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## SOIL QUALITY REPORT VERSION 1

October 17, 2023

AE PROJECT NUMBER: 3440

**STANTEC CONSULTING**

#400-655 Tyee Road  
Victoria, BC, V9A 6X5

**ATTENTION:** Tomasz Zolyniak

**REFERENCE:** Soil Quality Report  
Trans-Canada Highway Multi-Use Pathway,  
Duncan, BC

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### 1 INTRODUCTION & BACKGROUND

Active Earth Engineering Ltd. (Active Earth) was retained by Stantec Consulting (Stantec), to conduct a soil quality assessment and prepare a Soil Quality Report for the planned multi-use path (MUP) adjacent to the Trans-Canada Highway in Duncan, BC (the "Site"). The Site location is shown on Figure 1, attached.

The purpose of this work is to evaluate the chemical quality of on-Site soil that will be excavated during the MUP construction, to characterize the soil for off-Site disposal to an appropriate receiver facility.

The scope of work involved the following:

- A limited desktop study to identify the presence or absence of current or historical BC Contaminated Sites Regulation (CSR) Schedule 2 Activities, and / or Areas of Potential Environmental Concern (APECs), on-Site and in the direct vicinity of the Site. This step was warranted to identify Potential Contaminants of Concern (PCOC) for testing and to determine if Protocol 19 testing and notification requirements applied to the Site.
- Conduct a BC One-call and engaged a professional utility locator contractor to identify and mark underground services in the proposed drilling areas.
- Advanced 6 test holes using pionjar sampling equipment to a maximum of 1.5 metres (m) and collect, log and field screen representative soil samples.
- Submit samples for analysis of the identified PCOCs to a CALA-accredited laboratory.
- Prepare a Soil Quality Report detailing the chemical quality of the soil and disposal classifications.

## 2 SITE DETAILS

The following table summarizes the key Site location details:

### SITE DETAILS

Site Description	Location	City owned frontage of 540 Al Wilson Grove, 130 and 140 Trans-Canada Highway (TCH). See Figure 1.
	PID	N/A
	Cartographic Coordinates	48°46'24.5" North 123°41'55.0" West (approximate centre of investigation area)
Topography	Geodetic Elevation	Approximately 12-15m (geodetic)
	Site Topography	The narrow Site area generally slopes from the south (15m) down towards the north (12m). However, the surrounding area of the Site, east of the TCH, generally slopes from west to east away from the topographic highpoint of the highway.

## 3 RELEVANT STANDARDS

Soil standards are provided in Section 3.1 of the BC CSR. The purpose of this soil assessment is to classify the material for disposal. Therefore, we have considered the soil standards that would conservatively apply for relocation to various receiver land uses<sup>1</sup>, assuming conservative site-specific factors.

The BC Hazardous Waste Regulation (HWR) provides standards to determine if material qualifies as Hazardous Waste. Material classified as Hazardous Waste must be managed appropriately.

The BC Ministry of Environment and Climate Change Strategy (ENV) Protocol 4: Establishing Background Concentrations in Soil (P-4), provides regional background concentrations in soil for select parameters. Concentrations of regulated parameters that are within the applicable regional background estimates are not considered “contamination”, even if those concentrations exceed the applicable CSR soil standard.

## 4 LIMITED DESKTOP STUDY

The following were reviewed as part of a limited desktop study:

- Historical aerial photographs from the University of British Columbia from 1946 to 2007,
- Available aerial / satellite imagery post 2010 (Google Earth and local government online mapping applications),

<sup>1</sup> Standards for Agricultural (AL), Urban Park (PL), Residential Low Density (RLld), Residential High Density (RLhd), Commercial (CL), and Industrial (IL) land uses were considered.

- iMapBC Environmental Remediation Sites, and
- Google Street view from June 2009 to November 2022.

No evidence of potentially contaminated and/or remediated properties were identified within 150m of the Site. A summary of the Site and surrounding land use is provided below:

**Site:** Since the early 1990s the Site has been a mix of paved driveway, parking area, vegetated embankment and grassy landscaped area. Prior to the 1990s the southern portion of the Site was forested and in the 1960s, prior to the construction of the inn at 140 TCH, single-family residential homes were present at the northern portion of the Site.

**North:** The area north of the Site was occupied by single-family residential homes in the earliest available record (1946) until the 1970s when commercial development began replacing residential homes. To the northwest across the highway, commercial development began in the 1960s with the area completely developed as a parking lot and shopping center by the 1980s. Currently, various commercial shops and restaurants occupy the area north of the Site and residential single-family homes are still present to the northeast.

**East:** In the 1946 aerial photograph the area east of the southern portion of the Site is forested and there appears to be single-family residential homes in the area east of the northern portion of the Site. In the 1962 aerial photograph the inn at 140 TCH is present, east of the northern portion of the Site area. The commercial building at 130 TCH, east of the middle area of the Site, is present in the 1973 aerial photo with a parking area to the west of the building. The area east of the southern portion of the Site was forested until the late 1980s when the area was cleared in advance of development. In the 1993 aerial photograph the current apartment building at 540 Al Wilson Grove has been constructed with a grassy frontage and sidewalk constructed west of the building in the project area.

**South:** The Cowichan River flows south of the Project area.

**West:** The area west of the Site was forested in the 1946 aerial photograph. In the 1950 photograph the TCH has been constructed adjacent to the Site. Development of the shopping center west of the northern portion of the Site across the highway began in the early 1970s. Currently this area is occupied by a restaurant, clothing store and other commercial shops. Across the highway from the southern portion of the Site remained forested until the mid 2000s when a casino was constructed approximately 90m west of the Site.

Overall, no current or historical Schedule 2 activities were identified within the vicinity of the Site. Given that no current or historical Schedule 2 activities were identified at the Site, the assessment and relocation of this soil is not required to comply with the testing and public notification

provisions set out in Section 55 of the BC Environmental Management Act, Sections 42 and 43 of the CSR, and Protocol 19<sup>2</sup>.

Based on the desktop review, PCOCs were limited to parameters of concern related to fill of unknown quality and road salting, outlined below:

- Metals,
- Hydrocarbons (Light / Heavy Extractable Petroleum Hydrocarbons [L/HEPH] and Polycyclic Aromatic Hydrocarbons [PAHs]), and
- Sodium ions.

One sample was also analysed for Volatile Organic Compounds (VOCs) as this analysis may be required for disposal at certain facilities.

## 5 METHODOLOGY

### 5.1 Utility Locates

Utility locates were completed by GeoScan under Active Earth supervision on September 19, 2023 to clear investigative locations and mark out underground utilities in the project area.

### 5.2 Drilling

One investigation location was advanced for approximately every 40m of length of the MUP. The MUP will extend approximately 260m and therefore a total of 6 investigation locations were advanced, each to a depth of 1.5m. All boreholes were advanced on September 21, 2023 by Westsoils under Active Earth supervision, using pionjar sampling equipment.

### 5.3 Soil Sampling

Soil samples were recovered during drilling from the interlocking split spoon at regular intervals and changes in stratigraphy.

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. Samples submitted for analysis of select volatile parameters were field-preserved as required using laboratory-provided methanol preservation kits, in order to further prevent the loss of volatile contaminants.

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 the chain of custody protocol to ALS Environmental 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

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<sup>2</sup> BC Ministry of Environment and Climate Change Strategy, Protocol 19: Site Investigation and Reporting (January 24, 2023).

of the resulting volatile organic vapour concentrations was then measured using a portable RKI Eagle® vapour analyzer. The monitoring equipment was calibrated before field use. Headspace vapour measurements are indicated on the borehole logs in Appendix A.

This approach was considered sufficient to assess the overall chemical quality of the soil for disposal planning purposes<sup>3</sup>.

## 6 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;
- Submission of samples within recommended holding times; and
- Analysis of duplicate sample results and laboratory internal QA/QC.

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

### BCELM RECOMMENDATIONS RPDS

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

<sup>3</sup> The Ministry of Environment and Climate Change Strategy (ENV) Technical Guidance Document 1 (TG1) provides guidance for investigating and characterizing soil at, and from, sites that may be contaminated. Active Earth generally followed the soil sampling methodologies provided in TG1, and followed our standard practices and protocols for sample collection, storage and transmittal.

One sample duplicate pair (AE23-BH6-1 / AE23-BHX) was submitted for metals analysis to assess data quality. All RPD results were within acceptable limits, as shown in Table 2 attached.

Overall, based on the results of the laboratory's internal QA/QC program, as well as Active Earth's supplemental QA/QC program, the results are considered valid. No systematic problems with the sampling and/or analysis have been identified that would compromise the dataset.

## 7 RESULTS

### 7.1 Soil Description and Observations

The three locations advanced in the northern portion of the Site (AE23-BH1 through 3) generally showed a layer of topsoil fill (maximum thickness of 0.2m) overlaying gravelly silt fill.

The locations in the southern portion of the Site (AE23-BH4 through 6) generally had a layer of topsoil fill (maximum depth of 0.6m) overlaying native clayey silt or silty clay with gravel.

No signs of contamination were observed during the investigations (odours, staining, debris, elevated headspace vapours). Borehole logs are attached in Appendix A.

Groundwater was not encountered during the drilling.

### 7.2 Soil Results

Various PAH concentrations in samples AE23-BH1-1 and AE23-BH6-2 exceeded AL standards, however all samples met RLld standards for all analysed parameters. Iron and vanadium concentrations were noted to exceed the applicable CSR standards for various samples but were below the relevant P-4 Regional Background Concentrations. Therefore, the material is not considered contaminated if it stays within Vancouver Island.

Soil vapour assessment was not considered warranted, as the risk of vapour contamination was considered to be negligible or low<sup>4</sup>.

Concentrations of Benzo(a)Pyrene exceeded the "rule of 20"<sup>5</sup> Hazardous Waste screening concentrations in samples AE23-BH1-1, AE23-BH2-1, and AE23-BH6-2. A leachate test was requested for the sample with the highest Benzo(a)pyrene concentration (AE23-BH6-2). The results are shown in Table 4 and confirmed the material is not Hazardous Waste.

Soil results are summarized on Figure 2 and the attached Tables 1 through 4. Laboratory Certificates are attached as Appendix B.

<sup>4</sup> Soil laboratory results for all volatile parameters were less than the laboratory method detection limits (MDLs), with the exception of toluene in sample AE23-BH5-2, and field screening demonstrated no appreciable vapours.

<sup>5</sup> The leachate analysis procedure used to determine presence/absence of Hazardous Waste utilizes an extraction fluid that is 20 times the weight of the soil sample. The maximum possible concentration in the analysis leachate is therefore 1/20<sup>th</sup> of the concentration in soil. If the soil concentration is *less than* 20 times the HWR leachate standard, it is *not possible* for the soil to be Hazardous Waste. If the soil concentration is *equal to or greater than* 20 times the HWR leachate standard, it is *theoretically possible* for the soil to be Hazardous Waste.

## 8 CONCLUSIONS AND RECOMMENDATIONS

Based on the soil assessment described above, soil excavated from the MUP area can be disposed of at clean fill receiver facilities where the following conditions are met:

- The Site must be located on Vancouver Island, and
- Agricultural (AL) standards do not apply to the receiver site.

Operators should pay close attention to soils during excavation work. If signs of contamination are observed, such as odour or staining, a Qualified Environmental Professional such as Active Earth should be contacted to provide next steps.

## 9 LIMITATIONS

The use of this report by anyone is subject to the following conditions and limitations:

1. This report has been prepared at the request of the client and for the specific use referred to herein. Stantec Consulting may rely on this report. It is not reasonable for any other party to rely on the contents of this report without first obtaining written authorization from the client and Active Earth Engineering Ltd.
2. Liability is expressly denied to any person other than the parties indicated above and those who obtain written consent. Accordingly, Active Earth Engineering Ltd. does not accept responsibility for any damage suffered by any such person as a result of decisions made or actions based on this report. Diligence by all intended users is assumed.
3. This report is believed to provide a reasonable representation of the 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.
4. Active Earth Engineering Ltd. has agreed to conduct an assessment and prepare this report as requested by the client named in the report for the use specified by the client, which is stated in the report. The client has agreed that the performance of this work and the report format are appropriate for the intended use.
5. Written consent from Active Earth Engineering Ltd. must be obtained before any part of the report can be used for any purpose by anyone other than the client and other intended users identified in the report. Liability to any other party or for any other use is expressly denied regardless of who pays Active Earth Engineering Ltd.'s fee. Written consent and approval of Active Earth Engineering Ltd. must also be obtained before the report (or any part of it) can be altered or conveyed to other parties or the public through prospectus, offering memoranda, advertising, public relations, news, sales or other media.

## 10 CLOSURE

We trust this provides the information required at this time. If you have any questions, or require additional clarification, please contact the undersigned.

Yours truly,

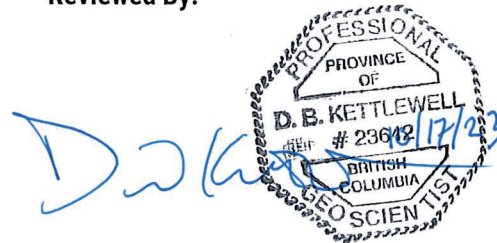
### ACTIVE EARTH ENGINEERING LTD.

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Senior Project Manager

EG-BC Permit to Practice # 1001595

## ATTACHMENTS

### LIST OF ACRONYMS

### FIGURES

- Figure 1 Borehole Plan
- Figure 2 Soil Analytical Results

### TABLES

- Table 1 Analytical Results for Hydrocarbons in Soil
- Table 2 Analytical Results for Metals and Salts in Soil
- Table 3 Analytical Results for Volatile Organic Compounds in Soil
- Table 4 Analytical Concentrations for TCLP benzo(a)pyrene in Soil

### APPENDICES

- Appendix A Borehole Logs
- Appendix B Laboratory Certificates



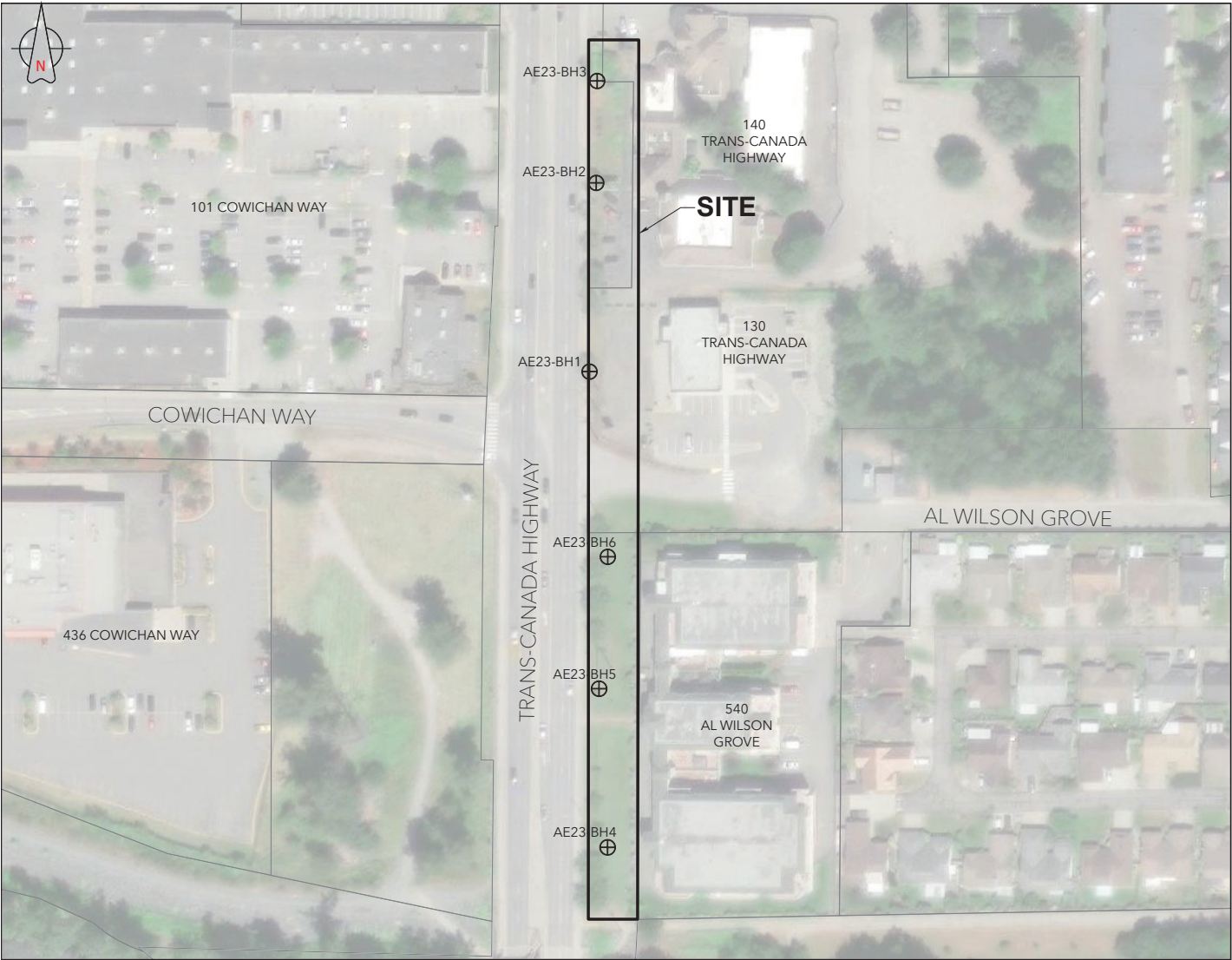


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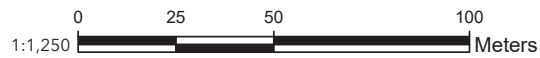
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# FIGURES



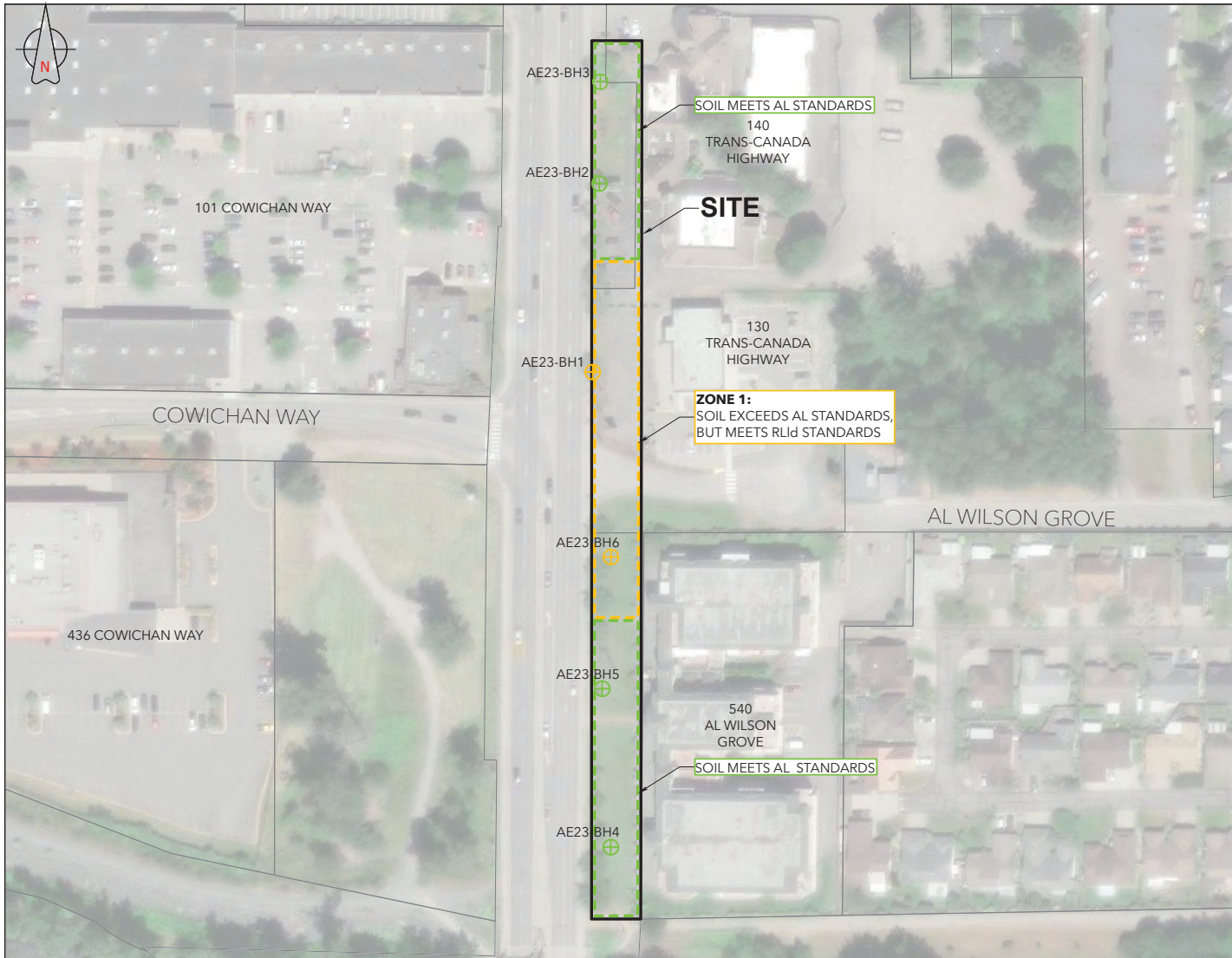


- LEGEND**
- APPROXIMATE LEGAL LOT LINE
  - APPROXIMATE SITE BOUNDARY
  - ⊕ BOREHOLE



		<b>ACTIVE EARTH</b> ENGINEERING LTD	
CLIENT NAME: STANTEC CONSULTING		PROJECT LOCATION: DUNCAN, BC	
<b>BOREHOLE PLAN</b>			
<b>TRANS-CANADA HIGHWAY MULTI USE PATH</b>			
DWN BY: WS	DWG NAME: FIG1	DATE: 2023-10-17	FIGURE 1
CHK'D: DBK	PLOT: 11x17	GISFILE: 3440	

REFERENCE: COWICHAN VALLEY REGIONAL DISTRICT GIS DOWNLOADS, B.C. DATA CATALOGUE - MUNICIPALITY OF NORTH COWICHAN, ESRI WORLD IMAGERY DATED 2023

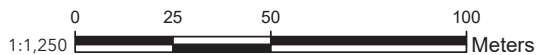


**LEGEND**

- APPROXIMATE LEGAL LOT LINE
- APPROXIMATE SITE BOUNDARY
- ⊕ BOREHOLE

**SOIL ANALYTICAL RESULTS**

- GREEN ≤ CSR STANDARDS
- ORANGE > CSR AL
- BLUE > CSR RLld/RLhd
- RED > CSR CL/IL



REFERENCE: COWICHAN VALLEY REGIONAL DISTRICT GIS DOWNLOADS, B.C. DATA CATALOGUE - MUNICIPALITY OF NORTH COWICHAN, ESRI WORLD IMAGERY DATED 2023



CLIENT NAME: STANTEC CONSULTING PROJECT LOCATION: DUNCAN, BC

**SOIL ANALYTICAL RESULTS  
TRANS-CANADA HIGHWAY MULTI USE PATH**

DWN BY: WS	DWG NAME: FIG2	DATE: 2023-10-17	FIGURE 2
CHK'D: DBK	PLOT: 11x17	GISFILE: 3440	



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# TABLES

**Analytical Table Footnotes: Analytical Results for Soil - Comparison to Conservative Soil Relocation Standards**

Tables should be viewed and printed in colour.

All concentrations in µg/g, except pH or where otherwise noted.

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, including amendments up to the date of this report), Numerical Soil Standards (Schedule 3.1 Parts 1, 2, and 3) for soil relocation to the receiver site land uses indicated below. When evaluating soil relocation, all site specific factors are considered to apply (except groundwater used for irrigation, which was considered to apply to Agricultural lands only, not Residential Low-Density or Urban Park lands). If any results exceed these standards, the soil relocation to the respective land use is prohibited unless the receiver site is duly authorized by Permit or Contaminated Soil Relocation Agreement (CSRA).

Applicable Site-Specific Factors (CSR)	Soil Relocation Land Use Standards (CSR)	
Intake of contaminated soil	Agricultural (AL)	Included for Information Purposes
Toxicity to soil invertebrates and plants	Urban Park (PL)	Included for Information Purposes
Groundwater used for drinking water	Residential - Low Density (RLld)	Included for Information Purposes
Groundwater flow to surface water used by aquatic life - freshwater and marine	Residential - High Density (RLhd)	Included for Information Purposes
Livestock ingesting soil and fodder (applied to Agricultural land use standards only)	Commercial (CL)	Included for Information Purposes
Major microbial functional impairment (applied to Agricultural land use standards only)	Industrial (IL)	Included for Information Purposes
Groundwater used for livestock watering (applied to Agricultural land use standards only)		
Groundwater used for irrigation (applied to Agricultural land use standards only)		

- (2) 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<sub>10</sub> - c<sub>19</sub>) and EPH (c<sub>19</sub> - c<sub>32</sub>) are uncorrected for PAH.
- (3) Total chromium standard shown is the more conservative of the Standards for chromium +6 and chromium +3.
- (4) BC Hazardous Waste Regulation (HWR BC Reg. 63/88 including amendments up to the date of this report), Schedule 1 and Schedule 4 Table 1. Hazardous Waste PAH standard as per Section 1 definition for Waste Containing PAH.
- (5) ENV Protocol 4 - Establishing Background Concentrations in Soil (Version 11, February 1, 2021), Table 1.
- (6) If the results are equal to or exceed the trigger concentration, then TCLP Leachate analysis may be required to determine if the material is Hazardous Waste before a receiver facility will accept the soil.

<b>BLUE TEXT</b>	Concentration less than Laboratory Method Detection Limit
<b>BOLD, UNDERLINE</b>	Laboratory Method Detection Limit exceeds one or more standard
<b>THICK OUTLINE</b>	Concentration greater than or equal to HW Leachate Analysis Trigger Concentration
<b>MAGENTA SHADING</b>	Concentration greater than HWR Standard
<b>GREY SHADING</b>	Concentration greater than applicable CSR Standard but within relevant Protocol 4 Regional Background Concentration
<b>ORANGE SHADING</b>	Concentration greater than CSR standards that control relocation to Agricultural (AL) Land Use Receiver Sites
<b>LIGHT BLUE SHADING</b>	Concentration greater than CSR standards that control relocation to Urban Park (PL) Land Use Receiver Sites
<b>BLUE SHADING</b>	Concentration greater than CSR standards that control relocation to Residential - Low Density (RLld) Land Use Receiver Sites
<b>BOLD, BLUE SHADING</b>	Concentration greater than CSR standards that control relocation to Residential - High Density (RLhd) Land Use Receiver Sites
<b>RED SHADING</b>	Concentration greater than CSR standards that control relocation to Commercial (CL) Land Use Receiver Sites
<b>BOLD, RED SHADING</b>	Concentration greater than CSR standards that control relocation to Industrial (IL) Land Use Receiver Sites

Associated Lab Files: VA23C2689

Table 1: Analytical Results for Hydrocarbons in Soil

		Sample Location						AE23-BH1	AE23-BH2	AE23-BH3	AE23-BH4	AE23-BH5	AE23-BH6
		Sample ID						AE23-BH1-1	AE23-BH2-1	AE23-BH3-1	AE23-BH4-1	AE23-BH5-2	AE23-BH6-2
		Depth (m)						0.1	0.4	0.4	0.5	1.2	1.2
		Vapour Reading (ppm)						0	0	0	0	0	0
		Fill/Native						Fill	Native	Fill	Native	Native	Native
		Date Sampled						21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23	21-Sep-23
Completed by: KL Review by: ES	CSR Soil Relocation Standards <sup>(1)</sup> (Assumed/Conservative)						Hazardous Waste Standards <sup>(4)</sup>	Hazardous Waste Leachate Analysis Trigger Concentration <sup>(6)</sup>					
	Agricultural (AL)	Urban Park (PL)	Residential Low Density (RLd)	Residential High Density (RLhd)	Commercial (CL)	Industrial (IL)							
<b>Extractable Petroleum Hydrocarbons (ug/g)</b>													
EPH(C <sub>10-16</sub> ) <sup>(2)</sup>	1,000	1,000	1,000	1,000	2,000	2,000	-	-	<200	<200	<200	<200	
EPH(C <sub>18-32</sub> ) <sup>(2)</sup>	1,000	1,000	1,000	1,000	5,000	5,000	-	-	<200	<200	<200	<200	
LEPH	1,000	1,000	1,000	1,000	2,000	2,000	-	-	<200	<200	<200	<200	
HEPH	1,000	1,000	1,000	1,000	5,000	5,000	-	-	<200	<200	<200	<200	
<b>Polycyclic Aromatic Hydrocarbons (ug/g)</b>													
acenaphthene	950	2,000	950	2,000	15,000	15,000	-	-	<0.0050	<0.0050	<0.0050	0.0108	
acenaphthylene	-	-	-	-	-	-	-	-	0.0139	0.0117	<0.0050	0.0093	
acridine	-	-	-	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010	
anthracene	2.5	2.5	2.5	30	30	30	-	-	<0.0120	0.0123	<0.0040	0.0059	
benzo(a)anthracene	0.1	1	1	10	10	10	-	-	0.064	0.037	<0.010	0.012	
benzo(a)pyrene	5	10	5	10	30	50	-	0.02	0.084	0.041	<0.010	0.017	
benzo(b+j)fluoranthene	0.1	1	1	10	10	10	-	-	0.124	0.051	<0.010	0.022	
benzo(b+k)fluoranthene	-	-	-	-	-	-	-	-	0.163	0.067	<0.015	0.022	
benzo(g,h,i)perylene	-	-	-	-	-	-	-	-	0.067	0.026	<0.010	0.015	
benzo(k)fluoranthene	0.1	1	1	10	10	10	-	-	0.039	0.016	<0.010	0.010	
chrysene	200	400	200	400	4,500	4,500	-	-	0.089	0.049	<0.010	0.015	
dibenz(a,h)anthracene	0.1	1	1	10	10	10	-	-	0.0157	0.0072	<0.0050	0.0372	
fluoranthene	50	50	50	200	200	200	-	-	0.089	0.077	<0.010	0.018	
fluorene	600	1,000	600	1,000	9,500	9,500	-	-	<0.010	<0.010	<0.010	0.043	
indeno(1,2,3-c,d)pyrene	0.1	1	1	10	10	10	-	-	0.074	0.031	<0.010	0.016	
1-methylnaphthalene	250	500	250	500	1,000	1,000	-	-	<0.010	<0.010	<0.010	0.011	
2-methylnaphthalene	60	100	60	100	950	950	-	-	<0.010	<0.010	<0.010	0.011	
naphthalene	0.6	0.6	0.6	20	20	20	-	-	<0.010	<0.010	<0.010	<0.010	
phenanthrene	0.1	5	5	50	50	50	-	-	0.019	0.051	<0.010	0.017	
pyrene	0.1	10	10	100	100	100	-	-	0.085	0.078	<0.010	0.021	
quinoline	2.5	4.5	2.5	4.5	10	10	-	-	<0.010	<0.010	<0.010	<0.010	
PAH TEQ (Calculated)	-	-	-	-	-	-	100	-	0.13136	0.06245	0.0192	0.0283	
<b>Non-Halogenated Volatiles (ug/g)</b>													
benzene	0.035	0.035	0.035	0.035	0.035	0.035	-	10	-	-	-	<0.0050	
toluene	0.5	0.5	0.5	0.5	0.5	0.5	-	48	-	-	-	0.054	
ethylbenzene	15	15	15	15	15	15	-	4.8	-	-	-	<0.015	
xylenes	6.5	6.5	6.5	6.5	6.5	6.5	-	600	-	-	-	<0.075	
styrene	0.1	5	5	50	50	50	-	-	-	-	-	<0.050	
methyl tert-butyl ether (MTBE)	4,000	8,000	4,000	8,000	20,000	20,000	-	-	-	-	-	<0.040	

BLUE TEXT	Concentration less than Laboratory Method Detection Limit
<b>BOLD, UNDERLINE</b>	Laboratory Method Detection Limit exceeds one or more standard
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ORANGE SHADING	Concentration greater than CSR standards that control relocation to Agricultural (AL) Land Use Receiver Sites
LIGHT BLUE SHADING	Concentration greater than CSR standards that control relocation to Urban Park (PL) Land Use Receiver Sites
BLUE SHADING	Concentration greater than CSR standards that control relocation to Residential - Low Density (RLd) Land Use Receiver Sites
<b>BOLD, BLUE SHADING</b>	Concentration greater than CSR standards that control relocation to Residential - High Density (RLhd) Land Use Receiver Sites
RED SHADING	Concentration greater than CSR standards that control relocation to Commercial (CL) Land Use Receiver Sites
<b>BOLD, RED SHADING</b>	Concentration greater than CSR standards that control relocation to Industrial (IL) Land Use Receiver Sites

Table 2: Analytical Results for Metals and Salts in Soil

	Sample Location	Sample Location											Date Sampled	
		Sample ID	AE23-BH1		AE23-BH2		AE23-BH3		AE23-BH4		Region 1 Vancouver Island	Protocol 4 Background Concentrations <sup>(6)</sup>		Hazardous Waste Leachate Analysis Trigger Concentration <sup>(6)</sup>
			AE23-BH1-1	AE23-BH1-2	AE23-BH2-1	AE23-BH2-2	AE23-BH3-1	AE23-BH4-1	AE23-BH4-2					
			Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)					
Fill/Native	Fill/Native	Fill/Native	Fill/Native	Fill/Native	Fill/Native	Fill/Native								
Completed by: KL Review by: ES		CSR Soil Relocation Standards <sup>(1)</sup> (Assumed/Conservative)												
		Agricultural (AL)	Urban Park (PL)	Residential Low Density (RLd)	Residential High Density (RLhd)	Commercial (CL)	Industrial (IL)							
<b>Physical Tests</b>														
% moisture		-	-	-	-	-	-	-	-	-	-	-	-	
pH		-	-	-	-	-	-	-	-	-	-	-	-	
<b>Salts (µg/g) via Sat. Paste.</b>														
sodium (Na)		200	200	200	1,000	1,000	1,000	-	-	-	-	-	-	
chloride (Cl)		40	100	100	100	100	100	-	-	-	-	-	-	
<b>Total Metals (µg/g)</b>														
aluminum (Al)		40,000	40,000	40,000	40,000	250,000	250,000	55,000	-	-	-	-	-	
antimony (Sb)		20	20	20	40	40	40	4	-	-	-	-	-	
arsenic (As)		10	10	10	10	10	10	4	50	5.75	6	5.86	4.83	
barium (Ba)		350	350	350	350	350	350	250	2,000	100	89.8	92.2	95	
beryllium (Be)	pH <6.5 pH 6.5-<7.0 pH 7.0-<7.5 pH 7.5-<8.0 pH ≥8.0	1 4 30 85 85	1 4 30 150 150	1 4 30 85 85	1 4 30 150 150	1 4 30 250 350	1 4 30 250 350	0.7	-	0.42	0.49	0.38	0.54	0.27
bismuth (Bi)		-	-	-	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20
boron (B)		8500	15000	8500	15000	50000	>1,000 mg/g	1	10,000	<5.0	<5.0	<5.0	<5.0	<5.0
boron (hot water soluble)		2	-	-	-	-	-	-	-	-	-	-	-	-
cadmium (Cd)	pH <7.0 pH 7.0-<7.5 pH 7.5-<8.0 pH ≥8.0	1 3 10 10	1 3 20 30	1 3 20 30	1 3 20 40	1 3 20 50	1 3 20 50	0.95	10	0.211	0.116	0.176	0.102	0.061
calcium (Ca)		-	-	-	-	-	-	-	-	7610	8,200	7,960	9,090	9,210
chromium (Cr)		60	60 <sup>(3)</sup>	60 <sup>(3)</sup>	60 <sup>(3)</sup>	60 <sup>(3)</sup>	60 <sup>(3)</sup>	65	100	39.1	47.5	38.1	49.7	28.2
cobalt (Co)		25	25	25	25	25	25	30	-	15.8	25	15.4	18.7	11.9
copper (Cu)	pH <5.5 pH 5.5-<6.0 pH ≥6.0	75 100 150	75 100 150	75 100 150	75 100 300	75 100 300	75 100 300	100	2,000	50.3	53.7	50.3	52.2	50.1
iron (Fe)		35,000	35,000	35,000	35,000	150,000	150,000	70,000	-	36,300	40,700	36,600	41,900	28,100
lead (Pb)	pH <5.5 pH 5.5-<6.0 pH 6.0-<6.5 pH ≥6.5	120	120	120	120	120	120	40	100	26.7	4.25	26	4.16	2.72
lithium (Li)		30	65	30	65	450	450	-	-	14.7	16.6	15.2	16.9	10.6
magnesium (Mg)		-	-	-	-	-	-	-	-	10,900	12,600	10,800	12,700	8,690
manganese (Mn)		2,000	2,000	2,000	2,000	2,000	2,000	5,000	-	753	763	722	778	644
mercury (Hg)		0.6	25	10	25	75	75	0.15	2	<0.0500	0.0534	<0.0500	0.283	<0.0500
molybdenum (Mo)		3	15	15	15	15	15	1	-	0.36	0.29	0.33	0.3	0.58
nickel (Ni)	pH <7.5 pH >7.5	70 150	70 150	70 150	70 250	70 250	70 250	50	-	26.5	31.3	26.6	31	20.7
phosphorus (P)		-	-	-	-	-	-	-	-	987	693	1,020	697	723
potassium (K)		-	-	-	-	-	-	-	-	950	680	1,000	840	850
selenium (Se)		1	1	1	1	1	1	4	20	<0.20	<0.20	<0.20	<0.20	0.28
silver (Ag)		20	20	20	40	40	40	1	100	<0.10	<0.10	<0.10	<0.10	0.11
sodium (Na)		-	-	-	-	-	-	-	-	321	237	372	265	656
strontium (Sr)		9,500	20,000	9,500	20,000	150,000	150,000	100	-	42.2	52.9	43.7	61.2	43
sulfur (S)		2,000	-	-	-	-	-	1,000	-	<1,000	<1,000	<1,000	<1,000	<1,000
thallium (Tl)		2	9	9	25	25	25	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
tin (Sn)		5	50	50	300	300	300	4	-	<2.0	<2.0	<2.0	<2.0	<2.0
titanium (Ti)		-	-	-	-	-	-	-	-	1,190	1,460	1,160	1,690	1,320
tungsten (W)		15	25	15	25	200	200	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
uranium (U)		15	30	30	30	30	30	-	-	0.331	0.407	0.31	0.435	0.349
vanadium (V)		100	100	100	100	100	100	200	-	100	122	102	126	88.5
zinc (Zn)	pH <8.0 pH >8.0	150 200	150 200	150 200	150 200	150 200	150 200	150	10,000	82.6	64.6	82.6	64	43.2
zirconium (Zr)		-	-	-	-	-	-	-	-	1.6	2.5	1.6	2.5	3.6

BLUE TEXT	Concentration less than Laboratory Method Detection Limit
BOLD, UNDERLINE	Laboratory Method Detection Limit exceeds one or more standard
THICK OUTLINE	Concentration greater than or equal to HW Leachate Analysis Trigger Concentration
GREY SHADING	Concentration greater than applicable CSR Standard but within relevant Protocol 4 Regional Background Concentration
ORANGE SHADING	Concentration greater than CSR standards that control relocation to Agricultural (AL) Land Use Receiver Sites
LIGHT BLUE SHADING	Concentration greater than CSR standards that control relocation to Urban Park (PL) Land Use Receiver Sites
BLUE SHADING	Concentration greater than CSR standards that control relocation to Residential - Low Density (RLd) Land Use Receiver Sites
BOLD, BLUE SHADING	Concentration greater than CSR standards that control relocation to Residential - High Density (RLhd) Land Use Receiver Sites
RED SHADING	Concentration greater than CSR standards that control relocation to Commercial (CL) Land Use Receiver Sites
BOLD, RED SHADING	Concentration greater than CSR standards that control relocation to Industrial (IL) Land Use Receiver Sites

Table 2: Analytical Results for Metals and Salts in Soil

	Sample Location	Sample Location										RPD %	AE23-BH6-2				
		AE23-BH5-1		AE23-BH5-2		AE23-BH6-1		AE23-BHX									
		Depth (m)		1.2		0.4		0.4									
		Fill/Native		Native		Fill		Fill									
Date Sampled		21-Sep-23		21-Sep-23		21-Sep-23		21-Sep-23									
		CSR Soil Relocation Standards <sup>(1)</sup> (Assumed/Conservative)					Protocol 4 Background Concentrations <sup>(6)</sup>		Region 1 Vancouver Island	Hazardous Waste Leachate Analysis Trigger Concentration <sup>(6)</sup>							
		Agricultural (AL)	Urban Park (PL)	Residential Low Density (RLiD)	Residential High Density (RLhD)	Commercial (CL)	Industrial (IL)										
Physical Tests																	
% moisture	-	-	-	-	-	-	-	-	-	-	13.3	-	-	10.8			
pH	-	-	-	-	-	-	-	-	-	-	5.72	6.31	5.9	6.08	3%	6.53	
Salts (µg/g) via Sat. Paste.																	
sodium (Na)	200	200	200	1,000	1,000	1,000	-	-	-	-	3.76	-	-	-	-	5.33	
chloride (Cl)	40	100	100	100	100	100	-	-	-	-	4	-	-	-	-	<3.3	
Total Metals (µg/g)																	
aluminum (Al)	40,000	40,000	40,000	40,000	250,000	250,000	55,000	-	-	26,100	24,300	24,100	24,200	0%	-	22,900	
antimony (Sb)	20	20	20	40	40	40	4	-	-	0.31	0.35	0.33	0.4	19%	-	0.34	
arsenic (As)	10	10	10	10	10	10	4	50	-	4.87	5.39	5.08	5.12	1%	-	4.81	
barium (Ba)	350	350	350	350	350	350	250	2,000	-	93	73.1	86.2	78.5	9%	-	86.3	
beryllium (Be)	pH <6.5 pH 6.5-<7.0 pH 7.0-<7.5 pH 7.5-<8.0 pH ≥8.0	1 4 30 85	1 4 30 150	1 4 30 85	1 4 30 150	1 4 30 150	1 4 30 250	1 4 30 350	0.7	-	0.45	0.42	0.42	0.44	5%	-	0.36
bismuth (Bi)	-	-	-	-	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	*	-	<0.20	
boron (B)	8500	15000	8500	15000	50000	>1,000 mg/g	1	10,000	-	<5.0	<5.0	<5.0	<5.0	*	-	<5.0	
boron (hot water soluble)	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
cadmium (Cd)	pH <7.0 pH 7.0-<7.5 pH 7.5-<8.0 pH ≥8.0	1 3 10 10	1 3 20 30	1 3 20 30	1 3 20 40	1 3 20 50	1 3 20 300	1 3 20 300	0.95	10	0.128	0.12	0.134	0.145	8%	-	0.132
calcium (Ca)	-	-	-	-	-	-	-	-	-	7,680	6,340	7,040	8,000	13%	-	6,590	
chromium (Cr)	60	60 <sup>(3)</sup>	60 <sup>(3)</sup>	60 <sup>(3)</sup>	60 <sup>(3)</sup>	60 <sup>(3)</sup>	65	100	-	43.5	39.2	40	41.6	4%	-	37.5	
cobalt (Co)	25	25	25	25	25	25	30	-	-	15	16.1	15.4	15.7	2%	-	15.6	
copper (Cu)	pH <5.5 pH 5.5-<6.0 pH ≥6.0	75 100 150	75 100 150	75 100 150	75 100 300	75 100 300	75 100 300	100	2,000	50.4	55.4	52.8	51.8	2%	-	57.5	
iron (Fe)	35,000	35,000	35,000	35,000	150,000	150,000	70,000	-	-	35,700	35,300	34,900	35,500	2%	-	33,700	
lead (Pb)	pH <5.5 pH 5.5-<6.0 pH 6.0-<6.5 pH ≥6.5	120	120	120	120	120	120	120	40	100	6.3	8.49	10.1	10.8	7%	-	8.6
lithium (Li)	30	65	30	65	450	450	-	-	-	16.3	16.4	17.6	16.8	5%	-	17.1	
magnesium (Mg)	-	-	-	-	-	-	-	-	-	10,000	9,980	10,200	10,500	3%	-	10,600	
manganese (Mn)	2,000	2,000	2,000	2,000	2,000	2,000	5,000	-	-	611	536	608	600	1%	-	600	
mercury (Hg)	0.6	25	10	25	75	75	0.15	2	-	<0.0500	<0.0500	<0.0500	<0.0500	*	-	<0.0500	
molybdenum (Mo)	3	15	15	15	15	15	1	-	-	0.32	0.5	0.38	0.69	*	-	0.35	
nickel (Ni)	pH <7.5 pH >7.5	70 150	70 150	70 150	70 250	70 250	70 250	50	-	29.5	27.9	28.5	28.3	1%	-	28.8	
phosphorus (P)	-	-	-	-	-	-	-	-	-	734	740	840	886	5%	-	740	
potassium (K)	-	-	-	-	-	-	-	-	-	800	700	820	880	7%	-	770	
selenium (Se)	1	1	1	1	1	1	4	20	-	0.2	<0.20	<0.20	<0.20	*	-	<0.20	
silver (Ag)	20	20	20	40	40	40	1	100	-	<0.10	<0.10	<0.10	<0.10	*	-	<0.10	
sodium (Na)	-	-	-	-	-	-	-	-	-	257	209	248	273	10%	-	235	
strontium (Sr)	9,500	20,000	9,500	20,000	150,000	150,000	100	-	-	52.9	42.9	44.7	50.8	13%	-	35.2	
sulfur (S)	2,000	-	-	-	-	-	1,000	-	-	<1,000	<1,000	<1,000	<1,000	*	-	<1,000	
thallium (Tl)	2	9	9	25	25	25	-	-	-	<0.050	<0.050	<0.050	<0.050	*	-	<0.050	
tin (Sn)	5	50	50	300	300	300	4	-	-	<2.0	<2.0	<2.0	<2.0	*	-	<2.0	
titanium (Ti)	-	-	-	-	-	-	-	-	-	1,380	1,140	1,170	1,430	20%	-	972	
tungsten (W)	15	25	15	25	200	200	-	-	-	<0.50	<0.50	<0.50	<0.50	*	-	<0.50	
uranium (U)	15	30	30	30	30	30	-	-	-	0.392	0.355	0.348	0.368	6%	-	0.275	
vanadium (V)	100	100	100	100	100	100	200	-	-	105	99.8	99.8	106	6%	-	90.9	
zinc (Zn)	pH <8.0 pH >8.0	150 200	150 200	150 200	150 200	150 200	150	10,000	-	66.6	75.6	74	74.1	0%	-	73.8	
zirconium (Zr)	-	-	-	-	-	-	-	-	-	1.9	3.4	2.1	2.4	13%	-	2	

BLUE TEXT	Concentration less than Laboratory Method Detection Limit
BOLD, UNDERLINE	Laboratory Method Detection Limit exceeds one or more standard
THICK OUTLINE	Concentration greater than or equal to HW Leachate Analysis Trigger Concentration
GREY SHADING	Concentration greater than applicable CSR Standard but within relevant Protocol 4 Regional Background Concentration
ORANGE SHADING	Concentration greater than CSR standards that control relocation to Agricultural (AL) Land Use Receiver Sites
LIGHT BLUE SHADING	Concentration greater than CSR standards that control relocation to Urban Park (PL) Land Use Receiver Sites
BLUE SHADING	Concentration greater than CSR standards that control relocation to Residential - Low Density (RLiD) Land Use Receiver Sites
BOLD, BLUE SHADING	Concentration greater than CSR standards that control relocation to Residential - High Density (RLhD) Land Use Receiver Sites
RED SHADING	Concentration greater than CSR standards that control relocation to Commercial (CL) Land Use Receiver Sites
BOLD, RED SHADING	Concentration greater than CSR standards that control relocation to Industrial (IL) Land Use Receiver Sites



**Table 3: Analytical Results for Volatile Organic Compounds In Soil**

							Sample Location	AE23-BH5
							Sample ID	AE23-BH5-2
							Depth (m)	1.2
							Vapour Reading (ppm)	0
							Fill/Native	Native
							Date Sampled	21-Sep-23
Completed by: KL Review by: ES	CSR Soil Relocation Standards <sup>(1)</sup> (Assumed/Conservative)						Hazardous Waste Leachate Analysis Trigger Concentration <sup>(6)</sup>	
	Agricultural (AL)	Urban Park (PL)	Residential Low Density (RLld)	Residential High Density (RLhd)	Commercial (CL)	Industrial (IL)		
<b>Halogenated Volatiles (µg/g)</b>								
chlorobenzene	0.1	1	1	10	10	10	160	<0.050
chloromethane	-	-	-	-	-	-	-	<0.050
1,2-dichlorobenzene	0.1	1	1	10	10	10	400	<0.050
1,3-dichlorobenzene	0.1	1	1	10	10	10	-	<0.050
1,4-dichlorobenzene	0.1	1	1	10	10	10	10	<0.050
1,2-dichloropropane	0.1	5	5	50	50	50	-	<0.050
1,3-dichloropropane (cis + trans)	0.1	5	5	50	50	50	-	<0.075
cis-1,3-dichloropropene	-	-	-	-	-	-	-	<0.050
1,1,1,2-tetrachloroethane	250	550	250	550	1,500	1,500	-	<0.050
1,1,2,2-tetrachloroethane	35	70	35	70	150	150	-	<0.050
1,1,2-trichloroethane	0.1	5	5	50	50	50	-	<0.050
trichlorofluoromethane	4,500	9,000	4,500	9,000	70,000	70,000	-	<0.050
carbon tetrachloride	0.1	5	5	50	50	50	10	<0.050
chloroethane (monochloroethane)	-	-	-	-	-	-	-	<0.050
1,1-dichloroethane	0.1	5	5	50	50	50	-	<0.050
1,2-dichloroethane	0.1	5	5	50	50	50	10	<0.050
1,1-dichloroethylene	0.1	5	5	50	50	50	28	<0.050
cis-1,2-dichloroethylene	0.1	5	5	50	50	50	-	<0.050
trans-1,2-dichloroethylene	0.1	5	5	50	50	50	-	<0.050
dichloromethane	0.1	5	5	50	50	50	100	<0.045
trans-1,3-dichloropropene	-	-	-	-	-	-	-	<0.050
tetrachloroethylene	2.5	2.5	2.5	2.5	2.5	2.5	60	<0.050
1,1,1-trichloroethane	0.1	5	5	50	50	50	-	<0.050
trichloroethylene	0.3	0.3	0.3	0.3	0.3	0.3	100	<0.010
vinyl chloride	0.95	2	0.95	2	45	45	4	<0.050
bromodichloromethane	100	200	100	200	550	550	-	<0.050
bromoform	300	650	300	650	4,000	4,000	-	<0.050
chloroform	0.1	5	5	50	50	50	-	<0.050
dibromochloromethane (DBCM)	85	150	85	150	400	400	-	<0.050

BLUE TEXT	Concentration less than Laboratory Method Detection Limit
<b>BOLD, UNDERLINE</b>	Laboratory Method Detection Limit exceeds one or more standard
THICK OUTLINE	Concentration greater than or equal to HW Leachate Analysis Trigger Concentration
ORANGE SHADING	Concentration greater than CSR standards that control relocation to Agricultural (AL) Land Use Receiver Sites
LIGHT BLUE SHADING	Concentration greater than CSR standards that control relocation to Urban Park (PL) Land Use Receiver Sites
BLUE SHADING	Concentration greater than CSR standards that control relocation to Residential - Low Density (RLld) Land Use Receiver Sites
<b>BOLD, BLUE SHADING</b>	Concentration greater than CSR standards that control relocation to Residential - High Density (RLhd) Land Use Receiver Sites
RED SHADING	Concentration greater than CSR standards that control relocation to Commercial (CL) Land Use Receiver Sites
<b>BOLD, RED SHADING</b>	Concentration greater than CSR standards that control relocation to Industrial (IL) Land Use Receiver Sites

**Table 4: Analytical Concentrations for TCLP benzo(a)pyrene in Soil**

<b>Sample Location</b>		<b>AE23-BH6</b>
<b>Sample ID</b>		AE23-BH6-2
<b>Depth (m)</b>		1.2
<b>Fill/Native</b>		Native
<b>Date Sampled</b>		21-Sep-23
Completed by: KL Review by: ES	<b>Hazardous Waste Standards<sup>(4)</sup></b>	
<b>Leachable PAHs (µg/L)</b>		
benzo(a)pyrene - leachable	<b>1</b>	<0.50

BLUE TEXT	Concentration less than Laboratory Method Detection Limit
<b>BOLD, MAGENTA SHADING</b>	Concentration greater than Hazardous Waste Regulation (HWR) Standards



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# BOREHOLE LOGS



**SUMMARY LOG**

Borehole#: **AE23-BH1**

AE Project No.  
3440

Project: **Trans Canada Highway Multi Use Path**  
 Location: Duncan, BC Client: Stantec Consulting

Datum:  
 Northing/Easting: ,  
 Elevation:

Date(s) Drilled: Sept 21, 2023  
 Company: Westsoil Sampling  
 Driller: Liam & Carl  
 Drill Make/Model:

Drilling Method: Pionjar  
 Hole Diameter: 2"  
 Sample Type:  Grab  
 \* indicates sent for lab analysis

Logged by: JP Reviewed by: DK

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SOIL VAP. (ppm)	USCS	SOIL SYMBOL	SOIL DESCRIPTION
-----------	-------------	-----------	-----------------	------	-------------	------------------

		BH1-1	0			TOPSOIL, silt, brown, dry, no odour, no staining, some organics (FILL)
--	--	-------	---	--	--	------------------------------------------------------------------------

		BH1-2	0	ML		gravelly SILT, grey/brown, dry, no odour, no staining (NATIVE) 0.2m
--	--	-------	---	----	--	---------------------------------------------------------------------

						End of Borehole at 1.5m. 1.5m
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### SUMMARY LOG

Borehole#: **AE23-BH2**

AE Project No.  
3440

Project: **Trans Canada Highway Multi Use Path**  
 Location: Duncan, BC      Client: Stantec Consulting

Datum:  
 Northing/Easting: ,  
 Elevation:

Date(s) Drilled: Sept 21, 2023      Drilling Method: Pionjar  
 Company: Westsoil Sampling      Hole Diameter: 2"  
 Driller: Liam & Carl      Sample Type:  Grab  
 Drill Make/Model:      \* indicates sent for lab analysis

Logged by: JP    Reviewed by: DK

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SOIL VAP. (ppm)	USCS	SOIL SYMBOL	SOIL DESCRIPTION
						TOPSOIL, silt, brown, dry, no odour, no staining, roots (FILL)
						gravelly SILT, grey/brown, dry, no odour, no staining (NATIVE) 0.1m
		BH2-1	0	ML		
						0.9m
		BH2-2	0	SW		silty, clayey SAND, light brown, dry, no odour, no staining (NATIVE)
1						1.5m
						End of Borehole at 1.5m.



**SUMMARY LOG**

Borehole#: **AE23-BH3**

Project: <b>Trans Canada Highway Multi Use Path</b> Location: Duncan, BC	Client: Stantec Consulting Date(s) Drilled: Sept 21, 2023 Company: Westsoil Sampling Driller: Liam & Carl Drill Make/Model:	Datum: Northing/Easting: , Elevation:
AE Project No. 3440 Logged by: JP Reviewed by: DK	Drilling Method: Pionjar Hole Diameter: 2" Sample Type: <input checked="" type="checkbox"/> Grab * indicates sent for lab analysis	

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SOIL VAP. (ppm)	USCS	SOIL SYMBOL	SOIL DESCRIPTION
						TOPSOIL, silty, brown, dry, grass, roots (FILL)
						0.1m
						gravelly SILT, grey, hard, dry, no odour, no staining (FILL)
		BH3-1	0			
				ML		
						0.9m
						decrease in gravel content, increase in silt content
1		BH3-2	0			
						1.5m
						End of Borehole at 1.5m.

ACTIVE\_EARTH\_LOG\_3440\_100\_SERIES.GPJ ACTIVEEARTH.GDT 23-10-4



### SUMMARY LOG

Borehole#: **AE23-BH4**

AE Project No.  
3440

Project: **Trans Canada Highway Multi Use Path**  
 Location: Duncan, BC      Client: Stantec Consulting

Datum:  
 Northing/Easting: ,  
 Elevation:

Logged by: JP    Reviewed by: DK

Date(s) Drilled: Sept 21, 2023      Drilling Method: Pionjar  
 Company: Westsoil Sampling      Hole Diameter: 2"  
 Driller: Liam & Carl      Sample Type:  Grab  
 Drill Make/Model:      \* indicates sent for lab analysis

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SOIL VAP. (ppm)	USCS	SOIL SYMBOL	SOIL DESCRIPTION
						<b>SOIL DESCRIPTION</b>
		BH4-1	0	ML		clayey SILT, some cobbles, rounded, large, dark brown/grey, moist, no odour, no staining (NATIVE)
1						0.9m
		BH4-2	0	ML		silty CLAY, trace gravel, dark brown/grey, hard, dense, moist, no odour, no staining (NATIVE)
						1.5m
						End of Borehole at 1.5m.



### SUMMARY LOG

Borehole#: **AE23-BH5**

Project: <b>Trans Canada Highway Multi Use Path</b> Location: Duncan, BC		Datum: Northing/Easting: , Elevation:
Date(s) Drilled: Sept 21, 2023 Company: Westsoil Sampling Driller: Liam & Carl Drill Make/Model:		Drilling Method: Pionjar Hole Diameter: 2" Sample Type: <input checked="" type="checkbox"/> Grab * indicates sent for lab analysis
AE Project No. 3440	Logged by: JP    Reviewed by: DK	

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SOIL VAP. (ppm)	USCS	SOIL SYMBOL	SOIL DESCRIPTION
						TOPSOIL, silty, gravelly, light grey, loose, dry, no odour, no staining (FILL)
		BH5-1	0			
						0.5m
						silty, gravelly CLAY, medium dense, moist to wet, no odour, no staining, shale-like rock present at 0.5m (NATIVE)
						0.9m
						trace organic wood debris present from 0.9m-1.5m
1		BH5-2	0	CL		
						1.5m
						End of Borehole at 1.5m.

ACTIVE\_EARTH\_LOG\_3440\_100\_SERIES.GPJ ACTIVEEARTH.GDT 23-10-4





### SUMMARY LOG

Borehole#: **AE23-BH6**

AE Project No. 3440	Project: <b>Trans Canada Highway Multi Use Path</b>	Datum:
	Location: Duncan, BC	Client: Stantec Consulting
Logged by: JP Reviewed by: DK	Date(s) Drilled: Sept 21, 2023	Drilling Method: Pionjar
	Company: Westsoil Sampling	Hole Diameter: 2"
	Driller: Liam & Carl	Sample Type: <input checked="" type="checkbox"/> Grab
	Drill Make/Model:	* indicates sent for lab analysis

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SOIL VAP. (ppm)	USCS	SOIL SYMBOL	SOIL DESCRIPTION
						TOPSOIL, clayey, silty, trace gravel, brown, damp, no odour, no staining, some roots (FILL)
		BH6-1/BHX	0			
						0.6m
						silty, gravelly CLAY, dark brown, hard, damp, no odour, no staining (NATIVE)
						0.8m
						increase in silt content and decrease in hardness from 0.8m to 1.5m
						0.8m
						shale-like rock present at 0.8m
1		BH6-2	0	CL		
						1.5m
						End of Borehole at 1.5m.

ACTIVE\_EARTH\_LOG\_3440\_100\_SERIES.GPJ ACTIVEEARTH.GDT 23-10-4



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# LABORATORY CERTIFICATES



## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>VA23C2689</b></p> <p><b>Amendment</b> : <b>1</b></p> <p><b>Client</b> : <b>Active Earth Engineering Ltd.</b></p> <p><b>Contact</b> : JANE PIRIE</p> <p><b>Address</b> : 304-2600 Gladys Avenue Abbotsford BC Canada V2S 0E9</p> <p><b>Telephone</b> : ----</p> <p><b>Project</b> : 3440</p> <p><b>PO</b> : 3440</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : JP</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : VA22-ACT1100-001 (Default Pricing 2022+)</p> <p><b>No. of samples received</b> : 13</p> <p><b>No. of samples analysed</b> : 12</p>	<p><b>Page</b> : 1 of 14</p> <p><b>Laboratory</b> : ALS Environmental - Vancouver</p> <p><b>Account Manager</b> : Sneha Sansare</p> <p><b>Address</b> : 8081 Lougheed Highway Burnaby BC Canada V5A 1W9</p> <p><b>Telephone</b> : +1 604 253 4188</p> <p><b>Date Samples Received</b> : 22-Sep-2023 11:00</p> <p><b>Date Analysis Commenced</b> : 29-Sep-2023</p> <p><b>Issue Date</b> : 11-Oct-2023 23:07</p>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Kate Dimitrova	Supervisor - Inorganic	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Organics, Burnaby, British Columbia
Parnian Sane	Analyst	Metals, Burnaby, British Columbia
Rebecca Sit	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	no units
%	percent
µg/L	micrograms per litre
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLQ	Detection Limit raised due to co-eluting interference. Mass Spectrometry qualifier ion ratio did not meet acceptance criteria.



## Analytical Results

Sub-Matrix: Soil/Solid					Client sample ID				
(Matrix: Soil/Solid)					AE23-BH1-1	AE23-BH1-2	AE23-BH2-1	AE23-BH2-2	AE23-BH3-1
Client sampling date / time					21-Sep-2023 08:30	21-Sep-2023 08:45	21-Sep-2023 09:15	21-Sep-2023 09:30	21-Sep-2023 10:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C2689-001	VA23C2689-002	VA23C2689-003	VA23C2689-004	VA23C2689-005
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
% Saturation	----	E141/VA	1.0	%	66.4	----	34.6	----	19.0
Moisture	----	E144/VA	0.25	%	7.50	----	4.71	----	1.66
pH (1:2 soil:water)	----	E108/VA	0.10	pH units	5.14	5.92	5.66	5.77	7.69
<b>Saturated Paste Extractables</b>									
Chloride, soluble ion content	16887-00-6	EC239A.CI/V A	1.0	mg/kg	23.2	----	6.2	----	6.1
Chloride, soluble ion content	16887-00-6	E239.CI/VA	10	mg/L	35	----	18	----	32
Sodium, soluble ion content	17341-25-2	EC442/VA	1.00	mg/kg	19.2	----	9.20	----	10.2
Sodium, soluble ion content	17341-25-2	E442/VA	2.0	mg/L	29.0	----	26.6	----	53.8
<b>Metals</b>									
Aluminum	7429-90-5	E440/VA	50	mg/kg	21500	25600	21900	26200	18200
Antimony	7440-36-0	E440/VA	0.10	mg/kg	0.29	0.26	0.28	0.30	0.19
Arsenic	7440-38-2	E440/VA	0.10	mg/kg	5.75	6.00	5.86	5.80	4.83
Barium	7440-39-3	E440/VA	0.50	mg/kg	100	89.8	92.2	95.0	69.0
Beryllium	7440-41-7	E440/VA	0.10	mg/kg	0.42	0.49	0.38	0.54	0.27
Bismuth	7440-69-9	E440/VA	0.20	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Boron	7440-42-8	E440/VA	5.0	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	7440-43-9	E440/VA	0.020	mg/kg	0.211	0.116	0.176	0.102	0.061
Calcium	7440-70-2	E440/VA	50	mg/kg	7610	8200	7960	9090	9210
Chromium	7440-47-3	E440/VA	0.50	mg/kg	39.1	47.5	38.1	49.7	28.2
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	15.8	18.9	15.4	18.7	11.9
Copper	7440-50-8	E440/VA	0.50	mg/kg	50.3	53.7	50.3	52.2	50.1
Iron	7439-89-6	E440/VA	50	mg/kg	36300	40700	36600	41900	28100
Lead	7439-92-1	E440/VA	0.50	mg/kg	26.7	4.25	26.0	4.16	2.72
Lithium	7439-93-2	E440/VA	2.0	mg/kg	14.7	16.6	15.2	16.9	10.6
Magnesium	7439-95-4	E440/VA	20	mg/kg	10900	12600	10800	12700	8690
Manganese	7439-96-5	E440/VA	1.0	mg/kg	753	763	722	778	644
Mercury	7439-97-6	E510/VA	0.0500	mg/kg	<0.0500	0.0534	<0.0500	0.283	<0.0500
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg	0.36	0.29	0.33	0.30	0.58



## Analytical Results

Sub-Matrix: Soil/Solid

Client sample ID

(Matrix: Soil/Solid)

					AE23-BH1-1	AE23-BH1-2	AE23-BH2-1	AE23-BH2-2	AE23-BH3-1
Client sampling date / time					21-Sep-2023 08:30	21-Sep-2023 08:45	21-Sep-2023 09:15	21-Sep-2023 09:30	21-Sep-2023 10:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C2689-001	VA23C2689-002	VA23C2689-003	VA23C2689-004	VA23C2689-005
					Result	Result	Result	Result	Result
<b>Metals</b>									
Nickel	7440-02-0	E440/VA	0.50	mg/kg	26.5	31.3	26.6	31.0	20.7
Phosphorus	7723-14-0	E440/VA	50	mg/kg	987	693	1020	697	723
Potassium	7440-09-7	E440/VA	100	mg/kg	950	680	1000	840	850
Selenium	7782-49-2	E440/VA	0.20	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Silver	7440-22-4	E440/VA	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	7440-23-5	E440/VA	50	mg/kg	321	237	372	265	656
Strontium	7440-24-6	E440/VA	0.50	mg/kg	42.2	52.9	43.7	61.2	43.0
Sulfur	7704-34-9	E440/VA	1000	mg/kg	<1000	<1000	<1000	<1000	<1000
Thallium	7440-28-0	E440/VA	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
Tin	7440-31-5	E440/VA	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	7440-32-6	E440/VA	1.0	mg/kg	1190	1460	1160	1690	1320
Tungsten	7440-33-7	E440/VA	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium	7440-61-1	E440/VA	0.050	mg/kg	0.331	0.407	0.310	0.435	0.349
Vanadium	7440-62-2	E440/VA	0.20	mg/kg	100	122	102	128	88.5
Zinc	7440-66-6	E440/VA	2.0	mg/kg	82.6	64.6	82.6	64.0	43.2
Zirconium	7440-67-7	E440/VA	1.0	mg/kg	1.6	2.5	1.6	2.5	3.6
<b>Hydrocarbons</b>									
EPH (C10-C19)	----	E601A/VA	200	mg/kg	<200	----	<200	----	<200
EPH (C19-C32)	----	E601A/VA	200	mg/kg	<200	----	<200	----	<200
HEPHs	----	EC600A/VA	200	mg/kg	<200	----	<200	----	<200
LEPHs	----	EC600A/VA	200	mg/kg	<200	----	<200	----	<200
<b>Hydrocarbons Surrogates</b>									
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6	E601A/VA	1.0	%	94.5	----	104	----	95.2
<b>Polycyclic Aromatic Hydrocarbons</b>									
Acenaphthene	83-32-9	E641A-L/VA	0.0050	mg/kg	<0.0050	----	<0.0050	----	<0.0050
Acenaphthylene	208-96-8	E641A-L/VA	0.0050	mg/kg	0.0139	----	0.0117	----	<0.0050
Acridine	260-94-6	E641A-L/VA	0.010	mg/kg	<0.010	----	<0.010	----	<0.010
Anthracene	120-12-7	E641A-L/VA	0.0040	mg/kg	<0.0120 <sup>DLO</sup>	----	0.0123	----	<0.0040
Benz(a)anthracene	56-55-3	E641A-L/VA	0.010	mg/kg	0.064	----	0.037	----	<0.010
Benzo(a)pyrene	50-32-8	E641A-L/VA	0.010	mg/kg	0.084	----	0.041	----	<0.010



## Analytical Results

Sub-Matrix: Soil/Solid

Client sample ID

(Matrix: Soil/Solid)

					AE23-BH1-1	AE23-BH1-2	AE23-BH2-1	AE23-BH2-2	AE23-BH3-1
Client sampling date / time					21-Sep-2023 08:30	21-Sep-2023 08:45	21-Sep-2023 09:15	21-Sep-2023 09:30	21-Sep-2023 10:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C2689-001	VA23C2689-002	VA23C2689-003	VA23C2689-004	VA23C2689-005
					Result	Result	Result	Result	Result
<b>Polycyclic Aromatic Hydrocarbons</b>									
Benzo(b+j)fluoranthene	n/a	E641A-LVA	0.010	mg/kg	0.124	---	0.051	---	<0.010
Benzo(b+j+k)fluoranthene	n/a	E641A-LVA	0.015	mg/kg	0.163	---	0.067	---	<0.015
Benzo(g,h,i)perylene	191-24-2	E641A-LVA	0.010	mg/kg	0.067	---	0.026	---	<0.010
Benzo(k)fluoranthene	207-08-9	E641A-LVA	0.010	mg/kg	0.039	---	0.016	---	<0.010
Chrysene	218-01-9	E641A-LVA	0.010	mg/kg	0.089	---	0.049	---	<0.010
Dibenz(a,h)anthracene	53-70-3	E641A-LVA	0.0050	mg/kg	0.0157	---	0.0072	---	<0.0050
Fluoranthene	206-44-0	E641A-LVA	0.010	mg/kg	0.089	---	0.077	---	<0.010
Fluorene	86-73-7	E641A-LVA	0.010	mg/kg	<0.010	---	<0.010	---	<0.010
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-LVA	0.010	mg/kg	0.074	---	0.031	---	<0.010
Methylnaphthalene, 1-	90-12-0	E641A-LVA	0.010	mg/kg	<0.010	---	<0.010	---	<0.010
Methylnaphthalene, 2-	91-57-6	E641A-LVA	0.010	mg/kg	<0.010	---	<0.010	---	<0.010
Naphthalene	91-20-3	E641A-LVA	0.010	mg/kg	<0.010	---	<0.010	---	<0.010
Phenanthrene	85-01-8	E641A-LVA	0.010	mg/kg	0.019	---	0.051	---	<0.010
Pyrene	129-00-0	E641A-LVA	0.010	mg/kg	0.085	---	0.078	---	<0.010
Quinoline	91-22-5	E641A-LVA	0.010	mg/kg	<0.010	---	<0.010	---	<0.010
B(a)P total potency equivalents [B(a)P TPE]	---	E641A-LVA	0.020	mg/kg	0.131	---	0.062	---	<0.020
IACR (CCME)	---	E641A-LVA	0.150	-	1.59	---	0.712	---	<0.150
<b>Polycyclic Aromatic Hydrocarbons Surrogates</b>									
Acridine-d9	34749-75-2	E641A-LVA	0.1	%	61.5	---	94.2	---	108
Chrysene-d12	1719-03-5	E641A-LVA	0.1	%	104	---	115	---	107
Naphthalene-d8	1146-65-2	E641A-LVA	0.1	%	110	---	120	---	109
Phenanthrene-d10	1517-22-2	E641A-LVA	0.1	%	104	---	115	---	105

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.



## Analytical Results

Sub-Matrix: Soil/Solid					Client sample ID				
(Matrix: Soil/Solid)					AE23-BH4-1	AE23-BH4-2	AE23-BH5-1	AE23-BH5-2	AE23-BH6-1
Client sampling date / time					21-Sep-2023 11:05	21-Sep-2023 11:15	21-Sep-2023 11:25	21-Sep-2023 11:35	21-Sep-2023 11:50
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C2689-007	VA23C2689-008	VA23C2689-009	VA23C2689-010	VA23C2689-011
					Result	Result	Result	Result	Result
<b>Physical Tests</b>									
% Saturation	---	E141/VA	1.0	%	53.6	---	---	33.3	---
Moisture	---	E144/VA	0.25	%	17.8	---	---	13.3	---
pH (1:2 soil:water)	---	E108/VA	0.10	pH units	6.65	7.39	5.72	6.31	5.90
<b>Saturated Paste Extractables</b>									
Chloride, soluble ion content	16887-00-6	EC239A.CI/VA	1.0	mg/kg	<5.4	---	---	4.0	---
Chloride, soluble ion content	16887-00-6	E239.CI/VA	10	mg/L	<10	---	---	12	---
Sodium, soluble ion content	17341-25-2	EC442/VA	1.00	mg/kg	5.47	---	---	3.76	---
Sodium, soluble ion content	17341-25-2	E442/VA	2.0	mg/L	10.2	---	---	11.3	---
<b>Metals</b>									
Aluminum	7429-90-5	E440/VA	50	mg/kg	33100	28700	26100	24300	24100
Antimony	7440-36-0	E440/VA	0.10	mg/kg	0.41	0.29	0.31	0.35	0.33
Arsenic	7440-38-2	E440/VA	0.10	mg/kg	6.14	6.34	4.87	5.39	5.08
Barium	7440-39-3	E440/VA	0.50	mg/kg	127	107	93.0	73.1	86.2
Beryllium	7440-41-7	E440/VA	0.10	mg/kg	0.63	0.46	0.45	0.42	0.42
Bismuth	7440-69-9	E440/VA	0.20	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Boron	7440-42-8	E440/VA	5.0	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	7440-43-9	E440/VA	0.020	mg/kg	0.131	0.083	0.128	0.120	0.134
Calcium	7440-70-2	E440/VA	50	mg/kg	10100	8700	7680	6340	7040
Chromium	7440-47-3	E440/VA	0.50	mg/kg	55.3	47.8	43.5	39.2	40.0
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	17.9	16.3	15.0	16.1	15.4
Copper	7440-50-8	E440/VA	0.50	mg/kg	58.4	57.7	50.4	55.4	52.8
Iron	7439-89-6	E440/VA	50	mg/kg	41700	39700	35700	35300	34900
Lead	7439-92-1	E440/VA	0.50	mg/kg	6.58	5.31	6.30	8.49	10.1
Lithium	7439-93-2	E440/VA	2.0	mg/kg	21.0	22.0	16.3	16.4	17.6
Magnesium	7439-95-4	E440/VA	20	mg/kg	10600	10400	10000	9980	10200
Manganese	7439-96-5	E440/VA	1.0	mg/kg	656	766	611	536	608
Mercury	7439-97-6	E510/VA	0.0500	mg/kg	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg	0.36	0.39	0.32	0.50	0.38
Nickel	7440-02-0	E440/VA	0.50	mg/kg	36.8	34.5	29.5	27.9	28.5





## Analytical Results

Sub-Matrix: Soil/Solid					Client sample ID				
(Matrix: Soil/Solid)					AE23-BH4-1	AE23-BH4-2	AE23-BH5-1	AE23-BH5-2	AE23-BH6-1
Client sampling date / time					21-Sep-2023 11:05	21-Sep-2023 11:15	21-Sep-2023 11:25	21-Sep-2023 11:35	21-Sep-2023 11:50
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C2689-007	VA23C2689-008	VA23C2689-009	VA23C2689-010	VA23C2689-011
					Result	Result	Result	Result	Result
<b>Metals</b>									
Phosphorus	7723-14-0	E440/VA	50	mg/kg	727	648	734	740	840
Potassium	7440-09-7	E440/VA	100	mg/kg	1090	1060	800	700	820
Selenium	7782-49-2	E440/VA	0.20	mg/kg	0.28	0.21	0.20	<0.20	<0.20
Silver	7440-22-4	E440/VA	0.10	mg/kg	0.11	<0.10	<0.10	<0.10	<0.10
Sodium	7440-23-5	E440/VA	50	mg/kg	327	322	257	209	248
Strontium	7440-24-6	E440/VA	0.50	mg/kg	73.5	58.2	52.9	42.9	44.7
Sulfur	7704-34-9	E440/VA	1000	mg/kg	<1000	<1000	<1000	<1000	<1000
Thallium	7440-28-0	E440/VA	0.050	mg/kg	0.072	0.054	<0.050	<0.050	<0.050
Tin	7440-31-5	E440/VA	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	7440-32-6	E440/VA	1.0	mg/kg	1460	1380	1380	1140	1170
Tungsten	7440-33-7	E440/VA	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium	7440-61-1	E440/VA	0.050	mg/kg	0.492	1.39	0.392	0.355	0.348
Vanadium	7440-62-2	E440/VA	0.20	mg/kg	117	112	105	99.8	99.8
Zinc	7440-66-6	E440/VA	2.0	mg/kg	77.3	67.3	66.6	75.6	74.0
Zirconium	7440-67-7	E440/VA	1.0	mg/kg	2.3	3.3	1.9	3.4	2.1
<b>Volatile Organic Compounds</b>									
Chlorobenzene	108-90-7	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Chloromethane	74-87-3	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Dichlorobenzene, 1,2-	95-50-1	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Dichlorobenzene, 1,3-	541-73-1	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Dichlorobenzene, 1,4-	106-46-7	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Dichloropropane, 1,2-	78-87-5	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Dichloropropylene, cis+trans-1,3-	542-75-6	E611C/VA	0.075	mg/kg	---	---	---	<0.075	---
Dichloropropylene, cis-1,3-	10061-01-5	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Trichloroethane, 1,1,2-	79-00-5	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Trichlorofluoromethane	75-69-4	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
<b>Volatile Organic Compounds [Drycleaning]</b>									
Carbon tetrachloride	56-23-5	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---



## Analytical Results

Sub-Matrix: Soil/Solid					Client sample ID				
(Matrix: Soil/Solid)					AE23-BH4-1	AE23-BH4-2	AE23-BH5-1	AE23-BH5-2	AE23-BH6-1
Client sampling date / time					21-Sep-2023 11:05	21-Sep-2023 11:15	21-Sep-2023 11:25	21-Sep-2023 11:35	21-Sep-2023 11:50
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C2689-007	VA23C2689-008	VA23C2689-009	VA23C2689-010	VA23C2689-011
					Result	Result	Result	Result	Result
<b>Volatile Organic Compounds [Drycleaning]</b>									
Chloroethane	75-00-3	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Dichloroethane, 1,1-	75-34-3	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Dichloroethane, 1,2-	107-06-2	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Dichloroethylene, 1,1-	75-35-4	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Dichloroethylene, cis-1,2-	156-59-2	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Dichloroethylene, trans-1,2-	156-60-5	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Dichloromethane	75-09-2	E611C/VA	0.045	mg/kg	---	---	---	<0.045	---
Dichloropropylene, trans-1,3-	10061-02-6	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Tetrachloroethylene	127-18-4	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Trichloroethane, 1,1,1-	71-55-6	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Trichloroethylene	79-01-6	E611C/VA	0.010	mg/kg	---	---	---	<0.010	---
Vinyl chloride	75-01-4	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
<b>Volatile Organic Compounds [Fuels]</b>									
Benzene	71-43-2	E611C/VA	0.0050	mg/kg	---	---	---	<0.0050	---
Ethylbenzene	100-41-4	E611C/VA	0.015	mg/kg	---	---	---	<0.015	---
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C/VA	0.040	mg/kg	---	---	---	<0.040	---
Styrene	100-42-5	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Toluene	108-88-3	E611C/VA	0.050	mg/kg	---	---	---	0.054	---
Xylene, m+p-	179601-23-1	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Xylene, o-	95-47-6	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Xylenes, total	1330-20-7	E611C/VA	0.075	mg/kg	---	---	---	<0.075	---
<b>Volatile Organic Compounds [THMs]</b>									
Bromodichloromethane	75-27-4	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Bromoform	75-25-2	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Chloroform	67-66-3	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
Dibromochloromethane	124-48-1	E611C/VA	0.050	mg/kg	---	---	---	<0.050	---
<b>Hydrocarbons</b>									
EPH (C10-C19)	---	E601A/VA	200	mg/kg	<200	---	---	<200	---
EPH (C19-C32)	---	E601A/VA	200	mg/kg	<200	---	---	<200	---
HEPHs	---	EC600A/VA	200	mg/kg	<200	---	---	<200	---



## Analytical Results

Sub-Matrix: Soil/Solid					Client sample ID				
(Matrix: Soil/Solid)					AE23-BH4-1	AE23-BH4-2	AE23-BH5-1	AE23-BH5-2	AE23-BH6-1
Client sampling date / time					21-Sep-2023 11:05	21-Sep-2023 11:15	21-Sep-2023 11:25	21-Sep-2023 11:35	21-Sep-2023 11:50
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C2689-007	VA23C2689-008	VA23C2689-009	VA23C2689-010	VA23C2689-011
					Result	Result	Result	Result	Result
<b>Hydrocarbons</b>									
LEPHs	---	EC600A/VA	200	mg/kg	<200	---	---	<200	---
<b>Hydrocarbons Surrogates</b>									
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6	E601A/VA	1.0	%	101	---	---	98.0	---
<b>Volatile Organic Compounds Surrogates</b>									
Bromofluorobenzene, 4-	460-00-4	E611C/VA	0.10	%	---	---	---	97.6	---
Difluorobenzene, 1,4-	540-36-3	E611C/VA	0.10	%	---	---	---	108	---
<b>Polycyclic Aromatic Hydrocarbons</b>									
Acenaphthene	83-32-9	E641A-L/VA	0.0050	mg/kg	<0.0050	---	---	<0.0050	---
Acenaphthylene	208-96-8	E641A-L/VA	0.0050	mg/kg	<0.0050	---	---	0.0093	---
Acridine	260-94-6	E641A-L/VA	0.010	mg/kg	<0.010	---	---	<0.010	---
Anthracene	120-12-7	E641A-L/VA	0.0040	mg/kg	<0.0040	---	---	0.0059	---
Benz(a)anthracene	56-55-3	E641A-L/VA	0.010	mg/kg	<0.010	---	---	0.012	---
Benzo(a)pyrene	50-32-8	E641A-L/VA	0.010	mg/kg	<0.010	---	---	0.017	---
Benzo(b+j)fluoranthene	n/a	E641A-L/VA	0.010	mg/kg	<0.010	---	---	0.022	---
Benzo(b+j+k)fluoranthene	n/a	E641A-L/VA	0.015	mg/kg	<0.015	---	---	0.022	---
Benzo(g,h,i)perylene	191-24-2	E641A-L/VA	0.010	mg/kg	<0.010	---	---	0.015	---
Benzo(k)fluoranthene	207-08-9	E641A-L/VA	0.010	mg/kg	<0.010	---	---	<0.010	---
Chrysene	218-01-9	E641A-L/VA	0.010	mg/kg	<0.010	---	---	0.015	---
Dibenz(a,h)anthracene	53-70-3	E641A-L/VA	0.0050	mg/kg	<0.0050	---	---	<0.0050	---
Fluoranthene	206-44-0	E641A-L/VA	0.010	mg/kg	<0.010	---	---	0.018	---
Fluorene	86-73-7	E641A-L/VA	0.010	mg/kg	<0.010	---	---	<0.010	---
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L/VA	0.010	mg/kg	<0.010	---	---	0.016	---
Methylnaphthalene, 1-	90-12-0	E641A-L/VA	0.010	mg/kg	<0.010	---	---	<0.010	---
Methylnaphthalene, 2-	91-57-6	E641A-L/VA	0.010	mg/kg	<0.010	---	---	<0.010	---
Naphthalene	91-20-3	E641A-L/VA	0.010	mg/kg	<0.010	---	---	<0.010	---
Phenanthrene	85-01-8	E641A-L/VA	0.010	mg/kg	<0.010	---	---	0.017	---
Pyrene	129-00-0	E641A-L/VA	0.010	mg/kg	<0.010	---	---	0.021	---
Quinoline	91-22-5	E641A-L/VA	0.010	mg/kg	<0.010	---	---	<0.010	---
B(a)P total potency equivalents [B(a)P TPE]	---	E641A-L/VA	0.020	mg/kg	<0.020	---	---	0.025	---
IACR (CCME)	---	E641A-L/VA	0.150	-	<0.150	---	---	0.277	---



## Analytical Results

Sub-Matrix: Soil/Solid

Client sample ID

(Matrix: Soil/Solid)

					AE23-BH4-1	AE23-BH4-2	AE23-BH5-1	AE23-BH5-2	AE23-BH6-1
					21-Sep-2023 11:05	21-Sep-2023 11:15	21-Sep-2023 11:25	21-Sep-2023 11:35	21-Sep-2023 11:50
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C2689-007	VA23C2689-008	VA23C2689-009	VA23C2689-010	VA23C2689-011
					Result	Result	Result	Result	Result
<b>Polycyclic Aromatic Hydrocarbons Surrogates</b>									
Acridine-d9	34749-75-2	E641A-LVA	0.1	%	97.6	---	---	116	---
Chrysene-d12	1719-03-5	E641A-LVA	0.1	%	120	---	---	116	---
Naphthalene-d8	1146-65-2	E641A-LVA	0.1	%	127	---	---	121	---
Phenanthrene-d10	1517-22-2	E641A-LVA	0.1	%	119	---	---	116	---

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.



## Analytical Results

Sub-Matrix: Soil/Solid

Client sample ID

AE23-BH6-2

AE23-BHX

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(Matrix: Soil/Solid)

Client sampling date / time

21-Sep-2023  
12:00

21-Sep-2023  
11:50

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Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C2689-012	VA23C2689-013	-----	-----	-----
					Result	Result	----	----	----
<b>Physical Tests</b>									
% Saturation	---	E141/VA	1.0	%	33.3	---	---	---	---
Moisture	---	E144/VA	0.25	%	10.8	---	---	---	---
pH (1:2 soil:water)	---	E108/VA	0.10	pH units	6.53	6.08	---	---	---
<b>Saturated Paste Extractables</b>									
Chloride, soluble ion content	16887-00-6	EC239A.CI/VA	1.0	mg/kg	<3.3	---	---	---	---
Chloride, soluble ion content	16887-00-6	E239.CI/VA	10	mg/L	<10	---	---	---	---
Sodium, soluble ion content	17341-25-2	EC442/VA	1.00	mg/kg	5.33	---	---	---	---
Sodium, soluble ion content	17341-25-2	E442/VA	2.0	mg/L	16.0	---	---	---	---
<b>Metals</b>									
Aluminum	7429-90-5	E440/VA	50	mg/kg	22900	24200	---	---	---
Antimony	7440-36-0	E440/VA	0.10	mg/kg	0.34	0.40	---	---	---
Arsenic	7440-38-2	E440/VA	0.10	mg/kg	4.81	5.12	---	---	---
Barium	7440-39-3	E440/VA	0.50	mg/kg	86.3	78.5	---	---	---
Beryllium	7440-41-7	E440/VA	0.10	mg/kg	0.36	0.44	---	---	---
Bismuth	7440-69-9	E440/VA	0.20	mg/kg	<0.20	<0.20	---	---	---
Boron	7440-42-8	E440/VA	5.0	mg/kg	<5.0	<5.0	---	---	---
Cadmium	7440-43-9	E440/VA	0.020	mg/kg	0.132	0.145	---	---	---
Calcium	7440-70-2	E440/VA	50	mg/kg	6590	8000	---	---	---
Chromium	7440-47-3	E440/VA	0.50	mg/kg	37.5	41.6	---	---	---
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	15.6	15.7	---	---	---
Copper	7440-50-8	E440/VA	0.50	mg/kg	57.5	51.8	---	---	---
Iron	7439-89-6	E440/VA	50	mg/kg	33700	35500	---	---	---
Lead	7439-92-1	E440/VA	0.50	mg/kg	8.60	10.8	---	---	---
Lithium	7439-93-2	E440/VA	2.0	mg/kg	17.1	16.8	---	---	---
Magnesium	7439-95-4	E440/VA	20	mg/kg	10600	10500	---	---	---
Manganese	7439-96-5	E440/VA	1.0	mg/kg	600	600	---	---	---
Mercury	7439-97-6	E510/VA	0.0500	mg/kg	<0.0500	<0.0500	---	---	---
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg	0.35	0.69	---	---	---
Nickel	7440-02-0	E440/VA	0.50	mg/kg	28.8	28.3	---	---	---



## Analytical Results

Sub-Matrix: Soil/Solid

Client sample ID

AE23-BH6-2

AE23-BHX

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(Matrix: Soil/Solid)

Client sampling date / time

21-Sep-2023  
12:00

21-Sep-2023  
11:50

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Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C2689-012	VA23C2689-013	-----	-----	-----
					Result	Result	----	----	----
<b>Metals</b>									
Phosphorus	7723-14-0	E440/VA	50	mg/kg	740	886	----	----	----
Potassium	7440-09-7	E440/VA	100	mg/kg	770	880	----	----	----
Selenium	7782-49-2	E440/VA	0.20	mg/kg	<0.20	<0.20	----	----	----
Silver	7440-22-4	E440/VA	0.10	mg/kg	<0.10	<0.10	----	----	----
Sodium	7440-23-5	E440/VA	50	mg/kg	235	273	----	----	----
Strontium	7440-24-6	E440/VA	0.50	mg/kg	35.2	50.8	----	----	----
Sulfur	7704-34-9	E440/VA	1000	mg/kg	<1000	<1000	----	----	----
Thallium	7440-28-0	E440/VA	0.050	mg/kg	<0.050	<0.050	----	----	----
Tin	7440-31-5	E440/VA	2.0	mg/kg	<2.0	<2.0	----	----	----
Titanium	7440-32-6	E440/VA	1.0	mg/kg	972	1430	----	----	----
Tungsten	7440-33-7	E440/VA	0.50	mg/kg	<0.50	<0.50	----	----	----
Uranium	7440-61-1	E440/VA	0.050	mg/kg	0.275	0.368	----	----	----
Vanadium	7440-62-2	E440/VA	0.20	mg/kg	90.9	106	----	----	----
Zinc	7440-66-6	E440/VA	2.0	mg/kg	73.8	74.1	----	----	----
Zirconium	7440-67-7	E440/VA	1.0	mg/kg	2.0	2.4	----	----	----
<b>TCLP Extractables</b>									
Benzo(a)pyrene, TCLP	50-32-8	E644/VA	0.00050	mg/L	<0.00050	----	----	----	----
<b>TCLP Extractables Surrogates</b>									
Chrysene-d12, TCLP	1719-03-5	E644/VA	5.0	%	116	----	----	----	----
Naphthalene-d8, TCLP	1146-65-2	E644/VA	5.0	%	95.7	----	----	----	----
Phenanthrene-d10, TCLP	1517-22-2	E644/VA	5.0	%	102	----	----	----	----
<b>TCLP Metals</b>									
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units	6.79	----	----	----	----
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units	1.70	----	----	----	----
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units	4.94	----	----	----	----
pH, TCLP final	----	EPP444/VA	0.010	pH units	4.92	----	----	----	----
<b>Hydrocarbons</b>									
EPH (C10-C19)	----	E601A/VA	200	mg/kg	<200	----	----	----	----
EPH (C19-C32)	----	E601A/VA	200	mg/kg	<200	----	----	----	----
HEPHs	----	EC600A/VA	200	mg/kg	<200	----	----	----	----



## Analytical Results

Sub-Matrix: Soil/Solid					Client sample ID	AE23-BH6-2	AE23-BHX	----	----	----
(Matrix: Soil/Solid)					Client sampling date / time	21-Sep-2023 12:00	21-Sep-2023 11:50	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C2689-012	VA23C2689-013	-----	-----	-----	
					Result	Result	----	----	----	
<b>Hydrocarbons</b>										
LEPHs	---	EC600A/VA	200	mg/kg	<200	---	---	---	---	---
<b>Hydrocarbons Surrogates</b>										
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6	E601A/VA	1.0	%	96.7	---	---	---	---	---
<b>Polycyclic Aromatic Hydrocarbons</b>										
Acenaphthene	83-32-9	E641A-L/VA	0.0050	mg/kg	0.0108	---	---	---	---	---
Acenaphthylene	208-96-8	E641A-L/VA	0.0050	mg/kg	0.0900	---	---	---	---	---
Acridine	260-94-6	E641A-L/VA	0.010	mg/kg	<0.010	---	---	---	---	---
Anthracene	120-12-7	E641A-L/VA	0.0040	mg/kg	0.109	---	---	---	---	---
Benz(a)anthracene	56-55-3	E641A-L/VA	0.010	mg/kg	0.259	---	---	---	---	---
Benzo(a)pyrene	50-32-8	E641A-L/VA	0.010	mg/kg	0.232	---	---	---	---	---
Benzo(b+j)fluoranthene	n/a	E641A-L/VA	0.010	mg/kg	0.262	---	---	---	---	---
Benzo(b+j+k)fluoranthene	n/a	E641A-L/VA	0.015	mg/kg	0.368	---	---	---	---	---
Benzo(g,h,i)perylene	191-24-2	E641A-L/VA	0.010	mg/kg	0.142	---	---	---	---	---
Benzo(k)fluoranthene	207-08-9	E641A-L/VA	0.010	mg/kg	0.106	---	---	---	---	---
Chrysene	218-01-9	E641A-L/VA	0.010	mg/kg	0.273	---	---	---	---	---
Dibenz(a,h)anthracene	53-70-3	E641A-L/VA	0.0050	mg/kg	0.0372	---	---	---	---	---
Fluoranthene	206-44-0	E641A-L/VA	0.010	mg/kg	0.548	---	---	---	---	---
Fluorene	86-73-7	E641A-L/VA	0.010	mg/kg	0.043	---	---	---	---	---
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L/VA	0.010	mg/kg	0.155	---	---	---	---	---
Methylnaphthalene, 1-	90-12-0	E641A-L/VA	0.010	mg/kg	0.011	---	---	---	---	---
Methylnaphthalene, 2-	91-57-6	E641A-L/VA	0.010	mg/kg	0.011	---	---	---	---	---
Naphthalene	91-20-3	E641A-L/VA	0.010	mg/kg	<0.010	---	---	---	---	---
Phenanthrene	85-01-8	E641A-L/VA	0.010	mg/kg	0.507	---	---	---	---	---
Pyrene	129-00-0	E641A-L/VA	0.010	mg/kg	0.533	---	---	---	---	---
Quinoline	91-22-5	E641A-L/VA	0.010	mg/kg	<0.010	---	---	---	---	---
B(a)P total potency equivalents [B(a)P TPE]	---	E641A-L/VA	0.020	mg/kg	0.352	---	---	---	---	---
IACR (CCME)	---	E641A-L/VA	0.150	-	4.08	---	---	---	---	---
<b>Polycyclic Aromatic Hydrocarbons Surrogates</b>										
Acridine-d9	34749-75-2	E641A-L/VA	0.1	%	112	---	---	---	---	---
Chrysene-d12	1719-03-5	E641A-L/VA	0.1	%	111	---	---	---	---	---



## Analytical Results

Sub-Matrix: Soil/Solid					Client sample ID	AE23-BH6-2	AE23-BHX	----	----	----
(Matrix: Soil/Solid)					Client sampling date / time	21-Sep-2023 12:00	21-Sep-2023 11:50	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C2689-012	VA23C2689-013	-----	-----	-----	
Polycyclic Aromatic Hydrocarbons Surrogates					Result	Result	---	---	---	
Naphthalene-d8	1146-65-2	E641A-LVA	0.1	%	120	---	---	---	---	
Phenanthrene-d10	1517-22-2	E641A-LVA	0.1	%	112	---	---	---	---	

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.



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## QUALITY CONTROL INTERPRETIVE REPORT

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<p><b>Work Order</b> : <b>VA23C2689</b></p> <p><b>Amendment</b> : <b>1</b></p> <p><b>Client</b> : <b>Active Earth Engineering Ltd.</b></p> <p><b>Contact</b> : JANE PIRIE</p> <p><b>Address</b> : 304-2600 Gladys Avenue Abbotsford BC Canada V2S 0E9</p> <p><b>Telephone</b> : ----</p> <p><b>Project</b> : 3440</p> <p><b>PO</b> : 3440</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : JP</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : VA22-ACT1100-001 (Default Pricing 2022+)</p> <p><b>No. of samples received</b> : 13</p> <p><b>No. of samples analysed</b> : 12</p>	<p><b>Page</b> : 1 of 16</p> <p><b>Laboratory</b> : ALS Environmental - Vancouver</p> <p><b>Account Manager</b> : Sneha Sansare</p> <p><b>Address</b> : 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9</p> <p><b>Telephone</b> : +1 604 253 4188</p> <p><b>Date Samples Received</b> : 22-Sep-2023 11:00</p> <p><b>Issue Date</b> : 11-Oct-2023 23:07</p>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO: Data Quality Objective.
- LOR: Limit of Reporting (detection limit).
- RPD: Relative Percent Difference.

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### ***Workorder Comments***

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

### ***Outliers : Analysis Holding Time Compliance (Breaches)***

- No Analysis Holding Time Outliers exist.

### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>										
Glass soil jar/Teflon lined cap AE23-BH1-1	E601A	21-Sep-2023	29-Sep-2023	14 days	8 days	✔	30-Sep-2023	40 days	1 days	✔
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>										
Glass soil jar/Teflon lined cap AE23-BH2-1	E601A	21-Sep-2023	29-Sep-2023	14 days	8 days	✔	30-Sep-2023	40 days	1 days	✔
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>										
Glass soil jar/Teflon lined cap AE23-BH3-1	E601A	21-Sep-2023	29-Sep-2023	14 days	8 days	✔	30-Sep-2023	40 days	1 days	✔
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>										
Glass soil jar/Teflon lined cap AE23-BH4-1	E601A	21-Sep-2023	29-Sep-2023	14 days	8 days	✔	30-Sep-2023	40 days	1 days	✔
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>										
Glass soil jar/Teflon lined cap AE23-BH5-2	E601A	21-Sep-2023	29-Sep-2023	14 days	8 days	✔	30-Sep-2023	40 days	1 days	✔
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>										
Glass soil jar/Teflon lined cap AE23-BH6-2	E601A	21-Sep-2023	29-Sep-2023	14 days	8 days	✔	30-Sep-2023	40 days	1 days	✔
<b>Metals : Mercury in Soil/Solid by CVAAS</b>										
Glass soil jar/Teflon lined cap AE23-BH1-1	E510	21-Sep-2023	01-Oct-2023	28 days	10 days	✔	03-Oct-2023	28 days	12 days	✔



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>										
Glass soil jar/Teflon lined cap AE23-BH1-2	E510	21-Sep-2023	01-Oct-2023	28 days	10 days	✔	03-Oct-2023	28 days	12 days	✔
<b>Metals : Mercury in Soil/Solid by CVAAS</b>										
Glass soil jar/Teflon lined cap AE23-BH2-1	E510	21-Sep-2023	01-Oct-2023	28 days	10 days	✔	03-Oct-2023	28 days	12 days	✔
<b>Metals : Mercury in Soil/Solid by CVAAS</b>										
Glass soil jar/Teflon lined cap AE23-BH2-2	E510	21-Sep-2023	01-Oct-2023	28 days	10 days	✔	03-Oct-2023	28 days	12 days	✔
<b>Metals : Mercury in Soil/Solid by CVAAS</b>										
Glass soil jar/Teflon lined cap AE23-BH3-1	E510	21-Sep-2023	01-Oct-2023	28 days	10 days	✔	03-Oct-2023	28 days	12 days	✔
<b>Metals : Mercury in Soil/Solid by CVAAS</b>										
Glass soil jar/Teflon lined cap AE23-BH4-1	E510	21-Sep-2023	01-Oct-2023	28 days	10 days	✔	03-Oct-2023	28 days	12 days	✔
<b>Metals : Mercury in Soil/Solid by CVAAS</b>										
Glass soil jar/Teflon lined cap AE23-BH4-2	E510	21-Sep-2023	01-Oct-2023	28 days	10 days	✔	03-Oct-2023	28 days	12 days	✔
<b>Metals : Mercury in Soil/Solid by CVAAS</b>										
Glass soil jar/Teflon lined cap AE23-BH5-1	E510	21-Sep-2023	01-Oct-2023	28 days	10 days	✔	03-Oct-2023	28 days	12 days	✔
<b>Metals : Mercury in Soil/Solid by CVAAS</b>										
Glass soil jar/Teflon lined cap AE23-BH5-2	E510	21-Sep-2023	01-Oct-2023	28 days	10 days	✔	03-Oct-2023	28 days	12 days	✔
<b>Metals : Mercury in Soil/Solid by CVAAS</b>										
Glass soil jar/Teflon lined cap AE23-BH6-1	E510	21-Sep-2023	01-Oct-2023	28 days	10 days	✔	03-Oct-2023	28 days	12 days	✔



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
Glass soil jar/Teflon lined cap AE23-BH6-2	E510	21-Sep-2023	01-Oct-2023	28 days	10 days	✔	03-Oct-2023	28 days	12 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
Glass soil jar/Teflon lined cap AE23-BHX	E510	21-Sep-2023	01-Oct-2023	28 days	10 days	✔	03-Oct-2023	28 days	12 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
Glass soil jar/Teflon lined cap AE23-BH1-1	E440	21-Sep-2023	01-Oct-2023	180 days	10 days	✔	03-Oct-2023	180 days	12 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
Glass soil jar/Teflon lined cap AE23-BH1-2	E440	21-Sep-2023	01-Oct-2023	180 days	10 days	✔	03-Oct-2023	180 days	12 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
Glass soil jar/Teflon lined cap AE23-BH2-1	E440	21-Sep-2023	01-Oct-2023	180 days	10 days	✔	03-Oct-2023	180 days	12 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
Glass soil jar/Teflon lined cap AE23-BH2-2	E440	21-Sep-2023	01-Oct-2023	180 days	10 days	✔	03-Oct-2023	180 days	12 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
Glass soil jar/Teflon lined cap AE23-BH3-1	E440	21-Sep-2023	01-Oct-2023	180 days	10 days	✔	03-Oct-2023	180 days	12 days	✔	
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Glass soil jar/Teflon lined cap AE23-BH4-1	E440	21-Sep-2023	01-Oct-2023	180 days	10 days	✔	03-Oct-2023	180 days	12 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
Glass soil jar/Teflon lined cap AE23-BH4-2	E440	21-Sep-2023	01-Oct-2023	180 days	10 days	✔	03-Oct-2023	180 days	12 days	✔	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
Glass soil jar/Teflon lined cap AE23-BH5-1	E440	21-Sep-2023	01-Oct-2023	180 days	10 days	✔	03-Oct-2023	180 days	12 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
Glass soil jar/Teflon lined cap AE23-BH5-2	E440	21-Sep-2023	01-Oct-2023	180 days	10 days	✔	03-Oct-2023	180 days	12 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
Glass soil jar/Teflon lined cap AE23-BH6-1	E440	21-Sep-2023	01-Oct-2023	180 days	10 days	✔	03-Oct-2023	180 days	12 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
Glass soil jar/Teflon lined cap AE23-BH6-2	E440	21-Sep-2023	01-Oct-2023	180 days	10 days	✔	03-Oct-2023	180 days	12 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
Glass soil jar/Teflon lined cap AE23-BHX	E440	21-Sep-2023	01-Oct-2023	180 days	10 days	✔	03-Oct-2023	180 days	12 days	✔	
<b>Physical Tests : Moisture Content by Gravimetry</b>											
Glass soil jar/Teflon lined cap AE23-BH1-1	E144	21-Sep-2023	----	----	----		29-Sep-2023	----	8 days		
<b>Physical Tests : Moisture Content by Gravimetry</b>											
Glass soil jar/Teflon lined cap AE23-BH2-1	E144	21-Sep-2023	----	----	----		29-Sep-2023	----	8 days		
<b>Physical Tests : Moisture Content by Gravimetry</b>											
Glass soil jar/Teflon lined cap AE23-BH3-1	E144	21-Sep-2023	----	----	----		29-Sep-2023	----	8 days		
<b>Physical Tests : Moisture Content by Gravimetry</b>											
Glass soil jar/Teflon lined cap AE23-BH4-1	E144	21-Sep-2023	----	----	----		29-Sep-2023	----	8 days		



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
Glass soil jar/Teflon lined cap AE23-BH5-2	E144	21-Sep-2023	----	----	----		29-Sep-2023	----	8 days	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
Glass soil jar/Teflon lined cap AE23-BH6-2	E144	21-Sep-2023	----	----	----		29-Sep-2023	----	8 days	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>										
Glass soil jar/Teflon lined cap AE23-BH1-1	E108	21-Sep-2023	01-Oct-2023	30 days	10 days	✔	01-Oct-2023	30 days	10 days	✔
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>										
Glass soil jar/Teflon lined cap AE23-BH1-2	E108	21-Sep-2023	01-Oct-2023	30 days	10 days	✔	01-Oct-2023	30 days	10 days	✔
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>										
Glass soil jar/Teflon lined cap AE23-BH2-1	E108	21-Sep-2023	01-Oct-2023	30 days	10 days	✔	01-Oct-2023	30 days	10 days	✔
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>										
Glass soil jar/Teflon lined cap AE23-BH2-2	E108	21-Sep-2023	01-Oct-2023	30 days	10 days	✔	01-Oct-2023	30 days	10 days	✔
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>										
Glass soil jar/Teflon lined cap AE23-BH3-1	E108	21-Sep-2023	01-Oct-2023	30 days	10 days	✔	01-Oct-2023	30 days	10 days	✔
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>										
Glass soil jar/Teflon lined cap AE23-BH4-1	E108	21-Sep-2023	01-Oct-2023	30 days	10 days	✔	01-Oct-2023	30 days	10 days	✔
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>										
Glass soil jar/Teflon lined cap AE23-BH4-2	E108	21-Sep-2023	01-Oct-2023	30 days	10 days	✔	01-Oct-2023	30 days	10 days	✔



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
Glass soil jar/Teflon lined cap AE23-BH5-1	E108	21-Sep-2023	01-Oct-2023	30 days	10 days	✔	01-Oct-2023	30 days	10 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
Glass soil jar/Teflon lined cap AE23-BH5-2	E108	21-Sep-2023	01-Oct-2023	30 days	10 days	✔	01-Oct-2023	30 days	10 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
Glass soil jar/Teflon lined cap AE23-BH6-1	E108	21-Sep-2023	01-Oct-2023	30 days	10 days	✔	01-Oct-2023	30 days	10 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
Glass soil jar/Teflon lined cap AE23-BH6-2	E108	21-Sep-2023	01-Oct-2023	30 days	10 days	✔	01-Oct-2023	30 days	10 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
Glass soil jar/Teflon lined cap AE23-BHX	E108	21-Sep-2023	01-Oct-2023	30 days	10 days	✔	01-Oct-2023	30 days	10 days	✔	
<b>Physical Tests : Saturation Percentage</b>											
Glass soil jar/Teflon lined cap AE23-BH1-1	E141	21-Sep-2023	03-Oct-2023	----	----		03-Oct-2023	0 days	12 days	✔	
<b>Physical Tests : Saturation Percentage</b>											
LDPE bag AE23-BH2-1	E141	21-Sep-2023	03-Oct-2023	----	----		03-Oct-2023	0 days	12 days	✔	
<b>Physical Tests : Saturation Percentage</b>											
LDPE bag AE23-BH3-1	E141	21-Sep-2023	03-Oct-2023	----	----		03-Oct-2023	0 days	12 days	✔	
<b>Physical Tests : Saturation Percentage</b>											
LDPE bag AE23-BH4-1	E141	21-Sep-2023	03-Oct-2023	----	----		03-Oct-2023	0 days	12 days	✔	





Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : Saturation Percentage</b>										
LDPE bag AE23-BH5-2	E141	21-Sep-2023	03-Oct-2023	----	----		03-Oct-2023	0 days	12 days	✔
<b>Physical Tests : Saturation Percentage</b>										
LDPE bag AE23-BH6-2	E141	21-Sep-2023	03-Oct-2023	----	----		03-Oct-2023	0 days	12 days	✔
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)</b>										
Glass soil jar/Teflon lined cap AE23-BH1-1	E641A-L	21-Sep-2023	29-Sep-2023	14 days	8 days	✔	30-Sep-2023	40 days	1 days	✔
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)</b>										
Glass soil jar/Teflon lined cap AE23-BH2-1	E641A-L	21-Sep-2023	29-Sep-2023	14 days	8 days	✔	30-Sep-2023	40 days	1 days	✔
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)</b>										
Glass soil jar/Teflon lined cap AE23-BH3-1	E641A-L	21-Sep-2023	29-Sep-2023	14 days	8 days	✔	30-Sep-2023	40 days	1 days	✔
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<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)</b>										
Glass soil jar/Teflon lined cap AE23-BH5-2	E641A-L	21-Sep-2023	29-Sep-2023	14 days	8 days	✔	30-Sep-2023	40 days	1 days	✔
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)</b>										
Glass soil jar/Teflon lined cap AE23-BH6-2	E641A-L	21-Sep-2023	29-Sep-2023	14 days	8 days	✔	30-Sep-2023	40 days	1 days	✔
<b>Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)</b>										
Glass soil jar/Teflon lined cap AE23-BH1-1	E442	21-Sep-2023	03-Oct-2023	365 days	12 days	✔	03-Oct-2023	180 days	0 days	✔



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)</b>											
<b>LDPE bag</b> AE23-BH2-1	E442	21-Sep-2023	03-Oct-2023	365 days	12 days	✔	03-Oct-2023	180 days	0 days	✔	
<b>Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)</b>											
<b>LDPE bag</b> AE23-BH3-1	E442	21-Sep-2023	03-Oct-2023	365 days	12 days	✔	03-Oct-2023	180 days	0 days	✔	
<b>Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)</b>											
<b>LDPE bag</b> AE23-BH4-1	E442	21-Sep-2023	03-Oct-2023	365 days	12 days	✔	03-Oct-2023	180 days	0 days	✔	
<b>Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)</b>											
<b>LDPE bag</b> AE23-BH5-2	E442	21-Sep-2023	03-Oct-2023	365 days	12 days	✔	03-Oct-2023	180 days	0 days	✔	
<b>Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)</b>											
<b>LDPE bag</b> AE23-BH6-2	E442	21-Sep-2023	03-Oct-2023	365 days	12 days	✔	03-Oct-2023	180 days	0 days	✔	
<b>Saturated Paste Extractables : Chloride by IC (Saturated Paste)</b>											
<b>Glass soil jar/Teflon lined cap</b> AE23-BH1-1	E239.Cl	21-Sep-2023	03-Oct-2023	365 days	12 days	✔	03-Oct-2023	28 days	0 days	✔	
<b>Saturated Paste Extractables : Chloride by IC (Saturated Paste)</b>											
<b>LDPE bag</b> AE23-BH2-1	E239.Cl	21-Sep-2023	03-Oct-2023	365 days	12 days	✔	03-Oct-2023	28 days	0 days	✔	
<b>Saturated Paste Extractables : Chloride by IC (Saturated Paste)</b>											
<b>LDPE bag</b> AE23-BH3-1	E239.Cl	21-Sep-2023	03-Oct-2023	365 days	12 days	✔	03-Oct-2023	28 days	0 days	✔	
<b>Saturated Paste Extractables : Chloride by IC (Saturated Paste)</b>											
<b>LDPE bag</b> AE23-BH4-1	E239.Cl	21-Sep-2023	03-Oct-2023	365 days	12 days	✔	03-Oct-2023	28 days	0 days	✔	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Saturated Paste Extractables : Chloride by IC (Saturated Paste)</b>										
LDPE bag AE23-BH5-2	E239.Cl	21-Sep-2023	03-Oct-2023	365 days	12 days	✔	03-Oct-2023	28 days	0 days	✔
<b>Saturated Paste Extractables : Chloride by IC (Saturated Paste)</b>										
LDPE bag AE23-BH6-2	E239.Cl	21-Sep-2023	03-Oct-2023	365 days	12 days	✔	03-Oct-2023	28 days	0 days	✔
<b>TCLP Extractables : PAHs by GC-MS (TCLP)</b>										
Amber glass/Teflon lined cap (sodium bisulfate) AE23-BH6-2	E644	06-Oct-2023	09-Oct-2023	29 days	18 days	✔	10-Oct-2023	40 days	1 days	✔
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) AE23-BH6-2	EPP444	21-Sep-2023	06-Oct-2023	----	----		----	180 days	15 days	✔
<b>Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS</b>										
Glass soil methanol vial AE23-BH5-2	E611C	21-Sep-2023	01-Oct-2023	40 days	10 days	✔	02-Oct-2023	40 days	11 days	✔
<b>Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS</b>										
Glass soil methanol vial AE23-BH5-2	E611C	21-Sep-2023	01-Oct-2023	40 days	10 days	✔	02-Oct-2023	40 days	11 days	✔
<b>Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS</b>										
Glass soil methanol vial AE23-BH5-2	E611C	21-Sep-2023	01-Oct-2023	40 days	10 days	✔	02-Oct-2023	40 days	11 days	✔
<b>Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS</b>										
Glass soil methanol vial AE23-BH5-2	E611C	21-Sep-2023	01-Oct-2023	40 days	10 days	✔	02-Oct-2023	40 days	11 days	✔

**Legend & Qualifier Definitions**

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
BC PHCs - EPH by GC-FID	E601A	1161214	1	7	14.2	5.0	✓
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	1161210	1	9	11.1	5.0	✓
Chloride by IC (Saturated Paste)	E239.Cl	1161208	1	9	11.1	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1161206	1	16	6.2	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1161205	1	18	5.5	5.0	✓
Moisture Content by Gravimetry	E144	1161221	1	9	11.1	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	1161213	1	7	14.2	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1161207	1	16	6.2	5.0	✓
Saturation Percentage	E141	1161209	1	9	11.1	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	1163269	1	8	12.5	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
BC PHCs - EPH by GC-FID	E601A	1161214	1	7	14.2	5.0	✓
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	1161210	2	9	22.2	10.0	✓
Chloride by IC (Saturated Paste)	E239.Cl	1161208	2	9	22.2	10.0	✓
Mercury in Soil/Solid by CVAAS	E510	1161206	2	16	12.5	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1161205	2	18	11.1	10.0	✓
Moisture Content by Gravimetry	E144	1161221	1	9	11.1	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	1161213	1	7	14.2	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1161207	1	16	6.2	5.0	✓
Saturation Percentage	E141	1161209	2	9	22.2	10.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	1163269	1	8	12.5	5.0	✓
<b>Method Blanks (MB)</b>							
BC PHCs - EPH by GC-FID	E601A	1161214	1	7	14.2	5.0	✓
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	1161210	1	9	11.1	5.0	✓
Chloride by IC (Saturated Paste)	E239.Cl	1161208	1	9	11.1	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1161206	1	16	6.2	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1161205	1	18	5.5	5.0	✓
Moisture Content by Gravimetry	E144	1161221	1	9	11.1	5.0	✓
PAHs by GC-MS (TCLP)	E644	1174486	1	1	100.0	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	1161213	1	7	14.2	5.0	✓
Saturation Percentage	E141	1161209	1	9	11.1	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	1163269	1	8	12.5	5.0	✓
<b>Matrix Spikes (MS)</b>							
BC PHCs - EPH by GC-FID	E601A	1161214	1	7	14.2	5.0	✓
PAHs by GC-MS (TCLP)	E644	1174486	1	1	100.0	5.0	✓



Matrix: **Soil/Solid**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	1161213	1	7	14.2	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	1163269	1	8	12.5	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 ALS Environmental - Vancouver	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally $20 \pm 5^\circ\text{C}$ ), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at $<60^\circ\text{C}$ ) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Saturation Percentage	E141 ALS Environmental - Vancouver	Soil/Solid	CSSS Ch. 15 (mod)/AER D50	Saturation Percentage (SP) is determined as the total volume of water present in a saturated paste (in mL) divided by the dry weight of the sample (in grams), expressed as a percentage.
Moisture Content by Gravimetry	E144 ALS Environmental - Vancouver	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at $105^\circ\text{C}$ . Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Chloride by IC (Saturated Paste)	E239.Cl ALS Environmental - Vancouver	Soil/Solid	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Metals in Soil/Solid by CRC ICPMS	E440 ALS Environmental - Vancouver	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with $\text{HNO}_3$ and $\text{HCl}$ .  Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines.  Analysis is by Collision/Reaction Cell ICPMS.
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442 ALS Environmental - Vancouver	Soil/Solid	CSSS CH15/EPA 6020B (mod)	A soil extract produced by the saturated paste extraction procedure is analyzed for Calcium, Magnesium, Potassium and Sodium by Collision/Reaction Cell ICPMS as per "Soil Sampling Methods of Analysis" By M Carter.
Mercury in Soil/Solid by CVAAS	E510 ALS Environmental - Vancouver	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with $\text{HNO}_3$ and $\text{HCl}$ , followed by CVAAS analysis.
BC PHCs - EPH by GC-FID	E601A ALS Environmental - Vancouver	Soil/Solid	BC MOE Lab Manual (EPH in Solids by GC/FID) (mod)	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs (BC List) by Headspace GC-MS	E611C ALS Environmental - Vancouver	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L ALS Environmental - Vancouver	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are extracted with hexane/acetone and analyzed by GC-MS. If reported, IACR (index of additive cancer risk, unitless) and B(a)P toxic potency equivalent (in soil concentration units) are calculated as per CCME PAH Soil Quality Guidelines fact sheet (2010) or ABT1.
PAHs by GC-MS (TCLP)	E644 ALS Environmental - Vancouver	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
Chloride by IC (Saturated Paste) (mg/kg)	EC239A.Cl ALS Environmental - Vancouver	Soil/Solid	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Ca, K, Mg, Na by ICPMS (Saturated Paste, mg/kg)	EC442 ALS Environmental - Vancouver	Soil/Solid	CSSS CH15/EPA 6020B (mod)	A soil extract produced by the saturated paste extraction procedure is analyzed for Calcium, Magnesium, Potassium, Sodium by ICPMS.
LEPH and HEPH: EPH-PAH	EC600A ALS Environmental - Vancouver	Soil/Solid	BC MOE Lab Manual (LEPH and HEPH)	Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(b+j+k)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, and Pyrene.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 ALS Environmental - Vancouver	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Digestion for Metals and Mercury	EP440 ALS Environmental - Vancouver	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
VOCs Methanol Extraction for Headspace Analysis	EP581 ALS Environmental - Vancouver	Soil/Solid	EPA 5035A (mod)	VOCs in samples are extracted with methanol. Extracts are then prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 ALS Environmental - Vancouver	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
PHCs and PAHs Extraction (TCLP)	EP602  ALS Environmental - Vancouver	Soil/Solid	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)	EPP444  ALS Environmental - Vancouver	Soil/Solid	EPA 1311	Preparation of a Toxicity Characteristic Leaching Procedure (TCLP) solid sample involves particle size reduction, homogenization, then determination of appropriate extraction fluid. A measured portion of fresh subsample is placed in an extraction bottle with the appropriate extraction fluid then tumbled in a rotary extractor for 18+/- 2 hours at 23 +/- 2 C. The liquid leachate is filtered to separate from solids then bottled and prepared for analytical tests.



## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>VA23C2689</b>	<b>Page</b>	: 1 of 18
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: Active Earth Engineering Ltd.	<b>Laboratory</b>	: ALS Environmental - Vancouver
<b>Contact</b>	: JANE PIRIE	<b>Account Manager</b>	: Sneha Sansare
<b>Address</b>	: 304-2600 Gladys Avenue Abbotsford BC Canada V2S 0E9	<b>Address</b>	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
<b>Telephone</b>	:	<b>Telephone</b>	: +1 604 253 4188
<b>Project</b>	: 3440	<b>Date Samples Received</b>	: 22-Sep-2023 11:00
<b>PO</b>	: 3440	<b>Date Analysis Commenced</b>	: 29-Sep-2023
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 11-Oct-2023 23:07
<b>Sampler</b>	: JP		
<b>Site</b>	: ----		
<b>Quote number</b>	: VA22-ACT1100-001 (Default Pricing 2022+)		
<b>No. of samples received</b>	: 13		
<b>No. of samples analysed</b>	: 12		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Kate Dimitrova	Supervisor - Inorganic	Vancouver Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
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Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia



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## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

### Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

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Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 1161207)</b>											
FJ2302466-001	Anonymous	pH (1:2 soil:water)	----	E108	0.10	pH units	8.13	8.20	0.9%	5%	----
<b>Physical Tests (QC Lot: 1161221)</b>											
VA23C2689-001	AE23-BH1-1	Moisture	----	E144	0.25	%	7.50	8.00	6.42%	20%	----
<b>Saturated Paste Extractables (QC Lot: 1161208)</b>											
VA23C2709-001	Anonymous	Chloride, soluble ion content	16887-00-6	E239.Cl	10	mg/L	<10	10	0.1	Diff <2x LOR	----
<b>Saturated Paste Extractables (QC Lot: 1161209)</b>											
VA23C2709-001	Anonymous	% Saturation	----	E141	1.0	%	144	138	4.29%	20%	----
<b>Saturated Paste Extractables (QC Lot: 1161210)</b>											
VA23C2709-001	Anonymous	Sodium, soluble ion content	17341-25-2	E442	2.0	mg/L	68.9	68.4	0.706%	30%	----
<b>Metals (QC Lot: 1161205)</b>											
FJ2302466-001	Anonymous	Aluminum	7429-90-5	E440	50	mg/kg	7740	8140	5.07%	40%	----
		Antimony	7440-36-0	E440	0.10	mg/kg	0.60	0.62	0.02	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	8.57	8.59	0.170%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	352	373	5.85%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.50	0.51	0.01	Diff <2x LOR	----
		Bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Boron	7440-42-8	E440	5.0	mg/kg	11.3	11.8	0.5	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.741	0.741	0.0218%	30%	----
		Calcium	7440-70-2	E440	50	mg/kg	26900	28300	4.93%	30%	----
		Chromium	7440-47-3	E440	0.50	mg/kg	16.8	17.4	3.37%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	6.60	6.77	2.41%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	14.9	15.0	0.712%	30%	----
		Iron	7439-89-6	E440	50	mg/kg	18600	19100	2.69%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	7.67	7.66	0.138%	40%	----
		Lithium	7439-93-2	E440	2.0	mg/kg	9.8	10.1	0.3	Diff <2x LOR	----
		Magnesium	7439-95-4	E440	20	mg/kg	7370	7620	3.38%	30%	----
		Manganese	7439-96-5	E440	1.0	mg/kg	227	235	3.37%	30%	----
Molybdenum	7439-98-7	E440	0.10	mg/kg	2.03	2.00	1.35%	40%	----		
Nickel	7440-02-0	E440	0.50	mg/kg	21.4	21.8	2.14%	30%	----		
Phosphorus	7723-14-0	E440	50	mg/kg	856	894	4.27%	30%	----		



Sub-Matrix: Soil/Solid					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Metals (QC Lot: 1161205) - continued</b>											
FJ2302466-001	Anonymous	Potassium	7440-09-7	E440	100	mg/kg	1590	1690	6.24%	40%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	0.68	0.78	0.10	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	0.14	0.15	0.01	Diff <2x LOR	----
		Sodium	7440-23-5	E440	50	mg/kg	123	123	0.2	Diff <2x LOR	----
		Strontium	7440-24-6	E440	0.50	mg/kg	69.0	72.1	4.44%	40%	----
		Sulfur	7704-34-9	E440	1000	mg/kg	1200	1200	3	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.050	mg/kg	0.182	0.181	0.0008	Diff <2x LOR	----
		Tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR	----
		Titanium	7440-32-6	E440	1.0	mg/kg	42.4	46.7	9.50%	40%	----
		Tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.050	mg/kg	0.983	1.00	1.77%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	38.5	40.8	5.66%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	80.5	82.7	2.69%	30%	----
		Zirconium	7440-67-7	E440	1.0	mg/kg	1.8	1.9	0.07	Diff <2x LOR	----
<b>Metals (QC Lot: 1161206)</b>											
FJ2302466-001	Anonymous	Mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
<b>Volatile Organic Compounds (QC Lot: 1163269)</b>											
VA23C2689-010	AE23-BH5-2	Benzene	71-43-2	E611C	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroethane	75-00-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloromethane	74-87-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----



Sub-Matrix: Soil/Solid

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Volatile Organic Compounds (QC Lot: 1163269) - continued</b>											
VA23C2689-010	AE23-BH5-2	Dichloromethane	75-09-2	E611C	0.045	mg/kg	<0.045	<0.045	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611C	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.040	mg/kg	<0.040	<0.040	0	Diff <2x LOR	----
		Styrene	100-42-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2,2-	79-34-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Toluene	108-88-3	E611C	0.050	mg/kg	0.054	0.053	0.0002	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611C	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Xylene, m+p-	179601-23-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----		
Xylene, o-	95-47-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----		
<b>Hydrocarbons (QC Lot: 1161214)</b>											
VA23C2709-001	Anonymous	EPH (C10-C19)	----	E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	----
		EPH (C19-C32)	----	E601A	200	mg/kg	580	750	170	Diff <2x LOR	----
<b>Polycyclic Aromatic Hydrocarbons (QC Lot: 1161213)</b>											
VA23C2709-001	Anonymous	Acenaphthene	83-32-9	E641A-L	0.0050	mg/kg	0.0220	0.0237	7.35%	50%	----
		Acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg	0.0078	0.0084	0.0007	Diff <2x LOR	----
		Acridine	260-94-6	E641A-L	0.012	mg/kg	<0.012	<0.012	0	Diff <2x LOR	----
		Anthracene	120-12-7	E641A-L	0.0140	mg/kg	<0.0120	<0.0140	0.0020	Diff <2x LOR	----
		Benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg	0.018	0.018	0.0006	Diff <2x LOR	----
		Benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg	0.011	0.012	0.001	Diff <2x LOR	----
		Benzo(b+j)fluoranthene	n/a	E641A-L	0.010	mg/kg	0.020	0.021	0.001	Diff <2x LOR	----
		Benzo(g,h,i)perylene	191-24-2	E641A-L	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		Benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Chrysene	218-01-9	E641A-L	0.010	mg/kg	0.025	0.037	0.011	Diff <2x LOR	----
		Dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	<0.0057	<0.0050	0.0050	Diff <2x LOR	----
Fluoranthene	206-44-0	E641A-L	0.010	mg/kg	0.087	0.091	5.02%	50%	----		



Sub-Matrix: Soil/Solid					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Polycyclic Aromatic Hydrocarbons (QC Lot: 1161213) - continued</b>											
VA23C2709-001	Anonymous	Fluorene	86-73-7	E641A-L	0.010	mg/kg	0.023	0.028	0.005	Diff <2x LOR	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg	<0.010	0.012	0.002	Diff <2x LOR	----
		Methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Naphthalene	91-20-3	E641A-L	0.010	mg/kg	0.016	0.021	0.004	Diff <2x LOR	----
		Phenanthrene	85-01-8	E641A-L	0.010	mg/kg	0.090	0.095	5.33%	50%	----
		Pyrene	129-00-0	E641A-L	0.010	mg/kg	0.086	0.086	0.719%	50%	----
		Quinoline	91-22-5	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1161221)</b>						
Moisture	---	E144	0.25	%	<0.25	---
<b>Saturated Paste Extractables (QCLot: 1161208)</b>						
Chloride, soluble ion content	16887-00-6	E239.Cl	10	mg/L	<10	---
<b>Saturated Paste Extractables (QCLot: 1161209)</b>						
% Saturation	---	E141	1	%	50.0	---
<b>Saturated Paste Extractables (QCLot: 1161210)</b>						
Sodium, soluble ion content	17341-25-2	E442	2	mg/L	<2.0	---
<b>Metals (QCLot: 1161205)</b>						
Aluminum	7429-90-5	E440	50	mg/kg	<50	---
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	---
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	---
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	---
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	---
Bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	---
Boron	7440-42-8	E440	5	mg/kg	<5.0	---
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	---
Calcium	7440-70-2	E440	50	mg/kg	<50	---
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	---
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	---
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	---
Iron	7439-89-6	E440	50	mg/kg	<50	---
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	---
Lithium	7439-93-2	E440	2	mg/kg	<2.0	---
Magnesium	7439-95-4	E440	20	mg/kg	<20	---
Manganese	7439-96-5	E440	1	mg/kg	<1.0	---
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	---
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	---
Phosphorus	7723-14-0	E440	50	mg/kg	<50	---
Potassium	7440-09-7	E440	100	mg/kg	<100	---
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	---
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	---
Sodium	7440-23-5	E440	50	mg/kg	<50	---



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Metals (QCLot: 1161205) - continued</b>						
Strontium	7440-24-6	E440	0.5	mg/kg	<0.50	----
Sulfur	7704-34-9	E440	1000	mg/kg	<1000	----
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
Tin	7440-31-5	E440	2	mg/kg	<2.0	----
Titanium	7440-32-6	E440	1	mg/kg	<1.0	----
Tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	----
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440	2	mg/kg	<2.0	----
Zirconium	7440-67-7	E440	1	mg/kg	<1.0	----
<b>Metals (QCLot: 1161206)</b>						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
<b>TCLP Extractables (QCLot: 1174486)</b>						
Benzo(a)pyrene, TCLP	50-32-8	E644	0.5	µg/L	<0.50	----
<b>Volatile Organic Compounds (QCLot: 1163269)</b>						
Benzene	71-43-2	E611C	0.005	mg/kg	<0.0050	----
Bromodichloromethane	75-27-4	E611C	0.05	mg/kg	<0.050	----
Bromoform	75-25-2	E611C	0.05	mg/kg	<0.050	----
Carbon tetrachloride	56-23-5	E611C	0.05	mg/kg	<0.050	----
Chlorobenzene	108-90-7	E611C	0.05	mg/kg	<0.050	----
Chloroethane	75-00-3	E611C	0.05	mg/kg	<0.050	----
Chloroform	67-66-3	E611C	0.05	mg/kg	<0.050	----
Chloromethane	74-87-3	E611C	0.05	mg/kg	<0.050	----
Dibromochloromethane	124-48-1	E611C	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,2-	95-50-1	E611C	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,3-	541-73-1	E611C	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,4-	106-46-7	E611C	0.05	mg/kg	<0.050	----
Dichloroethane, 1,1-	75-34-3	E611C	0.05	mg/kg	<0.050	----
Dichloroethane, 1,2-	107-06-2	E611C	0.05	mg/kg	<0.050	----
Dichloroethylene, 1,1-	75-35-4	E611C	0.05	mg/kg	<0.050	----
Dichloroethylene, cis-1,2-	156-59-2	E611C	0.05	mg/kg	<0.050	----
Dichloroethylene, trans-1,2-	156-60-5	E611C	0.05	mg/kg	<0.050	----
Dichloromethane	75-09-2	E611C	0.045	mg/kg	<0.045	----
Dichloropropane, 1,2-	78-87-5	E611C	0.05	mg/kg	<0.050	----
Dichloropropylene, cis-1,3-	10061-01-5	E611C	0.05	mg/kg	<0.050	----





Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Volatile Organic Compounds (QCLot: 1163269) - continued</b>						
Dichloropropylene, trans-1,3-	10061-02-6	E611C	0.05	mg/kg	<0.050	----
Ethylbenzene	100-41-4	E611C	0.015	mg/kg	<0.015	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.04	mg/kg	<0.040	----
Styrene	100-42-5	E611C	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.05	mg/kg	<0.050	----
Tetrachloroethylene	127-18-4	E611C	0.05	mg/kg	<0.050	----
Toluene	108-88-3	E611C	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,1-	71-55-6	E611C	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,2-	79-00-5	E611C	0.05	mg/kg	<0.050	----
Trichloroethylene	79-01-6	E611C	0.01	mg/kg	<0.010	----
Trichlorofluoromethane	75-69-4	E611C	0.05	mg/kg	<0.050	----
Vinyl chloride	75-01-4	E611C	0.05	mg/kg	<0.050	----
Xylene, m+p-	179601-23-1	E611C	0.05	mg/kg	<0.050	----
Xylene, o-	95-47-6	E611C	0.05	mg/kg	<0.050	----
<b>Hydrocarbons (QCLot: 1161214)</b>						
EPH (C10-C19)	----	E601A	200	mg/kg	<200	----
EPH (C19-C32)	----	E601A	200	mg/kg	<200	----
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 1161213)</b>						
Acenaphthene	83-32-9	E641A-L	0.005	mg/kg	<0.0050	----
Acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	<0.0050	----
Acridine	260-94-6	E641A-L	0.01	mg/kg	<0.010	----
Anthracene	120-12-7	E641A-L	0.004	mg/kg	<0.0040	----
Benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	<0.010	----
Benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	<0.010	----
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	mg/kg	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	<0.010	----
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	<0.010	----
Chrysene	218-01-9	E641A-L	0.01	mg/kg	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	<0.0050	----
Fluoranthene	206-44-0	E641A-L	0.01	mg/kg	<0.010	----
Fluorene	86-73-7	E641A-L	0.01	mg/kg	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	<0.010	----
Methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	<0.010	----
Methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	<0.010	----

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Work Order : VA23C2689 Amendment 1  
Client : Active Earth Engineering Ltd.  
Project : 3440



Sub-Matrix: **Soil/Solid**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 1161213) - continued</b>						
Naphthalene	91-20-3	E641A-L	0.01	mg/kg	<0.010	----
Phenanthrene	85-01-8	E641A-L	0.01	mg/kg	<0.010	----
Pyrene	129-00-0	E641A-L	0.01	mg/kg	<0.010	----
Quinoline	91-22-5	E641A-L	0.01	mg/kg	<0.010	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Soil/Solid

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 1161207)</b>									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	99.8	95.0	105	----
<b>Physical Tests (QCLot: 1161221)</b>									
Moisture	----	E144	0.25	%	50 %	99.4	90.0	110	----
<b>Saturated Paste Extractables (QCLot: 1161208)</b>									
Chloride, soluble ion content	16887-00-6	E239.Cl	10	mg/L	100 mg/L	100	80.0	120	----
<b>Saturated Paste Extractables (QCLot: 1161209)</b>									
% Saturation	----	E141	1	%	100 %	99.6	80.0	120	----
<b>Saturated Paste Extractables (QCLot: 1161210)</b>									
Sodium, soluble ion content	17341-25-2	E442	2	mg/L	50 mg/L	102	80.0	120	----
<b>Metals (QCLot: 1161205)</b>									
Aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	98.1	80.0	120	----
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	108	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	106	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	98.1	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	101	80.0	120	----
Bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	106	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	97.6	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	103	80.0	120	----
Calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	106	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	102	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	97.3	80.0	120	----
Iron	7439-89-6	E440	50	mg/kg	100 mg/kg	118	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	106	80.0	120	----
Lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	95.1	80.0	120	----
Magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	102	80.0	120	----
Manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	95.4	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	104	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	99.8	80.0	120	----
Phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	107	80.0	120	----
Potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	97.8	80.0	120	----



Sub-Matrix: Soil/Solid

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Metals (QCLot: 1161205) - continued</b>									
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	106	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	93.7	80.0	120	----
Sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	105	80.0	120	----
Strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	108	80.0	120	----
Sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	103	80.0	120	----
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	111	80.0	120	----
Tin	7440-31-5	E440	2	mg/kg	50 mg/kg	104	80.0	120	----
Titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	94.0	80.0	120	----
Tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	107	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	104	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	104	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	97.6	80.0	120	----
Zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	101	80.0	120	----
<b>Metals (QCLot: 1161206)</b>									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	110	80.0	120	----
<b>Volatile Organic Compounds (QCLot: 1163269)</b>									
Benzene	71-43-2	E611C	0.005	mg/kg	2.5 mg/kg	117	70.0	130	----
Bromodichloromethane	75-27-4	E611C	0.05	mg/kg	2.5 mg/kg	112	70.0	130	----
Bromoform	75-25-2	E611C	0.05	mg/kg	2.5 mg/kg	99.5	70.0	130	----
Carbon tetrachloride	56-23-5	E611C	0.05	mg/kg	2.5 mg/kg	116	70.0	130	----
Chlorobenzene	108-90-7	E611C	0.05	mg/kg	2.5 mg/kg	123	70.0	130	----
Chloroethane	75-00-3	E611C	0.05	mg/kg	2.5 mg/kg	111	60.0	140	----
Chloroform	67-66-3	E611C	0.05	mg/kg	2.5 mg/kg	115	70.0	130	----
Chloromethane	74-87-3	E611C	0.05	mg/kg	2.5 mg/kg	104	60.0	140	----
Dibromochloromethane	124-48-1	E611C	0.05	mg/kg	2.5 mg/kg	113	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611C	0.05	mg/kg	2.5 mg/kg	124	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611C	0.05	mg/kg	2.5 mg/kg	129	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611C	0.05	mg/kg	2.5 mg/kg	130	70.0	130	----
Dichloroethane, 1,1-	75-34-3	E611C	0.05	mg/kg	2.5 mg/kg	116	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611C	0.05	mg/kg	2.5 mg/kg	112	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611C	0.05	mg/kg	2.5 mg/kg	111	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611C	0.05	mg/kg	2.5 mg/kg	112	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611C	0.05	mg/kg	2.5 mg/kg	118	70.0	130	----
Dichloromethane	75-09-2	E611C	0.045	mg/kg	2.5 mg/kg	116	60.0	140	----
Dichloropropane, 1,2-	78-87-5	E611C	0.05	mg/kg	2.5 mg/kg	115	70.0	130	----



Sub-Matrix: Soil/Solid

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Volatile Organic Compounds (QCLot: 1163269) - continued</b>									
Dichloropropylene, cis-1,3-	10061-01-5	E611C	0.05	mg/kg	2.5 mg/kg	125	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611C	0.05	mg/kg	2.5 mg/kg	120	70.0	130	----
Ethylbenzene	100-41-4	E611C	0.015	mg/kg	2.5 mg/kg	114	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.04	mg/kg	2.5 mg/kg	123	70.0	130	----
Styrene	100-42-5	E611C	0.05	mg/kg	2.5 mg/kg	120	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.05	mg/kg	2.5 mg/kg	114	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.05	mg/kg	2.5 mg/kg	102	70.0	130	----
Tetrachloroethylene	127-18-4	E611C	0.05	mg/kg	2.5 mg/kg	118	70.0	130	----
Toluene	108-88-3	E611C	0.05	mg/kg	2.5 mg/kg	117	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611C	0.05	mg/kg	2.5 mg/kg	118	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611C	0.05	mg/kg	2.5 mg/kg	109	70.0	130	----
Trichloroethylene	79-01-6	E611C	0.01	mg/kg	2.5 mg/kg	118	70.0	130	----
Trichlorofluoromethane	75-69-4	E611C	0.05	mg/kg	2.5 mg/kg	137	60.0	140	----
Vinyl chloride	75-01-4	E611C	0.05	mg/kg	2.5 mg/kg	109	60.0	140	----
Xylene, m+p-	179601-23-1	E611C	0.05	mg/kg	5 mg/kg	123	70.0	130	----
Xylene, o-	95-47-6	E611C	0.05	mg/kg	2.5 mg/kg	116	70.0	130	----
<b>Hydrocarbons (QCLot: 1161214)</b>									
EPH (C10-C19)	----	E601A	200	mg/kg	1134.37 mg/kg	98.5	70.0	130	----
EPH (C19-C32)	----	E601A	200	mg/kg	575.98 mg/kg	95.7	70.0	130	----
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 1161213)</b>									
Acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	108	60.0	130	----
Acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.5 mg/kg	108	60.0	130	----
Acridine	260-94-6	E641A-L	0.01	mg/kg	0.5 mg/kg	116	60.0	130	----
Anthracene	120-12-7	E641A-L	0.004	mg/kg	0.5 mg/kg	117	60.0	130	----
Benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	0.5 mg/kg	116	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	0.5 mg/kg	114	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	mg/kg	0.5 mg/kg	112	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	0.5 mg/kg	102	60.0	130	----
Chrysene	218-01-9	E641A-L	0.01	mg/kg	0.5 mg/kg	113	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	0.5 mg/kg	113	60.0	130	----
Fluoranthene	206-44-0	E641A-L	0.01	mg/kg	0.5 mg/kg	107	60.0	130	----
Fluorene	86-73-7	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	0.5 mg/kg	117	60.0	130	----



Sub-Matrix: Soil/Solid

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 1161213) - continued</b>									
Methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	110	60.0	130	----
Naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	98.6	50.0	130	----
Phenanthrene	85-01-8	E641A-L	0.01	mg/kg	0.5 mg/kg	113	60.0	130	----
Pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	108	60.0	130	----
Quinoline	91-22-5	E641A-L	0.01	mg/kg	0.5 mg/kg	110	60.0	130	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Soil/Solid

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>TCLP Extractables (QCLot: 1174486)</b>										
VA23C2689-012	AE23-BH6-2	Benzo(a)pyrene, TCLP	50-32-8	E644	0.61 µg/L	0.5 µg/L	122	50.0	140	----
<b>Volatile Organic Compounds (QCLot: 1163269)</b>										
VA23C2689-010	AE23-BH5-2	Benzene	71-43-2	E611C	2.14 mg/kg	3.125 mg/kg	110	60.0	140	----
		Bromodichloromethane	75-27-4	E611C	2.05 mg/kg	3.125 mg/kg	106	60.0	140	----
		Bromoform	75-25-2	E611C	1.83 mg/kg	3.125 mg/kg	94.4	60.0	140	----
		Carbon tetrachloride	56-23-5	E611C	2.09 mg/kg	3.125 mg/kg	108	60.0	140	----
		Chlorobenzene	108-90-7	E611C	2.16 mg/kg	3.125 mg/kg	112	60.0	140	----
		Chloroethane	75-00-3	E611C	2.08 mg/kg	3.125 mg/kg	108	60.0	140	----
		Chloroform	67-66-3	E611C	2.09 mg/kg	3.125 mg/kg	108	60.0	140	----
		Chloromethane	74-87-3	E611C	2.04 mg/kg	3.125 mg/kg	105	60.0	140	----
		Dibromochloromethane	124-48-1	E611C	2.03 mg/kg	3.125 mg/kg	105	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611C	2.18 mg/kg	3.125 mg/kg	113	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611C	2.27 mg/kg	3.125 mg/kg	117	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611C	2.30 mg/kg	3.125 mg/kg	119	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611C	2.11 mg/kg	3.125 mg/kg	109	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611C	2.05 mg/kg	3.125 mg/kg	106	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611C	2.04 mg/kg	3.125 mg/kg	105	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611C	2.04 mg/kg	3.125 mg/kg	105	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611C	2.16 mg/kg	3.125 mg/kg	111	60.0	140	----
		Dichloromethane	75-09-2	E611C	2.12 mg/kg	3.125 mg/kg	110	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611C	2.09 mg/kg	3.125 mg/kg	108	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611C	2.27 mg/kg	3.125 mg/kg	117	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611C	2.16 mg/kg	3.125 mg/kg	112	60.0	140	----
		Ethylbenzene	100-41-4	E611C	2.07 mg/kg	3.125 mg/kg	107	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	2.20 mg/kg	3.125 mg/kg	114	60.0	140	----
		Styrene	100-42-5	E611C	2.16 mg/kg	3.125 mg/kg	112	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	2.04 mg/kg	3.125 mg/kg	105	60.0	140	----
		Tetrachloroethane, 1,1,1,2,2-	79-34-5	E611C	1.85 mg/kg	3.125 mg/kg	95.7	60.0	140	----
		Tetrachloroethylene	127-18-4	E611C	2.06 mg/kg	3.125 mg/kg	106	60.0	140	----
		Toluene	108-88-3	E611C	2.13 mg/kg	3.125 mg/kg	110	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611C	2.15 mg/kg	3.125 mg/kg	111	60.0	140	----



Sub-Matrix: Soil/Solid

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Volatile Organic Compounds (QCLot: 1163269) - continued</b>										
VA23C2689-010	AE23-BH5-2	Trichloroethane, 1,1,2-	79-00-5	E611C	1.98 mg/kg	3.125 mg/kg	102	60.0	140	----
		Trichloroethylene	79-01-6	E611C	2.13 mg/kg	3.125 mg/kg	110	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611C	2.55 mg/kg	3.125 mg/kg	132	60.0	140	----
		Vinyl chloride	75-01-4	E611C	2.13 mg/kg	3.125 mg/kg	110	60.0	140	----
		Xylene, m+p-	179601-23-1	E611C	4.30 mg/kg	6.25 mg/kg	111	60.0	140	----
		Xylene, o-	95-47-6	E611C	2.07 mg/kg	3.125 mg/kg	107	60.0	140	----
<b>Hydrocarbons (QCLot: 1161214)</b>										
VA23C2689-003	AE23-BH2-1	EPH (C10-C19)	----	E601A	880 mg/kg	1134.37 mg/kg	95.0	60.0	140	----
		EPH (C19-C32)	----	E601A	450 mg/kg	575.98 mg/kg	96.1	60.0	140	----
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 1161213)</b>										
VA23C2689-003	AE23-BH2-1	Acenaphthene	83-32-9	E641A-L	0.437 mg/kg	0.5 mg/kg	107	50.0	140	----
		Acenaphthylene	208-96-8	E641A-L	0.430 mg/kg	0.5 mg/kg	105	50.0	140	----
		Acridine	260-94-6	E641A-L	0.369 mg/kg	0.5 mg/kg	90.4	50.0	140	----
		Anthracene	120-12-7	E641A-L	0.460 mg/kg	0.5 mg/kg	113	50.0	140	----
		Benz(a)anthracene	56-55-3	E641A-L	0.434 mg/kg	0.5 mg/kg	106	50.0	140	----
		Benzo(a)pyrene	50-32-8	E641A-L	0.416 mg/kg	0.5 mg/kg	102	50.0	140	----
		Benzo(b+j)fluoranthene	n/a	E641A-L	0.413 mg/kg	0.5 mg/kg	101	50.0	140	----
		Benzo(g,h,i)perylene	191-24-2	E641A-L	0.366 mg/kg	0.5 mg/kg	89.6	50.0	140	----
		Benzo(k)fluoranthene	207-08-9	E641A-L	0.383 mg/kg	0.5 mg/kg	93.6	50.0	140	----
		Chrysene	218-01-9	E641A-L	0.419 mg/kg	0.5 mg/kg	102	50.0	140	----
		Dibenz(a,h)anthracene	53-70-3	E641A-L	0.416 mg/kg	0.5 mg/kg	102	50.0	140	----
		Fluoranthene	206-44-0	E641A-L	0.384 mg/kg	0.5 mg/kg	94.0	50.0	140	----
		Fluorene	86-73-7	E641A-L	0.421 mg/kg	0.5 mg/kg	103	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.408 mg/kg	0.5 mg/kg	99.7	50.0	140	----
		Methylnaphthalene, 1-	90-12-0	E641A-L	0.432 mg/kg	0.5 mg/kg	106	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E641A-L	0.454 mg/kg	0.5 mg/kg	111	50.0	140	----
		Naphthalene	91-20-3	E641A-L	0.418 mg/kg	0.5 mg/kg	102	50.0	140	----
		Phenanthrene	85-01-8	E641A-L	0.419 mg/kg	0.5 mg/kg	102	50.0	140	----
		Pyrene	129-00-0	E641A-L	0.394 mg/kg	0.5 mg/kg	96.4	50.0	140	----
		Quinoline	91-22-5	E641A-L	0.428 mg/kg	0.5 mg/kg	105	50.0	140	----





## Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
<b>Saturated Paste Extractables (QCLot: 1161208)</b>									
	RM	Chloride, soluble ion content	16887-00-6	E239.Cl	1237 mg/L	96.3	70.0	130	----
<b>Saturated Paste Extractables (QCLot: 1161209)</b>									
	RM	% Saturation	----	E141	48.3 %	103	70.0	130	----
<b>Saturated Paste Extractables (QCLot: 1161210)</b>									
	RM	Sodium, soluble ion content	17341-25-2	E442	330 mg/L	91.7	70.0	130	----
<b>Metals (QCLot: 1161205)</b>									
	SCP SS-2	Aluminum	7429-90-5	E440	9817 mg/kg	102	70.0	130	----
	SCP SS-2	Antimony	7440-36-0	E440	3.99 mg/kg	95.9	70.0	130	----
	SCP SS-2	Arsenic	7440-38-2	E440	3.73 mg/kg	97.9	70.0	130	----
	SCP SS-2	Barium	7440-39-3	E440	105 mg/kg	93.8	70.0	130	----
	SCP SS-2	Beryllium	7440-41-7	E440	0.349 mg/kg	105	70.0	130	----
	SCP SS-2	Boron	7440-42-8	E440	8.5 mg/kg	127	40.0	160	----
	SCP SS-2	Cadmium	7440-43-9	E440	0.91 mg/kg	119	70.0	130	----
	SCP SS-2	Calcium	7440-70-2	E440	31082 mg/kg	104	70.0	130	----
	SCP SS-2	Chromium	7440-47-3	E440	101 mg/kg	118	70.0	130	----
	SCP SS-2	Cobalt	7440-48-4	E440	6.9 mg/kg	102	70.0	130	----
	SCP SS-2	Copper	7440-50-8	E440	123 mg/kg	94.1	70.0	130	----
	SCP SS-2	Iron	7439-89-6	E440	23558 mg/kg	101	70.0	130	----
	SCP SS-2	Lead	7439-92-1	E440	267 mg/kg	105	70.0	130	----
	SCP SS-2	Lithium	7439-93-2	E440	9.5 mg/kg	105	70.0	130	----
	SCP SS-2	Magnesium	7439-95-4	E440	5509 mg/kg	99.6	70.0	130	----
	SCP SS-2	Manganese	7439-96-5	E440	269 mg/kg	102	70.0	130	----
	SCP SS-2	Molybdenum	7439-98-7	E440	1.03 mg/kg	106	70.0	130	----
	SCP SS-2	Nickel	7440-02-0	E440	26.7 mg/kg	101	70.0	130	----
	SCP SS-2	Phosphorus	7723-14-0	E440	752 mg/kg	106	70.0	130	----
	SCP SS-2	Potassium	7440-09-7	E440	1587 mg/kg	112	70.0	130	----
	SCP SS-2	Sodium	7440-23-5	E440	797 mg/kg	109	70.0	130	----
	SCP SS-2	Strontium	7440-24-6	E440	86.1 mg/kg	105	70.0	130	----



Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
<b>Metals (QCLot: 1161205) - continued</b>									
	SCP SS-2	Thallium	7440-28-0	E440	0.0786 mg/kg	110	40.0	160	----
	SCP SS-2	Tin	7440-31-5	E440	10.6 mg/kg	93.4	70.0	130	----
	SCP SS-2	Titanium	7440-32-6	E440	839 mg/kg	106	70.0	130	----
	SCP SS-2	Uranium	7440-61-1	E440	0.52 mg/kg	109	70.0	130	----
	SCP SS-2	Vanadium	7440-62-2	E440	32.7 mg/kg	108	70.0	130	----
	SCP SS-2	Zinc	7440-66-6	E440	297 mg/kg	96.4	70.0	130	----
	SCP SS-2	Zirconium	7440-67-7	E440	5.73 mg/kg	101	70.0	130	----
<b>Metals (QCLot: 1161206)</b>									
	SCP SS-2	Mercury	7439-97-6	E510	0.059 mg/kg	106	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

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Canada Toll Free: 1 800 668 9878



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other page in separate cooler

Environmental Division  
Vancouver

Work Order Reference  
VA23C2689



Telephone : +1 604 253 4166

<b>Report To</b> Contact and company name below will appear on the final report Company: Active Earth Engineering Ltd. Contact: Jane Pirie Phone: (778) 752-2222 Company address below will appear on the final report Street: 304 - 2600 Gladys Avenue City/Province: Abbotsford, BC Postal Code: V2S 0E9		<b>Reports / Recipients</b> Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL) Merge QC/QCI Reports with COA <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: labreports@activeearth.ca Email 2: jane.pirie@activeearth.ca Email 3: david.kettlewell@		<b>Turnaround Time (TAT) Requested</b> <input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends. Date and Time Required for all E&P TATs:	
<b>Invoice To</b> Same as Report To <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Company: Active Earth Engineering Ltd. Contact: Angie Steidle		<b>Invoice Recipients</b> Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: ap@activeearth.ca Email 2:		<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and	
<b>Project Information</b> ALS Account # / Quote #: VA22-ACT100-001 Job #: 3440 PO / AFE: (same as Job #) LSD: N/A		<b>Oil and Gas Required Fields (client use)</b> AFE/Cost Center: N/A PO#: N/A Major/Minor Code: N/A Routing Code: N/A Requisitioner: N/A Location: N/A		NUMBER OF CONTAINER LEPH / HEPH PAH Metals (incl. pH) Sodium ions (SOX) VOCs	
ALS Lab Work Order # (ALS use only):		ALS Contact: Sneha Sansare		Sampler: JP	
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINER
1	AE23 - BH1 - 1	21-09-23	8:30	Soil	✓
2	AE23 - BH1 - 2		8:45		✓
3	AE23 - BH2 - 1		9:15		✓
4	AE23 - BH2 - 2		9:30		✓
5	AE23 - BH3 - 1		10:00		✓
6	AE23 - BH3 - 2		10:15		✓

<b>Drinking Water (DW) Samples (client use)</b> Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		<b>SAMPLE RECEIPT DETAILS (ALS use only)</b> Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input checked="" type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Cooler Custody Seals Intact: <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A INITIAL COOLER TEMPERATURES °C: 5°C / 4°C FINAL COOLER TEMPERATURES °C:	
<b>SHIPMENT RELEASE (client use)</b> Released by: Jane Pirie Date: 2023-09-21 Time: 1:30 pm		<b>INITIAL SHIPMENT RECEPTION (ALS use only)</b> Received by: Date: Time:		<b>FINAL SHIPMENT RECEPTION (ALS use only)</b> Received by: DJ Date: Sep 22 / 23 Time: 11:00 am	



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 22 -

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1st page in separate cooler

<b>Report To</b> Contact and company name below will appear on the final report		<b>Reports / Recipients</b>			<b>Turnaround Time (TAT) Requested</b>				<b>AFFIX ALS BARCODE LABEL HERE (ALS use only)</b>								
<b>Company:</b> Active Earth Engineering Ltd.	<b>Contact:</b> Jane Pirie	<b>Phone:</b> (778) 752-2222	Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL) Merge QC/QCI Reports with COA <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked: Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			<input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-5 - 200% rush surcharge.											
Company address below will appear on the final report			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.											
<b>Street:</b> 304 - 2600 Gladys Avenue	<b>City/Province:</b> Abbotsford, BC		<b>Postal Code:</b> V2S 0E9		<b>Email 1 or Fax:</b> labreports@activeearth.ca			<b>Date and Time Required for all E&amp;P TATs:</b> dd-mmm-yy hh:mm am/pm									
<b>Invoice To</b> Same as Report To <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<b>Invoice Recipients</b>			For all tests with rush TATs requested, please contact your AM to confirm availability.												
Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			<b>Analysis Request</b>												
<b>Company:</b> Active Earth Engineering Ltd.		<b>Contact:</b> Angie Steidle			<b>Email 1 or Fax:</b> ap@activeearth.ca			<b>Email 2:</b>									
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below NUMBER OF CONTAINER: LEPH/HEPH, PAH, metals (ppt), sodium ion (ppt), VOCs SAMPLES ON HOLD, EXTENDED STORAGE REQUIRED, SUSPECTED HAZARD (see notes)												
<b>ALS Account # / Quote #:</b> VA22-ACT1100-001	<b>Job #:</b> 3440	<b>PO / AFE:</b> (same as Job #)	<b>LSD:</b> N/A	<b>AFE/Cost Center:</b> N/A							<b>Major/Minor Code:</b> N/A	<b>PO#:</b> N/A	<b>Routing Code:</b> N/A	<b>Requisitioner:</b> N/A	<b>Location:</b> N/A		
<b>ALS Lab Work Order # (ALS use only):</b>		<b>ALS Contact:</b> Sneha Sansare			<b>Sampler:</b> JP												
<b>ALS Sample # (ALS use only)</b>	<b>Sample Identification and/or Coordinates (This description will appear on the report)</b>			<b>Date (dd-mmm-yy)</b>	<b>Time (hh:mm)</b>	<b>Sample Type</b>											
2	AE23 - BH4-1			21-09-23	11:05	Soil											
9	AE23 - BH4-2				11:15												
10	AE23 - BH5-1				11:25												
11	AE23 - BH5-2				11:35												
12	AE23 - BH6-1				11:50												
13	AE23 - BH6-2				12:00												
14	AE23 - BHX				11:50												
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)</b>			<b>COOLING METHOD DETAILS (ALS use only)</b>												
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input checked="" type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED												
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO												
					Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A												
					INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C										
					11.2		57.4										
<b>SHIPMENT RELEASE (client use)</b>				<b>INITIAL SHIPMENT RECEPTION (ALS use only)</b>				<b>FINAL SHIPMENT RECEPTION (ALS use only)</b>									
Released by: Jane Pirie		Date: 2023-09-21		Time: 1:30 pm		Received by: Krysta		Date: Sept 21		Time: 1:30		Received by: DJ		Date: Sep 24/23		Time: 11:00	

grand Charge  
42 coolers

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white-report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

FEB 2022/FH01T  
am