

June 25, 2024

Attention: Keelin Scully, P.Eng.
Ministry of Transportation and Infrastructure
1500 Woolridge St. #310
Coquitlam, BC V3K 0B8

SLR Project No.: 201.089228.00002

Client Reference No.: MOTI Project No. 16985

Revision: 0

**RE: Step B – Soil Characterization
Highway 1 North Cowichan Active Transportation Overpass**

Introduction

On behalf of the Ministry of Transportation and Infrastructure (MOTI), SLR Consulting (Canada) Ltd. (SLR) completed Step B soil characterization within the planned cut areas of the proposed North Cowichan Active Transportation Overpass (the 'site') over the Trans-Canada Highway (Hwy 1) at University Way, North Cowichan, British Columbia (BC). A site plan is shown on Figure 1.

The Step B was completed in preparation for construction activities, per the MOTI Technical Circular T-03/20 (TC T-03/20), Identification and Characterization of Potentially Contaminated Soil (MOTI 2020), and in general accordance with BC Ministry of Environment and Climate Change Strategy (ENV) Technical Guidance 1: Site Characterization and Confirmation Testing (TG1) (ENV 2023c) and ENV Protocol 19: Site Investigation and Reporting (Protocol 19) (ENV 2023b).

Background

SLR completed a Step A Screening for the site in March 2024 to identify potential current and historical Contaminated Sites Regulation (CSR; ENV 1997) Schedule 2 uses at or near the site. A historical service station was identified at 5852 Hwy 1, which was located adjacent to the construction limits, and was registered as a potential contaminated site. A second historical service station was identified at 5832 Hwy 1, however, it was located outside of the planned excavation limits.

Based on the results, per MOTI TC T-03/20, Step B soil characterization was recommended for soils to be cut/removed from or adjacent to the 5852 Hwy 1 property, which included soil for a pier (P5) at the south end of the L10 Line overpass (at approx. STA 10+135), the footing and pier for the west stair access (S1) (at approx. STA 10+133.5) and sidewalk, and a traffic island was in close proximity, according to the MOTI Project No. 16985 North Cowichan Transportation Overpass Pedestrian Ramp Highway No. 1, 50% Detailed Design, dated May 3, 2024.

It should be noted that the Step B soil characterization program was initially designed using MOTI Project No. 16985 Highway No.1 North Cowichan Active Transportation Overpass, 100% Functional Design, dated December 2023. After comparing to the 50% Detailed Design, the main change that would impact soil management was the added footing and pier for the west stair access (S1), however, this area was assessed as part of this Step B.

Scope of Work

SLR recommended advancing two boreholes and installing a soil vapour probe (SVP) in the areas within or adjacent to the 5852 Hwy 1 property where soil is expected to be disturbed for the site. Photos of the site and the field program are included in Appendix A. The program was carried out in accordance with the MOTI TC T-03/20 and SLR's standard field investigative procedures, and included the following tasks:

- Prepared a site-specific health and safety plan (HASP);
- Obtained a lane closure permit from MOTI;
- Retained a traffic control company, Neway Traffic Management (Neway), to prepare a Traffic Management Plan, and provide traffic control services during field work;
- Retained a utility locator, ScanPlus Locating Ltd. (ScanPlus), to conduct a BC One Call, identify the presence of utilities, and clear the investigation locations with ground penetrating radar and electromagnetic locating equipment;
- Advanced two boreholes using a hydro-vacuum truck (hydrovac) provided by H2X Contracting Ltd. (H2X) to confirm the absence of underground utilities, to collect soil samples and to install a soil vapour probe;
- Collected soil samples, logged soil type, and field-screened samples for headspace vapour levels (HSVLS) using a combustible vapour analyzer;
- Submitted select soil samples to Bureau Veritas Canada laboratory (BVL) in Burnaby, BC for analysis of potential contaminants of concern (PCOCs); and
- Prepared this report summarizing the field activities and results of the soil characterization program.

Regulatory Standards

The CSR and the Environmental Management Act (EMA) contain the principal regulatory requirements for contaminated sites management in British Columbia (BC). The CSR came into effect on April 1, 1997, and was recently amended on March 1, 2023. Under Section 63.1 of EMA and protocols under Section 64, the director's interim standards are legally binding. The Hazardous Waste Regulation (HWR) (ENV 1998) may also apply where contaminated media are transported, managed, or disposed of offsite.



Soil Standards

The CSR presents numerical standards for investigating and remediating soils in Schedule 3.1, divided into matrix standards and generic numerical standards. Soil standards are provided for eight classes of land use:

- Wildlands – Natural (WLN) and Wildlands – Reverted (WLR)
- Residential – Low Density (RLLD) and Residential – High Density (RLHD)
- Agricultural (AL)
- Urban Park (PL)
- Commercial (CL)
- Industrial (IL)

Matrix Numerical Soil Standards are in Part 1 of Schedule 3.1 for a subset of inorganic and organic substances, where they are based on both land use and exposure pathways.

Several mandatory and potentially applicable site-specific factors indicate potential exposure to contaminants and define applicable standards. Under CSR Section 12(8), mandatory site-specific factors include human intake of contaminated soil and toxicity to soil invertebrates and plants. Commonly applicable site-specific factors include “groundwater used for drinking water”, and “groundwater flow to surface water used by aquatic life (freshwater or marine)”. Other site-specific factors may apply, depending on the land and water uses, and include: “livestock ingesting soil and fodder”, “major microbial functional impairment” and “groundwater used for livestock watering” on agricultural lands; and “groundwater used for irrigation” on agricultural, urban park or residential lands.

Generic Numerical Soil Standards for various inorganic and organic substances are presented in Parts 2 and 3 of Schedule 3.1, protecting human and ecological health, respectively.

Provision exists in the CSR (Section 11(3)) for considering **background concentrations** for soils. Requirements have been specified in Protocol 4 (ENV 2023a) for using local and regional background soil concentrations as an alternative to the numerical standards prescribed in the CSR.

Where contaminated soil is to be transported and managed or disposed of offsite, the presence/absence of hazardous waste soil is determined by reference to definitions in the HWR. **Hazardous waste soils** are defined by criteria for Federal Transportation of Dangerous Goods Regulation (TDGR) Classes 2, 3, 4, 5, 6, 8 or 9 and HWR definitions for polychlorinated biphenyl (PCB) waste; wastes containing dioxin; waste oil; leachable toxic waste (HWR Schedule 4, Table 1); waste containing tetrachloroethylene; and waste containing polycyclic aromatic hydrocarbons.



Applicable Soil Standards at the Site

Roads are considered industrial land use. Based on the current and reasonable potential future land use, **Industrial (IL) soil standards** are considered to apply to soil at the site. Given the presence of surface water bodies near the site and the mapped aquifer below the site, and in the absence of a detailed investigation to assess groundwater flow and use in accordance with ENV Protocol 21 (ENV 2017), the generic and matrix mandatory factors and common site-specific factors to protect groundwater were applied, including:

- Matrix Numerical Soil Standards for the mandatory site-specific factors: human intake of contaminated soil; and toxicity to soil invertebrates and plants (CSR Schedule 3.1, Part 1);
- Matrix Numerical Soil Standards for the site-specific factors: groundwater used for drinking water, and groundwater flow to surface water used by freshwater and marine aquatic life (CSR Schedule 3.1 Part 1); and
- Generic Numerical Soil Standards (CSR Schedule 3.1) to protect human health (Part 2) and ecological health (Part 3).

Additionally, inorganic substances have been screened against the background values (Region 1 - Vancouver Island) from the BC CSR “Protocol 4 Establishing Local Background Concentrations in Soil” document (ENV 2023a). Where concentrations of inorganic substances were greater than the applied standards but less than the referenced background values, these substances were not carried forward as contaminants of concern.

Additionally, the BC Hazardous Waste Regulation (HWR) provides standards to determine if material qualifies as Hazardous Waste, and must be managed appropriately where contaminated media are transported, managed, or disposed of offsite.

Soil Relocation Standards

The soil relocation standards selected for comparison did not consider a specific receiver site. Rather, analytical results were compared to common soil quality classes for relocation of uncontaminated soil, Agricultural (AL), Residential low density (RL_{LD}) and Commercial (CL), for off-site soil disposal purposes. Conservative pH values and site-specific factors were selected based on frequently applied standards for the land use.

As described in Section 55 of the EMA, notice is required whenever soil is relocated from a site that had a specified industrial or commercial use, subject to specific exemptions. CSR Schedule 2 lists the specified industrial or commercial uses that potentially trigger a notice requirement when relocating soil offsite.

Based on the design drawing, only one pier (P5) at the south end of L10 Line, the footing and pier for the west stair access (S1), and the proposed sidewalk fall within a property with historical Schedule 2 use (service station), and the traffic island is adjacent to the former service station property. Given that there are no current or historical Schedule 2 activities identified at the remaining part of the site, the assessment and relocation of soil from the remaining site was not required to comply with the testing and public notification provisions set out in Section 55 of the EMA, Sections 42 and 43 of the CSR and ENV Protocol 19: Site Investigation and Reporting.

A frequent exemption to a notification requirement is when soil is transported to a permitted facility authorized to receive contaminated soils. However, many facilities have restrictions on the soil quality and source locations they accept.



After notification is provided, soils may be relocated from a site having current or historical Schedule 2 uses to another property if the soil and associated vapour quality meet the most stringent land use standards applicable for the receiving site. Site-specific standards and background concentrations for the receiving site may also be used to show that the soil quality is suitable for relocation. ENV requires the involvement of a qualified professional to prepare and submit a soil relocation notification form supported by appropriate soil quality data collected following Protocol 19.

Field Methodology

Field procedures adopted during the field activities were based on generally accepted environmental engineering practices and BC ENV guidelines for soil characterization.

The Traffic Management Plan was implemented by Neway for the lane closure during field work. Prior to commencing subsurface field investigations, SLR retained ScanPlus to complete the utility locates using ground penetrating radar and electromagnetic scans to identify and mark any utilities within or near the work area.

Both boreholes were daylighted using a hydro-vacuum truck (hydrovac) provided by H2X to confirm the absence of underground utilities, to collect soil samples and to install a soil vapour probe. Borehole locations/coordinates are as follows:

BH24-01 (near proposed pier P5, S1 and sidewalk)	48.78348° N, 123.70091° W
BH24-02 (within traffic island to be modified)	48.78317° N, 123.70035° W

The BH24-01 location was moved slightly to the southeast from the proposed P5 and S1 locations due to accessibility for the utility locators and the hydrovac truck. The hydrovac crew was not able to advance the borehole deeper than 2.7 m because of sloughing associated with groundwater present at the end of the hole. There was caving at depth and to avoid making a much bigger hole, the borehole was terminated at 2.7 mbg instead of the targeted 3.0 m depth.

Protocol 19 requires a minimum of three soil samples to be analysed if less than 600 cubic metres (m³) of soil will be relocated. Six soil samples plus a duplicate were analysed for the required parameters, which exceeded requirements.

Soil Sampling

Soil sampling methodology and frequency were conducted in general accordance with BC ENV TG1, Protocol 19, MOTI TC T-03-20 and SLR standard procedures. Soil samples were collected with a sampling spoon during daylighting at typically 0.5 m intervals.

The soil samples were classified according to soil type, structure, and colour. Soil samples were split into two portions; one sample was placed in a plastic bag to field-screen for the presence of headspace vapour levels (HSVLs) and the other portion of sample was immediately placed in laboratory prepared glass jars (125 millilitres [mL]) and/or methanol preserved glass vials (40 mL), which were labelled and stored in an ice-filled cooler. To prevent cross-contamination, nitrile gloves were worn and disposed of after each sample was collected.

Soil samples were field monitored in airtight plastic bags for the presence of HSVLs using a pre-calibrated RKI Eagle gas monitor. The bags were partially filled with soil and allowed to equilibrate before measuring the HSVL. The bags were then punctured and the gas monitor probe was inserted into the bag. The detector recorded the concentration of volatile organic compound (VOC) vapours in ppmv (parts per million by volume).



Field measured values of HSVLs are semi quantitative and should not be relied upon as an accurate measurement of pore space vapour concentrations, which may be present under the site.

Soil samples selected for chemical analyses were placed in ice-filled coolers and shipped to BVL, in Burnaby, BC, along with completed chain of custody forms within the acceptable sample holding time. Approximately one in ten samples were duplicated to confirm field sampling techniques and laboratory analyses.

Soil cuttings from each borehole were disposed of at Generating Resources for Tomorrow (GRT) in Nanaimo, BC.

Vapour Probe Installation

A soil vapour probe (SVP) was installed at BH24-01 using a 10 mm diameter by 200 mm long stainless-steel mesh implant and Teflon riser tubing. No glues, adhesives or solvents were used in the probe construction. Implant placement was dependent on depth to water table and stratigraphy encountered. The SVP was fitted with a ball-valve closure at the top. A clean silica sand filter pack was installed in the annular space surrounding the slotted interval and extended 0.1 m above the probe. The vapour probe was completed by backfilling the annular space above the sand pack with hydrated bentonite seal with de-ionized water to isolate the screen at the depth installed.

Soil Investigation

Soil Field Observations

The stratigraphy encountered at BH24-01 was silt with organics from surface to 0.25 metres below grade (mbg), underlain by sand with trace to some gravel to the maximum investigated depth of 2.7 mbg. The water table was observed at approximately 2.4 to 2.7 mbg, where the borehole was caving in and was terminated. At BH24-02, asphalt was present at surface followed by sand, no organic layer was present. The borehole logs are included in Appendix B.

HSVLS measured in all soil samples were low, ranging from less than the detection limit of the field instrument to 10 ppmv. No staining or odours were noted in the samples.

Soil Analytical Results

Six soil samples (plus a duplicate) were analysed for PCOCs related to the historical gas station and the additional PCOCs related to auto repair as it was not confirmed if the gas station also operated an auto repair. The same samples were also analysed for PCOCs associated with fill of unknown quality, which also covers the Protocol 19 requirement for metals and PAH analyses. Additionally, the two shallow samples were analysed for PCOCs associated with road salt, which is often required by disposal facilities. The PCOCs and analytical schedule are summarized in the following table.



Table A: PCOCs and Analytical Schedule Summary

Activity	PCOCs	Analysis
Gas station (and potential auto repair)	BTEX, VPH, LEPH, HEPH, PAH, fuel VOCs	BH24-01_0-0.25 BH24-01_0.5-1.0 (BH24-A) BH24-01_1.0-1.5 BH24-01_2.0-2.4 BH24-02_0-0.25 BH24-02_0.5-1.0
	Possible PCOCs if auto repair operated: waste oil VOCs, waste oil metals, glycols (1 sample from each borehole)	BH24-01_0-0.25 BH24-01_0.5-1.0 BH24-01_1.0-1.5 BH24-01_2.0-2.4 BH24-02_0-0.25 BH24-02_0.5-1.0
Fill (unknown quality)	Metals, PAH Possible PCOCs if potential hydrocarbon source or observations: BTEX, VPH, LEPH, HEPH	BH24-01_0-0.25 BH24-01_0.5-1.0 (BH24-A) BH24-01_1.0-1.5 BH24-01_2.0-2.4 BH24-02_0-0.25 BH24-02_0.25-0.5 (As only) BH24-02_0.5-1.0
Road salting (surficial soil for potential disposal purposes)	sodium, chloride	BH24-01_0-0.25 BH24-02_0-0.25
BTEX - benzene, toluene, ethylbenzene, xylenes VPH - volatile petroleum hydrocarbons LEPH - light extractable petroleum hydrocarbons HEPH - heavy extractable petroleum hydrocarbons PAH - polycyclic aromatic hydrocarbons VOCs - volatile organic compounds		

The analytical results are presented in Tables 1 through 6, and are summarized on Figure 2. Borehole logs are presented in Appendix B and the laboratory report is included in Appendix C.

The analytical results indicated petroleum hydrocarbon (PHC), PAH, VOC, metals, glycols, sodium and chloride concentrations met the CSR IL standards for all parameters analysed, except arsenic in BH24-02 from 0 to 0.25 mbg. Arsenic in the sample directly below, at 0.25 - 0.5 mbg met the IL standard, thus the contamination was delineated vertically.

The borehole BH24-02 is located in the traffic island. Based on these results, if the surficial (0-0.25 m) waste (IL+) soil in the traffic island is removed, it should be disposed of at a registered treatment facility. The estimated extent of the area considered Waste Quality (IL+) soil is shown on Figure 2.

One sample (BH24-02_0.5-1.0) had a detectable benzo(a)pyrene (BaP) concentration (greater than the potential HWR leachate trigger), thus was also analyzed for leachable BaP for disposal purposes. The leachate result was less than detection limits and less than the HWR, therefore, the soil is not HW.



The concentrations of all volatile parameters were less than the laboratory method detection limits and volatile substance concentrations in soil were less than the generic numerical soil standard and the lowest value of the matrix numerical soil standards for low density residential land use (RL_{LD}). Therefore, per Protocol 19, soil vapour samples were not required to assess soil quality.

Quality Assurance and Quality Control

SLR has implemented a standardized corporate QA/QC program that follows guidelines established by the BC ENV to maintain a high standard of sample collection.

One soil blind field duplicate (BFD) pair was analysed from borehole BH24-01 (BH24-01_0.5-1.0/BH24-A). The analytical results in both samples were less than the laboratory detection limits, therefore, the relative percent difference (RPD) were not calculated. However, results were the same, and thus, the results are considered to be reliable.

Laboratory QA/QC

BVL internal quality control programs included analyzing reference samples, spiked samples, blank samples, and batch duplicate samples. Batch quality control consisted of the analysis of 10% of the total number of batch samples as randomly selected duplicates and calculation of the RPD. A batch quality control frequency summary was provided for each parameter, including batch identification number and duplicates.

The laboratory internal quality control program indicated the quality control samples either passed or were within the duplicate limits and, therefore, the results were considered acceptable. The overall results of the laboratory and field QA/QC measures were deemed acceptable by SLR and the analytical results can be relied on.

Soil Relocation

For soil disposal purposes, analytical results were also compared to other common land use standards. Other than arsenic in BH24-02 from grade to 0.25 mbg which exceeded the CSR IL standards, the analysed parameter concentrations met the CSR AL, RL_{LD}, and CL standards for all parameters analysed.

Based on these results, if the surficial (0-0.25 m) waste (IL+) soil in the traffic island is removed, it should be disposed of at a registered treatment facility. Registered treatment facilities are exempt from the requirement to notify for soil relocation. A Notification of Independent Remediation (NIR) should be submitted to ENV by a Qualified Professional if remediation is completed in this area.

It is recommended that the remaining excavated soil originating from within the property with Schedule 2 activities (at P5, west stair footing and S1, the sidewalk near P5, and below 0.25 m in the traffic island) be retained within the property boundary, if possible. Otherwise, notification for soil relocation will be required for soil removed from these locations.

During construction activities, if areas of soil contamination not previously identified (i.e., soil that exhibits odours or staining) or debris are encountered, the soils should be segregated for further assessment in accordance with MOTI's Standard Specification for Highway Construction 165.14.03 and Appendix 165-A.



Conclusion

Two areas within the site were investigated due to their proximity to a historical gas station located at 5852 Hwy 1:

- pier P5, west stair footing and pier S1, and sidewalk at approx. STA 10+133.5/135, and
- traffic island.

The following area and depth of waste quality (IL+) soil was identified.

Table B: Area and Depth of Waste Quality

Location	Type	Contaminant	Cut Location	Depth (m)	Volume (m ³)
BH24-02_0-0.25m	fill (sand)	arsenic	traffic island	0 - 0.25	35

The estimated extent of area considered waste quality (IL+) soil is shown in red on Figure 2.

Based on these results, if the surficial (0-0.25 m) waste (IL+) soil in the traffic island is removed, it should be disposed of at a registered treatment facility. Registered treatment facilities are exempt from the requirement to notify for soil relocation. A Notification of Independent Remediation (NIR) should be submitted to ENV by a Qualified Professional if remediation is completed in this area.

Although remaining soil characterized met the AL, RL_{LD} and CL standards, it is recommended that the remaining excavated soil originating from within the property with Schedule 2 activities (at pier P5, west stair footing and pier S1, the sidewalk near P5, and below 0.25 m in the traffic island) be retained within the property boundary, if possible. Otherwise, advance notification for soil relocation per Protocol 19 will be required for soil removed from these locations.

Given that there are no current or historical Schedule 2 activities identified at the remaining part of the site, the assessment and relocation of soil from the remaining site was not required to comply with the testing and public notification provisions set out in the EMA, CSR or Protocol 19.

During construction activities, if areas of soil contamination not previously identified (i.e., soil that exhibits odours or staining) or debris are encountered, the soils should be segregated for further assessment in accordance with MOTI’s Standard Specification for Highway Construction 165.14.03 and Appendix 165-A.

Statement of Limitations

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Closure

Should you have any questions or comments, please do not hesitate to contact the undersigned.

Regards,

SLR Consulting (Canada) Ltd.



Richard Plourde
Environmental Engineer-in-Training
rplourde@slrconsulting.com



Traci Brannen Magee, P.Eng.
Senior Environmental Engineer
tmagee@slrconsulting.com

The Association of Professional Engineers and Geoscientists of the
Province of British Columbia SLR Consulting (Canada) Ltd. Permit to Practice #1001562

Attachments Tables 1 though 6
 Figures 1 and 2
 Appendix A – Photolog
 Appendix B – Borehole Logs
 Appendix C – Laboratory Report



References

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Tables

Step B – Soil Characterization

Highway 1 North Cowichan Active Transportation Overpass

Ministry of Transportation and Infrastructure

SLR Project No.: 201.089228.00002

June 25, 2024

Table 1: PHCs in Soil

	PHCs								
	Benzene mg/kg	Ethylbenzene mg/kg	Toluene mg/kg	Xylene mg/kg	Styrene mg/kg	Methyl Tert- Butyl Ether (MTBE) mg/kg	VPH (C6-C10) mg/kg	LEPH mg/kg	HEPH mg/kg
BC CSR IL dw	0.035	15	6	6.5	ns	ns	ns	ns	ns
BC CSR IL fw	2.5	200	0.5	20	ns	ns	ns	ns	ns
BC CSR IL m	6.5	200	200	20	ns	ns	ns	ns	ns
BC CSR IL e	ns	ns	ns	ns	50	ns	200	2000	5000
BC CSR IL h	ns	ns	ns	ns	1000000	20000	200	2000	5000
BC CSR IL i	6500	700000	550000	1000000	ns	ns	ns	ns	ns
BC CSR IL t	250	650	450	600	ns	ns	ns	ns	ns
BC CSR AL dw	0.035	15	6	6.5	ns	ns	ns	ns	ns
BC CSR AL fw	2.5	200	0.5	20	ns	ns	ns	ns	ns
BC CSR AL m	6.5	200	200	20	ns	ns	ns	ns	ns
BC CSR AL e	ns	ns	ns	ns	0.1	ns	200	1000	1000
BC CSR AL h	ns	ns	ns	ns	8500	4000	200	1000	1000
BC CSR AL i	150	4000	3500	8500	ns	ns	ns	ns	ns
BC CSR AL t	100	200	150	150	ns	ns	ns	ns	ns
BC CSR RLid dw	0.035	15	6	6.5	ns	ns	ns	ns	ns
BC CSR RLid fw	2.5	200	0.5	20	ns	ns	ns	ns	ns
BC CSR RLid m	6.5	200	200	20	ns	ns	ns	ns	ns
BC CSR RLid e	ns	ns	ns	ns	5	ns	200	1000	1000
BC CSR RLid h	ns	ns	ns	ns	8500	4000	200	1000	1000
BC CSR RLid i	150	4000	3500	8500	ns	ns	ns	ns	ns
BC CSR RLid t	100	200	150	150	ns	ns	ns	ns	ns
BC CSR CL dw	0.035	15	6	6.5	ns	ns	ns	ns	ns
BC CSR CL fw	2.5	200	0.5	20	ns	ns	ns	ns	ns
BC CSR CL m	6.5	200	200	20	ns	ns	ns	ns	ns
BC CSR CL e	ns	ns	ns	ns	50	ns	200	2000	5000
BC CSR CL h	ns	ns	ns	ns	50000	20000	200	2000	5000
BC CSR CL i	1000	25000	20000	50000	ns	ns	ns	ns	ns
BC CSR CL t	250	650	450	600	ns	ns	ns	ns	ns

Location Groups	Sample Location	Sample Depth Interval (m)	Sample Name	Sample Date	Benzene	Ethylbenzene	Toluene	Xylene	Styrene	Methyl Tert-Butyl Ether (MTBE)	VPH (C6-C10)	LEPH	HEPH
Locations	BH24-01	0.00 - 0.25	BH24-01_0-0.25	2024-May-08	< 0.0050	< 0.010	< 0.050	< 0.040	< 0.030	< 0.10	< 10	< 100	140
		0.50 - 1.00	BH24-01_0.5-1.0	2024-May-08	< 0.013	< 0.026	< 0.13	< 0.10	< 0.077	< 0.26	< 26	< 100	< 100
			BH24-A		< 0.0050	< 0.010	< 0.050	< 0.040	< 0.030	< 0.10	< 10	< 100	< 100
		1.00 - 1.50	BH24-01_1.0-1.5	2024-May-08	-	-	-	-	-	-	-	< 100	< 100
	2.00 - 2.40	BH24-01_2.0-2.4	2024-May-08	< 0.0050	< 0.010	< 0.050	< 0.040	< 0.030	< 0.10	< 10	< 100	< 100	
	BH24-02	0.00 - 0.25	BH24-02_0-0.25	2024-May-08	< 0.0050	< 0.010	< 0.050	< 0.040	< 0.030	< 0.10	< 10	< 100	< 100
		0.50 - 1.00	BH24-02_0.5-1.0	2024-May-08	< 0.0050	< 0.010	< 0.050	< 0.040	< 0.030	< 0.10	< 10	< 100	< 100

Notes:

- samples collected at the same location and date are blind field duplicate/parent pairs
- '-' sample not analyzed for parameter indicated
- < less than reported detection limit
- m metres
- ns no standard listed
- mg/kg milligram per kilogram
- VPH - volatile petroleum hydrocarbons
- LEPH - light extractable petroleum hydrocarbons
- HEPH - heavy extractable petroleum hydrocarbons



Table 2: PAHs in Soil

	PAHs																						
	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Heavy Molecular Weight PAHs	Indeno(1,2,3-cd)pyrene	Light molecular weight PAHs	Naphthalene	PAHs (sum of total)	Phenanthrene	Pyrene	Quinoline
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BC CSR IL dw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	100	ns	ns	ns	ns
BC CSR IL fw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	75	ns	ns	ns	ns
BC CSR IL m	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	75	ns	ns	ns	ns
BC CSR IL e	ns	ns	ns	ns	ns	10	ns	10	10	ns	10	ns	10	ns	ns	ns	10	ns	ns	ns	50	100	ns
BC CSR IL h	1000	950	15000	ns	ns	500	ns	500	500	ns	500	4500	50	ns	9500	ns	500	ns	ns	ns	300000	200000	10
BC CSR IL i	ns	ns	ns	ns	1000000	ns	50	ns	ns	ns	ns	ns	300000	ns	ns	ns	ns	ns	150000	ns	ns	ns	ns
BC CSR IL t	ns	ns	ns	ns	30	ns	70	ns	ns	ns	ns	ns	200	ns	ns	ns	ns	ns	20	ns	ns	ns	ns
BC CSR AL dw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	100	ns	ns	ns	ns
BC CSR AL fw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	75	ns	ns	ns	ns
BC CSR AL m	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	75	ns	ns	ns	ns
BC CSR AL e	ns	ns	ns	ns	ns	0.1	ns	0.1	0.1	ns	0.1	ns	0.1	ns	ns	ns	0.1	ns	ns	ns	0.1	0.1	ns
BC CSR AL h	250	60	950	ns	ns	50	ns	50	50	ns	50	200	5	ns	600	ns	50	ns	ns	1500	1000	2.5	
BC CSR AL i	ns	ns	ns	ns	10000	ns	5	ns	ns	ns	ns	ns	1500	ns	ns	ns	ns	ns	850	ns	ns	ns	ns
BC CSR AL t	ns	ns	ns	ns	2.5	ns	20	ns	ns	ns	ns	ns	50	ns	ns	ns	ns	ns	0.6	ns	ns	ns	ns
BC CSR RLid dw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	100	ns	ns	ns	ns
BC CSR RLid fw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	75	ns	ns	ns	ns
BC CSR RLid m	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	75	ns	ns	ns	ns
BC CSR RLid e	ns	ns	ns	ns	ns	1	ns	1	1	ns	1	ns	1	ns	ns	ns	1	ns	ns	5	10	ns	ns
BC CSR RLid h	250	60	950	ns	ns	50	ns	50	50	ns	50	200	5	ns	600	ns	50	ns	ns	1500	1000	2.5	
BC CSR RLid i	ns	ns	ns	ns	10000	ns	5	ns	ns	ns	ns	ns	1500	ns	ns	ns	ns	ns	850	ns	ns	ns	ns
BC CSR RLid t	ns	ns	ns	ns	2.5	ns	20	ns	ns	ns	ns	ns	50	ns	ns	ns	ns	ns	0.6	ns	ns	ns	ns
BC CSR CL dw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	100	ns	ns	ns	ns
BC CSR CL fw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	75	ns	ns	ns	ns
BC CSR CL m	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	75	ns	ns	ns	ns
BC CSR CL e	ns	ns	ns	ns	ns	10	ns	10	10	ns	10	ns	10	ns	ns	ns	10	ns	ns	50	100	ns	ns
BC CSR CL h	1000	950	15000	ns	ns	300	ns	300	300	ns	300	4500	30	ns	9500	ns	300	ns	ns	10000	7500	10	
BC CSR CL i	ns	ns	ns	ns	75000	ns	30	ns	ns	ns	ns	ns	10000	ns	ns	ns	ns	ns	5000	ns	ns	ns	ns
BC CSR CL t	ns	ns	ns	ns	30	ns	70	ns	ns	ns	ns	ns	200	ns	ns	ns	ns	ns	20	ns	ns	ns	ns

Location Groups	Sample Location	Sample Depth Interval (m)	Sample Name	Sample Date	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Heavy Molecular Weight PAHs	Indeno(1,2,3-cd)pyrene	Light molecular weight PAHs	Naphthalene	PAHs (sum of total)	Phenanthrene	Pyrene	Quinoline	
Locations	BH24-01	0.00 - 0.25	BH24-01_0-0.25	2024-May-08	< 0.050	< 0.020	< 0.0050	< 0.0050	< 0.0040	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.050	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.050	< 0.020	< 0.060	< 0.010	< 0.060	0.011	< 0.020	< 0.060
		0.50 - 1.00	BH24-01_0.5-1.0	2024-May-08	< 0.050	< 0.020	< 0.0050	< 0.0050	< 0.0040	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.050	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.050	< 0.020	< 0.050	< 0.010	< 0.050	< 0.010	< 0.020	< 0.050
		1.00 - 1.50	BH24-01_1.0-1.5	2024-May-08	< 0.050	< 0.020	< 0.0050	< 0.0050	< 0.0040	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.050	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.050	< 0.020	< 0.050	< 0.010	< 0.050	< 0.010	< 0.020	< 0.050
		2.00 - 2.40	BH24-01_2.0-2.4	2024-May-08	< 0.050	< 0.020	< 0.0050	< 0.0050	< 0.0040	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.050	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.050	< 0.020	< 0.050	< 0.010	< 0.050	< 0.010	< 0.020	< 0.050
	BH24-02	0.00 - 0.25	BH24-02_0-0.25	2024-May-08	< 0.050	< 0.020	< 0.0050	< 0.0050	< 0.0040	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.050	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.050	< 0.020	< 0.050	< 0.010	< 0.050	< 0.010	< 0.020	< 0.050
		0.50 - 1.00	BH24-02_0.5-1.0	2024-May-08	< 0.050	< 0.020	< 0.0050	0.018	0.016	0.032	0.038	0.027	0.027	< 0.050	< 0.020	0.042	< 0.020	0.069	< 0.020	0.28	< 0.020	0.087	< 0.010	0.37	0.053	0.071	< 0.050	

- Notes:**
- samples collected at the same location and date are blind field duplicate/parent pairs
 - ‘-’ sample not analyzed for parameter indicated
 - < less than reported detection limit
 - m metres
 - ns no standard listed
 - mg/kg milligram per kilogram



Table 3: VOCs in Soil

	VOCs																					
	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethylene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloroethylene, cis-	1,2-Dichloroethylene, trans-	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Butadiene	1,3-Dichlorobenzene	1,3-Dichloropropene, cis-	1,3-Dichloropropene, trans-	1,4-Dichlorobenzene	1-Propylbenzene	2-Hexanone
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BC CSR IL fw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR IL m	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR IL e	ns	50	ns	50	50	50	10	10	ns	10	50	50	50	50	ns	ns	10	50	50	10	ns	ns
BC CSR IL h	1500	1000000	150	30000	1000000	350000	10000	70000	15	650000	350	15000	150000	10000	2500	9.5	200000	200000	200000	800000	25000	1000
BC CSR IL i	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR IL t	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR AL fw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR AL m	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR AL e	ns	0.1	ns	0.1	0.1	0.1	0.05	0.05	ns	0.1	0.1	0.1	0.1	0.1	ns	ns	0.1	0.1	0.1	0.1	ns	ns
BC CSR AL h	250	85000	35	150	8500	2000	60	400	3.5	3500	75	85	850	600	150	2	1000	1000	1000	4500	1500	80
BC CSR AL i	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR AL t	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR RLid fw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR RLid m	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR RLid e	ns	5	ns	5	5	5	2	2	ns	1	5	5	5	5	ns	ns	1	5	5	1	ns	ns
BC CSR RLid h	250	85000	35	150	8500	2000	60	400	3.5	3500	75	85	850	600	150	2	1000	1000	1000	4500	1500	80
BC CSR RLid i	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR RLid t	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR CL fw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR CL m	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR CL e	ns	50	ns	50	50	50	10	10	ns	10	50	50	50	50	ns	ns	10	50	50	10	ns	ns
BC CSR CL h	1500	500000	150	1000	50000	15000	400	2500	15	25000	350	500	5000	3500	2500	9.5	7500	7500	7500	30000	25000	1000
BC CSR CL i	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR CL t	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Location Groups	Sample Location	Sample Depth Interval (m)	Sample Name	Sample Date	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethylene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloroethylene, cis-	1,2-Dichloroethylene, trans-	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Butadiene	1,3-Dichlorobenzene	1,3-Dichloropropene, cis-	1,3-Dichloropropene, trans-	1,4-Dichlorobenzene	1-Propylbenzene	2-Hexanone
Locations	BH24-01	0.00 - 0.25	BH24-01_0-0.25	2024-May-08	< 0.020	< 0.020	< 0.020	< 0.020	< 0.025	< 0.025	< 0.030	< 0.030	< 0.020	< 0.020	< 0.020	< 0.030	< 0.030	< 0.020	< 0.20	< 0.080	< 0.020	< 0.020	< 0.020	< 0.020	< 15	< 10
		2.00 - 2.40	BH24-01_2.0-2.4	2024-May-08	< 0.020	< 0.020	< 0.020	< 0.020	< 0.025	< 0.025	< 0.030	< 0.030	< 0.020	< 0.020	< 0.020	< 0.030	< 0.030	< 0.020	< 0.20	< 0.080	< 0.020	< 0.020	< 0.020	< 0.020	< 15	-
	BH24-02	0.00 - 0.25	BH24-02_0-0.25	2024-May-08	< 0.020	< 0.020	< 0.020	< 0.020	< 0.025	< 0.025	< 0.030	< 0.030	< 0.020	< 0.020	< 0.020	< 0.030	< 0.030	< 0.020	< 0.20	< 0.080	< 0.020	< 0.020	< 0.020	< 0.020	< 15	-
		0.50 - 1.00	BH24-02_0.5-1.0	2024-May-08	< 0.020	< 0.020	< 0.020	< 0.020	< 0.025	< 0.025	< 0.030	< 0.030	< 0.020	< 0.020	< 0.020	< 0.030	< 0.030	< 0.020	< 0.20	< 0.080	< 0.020	< 0.020	< 0.020	< 0.020	< 15	-

- Notes:**
- samples collected at the same location and date are blind field duplicate/parent pairs
 - '-' sample not analyzed for parameter indicated
 - < less than reported detection limit
 - m metres
 - ns no standard listed
 - mg/kg milligram per kilogram



Table 3: VOCs in Soil

	VOCs																						
	Bromobenzene	Bromodichloromethane	Bromoform	Bromomethane	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	Cyclohexanone	Cyclohexene	Dibromochloromethane	Dichloromethane	Dicyclopentadiene	Hexachlorobutadiene	Isopropylbenzene	N-butylbenzene	Sec-butylbenzene	Tert-butylbenzene	Tetrachloroethylene	Trichloroethylene	Trichlorofluoromethane	Vinyl chloride
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BC CSR IL fw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2.5	0.3	ns	ns
BC CSR IL m	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2.5	0.3	ns	ns
BC CSR IL e	ns	ns	ns	ns	50	10	ns	50	ns	ns	ns	50	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR IL h	2000	550	4000	300	5000	150000	ns	70000	ns	1000000	1000	400	40000	20000	250	25000	10000	25000	25000	ns	ns	70000	45
BC CSR IL i	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	40000	3500	ns	ns
BC CSR IL t	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	30	25	ns	ns
BC CSR AL fw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2.5	0.3	ns	ns
BC CSR AL m	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2.5	0.3	ns	ns
BC CSR AL e	ns	ns	ns	ns	0.1	0.1	ns	0.1	ns	ns	ns	0.1	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR AL h	150	100	300	20	150	850	ns	400	ns	80000	80	85	250	1500	15	1500	800	1500	1500	ns	ns	4500	0.95
BC CSR AL i	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	250	20	ns	ns
BC CSR AL t	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	15	15	ns	ns
BC CSR RLid fw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2.5	0.3	ns	ns
BC CSR RLid m	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2.5	0.3	ns	ns
BC CSR RLid e	ns	ns	ns	ns	5	1	ns	5	ns	ns	ns	5	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR RLid h	150	100	300	20	150	850	ns	400	ns	80000	80	85	250	1500	15	1500	800	1500	1500	ns	ns	4500	0.95
BC CSR RLid i	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	250	20	ns	ns
BC CSR RLid t	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	15	15	ns	ns
BC CSR CL fw	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2.5	0.3	ns	ns
BC CSR CL m	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	2.5	0.3	ns	ns
BC CSR CL e	ns	ns	ns	ns	50	10	ns	50	ns	ns	ns	50	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
BC CSR CL h	2000	550	4000	300	1000	5000	ns	2500	ns	1000000	1000	400	1500	20000	250	25000	10000	25000	25000	ns	ns	70000	45
BC CSR CL i	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	1500	150	ns	ns
BC CSR CL t	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	30	25	ns	ns

Location Groups	Sample Location	Sample Depth Interval (m)	Sample Name	Sample Date	Bromobenzene	Bromodichloromethane	Bromoform	Bromomethane	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	Cyclohexanone	Cyclohexene	Dibromochloromethane	Dichloromethane	Dicyclopentadiene	Hexachlorobutadiene	Isopropylbenzene	N-butylbenzene	Sec-butylbenzene	Tert-butylbenzene	Tetrachloroethylene	Trichloroethylene	Trichlorofluoromethane	Vinyl chloride	
Locations	BH24-01	0.00 - 0.25	BH24-01_0-0.25	2024-May-08	< 0.20	< 0.050	< 0.050	< 0.30	< 0.020	< 0.020	< 0.10	< 0.020	< 0.050	< 15	-	< 0.050	< 0.080	< 15	< 0.20	< 0.20	< 15	< 15	< 15	< 15	< 0.010	< 0.0090	< 0.20	< 0.040
		2.00 - 2.40	BH24-01_2.0-2.4	2024-May-08	< 0.20	< 0.050	< 0.050	< 0.30	< 0.020	< 0.020	< 0.10	< 0.020	< 0.050	-	< 15	< 0.050	< 0.080	< 15	< 0.20	< 0.20	< 15	< 15	< 15	< 15	< 0.010	< 0.0090	< 0.20	< 0.040
	BH24-02	0.00 - 0.25	BH24-02_0-0.25	2024-May-08	< 0.20	< 0.050	< 0.050	< 0.30	< 0.020	< 0.020	< 0.10	< 0.020	< 0.050	-	< 15	< 0.050	< 0.080	< 15	< 0.20	< 0.20	< 15	< 15	< 15	< 15	< 0.010	< 0.0090	< 0.20	< 0.040
		0.50 - 1.00	BH24-02_0.5-1.0	2024-May-08	< 0.20	< 0.050	< 0.050	< 0.30	< 0.020	< 0.020	< 0.10	< 0.020	< 0.050	-	< 15	< 0.050	< 0.080	< 15	< 0.20	< 0.20	< 15	< 15	< 15	< 15	< 0.010	< 0.0090	< 0.20	< 0.040

Notes:

- samples collected at the same location and date are blind field duplicate/parent pairs
- '-' sample not analyzed for parameter indicated
- < less than reported detection limit
- m metres
- ns no standard listed
- mg/kg milligram per kilogram



Table 4: General Parameters

	Metals																															
	pH Units	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Chromium (III+VI)	Cobalt	Copper	Iron	Lead	Lithium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Zirconium	
BC CSR IL dw	ns	ns	ns	10	350	1.5-1000	ns	ns	1.0-30	60	25	2000-100000	ns	150-8500	ns	2000	ns	15	70-250	1	ns	15000	ns	ns	ns	ns	ns	30	100	300-3000	ns	
BC CSR IL fw	ns	ns	ns	10	3500	1.0-250	ns	ns	1.0-20	60	25	100-6500	ns	1500-90000	ns	ns	ns	650	150-5000	1	ns	ns	ns	ns	ns	ns	ns	150	ns	150-1500	ns	
BC CSR IL m	ns	ns	ns	10	1500	200-150000	ns	ns	1.5-95	60	25	75-1500	ns	300-15000	ns	ns	ns	650	70-250	1	ns	ns	ns	ns	ns	ns	ns	150	ns	150	ns	
BC CSR IL e	ns	ns	40	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	40	ns	ns	25	300	ns	ns	ns	ns	ns	ns	
BC CSR IL h	ns	250000	40000	ns	ns	ns	ns	1000000	ns	ns	ns	ns	150000	ns	450	ns	ns	ns	ns	ns	35000	ns	150000	ns	1000000	ns	200	ns	ns	ns	ns	
BC CSR IL i	ns	ns	ns	400	1000000	15000	ns	ns	3500	20000	2000	700000	ns	4000	ns	1000000	2000	35000	80000	35000	ns	1000000	ns	ns	ns	ns	20000	35000	1000000	ns	ns	
BC CSR IL t	ns	ns	ns	40	1500	350	ns	ns	75	250	200	300	ns	1000	ns	2000	75	150	250	2	ns	1000	ns	ns	ns	ns	2000	300	450	ns	ns	
BC CSR AL dw	ns	ns	ns	10	350	1.5-1000	ns	ns	1.0-30	60	25	2000-100000	ns	150-8500	ns	2000	ns	15	70-250	1	ns	15000	ns	ns	ns	ns	ns	30	100	300-3000	ns	
BC CSR AL fw	ns	ns	ns	10	3500	1.0-250	ns	ns	1.0-20	60	25	100-7500	ns	1500-90000	ns	ns	ns	650	150-5000	1	ns	ns	ns	ns	ns	ns	ns	150	ns	150-1500	ns	
BC CSR AL m	ns	ns	ns	10	1500	200-150000	ns	ns	1.5-95	60	25	75-1500	ns	300-15000	ns	ns	ns	650	70-250	1	ns	ns	ns	ns	ns	ns	ns	150	ns	150	ns	
BC CSR AL gw	ns	ns	ns	10	ns	20-15000	ns	ns	1.0-30	60	25	300-15000	ns	3000-150000	ns	2000	ns	3	70-650	1	ns	ns	ns	ns	ns	ns	ns	15	350	350-65000	ns	
BC CSR AL lw	ns	ns	ns	10	ns	20-15000	ns	ns	8.5-500	60	150	400-25000	ns	1500-85000	ns	ns	ns	3.5	100-3500	1	ns	ns	ns	ns	ns	ns	ns	300	350	200-2000	ns	
BC CSR AL e	ns	ns	20	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	20	ns	ns	9	5	ns	ns	ns	ns	ns	ns	
BC CSR AL h	ns	40000	250	ns	ns	ns	ns	8500	ns	ns	ns	ns	35000	ns	30	ns	ns	ns	ns	ns	200	ns	9500	2	25000	ns	15	ns	ns	ns	ns	
BC CSR AL i	ns	ns	ns	20	8500	85	ns	ns	20	100	25	3500	ns	120	ns	6000	10	200	450	200	ns	1000000	ns	ns	ns	ns	100	200	10000	ns	ns	
BC CSR AL t	ns	ns	ns	25	700	150	ns	ns	30	200	45	150	ns	550	ns	2000	40	80	150	1.5	ns	200	ns	ns	ns	ns	500	150	450	ns	ns	
BC CSR RLid dw	ns	ns	ns	10	350	1.5-1000	ns	ns	1.0-30	60	25	2000-100000	ns	150-8500	ns	2000	ns	15	70-250	1	ns	15000	ns	ns	ns	ns	ns	30	100	300-3000	ns	
BC CSR RLid fw	ns	ns	ns	10	3500	1.0-250	ns	ns	1.0-20	60	25	100-7500	ns	1500-90000	ns	ns	ns	650	150-5000	1	ns	ns	ns	ns	ns	ns	ns	150	ns	150-1500	ns	
BC CSR RLid m	ns	ns	ns	10	1500	200-150000	ns	ns	1.5-95	60	25	75-1500	ns	300-15000	ns	ns	ns	650	70-250	1	ns	ns	ns	ns	ns	ns	ns	150	ns	150	ns	
BC CSR RLid gw	ns	ns	ns	10	ns	20-15000	ns	ns	1.0-30	60	25	300-15000	ns	3000-150000	ns	2000	ns	3	70-650	1	ns	ns	ns	ns	ns	ns	ns	15	350	150-5000	ns	
BC CSR RLid e	ns	ns	20	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	20	ns	ns	9	50	ns	ns	ns	ns	ns	ns	
BC CSR RLid h	ns	40000	250	ns	ns	ns	ns	8500	ns	ns	ns	ns	35000	ns	30	ns	ns	ns	ns	ns	200	ns	9500	ns	25000	ns	15	ns	ns	ns	ns	
BC CSR RLid i	ns	ns	ns	20	8500	85	ns	ns	20	100	25	3500	ns	120	ns	6000	10	200	450	200	ns	1000000	ns	ns	ns	ns	100	200	10000	ns	ns	
BC CSR RLid t	ns	ns	ns	25	700	150	ns	ns	30	200	45	150	ns	550	ns	2000	40	80	150	1.5	ns	200	ns	ns	ns	ns	500	150	450	ns	ns	
BC CSR CL dw	ns	ns	ns	10	350	1.5-1000	ns	ns	1.0-30	60	25	2000-100000	ns	150-8500	ns	2000	ns	15	70-250	1	ns	15000	ns	ns	ns	ns	ns	30	100	300-3000	ns	
BC CSR CL fw	ns	ns	ns	10	3500	1.0-250	ns	ns	1.0-20	60	25	100-7500	ns	1500-90000	ns	ns	ns	650	150-5000	1	ns	ns	ns	ns	ns	ns	ns	150	ns	150-1500	ns	
BC CSR CL m	ns	ns	ns	10	1500	200-150000	ns	ns	1.5-95	60	25	75-1500	ns	300-15000	ns	ns	ns	650	70-250	1	ns	ns	ns	ns	ns	ns	ns	150	ns	150	ns	
BC CSR CL e	ns	ns	40	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	40	ns	ns	25	300	ns	ns	ns	ns	ns	ns	
BC CSR CL h	ns	250000	1500	ns	ns	ns	ns	50000	ns	ns	ns	ns	150000	ns	450	ns	ns	ns	ns	ns	1500	ns	150000	ns	150000	ns	200	ns	ns	ns	ns	
BC CSR CL i	ns	ns	ns	150	50000	500	ns	ns	150	750	75	25000	ns	150	ns	35000	75	1500	3000	1500	ns	1000000	ns	ns	ns	ns	ns	750	1500	75000	ns	ns
BC CSR CL t	ns	ns	ns	40	1500	350	ns	ns	75	250	200	300	ns	1000	ns	2000	75	150	250	2	ns	1000	ns	ns	ns	ns	ns	2000	300	450	ns	ns
BC P4 Background Soil - Region 1 Vancouver Island	ns	55000	4	4	250	0.7	ns	1	0.95	65	30	100	70000	40	ns	5000	0.15	1	50	4	1	ns	100	ns	ns	4	ns	ns	ns	200	150	ns

Location Group	Sample Location	Sample Depth Interval (m)	Sample Name	Sample Date	pH	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Chromium (III+VI)	Cobalt	Copper	Iron	Lead	Lithium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Zirconium
Locations	BH24-01	0.00 - 0.25	BH24-01 0-0.25	2024-May-08	5.61	16000	0.54	3.61	87.3	0.37	< 0.10	3.5	0.247	28.8	10.6	47.2	24200	13.2	11.6	503	0.072	0.62	20.3	< 0.50	0.059	213	35.9	< 0.050	0.59	805	< 0.50	0.495	63.8	74.3	1.56
		0.50 - 1.00	BH24-01 0.5-1.0	2024-May-08	6.14	17500	0.17	4.74	46.0	0.38	< 0.10	2.2	0.100	28.0	12.4	48.0	29100	5.56	11.1	447	0.067	0.20	21.4	< 0.50	0.057	101	19.2	< 0.050	0.26	1040	< 0.50	0.218	77.2	48.9	3.42
		1.00 - 1.50	BH24-01 1.0-1.5	2024-May-08	6.26	16400	0.15	3.66	31.8	0.34	< 0.10	1.9	0.073	28.1	12.0	42.3	28300	2.34	10.7	484	0.056	0.17	21.4	< 0.50	< 0.050	< 100	15.0	< 0.050	0.16	833	< 0.50	0.178	70.0	44.0	3.09
		2.00 - 2.40	BH24-01 2.0-2.4	2024-May-08	6.39	20400	0.15	2.44	52.5	0.43	< 0.10	2.2	0.106	36.1	14.3	40.4	30300	3.73	12.1	422	< 0.050	0.16	25.9	< 0.50	< 0.050	134	24.4	< 0.050	0.30	1030	< 0.50	0.264	82.7	64.3	2.30
	BH24-02	0.00 - 0.25	BH24-02 0-0.25	2024-May-08	7.97	18000	-	21.3	72.8	0.40	0.12	2.9	0.196	30.5	13.8	68.5	31000	23.6	14.7	515	0.073	1.56	25.0	< 0.50	0.060	259	22.7	< 0.050	1.06	836	< 0.50	0.277	71.5	104	2.10
		0.25 - 0.50	BH24-02 0.25-0.5	2024-May-08	-	-	-	3.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		0.50 - 1.00	BH24-02 0.5-1.0	2024-May-08	6.81	17800	0.32	5.01	50.1	0.36	< 0.10	2.9	0.247	29.9	12.7	54.3	30200	29.8	13.5	477	0.080	0.32	22.1	< 0.50	< 0.050	397	20.1	< 0.050	0.36	914	< 0.50	0.248	77.4	69.1	1.65

Notes:
 * samples collected at the same location and date are blind field duplicate/parent pairs
 - sample not analyzed for parameter indicated
 < less than reported detection limit
 m metres
 ns no standard listed
 mg/kg milligram per kilogram
 pH Units potential of hydrogen units



Table 5: Glycols in Soil

	Glycols			
	1,2-Propylene glycol	Diethylene glycol	Ethylene glycol	Triethylene glycol
	mg/kg	mg/kg	mg/kg	mg/kg
BC CSR IL dw	ns	ns	10	ns
BC CSR IL fw	ns	ns	700	ns
BC CSR IL m	ns	ns	700	ns
BC CSR IL h	ns	ns	ns	450000
BC CSR IL i	ns	ns	1000000	ns
BC CSR IL t	ns	ns	6000	ns
BC CSR AL dw	ns	ns	10	ns
BC CSR AL fw	ns	ns	700	ns
BC CSR AL m	ns	ns	700	ns
BC CSR AL h	ns	ns	ns	30000
BC CSR AL i	ns	ns	85000	ns
BC CSR AL t	ns	ns	4000	ns
BC CSR RLId dw	ns	ns	10	ns
BC CSR RLId fw	ns	ns	700	ns
BC CSR RLId m	ns	ns	700	ns
BC CSR RLId h	ns	ns	ns	30000
BC CSR RLId i	ns	ns	85000	ns
BC CSR RLId t	ns	ns	4000	ns
BC CSR CL dw	ns	ns	10	ns
BC CSR CL fw	ns	ns	700	ns
BC CSR CL m	ns	ns	700	ns
BC CSR CL h	ns	ns	ns	450000
BC CSR CL i	ns	ns	500000	ns
BC CSR CL t	ns	ns	6000	ns

Location Groups	Sample Location	Sample Depth Interval (m)	Sample Name	Sample Date				
Locations	BH24-01	2.00 - 2.40	BH24-01_2.0-2.4	2024-May-08	< 10	< 9.0	< 10	< 10
	BH24-02	0.00 - 0.25	BH24-02_0-0.25	2024-May-08	< 10	< 9.0	< 10	< 10

Notes:

- samples collected at the same location and date are blind field duplicate/parent pairs
- '.' sample not analyzed for parameter indicated
- < less than reported detection limit
- m metres
- ns no standard listed
- mg/kg milligram per kilogram



Table 6: Soluble Inorganics in Soil

	Soluble Inorganics	
	Soluble chloride	Soluble sodium
	mg/kg	mg/kg
BC CSR IL dw	100	15000
BC CSR IL fw	600	ns
BC CSR IL i	>1000 mg/g	1000000
BC CSR IL t	2500	1000
BC CSR AL dw	100	15000
BC CSR AL fw	600	ns
BC CSR AL gwi	40	ns
BC CSR AL i	>1000 mg/g	1000000
BC CSR AL lw	ns	ns
BC CSR AL t	350	200
BC CSR RLId dw	100	15000
BC CSR RLId fw	600	ns
BC CSR RLId gwi	40	ns
BC CSR RLId i	>1000 mg/g	1000000
BC CSR RLId t	350	200
BC CSR CL dw	100	15000
BC CSR CL fw	600	ns
BC CSR CL i	>1000 mg/g	1000000
BC CSR CL t	2500	1000

Location Groups	Sample Location	Sample Depth Interval (m)	Sample Name	Sample Date		
Locations	BH24-01	0.00 - 0.25	BH24-01_0-0.25	2024-May-08	< 11	21.6
	BH24-02	0.00 - 0.25	BH24-02_0-0.25	2024-May-08	17.5	22.5

Notes:

- samples collected at the same location and date are blind field duplicate/parent pairs
- '-' sample not analyzed for parameter indicated
- < less than reported detection limit
- m metres
- ns no standard listed
- mg/kg milligram per kilogram





Figures

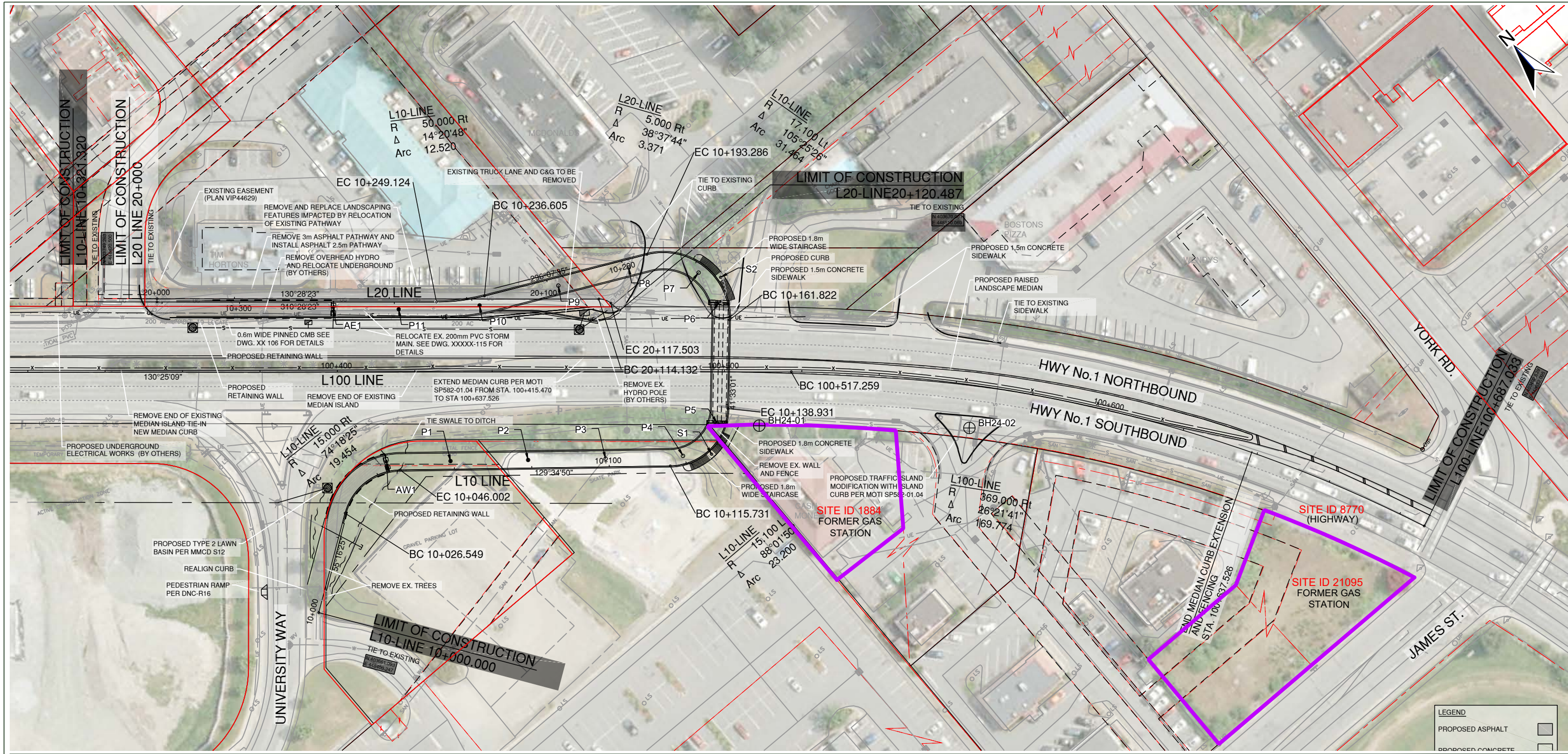
Step B – Soil Characterization

Highway 1 North Cowichan Active Transportation Overpass

Ministry of Transportation and Infrastructure

SLR Project No.: 201.089228.00002

June 25, 2024



- LEGEND:**
- PROPERTY BOUNDARY
 - SCHEDULE 2 USE (HISTORICAL)
 - PROPOSED ASPHALT
 - PROPOSED CONCRETE
 - **SITE ID** BC ENV SITE REGISTRY
 - ⊕ BOREHOLE

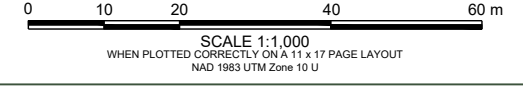
NOTES:

NOT A LEGAL SURVEY. DO NOT USE FOR CONSTRUCTION.

REFERENCED FROM: MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE, DRAWING No. R1-XXX-101 AND 102, REV. B.

Parcel/Polygon from ArcGIS: LAND TITLE AND SURVEY AUTHORITY OF BRITISH COLUMBIA (PARCELMAP BC)

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MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
HIGHWAY 1
NORTH COWICHAN, BC

NORTH COWICHAN ACTIVE TRANSPORTATION
OVERPASS - STEP B

SITE PLAN



FIGURE NO:
1

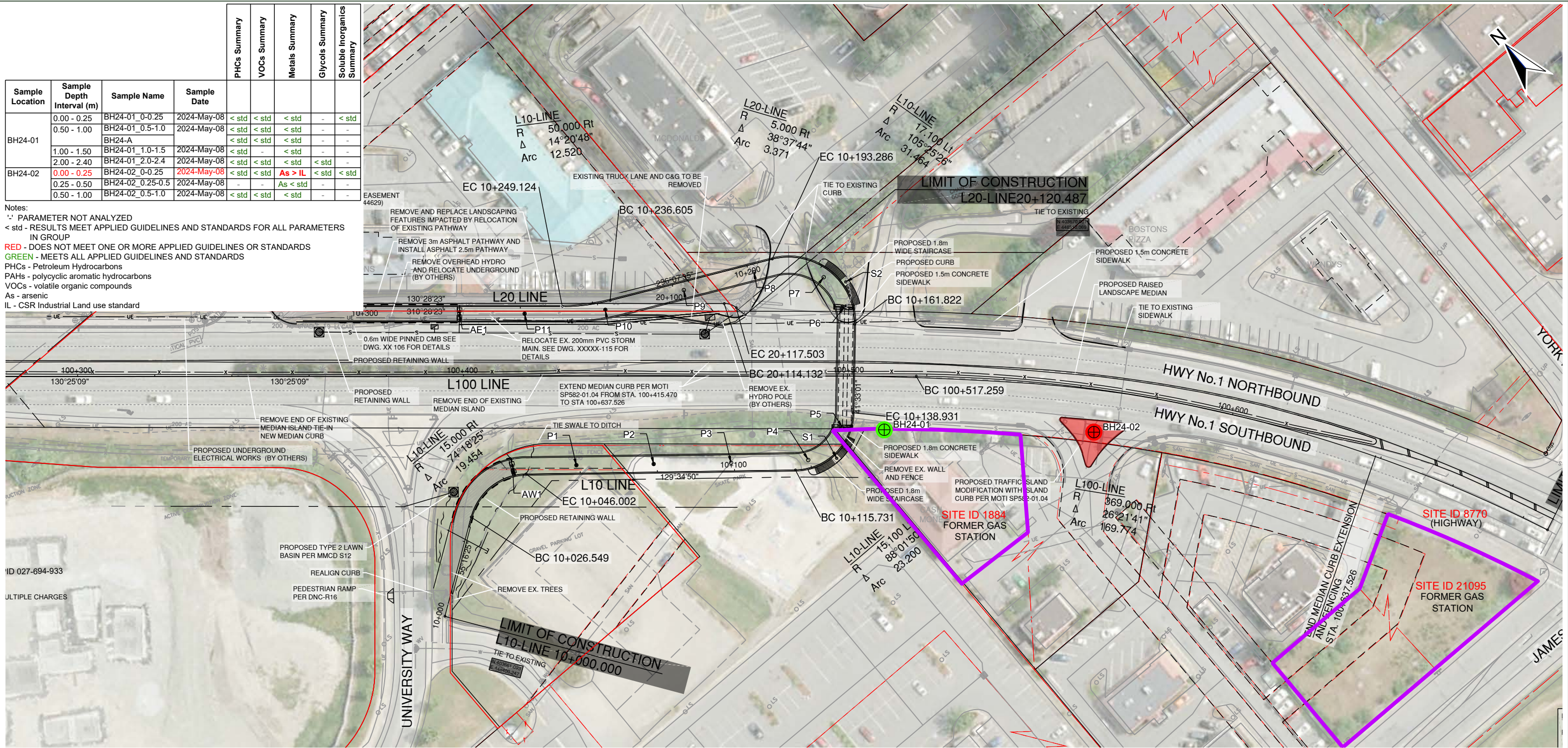
DATE: June 20, 2024

PROJECT NO: 201.089228.00002

Cadfile name: S_201-089228-00002-A1.dwg

Sample Location	Sample Depth Interval (m)	Sample Name	Sample Date	PHCs Summary	VOCs Summary	Metals Summary	Glycols Summary	Soluble Inorganics Summary
BH24-01	0.00 - 0.25	BH24-01_0-0.25	2024-May-08	< std	< std	< std	-	< std
	0.50 - 1.00	BH24-01_0.5-1.0	2024-May-08	< std	< std	< std	-	-
		BH24-A		< std	< std	< std	-	-
BH24-02	1.00 - 1.50	BH24-01_1.0-1.5	2024-May-08	< std	-	< std	-	-
	2.00 - 2.40	BH24-01_2.0-2.4	2024-May-08	< std	< std	< std	< std	< std
	0.00 - 0.25	BH24-02_0-0.25	2024-May-08	< std	< std	As > IL	< std	< std
BH24-02	0.25 - 0.50	BH24-02_0.25-0.5	2024-May-08	-	-	As < std	-	-
	0.50 - 1.00	BH24-02_0.5-1.0	2024-May-08	< std	< std	< std	-	-

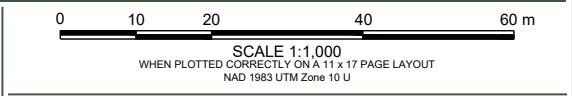
Notes:
 - PARAMETER NOT ANALYZED
 < std - RESULTS MEET APPLIED GUIDELINES AND STANDARDS FOR ALL PARAMETERS IN GROUP
RED - DOES NOT MEET ONE OR MORE APPLIED GUIDELINES OR STANDARDS
GREEN - MEETS ALL APPLIED GUIDELINES AND STANDARDS
 PHCs - Petroleum Hydrocarbons
 PAHs - polycyclic aromatic hydrocarbons
 VOCs - volatile organic compounds
 As - arsenic
 IL - CSR Industrial Land use standard



LEGEND:

- PROPERTY BOUNDARY
- █ SCHEDULE 2 USE (HISTORICAL)
- █ PROPOSED ASPHALT
- █ PROPOSED CONCRETE
- SITE ID BC ENV SITE REGISTRY
- ⊕ BOREHOLE
- SOIL LABORATORY ANALYSIS RESULTS
CONCENTRATIONS MET APPLICABLE CSR STANDARDS
- CONCENTRATION(S) EXCEEDED APPLICABLE CSR STANDARD(S)
- █ WASTE QUALITY SOIL (IL+) CONSIDERED CONTAMINATION

NOTES:
 NOT A LEGAL SURVEY. DO NOT USE FOR CONSTRUCTION.
 REFERENCED FROM: MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE, DRAWING No. R1-XXX-101 AND 102, REV. B.
 ParcelPolygon from ArcGIS: LAND TITLE AND SURVEY AUTHORITY OF BRITISH COLUMBIA (PARCELMAP BC)
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MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
 HIGHWAY 1
 NORTH COWICHAN, BC

NORTH COWICHAN ACTIVE TRANSPORTATION OVERPASS - STEP B

SOIL ANALYTICAL RESULTS SUMMARY

SLR

FIGURE NO:
2

Cadfile name: S_201-089228-00002-A1.dwg



Appendix A Photolog

Step B – Soil Characterization

Highway 1 North Cowichan Active Transportation Overpass

Ministry of Transportation and Infrastructure

SLR Project No.: 201.089228.00002

June 25, 2024

Hwy 1, North Cowichan AT Overpass Project

Photo 1: Location of BH24-01, road box cover in grass (May 8, 2024)



Photo 2: Advancing BH24-02 in traffic triangle using vacuum truck (May 8, 2024)





Appendix B Borehole Logs

Step B – Soil Characterization

Highway 1 North Cowichan Active Transportation Overpass

Ministry of Transportation and Infrastructure

SLR Project No.: 201.089228.00002

June 25, 2024



CLIENT: **MOTI**
 PROJECT: **North Cowichan AT Overpass - Step B**
 ADDRESS: **Highway 1 North Cowichan, BC**
 SLR JOB NO: **201.089228.00002**

BOREHOLE LOG

BOREHOLE NO: **BH24-01**
 SURFACE ELEVATION: n.m.

SLR CONSULTING (CANADA) LTD.

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA			WELL COMPLETION	WELL COMPLETION NOTES	DEPTH (m)
						ORGANIC VAPOUR LEVEL (ppmv)					
						1	10	100			
0-0.25	BH24-01	BH24-01_0-0.25		SILT	firm, some rootlets, dark brown, moist					roadbox, cement	
0.25-0.5	BH24-01	BH24-01_0.25-0.5		SAND	trace to some rounded gravel, compact, brown, moist						
0.5-1.0	BH24-01	BH24-01_0.5-1.0 (BH24-A)			-below 0.5 m, trace cobbles					bentonite seal	
1.0-1.5	BH24-01	BH24-01_1.0-1.5			-1.5-2.0 m, trace grey silt					silica sand vapour probe	1.0
1.5-2.0	BH24-01	BH24-01_1.5-2.0								bentonite seal	
2.0-2.4	BH24-01	BH24-01_2.0-2.4			-saturated at 2.4 m, borehole sloughing					silica sand	2.0
					End of borehole at 2.7 m						
					-stainless steel vapour probe screened from 1.1-1.3 mbg, with a diameter of 10mm and teflon tubing to surface						
					-bentonite surface seal to 1.0 mbg						

SLR CANADA V7.0 BH24-01 AND BH24-02.GPJ SLR_CAN V5.2.GDT 5/29/24

DRILLING METHOD: Vacuum Extraction/Daylighting
 DRILL DATE: 2024-May-08
 LOGGED BY: RP
 DRILLED BY: H2X

Notes: ■ GRAB SAMPLE



CLIENT: **MOTI**
 PROJECT: **North Cowichan AT Overpass - Step B**
 ADDRESS: **Highway 1 North Cowichan, BC**
 SLR JOB NO: **201.089228.00002**

BOREHOLE LOG

BOREHOLE NO: **BH24-02**
 SURFACE ELEVATION: n.m.

SLR CONSULTING (CANADA) LTD.

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA			BOREHOLE COMPLETION	WELL COMPLETION NOTES	DEPTH (m)
						ORGANIC VAPOUR LEVEL (ppmv)					
						1	10	100			
1.0		BH24-02_0-0.25		ASPHALT SAND	trace to some rounded gravel, compact, brown, moist					cement	
		BH24-02_0.25-0.5			-below 0.5 m, trace cobbles					silica sand	
		BH24-02_0.5-1.0								bentonite seal	
										silica sand	
					End of borehole at 1.1 m						

SLR CANADA V7.0 BH24-01 AND BH24-02.GPJ SLR_CAN V5.2.GDT 5/29/24

DRILLING METHOD: Vacuum Extraction/Daylighting
 DRILL DATE: 2024-May-08
 LOGGED BY: RP
 DRILLED BY: H2X

Notes: ■ GRAB SAMPLE



Appendix C Laboratory Reports

Step B – Soil Characterization

Highway 1 North Cowichan Active Transportation Overpass

Ministry of Transportation and Infrastructure

SLR Project No.: 201.089228.00002

June 25, 2024



Your P.O. #: VAN15614
 Your Project #: 201.089228.00002
 Site Location: North Cowichan, BC
 Your C.O.C. #: 84952

Attention: Richard Plourde
 SLR CONSULTING (CANADA) LTD
 #303-3960 Quadra Street
 VICTORIA, BC
 CANADA V8X 4A3

Report Date: 2024/05/29
 Report #: R3506168
 Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C433712

Received: 2024/05/11, 09:50

Sample Matrix: Soil
 # Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE LH VH F1 in Soil - Field Pres. (2)	2	N/A	2024/05/15	BBY8SOP-00010 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Sep 2017
Chloride (soluble)	2	2024/05/14	2024/05/14	BBY6SOP-00011	SM 24 4500-Cl- E m
Soluble Chloride Ion Calc. (mg/kg)	2	N/A	2024/05/14	BBY WI-00033	Auto Calc
Glycols in Soil by GC/FID (1)	2	2024/05/15	2024/05/16	CAL SOP-00093	BCMOE Glycols 09/17
Elements by ICPMS (total) (3)	6	2024/05/14	2024/05/15	BBY7SOP-00004 / BBY7SOP-00001	EPA 6020b R2 m
Elements by ICPMS (total) (3)	1	2024/05/29	2024/05/29	BBY7SOP-00004 / BBY7SOP-00001	EPA 6020b R2 m
Moisture	7	2024/05/14	2024/05/15	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Soluble Sodium Ion Calc. (mg/kg)	2	N/A	2024/05/14	BBY WI-00033	Auto Calc
PAH in TCLP Leachate by GC/MS (SIM)	1	2024/05/28	2024/05/28	BBY7SOP-00005 / BBY8SOP-00021	BCMOE BCLM Jul2017m
PAH in Soil by GC/MS (SIM)	7	2024/05/14	2024/05/16	BBY8SOP-00022	BCMOE BCLM Jul2017m
Total LMW, HMW, Total PAH Calc (4)	1	N/A	2024/05/28	BBY WI-00033	Auto Calc
Total PAH and B(a)P Calculation (5)	4	N/A	2024/05/16	BBY WI-00033	Auto Calc
Total PAH and B(a)P Calculation (5)	3	N/A	2024/05/17	BBY WI-00033	Auto Calc
pH (2:1 DI Water Extract)	6	2024/05/14	2024/05/15	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	1	2024/05/29	2024/05/29	BBY6SOP-00028	BCMOE BCLM Mar2005 m
TCLP pH Measurements	1	N/A	2024/05/28	BBY7SOP-00005	EPA 1311
Saturated Paste	2	2024/05/14	2024/05/14	BBY6SOP-00030	BC Lab Manual 2015 m
Soluble Cations (Ca,K,Mg,Na,S)	2	N/A	2024/05/14	BBY7SOP-00018 / BBY7SOP-00030 / BCLM Nov 2015	EPA 6010d m
EPH less PAH in Soil By GC/FID (6)	4	N/A	2024/05/16	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID (6)	3	N/A	2024/05/17	BBY WI-00033	Auto Calc
EPH in Soil by GC/FID	7	2024/05/14	2024/05/15	BBY8SOP-00029	BCMOE BCLM Dec2016 m
Extra VOCs in Soil - Field Pres. (2)	3	N/A	2024/05/16	BBY8SOP-00040	BCMOE BCLM Sep 2017m
Extra VOCs in Soil by HS GC/MS	1	N/A	2024/05/17	BBY8SOP-00040	BCMOE BCLM Sep 2017m
VOCs, VH, F1, LH in Soil - Field Pres. (2)	2	N/A	2024/05/14	BBY8SOP-00009 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Sep2017 m



Your P.O. #: VAN15614
 Your Project #: 201.089228.00002
 Site Location: North Cowichan, BC
 Your C.O.C. #: 84952

Attention: Richard Plourde

SLR CONSULTING (CANADA) LTD
 #303-3960 Quadra Street
 VICTORIA, BC
 CANADA V8X 4A3

Report Date: 2024/05/29
 Report #: R3506168
 Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C433712

Received: 2024/05/11, 09:50

Sample Matrix: Soil
 # Samples Received: 8

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
VOCs, VH, F1, LH in Soil - Field Pres. (2)	1	N/A	2024/05/15	BBY8SOP-00009 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Sep2017 m
VOCs, VH, F1, LH in Soil by HS GC/MS	1	2024/05/14	2024/05/17	BBY8SOP-00009 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Sep2017 m
Volatile HC-BTEX for Soil (7)	3	N/A	2024/05/15	BBY WI-00033	Auto Calc
Volatile HC-BTEX for Soil (7)	2	N/A	2024/05/16	BBY WI-00033	Auto Calc
Volatile HC-BTEX for Soil (7)	1	N/A	2024/05/21	BBY WI-00033	Auto Calc

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(2) The extraction date for VOC, BTEX, VH, or F1 samples that are field preserved with methanol equals the date sampled, unless otherwise stated.

(3) The sample is prepared per the BC MOE Lab Manual "Strong Acid Leachable Metals (SALM) in Soil - Prescriptive", Revision Nov 6, 2015.

(4) Total PAHs include: Quinoline, Naphthalene, 1-Methylnaphthalene, 2-Methylnaphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Acridine,



Your P.O. #: VAN15614
Your Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your C.O.C. #: 84952

Attention: Richard Plourde

SLR CONSULTING (CANADA) LTD
#303-3960 Quadra Street
VICTORIA, BC
CANADA V8X 4A3

Report Date: 2024/05/29
Report #: R3506168
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C433712

Received: 2024/05/11, 09:50

Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b&j)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, and Benzo(g,h,i)perylene.

(5) Total PAHs in Soil include: Quinoline, Naphthalene, 1-Methylnaphthalene, 2-Methylnaphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Acridine, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b&j)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, and Benzo(g,h,i)perylene.

Total PAHs in Sediment include (B.C. Reg. 116/2018, Schedule 3.4): Naphthalene, 2-Methylnaphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(a)pyrene, and Dibenz(a,h)anthracene.

(6) LEPH = EPH (C10 to C19) - (Naphthalene + Phenanthrene)

HEPH = EPH (C19 to C32) - (Benzo(a)anthracene + Benzo(a)pyrene + Benzo(b)fluoranthene + Benzo(k)fluoranthene + Dibenz(a,h)anthracene + Indeno(1,2,3-cd)pyrene + Pyrene)

(7) VPH = VH - (Benzene + Toluene + Ethylbenzene + m & p-Xylene + o-Xylene + Styrene)

Encryption Key

Diana Fausto
Customer Solutions Representative
29 May 2024 17:47:20

Please direct all questions regarding this Certificate of Analysis to:

Nahed Amer, Key Account Specialist
Email: Nahed.AMER@bureauveritas.com
Phone# (604) 734 7276

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Raphael Kwan, Senior Manager, BC and Yukon Regions responsible for British Columbia Environmental laboratory operations.



BUREAU
VERITAS

Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		CNK797			CNK798		CNK799	CNK800		
Sampling Date		2024/05/08 12:30			2024/05/08 12:25		2024/05/08 12:20	2024/05/08 11:43		
COC Number		84952			84952		84952	84952		
	UNITS	BH24-02_0-0.25	RDL	QC Batch	BH24-02_0.25-0.5	QC Batch	BH24-02_0.5-1.0	BH24-01_0-0.25	RDL	QC Batch

Calculated Parameters										
VPH (VHW6 to 10 - BTEX)	mg/kg	<10	10	B367604			<10	<10	10	B367604
Physical Properties										
Soluble (2:1) pH	pH				7.74	B382734				
RDL = Reportable Detection Limit										

Bureau Veritas ID		CNK806		
Sampling Date		2024/05/08 11:25		
COC Number		84952		
	UNITS	BH24-01_2.0-2.4	RDL	QC Batch
Calculated Parameters				
VPH (VHW6 to 10 - BTEX)	mg/kg	<10	10	B367604
RDL = Reportable Detection Limit				



BUREAU
VERITAS

Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

GLYCOLS BY GC-FID (SOIL)

Bureau Veritas ID		CNK797	CNK806		
Sampling Date		2024/05/08 12:30	2024/05/08 11:25		
COC Number		84952	84952		
	UNITS	BH24-02_0-0.25	BH24-01_2.0-2.4	RDL	QC Batch
Glycols					
Extractable (Water) Ethylene Glycol	mg/kg	<10	<10	10	B370006
Extractable (Water) Diethylene Glycol	mg/kg	<9.0	<9.0	9.0	B370006
Extractable (Water) Triethylene Glycol	mg/kg	<10	<10	10	B370006
Extractable (Water) Propylene Glycol	mg/kg	<10	<10	10	B370006
Surrogate Recovery (%)					
Extractable (Water) Methyl Sulfone (sur.)	%	93	98		B370006
RDL = Reportable Detection Limit					



BUREAU
VERITAS

Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

PHYSICAL TESTING (SOIL)

Bureau Veritas ID		CNK797	CNK799	CNK800	CNK802	CNK803		
Sampling Date		2024/05/08 12:30	2024/05/08 12:20	2024/05/08 11:43	2024/05/08 11:35	2024/05/08 11:35		
COC Number		84952	84952	84952	84952	84952		
	UNITS	BH24-02_0-0.25	BH24-02_0.5-1.0	BH24-01_0-0.25	BH24-01_0.5-1.0	BH24-A	RDL	QC Batch
Physical Properties								
Moisture	%	5.0	8.8	27	5.6	6.8	0.30	B369054
RDL = Reportable Detection Limit								

Bureau Veritas ID		CNK804	CNK806		
Sampling Date		2024/05/08 11:32	2024/05/08 11:25		
COC Number		84952	84952		
	UNITS	BH24-01_1.0-1.5	BH24-01_2.0-2.4	RDL	QC Batch
Physical Properties					
Moisture	%	3.1	14	0.30	B369054
RDL = Reportable Detection Limit					



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VERITAS

Bureau Veritas Job #: C433712
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SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		CNK798			CNK799	
Sampling Date		2024/05/08 12:25			2024/05/08 12:20	
COC Number		84952			84952	
	UNITS	BH24-02_0.25-0.5	RDL	QC Batch	BH24-02_0.5-1.0	QC Batch
TCLP Extraction Procedure						
Initial pH of Sample	pH				7.41	B381007
pH after HCl	pH				1.53	B381007
Final pH of Leachate	pH				4.94	B381007
pH of Leaching Fluid	pH				4.95	B381007
Total Metals by ICPMS						
Total Arsenic (As)	mg/kg	3.44	0.20	B382730		
RDL = Reportable Detection Limit						



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Bureau Veritas Job #: C433712
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SLR CONSULTING (CANADA) LTD
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Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CNK797	CNK799			CNK800		
Sampling Date		2024/05/08 12:30	2024/05/08 12:20			2024/05/08 11:43		
COC Number		84952	84952			84952		
	UNITS	BH24-02_0-0.25	BH24-02_0.5-1.0	RDL	QC Batch	BH24-01_0-0.25	RDL	QC Batch

Volatiles								
VH C6-C10	mg/kg	<10	<10	10	B369115	<10	10	B371862
1,1,1,2-tetrachloroethane	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
1,1,2,2-tetrachloroethane	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
1,1-dichloroethane	mg/kg	<0.025	<0.025	0.025	B369115	<0.025	0.025	B371862
1,1-dichloroethene	mg/kg	<0.025	<0.025	0.025	B369115	<0.025	0.025	B371862
1,2,3-trichlorobenzene	mg/kg	<0.030	<0.030	0.030	B369115	<0.030	0.030	B371862
1,2,4-trichlorobenzene	mg/kg	<0.030	<0.030	0.030	B369115	<0.030	0.030	B371862
1,2-dibromoethane	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
1,2-dichloroethane	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
1,2-dichloropropane	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
1,3,5-trimethylbenzene	mg/kg	<0.20	<0.20	0.20	B369115	<0.20	0.20	B371862
1,3-Butadiene	mg/kg	<0.080	<0.080	0.080	B369115	<0.080	0.080	B371862
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
Benzene	mg/kg	<0.0050	<0.0050	0.0050	B369115	<0.0050	0.0050	B371862
Bromobenzene	mg/kg	<0.20	<0.20	0.20	B369115	<0.20	0.20	B371862
Bromodichloromethane	mg/kg	<0.050	<0.050	0.050	B369115	<0.050	0.050	B371862
Bromoform	mg/kg	<0.050	<0.050	0.050	B369115	<0.050	0.050	B371862
Bromomethane	mg/kg	<0.30	<0.30	0.30	B369115	<0.30	0.30	B371862
Carbon tetrachloride	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
Chlorobenzene	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
Dibromochloromethane	mg/kg	<0.050	<0.050	0.050	B369115	<0.050	0.050	B371862
Chloroethane	mg/kg	<0.10	<0.10	0.10	B369115	<0.10	0.10	B371862
Chloroform	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
Chloromethane	mg/kg	<0.050	<0.050	0.050	B369115	<0.050	0.050	B371862
cis-1,2-dichloroethene	mg/kg	<0.030	<0.030	0.030	B369115	<0.030	0.030	B371862
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
Dichloromethane	mg/kg	<0.080	<0.080	0.080	B369115	<0.080	0.080	B371862

RDL = Reportable Detection Limit



BUREAU
VERITAS

Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CNK797	CNK799			CNK800		
Sampling Date		2024/05/08 12:30	2024/05/08 12:20			2024/05/08 11:43		
COC Number		84952	84952			84952		
	UNITS	BH24-02_0-0.25	BH24-02_0.5-1.0	RDL	QC Batch	BH24-01_0-0.25	RDL	QC Batch
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	B369115	<0.010	0.010	B371862
Hexachlorobutadiene	mg/kg	<0.20	<0.20	0.20	B369115	<0.20	0.20	B371862
Isopropylbenzene	mg/kg	<0.20	<0.20	0.20	B369115	<0.20	0.20	B371862
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	0.10	B369115	<0.10	0.10	B371862
n-Butylbenzene	mg/kg	<15	<15	15	B369115	<15	15	B371862
n-Propylbenzene	mg/kg	<15	<15	15	B369115	<15	15	B371862
sec-Butylbenzene	mg/kg	<15	<15	15	B369115	<15	15	B371862
tert-Butylbenzene	mg/kg	<15	<15	15	B369115	<15	15	B371862
Styrene	mg/kg	<0.030	<0.030	0.030	B369115	<0.030	0.030	B371862
Tetrachloroethene	mg/kg	<0.010	<0.010	0.010	B369115	<0.010	0.010	B371862
Toluene	mg/kg	<0.050	<0.050	0.050	B369115	<0.050	0.050	B371862
trans-1,2-dichloroethene	mg/kg	<0.030	<0.030	0.030	B369115	<0.030	0.030	B371862
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	0.020	B369115	<0.020	0.020	B371862
Trichloroethene	mg/kg	<0.0090	<0.0090	0.0090	B369115	<0.0090	0.0090	B371862
Trichlorofluoromethane	mg/kg	<0.20	<0.20	0.20	B369115	<0.20	0.20	B371862
Vinyl chloride	mg/kg	<0.040	<0.040	0.040	B369115	<0.040	0.040	B371862
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	B369115	<0.040	0.040	B371862
o-Xylene	mg/kg	<0.040	<0.040	0.040	B369115	<0.040	0.040	B371862
Xylenes (Total)	mg/kg	<0.040	<0.040	0.040	B369115	<0.040	0.040	B371862
Extractable (MeOH) 2-Hexanone	mg/kg					<10	10	B371866
Extractable (MeOH) Cyclohexanone	mg/kg					<15	15	B371866
Extractable (MeOH) Cyclohexene	mg/kg	<15	<15	15	B371848			
Extractable (MeOH) Dicyclopentadiene	mg/kg	<15	<15	15	B371848	<15	15	B371866
Surrogate Recovery (%)								
Extractable (MeOH) 1,4-Difluorobenzene (sur.)	%	112	112		B371848			
Extractable (MeOH) 4-Bromofluorobenzene (sur.)	%	98	98		B371848			
Extractable (MeOH) D10-o-Xylene (sur.)	%	93	100		B371848			
Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	%	103	105		B371848			
Extractable (MeOH) 1,4-Difluorobenzene (sur.)	%					119		B371866
Extractable (MeOH) 4-Bromofluorobenzene (sur.)	%					95		B371866
Extractable (MeOH) D10-o-Xylene (sur.)	%					78		B371866
Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	%					97		B371866
RDL = Reportable Detection Limit								



BUREAU
VERITAS

Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CNK797	CNK799			CNK800		
Sampling Date		2024/05/08 12:30	2024/05/08 12:20			2024/05/08 11:43		
COC Number		84952	84952			84952		
	UNITS	BH24-02_0-0.25	BH24-02_0.5-1.0	RDL	QC Batch	BH24-01_0-0.25	RDL	QC Batch
1,4-Difluorobenzene (sur.)	%	96	96		B369115			
4-Bromofluorobenzene (sur.)	%	89	89		B369115			
D10-o-Xylene (sur.)	%	98	100		B369115			
D4-1,2-Dichloroethane (sur.)	%	112	86		B369115			
1,4-Difluorobenzene (sur.)	%					101		B371862
4-Bromofluorobenzene (sur.)	%					98		B371862
D10-o-Xylene (sur.)	%					92		B371862
D4-1,2-Dichloroethane (sur.)	%					123		B371862
RDL = Reportable Detection Limit								



VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CNK806		
Sampling Date		2024/05/08 11:25		
COC Number		84952		
	UNITS	BH24-01_2.0-2.4	RDL	QC Batch
Volatiles				
VH C6-C10	mg/kg	<10	10	B369115
1,1,1,2-tetrachloroethane	mg/kg	<0.020	0.020	B369115
1,1,1-trichloroethane	mg/kg	<0.020	0.020	B369115
1,1,2,2-tetrachloroethane	mg/kg	<0.020	0.020	B369115
1,1,2-trichloroethane	mg/kg	<0.020	0.020	B369115
1,1-dichloroethane	mg/kg	<0.025	0.025	B369115
1,1-dichloroethene	mg/kg	<0.025	0.025	B369115
1,2,3-trichlorobenzene	mg/kg	<0.030	0.030	B369115
1,2,4-trichlorobenzene	mg/kg	<0.030	0.030	B369115
1,2-dibromoethane	mg/kg	<0.020	0.020	B369115
1,2-dichlorobenzene	mg/kg	<0.020	0.020	B369115
1,2-dichloroethane	mg/kg	<0.020	0.020	B369115
1,2-dichloropropane	mg/kg	<0.020	0.020	B369115
1,3,5-trimethylbenzene	mg/kg	<0.20	0.20	B369115
1,3-Butadiene	mg/kg	<0.080	0.080	B369115
1,3-dichlorobenzene	mg/kg	<0.020	0.020	B369115
1,4-dichlorobenzene	mg/kg	<0.020	0.020	B369115
Benzene	mg/kg	<0.0050	0.0050	B369115
Bromobenzene	mg/kg	<0.20	0.20	B369115
Bromodichloromethane	mg/kg	<0.050	0.050	B369115
Bromoform	mg/kg	<0.050	0.050	B369115
Bromomethane	mg/kg	<0.30	0.30	B369115
Carbon tetrachloride	mg/kg	<0.020	0.020	B369115
Chlorobenzene	mg/kg	<0.020	0.020	B369115
Dibromochloromethane	mg/kg	<0.050	0.050	B369115
Chloroethane	mg/kg	<0.10	0.10	B369115
Chloroform	mg/kg	<0.020	0.020	B369115
Chloromethane	mg/kg	<0.050	0.050	B369115
cis-1,2-dichloroethene	mg/kg	<0.030	0.030	B369115
cis-1,3-dichloropropene	mg/kg	<0.020	0.020	B369115
Dichloromethane	mg/kg	<0.080	0.080	B369115
RDL = Reportable Detection Limit				



VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CNK806		
Sampling Date		2024/05/08 11:25		
COC Number		84952		
	UNITS	BH24-01_2.0-2.4	RDL	QC Batch
Ethylbenzene	mg/kg	<0.010	0.010	B369115
Hexachlorobutadiene	mg/kg	<0.20	0.20	B369115
Isopropylbenzene	mg/kg	<0.20	0.20	B369115
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	B369115
n-Butylbenzene	mg/kg	<15	15	B369115
n-Propylbenzene	mg/kg	<15	15	B369115
sec-Butylbenzene	mg/kg	<15	15	B369115
tert-Butylbenzene	mg/kg	<15	15	B369115
Styrene	mg/kg	<0.030	0.030	B369115
Tetrachloroethene	mg/kg	<0.010	0.010	B369115
Toluene	mg/kg	<0.050	0.050	B369115
trans-1,2-dichloroethene	mg/kg	<0.030	0.030	B369115
trans-1,3-dichloropropene	mg/kg	<0.020	0.020	B369115
Trichloroethene	mg/kg	<0.0090	0.0090	B369115
Trichlorofluoromethane	mg/kg	<0.20	0.20	B369115
Vinyl chloride	mg/kg	<0.040	0.040	B369115
m & p-Xylene	mg/kg	<0.040	0.040	B369115
o-Xylene	mg/kg	<0.040	0.040	B369115
Xylenes (Total)	mg/kg	<0.040	0.040	B369115
Extractable (MeOH) Cyclohexene	mg/kg	<15	15	B371848
Extractable (MeOH) Dicyclopentadiene	mg/kg	<15	15	B371848
Surrogate Recovery (%)				
Extractable (MeOH) 1,4-Difluorobenzene (sur.)	%	110		B371848
Extractable (MeOH) 4-Bromofluorobenzene (sur.)	%	98		B371848
Extractable (MeOH) D10-o-Xylene (sur.)	%	108		B371848
Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	%	104		B371848
1,4-Difluorobenzene (sur.)	%	96		B369115
4-Bromofluorobenzene (sur.)	%	91		B369115
D10-o-Xylene (sur.)	%	116		B369115
D4-1,2-Dichloroethane (sur.)	%	90		B369115
RDL = Reportable Detection Limit				



CSR BTEX/VPH IN SOIL - FIELD PRESERVED (SOIL)

Bureau Veritas ID		CNK802			CNK803		
Sampling Date		2024/05/08 11:35			2024/05/08 11:35		
COC Number		84952			84952		
	UNITS	BH24-01_0.5-1.0	RDL	QC Batch	BH24-A	RDL	QC Batch
Calculated Parameters							
VPH (VHW6 to 10 - BTEX)	mg/kg	<26	26	B367604	<10	10	B367604
Volatiles							
Methyl-tert-butylether (MTBE)	mg/kg	<0.26 (1)	0.26	B369432	<0.10	0.10	B370190
Benzene	mg/kg	<0.013 (1)	0.013	B369432	<0.0050	0.0050	B370190
Toluene	mg/kg	<0.13 (1)	0.13	B369432	<0.050	0.050	B370190
Ethylbenzene	mg/kg	<0.026 (1)	0.026	B369432	<0.010	0.010	B370190
m & p-Xylene	mg/kg	<0.10 (1)	0.10	B369432	<0.040	0.040	B370190
o-Xylene	mg/kg	<0.10 (1)	0.10	B369432	<0.040	0.040	B370190
Styrene	mg/kg	<0.077 (1)	0.077	B369432	<0.030	0.030	B370190
Xylenes (Total)	mg/kg	<0.10	0.10	B369432	<0.040	0.040	B370190
VH C6-C10	mg/kg	<26 (1)	26	B369432	<10	10	B370190
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	105		B369432	108		B370190
4-Bromofluorobenzene (sur.)	%	92		B369432	102		B370190
D10-o-Xylene (sur.)	%	198 (2)		B369432	95		B370190
D4-1,2-Dichloroethane (sur.)	%	104		B369432	108		B370190
RDL = Reportable Detection Limit (1) Detection limits raised based on sample weight or volume used for analysis. (2) Surrogate O-Xylene-D10 results have a potential for bias high due to leaked extraction solvent during transport to lab.							



BUREAU
VERITAS

Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CNK797	CNK799		CNK800		CNK802		
Sampling Date		2024/05/08 12:30	2024/05/08 12:20		2024/05/08 11:43		2024/05/08 11:35		
COC Number		84952	84952		84952		84952		
	UNITS	BH24-02_0-0.25	BH24-02_0.5-1.0	RDL	BH24-01_0-0.25	RDL	BH24-01_0.5-1.0	RDL	QC Batch

Calculated Parameters									
Low Molecular Weight PAH's	mg/kg	<0.050	0.087	0.050	<0.060	0.060	<0.050	0.050	B367599
High Molecular Weight PAH's	mg/kg	<0.050	0.28	0.050	<0.050	0.050	<0.050	0.050	B367599
Total PAH	mg/kg	<0.050	0.37	0.050	<0.060	0.060	<0.050	0.050	B367599

Polycyclic Aromatics									
Quinoline	mg/kg	<0.050	<0.050	0.050	<0.060 (1)	0.060	<0.050	0.050	B369433
Naphthalene	mg/kg	<0.010	<0.010	0.010	<0.010	0.010	<0.010	0.010	B369433
1-Methylnaphthalene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	B369433
2-Methylnaphthalene	mg/kg	<0.020	<0.020	0.020	<0.020	0.020	<0.020	0.020	B369433
Acenaphthylene	mg/kg	<0.0050	0.018	0.0050	<0.0050	0.0050	<0.0050	0.0050	B369433
Acenaphthene	mg/kg	<0.0050	<0.0050	0.0050	<0.0050	0.0050	<0.0050	0.0050	B369433
Fluorene	mg/kg	<0.020	<0.020	0.020	<0.020	0.020	<0.020	0.020	B369433
Phenanthrene	mg/kg	<0.010	0.053	0.010	0.011	0.010	<0.010	0.010	B369433
Anthracene	mg/kg	<0.0040	0.016	0.0040	<0.0040	0.0040	<0.0040	0.0040	B369433
Fluoranthene	mg/kg	<0.020	0.069	0.020	<0.020	0.020	<0.020	0.020	B369433
Pyrene	mg/kg	<0.020	0.071	0.020	<0.020	0.020	<0.020	0.020	B369433
Benzo(a)anthracene	mg/kg	<0.020	0.032	0.020	<0.020	0.020	<0.020	0.020	B369433
Chrysene	mg/kg	<0.020	0.042	0.020	<0.020	0.020	<0.020	0.020	B369433
Benzo(b&j)fluoranthene	mg/kg	<0.020	0.027	0.020	<0.020	0.020	<0.020	0.020	B369433
Benzo(b)fluoranthene	mg/kg	<0.020	0.027	0.020	<0.020	0.020	<0.020	0.020	B369433
Benzo(k)fluoranthene	mg/kg	<0.020	<0.020	0.020	<0.020	0.020	<0.020	0.020	B369433
Benzo(a)pyrene	mg/kg	<0.020	0.038	0.020	<0.020	0.020	<0.020	0.020	B369433
Indeno(1,2,3-cd)pyrene	mg/kg	<0.020	<0.020	0.020	<0.020	0.020	<0.020	0.020	B369433
Dibenz(a,h)anthracene	mg/kg	<0.020	<0.020	0.020	<0.020	0.020	<0.020	0.020	B369433
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	B369433

Calculated Parameters									
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	100	<100	100	<100	100	B367601
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	100	140	100	<100	100	B367601

Hydrocarbons									
EPH (C10-C19)	mg/kg	<100	<100	100	<100	100	<100	100	B369425
EPH (C19-C32)	mg/kg	<100	<100	100	140	100	<100	100	B369425

RDL = Reportable Detection Limit
(1) Detection limits raised due to matrix interference.



BUREAU
VERITAS

Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CNK797	CNK799		CNK800		CNK802		
Sampling Date		2024/05/08 12:30	2024/05/08 12:20		2024/05/08 11:43		2024/05/08 11:35		
COC Number		84952	84952		84952		84952		
	UNITS	BH24-02_0-0.25	BH24-02_0.5-1.0	RDL	BH24-01_0-0.25	RDL	BH24-01_0.5-1.0	RDL	QC Batch

Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	86	88		83		82		B369433
D8-ACENAPHTHYLENE (sur.)	%	77	79		78		75		B369433
D8-NAPHTHALENE (sur.)	%	77	79		79		75		B369433
TERPHENYL-D14 (sur.)	%	82	85		81		79		B369433
O-TERPHENYL (sur.)	%	90	91		92		81		B369425

RDL = Reportable Detection Limit



BUREAU
VERITAS

Bureau Veritas Job #: C433712

Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD

Client Project #: 201.089228.00002

Site Location: North Cowichan, BC

Your P.O. #: VAN15614

Sampler Initials: RP

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CNK803	CNK804	CNK806		
Sampling Date		2024/05/08 11:35	2024/05/08 11:32	2024/05/08 11:25		
COC Number		84952	84952	84952		
	UNITS	BH24-A	BH24-01_1.0-1.5	BH24-01_2.0-2.4	RDL	QC Batch
Calculated Parameters						
Low Molecular Weight PAH`s	mg/kg	<0.050	<0.050	<0.050	0.050	B367599
High Molecular Weight PAH`s	mg/kg	<0.050	<0.050	<0.050	0.050	B367599
Total PAH	mg/kg	<0.050	<0.050	<0.050	0.050	B367599
Polycyclic Aromatics						
Quinoline	mg/kg	<0.050	<0.050	<0.050	0.050	B369433
Naphthalene	mg/kg	<0.010	<0.010	<0.010	0.010	B369433
1-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	0.050	B369433
2-Methylnaphthalene	mg/kg	<0.020	<0.020	<0.020	0.020	B369433
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	B369433
Acenaphthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	B369433
Fluorene	mg/kg	<0.020	<0.020	<0.020	0.020	B369433
Phenanthrene	mg/kg	<0.010	<0.010	<0.010	0.010	B369433
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	0.0040	B369433
Fluoranthene	mg/kg	<0.020	<0.020	<0.020	0.020	B369433
Pyrene	mg/kg	<0.020	<0.020	<0.020	0.020	B369433
Benzo(a)anthracene	mg/kg	<0.020	<0.020	<0.020	0.020	B369433
Chrysene	mg/kg	<0.020	<0.020	<0.020	0.020	B369433
Benzo(b&j)fluoranthene	mg/kg	<0.020	<0.020	<0.020	0.020	B369433
Benzo(b)fluoranthene	mg/kg	<0.020	<0.020	<0.020	0.020	B369433
Benzo(k)fluoranthene	mg/kg	<0.020	<0.020	<0.020	0.020	B369433
Benzo(a)pyrene	mg/kg	<0.020	<0.020	<0.020	0.020	B369433
Indeno(1,2,3-cd)pyrene	mg/kg	<0.020	<0.020	<0.020	0.020	B369433
Dibenz(a,h)anthracene	mg/kg	<0.020	<0.020	<0.020	0.020	B369433
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	<0.050	0.050	B369433
Calculated Parameters						
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	<100	100	B367601
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	<100	100	B367601
Hydrocarbons						
EPH (C10-C19)	mg/kg	<100	<100	<100	100	B369425
EPH (C19-C32)	mg/kg	<100	<100	<100	100	B369425
RDL = Reportable Detection Limit						



BUREAU
VERITAS

Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CNK803	CNK804	CNK806		
Sampling Date		2024/05/08 11:35	2024/05/08 11:32	2024/05/08 11:25		
COC Number		84952	84952	84952		
	UNITS	BH24-A	BH24-01_1.0-1.5	BH24-01_2.0-2.4	RDL	QC Batch
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	101	104	102		B369433
D8-ACENAPHTHYLENE (sur.)	%	74	65	63		B369433
D8-NAPHTHALENE (sur.)	%	82	77	76		B369433
TERPHENYL-D14 (sur.)	%	91	89	92		B369433
O-TERPHENYL (sur.)	%	89	92	91		B369425
RDL = Reportable Detection Limit						



BUREAU
VERITAS

Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

CSR/CCME METALS IN SOIL WITH HG (SOIL)

Bureau Veritas ID		CNK797	CNK799	CNK800	CNK802	CNK804		
Sampling Date		2024/05/08 12:30	2024/05/08 12:20	2024/05/08 11:43	2024/05/08 11:35	2024/05/08 11:32		
COC Number		84952	84952	84952	84952	84952		
	UNITS	BH24-02_0-0.25	BH24-02_0.5-1.0	BH24-01_0-0.25	BH24-01_0.5-1.0	BH24-01_1.0-1.5	RDL	QC Batch

Physical Properties								
Soluble (2:1) pH	pH	7.97	6.81	5.61	6.14	6.26	N/A	B369211
Total Metals by ICPMS								
Total Aluminum (Al)	mg/kg	18000	17800	16000	17500	16400	100	B369252
Total Antimony (Sb)	mg/kg	4.77	0.32	0.54	0.17	0.15	0.10	B369252
Total Arsenic (As)	mg/kg	21.3	5.01	3.61	4.74	3.66	0.20	B369252
Total Barium (Ba)	mg/kg	72.8	50.1	87.3	46.0	31.8	0.10	B369252
Total Beryllium (Be)	mg/kg	0.40	0.36	0.37	0.38	0.34	0.20	B369252
Total Bismuth (Bi)	mg/kg	0.12	<0.10	<0.10	<0.10	<0.10	0.10	B369252
Total Boron (B)	mg/kg	2.9	2.9	3.5	2.2	1.9	1.0	B369252
Total Cadmium (Cd)	mg/kg	0.196	0.247	0.247	0.100	0.073	0.050	B369252
Total Calcium (Ca)	mg/kg	4720	4320	6840	3900	3670	100	B369252
Total Chromium (Cr)	mg/kg	30.5	29.9	28.8	28.0	28.1	0.50	B369252
Total Cobalt (Co)	mg/kg	13.8	12.7	10.6	12.4	12.0	0.10	B369252
Total Copper (Cu)	mg/kg	68.5	54.3	47.2	48.0	42.3	0.50	B369252
Total Iron (Fe)	mg/kg	31000	30200	24200	29100	28300	100	B369252
Total Lead (Pb)	mg/kg	23.6	29.8	13.2	5.56	2.34	0.10	B369252
Total Lithium (Li)	mg/kg	14.7	13.5	11.6	11.1	10.7	0.50	B369252
Total Magnesium (Mg)	mg/kg	9810	10200	6860	10100	10700	100	B369252
Total Manganese (Mn)	mg/kg	515	477	503	447	484	0.20	B369252
Total Mercury (Hg)	mg/kg	0.073	0.080	0.072	0.067	0.056	0.050	B369252
Total Molybdenum (Mo)	mg/kg	1.56	0.32	0.62	0.20	0.17	0.10	B369252
Total Nickel (Ni)	mg/kg	25.0	22.1	20.3	21.4	21.4	0.50	B369252
Total Phosphorus (P)	mg/kg	590	731	610	567	658	10	B369252
Total Potassium (K)	mg/kg	608	419	430	382	394	100	B369252
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	B369252
Total Silver (Ag)	mg/kg	0.060	<0.050	0.059	0.057	<0.050	0.050	B369252
Total Sodium (Na)	mg/kg	259	397	213	101	<100	100	B369252
Total Strontium (Sr)	mg/kg	22.7	20.1	35.9	19.2	15.0	0.10	B369252
Total Thallium (Tl)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B369252
Total Tin (Sn)	mg/kg	1.06	0.36	0.59	0.26	0.16	0.10	B369252

RDL = Reportable Detection Limit
N/A = Not Applicable



BUREAU
VERITAS

Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

CSR/CCME METALS IN SOIL WITH HG (SOIL)

Bureau Veritas ID		CNK797	CNK799	CNK800	CNK802	CNK804		
Sampling Date		2024/05/08 12:30	2024/05/08 12:20	2024/05/08 11:43	2024/05/08 11:35	2024/05/08 11:32		
COC Number		84952	84952	84952	84952	84952		
	UNITS	BH24-02_0-0.25	BH24-02_0.5-1.0	BH24-01_0-0.25	BH24-01_0.5-1.0	BH24-01_1.0-1.5	RDL	QC Batch
Total Titanium (Ti)	mg/kg	836	914	805	1040	833	1.0	B369252
Total Tungsten (W)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	B369252
Total Uranium (U)	mg/kg	0.277	0.248	0.495	0.218	0.178	0.050	B369252
Total Vanadium (V)	mg/kg	71.5	77.4	63.8	77.2	70.0	1.0	B369252
Total Zinc (Zn)	mg/kg	104	69.1	74.3	48.9	44.0	1.0	B369252
Total Zirconium (Zr)	mg/kg	2.10	1.65	1.56	3.42	3.09	0.50	B369252
RDL = Reportable Detection Limit								



CSR/CCME METALS IN SOIL WITH HG (SOIL)

Bureau Veritas ID		CNK806		
Sampling Date		2024/05/08 11:25		
COC Number		84952		
	UNITS	BH24-01_2.0-2.4	RDL	QC Batch
Physical Properties				
Soluble (2:1) pH	pH	6.39	N/A	B369211
Total Metals by ICPMS				
Total Aluminum (Al)	mg/kg	20400	100	B369252
Total Antimony (Sb)	mg/kg	0.15	0.10	B369252
Total Arsenic (As)	mg/kg	2.44	0.20	B369252
Total Barium (Ba)	mg/kg	52.5	0.10	B369252
Total Beryllium (Be)	mg/kg	0.43	0.20	B369252
Total Bismuth (Bi)	mg/kg	<0.10	0.10	B369252
Total Boron (B)	mg/kg	2.2	1.0	B369252
Total Cadmium (Cd)	mg/kg	0.106	0.050	B369252
Total Calcium (Ca)	mg/kg	4830	100	B369252
Total Chromium (Cr)	mg/kg	36.1	0.50	B369252
Total Cobalt (Co)	mg/kg	14.3	0.10	B369252
Total Copper (Cu)	mg/kg	40.4	0.50	B369252
Total Iron (Fe)	mg/kg	30300	100	B369252
Total Lead (Pb)	mg/kg	3.73	0.10	B369252
Total Lithium (Li)	mg/kg	12.1	0.50	B369252
Total Magnesium (Mg)	mg/kg	11600	100	B369252
Total Manganese (Mn)	mg/kg	422	0.20	B369252
Total Mercury (Hg)	mg/kg	<0.050	0.050	B369252
Total Molybdenum (Mo)	mg/kg	0.16	0.10	B369252
Total Nickel (Ni)	mg/kg	25.9	0.50	B369252
Total Phosphorus (P)	mg/kg	770	10	B369252
Total Potassium (K)	mg/kg	458	100	B369252
Total Selenium (Se)	mg/kg	<0.50	0.50	B369252
Total Silver (Ag)	mg/kg	<0.050	0.050	B369252
Total Sodium (Na)	mg/kg	134	100	B369252
Total Strontium (Sr)	mg/kg	24.4	0.10	B369252
Total Thallium (Tl)	mg/kg	<0.050	0.050	B369252
Total Tin (Sn)	mg/kg	0.30	0.10	B369252
RDL = Reportable Detection Limit N/A = Not Applicable				



BUREAU
VERITAS

Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

CSR/CCME METALS IN SOIL WITH HG (SOIL)

Bureau Veritas ID		CNK806		
Sampling Date		2024/05/08 11:25		
COC Number		84952		
	UNITS	BH24-01_2.0-2.4	RDL	QC Batch
Total Titanium (Ti)	mg/kg	1030	1.0	B369252
Total Tungsten (W)	mg/kg	<0.50	0.50	B369252
Total Uranium (U)	mg/kg	0.264	0.050	B369252
Total Vanadium (V)	mg/kg	82.7	1.0	B369252
Total Zinc (Zn)	mg/kg	64.3	1.0	B369252
Total Zirconium (Zr)	mg/kg	2.30	0.50	B369252
RDL = Reportable Detection Limit				



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VERITAS

Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
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Your P.O. #: VAN15614
Sampler Initials: RP

SOLUBLE SODIUM AND CHLORIDE IN SOIL (SOIL)

Bureau Veritas ID		CNK797		CNK800		
Sampling Date		2024/05/08 12:30		2024/05/08 11:43		
COC Number		84952		84952		
	UNITS	BH24-02_0-0.25	RDL	BH24-01_0-0.25	RDL	QC Batch
ANIONS						
Soluble Chloride (Cl)	mg/L	47	10	<10	10	B369110
Calculated Parameters						
Soluble Chloride (Cl)	mg/kg	17.5	3.7	<11	11	B367515
Soluble Sodium (Na)	mg/kg	22.5	1.9	21.6	5.5	B367698
Soluble Parameters						
Saturation %	%	37.5	N/A	109	N/A	B368473
Soluble Sodium (Na)	mg/L	59.9	5.0	19.7	5.0	B368848
RDL = Reportable Detection Limit N/A = Not Applicable						



BUREAU
VERITAS

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Your P.O. #: VAN15614
Sampler Initials: RP

PAH IN LEACHATE BY GC-MS (SOIL)

Bureau Veritas ID		CNK799		
Sampling Date		2024/05/08 12:20		
COC Number		84952		
	UNITS	BH24-02_0.5-1.0	RDL	QC Batch
Calculated Parameters				
Leachate Low Molecular Weight PAH`s	ug/L	<0.50	0.50	B380482
Leachate High Molecular Weight PAH`s	ug/L	<0.20	0.20	B380482
Leachate Total PAH	ug/L	<0.50	0.50	B380482
Polycyclic Aromatics				
Leachate Benzo(a)pyrene	ug/L	<0.10	0.10	B381438
Surrogate Recovery (%)				
Leachate D10-ANTHRACENE (sur.)	%	117		B381438
Leachate D8-ACENAPHTHYLENE (sur.)	%	97		B381438
Leachate D8-NAPHTHALENE (sur.)	%	95		B381438
Leachate TERPHENYL-D14 (sur.)	%	121		B381438
RDL = Reportable Detection Limit				



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.0°C
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Version 2: Report reissued to remove the comments pertaining to an extra label attached to the methanol vials as it does not apply.

Version #4: Report reissued to include results for TCLP B(a)P and Arsenic as per client request received 2024/05/24.

Arsenic

BH24-02_0.25-0.5 for arsenic only

TCLP B(a)P

BH24-02_0.5-1.0

Sample CNK799 [BH24-02_0.5-1.0] : Sample analyzed past method specified hold time for PAH in TCLP Leachate by GC/MS (SIM). Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.

Sample CNK800 [BH24-01_0-0.25] : Sample received was not in compliance with BC CSR and CCME sampling requirements for VOC/BTEX/F1/VPH in soil. Sample was analyzed past method specified hold time for Extra VOCs in Soil by HS GC/MS. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.

Sample CNK802 [BH24-01_0.5-1.0] : Estimated results for VH/BTEX reported with client consent due to methanol vial leakage during transport.

Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C433712

Report Date: 2024/05/29

QUALITY ASSURANCE REPORT

SLR CONSULTING (CANADA) LTD

Client Project #: 201.089228.00002

Site Location: North Cowichan, BC

Your P.O. #: VAN15614

Sampler Initials: RP

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B369115	1,4-Difluorobenzene (sur.)	2024/05/14	97	50 - 140	97	50 - 140	97	%				
B369115	4-Bromofluorobenzene (sur.)	2024/05/14	91	50 - 140	93	50 - 140	90	%				
B369115	D10-o-Xylene (sur.)	2024/05/14	90	50 - 140	86	50 - 140	94	%				
B369115	D4-1,2-Dichloroethane (sur.)	2024/05/14	129	50 - 140	99	50 - 140	114	%				
B369425	O-TERPHENYL (sur.)	2024/05/15	88	60 - 140	95	60 - 140	88	%				
B369432	1,4-Difluorobenzene (sur.)	2024/05/15	98	70 - 130	99	70 - 130	105	%				
B369432	4-Bromofluorobenzene (sur.)	2024/05/15	99	70 - 130	99	70 - 130	93	%				
B369432	D10-o-Xylene (sur.)	2024/05/15	97	60 - 130	83	60 - 130	92	%				
B369432	D4-1,2-Dichloroethane (sur.)	2024/05/15	97	70 - 130	94	70 - 130	102	%				
B369433	D10-ANTHRACENE (sur.)	2024/05/16	89	50 - 140	85	50 - 140	90	%				
B369433	D8-ACENAPHTHYLENE (sur.)	2024/05/16	69	50 - 140	74	50 - 140	83	%				
B369433	D8-NAPHTHALENE (sur.)	2024/05/16	73	50 - 140	64	50 - 140	84	%				
B369433	TERPHENYL-D14 (sur.)	2024/05/16	83	50 - 140	73	50 - 140	79	%				
B370006	Extractable (Water) Methyl Sulfone (sur.)	2024/05/16	86	50 - 140	97	50 - 140	99	%				
B370190	1,4-Difluorobenzene (sur.)	2024/05/15	101	70 - 130	110	70 - 130	107	%				
B370190	4-Bromofluorobenzene (sur.)	2024/05/15	94	70 - 130	97	70 - 130	101	%				
B370190	D10-o-Xylene (sur.)	2024/05/15	92	60 - 130	80	60 - 130	85	%				
B370190	D4-1,2-Dichloroethane (sur.)	2024/05/15	105	70 - 130	106	70 - 130	112	%				
B371848	Extractable (MeOH) 1,4-Difluorobenzene (sur.)	2024/05/16	108	50 - 140	107	50 - 140	116	%				
B371848	Extractable (MeOH) 4-Bromofluorobenzene (sur.)	2024/05/16	98	50 - 140	99	50 - 140	98	%				
B371848	Extractable (MeOH) D10-o-Xylene (sur.)	2024/05/16	95	50 - 140	79	50 - 140	86	%				
B371848	Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	2024/05/16	98	50 - 140	97	50 - 140	100	%				
B371862	1,4-Difluorobenzene (sur.)	2024/05/17	99	50 - 140	100	50 - 140	101	%				
B371862	4-Bromofluorobenzene (sur.)	2024/05/17	104	50 - 140	101	50 - 140	96	%				
B371862	D10-o-Xylene (sur.)	2024/05/17	97	50 - 140	87	50 - 140	94	%				
B371862	D4-1,2-Dichloroethane (sur.)	2024/05/17	102	50 - 140	102	50 - 140	123	%				
B371866	Extractable (MeOH) 1,4-Difluorobenzene (sur.)	2024/05/17	115	50 - 140	115	50 - 140	121	%				
B371866	Extractable (MeOH) 4-Bromofluorobenzene (sur.)	2024/05/17	95	50 - 140	95	50 - 140	94	%				
B371866	Extractable (MeOH) D10-o-Xylene (sur.)	2024/05/17	78	50 - 140	69	50 - 140	78	%				



BUREAU
VERITAS

Bureau Veritas Job #: C433712

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QUALITY ASSURANCE REPORT(CONT'D)

SLR CONSULTING (CANADA) LTD

Client Project #: 201.089228.00002

Site Location: North Cowichan, BC

Your P.O. #: VAN15614

Sampler Initials: RP

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B371866	Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	2024/05/17	92	50 - 140	90	50 - 140	96	%				
B381438	Leachate D10-ANTHRACENE (sur.)	2024/05/28			132	50 - 140	114	%				
B381438	Leachate D8-ACENAPHTHYLENE (sur.)	2024/05/28			86	50 - 140	92	%				
B381438	Leachate D8-NAPHTHALENE (sur.)	2024/05/28			84	50 - 140	87	%				
B381438	Leachate TERPHENYL-D14 (sur.)	2024/05/28			106	50 - 140	116	%				
B368473	Saturation %	2024/05/14					0	%	0	30	100	75 - 125
B368848	Soluble Sodium (Na)	2024/05/14	NC	80 - 120	98	80 - 120	<5.0	mg/L	4.6	40	119	75 - 125
B369054	Moisture	2024/05/15					<0.30	%	1.5	20		
B369110	Soluble Chloride (Cl)	2024/05/14	96	75 - 125	95	80 - 120	<10	mg/L	1.5	30	98	75 - 125
B369115	1,1,1,2-tetrachloroethane	2024/05/14	86	50 - 140	87	60 - 130	<0.020	mg/kg	NC	50		
B369115	1,1,1-trichloroethane	2024/05/14	94	50 - 140	94	60 - 130	<0.020	mg/kg	NC	50		
B369115	1,1,2,2-tetrachloroethane	2024/05/14	97	50 - 140	96	60 - 130	<0.020	mg/kg	NC	50		
B369115	1,1,2-trichloroethane	2024/05/14	86	50 - 140	89	60 - 130	<0.020	mg/kg	NC	50		
B369115	1,1-dichloroethane	2024/05/14	90	50 - 140	94	60 - 130	<0.025	mg/kg	NC	50		
B369115	1,1-dichloroethene	2024/05/14	85	50 - 140	85	60 - 130	<0.025	mg/kg	NC	50		
B369115	1,2,3-trichlorobenzene	2024/05/14	87	50 - 140	90	60 - 130	<0.030	mg/kg	NC	50		
B369115	1,2,4-trichlorobenzene	2024/05/14	89	50 - 140	93	60 - 130	<0.030	mg/kg	NC	50		
B369115	1,2-dibromoethane	2024/05/14	87	50 - 140	91	60 - 130	<0.020	mg/kg	NC	50		
B369115	1,2-dichlorobenzene	2024/05/14	97	50 - 140	96	60 - 130	<0.020	mg/kg	NC	50		
B369115	1,2-dichloroethane	2024/05/14	95	50 - 140	96	60 - 130	<0.020	mg/kg	NC	50		
B369115	1,2-dichloropropane	2024/05/14	97	50 - 140	100	60 - 130	<0.020	mg/kg	NC	50		
B369115	1,3,5-trimethylbenzene	2024/05/14	99	50 - 140	102	60 - 130	<0.20	mg/kg	NC	50		
B369115	1,3-Butadiene	2024/05/14	93	50 - 140	78	50 - 140	<0.080	mg/kg	NC	50		
B369115	1,3-dichlorobenzene	2024/05/14	95	50 - 140	95	60 - 130	<0.020	mg/kg	NC	50		
B369115	1,4-dichlorobenzene	2024/05/14	88	50 - 140	87	60 - 130	<0.020	mg/kg	NC	50		
B369115	Benzene	2024/05/14	98	50 - 140	86	60 - 130	<0.0050	mg/kg	NC	50		
B369115	Bromobenzene	2024/05/14	94	50 - 140	92	60 - 130	<0.20	mg/kg	NC	50		
B369115	Bromodichloromethane	2024/05/14	90	50 - 140	90	60 - 130	<0.050	mg/kg	NC	50		
B369115	Bromoform	2024/05/14	98	50 - 140	82	60 - 130	<0.050	mg/kg	NC	50		
B369115	Bromomethane	2024/05/14	93	50 - 140	88	50 - 140	<0.30	mg/kg	NC	50		



BUREAU
VERITAS

Bureau Veritas Job #: C433712

Report Date: 2024/05/29

QUALITY ASSURANCE REPORT(CONT'D)

SLR CONSULTING (CANADA) LTD

Client Project #: 201.089228.00002

Site Location: North Cowichan, BC

Your P.O. #: VAN15614

Sampler Initials: RP

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B369115	Carbon tetrachloride	2024/05/14	90	50 - 140	89	60 - 130	<0.020	mg/kg	NC	50		
B369115	Chlorobenzene	2024/05/14	82	50 - 140	85	60 - 130	<0.020	mg/kg	NC	50		
B369115	Chloroethane	2024/05/14	80	50 - 140	105	50 - 140	<0.10	mg/kg	NC	50		
B369115	Chloroform	2024/05/14	92	50 - 140	91	60 - 130	<0.020	mg/kg	NC	50		
B369115	Chloromethane	2024/05/14	88	50 - 140	99	50 - 140	<0.050	mg/kg	NC	50		
B369115	cis-1,2-dichloroethene	2024/05/14	85	50 - 140	88	60 - 130	<0.030	mg/kg	NC	50		
B369115	cis-1,3-dichloropropene	2024/05/14	110	50 - 140	111	50 - 140	<0.020	mg/kg	NC	50		
B369115	Dibromochloromethane	2024/05/14	95	50 - 140	85	60 - 130	<0.050	mg/kg	NC	50		
B369115	Dichloromethane	2024/05/14	83	50 - 140	89	60 - 130	<0.080	mg/kg	NC	50		
B369115	Ethylbenzene	2024/05/14	85	50 - 140	93	60 - 130	<0.010	mg/kg	NC	50		
B369115	Hexachlorobutadiene	2024/05/14	82	50 - 140	85	50 - 130	<0.20	mg/kg	NC	50		
B369115	Isopropylbenzene	2024/05/14	96	50 - 140	88	60 - 130	<0.20	mg/kg	NC	50		
B369115	m & p-Xylene	2024/05/14	84	50 - 140	93	60 - 130	<0.040	mg/kg	NC	50		
B369115	Methyl-tert-butylether (MTBE)	2024/05/14	92	50 - 140	96	60 - 130	<0.10	mg/kg	NC	50		
B369115	n-Butylbenzene	2024/05/14	100	50 - 140			<15	mg/kg	NC	50		
B369115	n-Propylbenzene	2024/05/14	98	50 - 140			<15	mg/kg	NC	50		
B369115	o-Xylene	2024/05/14	90	50 - 140	98	60 - 130	<0.040	mg/kg	NC	50		
B369115	sec-Butylbenzene	2024/05/14	99	50 - 140			<15	mg/kg	NC	50		
B369115	Styrene	2024/05/14	93	50 - 140	97	60 - 130	<0.030	mg/kg	NC	50		
B369115	tert-Butylbenzene	2024/05/14	92	40 - 150			<15	mg/kg	NC	50		
B369115	Tetrachloroethene	2024/05/14	82	50 - 140	85	60 - 130	<0.010	mg/kg	NC	50		
B369115	Toluene	2024/05/14	88	50 - 140	91	60 - 130	<0.050	mg/kg	NC	50		
B369115	trans-1,2-dichloroethene	2024/05/14	84	50 - 140	86	60 - 130	<0.030	mg/kg	NC	50		
B369115	trans-1,3-dichloropropene	2024/05/14	116	50 - 140	117	50 - 140	<0.020	mg/kg	NC	50		
B369115	Trichloroethene	2024/05/14	90	50 - 140	85	60 - 130	<0.0090	mg/kg	NC	50		
B369115	Trichlorofluoromethane	2024/05/14	93	50 - 140	86	60 - 130	<0.20	mg/kg	NC	50		
B369115	VH C6-C10	2024/05/14			98	70 - 130	<10	mg/kg	NC	50		
B369115	Vinyl chloride	2024/05/14	90	50 - 140	75	50 - 140	<0.040	mg/kg	NC	50		
B369115	Xylenes (Total)	2024/05/14					<0.040	mg/kg	NC	50		
B369211	Soluble (2:1) pH	2024/05/15			100	97 - 103			0	N/A		
B369252	Total Aluminum (Al)	2024/05/15	NC	75 - 125	96	75 - 125	<100	mg/kg	2.2	40	82	70 - 130



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VERITAS

Bureau Veritas Job #: C433712

Report Date: 2024/05/29

QUALITY ASSURANCE REPORT(CONT'D)

SLR CONSULTING (CANADA) LTD

Client Project #: 201.089228.00002

Site Location: North Cowichan, BC

Your P.O. #: VAN15614

Sampler Initials: RP

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B369252	Total Antimony (Sb)	2024/05/15	93	75 - 125	100	75 - 125	<0.10	mg/kg	9.3	30	91	70 - 130
B369252	Total Arsenic (As)	2024/05/15	94	75 - 125	98	75 - 125	<0.20	mg/kg	7.6	30	78	70 - 130
B369252	Total Barium (Ba)	2024/05/15	99	75 - 125	95	75 - 125	<0.10	mg/kg	4.1	40	89	70 - 130
B369252	Total Beryllium (Be)	2024/05/15	93	75 - 125	97	75 - 125	<0.20	mg/kg	2.5	30	109	70 - 130
B369252	Total Bismuth (Bi)	2024/05/15	91	75 - 125	96	75 - 125	<0.10	mg/kg	NC	30		
B369252	Total Boron (B)	2024/05/15	93	75 - 125	97	75 - 125	<1.0	mg/kg	NC	30		
B369252	Total Cadmium (Cd)	2024/05/15	94	75 - 125	99	75 - 125	<0.050	mg/kg	3.6	30	85	70 - 130
B369252	Total Calcium (Ca)	2024/05/15	NC	75 - 125	102	75 - 125	<100	mg/kg	6.2	30	88	70 - 130
B369252	Total Chromium (Cr)	2024/05/15	92	75 - 125	96	75 - 125	<0.50	mg/kg	3.8	30	81	70 - 130
B369252	Total Cobalt (Co)	2024/05/15	92	75 - 125	100	75 - 125	<0.10	mg/kg	3.6	30	85	70 - 130
B369252	Total Copper (Cu)	2024/05/15	91	75 - 125	100	75 - 125	<0.50	mg/kg	3.5	30	94	70 - 130
B369252	Total Iron (Fe)	2024/05/15	NC	75 - 125	99	75 - 125	<100	mg/kg	6.0	30	87	70 - 130
B369252	Total Lead (Pb)	2024/05/15	93	75 - 125	98	75 - 125	<0.10	mg/kg	5.1	40	98	70 - 130
B369252	Total Lithium (Li)	2024/05/15	94	75 - 125	95	75 - 125	<0.50	mg/kg	2.4	30	90	70 - 130
B369252	Total Magnesium (Mg)	2024/05/15	122	75 - 125	103	75 - 125	<100	mg/kg	1.9	30	92	70 - 130
B369252	Total Manganese (Mn)	2024/05/15	110	75 - 125	98	75 - 125	<0.20	mg/kg	4.9	30	88	70 - 130
B369252	Total Mercury (Hg)	2024/05/15	97	75 - 125	101	75 - 125	<0.050	mg/kg	NC	40	44 (1)	70 - 130
B369252	Total Molybdenum (Mo)	2024/05/15	94	75 - 125	97	75 - 125	<0.10	mg/kg	1.5	40	92	70 - 130
B369252	Total Nickel (Ni)	2024/05/15	92	75 - 125	97	75 - 125	<0.50	mg/kg	4.2	30	91	70 - 130
B369252	Total Phosphorus (P)	2024/05/15	92	75 - 125	94	75 - 125	<10	mg/kg	6.9	30	87	70 - 130
B369252	Total Potassium (K)	2024/05/15	109	75 - 125	99	75 - 125	<100	mg/kg	3.8	40	75	70 - 130
B369252	Total Selenium (Se)	2024/05/15	98	75 - 125	101	75 - 125	<0.50	mg/kg	NC	30		
B369252	Total Silver (Ag)	2024/05/15	89	75 - 125	93	75 - 125	<0.050	mg/kg	NC	40	94	70 - 130
B369252	Total Sodium (Na)	2024/05/15	118	75 - 125	99	75 - 125	<100	mg/kg	8.9	40	79	70 - 130
B369252	Total Strontium (Sr)	2024/05/15	101	75 - 125	96	75 - 125	<0.10	mg/kg	3.3	40	90	70 - 130
B369252	Total Thallium (Tl)	2024/05/15	92	75 - 125	97	75 - 125	<0.050	mg/kg	16	30	76	70 - 130
B369252	Total Tin (Sn)	2024/05/15	96	75 - 125	100	75 - 125	<0.10	mg/kg	7.0	40	88	70 - 130
B369252	Total Titanium (Ti)	2024/05/15	NC	75 - 125	98	75 - 125	<1.0	mg/kg	1.6	40		
B369252	Total Tungsten (W)	2024/05/15	94	75 - 125	104	75 - 125	<0.50	mg/kg	NC	40		
B369252	Total Uranium (U)	2024/05/15	92	75 - 125	96	75 - 125	<0.050	mg/kg	7.1	30	81	70 - 130
B369252	Total Vanadium (V)	2024/05/15	98	75 - 125	99	75 - 125	<1.0	mg/kg	4.5	30	86	70 - 130



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Bureau Veritas Job #: C433712

Report Date: 2024/05/29

QUALITY ASSURANCE REPORT(CONT'D)

SLR CONSULTING (CANADA) LTD

Client Project #: 201.089228.00002

Site Location: North Cowichan, BC

Your P.O. #: VAN15614

Sampler Initials: RP

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B369252	Total Zinc (Zn)	2024/05/15	91	75 - 125	98	75 - 125	<1.0	mg/kg	4.0	30	92	70 - 130
B369252	Total Zirconium (Zr)	2024/05/15	98	75 - 125	98	75 - 125	<0.50	mg/kg	10	40		
B369425	EPH (C10-C19)	2024/05/15	111	60 - 140	121	70 - 130	<100	mg/kg	NC	40		
B369425	EPH (C19-C32)	2024/05/15	94	60 - 140	103	70 - 130	<100	mg/kg	NC	40		
B369432	Benzene	2024/05/15	82	60 - 140	78	70 - 130	<0.0050	mg/kg	NC	40		
B369432	Ethylbenzene	2024/05/15	88	60 - 140	84	70 - 130	<0.010	mg/kg	1.5	40		
B369432	m & p-Xylene	2024/05/15	87	60 - 140	84	70 - 130	<0.040	mg/kg	3.0	40		
B369432	Methyl-tert-butylether (MTBE)	2024/05/15	80	60 - 140	76	70 - 130	<0.10	mg/kg	NC	40		
B369432	o-Xylene	2024/05/15	86	60 - 140	83	70 - 130	<0.040	mg/kg	3.9	40		
B369432	Styrene	2024/05/15	97	60 - 140	95	70 - 130	<0.030	mg/kg	NC	40		
B369432	Toluene	2024/05/15	85	60 - 140	81	70 - 130	<0.050	mg/kg	NC	40		
B369432	VH C6-C10	2024/05/15			78	70 - 130	<10	mg/kg	14	40		
B369432	Xylenes (Total)	2024/05/15					<0.040	mg/kg	3.3	40		
B369433	1-Methylnaphthalene	2024/05/16	96	50 - 140	81	50 - 140	<0.050	mg/kg	NC	50		
B369433	2-Methylnaphthalene	2024/05/16	66	50 - 140	79	50 - 140	<0.020	mg/kg	NC	50		
B369433	Acenaphthene	2024/05/16	81	50 - 140	84	50 - 140	<0.0050	mg/kg	NC	50		
B369433	Acenaphthylene	2024/05/16	72	50 - 140	80	50 - 140	<0.0050	mg/kg	NC	50		
B369433	Anthracene	2024/05/16	100	50 - 140	89	50 - 140	<0.0040	mg/kg	NC	50		
B369433	Benzo(a)anthracene	2024/05/16	71	50 - 140	81	50 - 140	<0.020	mg/kg	NC	50		
B369433	Benzo(a)pyrene	2024/05/16	80	50 - 140	83	50 - 140	<0.020	mg/kg	NC	50		
B369433	Benzo(b&j)fluoranthene	2024/05/16	81	50 - 140	79	50 - 140	<0.020	mg/kg	NC	50		
B369433	Benzo(b)fluoranthene	2024/05/16	74	50 - 140	80	50 - 140	<0.020	mg/kg	NC	50		
B369433	Benzo(g,h,i)perylene	2024/05/16	93	50 - 140	87	50 - 140	<0.050	mg/kg	NC	50		
B369433	Benzo(k)fluoranthene	2024/05/16	77	50 - 140	84	50 - 140	<0.020	mg/kg	NC	50		
B369433	Chrysene	2024/05/16	76	50 - 140	84	50 - 140	<0.020	mg/kg	NC	50		
B369433	Dibenz(a,h)anthracene	2024/05/16	106	50 - 140	78	50 - 140	<0.020	mg/kg	NC	50		
B369433	Fluoranthene	2024/05/16	83	50 - 140	81	50 - 140	<0.020	mg/kg	NC	50		
B369433	Fluorene	2024/05/16	80	50 - 140	85	50 - 140	<0.020	mg/kg	NC	50		
B369433	Indeno(1,2,3-cd)pyrene	2024/05/16	94	50 - 140	79	50 - 140	<0.020	mg/kg	NC	50		
B369433	Naphthalene	2024/05/16	83	50 - 140	79	50 - 140	<0.010	mg/kg	NC	50		
B369433	Phenanthrene	2024/05/16	77	50 - 140	81	50 - 140	<0.010	mg/kg	NC	50		



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Bureau Veritas Job #: C433712

Report Date: 2024/05/29

QUALITY ASSURANCE REPORT(CONT'D)

SLR CONSULTING (CANADA) LTD

Client Project #: 201.089228.00002

Site Location: North Cowichan, BC

Your P.O. #: VAN15614

Sampler Initials: RP

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B369433	Pyrene	2024/05/16	77	50 - 140	80	50 - 140	<0.020	mg/kg	NC	50		
B369433	Quinoline	2024/05/16	107	50 - 140	111	50 - 140	<0.050	mg/kg	NC	50		
B370006	Extractable (Water) Diethylene Glycol	2024/05/16	91	60 - 140	97	60 - 140	<9.0	mg/kg	NC	50		
B370006	Extractable (Water) Ethylene Glycol	2024/05/16	74	60 - 140	80	60 - 140	<10	mg/kg	NC	50		
B370006	Extractable (Water) Propylene Glycol	2024/05/16	81	60 - 140	89	60 - 140	<10	mg/kg	NC	50		
B370006	Extractable (Water) Triethylene Glycol	2024/05/16	87	60 - 140	90	60 - 140	<10	mg/kg	NC	50		
B370190	Benzene	2024/05/15	93	60 - 140	89	70 - 130	<0.0050	mg/kg	NC	40		
B370190	Ethylbenzene	2024/05/15	91	60 - 140	87	70 - 130	<0.010	mg/kg	NC	40		
B370190	m & p-Xylene	2024/05/15	90	60 - 140	86	70 - 130	<0.040	mg/kg	NC	40		
B370190	Methyl-tert-butylether (MTBE)	2024/05/15	89	60 - 140	87	70 - 130	<0.10	mg/kg	NC	40		
B370190	o-Xylene	2024/05/15	92	60 - 140	87	70 - 130	<0.040	mg/kg	NC	40		
B370190	Styrene	2024/05/15	92	60 - 140	91	70 - 130	<0.030	mg/kg	NC	40		
B370190	Toluene	2024/05/15	89	60 - 140	86	70 - 130	<0.050	mg/kg	NC	40		
B370190	VH C6-C10	2024/05/15			89	70 - 130	<10	mg/kg	NC	40		
B370190	Xylenes (Total)	2024/05/15					<0.040	mg/kg	NC	40		
B371848	Extractable (MeOH) Cyclohexene	2024/05/16	95	60 - 140	84	60 - 140	<15	mg/kg	NC	50		
B371848	Extractable (MeOH) Dicyclopentadiene	2024/05/16	104	60 - 140	102	60 - 140	<15	mg/kg	NC	50		
B371862	1,1,1,2-tetrachloroethane	2024/05/17	128	50 - 140	96	60 - 130	<0.020	mg/kg	NC	50		
B371862	1,1,1-trichloroethane	2024/05/17	106	50 - 140	85	60 - 130	<0.020	mg/kg	NC	50		
B371862	1,1,2,2-tetrachloroethane	2024/05/17	105	50 - 140	95	60 - 130	<0.020	mg/kg	NC	50		
B371862	1,1,2-trichloroethane	2024/05/17	107	50 - 140	94	60 - 130	<0.020	mg/kg	NC	50		
B371862	1,1-dichloroethane	2024/05/17	105	50 - 140	94	60 - 130	<0.025	mg/kg	NC	50		
B371862	1,1-dichloroethene	2024/05/17	107	50 - 140	98	60 - 130	<0.025	mg/kg	NC	50		
B371862	1,2,3-trichlorobenzene	2024/05/17	104	50 - 140	96	60 - 130	<0.030	mg/kg	NC	50		
B371862	1,2,4-trichlorobenzene	2024/05/17	107	50 - 140	95	60 - 130	<0.030	mg/kg	NC	50		
B371862	1,2-dibromoethane	2024/05/17	108	50 - 140	90	60 - 130	<0.020	mg/kg	NC	50		
B371862	1,2-dichlorobenzene	2024/05/17	114	50 - 140	99	60 - 130	<0.020	mg/kg	NC	50		
B371862	1,2-dichloroethane	2024/05/17	107	50 - 140	91	60 - 130	<0.020	mg/kg	NC	50		
B371862	1,2-dichloropropane	2024/05/17	107	50 - 140	93	60 - 130	<0.020	mg/kg	NC	50		
B371862	1,3,5-trimethylbenzene	2024/05/17	110	50 - 140	95	60 - 130	<0.20	mg/kg	NC	50		
B371862	1,3-Butadiene	2024/05/17	105	50 - 140	56	50 - 140	<0.080	mg/kg	NC	50		



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Bureau Veritas Job #: C433712

Report Date: 2024/05/29

QUALITY ASSURANCE REPORT(CONT'D)

SLR CONSULTING (CANADA) LTD

Client Project #: 201.089228.00002

Site Location: North Cowichan, BC

Your P.O. #: VAN15614

Sampler Initials: RP

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B371862	1,3-dichlorobenzene	2024/05/17	113	50 - 140	96	60 - 130	<0.020	mg/kg	NC	50		
B371862	1,4-dichlorobenzene	2024/05/17	103	50 - 140	89	60 - 130	<0.020	mg/kg	NC	50		
B371862	Benzene	2024/05/17	104	50 - 140	94	60 - 130	<0.0050	mg/kg	NC	50		
B371862	Bromobenzene	2024/05/17	105	50 - 140	94	60 - 130	<0.20	mg/kg	NC	50		
B371862	Bromodichloromethane	2024/05/17	105	50 - 140	90	60 - 130	<0.050	mg/kg	NC	50		
B371862	Bromoform	2024/05/17	116	50 - 140	94	60 - 130	<0.050	mg/kg	NC	50		
B371862	Bromomethane	2024/05/17	92	50 - 140	93	50 - 140	<0.30	mg/kg	NC	50		
B371862	Carbon tetrachloride	2024/05/17	121	50 - 140	91	60 - 130	<0.020	mg/kg	NC	50		
B371862	Chlorobenzene	2024/05/17	103	50 - 140	90	60 - 130	<0.020	mg/kg	NC	50		
B371862	Chloroethane	2024/05/17	91	50 - 140	94	50 - 140	<0.10	mg/kg	NC	50		
B371862	Chloroform	2024/05/17	105	50 - 140	95	60 - 130	<0.020	mg/kg	NC	50		
B371862	Chloromethane	2024/05/17	97	50 - 140	60	50 - 140	<0.050	mg/kg	NC	50		
B371862	cis-1,2-dichloroethene	2024/05/17	106	50 - 140	94	60 - 130	<0.030	mg/kg	NC	50		
B371862	cis-1,3-dichloropropene	2024/05/17	111	50 - 140	83	50 - 140	<0.020	mg/kg	NC	50		
B371862	Dibromochloromethane	2024/05/17	117	50 - 140	98	60 - 130	<0.050	mg/kg	NC	50		
B371862	Dichloromethane	2024/05/17	96	50 - 140	90	60 - 130	<0.080	mg/kg	NC	50		
B371862	Ethylbenzene	2024/05/17	123	50 - 140	101	60 - 130	<0.010	mg/kg	NC	50		
B371862	Hexachlorobutadiene	2024/05/17	106	50 - 140	93	50 - 130	<0.20	mg/kg	NC	50		
B371862	Isopropylbenzene	2024/05/17	114	50 - 140	90	60 - 130	<0.20	mg/kg	NC	50		
B371862	m & p-Xylene	2024/05/17	127	50 - 140	101	60 - 130	<0.040	mg/kg	NC	50		
B371862	Methyl-tert-butylether (MTBE)	2024/05/17	96	50 - 140	85	60 - 130	<0.10	mg/kg	NC	50		
B371862	n-Butylbenzene	2024/05/17	114	50 - 140			<15	mg/kg	NC	50		
B371862	n-Propylbenzene	2024/05/17	108	50 - 140			<15	mg/kg	NC	50		
B371862	o-Xylene	2024/05/17	124	50 - 140	103	60 - 130	<0.040	mg/kg	NC	50		
B371862	sec-Butylbenzene	2024/05/17	115	50 - 140			<15	mg/kg	NC	50		
B371862	Styrene	2024/05/17	130	50 - 140	108	60 - 130	<0.030	mg/kg	NC	50		
B371862	tert-Butylbenzene	2024/05/17	113	40 - 150			<15	mg/kg	NC	50		
B371862	Tetrachloroethene	2024/05/17	104	50 - 140	91	60 - 130	<0.010	mg/kg	NC	50		
B371862	Toluene	2024/05/17	108	50 - 140	91	60 - 130	<0.050	mg/kg	NC	50		
B371862	trans-1,2-dichloroethene	2024/05/17	103	50 - 140	93	60 - 130	<0.030	mg/kg	NC	50		
B371862	trans-1,3-dichloropropene	2024/05/17	109	50 - 140	80	50 - 140	<0.020	mg/kg	NC	50		



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Bureau Veritas Job #: C433712

Report Date: 2024/05/29

QUALITY ASSURANCE REPORT(CONT'D)

SLR CONSULTING (CANADA) LTD

Client Project #: 201.089228.00002

Site Location: North Cowichan, BC

Your P.O. #: VAN15614

Sampler Initials: RP

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B371862	Trichloroethene	2024/05/17	114	50 - 140	100	60 - 130	<0.0090	mg/kg	NC	50		
B371862	Trichlorofluoromethane	2024/05/17	100	50 - 140	106	60 - 130	<0.20	mg/kg	NC	50		
B371862	VH C6-C10	2024/05/17			85	70 - 130	<10	mg/kg	NC	50		
B371862	Vinyl chloride	2024/05/17	104	50 - 140	59	50 - 140	<0.040	mg/kg	NC	50		
B371862	Xylenes (Total)	2024/05/17					<0.040	mg/kg	NC	50		
B371866	Extractable (MeOH) 2-Hexanone	2024/05/17	94	60 - 140	86	60 - 140	<10	mg/kg	NC	50		
B371866	Extractable (MeOH) Cyclohexanone	2024/05/17	82	60 - 140	81	60 - 140	<15	mg/kg	NC	50		
B371866	Extractable (MeOH) Dicyclopentadiene	2024/05/17	91	60 - 140	89	60 - 140	<15	mg/kg	NC	50		
B381007	Final pH of Leachate	2024/05/28					4.92	pH				
B381007	Initial pH of Sample	2024/05/28					4.95	pH				
B381007	pH after HCl	2024/05/28					NA	pH				
B381007	pH of Leaching Fluid	2024/05/28					4.95	pH				
B381438	Leachate Benzo(a)pyrene	2024/05/28			99	50 - 140	<0.10	ug/L				
B382730	Total Arsenic (As)	2024/05/29	90	75 - 125	93	75 - 125	<0.20	mg/kg	44 (2)	30	93	70 - 130
B382734	Soluble (2:1) pH	2024/05/29			100	97 - 103			0	N/A		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Reference outside acceptance criteria - re-analysis yields similar results.

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



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Bureau Veritas Job #: C433712
Report Date: 2024/05/29

SLR CONSULTING (CANADA) LTD
Client Project #: 201.089228.00002
Site Location: North Cowichan, BC
Your P.O. #: VAN15614
Sampler Initials: RP

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Gita Pokhrel, Laboratory Supervisor

Mauro Oselin, Scientific Specialist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Raphael Kwan, Senior Manager, BC and Yukon Regions responsible for British Columbia Environmental laboratory operations.



Custody Tracking Form



W84952

Please use this form for custody tracking when submitting the work instructions via eCOC (electronic Chain of Custody). Please ensure your form has a barcode or a Bureau Veritas eCOC confirmation number in the top right hand side. This number links your electronic submission to your samples. This form should be placed in the cooler with your samples.

First Sample: BH24-02_0-0.25
Last Sample: BH24-01_2.0-2.4
Sample Count: 10

Relinquished By			Received By		
Print Tom Willes	Sign <i>[Signature]</i>	Date 2024/05/10	Print DAMYAN GILL	Sign <i>[Signature]</i>	Date 2024/05/11
		Time (24 HR) 13:00			Time (24 HR) 09:50
Print	Sign	Date YYYY/MM/DD	Print	Sign	Date YYYY/MM/DD
		Time (24 HR) HH:MM			Time (24 HR) HH:MM
Print	Sign	Date YYYY/MM/DD	Print	Sign	Date YYYY/MM/DD
		Time (24 HR) HH:MM			Time (24 HR) HH:MM

Unless otherwise agreed to, submissions and use of services are governed by Bureau Veritas' standard terms and conditions which can be found at www.bvna.com.

Triage Information

Sampled By (Print)

Richard Plouffe

of Coolers/Pkgs:

1

Rush

Immediate Test

Food Residue

Micro

Food Chemistry

*** LABORATORY USE ONLY ***

Received At:

Lab Comments:

Labeled By:

D.G.I 2024/05/11

Verified By:

Custody Seal		Cooling Media	Temperature °C		
Present (Y/N)	Intact (Y/N)	Present (Y/N)	1	2	3
1	4	4			
N	N	Y	1	4	4
Drinking Water Metals Preservation Check Done (Circle)			YES	NO	

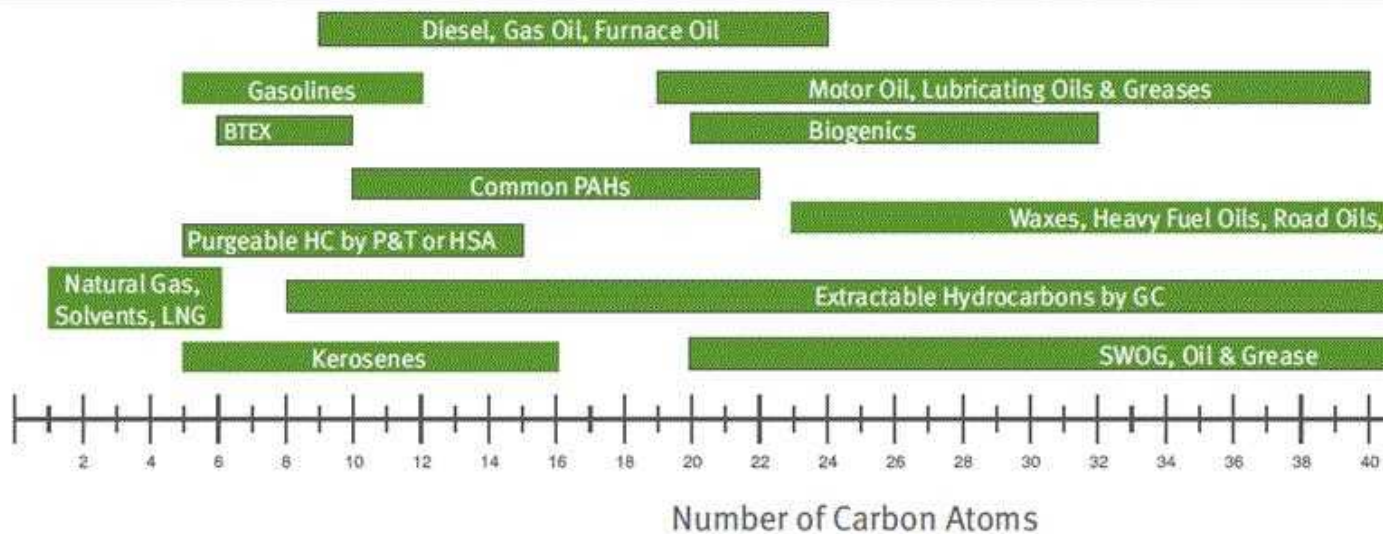
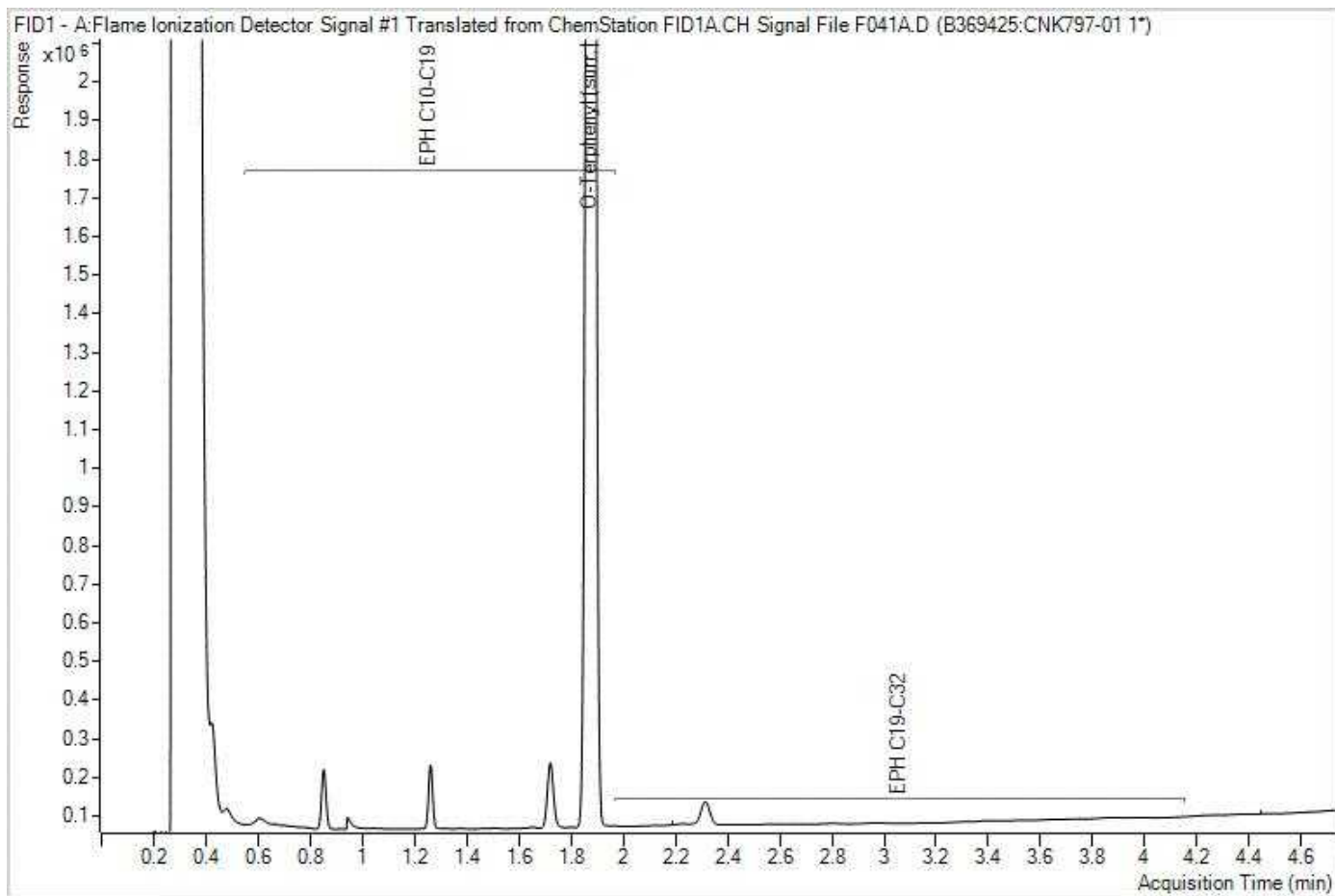


C433712_COC

COR FCD-00383/3

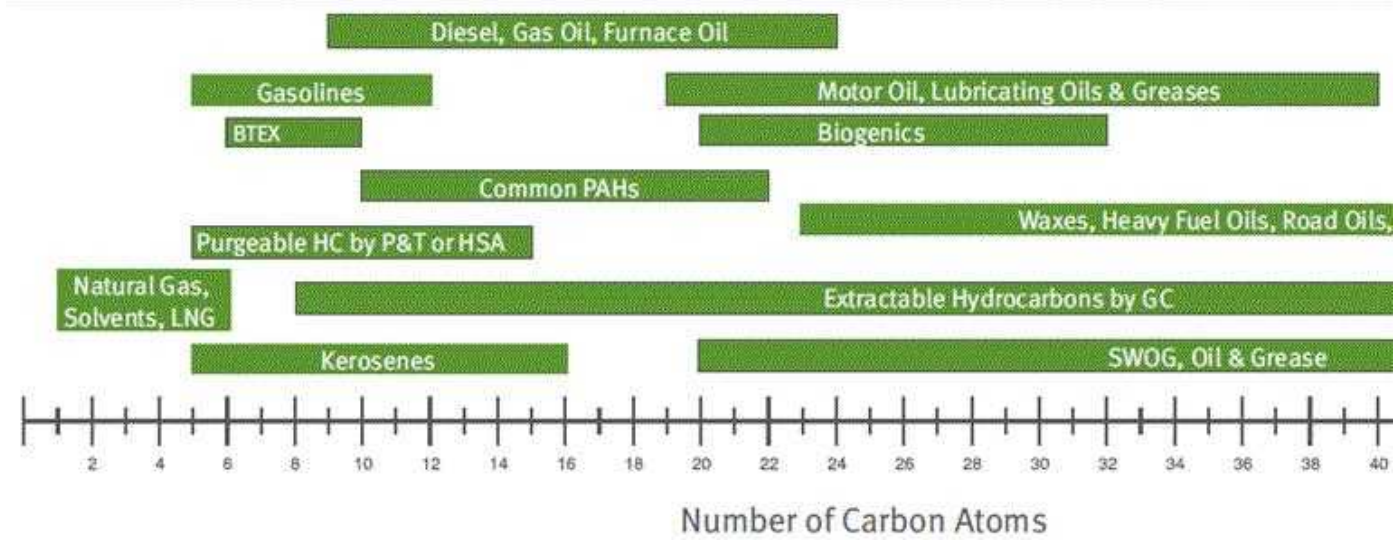
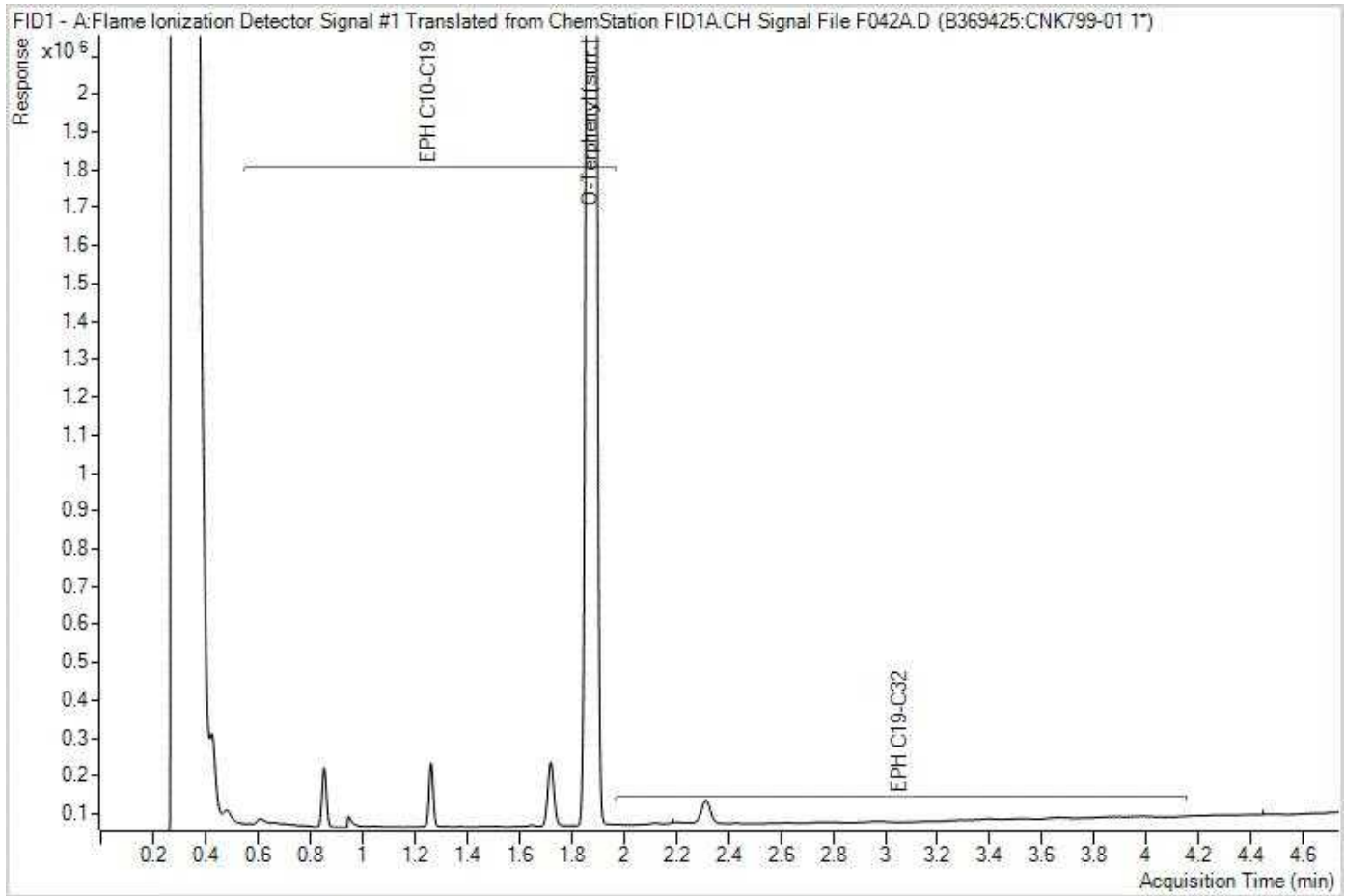
Page 1 of 1

EPH in Soil by GC/FID Chromatogram



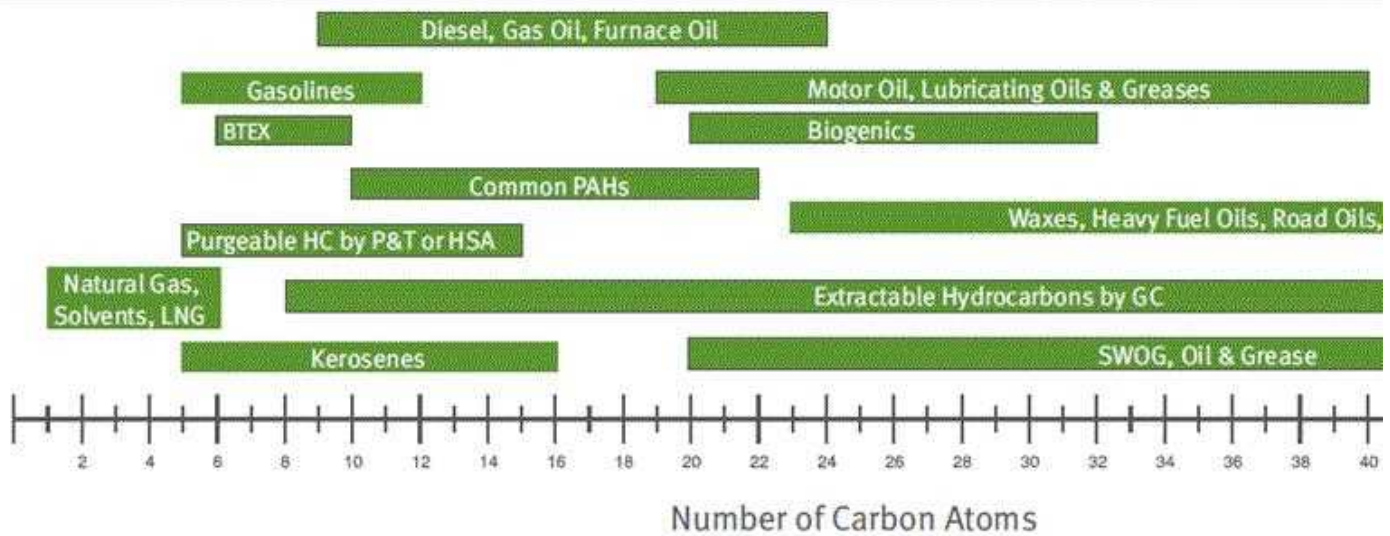
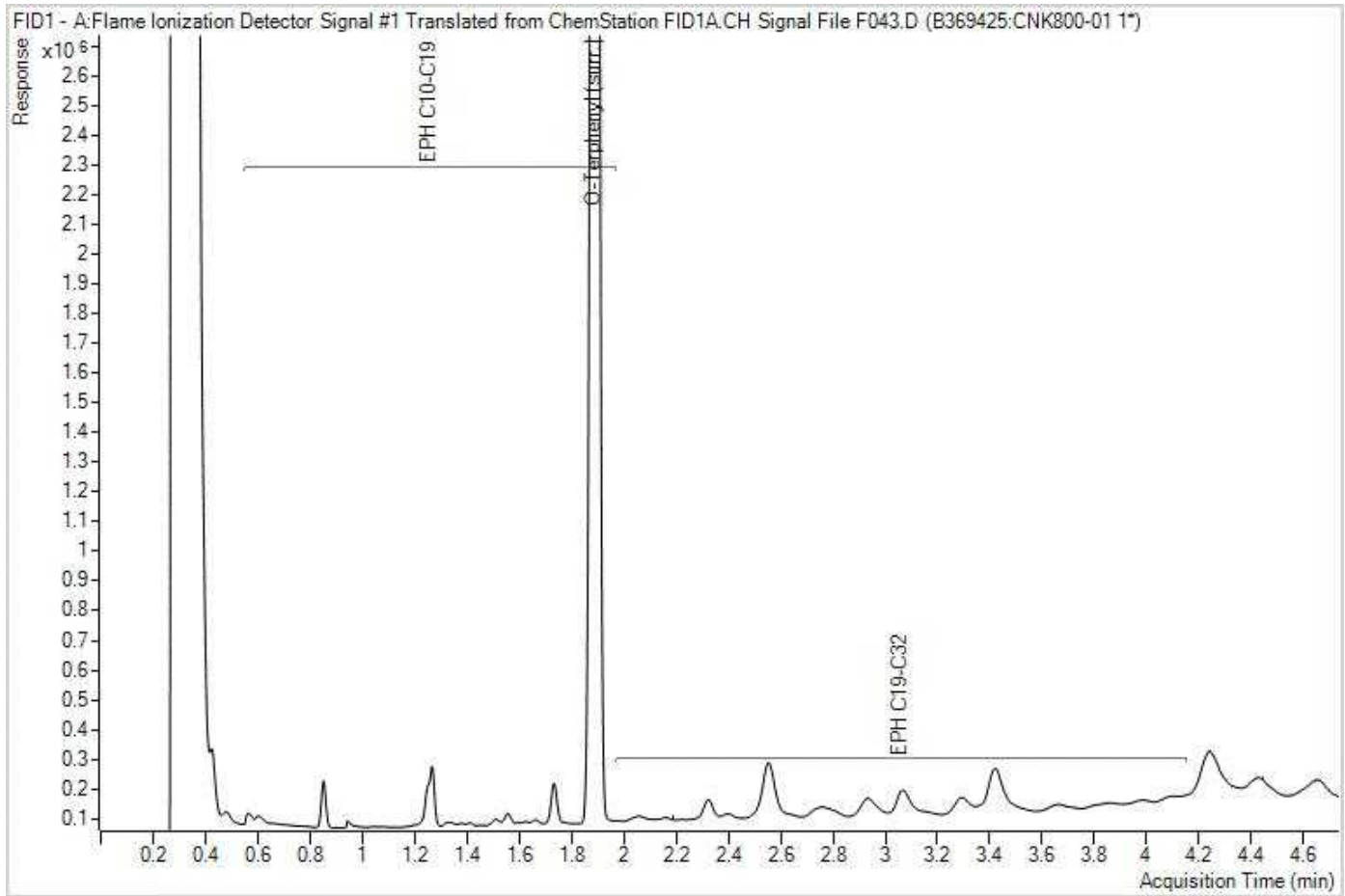
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



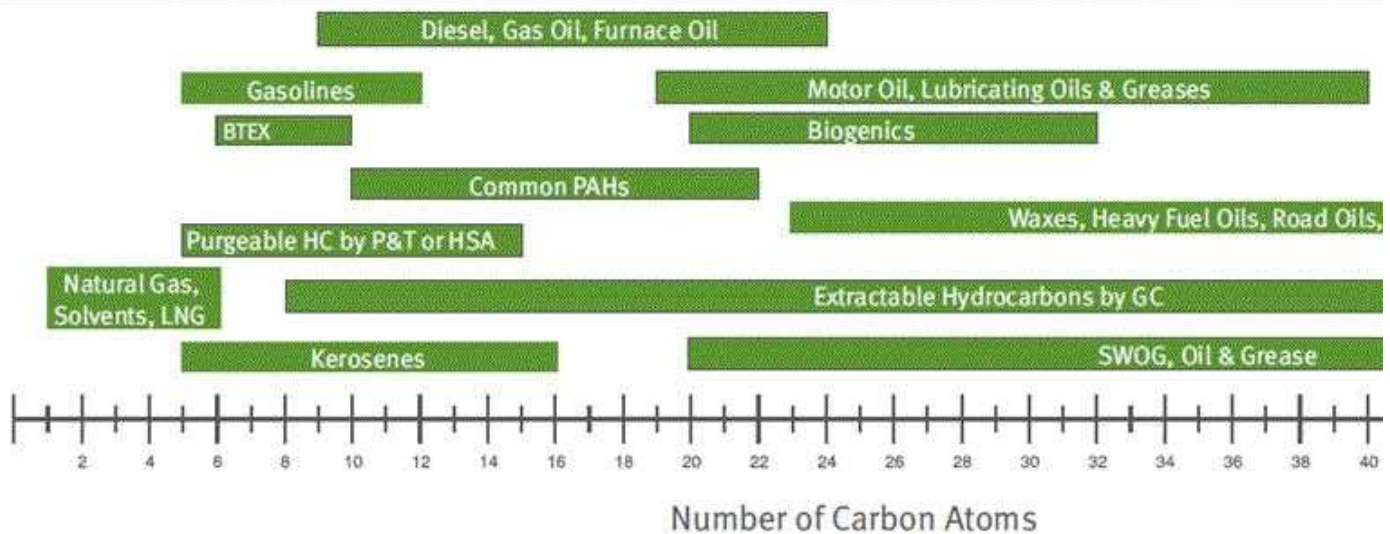
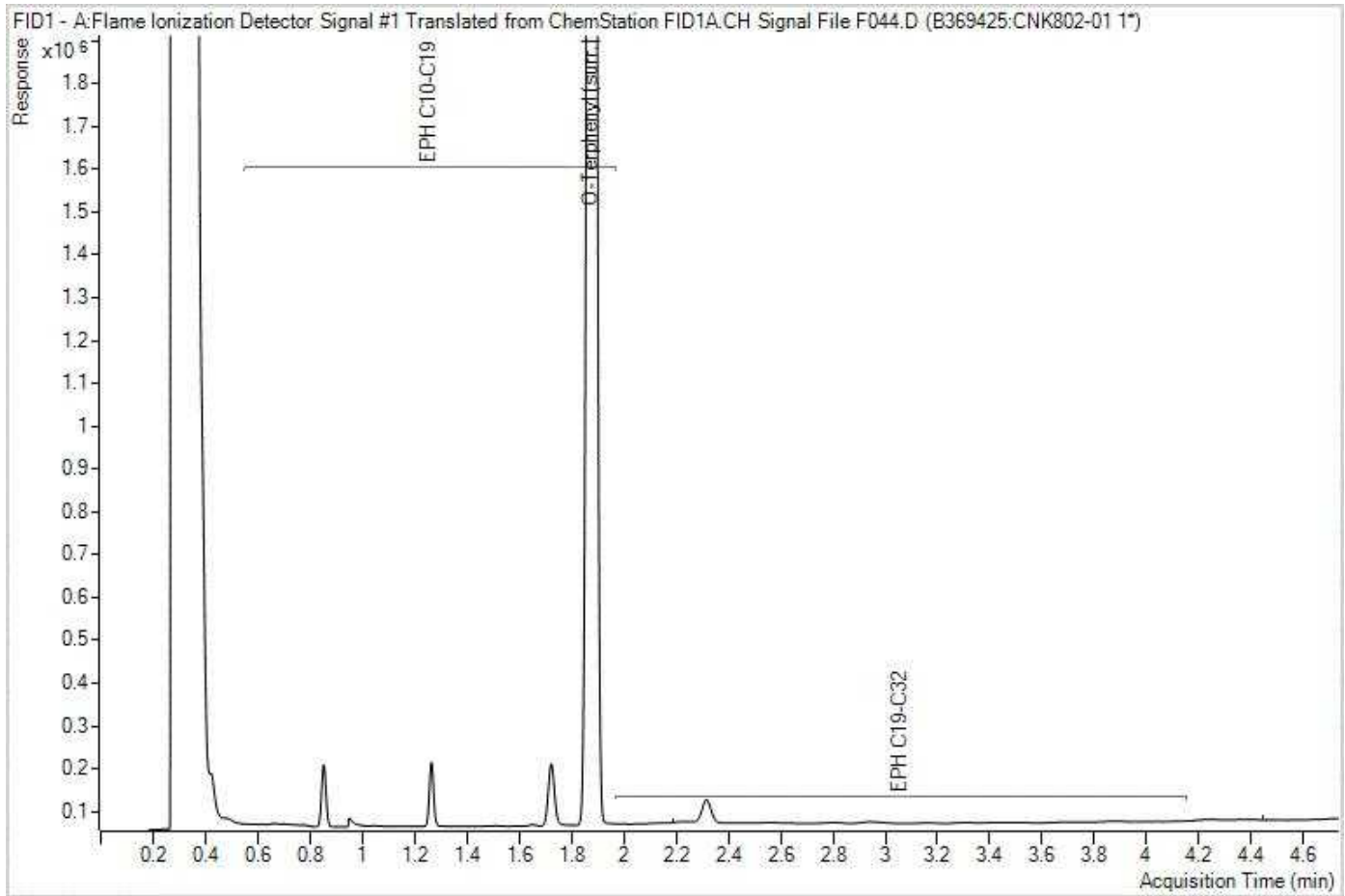
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



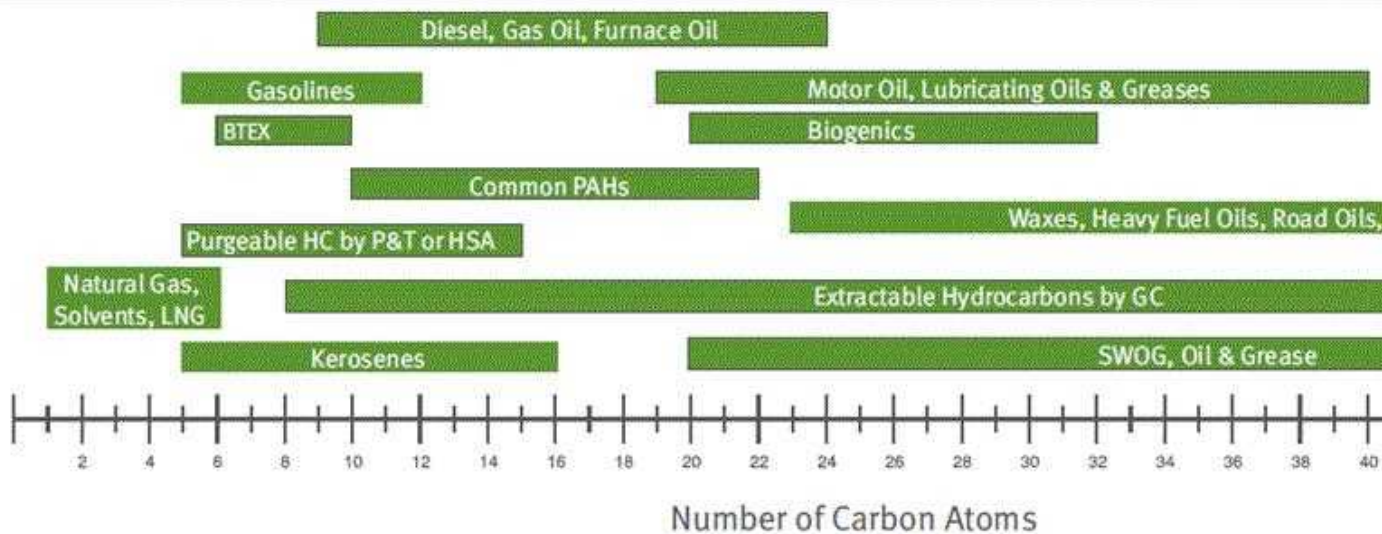
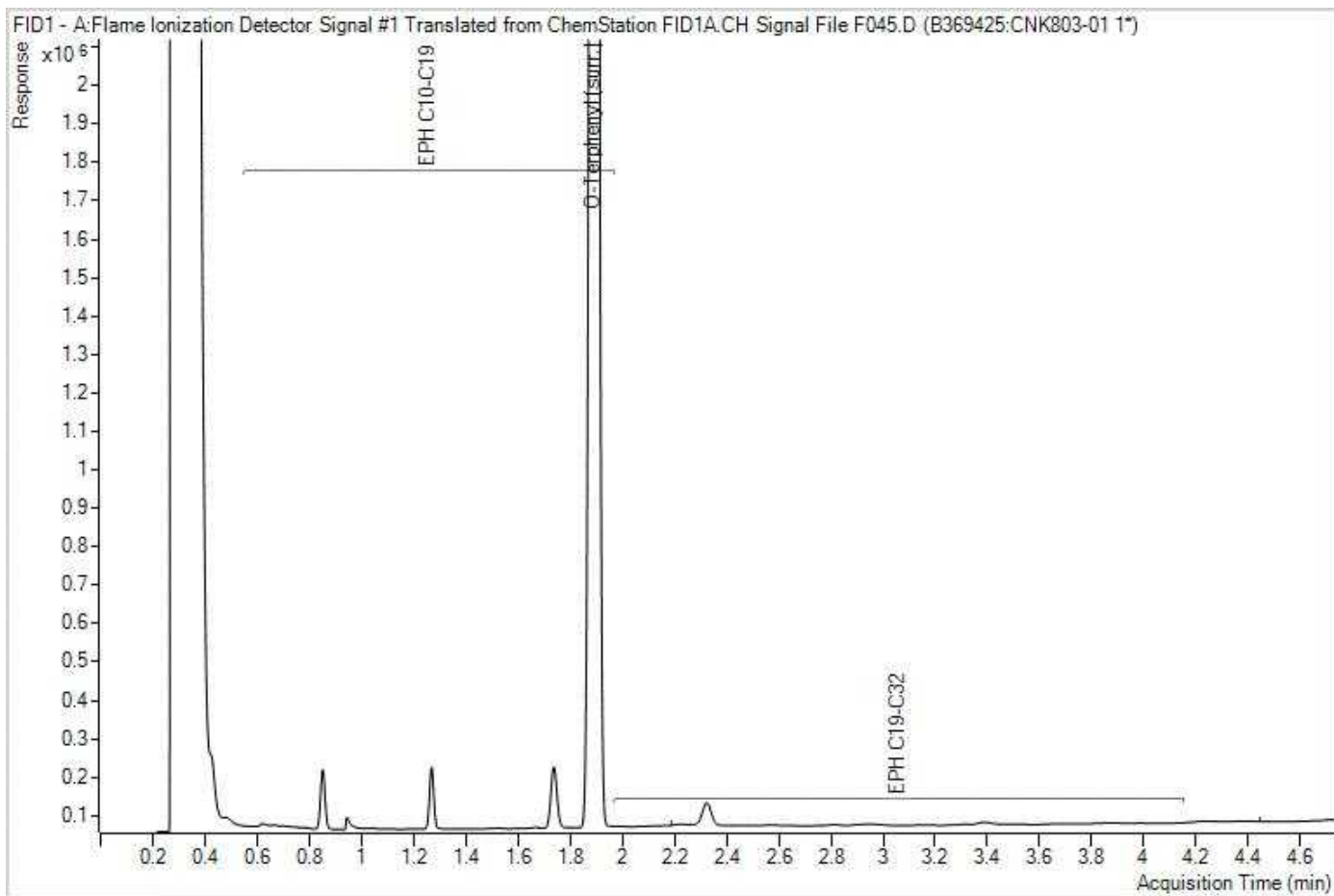
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



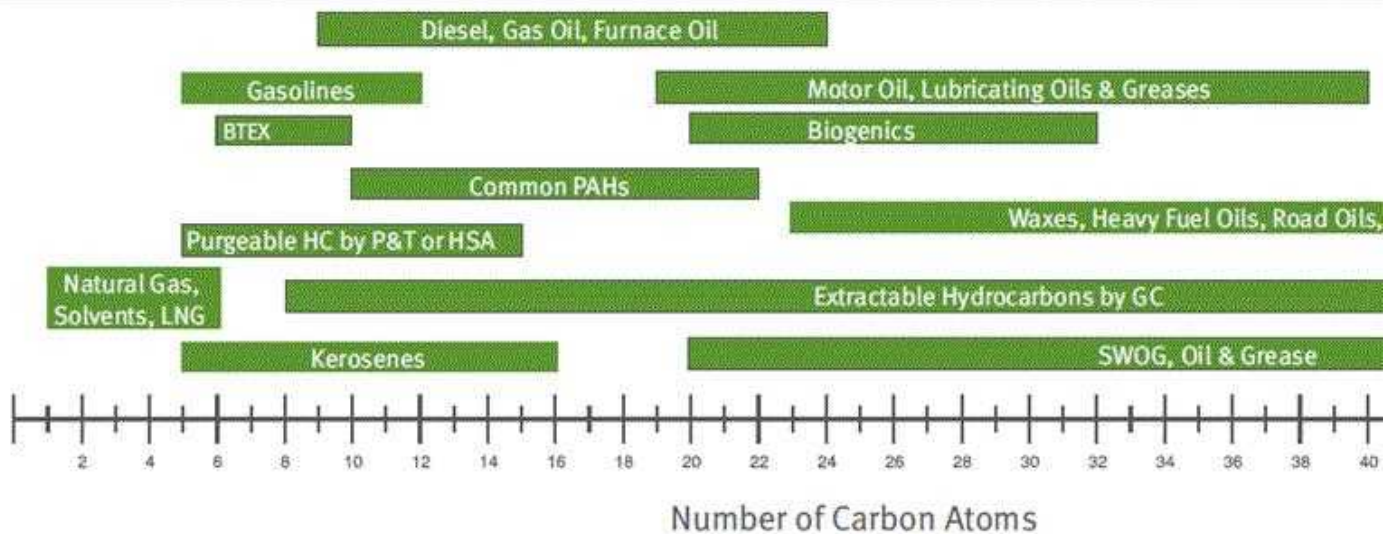
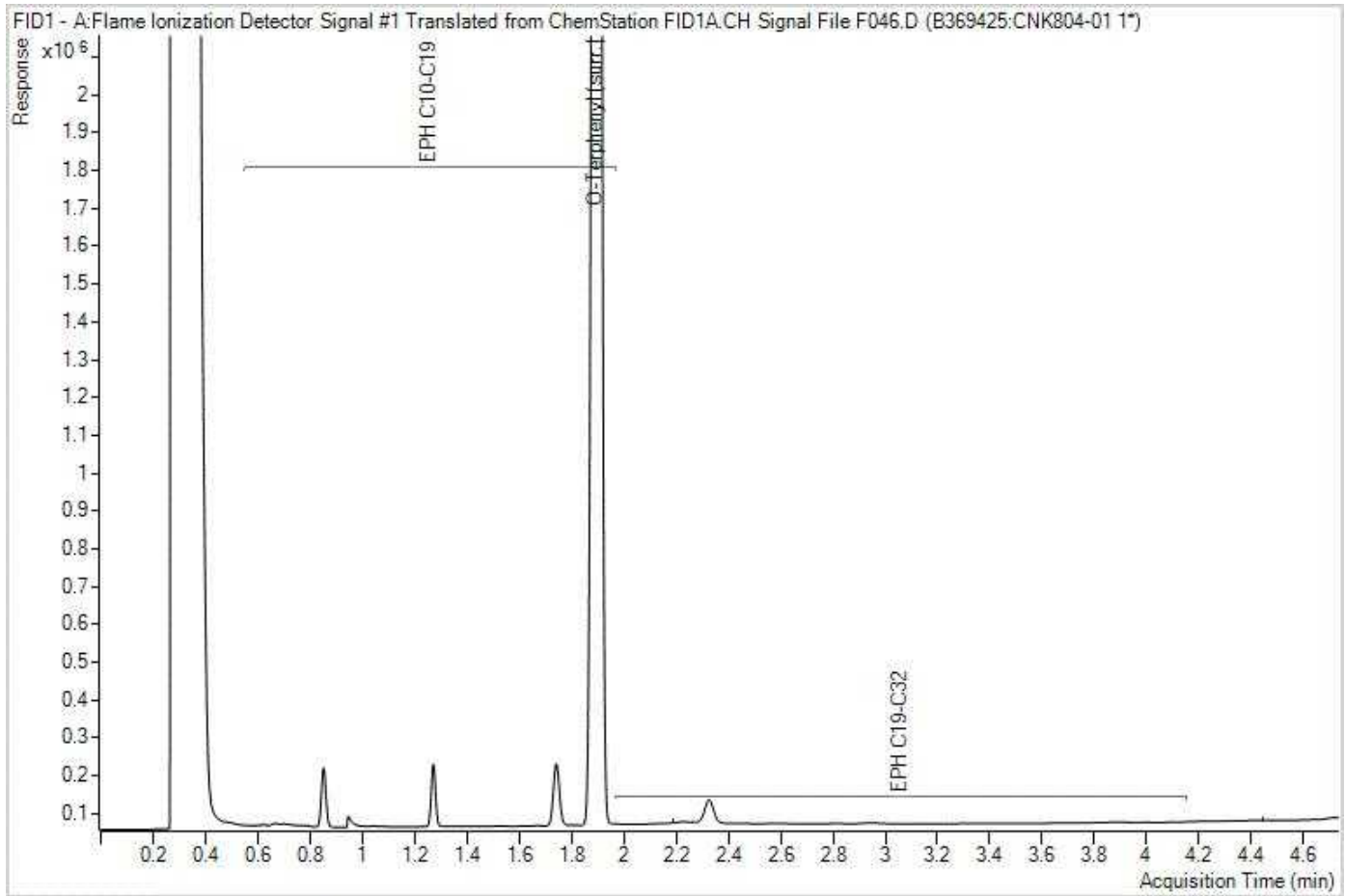
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



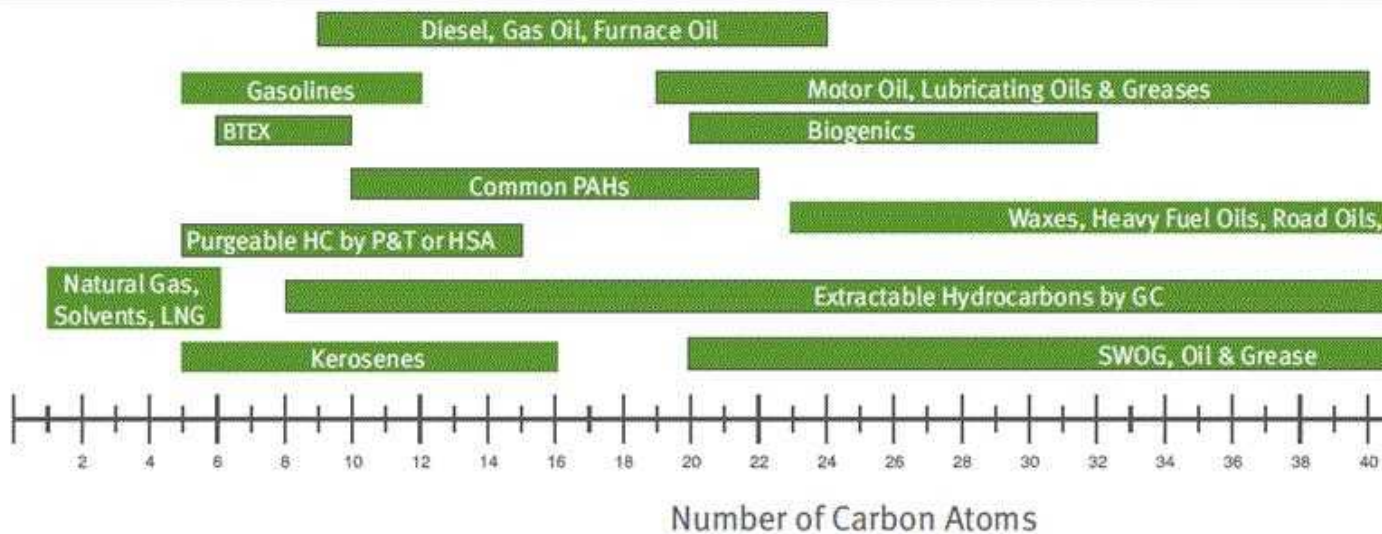
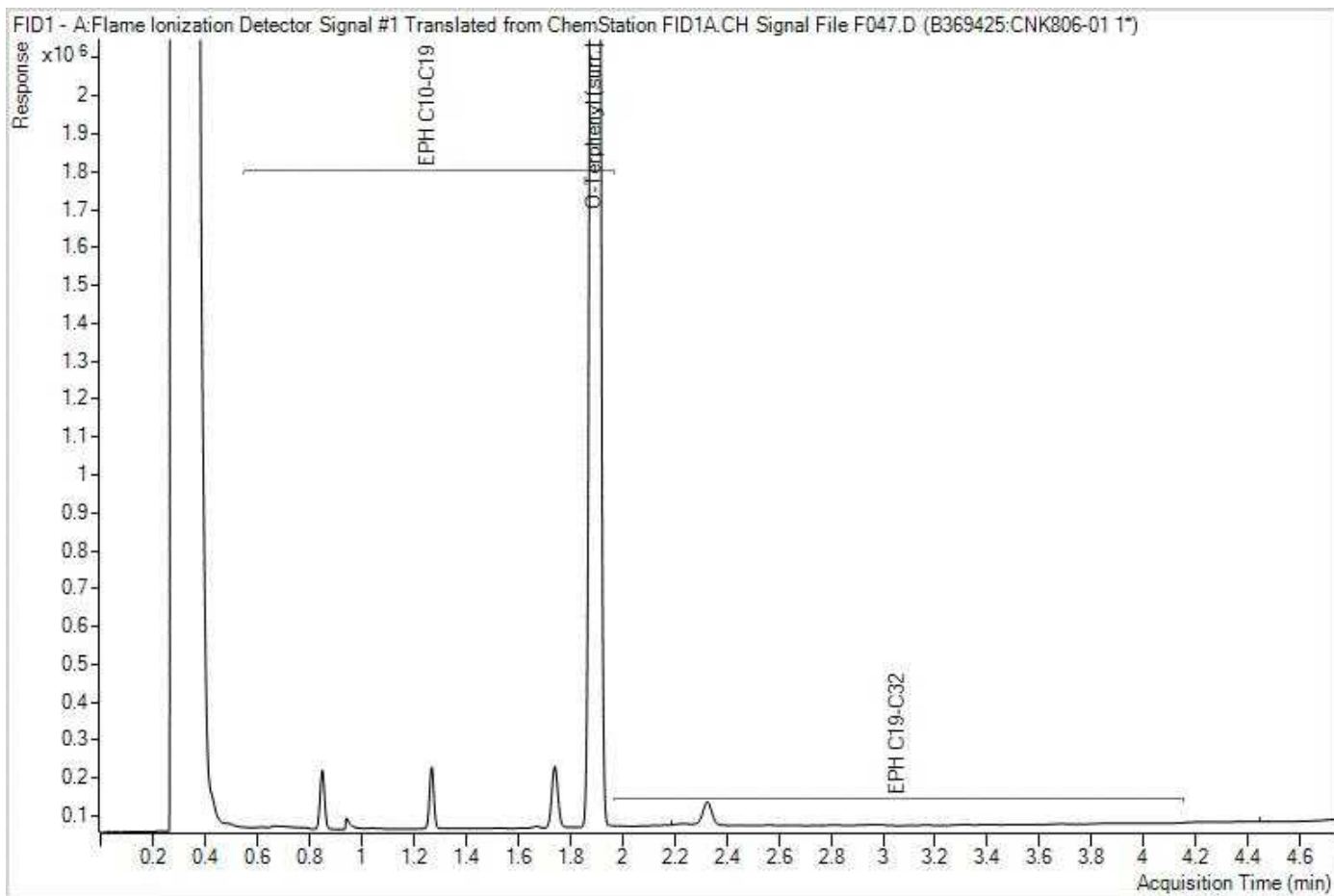
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EPH in Soil by GC/FID Chromatogram



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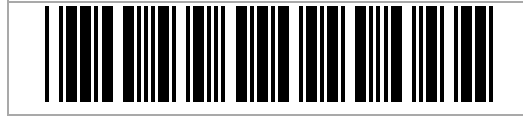
EPH in Soil by GC/FID Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



eCOC: W84952



Project Information: C433712
 Job Received: 2024/05/11 09:50
 Expected TAT: Standard TAT
 Expected Arrival: 2024/05/11 10:00
 Submitted By: Richard Plourde
 Submitted To: Burnaby ENV: 4606 Canada Way

Invoice Information

Attn: Traci Brannen Magee
 SLR CONSULTING (CANADA) LTD
 #303-3960 Quadra Street
 VICTORIA , BC , V8X 4A3
 Email to:
 tmagee@slrconsulting.com
 analytical@slrconsulting.com

Report Information

Attn: Richard Plourde
 SLR CONSULTING (CANADA) LTD
 #303-3960 Quadra Street
 VICTORIA , BC , V8X 4A3
 Email to:
 rplourde@slrconsulting.com
 analytical@slrconsulting.com

Project Information

Quote #: C40429
PO/AFE#: VAN15614
Project #: 201.089228.00002
Site Location: North Cowichan, BC

Analytical Summary

A: Standard TAT
 M: Manually added test

Client Sample ID	Clnt Ref	Sampling Date/Time	Matrix	#Cont	CSR BTEX/VPH by HS in Soil	CSR/CCME Metals in Soil with Hg	LEPH & HEPH with PAH for CCME in Soil	Soluble Sodium and Chloride in Soil	VOCs + Fuel Related VOCs Soils	Glycols in Soil by GC/FID	Hold	Moisture	Set Number
BH24-02_0-0.25	1	2024/05/08 12:30	SOIL	3	A	A	A	A	A	A		A	1
BH24-02_0.25-0.5	2	2024/05/08 12:25	SOIL	3							M		
BH24-02_0.5-1.0	3	2024/05/08 12:20	SOIL	3	A	A	A		A				2
BH24-01_0-0.25	4	2024/05/08 11:43	SOIL	3	A	A	A	A	A				3
BH24-01_0.25-0.5	5	2024/05/08 11:40	SOIL	3							M		
BH24-01_0.5-1.0	6	2024/05/08 11:35	SOIL	3	A	A	A						4
BH24-A	7	2024/05/08 11:35	SOIL	3	A		A						5
BH24-01_1.0-1.5	8	2024/05/08 11:32	SOIL	3		A	A						6
BH24-01_1.5-2.0	9	2024/05/08 11:28	SOIL	3							M		
BH24-01_2.0-2.4	10	2024/05/08 11:25	SOIL	3	A	A	A		A	A		A	7

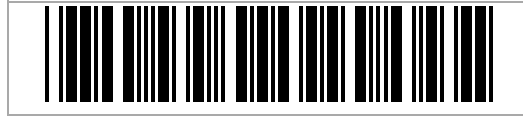
Deadlines are estimates only and are subject to change. Please refer to your Job Confirmation report for final due dates.

Submission Information

of Samples: 10
 Details: BC CSR



eCOC: W84952



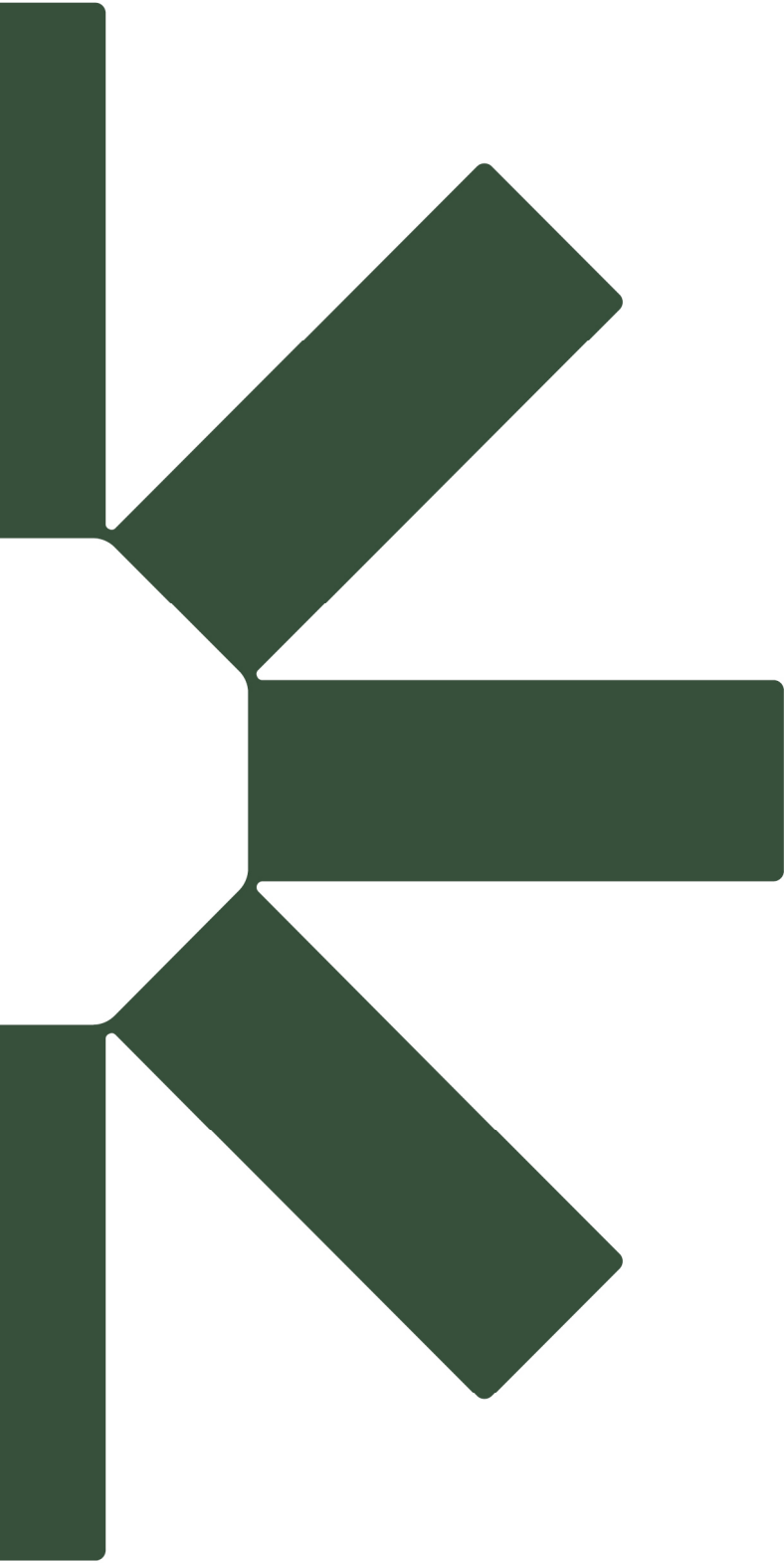
Project Information: C433712
 Job Received: 2024/05/11 09:50
 Expected TAT: Standard TAT
 Expected Arrival: 2024/05/11 10:00
 Submitted By: Richard Plourde
 Submitted To: Burnaby ENV: 4606
 Canada Way

eCOC Change Log

Modified By	Date Modified	Changes	Comments
Richard Plourde	10 May 24 13:51:34	Reporting and Invoicing	
Richard Plourde	10 May 24 13:57:16	Tests Requested	need to add analysis - Na/Cl
Richard Plourde	10 May 24 13:57:53	Tests Requested, Sample Information	need to add analysis - Na/Cl
Richard Plourde	10 May 24 17:36:19	Tests Requested	adding analysis
Richard Plourde	10 May 24 17:36:57	Tests Requested, Sample Information	adding analysis

Sample Set Listing

Set 1 (1 sample)	Set 2 (1 sample)	Set 3 (1 sample)	Set 4 (1 sample)	Set 5 (1 sample)	Set 6 (1 sample)	Set 7 (1 sample)
BH24-02_0-0.25	BH24-02_0.5-1.0	BH24-01_0-0.25	BH24-01_0.5-1.0	BH24-A	BH24-01_1.0-1.5	BH24-01_2.0-2.4



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