 1

Associated Lab Files: 16V135385, 16V135385

BOLD, ORANGE SHADING	Concentration > CSR UP Standard.
BOLD, BLUE SHADING	Concentration > CSR RL Standard. *Not Applicable to the Site.*
BOLD, RED SHADING	Concentration > CSR IL Standard. *Not Applicable to the Site.*
BOLD, GREY SHADING	Concentration >CSR SRA Standard.

Table 1: Analytical Results for Hydrocarbons and Glycols in Soil

Sample Location					**AE16TP1**		**AE16-TP2**		**AE16-TP3**	**AE16TP4**		**AE16-TP5**		**AE16-MW1**				**AE16-MW3**
Sample ID					AE16-TP-1-1	AE16-TP-1-2	AE16-TP-2-1	AE16-TP-2-2	AE16-TP-3-2	AE16-TP-4-2	AE16-TP-4-3	AE16-TP-5-1	AE16-TP-5-2	1-3	1-4	1-5	RPD	3-1
Depth (m)					0.3	0.9	0.3	0.45	0.75	0.75	1.05	0.3	0.6	1.2	2.9		%	1.7
Fill/Native					Fill	Fill	Fill	Native	Native	Native	Native	Fill	Native	Native	Native			Native
Vapour Reading (ppm)					-	-	-	-	-	-	-	-	-	0	0			0
Date Sampled					02-Jun-16	02-Jun-16	02-Jun-16	02-Jun-16	02-Jun-16	02-Jun-16	02-Jun-16	02-Jun-16	02-Jun-16	01-Sep-16	01-Sep-16			01-Sep-16
	CSR Standards [1]																	
	UP [1]	**RL [1]**	**IL [1]**	**SRA [2]**														
Extractable Petroleum Hydrocarbons (µg/g)																		
EPH10-19	**1000 [3]**	**1000 [3]**	**2000 [3]**	**1000 [3]**	584	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	*	-
EPH19-32	**1000 [3]**	**1000 [3]**	**5000 [3]**	**1000 [3]**	401	<20	87	812	<20	36	<20	132	<20	<20	<20	<20	*	-
LEPH	**1000**	**1000**	**2000**	**1000**	584	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	*	-
HEPH	**1000**	**1000**	**5000**	**1000**	401	<20	87	812	<20	36	<20	132	<20	<20	<20	<20	*	-
Polycyclic Aromatic Hydrocarbons (µg/g)																		
Acenaphthene	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	*	-
Acenaphthylene	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	*	-
Anthracene	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	*	-
Benz(a)anthracene	**1**	**1**	**10**	**1**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	*	-
Benzo(a)pyrene	**1**	**1**	**10**	**1**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	*	-
Benzo(b)fluoranthene	**1**	**1**	**10**	**1**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	*	-
Benzo(g,h,i)perylene	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	*	-
Benzo(k)fluoranthene	**1**	**1**	**10**	**1**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	*	-
Chrysene	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	*	-
Dibenz(a,h)anthracene	**1**	**1**	**10**	**1**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	*	-
Fluoranthene	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	*	-
Fluorene	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	*	-
Indeno(1,2,3-c,d)pyrene	**1**	**1**	**10**	**1**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	*	-
2-Methylnaphthalene	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	*	-
Naphthalene	**5**	**5**	**50**	**5**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	*	-
Phenanthrene	**5**	**5**	**50**	**5**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	*	-
Pyrene	**10**	**10**	**100**	**10**	0.24	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	*	-
Non-Halogenated Volatiles (µg/g)																		
Benzene	**0.04**	**0.04**	**0.04**	**0.04**	<0.02	-	-	<0.02	-	<0.02	-	<0.02	<0.02	<0.02	-	-	-	<0.02
Ethylbenzene	**1**	**1**	**7**	**1**	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	-	-	-	<0.05
Toluene	**1.5**	**1.5**	**2.5**	**1.5**	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	-	-	-	<0.05
Total Xylenes	**5**	**5**	**20**	**5**	<0.2	-	-	<0.2	-	<0.2	-	<0.2	<0.2	<0.2	-	-	-	<0.2
Styrene	**5**	**5**	**50**	**5**	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	-	-	-	<0.05
MTBE	**320**	**320**	**700**	-	<0.1	-	-	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	-	-	-	<0.1
VolatilePetroleum Hydrocarbons (µg/g)																		
VPH	**200**	**200**	**200**	**200**	<10	-	-	<10	-	<10	-	<10	<10	<10	-	-	-	<10
VH	-	-	-	-	<10	-	-	<10	-	<10	-	<10	<10	<10	-	-	-	<10
Glycols (ug/g)																		
Ethylene Glycol	**1500**	**1500**	**1500**	**1500**	-	-	-	-	-	-	<10	-	<10	-	-	-	-	-
Ethylene Glycol	**1500**	**1500**	**1500**	**1500**	-	-	-	-	-	-	<10	-	<10	-	-	-	-	-
Propylene Glycol	**30000**	**30000**	**100000**	-	-	-	-	-	-	-	<10	-	<10	-	-	-	-	-
Tetraethylene Glycol	-	-	-	-	-	-	-	-	-	-	<10	-	<10	-	-	-	-	-
Triethylene Glycol	-	-	-	-	-	-	-	-	-	-	<10	-	<10	-	-	-	-	-

Notes:

BOLD, ORANGE SHADING	Concentration greater than CSR Urban Park Land Use (UP) Standard.
BOLD, BLUE SHADING	Concentration greater than CSR Residential Land Use (RL) Standard. *Not Applicable to the Site.*
BOLD, RED SHADING	Concentration greater than CSR Industrial Land Use (IL) Standard. *Not Applicable to the Site.*
BOLD, GREY SHADING	Concentration greater than CSR Soil Relocation Agreement (SRA) Standard.

Table 2 - Analytical Results for Metals in Soil

					Sample Location	**AE16-TP1**	**AE16-TP2**	**AE16-TP3**	**AE16-TP4**		**AE16-MW1**
					Sample ID	AE16-TP-1-1	AE16-TP-2-1	AE16-TP-3-1	AE16-TP-4-1	AE16-TP-4-3	1-1
					Sample Depth (m)	0.3	0.3	0.3	0.3	1.05	0.3
					Fill/Native	Fill	Fill	Fill	Fill	Native	Fill
					Date Sampled	02-Jun-16	02-Jun-16	02-Jun-16	02-Jun-16	02-Jun-16	01-Sep-16
	CSR Standards [1]										
	UP [1]	**RL [1]**	**IL [1]**	**SRA [2]**	**Protocol 4 Background**						
Physical Tests											
pH	-	-	-	-	-	8.07	7.36	6.91	5.42	5.97	7.20
Total Metals (µg/g)											
Antimony (Sb)	**20**	**20**	**40**	**20**		0.3	0.3	0.4	0.3	0.3	0.7
Arsenic (As)	**15**	**15**	**15**	**15**		13.6	3.3	5.2	4.2	4.2	14.2
Barium (Ba)	**400**	**400**	**400**	**400**		22.4	60.6	54.5	111	74.8	83.2
Beryllium (Be)	**4**	**4**	**8**	**4**		0.3	0.2	0.3	0.3	0.3	0.3
Cadmium (Cd) pH < 6.5	**1.5**	**1.5**	**1.5**						0.23	0.14	
pH 6.5 -< 7.0	**2**	**2**	**2**					0.24			
pH 7.0 -< 7.5	**2.5**	**2.5**	**2.5**	**1.5**			0.16				0.12
pH 7.5 -< 8.0	**25**	**25**	**25**								
pH >= 8.0	**35**	**35**	**150**			0.27					
Chromium (Cr)	**60**	**60**	**60**	**60**	**90**	**62**	**88**	28	25	37	32
Cobalt (Co)	**50**	**50**	**300**	**50**		31.7	27.8	12.8	11.1	8.0	14.7
Copper (Cu) pH < 5.0	**90**	**90**	**90**								
pH 5.0 -< 5.5	**100**	**100**	**100**	**90**	**150**				29.2		
pH 5.5 -< 6.0	**150**	**150**	**200**							23.6	
pH > = 6.0			**250**			**92.7**	83.4	46.4			28.4
Lead (Pb) pH < 5.5	**100**	**100**	**100**						41.5		
pH 5.5 -< 6.0	**100**	**100**	**100**	**100**						6.7	
pH 6.0 -< 6.5	**250**	**250**	**250**								
pH >= 6.5	**400**	**400**	**2,000**			8.1	4.7	13.4			8.4
Mercury (Hg)	**15**	**15**	**150**	**15**		0.01	0.03	0.03	0.05	0.03	0.03
Molybdenum (Mo)	**10**	**10**	**40**	**10**		1.5	1.6	1.1	0.8	0.9	2.5
Nickel (Ni)	**100**	**100**	**500**	**100**		58.2	51.6	28.0	23.2	18.0	20.6
Selenium (Se)	**3**	**3**	**10**	**3**		0.2	0.2	0.2	0.4	0.1	0.2
Silver (Ag)	**20**	**20**	**40**	**20**		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tin (Sn)	**50**	**50**	**300**	**50**		0.4	0.5	1	3.1	0.6	1.3
Uranium (U)	**16**	**16**	**200**	-		0.2	0.3	0.6	0.6	0.5	1.1
Vanadium (V)	**200**	**200**	-	**200**		89	132	80	67	77	78
Zinc (Zn) pH < 6.0	**150**	**150**	**150**						75	31	
pH 6.0 -< 6.5	**300**	**300**	**300**	**150**							
pH > = 6.5	**450**	**450**	**600**			94	68	62			38

Notes:

BOLD, ORANGE SHADING Concentration greater than CSR Urban Park Land Use (UP) Standard.

BOLD, BLUE SHADING Concentration greater than CSR Residential Land Use (RL) Standard. *Not Applicable to the Site.*

BOLD, RED SHADING Concentration greater than CSR Industrial Land Use (IL) Standard. *Not Applicable to the Site.*

BOLD, GREY SHADING Concentration greater than CSR Soil Relocation Agreement (SRA) Standard.

Table 3 - Analytical Results for Volatile Organic Compounds in Soil

				Sample Location	**AE16-TP1**	**AE16-TP2**	**AE16-TP3**	**AE16-TP4**	**AE16-TP5**	**AE16-MW1**
				Sample ID	AE16-TP-1-1	AE16-TP-2-2	AE16-TP-3-2	AE16-TP-4-3	AE16-TP-5-1	1-3
				Sample Depth (m)	0.3	0.45	0.75	1.05	0.3	1.2
				Fill/Native	Fill	Native	Native	Native	Fill	Native
				Vapour Reading (ppm)	-	-	-	-	-	0
				Date Sampled	02-Jun-16	02-Jun-16	02-Jun-16	02-Jun-16	02-Jun-16	02-Jun-16
	AL[1]	**RL[1]**	**IL [1]**	**SRA[2]**						
Volatile Organic Compounds (µg/g)										
Bromodichloromethane	**8.2**	**8.2**	**18**	**-**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoform	**620**	**620**	**2,200**	**-**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	**5**	**5**	**50**	**5**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	**1**	**1**	**10**	**1**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloroethane	**30**	**30**	**65**	**-**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloroform	**5**	**5**	**50**	**5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloromethane	**47**	**47**	**160**	**-**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	**11**	**11**	**26**	**-**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	**1**	**1**	**10**	**1**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	**1**	**1**	**10**	**1**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	**1**	**1**	**10**	**1**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	**5**	**5**	**50**	**5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	**5**	**5**	**50**	**5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethene	**5**	**5**	**50**	**5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	**5**	**5**	**50**	**-**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	**5**	**5**	**50**	**-**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dichloromethane	**5**	**5**	**50**	**5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	**5**	**5**	**50**	**5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropene	**5**	**5**	**50**	**5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropene	**5**	**5**	**50**	**5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	**32**	**32**	**73**	**-**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	**4.1**	**4.1**	**9.3**	**5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	**5**	**5**	**5**	**5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	**5**	**5**	**50**	**5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	**5**	**5**	**50**	**5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	**0.015**	**0.015**	**0.015**	**0.015**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Trichlorofluoromethane	**390**	**390**	**2000**	**-**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	**0.79**	**0.79**	**7.5**	**-**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Associated Lab File:

All concentrations in ug/g

BOLD, ORANGE SHADING	Concentration greater than CSR Urban Park Land Use (UP) Standard.
BOLD, BLUE SHADING	Concentration greater than CSR Residential Land Use (RL) Standard. *Not Applicable to the Site.*
BOLD, RED SHADING	Concentration greater than CSR Industrial Land Use (IL) Standard. *Not Applicable to the Site.*
BOLD, GREY SHADING	Concentration greater than CSR Soil Relocation Agreement (SRA) Standard.

Analytical Table Footnotes: Analytical Results for Groundwater

All concentrations in ug/L, except pH.

All terms defined within the body of Active Earth's report.

"<" means less than the laboratory detection limit indicated.

"-" means not analyzed or no standard or guideline applies.

* means RPD not calculated. RPDs are not normally calculated where one or more concentrations are less than five times MDL.

(1) BC Contaminated Sites Regulation (CSR BC Reg. 375/96 includes amendents up to BC Reg. 4/2014) groundwater standards (Schedule 6) and generic soil and drinking water standards (Schedule 10). Applicable standards include those for protection of Freshwater Aquatic Water (AW), and groundwater used for Drinking Water (DW).

(2) Standard applies to all sites irrespective of water use.

(3) Laboratory Minimum Detection Limit exceeds the applicable CSR DW standard

(4) CSR Stage 8 Amendments (effective January 24, 2013) indicate that standards for dissolved Iron and Manganese only apply at sites with specified uses listed in Schedule 2 of the CSR. These standards are not considered to apply to the Site.

Associated Lab Files: 16V134774, 16V135098

BOLD, BLUE SHADING	Concentration greater than CSR Aquatic Life (DW) Standard
BOLD, RED SHADING	Concentration greater than CSR Aquatic Life (AW) Standard
BOLD, GREY SHADING	Laboratory Detection Limit greater than CSR AW or DW Standard

Table 4: Analytical Results for Hydrocarbons in Groundwater

Sample Location			**AE16-MW1**	**AE16-MW3**
Sample ID			MW1	MW3
Screened Interval (m)			2.1-3.3	1.5 - 1.8
Date Sampled			02-Sep-16	02-Sep-16
	CSR Standards[1]			
	Freshwater Aquatic Life (AW)	**Drinking Water (DW)**		
Extractible Petroleum Hydrocarbons (µg/L)				
$EPHw_{10-19}$	**5,000[2]**	**5,000[2]**	<100	830
$EPHw_{19-32}$	**-**	**-**	<100	980
$LEPH_W$	**500**	**-**	<100	**830**
HEPH	**-**	**-**	<100	980
Polycyclic Aromatic Hydrocarbons (µg/L)				
Acenaphthene	**60**	**-**	<0.05	<0.05
Acridine	**0.5**	**-**	<0.05	<0.05
Acenaphthylene	**-**	**-**	<0.05	<0.05
Anthracene	**1**	**-**	<0.05	<0.05
Benzo(a)anthracene	**1**	**-**	<0.05	<0.05
Benzo(a)pyrene	**0.1**	**0.01**	<0.01	<0.01
Benzo(b)fluoranthene	**-**	**-**	<0.05	<0.05
Benzo(g,h,i)perylene	**-**	**-**	<0.05	<0.05
Benzo(k)fluoranthene	**-**	**-**	<0.05	<0.05
Chrysene	**1**	**-**	<0.05	<0.05
Dibenz(a,h)anthracene	**-**	**-**	<0.05	<0.05
Fluoranthene	**2**	**-**	<0.05	<0.05
Fluorene	**120**	**-**	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	**-**	**-**	<0.05	<0.05
Naphthalene	**10**	**-**	0.23	<0.05
Phenanthrene	**3**	**-**	<0.05	<0.05
Pyrene	**0.2**	**-**	<0.02	0.07
Quinoline	**34**	**-**	<0.1	<0.1
Monoaromatic Hydrocarbons (µg/L)				
Benzene	**4,000**	**5**	<0.5	<0.5
Toluene	**390**	**24**	0.7	<0.5
Ethylbenzene	**2,000**	**2.4**	<0.5	<0.5
Xylenes	**-**	**300**	<1	<1
Styrene	**720**	**-**	<0.5	<0.5
Methyl t-butyl ether (MTBE)	**4,400**	**15**	<1	<1
Volatile Petroleum Hydrocarbons (µg/L)				
VHw_{6-10}	**15,000[2]**	**15,000[2]**	<100	<100
VPHw	**1,500**	**-**	<100	<100

Notes:

BOLD, RED SHADING	Concentration greater than CSR Aquatic Life (AW) Standard
BOLD, BLUE SHADING	Concentration greater than CSR Drinking Water (DW) Standard
BOLD, GREY SHADING	Laboratory Detection Limit greater than CSR AW or DW Standard

Table 5: Analytical Results for Dissolved Metals in Groundwater

		Sample Location	**AE16-MW1**	**AE16-MW3**
		Sample ID	MW1	AE16-MW3
		Screened Interval (m)	2.1-3.3	1.5 - 1.8
		Date Sampled	02-Sep-16	07-Sep-16
	CSR Standards[1]			
	Freshwater Aquatic Life (AW)	**Drinking Water (DW)**		
Physical Tests				
Hardness (as CaCO3)-mg/L	-	-	280	375
Dissolved Metals (ug/L)				
Aluminum (Al)	**-**	**9,500**	5	6
Antimony (Sb)	**200**	**6**	3	0.6
Arsenic (As)	**50**	**10**	1.9	1.2
Barium (Ba)	**10,000**	**1,000**	50.4	34.7
Beryllium (Be)	**53**	**-**	<0.01	<0.01
Boron (B)	**50,000**	**5,000**	144	84
Cadmium (Cd)	**0.1 (H< 30)**	**5**		
	0.3 (H=30 -<90)			
	0.5 (H=90-<150)			
	0.6 (H=150-<210)			
	- (H≥210)		0.03	0.01
Calcium (Ca)	**-**	**-**	83800	121000
Chromium (Cr)	**10**	**50**	0.6	<0.5
Cobalt (Co)	**40**	**-**	1.25	0.69
Copper (Cu)	**20 (H<50)**	**1,000**		
	30 (H=50-<75)			
	40 (H=75-<100)			
	50 (H=100-<125)			
	60 (H=125-<150)			
	70 (H=150-<175)			
	80 (H=175-<200)			
	90 (H>200)		3.8	12.6
Iron (Fe)[4]	**-**	**-**	<10	<10
Lead (Pb) H<50	**40 (H<50)**	**10**		
	50 (H=50-<100)			
	60 (H=100-<200)			
	110 (H=200-<300)		<0.05	
	160 (H>300)			<0.05
Lithium (Li)	**-**	**-**	8.4	5.1
Magnesium (Mg)	**-**	**100,000**	17300	17800
Manganese (Mn)[4]	**-**	**-**	86	84
Mercury (Hg)	**1**	**1**	<0.01	<0.01
Molybdenum (Mo)	**10,000**	**250**	8.22	14.7
Nickel (Ni)	**250 (H< 60)**	**-**		
	650 (H=60 -<120)			
	1100 (H=120-<180)			
	1500 (H>180)		11.2	4.6
Potassium (K)	**-**	**-**	6170	3260
Selenium (Se)	**10**	**10**	3.7	5.9
Silver (Ag)	**0.5 (H< 100)**	**-**		
	15 (H>100)		<0.02	<0.02
Sodium (Na)	**-**	**200,000**	21400	101000
Thallium (Tl)	**3**	**-**	0.02	<0.01
Titanium (Ti)	**1,000**	**-**	1.3	2
Uranium (U)	**3,000**	**20**	2.13	2.59
Vanadium (V)	**-**	**-**	1.5	1.1
Zinc (Zn) H<90	**75 (H<90)**	**5,000**		
	150 (H=90-<100)			
	900 (H=100-<200)			
	1650 (H=200-<300)		9	
	2400 (H=300-<400)			40
	- (H=≥400)			

Notes:

BOLD, RED SHADING	Concentration greater than CSR Aquatic Life (AW) Standard
BOLD, BLUE SHADING	Concentration greater than CSR Drinking Water (DW) Standard
BOLD, GREY SHADING	Laboratory Detection Limit greater than CSR AW or DW Standard

Table 6: Analytical Results for Volatile Organic Compounds (VOCs) in Groundwater

		Sample Location	**AE16-MW1**	**AE16-MW3**
		Sample ID	MW1	MW3
		Screened Interval (m)	2.1-3.3	1.5 - 1.8
		Date Sampled	02-Sep-16	02-Sep-16
	CSR Standards[1]			
	Freshwater Aquatic Life (AW)	**Drinking Water (DW)**		
Volatile Organic Compounds (µg/L)				
Acetone	-	**33000**	34	28
Bromodichloromethane	-	**16**	<1	<1
Bromoform	-	**100**	<1	<1
Bromomethane	-	**51**	<1	<1
2-Butanone	-	**22000**	<10	<10
Carbon Tetrachloride	**130**	**5**	<0.5	<0.5
Chlorobenzene	**13**	**30**	<1	<1
Dibromochloromethane	-	**100**	<1	<1
Chloroethane	-	**46**	<1	<1
Chloroform	**20**	**100**	<1	<1
Chloromethane	-	**950**	<1	<1
1,2-Dichlorobenzene	**7**	**3**	<0.5	<0.5
1,3-Dichlorobenzene	**1500**	-	<0.5	<0.5
1,4-Dichlorobenzene	**260**	**1**	<0.5	<0.5
1,1-Dichloroethane	-	**3700**	<1	<1
1,2-Dichloroethane	**1000**	**5**	<1	<1
1,1-Dichloroethylene	-	**14**	<1	<1
cis-1,2-Dichloroethylene	-	**370**	<1	<1
trans-1,2-Dichloroethylene	-	**730**	<1	<1
Dichloromethane	**980**	**50**	<1	<1
1,2-Dichloropropane	-	**9.9**	<1	<1
cis-1,3-Dichloropropylene	-	**6.7**	<1	<1
trans-1,3-Dichloropropylene	-	**6.7**	<1	<1
Ethylene Dibromide	-	**0.34**	<0.3	<0.3
4-Methyl-2-pentanone (MIBK)	-	**2900**	<10	<10
1,2,4-Trichlorobenzene	**260**	-	<1	<1
1,1,1,2-Tetrachloroethane	-	**26**	<1	<1
1,1,2,2-Tetrachloroethane	-	**3.4**	<1	<1
Tetrachloroethylene	**1100**	**30**	<1	<1
Total Trihalomethanes	-	**100**	<2	<2
1,1,1-Trichloroethane	-	**10000**	<1	<1
1,1,2-Trichloroethane	-	**12**	<1	<1
Trichloroethylene	**200**	**5**	<1	<1
Trichlorofluoromethane	-	**11000**	<1	<1
Vinyl Chloride	-	**2**	<1	<1

Notes:

BOLD, RED SHADING	Concentration greater than CSR Aquatic Life (AW) Standard
BOLD, BLUE SHADING	Concentration greater than CSR Drinking Water (DW) Standard
BOLD, GREY SHADING	Laboratory Detection Limit greater than CSR AW or DW Standard

Analytical Table Footnotes: Analytical Results for Soil Vapour

All concentrations in ug/g, except pH.

All terms defined within the body of Active Earth's report.

Original tables in colour

"<" "<" less than the laboratory detection limit indicated.

"-" "-" means not analyzed or no standard or guideline applies.

* * RPDs are not normally calculated where one or more concentrations are less than five times MDL.

(1) BC Contaminated Sites Regulation (CSR BC Reg. 375/96 includes amendments up to BC Reg. 4/2014) Generic Numerical Vapour Standards (Schedule 11). Applicable standards include those for Agricultural (AL) / Residential (RL) / Urban Park (UP) Land Use. Standards for Industrial (IL) Land Use are included for information purposes.

(2) Attenuation factor for current and future indoor and outdoor air receptors have been selected based on the land use and vapour probe depths, as per the Contaminated Sites Regulation (CSR BC Reg. 375/96 includes amendments up to BC Reg. 4/2014) Generic Numerical Vapour Standards (Schedule 11) and Table 2 of Technical Guidance 4 (September, 2010).

Associated Lab Files: 16V135169

BOLD, ORANGE SHADING	Concentration > CSR UP Standard.
BOLD, RED SHADING	Concentration > CSR IL Standard. *Not Applicable to the Site.*
BOLD, GREY SHADING	Laboratory Medthod Detection Limit (MDL) > CSR UP Standard

Table 7: Analytical Results for Soil Vapour

Sample Location	CSR Standards [1]		AE16-SV1			AE16-SV3		
Sample ID			AE16-SV1			AE16-SV3		
Screen Interval (m)			1.05-1.2			0.9-1.05		
Date Sampled			7-Sep-16			7-Sep-16		
Expsoure Scenario	Urban Park Land Use (UP)	Industrial Land Use (IL)	n/a	Current Indoor Air slab-on-grade (Industrial)	Current / Future Outdoor Air	n/a	Current Indoor Air slab-on-grade (Industrial)	Current / Future Outdoor Air
Attenuation Factor [2]			Raw	3.70E-04	1.50E-06	Raw	2.00E-02	1.00E-04
Polycyclic Aromatic Hydrocarbons (ug/m^3)								
Naphthalene	**3**	**25**	<3	<0.00111	<0.0000045	<3	<0.06	<0.0003
Volatile Hydrocarbons (ug/m^3)								
VHv(C6-C13)	**-**	**-**	7040	2.6048	0.01056	<700	<14	<0.07
VPHv(C6-C13)	**1000**	**11500**	**6660**	2.4642	0.00999	<700	<14	<0.07
Acetone	**20**	**200**	<20	<0.0074	<0.00003	-	-	-
Benzene	**1.5**	**10**	**9**	0.00333	0.0000135	**<2**	<0.04	<0.0002
Bromobenzene	**10**	**90**	<7	<0.00259	<0.0000105	-	-	-
Bromodichloromethane	**1**	**6.5**	**<2**	<0.00074	<0.000003	-	-	-
Bromomethane	**5**	**45**	**<20**	<0.0074	<0.00003	-	-	-
1,3-Butadiene	**2**	**20**	**<3**	<0.00111	<0.0000045	**<3**	<0.06	<0.0003
2-Butanone (MEK)	**5000**	**45000**	<7	<0.00259	<0.0000105	-	-	-
Carbon Disulfide			296	0.10952	0.000444	-	-	-
Carbon Tetrachloride	**0.65**	**2**	**<1**	<0.00037	<0.0000015	-	-	-
Chlorobenzene	**700**	**6500**	<3	<0.00111	<0.0000045	-	-	-
Chloroethane	**10000**	**90000**	<20	<0.0074	<0.00003	-	-	-
Chloroform	**1**	**4**	**4**	0.00148	0.000006	-	-	-
Decane (nC10)	**2500**	**25000**	<10	<0.0037	<0.000015	<10	<0.2	<0.001
1,2-Dibromoethane	**1**	**1**	**<2**	<0.00074	<0.000003	**<2**	<0.04	<0.0002
1,2-Dichlorobenzene	**200**	**2000**	<7	<0.00259	<0.0000105	-	-	-
Dichlorodifluoromethane	**200**	**2000**	9	0.00333	0.0000135	-	-	-
1,1-Dichloroethane	**500**	**4500**	<10	<0.0037	<0.000015	-	-	-
1,2-Dichloroethane	**0.4**	**3.5**	**<0.7**	<0.000259	<0.00000105	**<0.7**	<0.014	<0.00007
1,1-Dichloroethene	**1**	**2**	**<2**	<0.00074	<0.000003	-	-	-
cis-1,2-Dichloroethene	**20**	**200**	<7	<0.00259	<0.0000105	-	-	-
trans-1,2-Dichloroethene	**60**	**500**	<7	<0.00259	<0.0000105	-	-	-
Dichloromethane	**20**	**200**	<7	<0.00259	<0.0000105	-	-	-
1,2-Dichloropropane	**0.65**	**6**	**<1**	<0.00037	<0.0000015	-	-	-
Ethyl Acetate	**2000**	**15000**	<30	<0.0111	<0.000045	-	-	-
Ethylbenzene	**1000**	**9000**	52	0.01924	0.000078	<3	<0.06	<0.0003
n-Hexane (nC6)	**700**	**6500**	33	0.01221	0.0000495	<10	<0.2	<0.001
Cumene (Isopropylbenzene)	**400**	**4000**	<10	<0.0037	<0.000015	<10	<0.2	<0.001
4-Methyl-2-pentanone (MIBK)	**3000**	**27000**	<10	<0.0037	<0.000015	-	-	-
Methylcyclohexane	**3000**	**27000**	52	0.01924	0.000078	<10	<0.2	<0.001
Methyl tert-butyl ether (MTBE)	**3000**	**27000**	<7	<0.00259	<0.0000105	<7	<0.14	<0.0007
Styrene	**1000**	**9000**	<3	<0.00111	<0.0000045	<3	<0.06	<0.0003
1,1,2,2-Tetrachloroethane	**1**	**1.5**	**<2**	<0.00074	<0.000003	-	-	-
Tetrachloroethylene	**600**	**5500**	51	0.01887	0.0000765	-	-	-
Toluene	**5000**	**45000**	79	0.02923	0.0001185	<7	<0.14	<0.0007
1,2,4-Trichlorobenzene	**4**	**35**	**<7**	<0.00259	<0.0000105	-	-	-
1,1,1-Trichloroethane	**2000**	**20000**	<20	<0.0074	<0.00003	-	-	-
1,1,2-Trichloroethane	**0.6**	**5**	**<1**	<0.00037	<0.0000015	-	-	-
Trichloroethylene	**0.5**	**1**	**<1**	<0.00037	<0.0000015	-	-	-
1,2,4-Trimethylbenzene	**6**	**55**	**42**	0.01554	0.000063	**<7**	<0.14	<0.0007
1,3,5-Trimethylbenzene	**6**	**55**	**47**	0.01739	0.0000705	**<7**	<0.14	<0.0007
Vinyl chloride	**1**	**10**	**<2**	<0.00074	<0.000003	-	-	-
Total Xylenes	**100**	**900**	**200**	0.074	0.0003	10	0.2	0.001

Notes:

All concentrations in ug/m^3

BOLD, ORANGE SHADING	Concentration greater than CSR Urban Park Land Use (UP) Standard.
BOLD, RED SHADING	Concentration greater than CSR Industrial Land Use (IL) Standard. *Not Applicable to the Site.*
BOLD, GREY SHADING	Laboratory Medthod Detection Limit (MDL) > CSR UP Standard

APPENDIX A
Borehole Logs

AE16-TP1

Active Earth Engineering Ltd

1000 Beckwith Avenue
Saanich, BC

AE Project No. 1126

Date Started	: June 2, 2016	Company Rep.	: MP
Date Completed	: June 2, 2016	Lab Analysis	: *indicates sent for analysis
Hole Diameter	: n/a	Drilled By	: Don Mann Excavating
Drilling Method	: Backhoe	Logged By	: MP
Sampling Method	: Grab		

Depth in Meters	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Sample No.	Soil Vapours ppm	Lab Analysis
0		GW		SAND and GRAVEL, clear, angular, crush, grey, hydrocarbon odour (FILL)	1-1	-	
1		GW		SAND and GRAVEL, trace to some silt, brown, compact to dense, no odour	1-2	-	
				End of Hole			
2							
3							
4							

AE16-TP2

(Page 1 of 1)

Active Earth Engineering Ltd

1000 Beckwith Avenue
Saanich, BC

AE Project No. 1126

Date Started	: June 2, 2016	Company Rep.	: MP
Date Completed	: June 2, 2016	Lab Analysis	: *indicates sent for analysis
Hole Diameter	: n/a	Drilled By	: Don Mann Excavating
Drilling Method	: Backhoe	Logged By	: MP
Sampling Method	: Grab		

Depth in Meters	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Sample No.	Soil Vapours ppm	Lab Analysis
0		GW		SAND and GRAVEL, angular, crush, minor cobbles, brown, no hydrocarbon odour (FILL)	2-1	-	
		SW		SAND, some gravel, trace to to silt, brown, dense	2-2	-	
				End of Hole			
1							
2							
3							
4							

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AE16-TP3

Active Earth Engineering Ltd

1000 Beckwith Avenue
Saanich, BC

AE Project No. 1126

Date Started	: June 2, 2016	Company Rep.	: MP
Date Completed	: June 2, 2016	Lab Analysis	: *indicates sent for analysis
Hole Diameter	: n/a	Drilled By	: Don Mann Excavating
Drilling Method	: Backhoe	Logged By	: MP
Sampling Method	: Grab		

Depth in Meters	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Sample No.	Soil Vapours ppm	Lab Analysis
0		GW		SAND and GRAVEL, angular crush, minor cobbles, brown, (FILL)	3-1	-	
		SW		SAND, some gravel, trace to some silt, grey, mottled, dense	3-2	-	
1		SW		SAND, some gravel, trace to some silt, brown, dense			
				End of Hole			
2							
3							
4							

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AE16-TP4

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Active Earth Engineering Ltd

1000 Beckwith Avenue
Saanich, BC

AE Project No. 1126

Date Started	: June 2, 2016	Company Rep.	: MP
Date Completed	: June 2, 2016	Lab Analysis	: *indicates sent for analysis
Hole Diameter	: n/a	Drilled By	: Don Mann Excavating
Drilling Method	: Backhoe	Logged By	: MP
Sampling Method	: Grab		

Depth in Meters	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Sample No.	Soil Vapours ppm	Lab Analysis
0		GW		SAND and GRAVEL, angular crush, cobbles, brown, (FILL)	4-1	-	
		SW		SAND, some gravel, trace silt, dark brown, dense	4-2	-	
1		SW		SAND, gravelly, some silt, light brown, mottled, dense	4-3	-	
				End of Hole			
2							
3							
4							

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AE16-TP5

(Page 1 of 1)

1000 Beckwith Avenue
Saanich, BC

AE Project No. 1126

Date Started	: June 2, 2016	Company Rep.	: MP
Date Completed	: June 2, 2016	Lab Analysis	: *indicates sent for analysis
Hole Diameter	: n/a	Drilled By	: Don Mann Excavating
Drilling Method	: Backhoe	Logged By	: MP
Sampling Method	: Grab		

Depth in Meters	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Sample No.	Soil Vapours ppm	Lab Analysis
0				SAND and GRAVEL, silty, minor debris, bricks, dark brown (FILL)	5-1	-	
		SW		SAND, some silt, trace gravel, light brown, mottled, dense	5-2	-	
1				End of Hole			
2							
3							
4							

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AE16-MW1

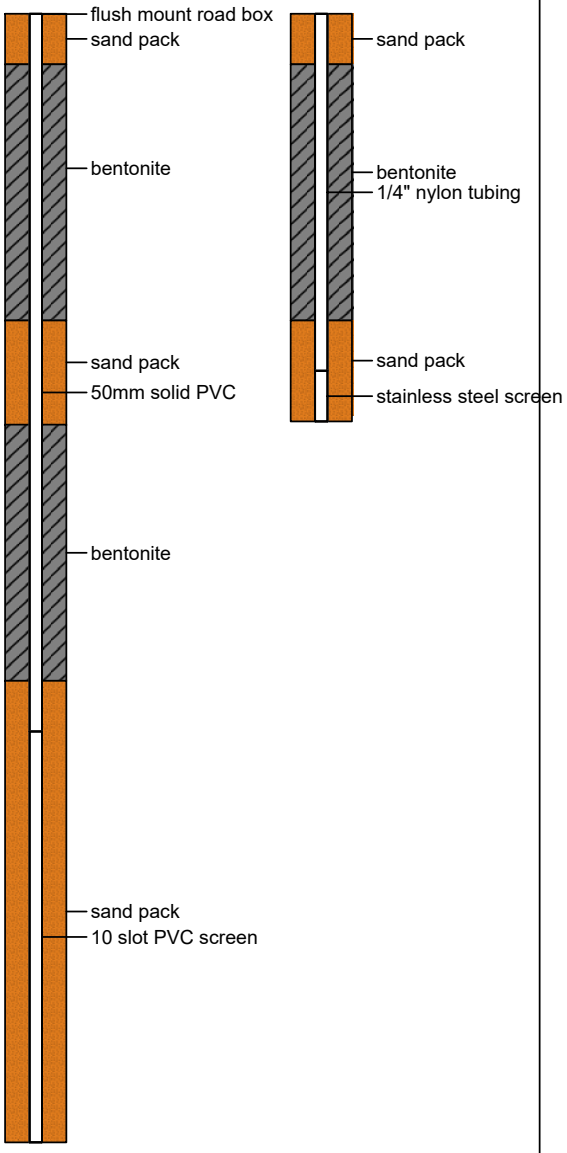
Active Earth Engineering Ltd

1000 Beckwith Avenue
Saanich, BC

AE Project No. 1126

Date Started	: September 1, 2016	Company Rep.	: SB
Date Completed	: September 1, 2016	Lab Analysis	: *indicates sent for analysis
Hole Diameter	: 152mm	Drilled By	: Drillwell
Drilling Method	: Track Auger Rig	Logged By	: SB
Sampling Method	: Grab		

Depth in Meters	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Sample No.	Soil Vapours ppm	Lab Analysis
0		AR		CONCRETE			
		GW		SAND and GRAVEL (ROADBASE FILL)			
		GW		TOPSOIL (silty, organic, old) and SAND/GRAVEL FILL, no debris, no odour/staining	1-1	25	
		SW		SAND, fine grained, some silt, trace gravel, occassional cobbles, tan, firm, damp (NATIVE)			
1					1-2	0	
				grey below 1.52m	1-3	0	
2				wet below 2.43m, no odour/staining			
3					1-4/5	0	
				End of Hole - Bedrock/Refusal			
4							



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AE16-MW2

(Page 1 of 1)

Active Earth Engineering Ltd

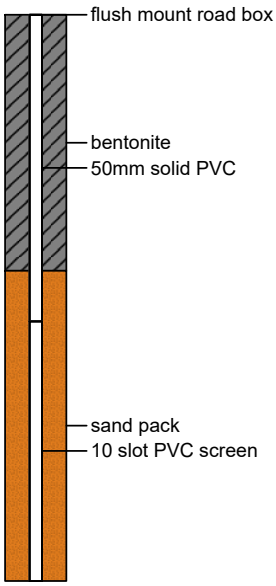
1000 Beckwith Avenue
Saanich, BC

AE Project No. 1126

Date Started	: September 1, 2016	Company Rep.	: SB
Date Completed	: September 1, 2016	Lab Analysis	: *indicates sent for analysis
Hole Diameter	: 152mm	Drilled By	: Drillwell
Drilling Method	: Track Auger Rig	Logged By	: SB
Sampling Method	: Grab		

Depth in Meters	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Sample No.	Soil Vapours ppm	Lab Analysis
0		GW		SAND and GRAVEL, angular, crush, cobbles, brown, no hydrocarbon odour (FILL)			
		SW		SANDY TILL, brown, dense			
1		SW		SAND, fine to medium grained, some silt, some gravel, brown, firm, moist to wet, no odour/staining (NATIVE)	2-1	0	*
				End of Hole - Refusal			
2							
3							
4							

Monitoring Well
AE16-MW2



09-13-2016 C:\Users\Admin\Dropbox (Active Earth)\Enviro Projects\1126 - 1000 Beckwith Stage 1\Logs\2MW-m.bor

AE16-MW3

(Page 1 of 1)

Active Earth Engineering Ltd

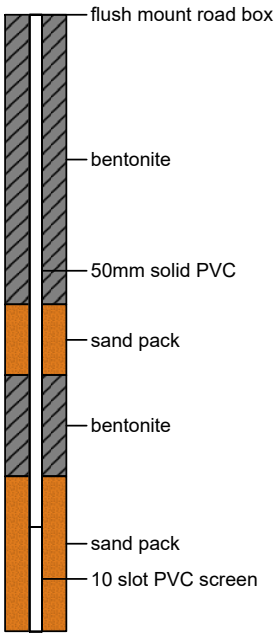
1000 Beckwith Avenue
Saanich, BC

AE Project No. 1126

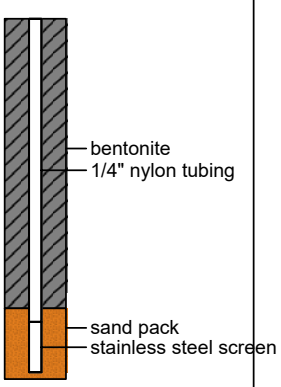
Date Started	: September 1, 2016	Company Rep.	: SB
Date Completed	: September 1, 2016	Lab Analysis	: *indicates sent for analysis
Hole Diameter	: 152mm	Drilled By	: Drillwell
Drilling Method	: Track Auger Rig	Logged By	: SB
Sampling Method	: Grab		

Depth in Meters	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Sample No.	Soil Vapours ppm	Lab Analysis
0		GW		SAND and GRAVEL, angular, cobbles, brown, (FILL)			
		SW		SANDY TILL, grey, mottled, dense			
1		SW		SANDY TILL, brown			
		SW		SAND, fine to medium grained, some silt, trace gravel, occassional cobbles, firm, no odour/staining (NATIVE)	3-1	0	*
2				End of Hole - Refusal/Bedrock			
3							
4							

Monitoring Well
AE16-MW3



Soil Vapour Well
AE16-SV3



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APPENDIX B
Groundwater Monitoring Report

Active Earth Engineering Ltd

GROUNDWATER MONITORING REPORT

Date:	7-Sep-16
Observer:	GM/MP
Weather:	Part sun, 18C
Time:	11:00

Monitoring Well ID	Top of Well Pipe Elevation[1] (m)	Depth to NAPL [2] (m)	Apparent NAPL [2] Thickness (mm)	Depth to Water from Top of Well Pipe (m)	Potentio-Metric Elevation[3] (m)	Vapour Concentrations (ppm)[4]	Comments
AE16-MW1	97.110	-	-	1.377	95.733	-	-
AE16-MW2	97.552	-	-	1.260	96.292	-	-
AE16-MW3	98.172	-	-	1.673	96.499		

NOTES:

[1] Reference Elevations are RELATIVE

[2] Non-Aqueous Phase Liquid.

[3] NAPL specific gravity assumed to be 0.80.

[4] 1% LEL is approximately equivalent to 110 ppm.

APPENDIX C
Laboratory Analytical Reports

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
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TEL (778)452-4000
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http://www.agatlabs.com

CLIENT NAME: ACTIVE EARTH ENGINEERING
4510 SADDLE HORN CRESCENT
LANGLEY, BC V2Z1J6
(778) 888-0473

ATTENTION TO: MATT PYE

PROJECT: 1106

AGAT WORK ORDER: 16V101896

SOIL ANALYSIS REVIEWED BY: Angela Bond, Technical Reviewer

TRACE ORGANICS REVIEWED BY: Angela Bond, Technical Reviewer

DATE REPORTED: Jun 13, 2016

PAGES (INCLUDING COVER): 22

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES
VERSION 1: Sample receipt temperature 13°C.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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FAX (778)452-4074
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16V101896

PROJECT: 1106

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

Active Earth British Columbia Metals Schedule 4 and 5

DATE RECEIVED: 2016-06-03

DATE REPORTED: 2016-06-10

					SAMPLE DESCRIPTION:	AE16-TP-1-1	AE16-TP-2-1	AE16-TP-3-1	AE16-TP-4-1	AE16-TP-4-3
					SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil
					DATE SAMPLED:	6/2/2016	6/2/2016	6/2/2016	6/2/2016	6/2/2016
Parameter	Unit	G / S: A	G / S: B	RDL		7608311	7608313	7608315	7608317	7608319
pH 1:2	pH units			0.05		8.07	7.36	6.91	5.42	5.97
Antimony	µg/g	40	20	0.1		0.3[<B]	0.3[<B]	0.4[<B]	0.3[<B]	0.3[<B]
Arsenic	µg/g	15	15	0.1		13.6[<A]	3.3[<A]	5.2[<A]	4.2[<A]	4.2[<A]
Barium	µg/g	400	400	0.5		22.4[<A]	60.6[<A]	54.5[<A]	111[<A]	74.8[<A]
Beryllium	µg/g	8	4	0.1		0.3[<B]	0.2[<B]	0.3[<B]	0.3[<B]	0.3[<B]
Cadmium	µg/g			0.01		0.27	0.16	0.24	0.23	0.14
Chromium	µg/g	60	60	1		62[>B]	88[>B]	28[<A]	25[<A]	37[<A]
Cobalt	µg/g	300	50	0.1		31.7[<B]	27.8[<B]	12.8[<B]	11.1[<B]	8.0[<B]
Copper	µg/g			0.2		92.7	83.4	46.4	29.2	23.6
Lead	µg/g			0.1		8.1	4.7	13.4	41.5	6.7
Mercury	µg/g			0.01		0.01	0.03	0.03	0.05	0.03
Molybdenum	µg/g	40	10	0.2		1.5[<B]	1.6[<B]	1.1[<B]	0.8[<B]	0.9[<B]
Nickel	µg/g	500	100	0.5		58.2[<B]	51.6[<B]	28.0[<B]	23.2[<B]	18.0[<B]
Selenium	µg/g	10	3	0.1		0.2[<B]	0.2[<B]	0.2[<B]	0.4[<B]	0.1[<B]
Silver	µg/g	40	20	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Thallium	µg/g			0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Tin	µg/g	300	50	0.2		0.4[<B]	0.5[<B]	1.0[<B]	3.1[<B]	0.6[<B]
Uranium	µg/g	200	16	0.2		0.2[<B]	0.3[<B]	0.6[<B]	0.6[<B]	0.5[<B]
Vanadium	µg/g		200	1		89[<B]	132[<B]	80[<B]	67[<B]	77[<B]
Zinc	µg/g			1		94	68	62	75	31

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to BC CSR (CL-G) (Van), B Refers to BC CSR (RL-G) (Van)

7608311-7608319 Results are based on the dry weight of the sample

Certified By: Angela Bond

AGAT Laboratories

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Burnaby, British Columbia
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FAX (778)452-4074
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16V101896

PROJECT: 1106

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

Active Earth LEPH / HEPH Soil

DATE RECEIVED: 2016-06-03

DATE REPORTED: 2016-06-08

					SAMPLE DESCRIPTION:	AE16-TP-1-1	AE16-TP-1-2	AE16-TP-2-1	AE16-TP-2-2	AE16-TP-3-2	AE16-TP-4-2	AE16-TP-4-3
					SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					DATE SAMPLED:	6/2/2016	6/2/2016	6/2/2016	6/2/2016	6/2/2016	6/2/2016	6/2/2016
Parameter	**Unit**	**G / S: A**	**G / S: B**	**RDL**		**7608311**	**7608312**	**7608313**	**7608314**	**7608316**	**7608318**	**7608319**
Acenaphthene	µg/g			0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Acenaphthylene	µg/g			0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Anthracene	µg/g			0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Benzo(a)anthracene	µg/g	10	1	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Benzo(a)pyrene	µg/g			0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	10	1	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Benzo(g,h,i)perylene	µg/g			0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	10	1	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chrysene	µg/g			0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/g	10	1	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluoranthene	µg/g			0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g			0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Indeno(1,2,3-c,d)pyrene	µg/g	10	1	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methylnaphthalene	µg/g			0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Naphthalene	µg/g			0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenanthrene	µg/g	50	5	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Pyrene	µg/g	100	10	0.02		0.24[<B]	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
EPH C10-C19	µg/g			20		584	<20	<20	<20	<20	<20	<20
EPH C19-C32	µg/g			20		401	<20	87	812	<20	36	<20
LEPH C10-C19	µg/g	2000	1000	20		584[<B]	<20	<20	<20	<20	<20	<20
HEPH C19-C32	µg/g	5000	1000	20		401[<B]	<20	87[<B]	812[<B]	<20	36[<B]	<20
Surrogate	**Unit**	**Acceptable Limits**										
Naphthalene - d8	%	50-130				74	72	69	72	79	71	77
2-Fluorobiphenyl	%	50-130				71	79	76	78	87	78	84
P-Terphenyl - d14	%	60-130				75	78	76	92	90	83	86

Certified By: Angela Bond

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 16V101896

PROJECT: 1106

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

Active Earth LEPH / HEPH Soil

DATE RECEIVED: 2016-06-03

DATE REPORTED: 2016-06-08

					SAMPLE DESCRIPTION:	AE16-TP-5-1	AE16-TP-5-2
					SAMPLE TYPE:	Soil	Soil
					DATE SAMPLED:	6/2/2016	6/2/2016
Parameter	**Unit**	**G / S: A**	**G / S: B**	**RDL**		**7608320**	**7608321**
Acenaphthene	µg/g			0.01		<0.01	<0.01
Acenaphthylene	µg/g			0.01		<0.01	<0.01
Anthracene	µg/g			0.02		<0.02	<0.02
Benzo(a)anthracene	µg/g	10	1	0.02		<0.02	<0.02
Benzo(a)pyrene	µg/g			0.05		<0.05	<0.05
Benzo(b)fluoranthene	µg/g	10	1	0.02		<0.02	<0.02
Benzo(g,h,i)perylene	µg/g			0.05		<0.05	<0.05
Benzo(k)fluoranthene	µg/g	10	1	0.02		<0.02	<0.02
Chrysene	µg/g			0.05		<0.05	<0.05
Dibenzo(a,h)anthracene	µg/g	10	1	0.02		<0.02	<0.02
Fluoranthene	µg/g			0.05		<0.05	<0.05
Fluorene	µg/g			0.02		<0.02	<0.02
Indeno(1,2,3-c,d)pyrene	µg/g	10	1	0.02		<0.02	<0.02
2-Methylnaphthalene	µg/g			0.01		<0.01	<0.01
Naphthalene	µg/g			0.01		<0.01	<0.01
Phenanthrene	µg/g	50	5	0.02		<0.02	<0.02
Pyrene	µg/g	100	10	0.02		0.02[<B]	<0.02
EPH C10-C19	µg/g			20		<20	<20
EPH C19-C32	µg/g			20		132	<20
LEPH C10-C19	µg/g	2000	1000	20		<20	<20
HEPH C19-C32	µg/g	5000	1000	20		132[<B]	<20
Surrogate	**Unit**		**Acceptable Limits**				
Naphthalene - d8	%		50-130			68	79
2-Fluorobiphenyl	%		50-130			75	85
P-Terphenyl - d14	%		60-130			77	86

Certified By: Angela Bond

AGAT Laboratories

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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16V101896

PROJECT: 1106

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

Active Earth LEPH / HEPH Soil

DATE RECEIVED: 2016-06-03

DATE REPORTED: 2016-06-08

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to BC CSR (CL-G) (Van), B Refers to BC CSR (RL-G) (Van)

7608311	Results are based on dry weight of sample. LEPH & HEPH results have been corrected for PAH contributions. Soil sample is visibly heterogeneous.
7608312	Results are based on dry weight of sample. LEPH & HEPH results have been corrected for PAH contributions.
7608313-7608316	Results are based on dry weight of sample. LEPH & HEPH results have been corrected for PAH contributions. Soil sample is visibly heterogeneous.
7608318	Results are based on dry weight of sample. LEPH & HEPH results have been corrected for PAH contributions.
7608319	Results are based on dry weight of sample. LEPH & HEPH results have been corrected for PAH contributions. Soil sample is visibly heterogeneous.
7608320	Results are based on dry weight of sample. LEPH & HEPH results have been corrected for PAH contributions.
7608321	Results are based on dry weight of sample. LEPH & HEPH results have been corrected for PAH contributions. Soil sample is visibly heterogeneous.

Certified By: Angela Bond

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 16V101896

PROJECT: 1106

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

Active Earth Volatile Organic Compounds in Soil

DATE RECEIVED: 2016-06-03

DATE REPORTED: 2016-06-08

					SAMPLE DESCRIPTION:	AE16-TP-1-1	AE16-TP-2-2	AE16-TP-3-2	AE16-TP-4-3	AE16-TP-5-1
					SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil
					DATE SAMPLED:	6/2/2016	6/2/2016	6/2/2016	6/2/2016	6/2/2016
Parameter	Unit	G / S: A	G / S: B	RDL		7608311	7608314	7608316	7608319	7608320
Bromodichloromethane	µg/g	18	8.2	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Bromoform	µg/g	2200	620	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	µg/g	50	5	0.02		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	µg/g	10	1	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	µg/g	26	11	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Chloroethane	µg/g	65	30	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Chloroform	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Chloromethane	µg/g	160	47	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	µg/g	10	1	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	µg/g	10	1	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	µg/g	10	1	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethene	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethene	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethene	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Dichloromethane	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropene	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropene	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	µg/g	73	32	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	µg/g	9.3	4.1	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Tetrachloroethene	µg/g			0.05		<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Trichloroethene	µg/g	0.015	0.015	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Trichlorofluoromethane	µg/g	2000	390	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	µg/g	7.5	0.79	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Bromomethane	µg/g	13	3.9	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Acetone	µg/g	54000	14000	0.5		<0.5	<0.5	<0.5	<0.5	<0.5

Certified By: Angela Bond

AGAT Laboratories

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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16V101896

PROJECT: 1106

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

Active Earth Volatile Organic Compounds in Soil

DATE RECEIVED: 2016-06-03

DATE REPORTED: 2016-06-08

					SAMPLE DESCRIPTION:	AE16-TP-1-1	AE16-TP-2-2	AE16-TP-3-2	AE16-TP-4-3	AE16-TP-5-1
					SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil
					DATE SAMPLED:	6/2/2016	6/2/2016	6/2/2016	6/2/2016	6/2/2016
Parameter	**Unit**	**G / S: A**	**G / S: B**	**RDL**		**7608311**	**7608314**	**7608316**	**7608319**	**7608320**
Methyl tert-butyl ether (MTBE)	µg/g	700	320	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
2-Butanone (MEK)	µg/g	110000	22000	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	µg/g			0.02		<0.02	<0.02	<0.02	<0.02	<0.02
4-Methyl-2-pentanone (MIBK)	µg/g	47000	5300	0.5		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/g	2.5	2.5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	µg/g	0.73	0.32	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	7	7	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
m&p-Xylene	µg/g	20	20	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Styrene	µg/g	50	5	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g	20	20	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
1,2,4-Trichlorobenzene	µg/g	10	2	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
VH	µg/g			10		<10	<10	<10	<10	<10
VPH	µg/g	200	200	10		<10	<10	<10	<10	<10
Total Xylenes	µg/g			0.2		<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate	**Unit**		**Acceptable Limits**							
Bromofluorobenzene	%		60-140			101	108	99	104	102
Dibromofluoromethane	%		60-140			118	117	126	127	123
Toluene - d8	%		60-140			116	117	112	121	119

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to BC CSR (CL-G) (Van), B Refers to BC CSR (RL-G) (Van)

7608311-7608320 Results are based on dry weight of sample.

Certified By: Angela Bond

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 16V101896

PROJECT: 1106

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

Glycols Analysis in Soil

DATE RECEIVED: 2016-06-03

DATE REPORTED: 2016-06-09

		SAMPLE DESCRIPTION:		AE16-TP-4-3	AE16-TP-5-2
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		6/2/2016	6/2/2016
Parameter	**Unit**	**G / S**	**RDL**	**7608319**	**7608321**
Propylene Glycol	mg/kg		10	<10	<10
Monoethylene Glycol	mg/kg		10	<10	<10
Diethylene Glycol	mg/kg		10	<10	<10
Triethylene Glycol	mg/kg		10	<10	<10
Tetraethylene Glycol	mg/kg		10	<10	<10
Surrogate	**Unit**	**Acceptable Limits**			
Heptanol	%	50-150		104	114

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (CL-G) (Van)

7608319-7608321 Analysis by GC/FID.
Results are based on the dry weight of the sample.

Analysis performed at AGAT Calgary

Certified By: Angela Bond

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V101896

PROJECT: 1106

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Active Earth British Columbia Metals Schedule 4 and 5															
pH 1:2	7608319		5.97	5.95	0.3%	< 0.1	99%	90%	110%	100%	95%	105%			
Antimony	7612956		0.2	0.2	NA	< 0.1	110%	70%	130%	102%	90%	110%			
Arsenic	7612956		2.3	2.2	4.0%	< 0.1	117%	70%	130%	95%	90%	110%			
Barium	7612956		61.8	59.9	3.1%	< 0.5	101%	70%	130%	105%	90%	110%			
Beryllium	7612956		0.1	0.1	NA	< 0.1	92%	70%	130%	94%	90%	110%			
Cadmium	7612956		0.23	0.24	2.4%	< 0.01	122%	70%	130%	98%	90%	110%			
Chromium	7612956		18	18	1.5%	< 1	106%	70%	130%	102%	90%	110%			
Cobalt	7612956		6.0	6.1	1.8%	< 0.1	106%	70%	130%	96%	90%	110%			
Copper	7612956		13.8	13.9	1.0%	< 0.2	99%	70%	130%	103%	90%	110%			
Lead	7612956		2.1	2.1	0.1%	< 0.1	98%	70%	130%	103%	90%	110%			
Mercury	7612956		0.02	0.01	NA	< 0.01	98%	70%	130%	108%	90%	110%			
Molybdenum	7612956		0.3	0.3	NA	< 0.2	104%	70%	130%	98%	90%	110%			
Nickel	7612956		17.5	17.7	1.4%	< 0.5	108%	70%	130%	99%	90%	110%			
Selenium	7612956		0.1	0.2	NA	< 0.1				99%	90%	110%			
Silver	7612956		<0.5	<0.5	NA	< 0.5	77%	70%	130%	90%	90%	110%			
Thallium	7612956		<0.1	<0.1	NA	< 0.1	101%	70%	130%	101%	90%	110%			
Tin	7612956		0.3	0.2	NA	< 0.2	103%	70%	130%	101%	90%	110%			
Uranium	7612956		0.4	0.4	NA	< 0.2	106%	70%	130%	104%	90%	110%			
Vanadium	7612956		37	36	4.3%	< 1	108%	70%	130%	98%	90%	110%			
Zinc	7612956		30	30	0.8%	< 1	103%	70%	130%	104%	90%	110%			

Comments: RPDs are calculated using raw analytical data and not the rounded duplicate values reported.

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V101896

PROJECT: 1106

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Active Earth LEPH / HEPH Soil															
Acenaphthene	65778	7608316	<0.01	<0.01	NA	< 0.01	100%	80%	120%				101%	50%	130%
Acenaphthylene	65778	7608316	<0.01	<0.01	NA	< 0.01	101%	80%	120%				95%	50%	130%
Anthracene	65778	7608316	<0.02	<0.02	NA	< 0.02	100%	80%	120%				94%	60%	130%
Benzo(a)anthracene	65778	7608316	<0.02	<0.02	NA	< 0.02	101%	80%	120%				94%	60%	130%
Benzo(a)pyrene	65778	7608316	<0.05	<0.05	NA	< 0.05	101%	80%	120%				88%	60%	130%
Benzo(b)fluoranthene	65778	7608316	<0.02	<0.02	NA	< 0.02	102%	80%	120%				83%	60%	130%
Benzo(g,h,i)perylene	65778	7608316	<0.05	<0.05	NA	< 0.05	101%	80%	120%				95%	60%	130%
Benzo(k)fluoranthene	65778	7608316	<0.02	<0.02	NA	< 0.02	101%	80%	120%				93%	60%	130%
Chrysene	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				100%	60%	130%
Dibenzo(a,h)anthracene	65778	7608316	<0.02	<0.02	NA	< 0.02	101%	80%	130%				86%	60%	130%
Fluoranthene	65778	7608316	<0.05	<0.05	NA	< 0.05	99%	80%	120%				92%	60%	130%
Fluorene	65778	7608316	<0.02	<0.02	NA	< 0.02	100%	80%	120%				97%	50%	130%
Indeno(1,2,3-c,d)pyrene	65778	7608316	<0.02	<0.02	NA	< 0.02	100%	80%	120%				88%	60%	130%
2-Methylnaphthalene	65778	7608316	<0.01	<0.01	NA	< 0.01	100%	80%	120%				95%	50%	130%
Naphthalene	65778	7608316	<0.01	<0.01	NA	< 0.01	101%	80%	120%				99%	50%	130%
Phenanthrene	65778	7608316	<0.02	<0.02	NA	< 0.02	99%	80%	120%				91%	60%	130%
Pyrene	65778	7608316	<0.02	<0.02	NA	< 0.02	101%	80%	120%				94%	60%	130%
Naphthalene - d8	65778	7608316	79	78	1.3%		100%	80%	120%				88%	50%	130%
2-Fluorobiphenyl	65778	7608316	87	86	1.2%		99%	80%	120%				94%	50%	130%
P-Terphenyl - d14	65778	7608316	90	86	4.5%		99%	80%	120%				91%	60%	130%
EPH C10-C19	65778	7608316	<20	<20	NA	< 20	104%	70%	130%				96%	65%	120%
EPH C19-C32	65778	7608316	<20	<20	NA	< 20	107%	70%	130%				96%	80%	120%
Active Earth Volatile Organic Compounds in Soil															
Bromodichloromethane	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				100%	70%	130%
Bromoform	65778	7608316	<0.05	<0.05	NA	< 0.05	101%	80%	120%				95%	70%	130%
Carbon Tetrachloride	65778	7608316	<0.02	<0.02	NA	< 0.02	100%	80%	120%				94%	70%	130%
Chlorobenzene	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				97%	70%	130%
Dibromochloromethane	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				101%	70%	130%
Chloroethane	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				103%	60%	140%
Chloroform	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				101%	70%	130%
Chloromethane	65778	7608316	<0.05	<0.05	NA	< 0.05	98%	80%	120%				110%	60%	140%
1,2-Dichlorobenzene	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				95%	70%	130%
1,3-Dichlorobenzene	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				95%	70%	130%
1,4-Dichlorobenzene	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				97%	70%	130%
1,1-Dichloroethane	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				102%	70%	130%
1,2-Dichloroethane	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				101%	70%	130%
1,1-Dichloroethene	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				103%	70%	130%

Comments: RPDs are calculated using raw analytical data and not the rounded duplicate values reported.

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V101896

PROJECT: 1106

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
cis-1,2-Dichloroethene	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				100%	70%	130%
trans-1,2-Dichloroethene	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				102%	70%	130%
Dichloromethane	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				105%	70%	130%
1,2-Dichloropropane	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				100%	70%	130%
cis-1,3-Dichloropropene	65778	7608316	<0.05	<0.05	NA	< 0.05	101%	80%	120%				96%	60%	140%
trans-1,3-Dichloropropene	65778	7608316	<0.05	<0.05	NA	< 0.05	101%	80%	120%				95%	60%	140%
1,1,1,2-Tetrachloroethane	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				97%	70%	130%
1,1,2,2-Tetrachloroethane	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				98%	70%	130%
Tetrachloroethene	65778	7608316	<0.05	<0.05	NA	< 0.05	102%	80%	120%				93%	70%	130%
1,1,1-Trichloroethane	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				97%	70%	130%
1,1,2-Trichloroethane	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				101%	70%	130%
Trichloroethene	65778	7608316	<0.01	<0.01	NA	< 0.01	100%	80%	120%				98%	70%	130%
Trichlorofluoromethane	65778	7608316	<0.05	<0.05	NA	< 0.05	99%	80%	120%				104%	70%	130%
Vinyl Chloride	65778	7608316	<0.05	<0.05	NA	< 0.05	99%	80%	120%				113%	60%	140%
Bromomethane	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				115%	60%	140%
Acetone	65778	7608316	<0.5	<0.5	NA	< 0.5	100%	80%	120%				107%	70%	130%
Methyl tert-butyl ether (MTBE)	65778	7608316	<0.1	<0.1	NA	< 0.1	100%	80%	120%				103%	70%	130%
2-Butanone (MEK)	65778	7608316	<0.5	<0.5	NA	< 0.5	100%	80%	120%				99%	70%	130%
Benzene	65778	7608316	<0.02	<0.02	NA	< 0.02	100%	80%	120%				101%	70%	130%
4-Methyl-2-pentanone (MIBK)	65778	7608316	<0.5	<0.5	NA	< 0.5	101%	80%	120%				96%	70%	130%
Toluene	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				99%	70%	130%
Ethylene Dibromide	65778	7608316	<0.05	<0.05	NA	< 0.05	100%	80%	120%				101%	70%	130%
Ethylbenzene	65778	7608316	<0.05	<0.05	NA	< 0.05	101%	80%	120%				93%	70%	130%
m&p-Xylene	65778	7608316	<0.05	<0.05	NA	< 0.05	101%	80%	120%				95%	70%	130%
Styrene	65778	7608316	<0.05	<0.05	NA	< 0.05	101%	80%	120%				95%	70%	130%
o-Xylene	65778	7608316	<0.05	<0.05	NA	< 0.05	101%	80%	120%				96%	70%	130%
1,2,4-Trichlorobenzene	65778	7608316	<0.05	<0.05	NA	< 0.05	101%	80%	120%				93%	70%	130%
Bromofluorobenzene	65778	7608316	99	95	4.1%		102%	60%	140%				115%	60%	140%
Dibromofluoromethane	65778	7608316	126	121	4.0%		100%	60%	140%				110%	60%	140%
Toluene - d8	65778	7608316	112	108	3.6%		93%	60%	140%				114%	60%	140%
VH	65778	7608316	<10	<10	NA	< 10									
VPH	65778	7608316	<10	<10	NA	< 10									

Comments: RPDs are calculated using raw analytical data and not the rounded duplicate values reported.

Glycols Analysis in Soil

Propylene Glycol	82	7608321	<10	<10	NA	< 10	104%	70%	130%	108%	70%	130%	119%	60%	140%
Monoethylene Glycol	82	7608321	<10	<10	NA	< 10	104%	70%	130%	109%	70%	130%	120%	60%	140%
Diethylene Glycol	82	7608321	<10	<10	NA	< 10	98%	70%	130%	101%	70%	130%	111%	60%	140%
Triethylene Glycol	82	7608321	<10	<10	NA	< 10	102%	70%	130%	104%	70%	130%	114%	60%	140%

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V101896

PROJECT: 1106

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Tetraethylene Glycol	82	7608321	<10	<10	NA	< 10	94%	70%	130%	93%	70%	130%	101%	60%	140%

Comments: If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.

Certified By: Angela Bond

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Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V101896

PROJECT: 1106

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
pH 1:2	INOR-181-6031	BC MOE Lab Manual B (pH, Electrometric, Soil)	PH METER
Antimony	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Arsenic	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Barium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Beryllium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Cadmium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Chromium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Cobalt	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Copper	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Lead	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Mercury	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Molybdenum	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Nickel	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Selenium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Silver	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Thallium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Tin	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Uranium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Vanadium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Zinc	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS

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Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V101896

PROJECT: 1106

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Acenaphthene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Acenaphthylene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Anthracene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(a)anthracene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(a)pyrene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(b)fluoranthene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(g,h,i)perylene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(k)fluoranthene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Chrysene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Fluoranthene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Fluorene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Indeno(1,2,3-c,d)pyrene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
2-Methylnaphthalene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Naphthalene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Phenanthrene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Pyrene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Naphthalene - d8	ORG-180-5102	modified from BC MOE Lab Manual Section D (PAH)	GC/MS
2-Fluorobiphenyl	ORG-180-5102	modified from BC MOE Lab Manual Section D (PAH)	GC/MS
P-Terphenyl - d14	ORG-180-5102	modified from BC MOE Lab Manual Section D (PAH)	GC/MS
EPH C10-C19	ORG-180-5101	Modified from BCMOE Lab Manual Section D (EPH)	GC/FID
EPH C19-C32	ORG-180-5101	Modified from BCMOE Lab Manual Section D (EPH)	GC/FID
LEPH C10-C19	ORG-180-5101	Modified from BCMOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5101	Modified from BCMOE Lab Manual Section D (EPH)	GC/FID
Bromodichloromethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromoform	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Carbon Tetrachloride	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V101896

PROJECT: 1106

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Chlorobenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromochloromethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroform	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloromethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichlorobenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,3-Dichlorobenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,4-Dichlorobenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,2-Dichloroethene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,2-Dichloroethene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dichloromethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloropropane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,3-Dichloropropene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,3-Dichloropropene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1,2-Tetrachloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2,2-Tetrachloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Tetrachloroethene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1-Trichloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2-Trichloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichloroethene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichlorofluoromethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Vinyl Chloride	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromomethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Acetone	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V101896

PROJECT: 1106

ATTENTION TO: MATT PYE

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
2-Butanone (MEK)	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Benzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
4-Methyl-2-pentanone (MIBK)	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylene Dibromide	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylbenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
m&p-Xylene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Styrene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
o-Xylene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2,4-Trichlorobenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromofluorobenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromofluoromethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene - d8	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
VH	ORG-180-5103	Modified from BC MOE Lab Manual Sec D (VOC)	GC/MS/FID
VPH	ORG-180-5103	Modified from BC MOE Lab Manual Sec D (VOC)	GC/MS/FID
Propylene Glycol	TO-1410	EPA SW-846 8015	GC/FID
Monoethylene Glycol	TO-1410	EPA SW-846 8015	GC/FID
Diethylene Glycol	TO-1410	EPA SW-846 8015	GC/FID
Triethylene Glycol	TO-1410	EPA SW-846 8015	GC/FID
Tetraethylene Glycol	TO-1410	EPA SW-846 8015	GC/FID
Heptanol	TO-1410	EPA SW-846 8015	GC/FID

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Chromatogram Image

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V101896

PROJECT: 1106

ATTENTION TO: MATT PYE

IMAGE001: 7608311, AE16-TP-1-1

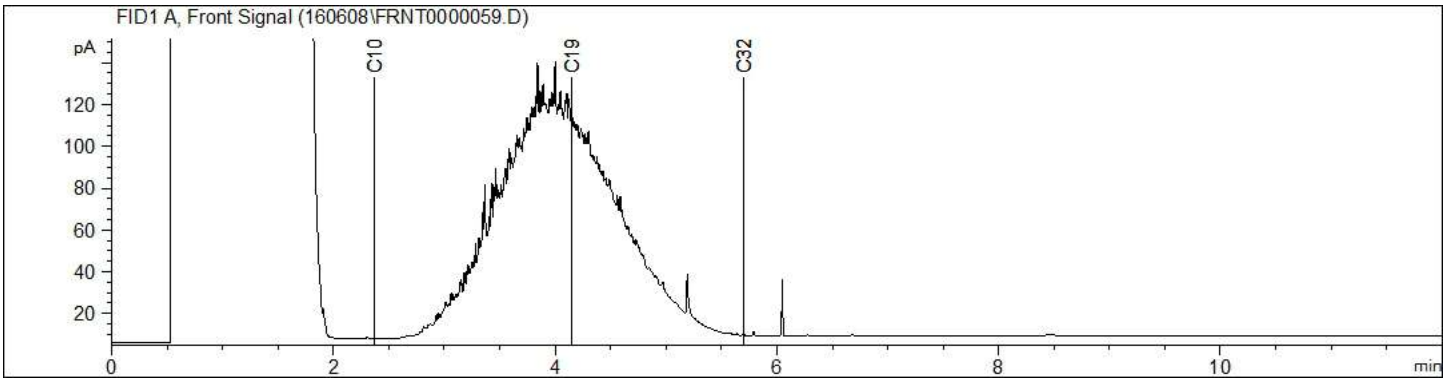


IMAGE002: 7608312, AE16-TP-1-2

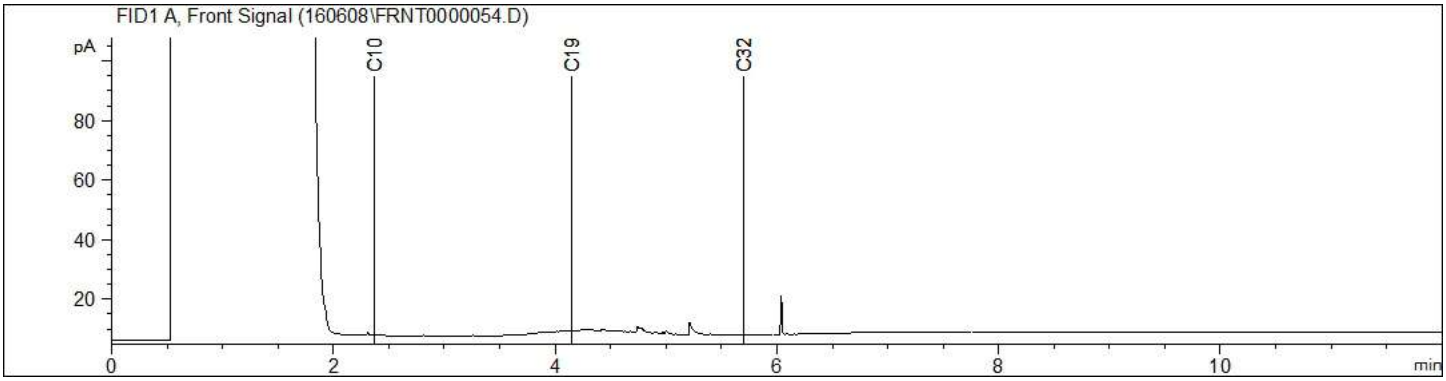
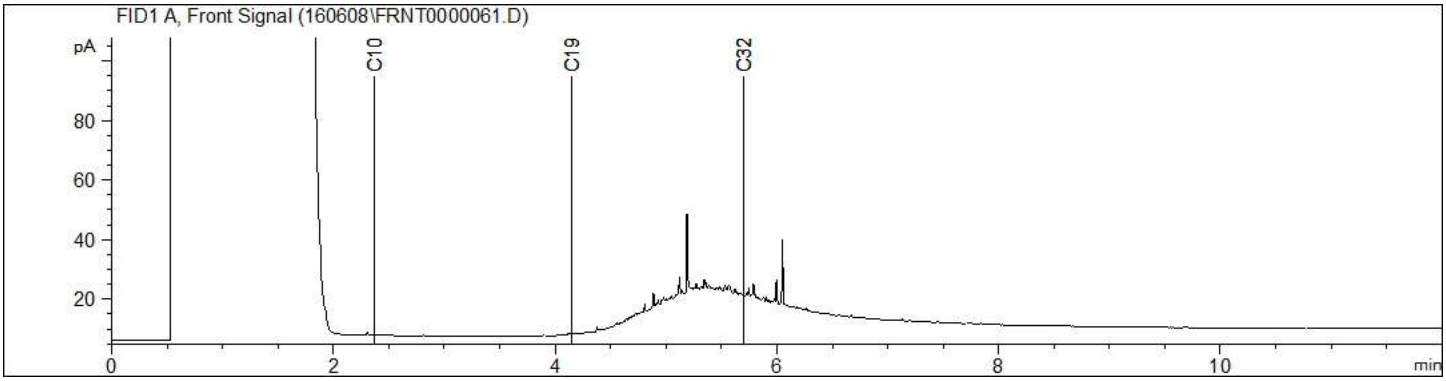


IMAGE003: 7608313, AE16-TP-2-1



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Chromatogram Image

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V101896

PROJECT: 1106

ATTENTION TO: MATT PYE

IMAGE004: 7608314, AE16-TP-2-2

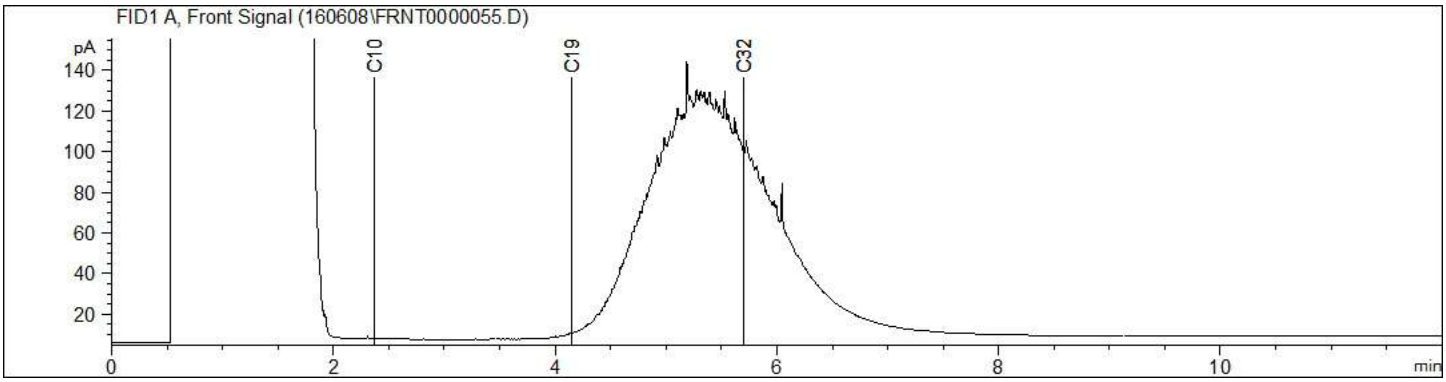


IMAGE005: 7608316, AE16-TP-3-2

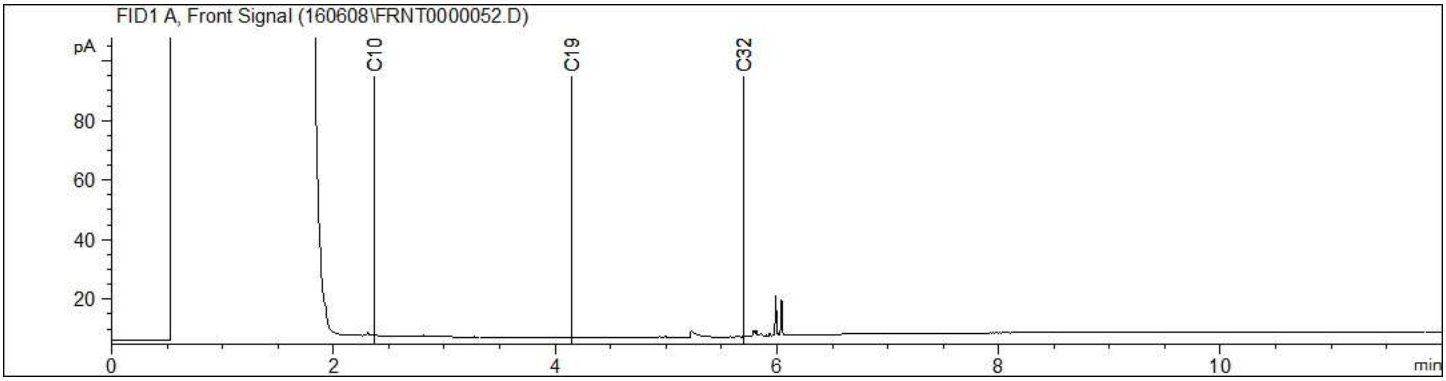
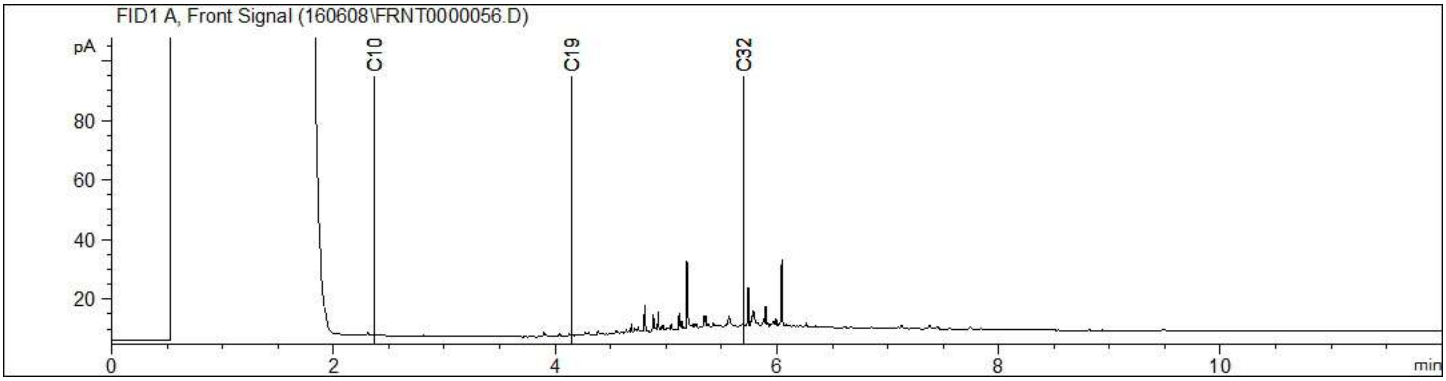


IMAGE006: 7608318, AE16-TP-4-2



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Chromatogram Image

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V101896

PROJECT: 1106

ATTENTION TO: MATT PYE

IMAGE007: 7608319, AE16-TP-4-3

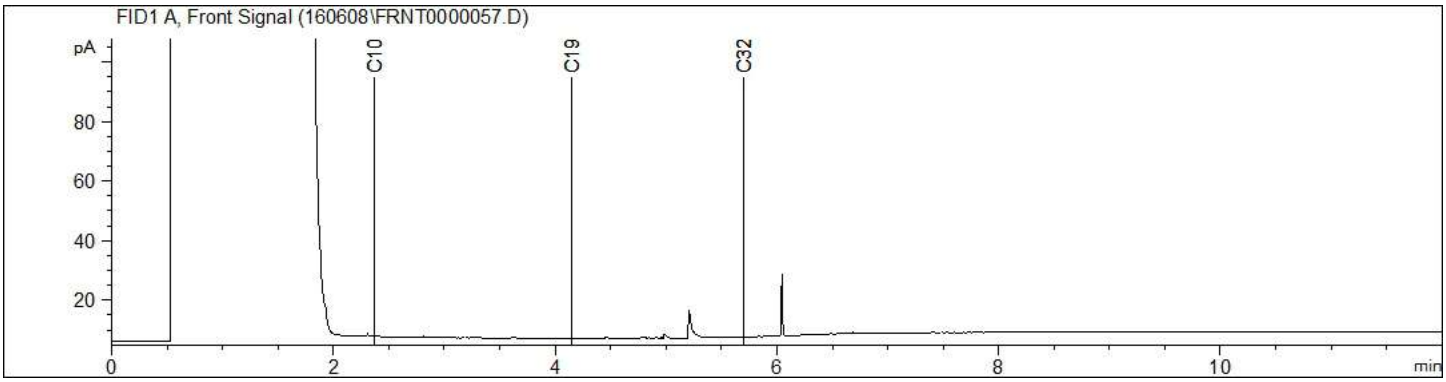


IMAGE008: 7608320, AE16-TP-5-1

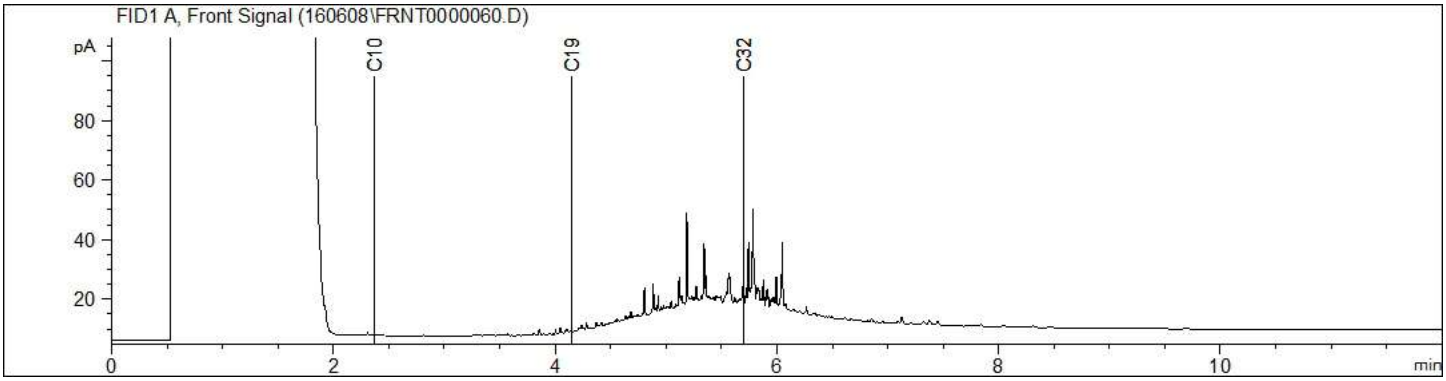
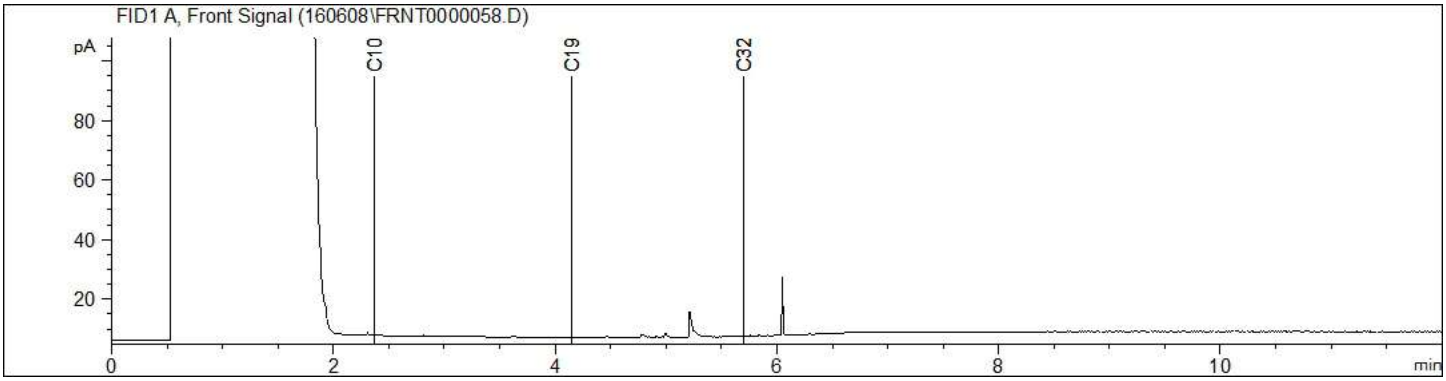


IMAGE009: 7608321, AE16-TP-5-2



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Phone: 778.45234000 • Fax: 778.452.4074 • Toll Free: 1.800.856.6261

Laboratory Use Only
Arrival Condition: Good ☑ Poor (complete notes) ☐
Arrival Temperature: 13°C
AGAT Job Number: 16V101896
Notes:

Report Information
Company: Active Earth Engineering Ltd.
Contact: Matt Pye
Address: 160-2250 Boundary Road
Burnaby BC V5M 3Z3
Phone: 778-866-0064 Fax:
LSD:
Client Project #: 1106
AGAT Quotation #:

Invoice to
Same as above ☐ yes ☑ No
Company: Active Earth Engineering Ltd.
Address: 4510 Saddlehorne Crescent
Langley BC V2Z 1J6
Phone: 604-856-7598 Fax:
PO #:
Client Project #: 1126
AGAT Quotation #:

Report Information
1 Name: David Mitchell
Email: matt.pye@activeearth.ca
2 Name: Glen Manns
Email: Glen.Manns@activeearth.ca

Requirements *(Check one)*
☑ BC CSR Soil ☐ BC CSR Water
☐ AL ☐ DW
☐ IL ☐ AW
☐ PL ☐ IW
☑ CL ☐ LW
☑ RL

Schedule 11
CCME
Other

Turnaround Time Required (TAT)*
Regular TAT: 5 to 7 working days ☐
Rush TAT: Day 2 - 100% ☐
Day 3 - 50% ☐
SUBMISSION CUT OFF FOR EFFECTIVE DATE BY 3 PM Day 4 - 25% ☐
Date Required by (Rush surcharges may apply):

Laboratory Use (Lab ID #)	Sample Identification	Sample Matrix	Date/Time Sampled	Comments	LEPH/HEPH/PAH	BTEX/VPH/VOC	Metals (with pH)	TCLP Metals	Glycols	PCB	Sodium Saturated Paste	Chloride Saturated Paste	MOG/TOG	BTEX/VPH	TSS	Total Metals	Chromium VI				Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for ___ 60 days
1608311	AE16-TP-1-1	SOIL	2016-06-02		X	X	X														4			X
312	AE16-TP-1-2	SOIL	2016-06-02		X																			X
313	AE16-TP-2-1	SOIL	2016-06-02		X		X																	X
314	AE16-TP-2-2	SOIL	2016-06-02		X	X																		X
315	AE16-TP-3-1	SOIL	2016-06-02		X		X																	X
316	AE16-TP-3-2	SOIL	2016-06-02		X	X																		X
317	AE16-TP-4-1	SOIL	2016-06-02				X																	X
318	AE16-TP-4-2	SOIL	2016-06-02		X																			X
319	AE16-TP-4-3	SOIL	2016-06-02		X	X	X		X															X
320	AE16-TP-5-1	SOIL	2016-06-02		X	X																		X
321	AE16-TP-5-2	SOIL	2016-06-02		X				X															X

Samples Relinquished By (Print and Sign):	Matt Pye	Date/Time:	02-Jun-16	Samples Relinquished by		Date/Time	
Samples Relinquished By (Print and Sign):		Date/Time		Samples Relinquished by		Date/Time	
Samples Relinquished By (Print and Sign):		Date/Time		Samples Relinquished by		Date/Time	

Page 1 of 1
N °

Matthew Wong Jun 3, 16.

V104152

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 16V101896

RECEIVING BASICS:

Received From: Maxxmum Express Waybill #: _____

SAMPLE QUANTITIES:

Coolers: 1 Containers: 43

TIME SENSITIVE ISSUES:

Earliest Date Sampled: 02-JUN-16 ALREADY EXCEEDED? Yes (No)

NON-CONFORMANCES:

3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's) ***use jars when available**

(1) 12 + 13 + 13 = 13 °C (2) ___ + ___ + ___ = ___ °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C

Was ice or ice pack present: (Yes) No

Integrity Issues:

Account Project Manager: _____ have they been notified of the above issues: Yes No

Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM

RECEIVING BASICS - Shipping

Company/Consultant: ACTIVE EARTH

Courier: _____ Prepaid Collect

Waybill#_____

Branch: EDM GP FN FM RD VAN LYD FSJ EST Other:_____

If multiple sites were submitted at once: Yes No

Custody Seal Intact: Yes No NA

TAT: <24hr 24-48hr 48-72hr Reg Other_____

Cooler Quantity: _____

TIME SENSITIVE ISSUES - Shipping

ALREADY EXCEEDED HOLD TIME? Yes (No)

Inorganic Tests (Please Circle): Mibi , BOD , Nitrate/Nitrite , Turbidity , Microtox , Ortho PO4 , Tedlar Bag , Residual Chlorine , Chlorophyll* , Chloroamines*

Earliest Expiry:_____

Hydrocarbons: Earliest Expiry _____

SAMPLE INTEGRITY - Shipping

Hazardous Samples: YES (NO) Precaution Taken:_____

Legal Samples: Yes (No)

International Samples: Yes (NO)

Tape Sealed: Yes (NO)

Coolant Used: Icepack Bagged Ice Free Ice Free Water None

Temperature (Bottles/Jars only) N/A if only Soil Bags Received

FROZEN (Please Circle if samples received Frozen)

1 (Bottle/Jar) 2.1 + 2.1 + 2.1 = 2.1 °C

2(Bottle/Jar)___+___+___=____ °C

3 (Bottle/Jar)___+___+___=____ °C

4 (Bottle/Jar)___+___+___=____ °C

5 (Bottle/Jar)___+___+___=____ °C

6 (Bottle/Jar)___+___+___=____ °C

7 (Bottle/Jar)___+___+___=____ °C

8 (Bottle/Jar)___+___+___=____ °C

9 (Bottle/Jar)___+___+___=____ °C

10 (Bottle/Jar)___+___+___=____ °C

(If more than 10 coolers are received use another sheet of paper and attach)

LOGISTICS USE ONLY

Workorder No: 16V101896

Samples Damaged: Yes No If YES why?

No Bubble Wrap Frozen Courier

Other: _____

Account Project Manager: _____have they been notified of the above issues: Yes No

Whom spoken to: _____ Date/Time: _____

CPM Initial_____

General Comments: _____

* Subcontracted Analysis (See CPM)

Date issued: October 05, 2015
Document ID: SR-9505.003

AGAT Laboratories

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http://www.agatlabs.com

CLIENT NAME: ACTIVE EARTH ENGINEERING
4510 SADDLE HORN CRESCENT
LANGLEY, BC V2Z1J6
(778) 888-0473

ATTENTION TO: Steve Boyce

PROJECT: 1126

AGAT WORK ORDER: 16V134774

TRACE ORGANICS REVIEWED BY: Andrew Garrard, B.Sc., General Manager

WATER ANALYSIS REVIEWED BY: Andrew Garrard, B.Sc., General Manager

DATE REPORTED: Sep 09, 2016

PAGES (INCLUDING COVER): 17

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES
VERSION 1: Sample receipt temperature 6°C.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 16V134774

PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

Active Earth LEPH / HEPH Water

DATE RECEIVED: 2016-09-06

DATE REPORTED: 2016-09-07

			SAMPLE DESCRIPTION:		MW1	MW3
			SAMPLE TYPE:		Water	Water
			DATE SAMPLED:		9/2/2016	9/2/2016
Parameter	Unit	G / S: A	G / S: B	RDL	7827336	7827350
Acenaphthene	µg/L	60		0.05	<0.05	<0.05
Acenaphthylene	µg/L			0.05	<0.05	<0.05
Acridine	µg/L	0.5		0.05	<0.05	<0.05
Anthracene	µg/L	1		0.05	<0.05	<0.05
Benzo(a)anthracene	µg/L	1		0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	0.01	<0.01	<0.01
Benzo(b)fluoranthene	µg/L			0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L			0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/L			0.05	<0.05	<0.05
Chrysene	µg/L	1		0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/L			0.05	<0.05	<0.05
Fluoranthene	µg/L	2		0.05	<0.05	<0.05
Fluorene	µg/L	120		0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	µg/L			0.05	<0.05	<0.05
Naphthalene	µg/L	10		0.05	0.23[<A]	<0.05
Phenanthrene	µg/L	3		0.05	<0.05	<0.05
Pyrene	µg/L	0.2		0.02	<0.02	0.07[<A]
Quinoline	µg/L	34		0.1	<0.1	<0.1
EPH C10-C19	µg/L	5000	5000	100	<100	830[<A]
EPH C19-C32	µg/L			100	<100	980
LEPH C10-C19	µg/L	500		100	<100	830[>A]
HEPH C19-C32	µg/L			100	<100	980
Surrogate	Unit		Acceptable Limits			
Naphthalene - d8	%		50-130		90	84
2-Fluorobiphenyl	%		50-130		90	96
P-Terphenyl - d14	%		60-130		99	100

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to BCCSR(AW-F)ug/L(Van), B Refers to BCCSR(DW)ug/L(Van)

7827336-7827350 LEPH & HEPH results have been corrected for PAH contributions.

Certified By:

AGAT Laboratories

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FAX (778)452-4074
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16V134774

PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

Active Earth Volatile Organic Compounds in Water

DATE RECEIVED: 2016-09-06

DATE REPORTED: 2016-09-08

			SAMPLE DESCRIPTION:		MW1	MW3
			SAMPLE TYPE:		Water	Water
			DATE SAMPLED:		9/2/2016	9/2/2016
Parameter	Unit	G / S: A	G / S: B	RDL	7827336	7827350
Bromodichloromethane	µg/L		16	1	<1	<1
Bromoform	µg/L		100	1	<1	<1
Carbon Tetrachloride	µg/L	130	5	0.5	<0.5	<0.5
Chlorobenzene	µg/L	13	30	1	<1	<1
Dibromochloromethane	µg/L		100	1	<1	<1
Chloroethane	µg/L		46	1	<1	<1
Chloroform	µg/L	20	100	1	<1	<1
Chloromethane	µg/L		950	1	<1	<1
1,2-Dichlorobenzene	µg/L	7	3	0.5	<0.5	<0.5
1,3-Dichlorobenzene	µg/L	1500		0.5	<0.5	<0.5
1,4-Dichlorobenzene	µg/L	260	1	0.5	<0.5	<0.5
1,1-Dichloroethane	µg/L		3700	1	<1	<1
1,2-Dichloroethane	µg/L	1000	5	1	<1	<1
1,1-Dichloroethene	µg/L		14	1	<1	<1
cis-1,2-Dichloroethylene	µg/L		370	1	<1	<1
trans-1,2-Dichloroethylene	µg/L		730	1	<1	<1
Dichloromethane	µg/L	980	50	1	<1	<1
1,2-Dichloropropane	µg/L		9.9	1	<1	<1
cis-1,3-Dichloropropene	µg/L		6.7	1	<1	<1
trans-1,3-Dichloropropene	µg/L		6.7	1	<1	<1
1,1,1,2-Tetrachloroethane	µg/L		26	1	<1	<1
1,1,2,2-Tetrachloroethane	µg/L		3.4	1	<1	<1
Tetrachloroethene	µg/L	1100	30	1	<1	<1
1,1,1-Trichloroethane	µg/L		10000	1	<1	<1
1,1,2-Trichloroethane	µg/L		12	1	<1	<1
Trichloroethene	µg/L	200	5	1	<1	<1
Trichlorofluoromethane	µg/L		11000	1	<1	<1
Vinyl Chloride	µg/L		2	1	<1	<1
Bromomethane	µg/L		51	1	<1	<1
Acetone	µg/L		33000	10	34[<B]	28[<B]

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 16V134774
PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING
SAMPLING SITE:

ATTENTION TO: Steve Boyce
SAMPLED BY:

Active Earth Volatile Organic Compounds in Water

DATE RECEIVED: 2016-09-06

DATE REPORTED: 2016-09-08

			SAMPLE DESCRIPTION:		MW1	MW3
			SAMPLE TYPE:		Water	Water
			DATE SAMPLED:		9/2/2016	9/2/2016
Parameter	Unit	G / S: A	G / S: B	RDL	7827336	7827350
Methyl tert-butyl ether (MTBE)	µg/L	34000	15	1	<1	<1
2-Butanone (MEK)	µg/L		22000	10	<10	<10
Benzene	µg/L	4000	5	0.5	<0.5	<0.5
4-Methyl-2-pentanone (MIBK)	µg/L		2900	10	<10	<10
Toluene	µg/L	390	24	0.5	0.7[<B]	<0.5
Ethylene Dibromide	µg/L		0.34	0.3	<0.3	<0.3
Ethylbenzene	µg/L	2000	2.4	0.5	<0.5	<0.5
m&p-Xylene	µg/L		300	0.5	<0.5	<0.5
Styrene	µg/L	720		0.5	<0.5	<0.5
o-Xylene	µg/L		300	0.5	<0.5	<0.5
1,2,4-Trichlorobenzene	µg/L	240		1	<1	<1
VH	µg/L	15000	15000	100	<100	<100
VPH	µg/L	1500		100	<100	<100
Total Trihalomethanes	µg/L			2	<2	<2
Total Xylenes	µg/L			1	<1	<1
Surrogate	Unit		Acceptable Limits			
Bromofluorobenzene	%		70-130		88	83
Dibromofluoromethane	%		70-130		109	102
Toluene - d8	%		70-130		102	100

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to BCCSR(AW-F)ug/L(Van), B Refers to BCCSR(DW)ug/L(Van)

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AGAT WORK ORDER: 16V134774

PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

British Columbia CSR- Schedule 6 Dissolved Metals

DATE RECEIVED: 2016-09-06

DATE REPORTED: 2016-09-08

				SAMPLE DESCRIPTION:	MW1
				SAMPLE TYPE:	Water
				DATE SAMPLED:	9/2/2016
Parameter	Unit	G / S: A	G / S: B	RDL	7827336
Aluminum Dissolved	µg/L		9500	2	5[<B]
Antimony Dissolved	µg/L	200	6	0.2	3.0[<B]
Arsenic Dissolved	µg/L	50	10	0.1	1.9[<B]
Barium Dissolved	µg/L	10000	1000	0.2	50.4[<B]
Beryllium Dissolved	µg/L	53		0.01	<0.01
Boron Dissolved	µg/L	50000	5000	2	144[<B]
Cadmium Dissolved	µg/L		5	0.01	0.03[<B]
Calcium Dissolved	µg/L			50	83800
Chromium Dissolved	µg/L		50	0.5	0.6[<B]
Cobalt Dissolved	µg/L	40		0.05	1.25[<A]
Copper Dissolved	µg/L		1000	0.2	3.8[<B]
Iron Dissolved	µg/L		6500	10	<10
Lead Dissolved	µg/L		10	0.05	<0.05
Lithium Dissolved	µg/L		730	0.5	8.4[<B]
Magnesium Dissolved	µg/L		100000	50	17300[<B]
Manganese Dissolved	µg/L		550	1	86[<B]
Mercury Dissolved	µg/L	1	1	0.01	<0.01
Molybdenum Dissolved	µg/L	10000	250	0.05	8.22[<B]
Nickel Dissolved	µg/L			0.2	11.2
Potassium Dissolved	µg/L			50	6170
Selenium Dissolved	µg/L	10	10	0.5	3.7[<A]
Silver Dissolved	µg/L			0.02	<0.02
Sodium Dissolved	µg/L		200000	50	21400[<B]
Thallium Dissolved	µg/L	3		0.01	0.02[<A]
Titanium Dissolved	µg/L	1000		0.5	1.3[<A]
Uranium Dissolved	µg/L	3000	20	0.01	2.13[<B]
Vanadium Dissolved	µg/L			0.5	1.5
Zinc Dissolved	µg/L		5000	2	9[<B]
Hardness (calc)	ug CaCO3/L			100	280000

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Certificate of Analysis

AGAT WORK ORDER: 16V134774
PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING
ATTENTION TO: Steve Boyce
SAMPLING SITE:
SAMPLED BY:

British Columbia CSR- Schedule 6 Dissolved Metals

DATE RECEIVED: 2016-09-06
DATE REPORTED: 2016-09-08

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to BCCSR(AW-F)ug/L(Van), B Refers to BCCSR(DW)ug/L(Van)

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING
AGAT WORK ORDER: 16V134774
PROJECT: 1126
ATTENTION TO: Steve Boyce
SAMPLING SITE:
SAMPLED BY:

Trace Organics Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Active Earth LEPH / HEPH Water															
Acenaphthene	66192	W-MS	0.48	0.51	6.1%	< 0.05	100%	80%	120%				97%	50%	130%
Acenaphthylene	66192	W-MS	0.44	0.47	6.6%	< 0.05	100%	80%	120%				89%	50%	130%
Acridine	66192	W-MS	0.47	0.43	8.9%	< 0.05	96%	80%	120%				95%	50%	130%
Anthracene	66192	W-MS	0.52	0.47	10.1%	< 0.05	102%	80%	120%				104%	60%	130%
Benzo(a)anthracene	66192	W-MS	0.42	0.42	0.0%	< 0.05	100%	80%	120%				84%	60%	130%
Benzo(a)pyrene	66192	W-MS	0.45	0.46	2.2%	< 0.01	102%	80%	120%				91%	60%	130%
Benzo(b)fluoranthene	66192	W-MS	0.39	0.40	2.5%	< 0.05	103%	80%	120%				78%	60%	130%
Benzo(g,h,i)perylene	66192	W-MS	0.46	0.47	2.2%	< 0.05	100%	80%	120%				93%	60%	130%
Benzo(k)fluoranthene	66192	W-MS	0.43	0.37	15.0%	< 0.05	90%	80%	120%				86%	60%	130%
Chrysene	66192	W-MS	0.47	0.49	4.2%	< 0.05	100%	80%	120%				95%	60%	130%
Dibenzo(a,h)anthracene	66192	W-MS	0.44	0.45	2.2%	< 0.05	99%	80%	120%				89%	60%	130%
Fluoranthene	66192	W-MS	0.48	0.45	6.5%	< 0.05	100%	80%	120%				96%	60%	130%
Fluorene	66192	W-MS	0.46	0.49	6.3%	< 0.05	101%	80%	120%				93%	50%	130%
Indeno(1,2,3-c,d)pyrene	66192	W-MS	0.42	0.42	0.0%	< 0.05	100%	80%	120%				86%	60%	130%
Naphthalene	66192	W-MS	0.44	0.46	4.4%	< 0.05	101%	80%	120%				88%	50%	130%
Phenanthrene	66192	W-MS	0.42	0.41	2.4%	< 0.05	98%	80%	120%				85%	60%	130%
Pyrene	66192	W-MS	0.51	0.48	6.1%	< 0.02	98%	80%	120%				102%	60%	130%
Quinoline	66192	W-MS	0.5	0.5	0.0%	< 0.1	100%	80%	120%				108%	50%	130%
Naphthalene - d8	66192	W-MS	93	100	7.3%		100%	80%	120%				94%	50%	130%
2-Fluorobiphenyl	66192	W-MS	98	105	6.9%		101%	80%	120%				98%	50%	130%
P-Terphenyl - d14	66192	W-MS	107	102	4.8%		99%	80%	120%				107%	60%	130%
EPH C10-C19	66192	W-MS	9610	9080	5.7%	< 100	112%	70%	130%				107%	70%	130%
EPH C19-C32	66192	W-MS	11400	10800	5.4%	< 100	99%	70%	130%				103%	70%	130%

Comments: RPDs are calculated using raw analytical data and not the rounded duplicate values reported.

Active Earth Volatile Organic Compounds in Water															
Bromodichloromethane	66202	7823326	<1	<1	NA	< 1	101%	80%	120%				98%	70%	130%
Bromoform	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				102%	70%	130%
Carbon Tetrachloride	66202	7823326	<0.5	<0.5	NA	< 0.5	101%	80%	120%				97%	70%	130%
Chlorobenzene	66202	7823326	<1	<1	NA	< 1	101%	80%	120%				100%	70%	130%
Dibromochloromethane	66202	7823326	<1	<1	NA	< 1	101%	80%	120%				96%	70%	130%
Chloroethane	66202	7823326	<1	<1	NA	< 1	101%	80%	120%				100%	70%	130%
Chloroform	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				97%	70%	130%
Chloromethane	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				95%	70%	130%
1,2-Dichlorobenzene	66202	7823326	<0.5	<0.5	NA	< 0.5	101%	80%	120%				103%	70%	130%
1,3-Dichlorobenzene	66202	7823326	<0.5	<0.5	NA	< 0.5	100%	80%	120%				103%	70%	130%
1,4-Dichlorobenzene	66202	7823326	<0.5	<0.5	NA	< 0.5	100%	80%	120%				102%	70%	130%
1,1-Dichloroethane	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				102%	70%	130%
1,2-Dichloroethane	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				99%	70%	130%

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING
AGAT WORK ORDER: 16V134774
PROJECT: 1126
ATTENTION TO: Steve Boyce
SAMPLING SITE:
SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
1,1-Dichloroethene	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				98%	70%	130%
cis-1,2-Dichloroethylene	66202	7823326	<1	<1	NA	< 1	101%	80%	120%				97%	70%	130%
trans-1,2-Dichloroethylene	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				100%	70%	130%
Dichloromethane	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				94%	70%	130%
1,2-Dichloropropane	66202	7823326	<1	<1	NA	< 1	101%	80%	120%				102%	70%	130%
cis-1,3-Dichloropropene	66202	7823326	<1	<1	NA	< 1	101%	80%	120%				93%	70%	130%
trans-1,3-Dichloropropene	66202	7823326	<1	<1	NA	< 1	101%	80%	120%				99%	70%	130%
1,1,1,2-Tetrachloroethane	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				101%	70%	130%
1,1,2,2-Tetrachloroethane	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				99%	70%	130%
Tetrachloroethene	66202	7823326	<1	<1	NA	< 1	101%	80%	120%				101%	70%	130%
1,1,1-Trichloroethane	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				97%	70%	130%
1,1,2-Trichloroethane	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				96%	70%	130%
Trichloroethene	66202	7823326	<1	<1	NA	< 1	101%	80%	120%				101%	70%	130%
Trichlorofluoromethane	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				97%	70%	130%
Vinyl Chloride	66202	7823326	<1	<1	NA	< 1	100%	80%	120%				96%	70%	130%
Bromomethane	66202	7823326	<1	<1	NA	< 1	99%	80%	120%				103%	70%	130%
Acetone	66202	7823326	<10	<10	NA	< 10	100%	80%	120%						
Methyl tert-butyl ether (MTBE)	66202	7823326	<1	<1	NA	< 1	101%	80%	120%				96%	70%	130%
2-Butanone (MEK)	66202	7823326	<10	<10	NA	< 10	100%	80%	120%						
Benzene	66202	7823326	<0.5	<0.5	NA	< 0.5	101%	80%	120%				100%	70%	130%
4-Methyl-2-pentanone (MIBK)	66202	7823326	<10	<10	NA	< 10	101%	80%	120%						
Toluene	66202	7823326	<0.5	<0.5	NA	< 0.5	101%	80%	120%				101%	70%	130%
Ethylene Dibromide	66202	7823326	<0.3	<0.3	NA	< 0.3	101%	80%	120%				97%	70%	130%
Ethylbenzene	66202	7823326	<0.5	<0.5	NA	< 0.5	102%	80%	120%				101%	70%	130%
m&p-Xylene	66202	7823326	<0.5	<0.5	NA	< 0.5	101%	80%	120%				102%	70%	130%
Styrene	66202	7823326	<0.5	<0.5	NA	< 0.5	102%	80%	120%				104%	70%	130%
o-Xylene	66202	7823326	<0.5	<0.5	NA	< 0.5	101%	80%	120%				101%	70%	130%
1,2,4-Trichlorobenzene	66202	7823326	<1	<1	NA	< 1	101%	80%	120%				94%	70%	130%
Bromofluorobenzene	66202	7823326	76	86	12.3%		106%	70%	130%				109%	70%	130%
Dibromofluoromethane	66202	7823326	98	110	11.5%		103%	70%	130%				99%	70%	130%
Toluene - d8	66202	7823326	90	106	16.3%		101%	70%	130%				105%	70%	130%
VH	66202	7823326	<100	<100	NA	< 100									
VPH	66202	7823326	<100	<100	NA	< 100									

Comments: RPDs are calculated using raw analytical data and not the rounded duplicate values reported.

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V134774

PROJECT: 1126

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

Water Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	7818246		20	21	1.5%	< 2	101%	90%	110%	92%	90%	110%			
Antimony Dissolved	7818246		<0.2	<0.2	NA	< 0.2	107%	90%	110%	98%	90%	110%			
Arsenic Dissolved	7818246		<0.1	0.2	NA	< 0.1	104%	90%	110%	110%	90%	110%			
Barium Dissolved	7818246		27.2	27.2	0.0%	< 0.2	103%	90%	110%	108%	90%	110%			
Beryllium Dissolved	7818246		<0.01	<0.01	NA	< 0.01	103%	90%	110%	104%	90%	110%			
Boron Dissolved	7818246		347	340	2.0%	< 2	99%	90%	110%	106%	90%	110%			
Cadmium Dissolved	7818246		<0.01	0.01	NA	< 0.01	99%	90%	110%	101%	90%	110%			
Calcium Dissolved	7818246		39800	39700	0.2%	< 50	100%	90%	110%	101%	90%	110%			
Chromium Dissolved	7818246		<0.5	<0.5	NA	< 0.5	97%	90%	110%	91%	90%	110%			
Cobalt Dissolved	7818246		0.23	0.24	NA	< 0.05	103%	90%	110%	110%	90%	110%			
Copper Dissolved	7818246		0.3	0.3	NA	< 0.2	104%	90%	110%	107%	90%	110%			
Iron Dissolved	7818246		979	979	0.0%	< 10	100%	90%	110%	100%	90%	110%			
Lead Dissolved	7818246		<0.05	<0.05	NA	< 0.05	104%	90%	110%	104%	90%	110%			
Lithium Dissolved	7818246		12.9	12.6	2.1%	< 0.5				109%	90%	110%			
Magnesium Dissolved	7818246		101000	101000	0.3%	< 50	102%	90%	110%	103%	90%	110%			
Manganese Dissolved	7818246		118	117	0.9%	< 1	102%	90%	110%	102%	90%	110%			
Mercury Dissolved	7821433		<0.01	<0.01	NA	< 0.01	95%	90%	110%	95%	90%	110%			
Molybdenum Dissolved	7818246		1.01	0.99	2.3%	< 0.05	104%	90%	110%	105%	90%	110%			
Nickel Dissolved	7818246		<0.2	<0.2	NA	< 0.2	103%	90%	110%	106%	90%	110%			
Potassium Dissolved	7818246		31500	31300	0.7%	< 50	96%	90%	110%	97%	90%	110%			
Selenium Dissolved	7818246		<0.5	<0.5	NA	< 0.5	106%	90%	110%	104%	90%	110%			
Silver Dissolved	7818246		<0.02	<0.02	NA	< 0.02				100%	90%	110%			
Sodium Dissolved	7818246		844000	839000	0.6%	< 50	101%	90%	110%	101%	90%	110%			
Thallium Dissolved	7818246		0.01	<0.01	NA	< 0.01	98%	90%	110%	98%	90%	110%			
Titanium Dissolved	7818246		1.2	1.2	NA	< 0.5				106%	90%	110%			
Uranium Dissolved	7818246		0.10	0.10	2.8%	< 0.01	93%	90%	110%	106%	90%	110%			
Vanadium Dissolved	7818246		0.6	0.7	NA	< 0.5	104%	90%	110%	108%	90%	110%			
Zinc Dissolved	7818246		<2	<2	NA	< 2	99%	90%	110%	98%	90%	110%			

Comments: RPDs are calculated using raw analytical data and not the rounded duplicate values reported.

Certified By:

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Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING
AGAT WORK ORDER: 16V134774
PROJECT: 1126
ATTENTION TO: Steve Boyce
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(g,h,i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Indeno(1,2,3-c,d)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Naphthalene - d8			GC/MS
2-Fluorobiphenyl	ORG-180-5133	Modified form BCMOE Lab Manual Section D (PAH)	GC/MS
P-Terphenyl - d14	ORG-180-5133	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
EPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromodichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromoform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Carbon Tetrachloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

AGAT Laboratories

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Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V134774

PROJECT: 1126

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Chlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromochloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,3-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,4-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloropropane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D	GC/MS
1,1,2,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Tetrachloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichlorofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Vinyl Chloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromomethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Acetone	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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AGAT WORK ORDER: 16V134774

PROJECT: 1126

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SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
2-Butanone (MEK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Benzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
4-Methyl-2-pentanone (MIBK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylene Dibromide	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylbenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
m&p-Xylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Styrene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
o-Xylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2,4-Trichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromofluorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene - d8	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
VH	ORG-180-5133	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS/FID
VPH	ORG-180-5131	Modified from BC MOE Lab Manual Sec D (VOC)	GC/MS/FID

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Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V134774

PROJECT: 1126

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Potassium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

Unit 120, 8600 Glenlyon Parkway
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Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V134774

PROJECT: 1126

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

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Chromatogram Image

CLIENT NAME: ACTIVE EARTH ENGINEERING

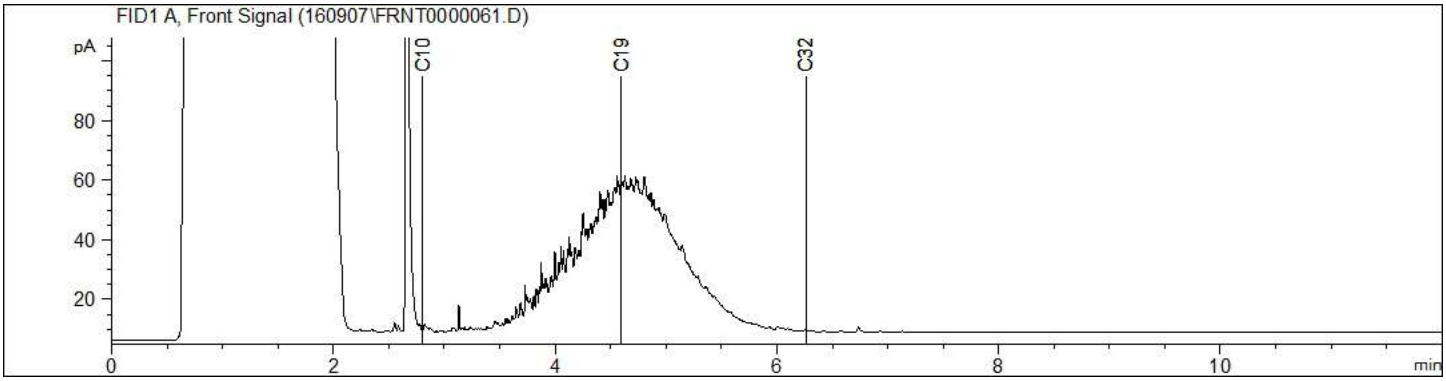
AGAT WORK ORDER: 16V134774

PROJECT: 1126

ATTENTION TO: Steve Boyce

IMAGE001: 7827336, MW1

IMAGE002: 7827350, MW3



SEP 6 PM 3:01

AGAT Laboratories

120 - 8600 Glenlyon Parkway
Burnaby, BC.
V5J 0B6
webearth.agatlabs.com
Ph.: 778.452.4000 · Fax: 778.452.7074

Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days ☐
Rush TAT 24 to 48 hours ☐
48 to 72 hours ☒
Date Required: FRI SEPT 9 5pm
Please contact laboratory if Rush is required

Report To:

Company: Active Earth Engineering Ltd
Contact: STEVE BOYCE
Address: 4510 Saddlehorn Crescent
Langley BC V2Z 1J6
Phone: _____ Fax: _____
LSD: _____
Client Project #: 1126

Report Information

1. Name: _____
Email: STEVE.BOYCE @activeearth.ca
2. Name: _____
Email: MATT.PYE @activeearth.ca

Report Format

☐ Single Sample per page
☑ Multiple Samples per page
☑ Excel Format Included

Laboratory Use Only

Arrival Temperature: 6°C
AGAT Job Number: 16V134774

Notes: AEE PRICING

Invoice To: Same as above Yes ☐ No ☐

Company: Active Earth Engineering Ltd
Contact: Carol Kneale
Address: 4510 Saddlehorn Crescent
Langley BC V2Z 1J6
Phone: (604) 856-5119 Fax: (604) 856-7598
PO/AFE #: same as project #

Regulatory Requirements (Check):

☐ **BC CSR – Soil**
- ☐ Agricultural
- ☐ Industrial
- ☐ Urban/Park
- ☐ Commercial

☒ **BC CSR – Water**
- ☒ Drinking Water
- ☒ Aquatic Life
- ☐ Irrigation
- ☐ Livestock

☐ **CCME**
- ☐ Drinking Water
- ☐ Residential/Park
- ☐ Commercial
- ☐ Industrial
- ☐ Drinking Water
- ☐ FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	LEPH/HEPH/PAH	VOC/VPH	dissolved metals (incl. Hg)	Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
78m336	MW1	Water	Sept 2/16 3pm		X	X	X	5	Y	N	N
350	MW3	Water	"		X	X		3	Y	N	N

Samples Relinquished by (print name & sign): STEVE BOYCE	Date: SEPT 6/16 8am	Samples Received by (Print name & sign):	Date: 9/6/16	Pink Copy - Client
Samples Relinquished by (print name & sign):	Date:	Samples Received by (Print name & sign):	Date:	Yellow Copy - AGA
Samples Relinquished by (print name & sign):	Date:	Samples Received by (Print name & sign):	Date:	White Copy - AGA

Page 1 of _____

V105181

Document ID: DIV-186-0811.001

Date Issued: August 16, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 16V134774

RECEIVING BASICS:
Received From: ~~AGAT~~ A-1 Waybill #: _____

SAMPLE QUANTITIES:
Coolers: 1 Containers: 8

TIME SENSITIVE ISSUES:
Earliest Date Sampled: Sept 2/16 ALREADY EXCEEDED? Yes (No)

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's) *use jars when available

(1) 5 + 6 + 5 = 6 °C (2) ___ + ___ + ___ = ___ °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C

Was ice or ice pack present: (Yes) No

Integrity Issues:

Account Project Manager: _____ have they been notified of the above issues: Yes No

Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

AGAT Laboratories

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CANADA V5J 0B6
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FAX (778)452-4074
http://www.agatlabs.com

CLIENT NAME: ACTIVE EARTH ENGINEERING
4083 SHELBOURNE STREET
VICTORIA , BC V8N5Y1
(250) 686-9850

ATTENTION TO: Matt Pye

PROJECT: 1126

AGAT WORK ORDER: 16V135098

WATER ANALYSIS REVIEWED BY: Andrew Garrard, B.Sc., General Manager

DATE REPORTED: Sep 09, 2016

PAGES (INCLUDING COVER): 8

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES
VERSION 1: Sample receipt temperature: 4°C

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 16V135098

PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: Matt Pye

SAMPLING SITE:

SAMPLED BY:

British Columbia CSR- Schedule 6 Dissolved Metals

DATE RECEIVED: 2016-09-07

DATE REPORTED: 2016-09-08

				SAMPLE DESCRIPTION:	AE16-MW3
				SAMPLE TYPE:	Water
				DATE SAMPLED:	9/7/2016
Parameter	Unit	G / S: A	G / S: B	RDL	7829388
Aluminum Dissolved	µg/L	9500		2	6[<A]
Antimony Dissolved	µg/L	6	200	0.2	0.6[<A]
Arsenic Dissolved	µg/L	10	50	0.1	1.2[<A]
Barium Dissolved	µg/L	1000	10000	0.2	34.7[<A]
Beryllium Dissolved	µg/L		53	0.01	<0.01
Boron Dissolved	µg/L	5000	50000	2	84[<A]
Cadmium Dissolved	µg/L	5		0.01	0.01[<A]
Calcium Dissolved	µg/L			50	121000
Chromium Dissolved	µg/L	50		0.5	<0.5
Cobalt Dissolved	µg/L		40	0.05	0.69[<B]
Copper Dissolved	µg/L	1000		0.2	12.6[<A]
Iron Dissolved	µg/L	6500		10	<10
Lead Dissolved	µg/L	10		0.05	<0.05
Lithium Dissolved	µg/L	730		0.5	5.1[<A]
Magnesium Dissolved	µg/L	100000		50	17800[<A]
Manganese Dissolved	µg/L	550		1	84[<A]
Mercury Dissolved	µg/L	1	1	0.01	<0.01
Molybdenum Dissolved	µg/L	250	10000	0.05	14.7[<A]
Nickel Dissolved	µg/L			0.2	4.6
Potassium Dissolved	µg/L			50	3260
Selenium Dissolved	µg/L	10	10	0.5	5.9[<A]
Silver Dissolved	µg/L			0.02	<0.02
Sodium Dissolved	µg/L	200000		50	101000[<A]
Thallium Dissolved	µg/L		3	0.01	<0.01
Titanium Dissolved	µg/L		1000	0.5	2.0[<B]
Uranium Dissolved	µg/L	20	3000	0.01	2.59[<A]
Vanadium Dissolved	µg/L			0.5	1.1
Zinc Dissolved	µg/L	5000		2	40[<A]
Hardness (calc)	ug CaCO3/L			100	375000

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 16V135098
PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: Matt Pye

SAMPLING SITE:

SAMPLED BY:

British Columbia CSR- Schedule 6 Dissolved Metals

DATE RECEIVED: 2016-09-07

DATE REPORTED: 2016-09-08

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to BCCSR(DW)ug/L(Van), B Refers to BCCSR(AW-F)ug/L(Van)

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V135098

PROJECT: 1126

ATTENTION TO: Matt Pye

SAMPLING SITE:

SAMPLED BY:

Water Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	7821433		11	8	NA	< 2	98%	90%	110%	102%	90%	110%			
Antimony Dissolved	7821433		<0.2	<0.2	NA	< 0.2	110%	90%	110%	105%	90%	110%			
Arsenic Dissolved	7821433		<0.1	<0.1	NA	< 0.1	106%	90%	110%	107%	90%	110%			
Barium Dissolved	7821433		13.9	12.5	10.5%	< 0.2	106%	90%	110%	99%	90%	110%			
Beryllium Dissolved	7821433		<0.01	<0.01	NA	< 0.01	103%	90%	110%	107%	90%	110%			
Boron Dissolved	7821433		96	95	1.0%	< 2	91%	90%	110%	93%	90%	110%			
Cadmium Dissolved	7821433		<0.01	<0.01	NA	< 0.01	107%	90%	110%	100%	90%	110%			
Calcium Dissolved	7821433		13400	13400	0.3%	< 50	99%	90%	110%	101%	90%	110%			
Chromium Dissolved	7821433		<0.5	<0.5	NA	< 0.5	98%	90%	110%	98%	90%	110%			
Cobalt Dissolved	7821433		0.07	0.07	NA	< 0.05	103%	90%	110%	101%	90%	110%			
Copper Dissolved	7821433		0.4	0.4	NA	< 0.2	103%	90%	110%	104%	90%	110%			
Iron Dissolved	7821433		107	105	1.7%	< 10	100%	90%	110%	103%	90%	110%			
Lead Dissolved	7821433		<0.05	<0.05	NA	< 0.05	108%	90%	110%	103%	90%	110%			
Magnesium Dissolved	7821433		28500	27900	2.2%	< 50	101%	90%	110%	103%	90%	110%			
Manganese Dissolved	7821433		13	13	1.3%	< 1	101%	90%	110%	101%	90%	110%			
Mercury Dissolved	7821433		<0.01	<0.01	NA	< 0.01	95%	90%	110%	95%	90%	110%			
Molybdenum Dissolved	7821433		0.94	1.10	15.8%	< 0.05	104%	90%	110%	96%	90%	110%			
Nickel Dissolved	7821433		<0.2	<0.2	NA	< 0.2	103%	90%	110%	103%	90%	110%			
Potassium Dissolved	7821433		9260	9280	0.2%	< 50	95%	90%	110%	96%	90%	110%			
Selenium Dissolved	7821433		<0.5	<0.5	NA	< 0.5	91%	90%	110%	92%	90%	110%			
Silver Dissolved	7821433		<0.02	<0.02	NA	< 0.02				109%	90%	110%			
Sodium Dissolved	7821433		236000	234000	0.9%	< 50	99%	90%	110%	99%	90%	110%			
Thallium Dissolved	7821433		<0.01	<0.01	NA	< 0.01	104%	90%	110%	102%	90%	110%			
Titanium Dissolved	7821433		0.5	<0.5	NA	< 0.5				104%	90%	110%			
Uranium Dissolved	7821433		0.08	0.09	13.1%	< 0.01	108%	90%	110%	102%	90%	110%			
Vanadium Dissolved	7821433		<0.5	<0.5	NA	< 0.5	105%	90%	110%	105%	90%	110%			
Zinc Dissolved	7821433		<2	<2	NA	< 2	100%	90%	110%	99%	90%	110%			

Comments: RPDs are calculated using raw analytical data and not the rounded duplicate values reported.

Certified By:

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
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CANADA V5J 0B6
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Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V135098

PROJECT: 1126

ATTENTION TO: Matt Pye

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Potassium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

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Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V135098

PROJECT: 1126

ATTENTION TO: Matt Pye

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

SEP 7 PM 12:32

AGAT Laboratories

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Laboratory Use Only
Arrival Condition: 4°C ☐ Good Poor (complete notes) ☐
Arrival Temperature:
AGAT Job Number: 16V135098
Notes:

Report Information
Company: Active Earth Engineering Ltd.
Contact: Matt Pye
Address: 105 4343 Tyndall Ave
Victora BC V8N 3R9
Phone: 250-686-9850 Fax:
LSD:
Client Project #: 1126
AGAT Quotation #:

Invoice to
Same as above ☐ yes ☑ No
Company: Active Earth Engineering Ltd.
Address: 4510 Saddlehorne Crescent
Langley BC V2Z 1J6
Phone: 604-856-7598 Fax:
PO #:
Client Project #: 1126
AGAT Quotation #:

Report Information
1 Name: Matt Pye
Email: Matt.Pye@activeearth.ca
2 Name: Glen Manns
Email: Glen.Manns@activeearth.ca

Requirements *(Check one)*
☐ BC CSR Soil ☑ BC CSR Water
☐ AL ☑ DW
☐ IL ☑ AW
☐ PL ☐ IW
☐ CL ☐ LW
☐ RL

Schedule 11
CCME
Other

Turnaround Time Required (TAT)*
Regular TAT: 5 to 7 working days ☐
Rush TAT: Day 2 - 100% ☐
SUBMISSION CUT OFF FOR EFFECTIVE DATE BY 3 PM
Day 3 - 50% ☐
Day 4 - 25% ☐
Date Required by (Rush surcharges may apply): Need results by Sept 9th

Laboratory Use (Lab ID #)	Sample Identification	Sample Matrix	Date/Time Sampled	Comments	LEPH/HEPH/PAH	VOC	Metals (with pH)	TCLP Metals	Glycols	PCB	Sodium Saturated Paste	Chloride Saturated Paste	MOG/TOG	BTEX/VPH	VOC	Total Metals	Chromium VI	Lead	MTBE	Dissolved Metals		Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for __ 60 days
7829388	AE16-MW3	WATER	2016-09-06																	x		2	y		X

Samples Relinquished By (Print and Sign):	Glen Manns	Date/Time:	September 6 2016	Samples Relinquished by		Date/Time	
Samples Relinquished By (Print and Sign):		Date/Time:		Samples Relinquished by		Date/Time	
Samples Relinquished By (Print and Sign):		Date/Time:		Samples Relinquished by		Date/Time	

Page 1 of 1
N °

9/7/16

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 16V135098

RECEIVING BASICS:
Received From: Maxim Express Waybill #: _____

SAMPLE QUANTITIES:
Coolers: 1 Containers: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: Sept 6/16 ALREADY EXCEEDED? Yes (No)

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's) *use jars when available

(1) 5 + 4 + ___ = 4 °C (2) ___ + ___ + ___ = ___ °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C

Was ice or ice pack present: (Yes) No

Integrity Issues:

Account Project Manager: _____ have they been notified of the above issues: Yes No

Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

AGAT Laboratories

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TEL (778)452-4000
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http://www.agatlabs.com

CLIENT NAME: ACTIVE EARTH ENGINEERING
4510 SADDLE HORN CRESCENT
LANGLEY, BC V2Z1J6
(778) 888-0473

ATTENTION TO: Matt Pye

PROJECT: 1126

AGAT WORK ORDER: 16V135169

TRACE ORGANICS REVIEWED BY: Andrew Garrard, B.Sc., General Manager

DATE REPORTED: Sep 09, 2016

PAGES (INCLUDING COVER): 11

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES
VERSION 1: Sample receipt temperature: 8°C

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 16V135169

PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: Matt Pye

SAMPLING SITE:

SAMPLED BY:

Active Earth VOCs in Air - Waste Oil Package

DATE RECEIVED: 2016-09-07

DATE REPORTED: 2016-09-08

					SAMPLE DESCRIPTION:	AE16-SV1
					SAMPLE TYPE:	Air
					DATE SAMPLED:	9/7/2016
Parameter	Unit	G / S: A	G / S: B	RDL		7829748
Acetone	µg/m3	60	20	20		<20
Benzene	µg/m3	4	1.5	2		9[>A]
Bromobenzene	µg/m3	30	10	7		<7
Bromodichloromethane	µg/m3	2	1	2		<2
Bromomethane	µg/m3	15	5	20		<20
1,3-Butadiene	µg/m3	6	2	3		<3
2-Butanone (MEK)	µg/m3	15000	5000	7		<7
Carbon Disulfide	µg/m3	2000	700	10		296[<B]
Carbon Tetrachloride	µg/m3	2	0.65	1		<1
Chlorobenzene	µg/m3	150	50	3		<3
Chloroethane	µg/m3	30000	10000	20		<20
Chloroform	µg/m3	1.5	1	2		4[>A]
n-Decane	µg/m3	8000	2500	10		<10
1,2-Dibromoethane	µg/m3	1	1	2		<2
1,2-Dichlorobenzene	µg/m3	600	200	7		<7
Dichlorodifluoromethane	µg/m3	600	200	7		9[<B]
1,1-Dichloroethane	µg/m3	1500	500	10		<10
1,2-Dichloroethane	µg/m3	1	0.4	0.7		<0.7
1,1-Dichloroethene	µg/m3	1	1	2		<2
cis-1,2-Dichloroethene	µg/m3	60	20	7		<7
trans-1,2-Dichloroethene	µg/m3	200	60	7		<7
Dichloromethane	µg/m3	65	20	7		<7
1,2-Dichloropropane	µg/m3	2	0.65	1		<1
Ethyl Acetate	µg/m3	5500	2000	30		<30
Ethylbenzene	µg/m3	3000	1000	3		52[<B]
n-Hexane	µg/m3	2000	700	10		33[<B]
Isopropylbenzene	µg/m3	1000	400	10		<10
4-Methyl-2-pentanone (MIBK)	µg/m3	9000	3000	10		<10
Methylcyclohexane	µg/m3	9000	3000	10		52[<B]
Methyl tert-butyl ether (MTBE)	µg/m3	9000	3000	7		<7

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 16V135169
PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING
ATTENTION TO: Matt Pye
SAMPLING SITE:
SAMPLED BY:

Active Earth VOCs in Air - Waste Oil Package

DATE RECEIVED: 2016-09-07
DATE REPORTED: 2016-09-08

				SAMPLE DESCRIPTION:	AE16-SV1
				SAMPLE TYPE:	Air
				DATE SAMPLED:	9/7/2016
Parameter	Unit	G / S: A	G / S: B	RDL	7829748
Styrene	µg/m3	3000	1000	3	<3
1,1,2,2-Tetrachloroethane	µg/m3	1	1	2	<2
Tetrachloroethene	µg/m3	2000	600	1	51[<B]
Toluene	µg/m3	15000	5000	7	79[<B]
1,2,4-Trichlorobenzene	µg/m3	10	4	7	<7
1,1,1-Trichloroethane	µg/m3	6500	2000	20	<20
1,1,2-Trichloroethane	µg/m3	2	0.6	1	<1
Trichloroethene	µg/m3	0.5	0.5	1	<1
1,2,4-Trimethylbenzene	µg/m3	20	6	7	42[>A]
1,3,5-Trimethylbenzene	µg/m3	20	6	7	47[>A]
Vinyl Chloride	µg/m3	3.5	1	2	<2
o-Xylene	µg/m3	300	100	3	93[<B]
m&p-Xylene	µg/m3	300	100	3	107[B-A]
VH v6-13	µg/m3			700	7040
VPHv (C6-C13)	µg/m3	3000	1000	700	6660[>A]
Naphthalene	µg/m3	9	3	3	<3
Sample Volume	L				3.06
Total Xylenes	ug/m3			2	200
Surrogate	Unit		Acceptable Limits		
Benzene - d6	%		60-140		93

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Sched 11 (CL) (Van), B Refers to Sched 11 (RL) (Van)

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 16V135169

PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: Matt Pye

SAMPLING SITE:

SAMPLED BY:

VOCs in Air Gasoline Package

DATE RECEIVED: 2016-09-07

DATE REPORTED: 2016-09-08

			SAMPLE DESCRIPTION:		AE16-SV3
			SAMPLE TYPE:		Air
			DATE SAMPLED:		9/7/2016
Parameter	Unit	G / S: A	G / S: B	RDL	7829749
Benzene	µg/m3	4	1.5	2	<2
Ethylbenzene	µg/m3	3000	1000	3	<3
Toluene	µg/m3	15000	5000	7	<7
m&p-Xylene	µg/m3	300	100	3	10[<B]
o-Xylene	µg/m3	300	100	3	<3
Styrene	µg/m3	3000	1000	3	<3
n-Hexane	µg/m3	2000	700	10	<10
n-Decane	µg/m3	8000	2500	10	<10
VH v6-13	µg/m3			700	<700
VPHv (C6-C13)	µg/m3	3000	1000	700	<700
Naphthalene	µg/m3	9	3	3	<3
1,3,5-Trimethylbenzene	µg/m3	20	6	7	<7
1,2,4-Trimethylbenzene	µg/m3	20	6	7	<7
1,3-Butadiene	µg/m3	6	2	3	<3
Isopropylbenzene	µg/m3	1000	400	10	<10
1,2-Dibromoethane	µg/m3	1	1	2	<2
1,2-Dichloroethane	µg/m3	1	0.4	0.7	<0.7
Methyl tert-butyl ether (MTBE)	µg/m3	9000	3000	7	<7
Methylcyclohexane	µg/m3	9000	3000	10	<10
Total Xylenes	ug/m3			2	10
Surrogate	Unit		Acceptable Limits		
Benzene - d6	%		60-140		78

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Sched 11 (CL) (Van), B Refers to Sched 11 (RL) (Van)

Certified By:

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING
AGAT WORK ORDER: 16V135169
PROJECT: 1126
ATTENTION TO: Matt Pye
SAMPLING SITE:
SAMPLED BY:

Trace Organics Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Active Earth VOCs in Air - Waste Oil Package															
Acetone	66213	7829748	<20	<20	NA	< 5	104%	70%	130%						
Benzene	66213	7829748	9.0	10.0	10.5%	< 0.6	103%	70%	130%				114%	60%	140%
Bromobenzene	66213	7829748	<7	<7	NA	< 2	105%	70%	130%				113%	60%	140%
Bromodichloromethane	66213	7829748	<2	<2	NA	< 0.5	105%	70%	130%				115%	60%	140%
Bromomethane	66213	7829748	<20	<20	NA	< 5	113%	70%	130%						
1,3-Butadiene	66213	7829748	<3	<3	NA	< 1	103%	70%	130%						
2-Butanone (MEK)	66213	7829748	<7	<7	NA	< 2	105%	70%	130%						
Carbon Disulfide	66213	7829748	296	314	5.9%	< 3	103%	70%	130%						
Carbon Tetrachloride	66213	7829748	<1	<1	NA	< 0.3	105%	70%	130%				112%	60%	140%
Chlorobenzene	66213	7829748	<3	<3	NA	< 1	105%	70%	130%				114%	60%	140%
Chloroethane	66213	7829748	<20	<20	NA	< 5	105%	70%	130%						
Chloroform	66213	7829748	4.0	4.0	0.0%	< 0.5	104%	70%	130%				113%	60%	140%
n-Decane	66213	7829748	<10	<10	NA	< 3	101%	70%	130%						
1,2-Dibromoethane	66213	7829748	<2	<2	NA	< 0.5	105%	70%	130%				114%	60%	140%
1,2-Dichlorobenzene	66213	7829748	<7	<7	NA	< 2	104%	70%	130%				115%	60%	140%
Dichlorodifluoromethane	66213	7829748	9	10	NA	< 2	123%	70%	130%						
1,1-Dichloroethane	66213	7829748	<10	<10	NA	< 3	105%	70%	130%				114%	60%	140%
1,2-Dichloroethane	66213	7829748	<0.7	<0.7	NA	< 0.2	105%	70%	130%				113%	60%	140%
1,1-Dichloroethene	66213	7829748	<2	<2	NA	< 0.5	106%	70%	130%				109%	60%	140%
cis-1,2-Dichloroethene	66213	7829748	<7	<7	NA	< 2	105%	70%	130%				114%	60%	140%
trans-1,2-Dichloroethene	66213	7829748	<7	<7	NA	< 2	105%	70%	130%				110%	60%	140%
Dichloromethane	66213	7829748	<7	<7	NA	< 2	102%	70%	130%				115%	60%	140%
1,2-Dichloropropane	66213	7829748	<1	<1	NA	< 0.3	105%	70%	130%				117%	60%	140%
Ethyl Acetate	66213	7829748	<30	<30	NA	< 10	101%	70%	130%						
Ethylbenzene	66213	7829748	52	52	0.0%	< 1	105%	70%	130%				114%	60%	140%
n-Hexane	66213	7829748	33	36	8.7%	< 3	105%	70%	130%						
Isopropylbenzene	66213	7829748	<10	<10	NA	< 3	104%	70%	130%				113%	60%	140%
4-Methyl-2-pentanone (MIBK)	66213	7829748	<10	<10	NA	< 3	105%	70%	130%						
Methylcyclohexane	66213	7829748	52	54	3.8%	< 3	103%	70%	130%						
Methyl tert-butyl ether (MTBE)	66213	7829748	<7	<7	NA	< 2	102%	70%	130%						
Styrene	66213	7829748	<3	<3	NA	< 1	105%	70%	130%				115%	60%	140%
1,1,2,2-Tetrachloroethane	66213	7829748	<2	<2	NA	< 0.5	106%	70%	130%				117%	60%	140%
Tetrachloroethene	66213	7829748	51.0	50.0	2.0%	< 0.3	100%	70%	130%				94%	60%	140%
Toluene	66213	7829748	79	80	1.3%	< 2	103%	70%	130%				112%	60%	140%
1,2,4-Trichlorobenzene	66213	7829748	<7	<7	NA	< 2	104%	70%	130%				113%	60%	140%
1,1,1-Trichloroethane	66213	7829748	<20	<20	NA	< 5	104%	70%	130%				111%	60%	140%
1,1,2-Trichloroethane	66213	7829748	<1	<1	NA	< 0.3	105%	70%	130%				113%	60%	140%
Trichloroethene	66213	7829748	<1	<1	NA	< 0.3	103%	70%	130%				110%	60%	140%
1,2,4-Trimethylbenzene	66213	7829748	42	42	0.0%	< 2	103%	70%	130%				114%	60%	140%

AGAT Laboratories

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V135169

PROJECT: 1126

ATTENTION TO: Matt Pye

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
1,3,5-Trimethylbenzene	66213	7829748	47	47	0.0%	< 2	103%	70%	130%				114%	60%	140%
Vinyl Chloride	66213	7829748	<2	<2	NA	< 0.5	104%	70%	130%						
o-Xylene	66213	7829748	93	93	0.0%	< 1	105%	70%	130%				116%	60%	140%
m&p-Xylene	66213	7829748	107	109	1.9%	< 1	105%	70%	130%				115%	60%	140%
VH v6-13	66213	7829748	7040	7040	0.0%	< 200									
VPHv (C6-C13)	66213	7829748	6660	6650	0.2%	< 200									
Naphthalene	66213	7829748	<3	3	NA	< 1	101%	70%	130%				107%	60%	140%
Benzene - d6	66213	7829748	93	94	1.1%		92%	70%	130%				96%	60%	140%

Comments: RPDs are calculated using raw analytical data and not the rounded duplicate values reported.

Certified By:

AGAT Laboratories
Unit 120, 8600 Glenlyon Parkway
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CANADA V5J 0B6
TEL (778)452-4000
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Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING
AGAT WORK ORDER: 16V135169
PROJECT: 1126
ATTENTION TO: Matt Pye
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Acetone	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Benzene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Bromobenzene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Bromodichloromethane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Bromomethane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,3-Butadiene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
2-Butanone (MEK)	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Carbon Disulfide	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Carbon Tetrachloride	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Chlorobenzene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Chloroethane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Chloroform	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
n-Decane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,2-Dibromoethane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,2-Dichlorobenzene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Dichlorodifluoromethane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,1-Dichloroethane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,2-Dichloroethane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,1-Dichloroethene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
cis-1,2-Dichloroethene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
trans-1,2-Dichloroethene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Dichloromethane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,2-Dichloropropane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Ethyl Acetate	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Ethylbenzene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
n-Hexane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Isopropylbenzene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
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Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V135169

PROJECT: 1126

ATTENTION TO: Matt Pye

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
4-Methyl-2-pentanone (MIBK)	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Methylcyclohexane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Styrene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,1,2,2-Tetrachloroethane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Tetrachloroethene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Toluene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,2,4-Trichlorobenzene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,1,1-Trichloroethane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,1,2-Trichloroethane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Trichloroethene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,2,4-Trimethylbenzene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
1,3,5-Trimethylbenzene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Vinyl Chloride	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
o-Xylene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
m&p-Xylene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
VH v6-13	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
VPHv (C6-C13)	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Naphthalene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Sample Volume	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS
Benzene - d6			GC/MS
o-Xylene	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual Secti	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual Secti	GC/MS
Methylcyclohexane	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual Secti	GC/MS
Benzene - d6	ORG-180-5170	Modified from EPA TO-17 and BCMOE Lab Manual	GC/MS

SEP 7 PM 3:05

AGAT Laboratories

120-8600 Glenlyon Parkway, Burnaby, BC, V5J 0B8 www.agatlabs.com
Phone: 778.45234000 • Fax: 778.452.4074 • Toll Free: 1.800.856.6261

Laboratory Use Only
Arrival Condition: ☐ Good Poor (complete notes) ☐
Arrival Temperature: 8°C
AGAT Job Number: 16V135169
Notes:

Report Information
Company: Active Earth Engineering Ltd.
Contact: Matt Pye
Address: 105-4343 Tyndall Ave
Victoria, BC V8N 3R9
Phone: 250-686-9850 Fax:
LSD:
Client Project #: 1126
AGAT Quotation #:

Report Information
1 Name: David Mitchell
Email: matt.pye@activeearth.ca
2 Name: Glen Manns
Email: Glen.Manns@activeearth.ca

Requirements (Check one)
☑ BC CSR Soil ☐ BC CSR Water
☐ AL ☐ DW
☐ IL ☐ AW
☐ PL ☐ IW
☑ CL ☐ LW
☑ RL
Schedule 11
CCME
Other

Invoice to
Same as above ☐ yes ☑ No
Company: Active Earth Engineering Ltd.
Address: 4510 Saddlehorne Crescent
Langley BC V2Z 1J6
Phone: 604-856-7598 Fax:
PO #:
Client Project #: 1126
AGAT Quotation #:

Turnaround Time Required (TAT)*
Regular TAT: 5 to 7 working days ☐
Rush TAT: Day 2 - 100% ☐
SUBMISSION CUT OFF FOR EFFECTIVE DATE BY 3 PM: Day 3 - 50% ☐, Day 4 - 25% ☐
Date Required by (Rush surcharges may apply):
Results required by September 9th

Laboratory Use (Lab ID #)	Sample Identification	Sample Matrix	Date/Time Sampled	Comments	LEPH/HEPH/PAH	BTEX/VPH/VOC	Metals (with pH)	TCLP Metals	Glycols	PCB	Sodium Saturated Paste	Chloride Saturated Paste	MOG/TOG	BTEX/VPH	TSS	Total Metals	Chromium VI	Gas + Diesel Pkg	Waste Oil Pkg			Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for __ 60 days
7829748	AE16-SV1	Vapour	2016-09-07																X			1			X
749	AE16-SV3	Vapour	2016-09-07															X				1			X
753	TEST	Vapour	2016-09-07																			1			X

Samples Relinquished By (Print and Sign):	Glen Manns	Date/Time:	07-Sep-16	Samples Relinquished by		Date/Time	
Samples Relinquished By (Print and Sign):		Date/Time:		Samples Relinquished by		Date/Time	
Samples Relinquished By (Print and Sign):		Date/Time:		Samples Relinquished by		Date/Time	

Page 1 of 1
N °

Matthew Hoy Sep 7,16

V105193

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 16U135169

RECEIVING BASICS:

Received From: A-1 Waybill #: _____

SAMPLE QUANTITIES:

Coolers: 1 Containers: 3

TIME SENSITIVE ISSUES:

Earliest Date Sampled: Sept 7, 2016 ALREADY EXCEEDED? Yes (No)

NON-CONFORMANCES:

3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's) *use jars when available

(1) 9 + 7 + 9 = 8 °C (2) ___ + ___ + ___ = ___ °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C

Was ice or ice pack present: (Yes) No

Integrity Issues:

Account Project Manager: _____ have they been notified of the above issues: Yes No

Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

AGAT Laboratories

Soil Vapour Analysis Field Sampling Form

Company: Active Earth

Field Staff(s): Matt Pye

Sample Date(s): (yy/mm/dd)

Sampling Pump Required: YES NO

Charger Included: YES NO

Sampling Pump ID:

Site Type: Residential | Commercial | Light Industrial | Heavy Industrial | Other

Contamination of Concern: Fuels | Oils and Greases | Dry Cleaning Reagents | Unknown

Estimated Contamination Concentration: Low | Moderate | High | Unknown

Thermal Desorbtion Tube Sample Data

Sample Tube ID	Sampling Time (Minutes)	Initial Flow Rate (mL/min)	Returned Flow Rate (mL/min)
AE16-SV1 - G0184949	47 min	65 mL/min	
AE16-SV3 - G0155109	36 min	85 mL/min	
TEST - G0189029			

AGAT Laboratories

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CLIENT NAME: ACTIVE EARTH ENGINEERING
4510 SADDLE HORN CRESCENT
LANGLEY, BC V2Z1J6
(778) 888-0473

ATTENTION TO: Steve Boyce

PROJECT: 1126

AGAT WORK ORDER: 16V135385

SOIL ANALYSIS REVIEWED BY: Andrew Garrard, B.Sc., General Manager

TRACE ORGANICS REVIEWED BY: Andrew Garrard, B.Sc., General Manager

DATE REPORTED: Sep 09, 2016

PAGES (INCLUDING COVER): 18

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

VERSION 2: Sample receipt temperature 1°C.

Version 2 issued on September 15, 2016 to report additional metals analysis for sample 1-1 as requested by Matt Pye of Active Earth. Version 2 is an amendment to Version 1.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 16V135385

PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

Active Earth British Columbia Metals Schedule 4 and 5

DATE RECEIVED: 2016-09-02

DATE REPORTED: 2016-09-09

		SAMPLE DESCRIPTION:		1-1
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		9/1/2016
Parameter	Unit	G / S	RDL	7831217
pH 1:2	pH units		0.05	7.20
Antimony	µg/g	20	0.1	0.7
Arsenic	µg/g	15	0.1	14.2
Barium	µg/g	400	0.5	83.2
Beryllium	µg/g	4	0.1	0.3
Cadmium	µg/g		0.01	0.12
Chromium	µg/g	60	1	32
Cobalt	µg/g	40	0.1	14.7
Copper	µg/g		0.2	28.4
Lead	µg/g		0.1	8.4
Mercury	µg/g		0.01	0.03
Molybdenum	µg/g	5	0.2	2.5
Nickel	µg/g	150	0.5	20.6
Selenium	µg/g	2	0.1	0.2
Silver	µg/g	20	0.5	<0.5
Thallium	µg/g	2	0.1	<0.1
Tin	µg/g	5	0.2	1.3
Uranium	µg/g	16	0.2	1.1
Vanadium	µg/g	200	1	78
Zinc	µg/g		1	38

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AL-G) (Van)

7831217 Results are based on the dry weight of the sample

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 16V135385

PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

Active Earth LEPH / HEPH Soil

DATE RECEIVED: 2016-09-02

DATE REPORTED: 2016-09-09

		SAMPLE DESCRIPTION:		1-3	1-4	1-5
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		9/1/2016	9/1/2016	9/1/2016
Parameter	Unit	G / S	RDL	7831219	7831220	7831221
Acenaphthene	µg/g		0.01	<0.01	<0.01	<0.01
Acenaphthylene	µg/g		0.01	<0.01	<0.01	<0.01
Anthracene	µg/g		0.02	<0.02	<0.02	<0.02
Benzo(a)anthracene	µg/g	0.1	0.02	<0.02	<0.02	<0.02
Benzo(a)pyrene	µg/g		0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.1	0.02	<0.02	<0.02	<0.02
Benzo(g,h,i)perylene	µg/g		0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.1	0.02	<0.02	<0.02	<0.02
Chrysene	µg/g		0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/g	0.1	0.02	<0.02	<0.02	<0.02
Fluoranthene	µg/g		0.05	<0.05	<0.05	<0.05
Fluorene	µg/g		0.02	<0.02	<0.02	<0.02
Indeno(1,2,3-c,d)pyrene	µg/g	0.1	0.02	<0.02	<0.02	<0.02
2-Methylnaphthalene	µg/g		0.01	<0.01	<0.01	<0.01
Naphthalene	µg/g		0.01	<0.01	<0.01	<0.01
Phenanthrene	µg/g	0.1	0.02	<0.02	<0.02	<0.02
Pyrene	µg/g	0.1	0.02	<0.02	<0.02	<0.02
EPH C10-C19	µg/g		20	<20	<20	<20
EPH C19-C32	µg/g		20	<20	<20	<20
LEPH C10-C19	µg/g	1000	20	<20	<20	<20
HEPH C19-C32	µg/g	1000	20	<20	<20	<20
Surrogate	Unit	Acceptable Limits				
Naphthalene - d8	%	50-130		81	80	83
2-Fluorobiphenyl	%	50-130		81	76	83
P-Terphenyl - d14	%	60-130		93	85	92

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AL-G) (Van)

7831219-7831221 Results are based on dry weight of sample.
LEPH & HEPH results have been corrected for PAH contributions.
Soil sample is visibly heterogeneous.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 16V135385

PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

Active Earth Volatile Organic Compounds in Soil

DATE RECEIVED: 2016-09-02

DATE REPORTED: 2016-09-09

		SAMPLE DESCRIPTION:		1-3
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		9/1/2016
Parameter	Unit	G / S	RDL	7831219
Bromodichloromethane	µg/g	8.2	0.05	<0.05
Bromoform	µg/g	620	0.05	<0.05
Carbon Tetrachloride	µg/g	0.1	0.02	<0.02
Chlorobenzene	µg/g	0.1	0.05	<0.05
Dibromochloromethane	µg/g	11	0.05	<0.05
Chloroethane	µg/g	30	0.05	<0.05
Chloroform	µg/g	0.1	0.05	<0.05
Chloromethane	µg/g	47	0.05	<0.05
1,2-Dichlorobenzene	µg/g	0.1	0.05	<0.05
1,3-Dichlorobenzene	µg/g	0.1	0.05	<0.05
1,4-Dichlorobenzene	µg/g	0.1	0.05	<0.05
1,1-Dichloroethane	µg/g	0.1	0.05	<0.05
1,2-Dichloroethane	µg/g	0.1	0.05	<0.05
1,1-Dichloroethene	µg/g	0.1	0.05	<0.05
cis-1,2-Dichloroethene	µg/g	0.1	0.05	<0.05
trans-1,2-Dichloroethene	µg/g	0.1	0.05	<0.05
Dichloromethane	µg/g	0.1	0.05	<0.05
1,2-Dichloropropane	µg/g	0.1	0.05	<0.05
cis-1,3-Dichloropropene	µg/g	0.1	0.05	<0.05
trans-1,3-Dichloropropene	µg/g	0.1	0.05	<0.05
1,1,1,2-Tetrachloroethane	µg/g	32	0.05	<0.05
1,1,2,2-Tetrachloroethane	µg/g	4.1	0.05	<0.05
Tetrachloroethene	µg/g		0.05	<0.05
1,1,1-Trichloroethane	µg/g	0.1	0.05	<0.05
1,1,2-Trichloroethane	µg/g	0.1	0.05	<0.05
Trichloroethene	µg/g	0.015	0.01	<0.01
Trichlorofluoromethane	µg/g	390	0.05	<0.05
Vinyl Chloride	µg/g	0.79	0.05	<0.05
Bromomethane	µg/g	3.9	0.05	<0.05
Acetone	µg/g	14000	0.5	<0.5

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 16V135385
PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING
ATTENTION TO: Steve Boyce
SAMPLING SITE:
SAMPLED BY:

Active Earth Volatile Organic Compounds in Soil

DATE RECEIVED: 2016-09-02
DATE REPORTED: 2016-09-09

		SAMPLE DESCRIPTION:		1-3
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		9/1/2016
Parameter	Unit	G / S	RDL	7831219
Methyl tert-butyl ether (MTBE)	µg/g	320	0.1	<0.1
2-Butanone (MEK)	µg/g	22000	0.5	<0.5
Benzene	µg/g		0.02	<0.02
4-Methyl-2-pentanone (MIBK)	µg/g	5300	0.5	<0.5
Toluene	µg/g	2.5	0.05	<0.05
Ethylene Dibromide	µg/g	0.32	0.05	<0.05
Ethylbenzene	µg/g	7	0.05	<0.05
m&p-Xylene	µg/g	20	0.05	<0.05
Styrene	µg/g	0.1	0.05	<0.05
o-Xylene	µg/g	20	0.05	<0.05
1,2,4-Trichlorobenzene	µg/g	0.05	0.05	<0.05
VH	µg/g		10	<10
VPH	µg/g	200	10	<10
Total Xylenes	µg/g		0.2	<0.2
Surrogate	Unit	Acceptable Limits		
Bromofluorobenzene	%	60-140		99
Dibromofluoromethane	%	60-140		129
Toluene - d8	%	60-140		119

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AL-G) (Van)
7831219 Results are based on dry weight of sample.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 16V135385

PROJECT: 1126

CLIENT NAME: ACTIVE EARTH ENGINEERING

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

BTEX / VPH (C6-C10) Soil

DATE RECEIVED: 2016-09-02

DATE REPORTED: 2016-09-09

		SAMPLE DESCRIPTION:		3-1
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		9/1/2016
Parameter	Unit	G / S	RDL	7831224
Methyl tert-butyl ether (MTBE)	µg/g	320	0.1	<0.1
Benzene	µg/g	0.04	0.02	<0.02
Toluene	µg/g	2.5	0.05	<0.05
Ethylbenzene	µg/g	7	0.05	<0.05
m&p-Xylene	µg/g	20	0.05	<0.05
o-Xylene	µg/g	20	0.05	<0.05
Styrene	µg/g	0.1	0.05	<0.05
VPH	µg/g	200	10	<10
VH	µg/g		10	<10
Total Xylenes	ug/g		0.1	<0.1
Surrogate	Unit	Acceptable Limits		
Bromofluorobenzene	%	60-140		101
Dibromofluoromethane	%	60-140		113
Toluene - d8	%	60-140		102

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AL-G) (Van)

7831224 Results are based on dry weight of sample.
VPH results have been corrected for BTEX contributions.

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V135385

PROJECT: 1126

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date: Sep 09, 2016			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Active Earth British Columbia Metals Schedule 4 and 5															
pH 1:2	7831217		7.20	7.26	0.8%	< 0.1	96%	90%	110%	99%	95%	105%			
Antimony	7831217		0.7	0.7	2.5%	< 0.1	109%	70%	130%	105%	90%	110%			
Arsenic	7831217		14.2	14.9	4.6%	< 0.1	107%	70%	130%	99%	90%	110%			
Barium	7831217		83.2	87.3	4.7%	< 0.5	99%	70%	130%	102%	90%	110%			
Beryllium	7831217		0.3	0.4	NA	< 0.1	96%	70%	130%	107%	90%	110%			
Cadmium	7831217		0.12	0.12	0.3%	< 0.01	112%	70%	130%	101%	90%	110%			
Chromium	7831217		32	36	9.7%	< 1	104%	70%	130%	98%	90%	110%			
Cobalt	7831217		14.7	15.9	7.8%	< 0.1	106%	70%	130%	103%	90%	110%			
Copper	7831217		28.4	30.0	5.4%	< 0.2	105%	70%	130%	107%	90%	110%			
Lead	7831217		8.4	8.6	2.7%	< 0.1	92%	70%	130%	99%	90%	110%			
Mercury	7831217		0.03	0.03	NA	< 0.01	78%	70%	130%	101%	90%	110%			
Molybdenum	7831217		2.5	2.5	0.6%	< 0.2	103%	70%	130%	98%	90%	110%			
Nickel	7831217		20.6	23.4	12.6%	< 0.5	108%	70%	130%	105%	90%	110%			
Selenium	7831217		0.2	0.2	NA	< 0.1				106%	90%	110%			
Silver	7831217		<0.5	<0.5	NA	< 0.5	102%	70%	130%	101%	90%	110%			
Thallium	7831217		<0.1	<0.1	NA	< 0.1	103%	70%	130%	98%	90%	110%			
Tin	7831217		1.3	1.4	5.8%	< 0.2	100%	70%	130%	100%	90%	110%			
Uranium	7831217		1.1	1.1	1.5%	< 0.2	98%	70%	130%	102%	90%	110%			
Vanadium	7831217		78	87	11.1%	< 1	106%	70%	130%	98%	90%	110%			
Zinc	7831217		38	41	9.6%	< 1	111%	70%	130%	94%	90%	110%			

Comments: RPDs are calculated using raw analytical data and not the rounded duplicate values reported.

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING
AGAT WORK ORDER: 16V135385
PROJECT: 1126
ATTENTION TO: Steve Boyce
SAMPLING SITE:
SAMPLED BY:

Trace Organics Analysis

RPT Date: Sep 09, 2016			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Active Earth LEPH / HEPH Soil															
Acenaphthene	66203	7829910	<0.01	<0.01	NA	< 0.01	100%	80%	120%				102%	50%	130%
Acenaphthylene	66203	7829910	<0.01	<0.01	NA	< 0.01	100%	80%	120%				92%	50%	130%
Anthracene	66203	7829910	<0.02	<0.02	NA	< 0.02	103%	80%	120%				114%	60%	130%
Benzo(a)anthracene	66203	7829910	<0.02	<0.02	NA	< 0.02	100%	80%	120%				92%	60%	130%
Benzo(a)pyrene	66203	7829910	<0.05	<0.05	NA	< 0.05	97%	80%	120%				105%	60%	130%
Benzo(b)fluoranthene	66203	7829910	<0.02	<0.02	NA	< 0.02	90%	80%	120%				82%	60%	130%
Benzo(g,h,i)perylene	66203	7829910	<0.05	<0.05	NA	< 0.05	101%	80%	120%				116%	60%	130%
Benzo(k)fluoranthene	66203	7829910	<0.02	<0.02	NA	< 0.02	100%	80%	120%				98%	60%	130%
Chrysene	66203	7829910	<0.05	<0.05	NA	< 0.05	99%	80%	120%				111%	60%	130%
Dibenzo(a,h)anthracene	66203	7829910	<0.02	<0.02	NA	< 0.02	101%	80%	130%				99%	60%	130%
Fluoranthene	66203	7829910	<0.05	<0.05	NA	< 0.05	96%	80%	120%				109%	60%	130%
Fluorene	66203	7829910	<0.02	<0.02	NA	< 0.02	98%	80%	120%				96%	50%	130%
Indeno(1,2,3-c,d)pyrene	66203	7829910	<0.02	<0.02	NA	< 0.02	101%	80%	120%				104%	60%	130%
2-Methylnaphthalene	66203	7829910	0.01	<0.01	NA	< 0.01	99%	80%	120%				87%	50%	130%
Naphthalene	66203	7829910	<0.01	<0.01	NA	< 0.01	100%	80%	120%				105%	50%	130%
Phenanthrene	66203	7829910	<0.02	<0.02	NA	< 0.02	98%	80%	120%				99%	60%	130%
Pyrene	66203	7829910	<0.02	<0.02	NA	< 0.02	98%	80%	120%				111%	60%	130%
Naphthalene - d8	66203	7829910	79	82	3.7%		100%	80%	120%				104%	50%	130%
2-Fluorobiphenyl	66203	7829910	77	81	5.1%		100%	80%	120%				104%	50%	130%
P-Terphenyl - d14	66203	7829910	75	84	11.3%		100%	80%	120%				113%	60%	130%
EPH C10-C19	66203	7829910	21	<20	NA	< 20	112%	70%	130%				100%	65%	120%
EPH C19-C32	66203	7829910	33	30	NA	< 20	103%	70%	130%				101%	80%	120%
Active Earth Volatile Organic Compounds in Soil															
Bromodichloromethane	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				108%	70%	130%
Bromoform	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				105%	70%	130%
Carbon Tetrachloride	66203	7831219	<0.02	<0.02	NA	< 0.02	99%	80%	120%				102%	70%	130%
Chlorobenzene	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				104%	70%	130%
Dibromochloromethane	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				108%	70%	130%
Chloroethane	66203	7831219	<0.05	<0.05	NA	< 0.05	99%	80%	120%				98%	60%	140%
Chloroform	66203	7831219	<0.05	<0.05	NA	< 0.05	99%	80%	120%				108%	70%	130%
Chloromethane	66203	7831219	<0.05	<0.05	NA	< 0.05	99%	80%	120%				83%	60%	140%
1,2-Dichlorobenzene	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				101%	70%	130%
1,3-Dichlorobenzene	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				103%	70%	130%
1,4-Dichlorobenzene	66203	7831219	<0.05	<0.05	NA	< 0.05	99%	80%	120%				105%	70%	130%
1,1-Dichloroethane	66203	7831219	<0.05	<0.05	NA	< 0.05	99%	80%	120%				106%	70%	130%
1,2-Dichloroethane	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				109%	70%	130%
1,1-Dichloroethene	66203	7831219	<0.05	<0.05	NA	< 0.05	99%	80%	120%				99%	70%	130%

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING
AGAT WORK ORDER: 16V135385
PROJECT: 1126
ATTENTION TO: Steve Boyce
SAMPLING SITE:
SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Sep 09, 2016			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
cis-1,2-Dichloroethene	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				103%	70%	130%
trans-1,2-Dichloroethene	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				104%	70%	130%
Dichloromethane	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				106%	70%	130%
1,2-Dichloropropane	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				106%	70%	130%
cis-1,3-Dichloropropene	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				102%	60%	140%
trans-1,3-Dichloropropene	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				105%	60%	140%
1,1,1,2-Tetrachloroethane	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				106%	70%	130%
1,1,2,2-Tetrachloroethane	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				103%	70%	130%
Tetrachloroethene	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				130%	70%	130%
1,1,1-Trichloroethane	66203	7831219	<0.05	<0.05	NA	< 0.05	99%	80%	120%				104%	70%	130%
1,1,2-Trichloroethane	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				110%	70%	130%
Trichloroethene	66203	7831219	<0.01	<0.01	NA	< 0.01	100%	80%	120%				105%	70%	130%
Trichlorofluoromethane	66203	7831219	<0.05	<0.05	NA	< 0.05	99%	80%	120%				92%	70%	130%
Vinyl Chloride	66203	7831219	<0.05	<0.05	NA	< 0.05	99%	80%	120%				86%	60%	140%
Bromomethane	66203	7831219	<0.05	<0.05	NA	< 0.05	98%	80%	120%				94%	60%	140%
Acetone	66203	7831219	<0.5	<0.5	NA	< 0.5	100%	80%	120%				108%	70%	130%
Methyl tert-butyl ether (MTBE)	66203	7831219	<0.1	<0.1	NA	< 0.1	100%	80%	120%				104%	70%	130%
2-Butanone (MEK)	66203	7831219	<0.5	<0.5	NA	< 0.5	99%	80%	120%				107%	70%	130%
Benzene	66203	7831219	<0.02	<0.02	NA	< 0.02	100%	80%	120%				104%	70%	130%
4-Methyl-2-pentanone (MIBK)	66203	7831219	<0.5	<0.5	NA	< 0.5	100%	80%	120%				103%	70%	130%
Toluene	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				105%	70%	130%
Ethylene Dibromide	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				106%	70%	130%
Ethylbenzene	66203	7831219	<0.05	<0.05	NA	< 0.05	101%	80%	120%				100%	70%	130%
m&p-Xylene	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				103%	70%	130%
Styrene	66203	7831219	<0.05	<0.05	NA	< 0.05	101%	80%	120%				98%	70%	130%
o-Xylene	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				105%	70%	130%
1,2,4-Trichlorobenzene	66203	7831219	<0.05	<0.05	NA	< 0.05	100%	80%	120%				101%	70%	130%
Bromofluorobenzene	66203	7831219	99	90	9.5%		108%	60%	140%				114%	60%	140%
Dibromofluoromethane	66203	7831219	129	123	4.8%		95%	60%	140%				103%	60%	140%
Toluene - d8	66203	7831219	119	110	7.9%		101%	60%	140%				107%	60%	140%
VH	66203	7831219	<10	<10	NA	< 10									
VPH	66203	7831219	<10	<10	NA	< 10									

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BTEX / VPH (C6-C10) Soil															
Methyl tert-butyl ether (MTBE)	66203	7829910	<0.1	<0.1	NA	< 0.1	100%	80%	120%				101%	70%	130%
Benzene	66203	7829910	<0.02	<0.02	NA	< 0.02	100%	80%	120%				98%	70%	130%
Toluene	66203	7829910	<0.05	<0.05	NA	< 0.05	100%	80%	120%				90%	70%	130%
Ethylbenzene	66203	7829910	<0.05	<0.05	NA	< 0.05	100%	80%	120%				102%	70%	130%

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Quality Assurance

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V135385

PROJECT: 1126

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Sep 09, 2016			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
m&p-Xylene	66203	7829910	0.06	0.05	NA	< 0.05	100%	80%	120%				101%	70%	130%
o-Xylene	66203	7829910	<0.05	<0.05	NA	< 0.05	101%	80%	120%				101%	70%	130%
Styrene	66203	7829910	<0.05	<0.05	NA	< 0.05	99%	80%	120%				102%	70%	130%
VPH	66203	7829910	<10	<10	NA	< 10									
VH	66203	7829910	<10	<10	NA	< 10									
Bromofluorobenzene	66203	7829910	103	93	10.2%		101%	60%	140%				93%	60%	140%
Dibromofluoromethane	66203	7829910	101	102	1.0%		100%	60%	140%				104%	60%	140%
Toluene - d8	66203	7829910	98	90	8.5%		100%	60%	140%				88%	60%	140%

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Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
pH 1:2	INOR-181-6031	BC MOE Lab Manual B (pH, Electrometric, Soil)	PH METER
Antimony	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Arsenic	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Barium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Beryllium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Cadmium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Chromium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Cobalt	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Copper	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Lead	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Mercury	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Molybdenum	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Nickel	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Selenium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Silver	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Thallium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Tin	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Uranium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Vanadium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Zinc	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Acenaphthene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Acenaphthylene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Anthracene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(a)anthracene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(a)pyrene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(b)fluoranthene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(g,h,i)perylene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(k)fluoranthene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Chrysene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Fluoranthene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Fluorene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Indeno(1,2,3-c,d)pyrene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
2-Methylnaphthalene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Naphthalene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Phenanthrene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Pyrene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Naphthalene - d8	ORG-180-5102	modified from BC MOE Lab Manual Section D (PAH)	GC/MS
2-Fluorobiphenyl	ORG-180-5102	modified from BC MOE Lab Manual Section D (PAH)	GC/MS
P-Terphenyl - d14	ORG-180-5102	modified from BC MOE Lab Manual Section D (PAH)	GC/MS
EPH C10-C19	ORG-180-5101	Modified from BCMOE Lab Manual Section D (EPH)	GC/FID
EPH C19-C32	ORG-180-5101	Modified from BCMOE Lab Manual Section D (EPH)	GC/FID
LEPH C10-C19	ORG-180-5101	Modified from BCMOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5101	Modified from BCMOE Lab Manual Section D (EPH)	GC/FID
Bromodichloromethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromoform	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Carbon Tetrachloride	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Chlorobenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromochloromethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroform	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloromethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichlorobenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,3-Dichlorobenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,4-Dichlorobenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,2-Dichloroethene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,2-Dichloroethene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dichloromethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloropropane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,3-Dichloropropene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,3-Dichloropropene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1,2-Tetrachloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2,2-Tetrachloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Tetrachloroethene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1-Trichloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2-Trichloroethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichloroethene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichlorofluoromethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Vinyl Chloride	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromomethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Acetone	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

Method Summary

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V135385

PROJECT: 1126

ATTENTION TO: Steve Boyce

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
2-Butanone (MEK)	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Benzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
4-Methyl-2-pentanone (MIBK)	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylene Dibromide	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylbenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
m&p-Xylene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Styrene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
o-Xylene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2,4-Trichlorobenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromofluorobenzene	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromofluoromethane	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene - d8	ORG-180-5103	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
VH	ORG-180-5103	Modified from BC MOE Lab Manual Sec D (VOC)	GC/MS/FID
VPH	ORG-180-5103	Modified from BC MOE Lab Manual Sec D (VOC)	GC/MS/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Benzene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Toluene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Ethylbenzene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
m&p-Xylene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
o-Xylene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Styrene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VPH	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VH	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Bromofluorobenzene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS

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Chromatogram Image

CLIENT NAME: ACTIVE EARTH ENGINEERING

AGAT WORK ORDER: 16V135385

PROJECT: 1126

ATTENTION TO: Steve Boyce

IMAGE001: 7831219, 1-3

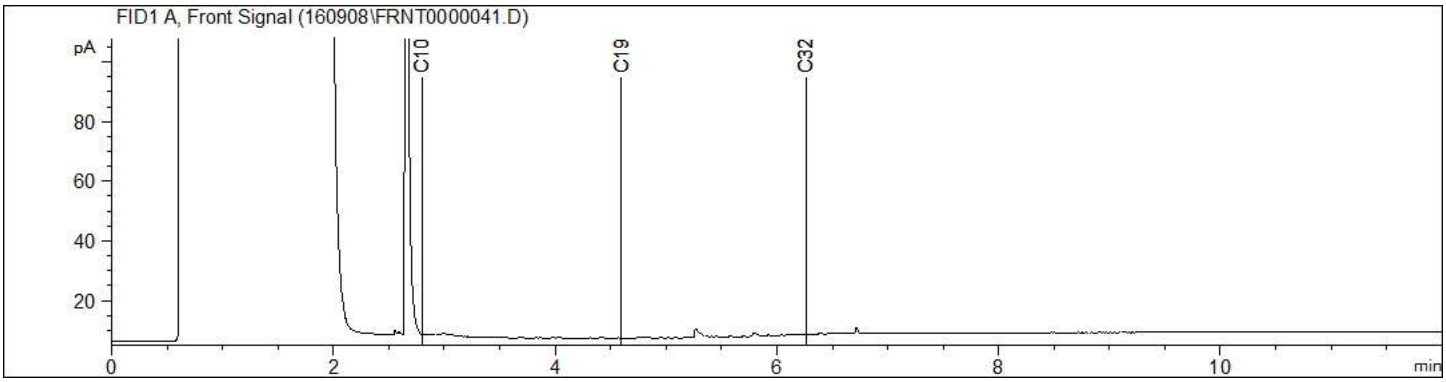


IMAGE002: 7831220, 1-4

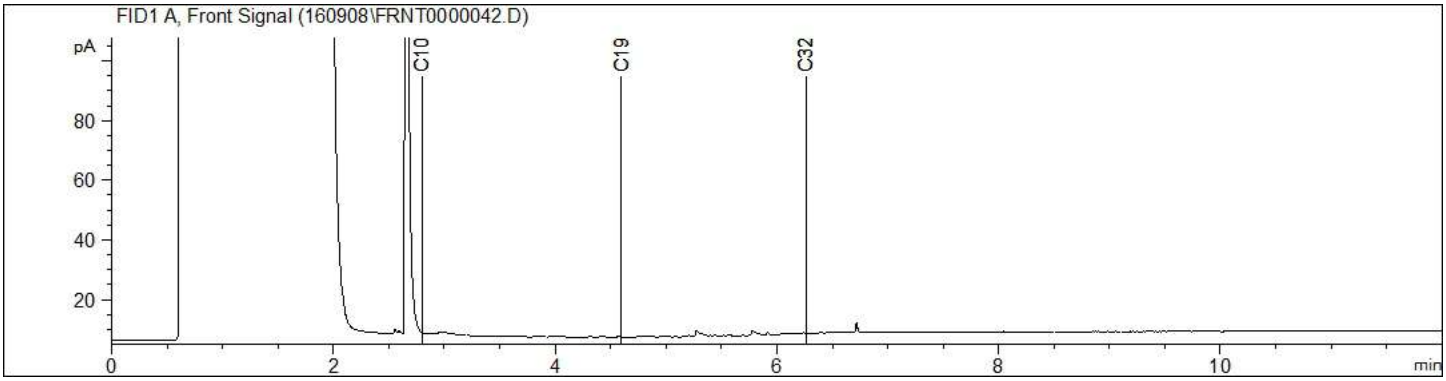
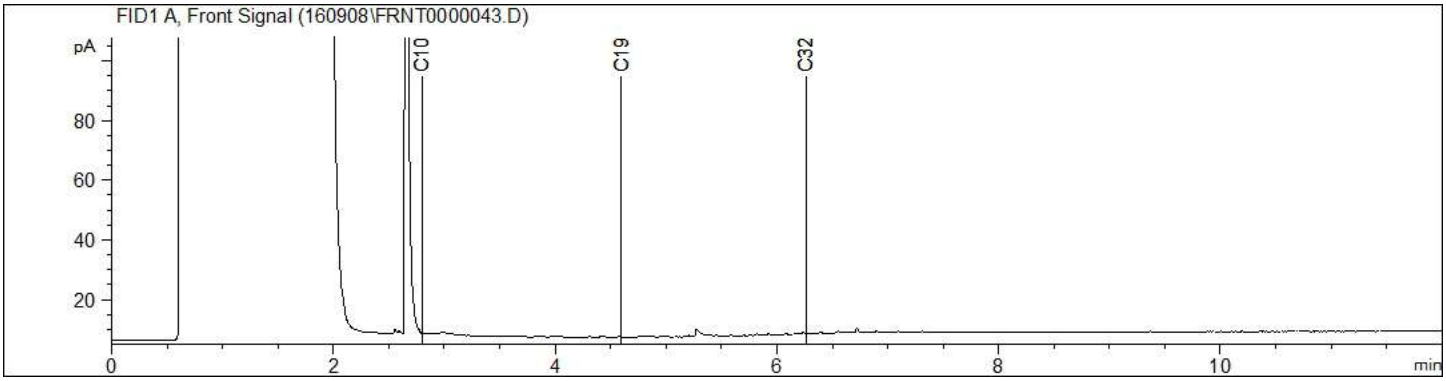


IMAGE003: 7831221, 1-5



AGAT Laboratories

120 - 8600 Glenlyon Parkway
Burnaby, BC.
V5J 0B6
webearth.agatlabs.com

Ph.: 778.452.4000 · Fax: 778.452.7074

Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days ☐
Rush TAT 24 to 48 hours ☐
48 to 72 hours ☐
Date Required: TBD
Please contact laboratory if Rush is required

Report To:

Company: Active Earth Engineering Ltd
Contact: STEVE BOYCE
Address: 4510 Saddlehorn Crescent
Langley BC V2Z 1J6
Phone: _____ Fax: _____
LSD: _____
Client Project #: 1126

Report Information

1. Name: _____
Email: STEVE.BOYCE @activeearth.ca
2. Name: _____
Email: MATT.PYE @activeearth.ca

Report Format

☐ Single Sample per page
☑ Multiple Samples per page
☑ Excel Format Included

Laboratory Use Only

Arrival Temperature: 1°C
AGAT Job Number: 16V135385

Notes: AEE PACING SEP 2 AM 9:19

Invoice To: Same as above Yes ☐ No ☐

Company: Active Earth Engineering Ltd
Contact: Carol Kneale
Address: 4510 Saddlehorn Crescent
Langley BC V2Z 1J6
Phone: (604) 856-5119 Fax: (604) 856-7598
PO/AFE #: same as project #

Regulatory Requirements (Check):

☒ **BC CSR – Soil**
- ☒ Agricultural
- ☐ Industrial
- ☒ Urban/Park
- ☐ Commercial

☐ **BC CSR – Water**
- ☐ Drinking Water
- ☐ Aquatic Life
- ☐ Irrigation
- ☐ Livestock

☐ **CCME**
- ☐ Drinking Water
- ☐ Residential/Park
- ☐ Commercial
- ☐ Industrial
- ☐ Drinking Water
- ☐ FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments - Site/Sample Info. Sample Containment	HOLD	Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
T831217	1-1	Soil	SEPT 1/16 0930		X	2	N	?	N
218	1-2					2	N		
219	1-3					4	N		
220	1-4					4	N		
221	1-5					4	N		
222	2-1					4	N		
224	3-1					4	N		

Samples Relinquished by (print name & sign): STEVE BOYCE	Date: SEPT 1/16 2:30	Samples Received by (Print name & sign): AC	Date: 9/2/16	Pink Copy - Client	Page 1 of 1
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date	Yellow Copy	
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date	White Copy	V105364

Document ID: DIV-186-0811.001

From: Steve Boyce
To: Maggie Chan
Subject: RE: Samples Received on Hold - Sept 2
Date: September-08-16 8:15:10 AM
Attachments: image001.png
image003.png
image004.png

Please add samples 1-4 and 1-5 for LEPH/HEPH/PAH.

Steve Boyce, B.A. (Env)
Active Earth Engineering Ltd.
105 – 4343 Tyndall Avenue
Victoria, BC V8N 3R9
c: 778-888-0473
www.activeearth.ca

From: Steve Boyce [mailto:steve.boyce@activeearth.ca]
Sent: September 7, 2016 9:20 PM
To: 'Maggie Chan' <mchan@agatlabs.com>
Subject: RE: Samples Received on Hold - Sept 2

Hi Maggie,

Please analyze the following with results due end of day this Friday:

- 3-1: BTEX/VPH
- 1-3: LEPH/HEPH/PAH, VOC/VPH

Please confirm

Thanks,

Steve Boyce, B.A. (Env)
Active Earth Engineering Ltd.
105 – 4343 Tyndall Avenue
Victoria, BC V8N 3R9
c: 778-888-0473
www.activeearth.ca

From: Maggie Chan [mailto:mchan@agatlabs.com]
Sent: September 2, 2016 9:30 AM
To: Steve Boyce <steve.boyce@activeearth.ca>; matt.pye@activeearth.ca
Subject: Samples Received on Hold - Sept 2

Happy Friday long weekend Steve and Matt!

We have received the samples on attached COC on hold. Please contact us to assign analysis.

Sincerely,
Maggie

Maggie Chan, DipT
Client Project Manager
Environmental Division
Direct: 778-452-4009
Cell: 604-700-1084
Email: mchan@agatlabs.com

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 16V135385

RECEIVING BASICS:
Received From: Active Earth Waybill #: _____

SAMPLE QUANTITIES:
Coolers: 1 Containers: 26

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 01-SEP-16 ALREADY EXCEEDED? Yes (No)

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's) *use jars when available

(1) 1 + 1 + 1 = 1 °C (2) ___+___+___=___°C (3) ___+___+___=___°C (4) ___+___+___=___°C

Was ice or ice pack present: (Yes) No

Integrity Issues:

Account Project Manager: _____ have they been notified of the above issues: Yes No

Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES: