Bear Environmental Limited
PO Box 76
1648 Balsam Avenue
Rossland, BC V0G 1Y0
Tel: (250) 231-2151
Fax: (250) 362-2344
email: info@bearenviro.ca

January 14th, 2019

BC Ministry of Environment and Climate Change Strategy
Environmental Emergencies Program
Southern Interior – Kootenay Boundary

Attn: **Veron Novosad**, PChem, BSc, EP, HMT
Environmental Emergency Response Officer

RE: FINAL REPORT - Environmental Assessment
Kaslo Back Road Spill

Dear Mr. Novosad

This letter report details the Environmental Assessment (EA) performed by Bear Environmental Limited (BEAR) in response to a spill in the Kaslo Back Road area of Kaslo, BC. This EA was commissioned by Veron Novosad, Environmental Emergency Response Officer, BC Ministry of Environment and Climate Change Strategy (MoE). Additional supporting documents are appended at the end of this letter.

1.0 BACKGROUND

On July 31st, 2018, an unauthorized liquid discharge occurred along an approximately 7 km stretch of gravel road near Kaslo, BC. The spill area of potential environmental concern starts at the sand pit at the east end of the Kaslo Airport and continues east on Kaslo West Road and then south on Kalso Back Road to its intersection with Highway 31. The incident was witnessed by Village of Kaslo public works personnel and described as follows:

A truck equipped with a flatbed trailer with 17 plastic 205 L drums was observed within the sand pit where a person was drilling holes in the drums with the contents spill onto the bare ground. Anecdotal reports suggest the drums contained waste bilge water (water, fuel, and oil mixture). The truck left the sand pit travelling south on Kaslo West Road with the liquid contents continuing to discharge. The truck turned south on Kaslo Back Road and continued south. Village staff did not witness the entire spill route but did note petroleum hydrocarbon odours towards Highway 31 and flagged the location (sample location 260).

In response to the spill, Village of Kaslo public works personnel collected a sample of the pooled liquid from the initial spill location within the sand pit and excavated impacted soils within the pit. Soil excavation limits were based on soil saturation and olfactory indication of the presence of fuel. The excavation area was covered with a tarp to mitigate infiltration of precipitation that may promote the downward mobility of any residual contamination. Approximately 40 m^3 of excavated soils were stockpiled at the west end of the Kaslo Airport within a tarped area.

The spill site was inspected on August 1st, 2018 by Veron Novosad of MoE. Soil samples and water samples of the residual effluent and impacted soils were collected. Two private domestic surface water sources (Davidson Spring and Huss Spring) were identified at that time with the water users notified. Tap water samples were collected and submitted for analysis by the Ashley Hain, licensee of Davidson Spring, given the proximity and vulnerability of the system's water box located in the roadside ditch within the suspected spill area. Laboratory certificates for samples collected by third parties are included in **Appendix E**.

Preliminary soil and water sample results indicated Contaminants of Potential Concern (COPCs) to be:
- Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH),
- Polycyclic Aromatic Hydrocarbons (PAHs),
- Volatile Petroleum Hydrocarbons (VPH), and
- Volatile Organic Compounds (VOCs).

Additional COPCs for waste fuels include:
- Glycols, and
- Metals.

Details of the spill area are illustrated on **Figures 1 and 2** included in **Appendix A**.

2.0 OBJECTIVE

The objectives of this EA were to:

1. Detail the spill incident.

2. Determine the valued ecosystem components and potential receptors of concern potentially impacted by the spill.

3. Investigate the potential for impact to human health and the environment through qualitative and quantitative methods following standard industry practices and BC MoE guidance and standards.

4. Where contamination is identified, provide recommendations and costs for remediation if required.

3.0 SCOPE OF WORK AND METHODOLOGY

The objectives of this EA were met by performing the following tasks:

3.1 Desk Top Study

A preliminary inventory of potential receptors of concern and valued ecosystem components was compiled identified prior to the site investigation using the following online geographic information systems:

- Google Earth (terrain analysis and land use), and
- iMap BC (potable water systems and watercourses).

Features within the study area were mapped and are included on **Figures 1 and 2** in **Appendix A**.

Analytical results for soil and water samples collected by others were also compiled as follows:

- one water sample of spill solution collected by Village of Kaslo staff and analyzed for VOC and VPH by CARO Analytical of Kelowna, BC; and
- nine soil samples collected by Veron Novosad, MoE and analyzed for extractable petroleum hydrocarbons and PAH speciation by Environment and Climate Change Canada (EC) of North Vancouver, BC. (Note: analysis was completed for forensic purposes and results are not directly comparable to the BC *Contaminated Sites Regulation* (CSR) Standards.

3.2 Stakeholder Interviews

Interviews were conducted with the following stakeholders.

- Stephanie Patience, Deputy Clerk, Village of Kaslo
    - Provided details on Village of Kaslo spill response, stakeholder information, and analytical results for water samples collected.
- Mike Lund, Public Works Foreman, Village of Kaslo
    - Provided details on Village of Kaslo spill response and sample collection.
- Ashley Hain, owner, 751 West Kaslo Rd.
    - Provided details on Davidson Spring water system and analytical data from water testing.
- Veron Novosad, Environmental Emergency Response Officer, MoE
    - Provided spill incident details and analytical data for soil and water samples collected.

- Chris Johnson, Emergency Program Manager, RDCK
    - Provided details regarding the spill incident.

3.3 Site Investigation

The site investigation was conducted on November 7th, 2018. Dave Diplock, P.Eng. and Rick Nault, BA Geomatics, mobilized to the spill site. Village of Kaslo public works staff provided an orientation of the initial spill area, suspect soil stockpile area, and excavated the backfill from the initial spill area to facilitate collection of confirmatory soil samples. Confirmatory soil samples (North, West, South, East, and Base) were collected from the four walls and base of the excavation.

The stockpiled suspect soil excavated by the Village of Kaslo Public Works were sampled following the ex-situ soil sampling procedure of MoE Technical Guidance 1. Four stockpile samples (SP1-1 to SP1-4) and 1 composite soil sample (SP1-COMP) were collected.

BEAR personnel, ground-truthed the study area for receptors of concern and valued ecosystem components. Forty-seven (47) surface soil samples (0 to 0.2 m below surface grade) were collected along the reported spill route with sample locations biased to areas anticipated to hold residual contamination based on localized topography and drainage courses. Soil sample locations were further biased towards vulnerable receptors. Five surface soil samples were selected for analysis of LEPH/HEPH and PAHs based on field evidence of impacts and sensitive receptors.

Soil samples were collected using a stainless steel spade and laboratory supplied sample jars with a spilt sample also collected in a Ziplock® bag for relative soil vapour headspace measurements. Ziplock® bags were warmed up to approximately 15°C prior to measuring for relative soil vapour headspace using a MiniRAE 3000 Photoionization Detector (PID) calibrated to 100 ppm.

Water samples were collected directly from the two surface water boxes located in the vicinity of the initial spill location and shown on iMap BC:

- Davidson Spring (Sample WB-1)

- Huss Spring (Sample WB-2)

Tap water samples were also collected from two distribution points of the Davidson Spring system:

- Sample 722 (outdoor spigot of residence at 722 Kaslo West Road), and

- Sample 751 (kitchen tap of residence at 751 Kaslo West Road).

Filters, hoses, and/or aerators were removed prior to sampling water at the residences with the lines flushed for approximately 5 minutes prior to collecting the sample using laboratory supplied containers.
Samples for laboratory analysis were stored in a chilled cooler and couriered under chain of custody procedures to CARO Analytical of Kelowna, BC. Analytical results were compiled in tables and screened

against the applicable standards of the BC *Contaminated Sites Regulation* (CSR). Soil standards applicable to low density residential lands were applied conservatively although the less stringent commercial land use standards would be most applicable to the soil sample locations. Water standards applied included protection of freshwater Aquatic Life (AW), and water used for Drinking Water (DW), Irrigation Water (IW) and Livestock Watering (LW).

4.0 PROBLEM FORMULATION

4.1 Physical Setting

Land uses within the study area includes the commercial sand pit area, undeveloped forested areas (wild lands), rural residential properties with and without agricultural use, and agricultural land.

The initial spill site was within the sand pit at the east end of the Kaslo Airport. The pit contains primarily medium and fine grained sand with some gravel and cobbles, anticipated to be of glacial-fluvial origin within the Kaslo River drainage. Based on the presence of springs in the vicinity of the pit, groundwater is anticipated to be within 5 to 10 m of surface and influenced by bedrock topography. Groundwater within the low lying areas of the spill area is anticipated to be within 1 to 2 m of ground surface and hydraulically connected to adjacent surface waterbodies.

Although grades within the sand pit are gentle, topography outside the pit across Kaslo West Road slopes steeply down to the northeast towards the Kaslo River. Kaslo West Road is mostly paved with curbing directing surface runoff along the steep paved portion directly east of the sand pit. No major tributaries of the Kaslo River were identified adjacent to Kaslo West Road. A small (< 1 m wide) unnamed stream crosses Kaslo West via a culvert Road towards the bottom of the Airport hill. Two springs with domestic water licences (Davidson Spring and Huss Spring) are present adjacent to Kaslo West Road.

Given the reports of the incident, pooled surface water reported at the sand pit; the area of the sand pit and Kaslo West Road is considered to have the greatest potential for impact due to the anticipated higher volume release and paved surface of Kaslo West Road that would promote the transport and concentration of the effluent discharged.

The northern end of the gravel surfaced Kaslo Back Road connects with the Kaslo West Road and climbs out of the Kaslo River Watershed and into the Loftstead Creek drainage (tributary of Bjerkness Creek) that flows south. Loftstead Creek flows directly adjacent to the west side of the back road in some locations. The back road continues south past the confluence of Loftstead Creek with Bjerkness Creek to Highway 31.

Given the elapsed time between the July 31st, 2018 spill incident and the November 7th, 2018 site investigation of this EA, there has been a significant period for natural attenuation of any residual contamination that may have resulted due to the spill.

4.2 Contaminants of Potential Concern

Contaminants of Potential Concern (COPCs) identified included the waste fuel constituents: LEPH/HEPH, PAH, VPH, VOC, metals and glycols with LEPH/HEPH and PAH considered the primary COPCs for soil screening purposes, and LEPH/HEPH, PAH, VPH, VOC and metals for screening water.

4.3 Receptors of Concern

The review of the spill area indicated the following receptors of concern and valued ecosystem components.

Table 4.3 – Receptors of Concern

Receptor	Description	Relative Vulnerability
Soil	Soils may be impacted by direct contact with wastewater.	**High** Discharge of wastewater has the potential to contaminate contacting soils and present risk to soil based receptors and real property liability.
Groundwater	Groundwater may be impacted by infiltrating wastewater.	**Low** Initial spill response by village of Kaslo to excavate and contain soils impacted at the initial spill location within the sand pit mitigates potential for groundwater impacts. Groundwater would remain a media of concern should contaminated soils be identified.
Soil Vapour	Volatile compounds may potentially impact air quality.	**Very Low** Outdoor air is adequately diluted. No indoor air environments present within 30 m of spill area.
Groundwater Wells	Records of two groundwater wells were identified within the spill corridor according to the iMap BC online GIS: 1) Well 632 reported at 220 ft screened within bedrock and a water level of 50 ft. 2) Well 87771 reported at 320 ft deep screened within bedrock.	**Very Low** Given the low vulnerability to groundwater and depth of the groundwater wells screened within bedrock.

Table 4.3 – Receptors of Concern

Receptor	Description	Relative Vulnerability
Davidson Spring water system	A licensed spring with a wood water box situated within the southern ditch of Kaslo West Road. A polyethylene distribution line splits and provides domestic water to rural residences at 722 Kaslo West Road and 751 Kaslo West Road.	**High** Water intake is located directly within the Kaslo West Road's southern ditch and is vulnerable to surface water impacts from the road and roadside ditch.
Huss Spring Water System	A licensed spring with a concrete water box and polyvinylchloride distribution line located in an undeveloped forested area approximately 100 m north of Kaslo West Road. Water is used for irrigation purposes.	**Low** Water intake is located approximately 100 m down-gradient from the spill area with no complete surface water pathways to the spill area on Kaslo West Road. Remains a receptor of concern via groundwater if contaminated soils are identified in up-gradient locations.
Mirror Lake water system	Mirror Lake community water intake is located on the main stem of Bjerkness Creek. Bjerkness Creek and Loftstead Creek pass below the Kaslo Back Road via culverts within the suspected spill area. Road is gravel with no evidence of direct discharge of road surface water to the creeks.	**Low** Limited area of influence with potential spill source. High volume source and elapsed time since the spill. No concerns with system reported.
Agricultural Lands	Agricultural land use occurs within the study area both as farm fields and rural residential hobby farms.	**Low** With the exception of impacted domestic water used for irrigation and/or livestock watering, no complete pathways of significance were identified connecting agricultural lands to the spill area.
Surface watercourses	Surface water environments within the study area include: Loftstead Creek, Bjerkness Creek, unnamed creek crossing Kaslo West Road as bottom of Airport hill, groundwater seeps along the south side of Kaslo West Road in its steeper sections, and additional unnamed small creeks crossing Kaslo Back Road via culverts.	**Moderate** No direct flow pathways identified, however, Loftstead Creek comes within 1 m of the Kaslo Back Road and there are numerous stream crossings with culverts. Surface water quality vulnerability is decreased with increase flow within the watercourse. Aquatic life receptors typically highly sensitive to chemical exposure.

5.0 SITE INVESTIGATION RESULTS

5.1 Field Observations

No visual of olfactory evidence of petroleum hydrocarbon impacts were noted within the study area, soil samples collected, watercourses or water boxes. All relative soil vapour headspace measurements for soil samples collected were less than 8 ppm; interpreted to not be indicative of petroleum hydrocarbon or solvent impacts.

5.2 Soil Results

5.2.1 Suspect Soil Stockpile

Four stockpile samples (SP1-1 to SP1-4) and one composite soil sample (SP-COMP) were collected from the stockpiled soils at the west end of the airport that were excavated from the initial spill site at the sand pit. Sample SP1-1 collected from the area of the stockpile reported to contain the highest concentrations of the spill liquid was analyzed for LEPH/HEPH, PAH, VOC, VPH and metals. Analytical results indicated all COPC concentrations less than the applicable CSR Standards. Petroleum hydrocarbons and VOCs were reported at levels less than the reportable detection limits. These results were consistent with results reported for samples collected by MoE and analyzed by EC.

5.2.2 Initial Spill Site Excavation

Confirmatory samples (North, East, South, West, and Base) were collected from the excavation limits of the initial spill site in the sand pit and analyzed for LEPH/HEPH and PAH. Analytical results indicated all constituent concentrations less than the applicable CSR Standards and reportable detection limits.

5.2.3 Road Corridor

Forty-seven (47) surface soil samples were collected at regular intervals along the reported spill route with sample locations biased to areas anticipated to hold residual contamination based on localized topography and drainage courses. Soil sample locations were further biased towards vulnerable receptors. Five surface soil samples (218, 230, 243, 248, and 260) were selected for analysis of LEPH/HEPH and PAHs based on field evidence of impacts and proximity to vulnerable receptors. Analytical results for all five samples indicated all constituent concentrations less than the applicable CSR Standards and reportable detection limits with the exception of a marginal detection of HEPH in one sample.

5.3 Water Results

5.3.1 Source Water

Water samples were collected from the source water within the water boxes for Davidson Spring and Huss Spring, WB-1 and WB-2 respectively, and analyzed for LEPH/HEPH, PAH, VOC, VPH and metals.

Analytical results for both samples indicated all COPC concentrations less than the applicable CSR Standards. Petroleum hydrocarbons and VOCs were reported at levels less than the reportable detection limits.

5.3.2 Tap Water

Samples 722 and 751 were collected from the distribution system of the Davidson Spring (WB-1) at the dwellings located at 722 Kaslo West Rd. and 751 Kaslo West Road and analyzed for LEPH/HEPH, PAH, VOC, VPH and metals.

Sample 722 indicated all COPC concentrations less than the applicable CSR Standards. Petroleum hydrocarbons and VOCs were reported at levels less than the reportable detection limits.

Sample 751 indicated numerous detections of PAHs with Benzo(a)pyrene, Benzo(b+j)fluoranthene, and Dibenz(a,h)anthracene concentrations reported greater than the CSR Standards protective of drinking water. Metals constituents were reported at concentrations less the applicable CSR Standards. VOC, LEPH/HEPH and VPH concentrations were reported less that the applicable CSR Standards and laboratory reportable detection limits. Upon recept of these results, the homeowner at 751 Kaslo West Road was notified and directed to discontinue use of this water source for domestic purposes.

A water sample from the tap at 751 Kaslo West Road was collected by the homeowner on August 20th 2018 and submitted for laboratory analysis, however PAH analysis was not included. Likewise, PAH analysis was not conducted on the source spill effluent sample collected on July 31st, 2018 by the Village of Kaslo. Effluent samples submitted to EC by MoE did include PAH analysis; however, the analysis did not include sufficient low level detection limits as to be compared with the sample 751 collected by BEAR during this EA. Given the limited data available, the source of the PAHs in sample 751 could not be confirmed; however, the possibility remains that it may be associated with the spill incident.

6.0 CONCLUSION

This EA investigated the July 31st, 2018 spill of suspected bilge wastewater along the Kaslo West Road and Kaslo Back Road corridor.

COPCs identified included the waste fuel constituents: LEPH/HEPH, PAH, VPH, VOC, metals and glycols with LEPH/HEPH and PAH considered the primary COPCs for soil screening purposes, and LEPH/HEPH, PAH, VPH, VOC and metals for screening water.

Receptors of concern included: soils including rural residential lands with agricultural land use, freshwater aquatic habitats, and surface water used for drinking water including two drinking water intakes within 100 m of the spill area.

Qualitative and quantitative evidence from this EA indicated no residual soil contamination at levels of concern in the excavated and stockpiled soils from the initial spill site, within the excavation limits of the initial spill site, or within the suspected spill/discharge route along Kaslo West Road and Kaslo Back Road.

In the vicinity of the spill area, the two water boxes for collection and distribution of surface water (Davidson Spring and Huss Spring) were sampled with no evidence of residual contamination detected in either water sample. Two tap water samples were collected from the distribution system of the Davidson Spring water box considered to be the most vulnerable to the spill given its roadside location; one from 722 West Kaslo Road and one from 751 West Kaslo Road. The 751 tap sample indicated PAH constituent concentrations greater than the CSR Drinking Water Standards. The 722 tap sample indicated non-detect PAH concentrations. Given the limited data available, the source of the PAHs in the tap sample collected from 751 Kaslo West Road could not be confirmed.

7.0 RECOMMENDATION

No further soil investigation or remediation is recommended within the spill area.

Additional testing is required to determine the source of the PAHs identified in the Davidson Spring distribution system at 751 Kaslo West Road. Potable water use from this system should be discontinued pending a resolution to the elevated PAHs. Regardless of future sample results, it is recommended that the water collection box for the Davidson Spring system be upgraded to eliminate its current high vulnerability to impacts from Kaslo West Road. Users of this system should consult the BC Drinking Water Protection Regulations with respect to the requirements for this domestic water system.

Should water from the Huss Spring distribution system be used as a potable source in the future, it is recommended that LEPH/HEPH and PAH analysis be added to the analytical suite of routine sampling as a precaution.

8.0 STATEMENT OF LIMITATIONS

This report has been prepared for the sole benefit of BC Ministry of Environment and Climate Change Strategy. The report may not be relied upon by any other person or entity without the expressed written consent of Bear Environmental Limited and BC Ministry of Environment and Climate Change Strategy.

Any use which a third party makes of this report, or any reliance on decisions made based on it, are the responsibility of such third parties. Bear Environmental Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The conclusions presented represent the best judgement of the assessor based on the applicable legislation, current environmental standards, information compiled at the time of writing, and on the site conditions observed at the time of the site visit. The conclusions and opinions are based on a reasonable review of available information compiled within the scope of work, schedule and budget constraints of the project. In doing so Bear Environmental Limited has relied in good faith on information provided by others as noted in the report, and has assumed the information as provided is both factual and accurate. Bear Environmental Limited accepts no responsibility for any deficiencies, misstatements or inaccuracy resulting from information provided by others. Due to the limited nature of this investigation and the limited data available, the assessor cannot warrant against undiscovered environmental liabilities. No warranty, expressed or implied, is given concerning the presence or level of contamination on the Site.

The liability of Bear Environmental Limited to BC Ministry of Environment and Climate Change Strategy shall be limited to injury or loss caused by negligent acts of Bear Environmental Limited. The total aggregate liability of Bear Environmental Limited related to this agreement shall not exceed the lesser of the actual damages incurred or the total fee of Bear Environmental Limited for their services rendered on this project.

Should additional site conditions be revealed, the intended site use be altered, or additional information be required, please contact the undersigned.

Yours truly,

Bear Environmental Limited

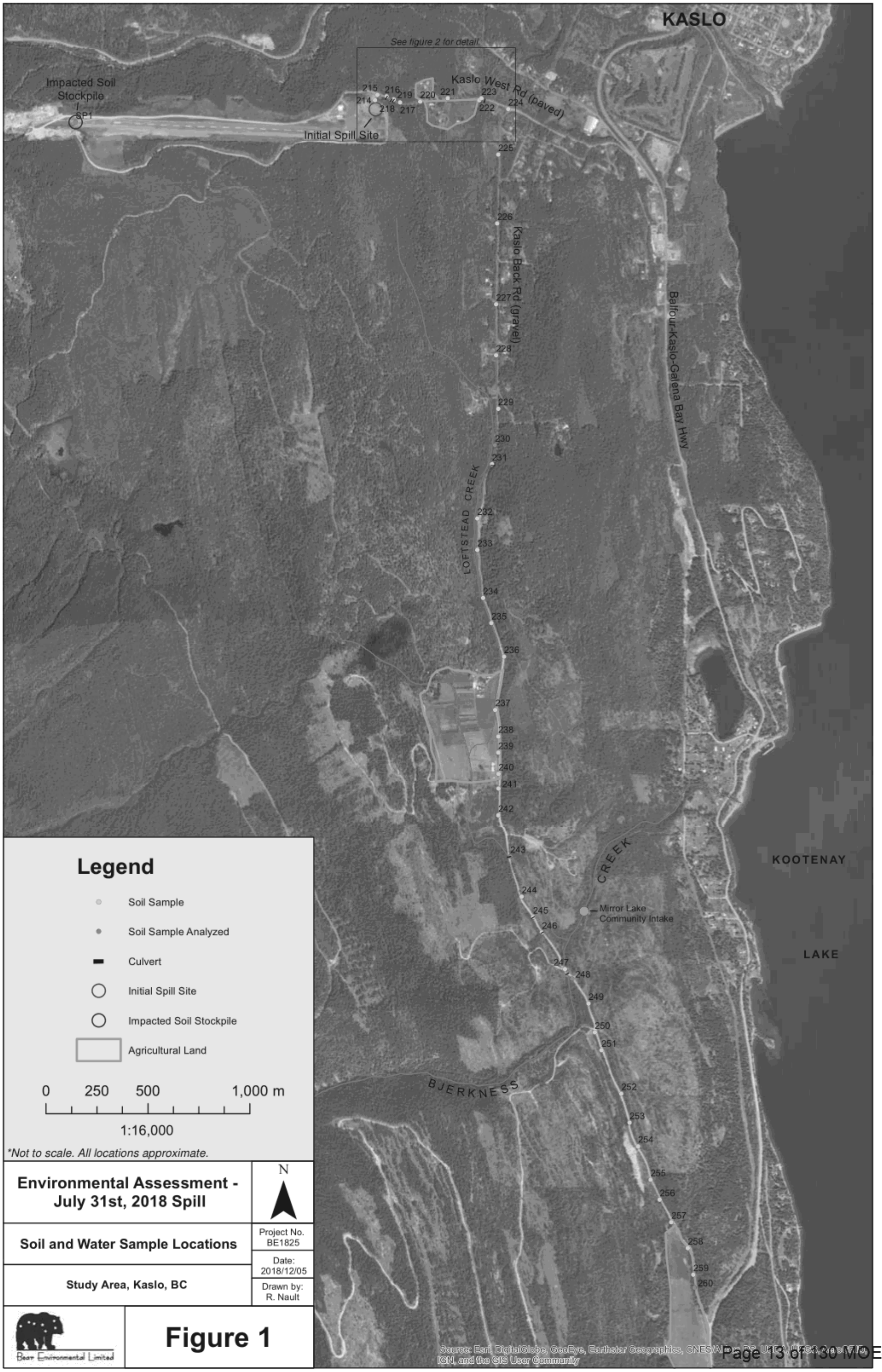
PROFESSIONAL
PROVINCE OF
D. A. DIPLOCK
29326 2019-01-14
BRITISH COLUMBIA
ENGINEER

Dave Diplock, P.Eng.
Senior Environmental Engineer

Encl.

APPENDIX A

FIGURES



Legend

●	Soil Sample
●	Soil Sample Analyzed
▬	Culvert
○	Initial Spill Site
○	Impacted Soil Stockpile
▭	Agricultural Land

*Not to scale. All locations approximate.

Environmental Assessment - July 31st, 2018 Spill

Soil and Water Sample Locations

Study Area, Kaslo, BC

Project No. BE1825

Date: 2018/12/05

Drawn by: R. Nault

Bear Environmental Limited

Figure 1

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- ○ Soil Sample
- ● Soil Sample Analyzed
- ● Water Sample Analyzed
- ■ Water Box with Sample Analyzed
- ○ Initial Spill Site
- — Water Distribution Line*
- ▭ Agricultural Land

*schematic representation from iMap BC

0 25 50 100 m

1:2,500

Not to scale. All locations approximate.

Environmental Assessment - July 31st, 2018 Spill

Soil and Water Sample Locations

Detail - Kaslo West Road Area

N

Project No.
BE1825

Date:
2018/12/05

Drawn by:
R. Nault

Bear Environmental Limited

Figure 2

APPENDIX B

PHOTOGRAPHS

Photograph 1 – Sand Pit: initial spill site at tarp.

Photograph 2 – Tarp covered initial spill location looking down-gradient towards Kaslo West Road.

Photograph 3 – Covered and lined, suspect soil stockpile at west end of the airport.

Photograph 4 – Kaslo West Road, looking east from sand pit entrance.

Photograph 5 – Davidson Spring water box in ditch of Kaslo West Road. Sand pit at top of hill.

Photograph 6 – Interior of Davidson Spring water box. Sample WB-1.

Photograph 7 – Huss Spring water box. Sample WB-2.

Photograph 8 – Surface water drainage swale on Kaslo West Road hill. Soil sample 217.

Photograph 8 – Surface water drainage swale towards bottom of Kaslo West Road hill. Soil sample 220.

Photograph 9 – Loftstead Creek culvert crossing Kaslo Back Road. Soil sample 243.

APPENDIX C

TABLES

TABLE 1: Soil Results - Metals

Project No. BE1825, Kaslo Road Spill, Kaslo, BC

			Sample ID	SP1-1
			Sampling Date	7-Nov-18
			Sample Interval (mbsg)	grab
Parameter	**RDL**	**BC CSR RL_{LD}**	**Background[1]**	
pH	0.1	ns	-	8.4
Aluminum	40	40000	-	13200
Antimony	0.1	250^{e}, 20^{f}	4	0.98
Arsenic	0.3	20^{a}, 25^{b}, 10^{c}, 10^{d}	4	10
Barium	1	8500^{a}, 700^{b}, 3500^{c}, 350^{d}	350	20.9
Beryllium	0.1	85^{a}, 150^{b}, $1\text{-}500^{cg}$, $1\text{-}2500^{dg}$	0.8	0.21
Boron	2	8500	1	<2.0
Cadmium	0.04	20^{a}, 30^{b}, $1\text{-}50^{cg}$, $1\text{-}70^{dg}$	0.4	1.01
Chromium	1	100^{a}, 200^{b}, 60^{ch}, 60^{dh}	35	40.6
Cobalt	0.1	25^{a}, 45^{b}, 25^{c}, 25^{d}	15	13.5
Copper	0.4	3500^{a}, 150^{b}, $70\text{-}6500^{cg}$, $250\text{-}1000000^{dg}$	35	30.2
Iron	20	35000	-	32400
Lead	0.2	120^{a}, 550^{b}, $100\text{-}50000^{cg}$, $25\text{-}8500^{dg}$	120	14
Lithium	0.1	30	-	17.2
Manganese	0.4	6000^{a}, 2000^{b}, 2000^{d}	2000	442
Mercury	0.04	10^{a}, 40^{b}	0.085	<0.040
Molybdenum	0.1	200^{a}, 80^{b}, 650^{c}, 15^{d}	1	1.89
Nickel	0.6	450^{a}, 150^{b}, $90\text{-}9500^{cg}$, $70\text{-}500^{dg}$	50	52.2
Selenium	0.2	200^{a}, 1.5^{b}, 1^{cd}	4	0.41
Silver	0.1	200^{e}, 20^{f}	1	0.19
Strontium	0.2	9500	250	64.1
Thallium	0.1	9^{f}	-	<0.10
Tin	0.2	25000^{e}, 50^{f}	4	0.28
Tungsten	0.2	15	-	<0.20
Uranium	0.05	100^{a}, 500^{b}, 150^{c}, 30^{d}	-	0.45
Vanadium	1	200^{a}, 150^{b}, 100^{d}	40	23
Zinc	2	10000^{a}, 450^{b}, $150\text{-}1500^{cg}$,$250\text{-}5500^{dg}$	200	110

NOTES:

All values in mg/kg (ppm)

mbsg	meters below surface grade
RDL	Reportable Detection Limit
BC CSR	British Columbia Ministry of Environment Contaminated Sites Regulation (BC Reg. 375/96)
RL_{LD}	Applicable to Low Density Residential Land Use
-	Not analyzed/no information
ns	no applicable standard
RPD/DF	Relative percent difference or Difference factor for duplicate sample
1	Background soil concentrations published in Protocol 4, Table 1, Region 4 Kootenay.
a	applicable to human health protection for intake of contaminated soil
b	applicable to environmental protection for toxicity to soil invertebrates and plants
c	applicable to environmental protection for groundwater flow to surface water used by freshwater aquatic life
d	applicable to human health protection for groundwater used for drinking water
e	applicable to protect human health
f	applicable to protect ecological health
g	standard varies with pH
h	standard is for hexavalent chromium
RED	Concentration greater than BC CSR RL and Background

TABLE 2: Soil Results - Petroleum Hydrocarbons

Project No. BE1825, Kaslo Road Spill, Kaslo, BC

		Sample ID	**218**	**230**	**243**	**248**	**260**	**South**	**West**	**North**	**East**	**Base**	**SP1-1**
		Sampling Date	7-Nov-18	7-Nov-18	7-Nov-18	7-Nov-18	7-Nov-18	7-Nov-18	7-Nov-18	7-Nov-18	7-Nov-18	7-Nov-18	7-Nov-18
		Sample Interval (mbsg)	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2	0.1-0.3	0.1-0.3	0.1-0.3	0.1-0.3	0.6-0.8	grab
Parameter	**RDL**	**BC CSR RL_{LD}**											
General Parameters													
Moisture (%)	0.1	ns	23.1	8.2	25.5	23.3	7	0.8	0.3	2.4	2.8	3.1	9.1
pH (unitless)	0.1	ns	-	-	-	-	-	-	-	-	-	-	8.44
Aggregate Organic Parameters													
VPHs	20	200^{ef}	-	-	-	-	-	-	-	-	-	-	<20
LEPHs	50	1000^{ef}	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
HEPHs	50	1000^{ef}	<50	<50	<50	100	<50	<50	<50	<50	<50	<50	<50
Polycyclic Aromatic Hydrocarbons													
Acenaphthene	0.05	950^{e}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	0.05	ns	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	0.05	10000^{a}, 2.5^{b}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benz(a)anthracene	0.05	50^{e}, 1^{f}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)pyrene	0.05	5^{a}, 20^{b}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(b+j)fluoranthene	0.05	50^{e}, 1^{f}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	0.05	ns	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	0.05	50^{e}, 1^{f}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2-Chloronaphthalene	0.05	1500^{e}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	0.05	200^{e}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibenz(a,h)anthracene	0.05	5^{e}, 1^{f}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	0.05	1500^{a}, 50^{b}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluorene	0.05	600^{e}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	0.05	50^{e}, 1^{f}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1-Methylnaphthalene	0.05	250^{e}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2-Methylnaphthalene	0.05	60^{e}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Naphthalene	0.05	850^{a}, 0.6^{b}, 75^{c}, 100^{d}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Phenanthrene	0.05	1500^{e}, 5^{f}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Pyrene	0.05	1000^{e}, 10^{f}	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

NOTES:

All values in mg/kg (ppm)

RDL	Reportable Detection Limit
mbsg	meters below surface grade
BC CSR	British Columbia Ministry of Environment Contaminated Sites Regulation (BC Reg. 375/96)
RL_{LD}	Applicable to Low Density Residential Land Use
ns	no applicable standard
-	not analyzed
RPD/DF	Relative percent difference or Difference factor for duplicate sample
a	applicable to human health protection for intake of contaminated soil
b	applicable to environmental protection for toxicity to soil invertebrates and plants
c	applicable to environmental protection for groundwater flow to surface water used by freshwater aquatic life
d	applicable to human health protection for groundwater used for drinking water
e	applicable to protect human health
f	applicable to protect ecological health
XX	Concentration greater than BC CSR RL

TABLE 3: Soil Results - VOCs

Project No. BE1825, Kaslo Road Spill, Kaslo, BC

		Sample ID	**SP1-1**
		Sampling Date	7-Nov-18
		Sample Interval (mbsg)	grab
Parameter	**RDL**	**BC CSR RL_{LD}**	
Benzene	0.02	150[a], 0.035[d], 100[b], 2.5[c]	<0.020
Bromodichloromethane	0.1	100[e]	<0.100
Bromoform	0.1	300[e]	<0.100
Carbon tetrachloride	0.05	150[e]	<0.050
Chlorobenzene	0.05	850[e], 1[f]	<0.050
Chloroform	0.05	400[e], 5[f]	<0.050
Dibromochloromethane	0.1	85[e]	<0.100
1,2-Dibromoethane	0.1	3.5[e]	<0.100
Dibromomethane	0.1	ns	<0.100
1,2-Dichlorobenzene	0.05	3500[e], 1[f]	<0.050
1,3-Dichlorobenzene	0.05	1000[e], 1[f]	<0.050
1,4-Dichlorobenzene	0.05	4500[e], 1[f]	<0.050
1,1-Dichloroethane	0.05	8500[e], 5[f]	<0.050
1,2-Dichloroethane	0.05	75[e], 5[f]	<0.050
1,1-Dichloroethylene	0.05	2000[e], 5[f]	<0.050
cis-1,2-Dichloroethylene	0.05	85[e], 5[f]	<0.050
trans-1,2-Dichloroethylene	0.05	850[e], 5[f]	<0.050
Dichloromethane	0.1	250[e], 5[f]	<0.100
1,2-Dichloropropane	0.05	600[e], 5[f]	<0.050
1,3-Dichloropropene (cis + trans)	0.05	300[e], 5[f]	<0.050
Ethylbenzene	0.05	4000[a], 15[d], 200[b], 200[c]	<0.050
Methyl tert-butyl ether	0.04	400[e]	<0.040
Styrene	0.05	8500[e], 5[f]	<0.050
1,1,2,2-Tetrachloroethane	0.05	35[e]	<0.050
Tetrachloroethylene	0.05	250[a], 15[b], 2.5[c]	<0.050
Toluene	0.2	3500[a], 6[d], 150[b], 0.5[c]	<0.200
1,1,1-Trichloroethane	0.05	85000[e], 5[f]	<0.050
1,1,2-Trichloroethane	0.05	150[e], 5[f]	<0.050
Trichloroethylene	0.04	20[a], 15[b], 0.3[c]	<0.040
Trichlorofluoromethane	0.1	4500[e]	<0.100
Vinyl chloride	0.1	0.95[e]	<0.100
Xylenes (total)	0.1	8500[a], 6.5[d], 150[b], 20[d]	<0.100

NOTES:

All values in mg/kg (ppm)

mbsg	meters below surface grade
RDL	Reportable Detection Limit
BC CSR	British Columbia Ministry of Environment Contaminated Sites Regulation (BC Reg. 375/96)
RL_{LD}	Applicable to Low Density Residential Land Use
ns	no applicable standard
-	not analyzed
RPD/DF	Relative percent difference or Difference factor for duplicate sample
a	applicable to human health protection for intake of contaminated soil
b	applicable to environmental protection for toxicity to soil invertebrates and plants
c	applicable to environmental protection for groundwater flow to surface water used by freshwater aquatic life
d	applicable to human health protection for groundwater used for drinking water
e	applicable to protect human health
f	applicable to protect ecological health

XX	Concentration greater than BC CSR RL
XX	RPD/DF does not meet data quality objective.

TABLE 4: Groundwater Results - Metals

Project No. BE1825, Kaslo Road Spill, Kaslo, BC

					Sample Location	WB-1	751	WB-2	722
					Sample ID	7-Nov-18	7-Nov-18	7-Nov-18	7-Nov-18
					Metals Sample Field Filtered	No	No	No	No
Parameter	**RDL**	**BC CSR AW**	**BC CSR IW**	**BC CSR LW**	**BC CSR DW**				
Hardness (calculated)	0.5	ns	ns	ns	ns	142	144	206	143
Dissolved Metals									
Aluminum, dissolved	0.005	ns	5	5	9.5	<0.0050	<0.0050	0.0072	0.0089
Antimony, dissolved	0.0002	0.09	ns	ns	0.006	<0.00020	<0.00020	<0.00020	<0.00020
Arsenic, dissolved	0.0005	0.05	0.1	0.025	0.01	<0.00050	0.00055	0.00071	0.00056
Barium, dissolved	0.005	10	ns	ns	1	0.0078	0.0079	0.0118	0.008
Beryllium, dissolved	0.0001	0.0015	0.1	0.1	0.008	<0.00010	<0.00010	<0.00010	<0.00010
Boron, dissolved	0.005	12	0.5 to 6g	5	5	0.0135	0.0084	0.0119	0.0098
Cadmium, dissolved	0.00001	0.0005-0.004^{a}	0.005	0.08	0.005	0.000013	<0.000010	0.00002	0.000012
Calcium, dissolved	0.2	ns	ns	1000	ns	50.1	50.7	68.8	50.4
Chromium, dissolved	0.0005	0.01^{b}	0.008^{b}, 0.005^{f}	0.05^{bf}	0.05^{b}	0.00134	0.00111	0.00123	0.00124
Cobalt, dissolved	0.0001	0.04	0.05	1	0.001, 0.02^{i}	<0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	0.0004	0.02-0.09^{a}	0.2	0.3	1.5	<0.00040	0.0139	<0.00040	<0.00040
Iron, dissolved	0.01	ns	5	ns	6.5	0.011	0.012	0.015	0.027
Lead, dissolved	0.0002	0.04-0.16^{a}	0.2	0.1	0.01	<0.00020	<0.00020	<0.00020	<0.00020
Lithium, dissolved	0.0001	ns	2.5	5	0.008	0.00287	0.00305	0.00401	0.00305
Magnesium, dissolved	0.01	ns	ns	ns	ns	4.03	4.08	8.25	4.13
Manganese, dissolved	0.0002	ns	0.2	ns	1.5	<0.00020	<0.00020	<0.00020	<0.00020
Mercury, dissolved	0.00001	0.00025	0.001	0.002	0.001	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum, dissolved	0.0001	10	0.01 to 0.03^{g}	0.05	0.25	0.00084	0.00086	0.00129	0.00086
Nickel, dissolved	0.0004	0.25-1.5^{a}	0.2	1	0.08	<0.00040	<0.00040	<0.00040	<0.00040
Selenium, dissolved	0.0005	0.02	0.02/0.05^{h}	0.03	0.01	<0.00050	<0.00050	<0.00050	<0.00050
Silver, dissolved	0.00005	0.0005-0.015^{a}	ns	ns	0.02	<0.000050	<0.000050	<0.000050	<0.000050
Sodium, dissolved	0.1	ns	ns	ns	200	1.22	1.22	3.34	1.22
Strontium, dissolved	0.001	ns	ns	ns	2.5	0.25	0.252	0.277	0.254
Thallium, dissolved	0.00002	0.003	ns	ns	ns	<0.000020	<0.000020	<0.000020	<0.000020
Tin, dissolved	0.0002	ns	ns	ns	2.5	<0.00020	<0.00020	<0.00020	<0.00020
Titanium, dissolved	0.005	1	ns	ns	ns	<0.0050	<0.0050	<0.0050	<0.0050
Tungsten, dissolved	0.001	ns	ns	ns	0.003	<0.0010	<0.0010	<0.0010	<0.0010
Uranium, dissolved	0.00002	0.085	0.01	0.2	0.02	0.000266	0.000277	0.000527	0.000272
Vanadium, dissolved	0.001	ns	0.1	0.1	0.02	<0.0010	<0.0010	<0.0010	<0.0010
Zinc, dissolved	0.004	0.075-2.4^{a}	1 to 5^{d}	2	3	<0.0040	0.0079	<0.0040	0.0254

NOTES:

All values in mg/L

RDL	Reportable Detection Limit
BC CSR	British Columbia Ministry of Environment Contaminated Sites Regulation (BC Reg. 375/96) Generic Water Standards, Schedules 3.2.
AW	Aquatic Life standard (freshwater)
IW	Irrigation Water Use standard
LW	Livestock Watering standard
DW	Drinking Water standard
-	Not analyzed
ns	no applicable standard
RPD/DF	Relative percent difference or Difference factor for duplicate sample
a	varies with hardness
b	standard applicable to Chromium(VI)
c	varies with chloride concentration
d	varies with pH
i	Interim background concentraion for Cobalt set Oct 4, 2002, extended Nov 7, 2017.
XX	Concentration greater than BC CSR AW
XX	Concentration greater than BC CSR DW

TABLE 5: Groundwater Results - Petroleum Hydrocarbons

Project No. BE1825, Kaslo Road Spill, Kaslo, BC

					Sample Location	Spill Puddle[1]	Site 2-1[2]	Site 2-1A[2]	WB-1	Hain[3]	751	WB-2	722
					Sampling Date	31-Jul-18	1-Aug-18	1-Aug-18	7-Nov-18	20-Aug-18	7-Nov-18	7-Nov-18	7-Nov-18
Parameter	**RDL**	**BC CSR AW**	**BC CSR IW**	**BC CSR LW**	**BC CSR DW**								
Extractable Petroleum Hydrocarbons													
VHw (6-10)	100	15000	15000	15000	15000	4980	-	-	<100	<100	<100	<100	<100
VPHw	100	1500	ns	ns	ns	**4900**	-	-	<100	<100	<100	<100	<100
EPHw (10-19)	250	5000	5000	5000	5000	-	-	-	<250	<250	<250	<250	<250
LEPHw	250	500	ns	ns	ns	-	-	-	<250	-	<250	<250	<250
EPHw (19-32)	250	ns	ns	ns	ns	-	-	-	<250	<250	<250	<250	<250
HEPHw	250	ns	ns	ns	ns	-	-	-	<250	-	<250	<250	<250
Polycyclic Aromatic Hydrocarbons													
Acenaphthene	0.05	60	ns	ns	250	-	11500	27600	<0.050	-	<0.050	<0.050	<0.050
Acenaphthylene	0.2	ns	ns	ns	ns	-	***<1000***	***<1000***	<0.200	-	<0.200	<0.200	<0.200
Acridine	0.05	0.5	ns	ns	ns	-	-	-	<0.050	-	<0.050	<0.050	<0.050
Anthracene	0.01	1	ns	ns	1000	-	11100	12100	<0.010	-	<0.010	<0.010	<0.010
Benzo (a) anthracene	0.01	1	ns	ns	0.07	-	***<1000***	***<1000***	<0.010	-	0.023	<0.010	<0.010
Benzo (a) pyrene	0.01	0.1	ns	ns	0.01	-	***<1000***	***<1000***	<0.010	-	**0.056**	<0.010	<0.010
Benzo(b+j)fluoranthene	0.05	ns	ns	ns	0.07	-	***<1000***	***<1000***	<0.050	-	**0.109**	<0.050	<0.050
Benzo (g,h,i) perylene	0.05	ns	ns	ns	ns	-	***<1000***	***<1000***	<0.050	-	0.116	<0.050	<0.050
Benzo (k) fluoranthene	0.05	ns	ns	ns	ns	-	***<1000***	***<1000***	<0.050	-	0.073	<0.050	<0.050
2-Chloronaphthalene	0.1	n	ns	ns	300	-	-	-	<0.100	-	<0.100	<0.100	<0.100
Chrysene	0.05	1	ns	ns	7	-	***<1000***	***<1000***	<0.050	-	<0.050	<0.050	<0.050
Dibenz (a,h) anthracene	0.01	ns	ns	ns	0.01	-	***<1000***	***<1000***	<0.010	-	**0.119**	<0.010	<0.010
Fluoranthene	0.03	2	ns	ns	150	-	3060	***<1000***	<0.030	-	<0.030	<0.030	<0.030
Fluorene	0.05	120	ns	ns	150	-	34200	19100	<0.050	-	<0.050	<0.050	<0.050
Indeno (1,2,3-cd) pyrene	0.05	ns	ns	ns	ns	-	***<1000***	***<1000***	<0.050	-	0.095	<0.050	<0.050
1-Methylnaphthalene	0.1	ns	ns	ns	5.5	-	-	-	<0.100	-	<0.100	<0.100	<0.100
2-Methylnaphthalene	0.1	ns	ns	ns	15	-	-	-	<0.100	-	<0.100	<0.100	<0.100
Naphthalene	0.2	10	ns	ns	80	-	128000	80400	<0.200	-	<0.200	<0.200	<0.200
Phenanthrene	0.1	3	ns	ns	ns	-	28600	26400	<0.100	-	<0.100	<0.100	<0.100
Pyrene	0.02	0.2	ns	ns	100	-	22500	5900	<0.020	-	<0.020	<0.020	<0.020
Quinoline	0.05	34	ns	ns	0.05	-	-	-	<0.050	-	<0.050	<0.050	<0.050

NOTES:

All values in ug/L

1	Sample collected by Village of Kaslo Public Works in container that would have resulted in bias low volatile concentrations. Analyzed by CARO Analytical.
2	Sample collected by MoE from barrel of source material containing suspected contaminated soil and water. Analyzed by Environment Canada.
3	Sample collected by homeowner at 751 Kaslo Road West. Analyzed by CARO Analytical.
RDL	Reportable Detection Limit (CARO Aanlytical)
BC CSR	British Columbia Ministry of Environment Contaminated Sites Regulation (BC Reg. 375/96) Generic Water Standards, Schedules 3.2.
AW	Aquatic Life standard (freshwater)
IW	Irrigation Water Use standard
LW	Livestock Watering standard
DW	Drinking Water standard
-	Not analyzed
ns	no applicable standard
RPD/DF	Relative percent difference or Difference factor for duplicate sample
XX	Concentration greater than BC CSR AW
XX	Concentration greater than BC CSR DW
XX	Detection limit greater than Standard

TABLE 6: Groundwater Results - VOCs

Project No. BE1825, Kaslo Road Spill, Kaslo, BC

					Sample Location	**Spill Puddle[1]**	**WB-1**	**Hain[3]**	**751**	**WB-2**	**722**
					Sampling Date	2018-07-31	7-Nov-18	20-Aug-18	7-Nov-18	7-Nov-18	7-Nov-18
Parameter	**RDL**	**BC CSR AW**	**BC CSR IW**	**BC CSR LW**	**BC CSR DW**						
Benzene	0.5	400	ns	ns	5	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	1	ns	ns	100	100	<10.0	<1.0	-	<1.0	<1.0	<1.0
Bromoform	1	ns	ns	100	100	<10.0	<1.0	-	<1.0	<1.0	<1.0
Carbon tetrachloride	0.5	130	ns	5	2	***<5.0***	<0.5	-	<0.5	<0.5	<0.5
Chlorobenzene	1	13	ns	ns	80	<10.0	<1.0	-	<1.0	<1.0	<1.0
Chloroethane	2	ns	ns	ns	ns	<20.0	<2.0	-	<2.0	<2.0	<2.0
Chloroform	1	20	ns	100	100	<10.0	<1.0	-	<1.0	<1.0	<1.0
Dibromochloromethane	1	ns	ns	100	100	<10.0	<1.0	-	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.3	ns	ns	ns	0.5	***<3.0***	<0.3	-	<0.3	<0.3	<0.3
Dibromomethane	1	ns	ns	ns	ns	<10.0	<1.0	-	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	0.5	7	ns	ns	200	***<8.0***	<0.5	-	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	1	1500	ns	ns	ns	<10.0	<1.0	-	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	1	260	ns	ns	5	***<10.0***	<1.0	-	<1.0	<1.0	<1.0
1,1-Dichloroethane	1	ns	ns	ns	30	<10.0	<1.0	-	<1.0	<1.0	<1.0
1,2-Dichloroethane	1	1000	ns	5	5	***<10.0***	<1.0	-	<1.0	<1.0	<1.0
1,1-Dichloroethene	1	ns	ns	ns	14	<10.0	<1.0	-	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	1	ns	ns	ns	8	<10.0	<1.0	-	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	1	ns	ns	ns	80	<10.0	<1.0	-	<1.0	<1.0	<1.0
Dichloromethane	3	980	ns	50	50	<30.0	<3.0	-	<3.0	<3.0	<3.0
1,2-Dichloropropane	1	ns	ns	ns	4.5	<10.0	<1.0	-	<1.0	<1.0	<1.0
1,3-Dichloropropene	1	ns	ns	ns	80	<10.0	<1.0	-	<1.0	<1.0	<1.0
Ethylbenzene	1	2000	ns	ns	140	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl tert-butyl ether	1	34000	ns	11000	95	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	1	720	ns	ns	800	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	0.5	ns	ns	ns	0.8	<5.0	<0.5	-	<0.5	<0.5	<0.5
Tetrachloroethene	1	1100	ns	ns	30	<10.0	<1.0	-	<1.0	<1.0	<1.0
Toluene	1	5	ns	ns	60	***<10.0***	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	1	ns	ns	ns	8000	<10.0	<1.0	-	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	1	ns	ns	ns	3	***<10.0***	<1.0	-	<1.0	<1.0	<1.0
Trichloroethene	1	200	ns	50	5	***<10.0***	<1.0	-	<1.0	<1.0	<1.0
Trichlorofluoromethane	1	ns	ns	ns	1000	<10.0	<1.0	-	<1.0	<1.0	<1.0
Vinyl chloride	1	ns	ns	ns	2	***<10.0***	<1.0	-	<1.0	<1.0	<1.0
Xylenes (total)	2	300	ns	ns	90	79.1	<2.0	<2.0	<2.0	<2.0	<2.0

NOTES:

All values in ug/L

1	Sample collected by Village of Kaslo Public Works in container that would have resulted in bias low volatile concentrations. Analyzed by CARO Analytical.
3	Sample collected by homeowner at 751 Kaslo Road West. Analyzed by CARO Analytical.
RDL	Reportable Detection Limit
BC CSR	British Columbia Ministry of Environment Contaminated Sites Regulation (BC Reg. 375/96) Generic Water Standards, Schedules 3.2.
AW	Aquatic Life standard (freshwater)
IW	Irrigation Water Use standard
LW	Livestock Watering standard
DW	Drinking Water standard
-	Not analyzed
ns	no applicable standard
a	varies with hardness
b	standard applicable to Chromium(VI)
c	varies with chloride concentration
RPD/DF	Relative percent difference or Difference factor for duplicate sample

XX	Concentration greater than BC CSR AW
XX	Concentration greater than BC CSR DW
XX	Detection limit greater than Standard

APPENDIX D

LABORATORY CERTIFICATES

CARO
ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

REPORTED TO Bear Environmental
1648 Balsam Ave, Box 76
Rossland, BC V0G 1Y0

ATTENTION Dave Diplock

PO NUMBER
PROJECT BE1825
PROJECT INFO -

WORK ORDER 8111113

RECEIVED / TEMP 2018-11-14 09:35 / 10°C
REPORTED 2018-11-21 15:23
COC NUMBER B66347

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at estclair@caro.ca

Authorized By:

Eilish St.Clair, B.Sc., C.I.T.
Client Service Representative

EStClair

TEST RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

218 (8111113-02) | Matrix: Soil | Sampled: 2018-11-07

Analyte	Result	RL	Units	Analyzed	Qualifier
BCMOE Aggregate Hydrocarbons					
EPHs10-19	< 50	50	mg/kg dry	2018-11-19	
EPHs19-32	< 50	50	mg/kg dry	2018-11-19	
LEPHs	< 50	50	mg/kg dry	N/A	
HEPHs	< 50	50	mg/kg dry	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*88*	*60-140*	*%*	*2018-11-19*	
General Parameters					
Moisture	**23.1**	1.0	% wet	2018-11-16	
Polycyclic Aromatic Hydrocarbons (PAH)					
Acenaphthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Acenaphthylene	< 0.050	0.050	mg/kg dry	2018-11-19	
Anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benz(a)anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(a)pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
2-Chloronaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Chrysene	< 0.050	0.050	mg/kg dry	2018-11-19	
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Fluorene	< 0.050	0.050	mg/kg dry	2018-11-19	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
1-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
2-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Naphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Phenanthrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Surrogate: Acenaphthene-d10	*77*	*71-118*	*%*	*2018-11-19*	
Surrogate: Chrysene-d12	*118*	*58-121*	*%*	*2018-11-19*	
Surrogate: Naphthalene-d8	*75*	*59-132*	*%*	*2018-11-19*	
Surrogate: Perylene-d12	*94*	*50-133*	*%*	*2018-11-19*	
Surrogate: Phenanthrene-d10	*79*	*72-109*	*%*	*2018-11-19*	

230 (8111113-04) | Matrix: Soil | Sampled: 2018-11-07

Analyte	Result	RL	Units	Analyzed	Qualifier
BCMOE Aggregate Hydrocarbons					
EPHs10-19	< 50	50	mg/kg dry	2018-11-19	
EPHs19-32	< 50	50	mg/kg dry	2018-11-19	
LEPHs	< 50	50	mg/kg dry	N/A	
HEPHs	< 50	50	mg/kg dry	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*100*	*60-140*	*%*	*2018-11-19*	

TEST RESULTS

230 (8111113-04) | Matrix: Soil | Sampled: 2018-11-07, Continued

General Parameters

Analyte	Result	RL	Units	Analyzed	Qualifier
Moisture	**8.2**	1.0	% wet	2018-11-16	

Polycyclic Aromatic Hydrocarbons (PAH)

Analyte	Result	RL	Units	Analyzed	Qualifier
Acenaphthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Acenaphthylene	< 0.050	0.050	mg/kg dry	2018-11-19	
Anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benz(a)anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(a)pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
2-Chloronaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Chrysene	< 0.050	0.050	mg/kg dry	2018-11-19	
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Fluorene	< 0.050	0.050	mg/kg dry	2018-11-19	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
1-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
2-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Naphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Phenanthrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Surrogate: Acenaphthene-d10	*74*	*71-118*	%	*2018-11-19*	
Surrogate: Chrysene-d12	*112*	*58-121*	%	*2018-11-19*	
Surrogate: Naphthalene-d8	*72*	*59-132*	%	*2018-11-19*	
Surrogate: Perylene-d12	*94*	*50-133*	%	*2018-11-19*	
Surrogate: Phenanthrene-d10	*74*	*72-109*	%	*2018-11-19*	

243 (8111113-05) | Matrix: Soil | Sampled: 2018-11-07

BCMOE Aggregate Hydrocarbons

Analyte	Result	RL	Units	Analyzed	Qualifier
EPHs10-19	< 50	50	mg/kg dry	2018-11-19	
EPHs19-32	< 50	50	mg/kg dry	2018-11-19	
LEPHs	< 50	50	mg/kg dry	N/A	
HEPHs	< 50	50	mg/kg dry	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*119*	*60-140*	%	*2018-11-19*	

General Parameters

Analyte	Result	RL	Units	Analyzed	Qualifier
Moisture	**25.5**	1.0	% wet	2018-11-16	

Polycyclic Aromatic Hydrocarbons (PAH)

Analyte	Result	RL	Units	Analyzed	Qualifier
Acenaphthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Acenaphthylene	< 0.050	0.050	mg/kg dry	2018-11-19	

CARO
ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
243 (8111113-05) | Matrix: Soil | Sampled: 2018-11-07, Continued					
Polycyclic Aromatic Hydrocarbons (PAH), Continued					
Anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benz(a)anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(a)pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
2-Chloronaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Chrysene	< 0.050	0.050	mg/kg dry	2018-11-19	
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Fluorene	< 0.050	0.050	mg/kg dry	2018-11-19	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
1-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
2-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Naphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Phenanthrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Surrogate: Acenaphthene-d10	*76*	*71-118*	%	*2018-11-19*	
Surrogate: Chrysene-d12	*116*	*58-121*	%	*2018-11-19*	
Surrogate: Naphthalene-d8	*74*	*59-132*	%	*2018-11-19*	
Surrogate: Perylene-d12	*96*	*50-133*	%	*2018-11-19*	
Surrogate: Phenanthrene-d10	*77*	*72-109*	%	*2018-11-19*	
248 (8111113-06) | Matrix: Soil | Sampled: 2018-11-07					
BCMOE Aggregate Hydrocarbons					
EPHs10-19	< 50	50	mg/kg dry	2018-11-19	
EPHs19-32	**100**	50	mg/kg dry	2018-11-19	
LEPHs	< 50	50	mg/kg dry	N/A	
HEPHs	**100**	50	mg/kg dry	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*125*	*60-140*	%	*2018-11-19*	
General Parameters					
Moisture	**23.3**	1.0	% wet	2018-11-16	
Polycyclic Aromatic Hydrocarbons (PAH)					
Acenaphthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Acenaphthylene	< 0.050	0.050	mg/kg dry	2018-11-19	
Anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benz(a)anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(a)pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg dry	2018-11-19	

TEST RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

248 (8111113-06) | Matrix: Soil | Sampled: 2018-11-07, Continued

Polycyclic Aromatic Hydrocarbons (PAH), Continued

Analyte	Result	RL	Units	Analyzed	Qualifier
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
2-Chloronaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Chrysene	< 0.050	0.050	mg/kg dry	2018-11-19	
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Fluorene	< 0.050	0.050	mg/kg dry	2018-11-19	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
1-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
2-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Naphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Phenanthrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Surrogate: Acenaphthene-d10	*75*	*71-118*	%	*2018-11-19*	
Surrogate: Chrysene-d12	*112*	*58-121*	%	*2018-11-19*	
Surrogate: Naphthalene-d8	*71*	*59-132*	%	*2018-11-19*	
Surrogate: Perylene-d12	*97*	*50-133*	%	*2018-11-19*	
Surrogate: Phenanthrene-d10	*75*	*72-109*	%	*2018-11-19*	

260 (8111113-07) | Matrix: Soil | Sampled: 2018-11-07

BCMOE Aggregate Hydrocarbons

Analyte	Result	RL	Units	Analyzed	Qualifier
EPHs10-19	< 50	50	mg/kg dry	2018-11-19	
EPHs19-32	< 50	50	mg/kg dry	2018-11-19	
LEPHs	< 50	50	mg/kg dry	N/A	
HEPHs	< 50	50	mg/kg dry	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*109*	*60-140*	%	*2018-11-19*	

General Parameters

Analyte	Result	RL	Units	Analyzed	Qualifier
Moisture	**7.0**	1.0	% wet	2018-11-16	

Polycyclic Aromatic Hydrocarbons (PAH)

Analyte	Result	RL	Units	Analyzed	Qualifier
Acenaphthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Acenaphthylene	< 0.050	0.050	mg/kg dry	2018-11-19	
Anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benz(a)anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(a)pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg dry	2018-11-19	
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	
2-Chloronaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Chrysene	< 0.050	0.050	mg/kg dry	2018-11-19	
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg dry	2018-11-19	
Fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-19	

TEST RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

260 (8111113-07) | Matrix: Soil | Sampled: 2018-11-07, Continued

Polycyclic Aromatic Hydrocarbons (PAH), Continued

Analyte	Result	RL	Units	Analyzed	Qualifier
Fluorene	< 0.050	0.050	mg/kg dry	2018-11-19	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
1-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
2-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Naphthalene	< 0.050	0.050	mg/kg dry	2018-11-19	
Phenanthrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Pyrene	< 0.050	0.050	mg/kg dry	2018-11-19	
Surrogate: Acenaphthene-d10	*79*	*71-118*	*%*	*2018-11-19*	
Surrogate: Chrysene-d12	*118*	*58-121*	*%*	*2018-11-19*	
Surrogate: Naphthalene-d8	*77*	*59-132*	*%*	*2018-11-19*	
Surrogate: Perylene-d12	*103*	*50-133*	*%*	*2018-11-19*	
Surrogate: Phenanthrene-d10	*80*	*72-109*	*%*	*2018-11-19*	

South (8111113-08) | Matrix: Soil | Sampled: 2018-11-07

BCMOE Aggregate Hydrocarbons

Analyte	Result	RL	Units	Analyzed	Qualifier
EPHs10-19	< 50	50	mg/kg dry	2018-11-19	
EPHs19-32	< 50	50	mg/kg dry	2018-11-19	
LEPHs	< 50	50	mg/kg dry	N/A	
HEPHs	< 50	50	mg/kg dry	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*84*	*60-140*	*%*	*2018-11-19*	

General Parameters

Analyte	Result	RL	Units	Analyzed	Qualifier
Moisture	< 1.0	1.0	% wet	2018-11-16	

Polycyclic Aromatic Hydrocarbons (PAH)

Analyte	Result	RL	Units	Analyzed	Qualifier
Acenaphthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Acenaphthylene	< 0.050	0.050	mg/kg dry	2018-11-20	
Anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benz(a)anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(a)pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
2-Chloronaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Chrysene	< 0.050	0.050	mg/kg dry	2018-11-20	
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Fluorene	< 0.050	0.050	mg/kg dry	2018-11-20	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
1-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
2-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Naphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	

TEST RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
South (8111113-08) | Matrix: Soil | Sampled: 2018-11-07, Continued					
Polycyclic Aromatic Hydrocarbons (PAH), Continued					
Phenanthrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Surrogate: Acenaphthene-d10	*72*	*71-118*	%	*2018-11-20*	
Surrogate: Chrysene-d12	*112*	*58-121*	%	*2018-11-20*	
Surrogate: Naphthalene-d8	*72*	*59-132*	%	*2018-11-20*	
Surrogate: Perylene-d12	*90*	*50-133*	%	*2018-11-20*	
Surrogate: Phenanthrene-d10	*77*	*72-109*	%	*2018-11-20*	
West (8111113-09) | Matrix: Soil | Sampled: 2018-11-07					
BCMOE Aggregate Hydrocarbons					
EPHs10-19	< 50	50	mg/kg dry	2018-11-19	
EPHs19-32	< 50	50	mg/kg dry	2018-11-19	
LEPHs	< 50	50	mg/kg dry	N/A	
HEPHs	< 50	50	mg/kg dry	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*74*	*60-140*	%	*2018-11-19*	
General Parameters					
Moisture	< 1.0	1.0	% wet	2018-11-16	
Polycyclic Aromatic Hydrocarbons (PAH)					
Acenaphthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Acenaphthylene	< 0.050	0.050	mg/kg dry	2018-11-20	
Anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benz(a)anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(a)pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
2-Chloronaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Chrysene	< 0.050	0.050	mg/kg dry	2018-11-20	
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Fluorene	< 0.050	0.050	mg/kg dry	2018-11-20	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
1-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
2-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Naphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Phenanthrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Surrogate: Acenaphthene-d10	*72*	*71-118*	%	*2018-11-20*	
Surrogate: Chrysene-d12	*109*	*58-121*	%	*2018-11-20*	
Surrogate: Naphthalene-d8	*70*	*59-132*	%	*2018-11-20*	

TEST RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
West (8111113-09) | Matrix: Soil | Sampled: 2018-11-07, Continued					
Polycyclic Aromatic Hydrocarbons (PAH), Continued					
Surrogate: Perylene-d12	*87*	*50-133*	%	*2018-11-20*	
Surrogate: Phenanthrene-d10	*72*	*72-109*	%	*2018-11-20*	
North (8111113-10) | Matrix: Soil | Sampled: 2018-11-07					
BCMOE Aggregate Hydrocarbons					
EPHs10-19	< 50	50	mg/kg dry	2018-11-19	
EPHs19-32	< 50	50	mg/kg dry	2018-11-19	
LEPHs	< 50	50	mg/kg dry	N/A	
HEPHs	< 50	50	mg/kg dry	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*83*	*60-140*	%	*2018-11-19*	
General Parameters					
Moisture	**2.4**	1.0	% wet	2018-11-16	
Polycyclic Aromatic Hydrocarbons (PAH)					
Acenaphthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Acenaphthylene	< 0.050	0.050	mg/kg dry	2018-11-20	
Anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benz(a)anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(a)pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
2-Chloronaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Chrysene	< 0.050	0.050	mg/kg dry	2018-11-20	
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Fluorene	< 0.050	0.050	mg/kg dry	2018-11-20	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
1-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
2-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Naphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Phenanthrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Surrogate: Acenaphthene-d10	*78*	*71-118*	%	*2018-11-20*	
Surrogate: Chrysene-d12	*114*	*58-121*	%	*2018-11-20*	
Surrogate: Naphthalene-d8	*76*	*59-132*	%	*2018-11-20*	
Surrogate: Perylene-d12	*89*	*50-133*	%	*2018-11-20*	
Surrogate: Phenanthrene-d10	*78*	*72-109*	%	*2018-11-20*	
East (8111113-11) | Matrix: Soil | Sampled: 2018-11-07					

TEST RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
East (8111113-11) | Matrix: Soil | Sampled: 2018-11-07, Continued					
BCMOE Aggregate Hydrocarbons					
EPHs10-19	< 50	50	mg/kg dry	2018-11-19	
EPHs19-32	< 50	50	mg/kg dry	2018-11-19	
LEPHs	< 50	50	mg/kg dry	N/A	
HEPHs	< 50	50	mg/kg dry	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*98*	*60-140*	*%*	*2018-11-19*	
General Parameters					
Moisture	**2.8**	1.0	% wet	2018-11-16	
Polycyclic Aromatic Hydrocarbons (PAH)					
Acenaphthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Acenaphthylene	< 0.050	0.050	mg/kg dry	2018-11-20	
Anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benz(a)anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(a)pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
2-Chloronaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Chrysene	< 0.050	0.050	mg/kg dry	2018-11-20	
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Fluorene	< 0.050	0.050	mg/kg dry	2018-11-20	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
1-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
2-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Naphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Phenanthrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Surrogate: Acenaphthene-d10	*79*	*71-118*	*%*	*2018-11-20*	
Surrogate: Chrysene-d12	*120*	*58-121*	*%*	*2018-11-20*	
Surrogate: Naphthalene-d8	*76*	*59-132*	*%*	*2018-11-20*	
Surrogate: Perylene-d12	*91*	*50-133*	*%*	*2018-11-20*	
Surrogate: Phenanthrene-d10	*80*	*72-109*	*%*	*2018-11-20*	
Base (8111113-12) | Matrix: Soil | Sampled: 2018-11-07					
BCMOE Aggregate Hydrocarbons					
EPHs10-19	< 50	50	mg/kg dry	2018-11-19	
EPHs19-32	< 50	50	mg/kg dry	2018-11-19	
LEPHs	< 50	50	mg/kg dry	N/A	
HEPHs	< 50	50	mg/kg dry	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*107*	*60-140*	*%*	*2018-11-19*	

TEST RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
Base (8111113-12) | Matrix: Soil | Sampled: 2018-11-07, Continued					
General Parameters					
Moisture	**3.1**	1.0	% wet	2018-11-16	
Polycyclic Aromatic Hydrocarbons (PAH)					
Acenaphthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Acenaphthylene	< 0.050	0.050	mg/kg dry	2018-11-20	
Anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benz(a)anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(a)pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
2-Chloronaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Chrysene	< 0.050	0.050	mg/kg dry	2018-11-20	
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Fluorene	< 0.050	0.050	mg/kg dry	2018-11-20	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
1-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
2-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Naphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Phenanthrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Surrogate: Acenaphthene-d10	*75*	*71-118*	*%*	*2018-11-20*	
Surrogate: Chrysene-d12	*111*	*58-121*	*%*	*2018-11-20*	
Surrogate: Naphthalene-d8	*71*	*59-132*	*%*	*2018-11-20*	
Surrogate: Perylene-d12	*91*	*50-133*	*%*	*2018-11-20*	
Surrogate: Phenanthrene-d10	*73*	*72-109*	*%*	*2018-11-20*	
SP1-1 (8111113-13) | Matrix: Soil | Sampled: 2018-11-07					
BCMOE Aggregate Hydrocarbons					
VHs (6-10)	< 20	20	mg/kg dry	2018-11-18	
VPHs	< 20	20	mg/kg dry	N/A	
EPHs10-19	< 50	50	mg/kg dry	2018-11-19	
EPHs19-32	< 50	50	mg/kg dry	2018-11-19	
LEPHs	< 50	50	mg/kg dry	N/A	
HEPHs	< 50	50	mg/kg dry	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*86*	*60-140*	*%*	*2018-11-19*	
General Parameters					
Moisture	**9.1**	1.0	% wet	2018-11-16	
pH (1:2 H2O Solution)	**8.44**	0.10	pH units	2018-11-20	

TEST RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825
WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
SP1-1 (8111113-13) | Matrix: Soil | Sampled: 2018-11-07, Continued					
Polycyclic Aromatic Hydrocarbons (PAH)					
Acenaphthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Acenaphthylene	< 0.050	0.050	mg/kg dry	2018-11-20	
Anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benz(a)anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(a)pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg dry	2018-11-20	
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
2-Chloronaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Chrysene	< 0.050	0.050	mg/kg dry	2018-11-20	
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg dry	2018-11-20	
Fluoranthene	< 0.050	0.050	mg/kg dry	2018-11-20	
Fluorene	< 0.050	0.050	mg/kg dry	2018-11-20	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
1-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
2-Methylnaphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Naphthalene	< 0.050	0.050	mg/kg dry	2018-11-20	
Phenanthrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Pyrene	< 0.050	0.050	mg/kg dry	2018-11-20	
Surrogate: Acenaphthene-d10	*81*	*71-118*	%	*2018-11-20*	
Surrogate: Chrysene-d12	*118*	*58-121*	%	*2018-11-20*	
Surrogate: Naphthalene-d8	*77*	*59-132*	%	*2018-11-20*	
Surrogate: Perylene-d12	*88*	*50-133*	%	*2018-11-20*	
Surrogate: Phenanthrene-d10	*80*	*72-109*	%	*2018-11-20*	
Strong Acid Leachable Metals					
Aluminum	**13200**	40	mg/kg dry	2018-11-16	
Antimony	**0.98**	0.10	mg/kg dry	2018-11-16	
Arsenic	**10.2**	0.30	mg/kg dry	2018-11-16	
Barium	**20.9**	1.0	mg/kg dry	2018-11-16	
Beryllium	**0.21**	0.10	mg/kg dry	2018-11-16	
Boron	< 2.0	2.0	mg/kg dry	2018-11-16	
Cadmium	**1.01**	0.040	mg/kg dry	2018-11-16	
Chromium	**40.6**	1.0	mg/kg dry	2018-11-16	
Cobalt	**13.5**	0.10	mg/kg dry	2018-11-16	
Copper	**30.2**	0.40	mg/kg dry	2018-11-16	
Iron	**32400**	20	mg/kg dry	2018-11-16	
Lead	**14.0**	0.20	mg/kg dry	2018-11-16	
Lithium	**17.2**	0.10	mg/kg dry	2018-11-16	
Manganese	**442**	0.40	mg/kg dry	2018-11-16	
Mercury	< 0.040	0.040	mg/kg dry	2018-11-16	
Molybdenum	**1.89**	0.10	mg/kg dry	2018-11-16	
Nickel	**52.2**	0.60	mg/kg dry	2018-11-16	

TEST RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
SP1-1 (8111113-13) | Matrix: Soil | Sampled: 2018-11-07, Continued					
Strong Acid Leachable Metals, Continued					
Selenium	**0.41**	0.20	mg/kg dry	2018-11-16	
Silver	**0.19**	0.10	mg/kg dry	2018-11-16	
Strontium	**64.1**	0.20	mg/kg dry	2018-11-16	
Thallium	< 0.10	0.10	mg/kg dry	2018-11-16	
Tin	**0.28**	0.20	mg/kg dry	2018-11-16	
Tungsten	< 0.20	0.20	mg/kg dry	2018-11-16	
Uranium	**0.450**	0.050	mg/kg dry	2018-11-16	
Vanadium	**23.0**	1.0	mg/kg dry	2018-11-16	
Zinc	**110**	2.0	mg/kg dry	2018-11-16	
Volatile Organic Compounds (VOC)					
Benzene	< 0.020	0.020	mg/kg dry	2018-11-18	
Bromodichloromethane	< 0.100	0.100	mg/kg dry	2018-11-18	
Bromoform	< 0.100	0.100	mg/kg dry	2018-11-18	
Carbon tetrachloride	< 0.050	0.050	mg/kg dry	2018-11-18	
Chlorobenzene	< 0.050	0.050	mg/kg dry	2018-11-18	
Chloroform	< 0.050	0.050	mg/kg dry	2018-11-18	
Dibromochloromethane	< 0.100	0.100	mg/kg dry	2018-11-18	
1,2-Dibromoethane	< 0.100	0.100	mg/kg dry	2018-11-18	
Dibromomethane	< 0.100	0.100	mg/kg dry	2018-11-18	
1,2-Dichlorobenzene	< 0.050	0.050	mg/kg dry	2018-11-18	
1,3-Dichlorobenzene	< 0.050	0.050	mg/kg dry	2018-11-18	
1,4-Dichlorobenzene	< 0.050	0.050	mg/kg dry	2018-11-18	
1,1-Dichloroethane	< 0.050	0.050	mg/kg dry	2018-11-18	
1,2-Dichloroethane	< 0.050	0.050	mg/kg dry	2018-11-18	
1,1-Dichloroethylene	< 0.050	0.050	mg/kg dry	2018-11-18	
cis-1,2-Dichloroethylene	< 0.050	0.050	mg/kg dry	2018-11-18	
trans-1,2-Dichloroethylene	< 0.050	0.050	mg/kg dry	2018-11-18	
Dichloromethane	< 0.100	0.100	mg/kg dry	2018-11-18	
1,2-Dichloropropane	< 0.050	0.050	mg/kg dry	2018-11-18	
1,3-Dichloropropene (cis + trans)	< 0.050	0.050	mg/kg dry	2018-11-18	
Ethylbenzene	< 0.050	0.050	mg/kg dry	2018-11-18	
Methyl tert-butyl ether	< 0.040	0.040	mg/kg dry	2018-11-18	
Styrene	< 0.050	0.050	mg/kg dry	2018-11-18	
1,1,2,2-Tetrachloroethane	< 0.050	0.050	mg/kg dry	2018-11-18	
Tetrachloroethylene	< 0.050	0.050	mg/kg dry	2018-11-18	
Toluene	< 0.200	0.200	mg/kg dry	2018-11-18	
1,1,1-Trichloroethane	< 0.050	0.050	mg/kg dry	2018-11-18	
1,1,2-Trichloroethane	< 0.050	0.050	mg/kg dry	2018-11-18	
Trichloroethylene	< 0.040	0.040	mg/kg dry	2018-11-18	
Trichlorofluoromethane	< 0.100	0.100	mg/kg dry	2018-11-18	
Vinyl chloride	< 0.100	0.100	mg/kg dry	2018-11-18	
Xylenes (total)	< 0.100	0.100	mg/kg dry	2018-11-18	

TEST RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
SP1-1 (8111113-13) | Matrix: Soil | Sampled: 2018-11-07, Continued					
Volatile Organic Compounds (VOC), Continued					
Surrogate: Toluene-d8	*74*	*60-140*	%	*2018-11-18*	
Surrogate: 4-Bromofluorobenzene	*91*	*60-140*	%	*2018-11-18*	
Surrogate: 1,4-Dichlorobenzene-d4	*80*	*60-140*	%	*2018-11-18*	
WB-1 (8111113-18) | Matrix: Water | Sampled: 2018-11-07					
BCMOE Aggregate Hydrocarbons					
VHw (6-10)	< 100	100	µg/L	2018-11-20	
VPHw	< 100	100	µg/L	N/A	
EPHw10-19	< 250	250	µg/L	2018-11-20	S09
EPHw19-32	< 250	250	µg/L	2018-11-20	S09
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*54*	*60-140*	%	*2018-11-20*	S09
Calculated Parameters					
Hardness, Total (as CaCO3)	**142**	0.500	mg/L	N/A	
Polycyclic Aromatic Hydrocarbons (PAH)					
Acenaphthene	< 0.050	0.050	µg/L	2018-11-21	
Acenaphthylene	< 0.200	0.200	µg/L	2018-11-21	
Acridine	< 0.050	0.050	µg/L	2018-11-21	
Anthracene	< 0.010	0.010	µg/L	2018-11-21	
Benz(a)anthracene	< 0.010	0.010	µg/L	2018-11-21	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2018-11-21	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2018-11-21	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2018-11-21	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2018-11-21	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2018-11-21	
Chrysene	< 0.050	0.050	µg/L	2018-11-21	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2018-11-21	
Fluoranthene	< 0.030	0.030	µg/L	2018-11-21	
Fluorene	< 0.050	0.050	µg/L	2018-11-21	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2018-11-21	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2018-11-21	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2018-11-21	
Naphthalene	< 0.200	0.200	µg/L	2018-11-21	
Phenanthrene	< 0.100	0.100	µg/L	2018-11-21	
Pyrene	< 0.020	0.020	µg/L	2018-11-21	
Quinoline	< 0.050	0.050	µg/L	2018-11-21	
Surrogate: Acridine-d9	*74*	*50-140*	%	*2018-11-21*	
Surrogate: Naphthalene-d8	*76*	*50-140*	%	*2018-11-21*	
Surrogate: Perylene-d12	*97*	*50-140*	%	*2018-11-21*	

TEST RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
WB-1 (8111113-18) | Matrix: Water | Sampled: 2018-11-07, Continued					
Total Metals					
Aluminum, total	< 0.0050	0.0050	mg/L	2018-11-19	
Antimony, total	< 0.00020	0.00020	mg/L	2018-11-19	
Arsenic, total	< 0.00050	0.00050	mg/L	2018-11-19	
Barium, total	**0.0078**	0.0050	mg/L	2018-11-19	
Beryllium, total	< 0.00010	0.00010	mg/L	2018-11-19	
Boron, total	**0.0135**	0.0050	mg/L	2018-11-19	
Cadmium, total	**0.000013**	0.000010	mg/L	2018-11-19	
Calcium, total	**50.1**	0.20	mg/L	2018-11-19	
Chromium, total	**0.00134**	0.00050	mg/L	2018-11-19	
Cobalt, total	< 0.00010	0.00010	mg/L	2018-11-19	
Copper, total	< 0.00040	0.00040	mg/L	2018-11-19	
Iron, total	**0.011**	0.010	mg/L	2018-11-19	
Lead, total	< 0.00020	0.00020	mg/L	2018-11-19	
Lithium, total	**0.00287**	0.00010	mg/L	2018-11-19	
Magnesium, total	**4.03**	0.010	mg/L	2018-11-19	
Manganese, total	< 0.00020	0.00020	mg/L	2018-11-19	
Mercury, total	< 0.000010	0.000010	mg/L	2018-11-20	
Molybdenum, total	**0.00084**	0.00010	mg/L	2018-11-19	
Nickel, total	< 0.00040	0.00040	mg/L	2018-11-19	
Selenium, total	< 0.00050	0.00050	mg/L	2018-11-19	
Silver, total	< 0.000050	0.000050	mg/L	2018-11-19	
Sodium, total	**1.22**	0.10	mg/L	2018-11-19	
Strontium, total	**0.250**	0.0010	mg/L	2018-11-19	
Thallium, total	< 0.000020	0.000020	mg/L	2018-11-19	
Tin, total	< 0.00020	0.00020	mg/L	2018-11-19	
Titanium, total	< 0.0050	0.0050	mg/L	2018-11-19	
Tungsten, total	< 0.0010	0.0010	mg/L	2018-11-19	
Uranium, total	**0.000266**	0.000020	mg/L	2018-11-19	
Vanadium, total	< 0.0010	0.0010	mg/L	2018-11-19	
Zinc, total	< 0.0040	0.0040	mg/L	2018-11-19	
Volatile Organic Compounds (VOC)					
Benzene	< 0.5	0.5	µg/L	2018-11-20	
Bromodichloromethane	< 1.0	1.0	µg/L	2018-11-20	
Bromoform	< 1.0	1.0	µg/L	2018-11-20	
Carbon tetrachloride	< 0.5	0.5	µg/L	2018-11-20	
Chlorobenzene	< 1.0	1.0	µg/L	2018-11-20	
Chloroethane	< 2.0	2.0	µg/L	2018-11-20	
Chloroform	< 1.0	1.0	µg/L	2018-11-20	
Dibromochloromethane	< 1.0	1.0	µg/L	2018-11-20	
1,2-Dibromoethane	< 0.3	0.3	µg/L	2018-11-20	
Dibromomethane	< 1.0	1.0	µg/L	2018-11-20	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	2018-11-20	

Analyte	Result	RL	Units	Analyzed	Qualifier
WB-1 (8111113-18) | Matrix: Water | Sampled: 2018-11-07, Continued					
Volatile Organic Compounds (VOC), Continued					
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	2018-11-20	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	2018-11-20	
1,1-Dichloroethane	< 1.0	1.0	µg/L	2018-11-20	
1,2-Dichloroethane	< 1.0	1.0	µg/L	2018-11-20	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
Dichloromethane	< 3.0	3.0	µg/L	2018-11-20	
1,2-Dichloropropane	< 1.0	1.0	µg/L	2018-11-20	
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L	2018-11-20	
Ethylbenzene	< 1.0	1.0	µg/L	2018-11-20	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	2018-11-20	
Styrene	< 1.0	1.0	µg/L	2018-11-20	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	2018-11-20	
Tetrachloroethylene	< 1.0	1.0	µg/L	2018-11-20	
Toluene	< 1.0	1.0	µg/L	2018-11-20	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	2018-11-20	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	2018-11-20	
Trichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
Trichlorofluoromethane	< 1.0	1.0	µg/L	2018-11-20	
Vinyl chloride	< 1.0	1.0	µg/L	2018-11-20	
Xylenes (total)	< 2.0	2.0	µg/L	2018-11-20	
Surrogate: Toluene-d8	*102*	*70-130*	*%*	*2018-11-20*	
Surrogate: 4-Bromofluorobenzene	*97*	*70-130*	*%*	*2018-11-20*	
Surrogate: 1,4-Dichlorobenzene-d4	*88*	*70-130*	*%*	*2018-11-20*	
WB-2 (8111113-19) | Matrix: Water | Sampled: 2018-11-07					
BCMOE Aggregate Hydrocarbons					
VHw (6-10)	< 100	100	µg/L	2018-11-20	
VPHw	< 100	100	µg/L	N/A	
EPHw10-19	< 250	250	µg/L	2018-11-20	
EPHw19-32	< 250	250	µg/L	2018-11-20	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*136*	*60-140*	*%*	*2018-11-20*	
Calculated Parameters					
Hardness, Total (as CaCO3)	**206**	0.500	mg/L	N/A	
Polycyclic Aromatic Hydrocarbons (PAH)					
Acenaphthene	< 0.050	0.050	µg/L	2018-11-21	
Acenaphthylene	< 0.200	0.200	µg/L	2018-11-21	

TEST RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825
WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
WB-2 (8111113-19) | Matrix: Water | Sampled: 2018-11-07, Continued					
Polycyclic Aromatic Hydrocarbons (PAH), Continued					
Acridine	< 0.050	0.050	µg/L	2018-11-21	
Anthracene	< 0.010	0.010	µg/L	2018-11-21	
Benz(a)anthracene	< 0.010	0.010	µg/L	2018-11-21	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2018-11-21	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2018-11-21	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2018-11-21	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2018-11-21	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2018-11-21	
Chrysene	< 0.050	0.050	µg/L	2018-11-21	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2018-11-21	
Fluoranthene	< 0.030	0.030	µg/L	2018-11-21	
Fluorene	< 0.050	0.050	µg/L	2018-11-21	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2018-11-21	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2018-11-21	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2018-11-21	
Naphthalene	< 0.200	0.200	µg/L	2018-11-21	
Phenanthrene	< 0.100	0.100	µg/L	2018-11-21	
Pyrene	< 0.020	0.020	µg/L	2018-11-21	
Quinoline	< 0.050	0.050	µg/L	2018-11-21	
Surrogate: Acridine-d9	*67*	*50-140*	%	*2018-11-21*	
Surrogate: Naphthalene-d8	*75*	*50-140*	%	*2018-11-21*	
Surrogate: Perylene-d12	*93*	*50-140*	%	*2018-11-21*	
Total Metals					
Aluminum, total	**0.0072**	0.0050	mg/L	2018-11-19	
Antimony, total	< 0.00020	0.00020	mg/L	2018-11-19	
Arsenic, total	**0.00071**	0.00050	mg/L	2018-11-19	
Barium, total	**0.0118**	0.0050	mg/L	2018-11-19	
Beryllium, total	< 0.00010	0.00010	mg/L	2018-11-19	
Boron, total	**0.0119**	0.0050	mg/L	2018-11-19	
Cadmium, total	**0.000020**	0.000010	mg/L	2018-11-19	
Calcium, total	**68.8**	0.20	mg/L	2018-11-19	
Chromium, total	**0.00123**	0.00050	mg/L	2018-11-19	
Cobalt, total	< 0.00010	0.00010	mg/L	2018-11-19	
Copper, total	< 0.00040	0.00040	mg/L	2018-11-19	
Iron, total	**0.015**	0.010	mg/L	2018-11-19	
Lead, total	< 0.00020	0.00020	mg/L	2018-11-19	
Lithium, total	**0.00401**	0.00010	mg/L	2018-11-19	
Magnesium, total	**8.25**	0.010	mg/L	2018-11-19	
Manganese, total	< 0.00020	0.00020	mg/L	2018-11-19	
Mercury, total	< 0.000010	0.000010	mg/L	2018-11-20	
Molybdenum, total	**0.00129**	0.00010	mg/L	2018-11-19	
Nickel, total	< 0.00040	0.00040	mg/L	2018-11-19	

TEST RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
WB-2 (8111113-19) | Matrix: Water | Sampled: 2018-11-07, Continued					
Total Metals, Continued					
Selenium, total	< 0.00050	0.00050	mg/L	2018-11-19	
Silver, total	< 0.000050	0.000050	mg/L	2018-11-19	
Sodium, total	**3.34**	0.10	mg/L	2018-11-19	
Strontium, total	**0.277**	0.0010	mg/L	2018-11-19	
Thallium, total	< 0.000020	0.000020	mg/L	2018-11-19	
Tin, total	< 0.00020	0.00020	mg/L	2018-11-19	
Titanium, total	< 0.0050	0.0050	mg/L	2018-11-19	
Tungsten, total	< 0.0010	0.0010	mg/L	2018-11-19	
Uranium, total	**0.000527**	0.000020	mg/L	2018-11-19	
Vanadium, total	< 0.0010	0.0010	mg/L	2018-11-19	
Zinc, total	< 0.0040	0.0040	mg/L	2018-11-19	
Volatile Organic Compounds (VOC)					
Benzene	< 0.5	0.5	µg/L	2018-11-20	
Bromodichloromethane	< 1.0	1.0	µg/L	2018-11-20	
Bromoform	< 1.0	1.0	µg/L	2018-11-20	
Carbon tetrachloride	< 0.5	0.5	µg/L	2018-11-20	
Chlorobenzene	< 1.0	1.0	µg/L	2018-11-20	
Chloroethane	< 2.0	2.0	µg/L	2018-11-20	
Chloroform	< 1.0	1.0	µg/L	2018-11-20	
Dibromochloromethane	< 1.0	1.0	µg/L	2018-11-20	
1,2-Dibromoethane	< 0.3	0.3	µg/L	2018-11-20	
Dibromomethane	< 1.0	1.0	µg/L	2018-11-20	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	2018-11-20	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	2018-11-20	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	2018-11-20	
1,1-Dichloroethane	< 1.0	1.0	µg/L	2018-11-20	
1,2-Dichloroethane	< 1.0	1.0	µg/L	2018-11-20	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
Dichloromethane	< 3.0	3.0	µg/L	2018-11-20	
1,2-Dichloropropane	< 1.0	1.0	µg/L	2018-11-20	
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L	2018-11-20	
Ethylbenzene	< 1.0	1.0	µg/L	2018-11-20	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	2018-11-20	
Styrene	< 1.0	1.0	µg/L	2018-11-20	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	2018-11-20	
Tetrachloroethylene	< 1.0	1.0	µg/L	2018-11-20	
Toluene	< 1.0	1.0	µg/L	2018-11-20	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	2018-11-20	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	2018-11-20	
Trichloroethylene	< 1.0	1.0	µg/L	2018-11-20	

CARO
ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier

WB-2 (8111113-19) | Matrix: Water | Sampled: 2018-11-07, Continued

Volatile Organic Compounds (VOC), Continued

Analyte	Result	RL	Units	Analyzed	Qualifier
Trichlorofluoromethane	< 1.0	1.0	µg/L	2018-11-20	
Vinyl chloride	< 1.0	1.0	µg/L	2018-11-20	
Xylenes (total)	< 2.0	2.0	µg/L	2018-11-20	
Surrogate: Toluene-d8	*106*	*70-130*	*%*	*2018-11-20*	
Surrogate: 4-Bromofluorobenzene	*103*	*70-130*	*%*	*2018-11-20*	
Surrogate: 1,4-Dichlorobenzene-d4	*94*	*70-130*	*%*	*2018-11-20*	

722 (8111113-20) | Matrix: Water | Sampled: 2018-11-07

BCMOE Aggregate Hydrocarbons

Analyte	Result	RL	Units	Analyzed	Qualifier
VHw (6-10)	< 100	100	µg/L	2018-11-20	
VPHw	< 100	100	µg/L	N/A	
EPHw10-19	< 250	250	µg/L	2018-11-20	
EPHw19-32	< 250	250	µg/L	2018-11-20	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*70*	*60-140*	*%*	*2018-11-20*	

Calculated Parameters

Analyte	Result	RL	Units	Analyzed	Qualifier
Hardness, Total (as CaCO3)	**143**	0.500	mg/L	N/A	

Polycyclic Aromatic Hydrocarbons (PAH)

Analyte	Result	RL	Units	Analyzed	Qualifier
Acenaphthene	< 0.050	0.050	µg/L	2018-11-21	
Acenaphthylene	< 0.200	0.200	µg/L	2018-11-21	
Acridine	< 0.050	0.050	µg/L	2018-11-21	
Anthracene	< 0.010	0.010	µg/L	2018-11-21	
Benz(a)anthracene	< 0.010	0.010	µg/L	2018-11-21	
Benzo(a)pyrene	< 0.010	0.010	µg/L	2018-11-21	
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L	2018-11-21	
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L	2018-11-21	
Benzo(k)fluoranthene	< 0.050	0.050	µg/L	2018-11-21	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2018-11-21	
Chrysene	< 0.050	0.050	µg/L	2018-11-21	
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L	2018-11-21	
Fluoranthene	< 0.030	0.030	µg/L	2018-11-21	
Fluorene	< 0.050	0.050	µg/L	2018-11-21	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L	2018-11-21	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2018-11-21	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2018-11-21	
Naphthalene	< 0.200	0.200	µg/L	2018-11-21	
Phenanthrene	< 0.100	0.100	µg/L	2018-11-21	
Pyrene	< 0.020	0.020	µg/L	2018-11-21	
Quinoline	< 0.050	0.050	µg/L	2018-11-21	

TEST RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
722 (8111113-20) | Matrix: Water | Sampled: 2018-11-07, Continued					
Polycyclic Aromatic Hydrocarbons (PAH), Continued					
Surrogate: Acridine-d9	*65*	*50-140*	*%*	*2018-11-21*	
Surrogate: Naphthalene-d8	*77*	*50-140*	*%*	*2018-11-21*	
Surrogate: Perylene-d12	*101*	*50-140*	*%*	*2018-11-21*	
Total Metals					
Aluminum, total	**0.0089**	0.0050	mg/L	2018-11-19	
Antimony, total	< 0.00020	0.00020	mg/L	2018-11-19	
Arsenic, total	**0.00056**	0.00050	mg/L	2018-11-19	
Barium, total	**0.0080**	0.0050	mg/L	2018-11-19	
Beryllium, total	< 0.00010	0.00010	mg/L	2018-11-19	
Boron, total	**0.0098**	0.0050	mg/L	2018-11-19	
Cadmium, total	**0.000012**	0.000010	mg/L	2018-11-19	
Calcium, total	**50.4**	0.20	mg/L	2018-11-19	
Chromium, total	**0.00124**	0.00050	mg/L	2018-11-19	
Cobalt, total	< 0.00010	0.00010	mg/L	2018-11-19	
Copper, total	< 0.00040	0.00040	mg/L	2018-11-19	
Iron, total	**0.027**	0.010	mg/L	2018-11-19	
Lead, total	< 0.00020	0.00020	mg/L	2018-11-19	
Lithium, total	**0.00305**	0.00010	mg/L	2018-11-19	
Magnesium, total	**4.13**	0.010	mg/L	2018-11-19	
Manganese, total	< 0.00020	0.00020	mg/L	2018-11-19	
Mercury, total	< 0.000010	0.000010	mg/L	2018-11-20	
Molybdenum, total	**0.00086**	0.00010	mg/L	2018-11-19	
Nickel, total	< 0.00040	0.00040	mg/L	2018-11-19	
Selenium, total	< 0.00050	0.00050	mg/L	2018-11-19	
Silver, total	< 0.000050	0.000050	mg/L	2018-11-19	
Sodium, total	**1.22**	0.10	mg/L	2018-11-19	
Strontium, total	**0.254**	0.0010	mg/L	2018-11-19	
Thallium, total	< 0.000020	0.000020	mg/L	2018-11-19	
Tin, total	< 0.00020	0.00020	mg/L	2018-11-19	
Titanium, total	< 0.0050	0.0050	mg/L	2018-11-19	
Tungsten, total	< 0.0010	0.0010	mg/L	2018-11-19	
Uranium, total	**0.000272**	0.000020	mg/L	2018-11-19	
Vanadium, total	< 0.0010	0.0010	mg/L	2018-11-19	
Zinc, total	**0.0254**	0.0040	mg/L	2018-11-19	
Volatile Organic Compounds (VOC)					
Benzene	< 0.5	0.5	µg/L	2018-11-20	
Bromodichloromethane	< 1.0	1.0	µg/L	2018-11-20	
Bromoform	< 1.0	1.0	µg/L	2018-11-20	
Carbon tetrachloride	< 0.5	0.5	µg/L	2018-11-20	
Chlorobenzene	< 1.0	1.0	µg/L	2018-11-20	
Chloroethane	< 2.0	2.0	µg/L	2018-11-20	

TEST RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
722 (8111113-20) | Matrix: Water | Sampled: 2018-11-07, Continued					
Volatile Organic Compounds (VOC), Continued					
Chloroform	< 1.0	1.0	µg/L	2018-11-20	
Dibromochloromethane	< 1.0	1.0	µg/L	2018-11-20	
1,2-Dibromoethane	< 0.3	0.3	µg/L	2018-11-20	
Dibromomethane	< 1.0	1.0	µg/L	2018-11-20	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	2018-11-20	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	2018-11-20	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	2018-11-20	
1,1-Dichloroethane	< 1.0	1.0	µg/L	2018-11-20	
1,2-Dichloroethane	< 1.0	1.0	µg/L	2018-11-20	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
Dichloromethane	< 3.0	3.0	µg/L	2018-11-20	
1,2-Dichloropropane	< 1.0	1.0	µg/L	2018-11-20	
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L	2018-11-20	
Ethylbenzene	< 1.0	1.0	µg/L	2018-11-20	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	2018-11-20	
Styrene	< 1.0	1.0	µg/L	2018-11-20	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	2018-11-20	
Tetrachloroethylene	< 1.0	1.0	µg/L	2018-11-20	
Toluene	< 1.0	1.0	µg/L	2018-11-20	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	2018-11-20	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	2018-11-20	
Trichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
Trichlorofluoromethane	< 1.0	1.0	µg/L	2018-11-20	
Vinyl chloride	< 1.0	1.0	µg/L	2018-11-20	
Xylenes (total)	< 2.0	2.0	µg/L	2018-11-20	
Surrogate: Toluene-d8	*102*	*70-130*	%	*2018-11-20*	
Surrogate: 4-Bromofluorobenzene	*98*	*70-130*	%	*2018-11-20*	
Surrogate: 1,4-Dichlorobenzene-d4	*89*	*70-130*	%	*2018-11-20*	
751 (8111113-21) | Matrix: Water | Sampled: 2018-11-07					
BCMOE Aggregate Hydrocarbons					
VHw (6-10)	< 100	100	µg/L	2018-11-20	
VPHw	< 100	100	µg/L	N/A	
EPHw10-19	< 250	250	µg/L	2018-11-20	
EPHw19-32	< 250	250	µg/L	2018-11-20	
LEPHw	< 250	250	µg/L	N/A	
HEPHw	< 250	250	µg/L	N/A	
Surrogate: 2-Methylnonane (EPH/F2-4)	*67*	*60-140*	%	*2018-11-20*	
Calculated Parameters					

TEST RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
751 (8111113-21) | Matrix: Water | Sampled: 2018-11-07, Continued					
Calculated Parameters, Continued					
Hardness, Total (as CaCO3)	**144**	0.500	mg/L	N/A	
Polycyclic Aromatic Hydrocarbons (PAH)					
Acenaphthene	< 0.050	0.050	µg/L	2018-11-21	
Acenaphthylene	< 0.200	0.200	µg/L	2018-11-21	
Acridine	< 0.050	0.050	µg/L	2018-11-21	
Anthracene	< 0.010	0.010	µg/L	2018-11-21	
Benz(a)anthracene	**0.023**	0.010	µg/L	2018-11-21	
Benzo(a)pyrene	**0.056**	0.010	µg/L	2018-11-21	
Benzo(b+j)fluoranthene	**0.109**	0.050	µg/L	2018-11-21	
Benzo(g,h,i)perylene	**0.116**	0.050	µg/L	2018-11-21	
Benzo(k)fluoranthene	**0.073**	0.050	µg/L	2018-11-21	
2-Chloronaphthalene	< 0.100	0.100	µg/L	2018-11-21	
Chrysene	< 0.050	0.050	µg/L	2018-11-21	
Dibenz(a,h)anthracene	**0.119**	0.010	µg/L	2018-11-21	
Fluoranthene	< 0.030	0.030	µg/L	2018-11-21	
Fluorene	< 0.050	0.050	µg/L	2018-11-21	
Indeno(1,2,3-cd)pyrene	**0.095**	0.050	µg/L	2018-11-21	
1-Methylnaphthalene	< 0.100	0.100	µg/L	2018-11-21	
2-Methylnaphthalene	< 0.100	0.100	µg/L	2018-11-21	
Naphthalene	< 0.200	0.200	µg/L	2018-11-21	
Phenanthrene	< 0.100	0.100	µg/L	2018-11-21	
Pyrene	< 0.020	0.020	µg/L	2018-11-21	
Quinoline	< 0.050	0.050	µg/L	2018-11-21	
Surrogate: Acridine-d9	*76*	*50-140*	%	*2018-11-21*	
Surrogate: Naphthalene-d8	*74*	*50-140*	%	*2018-11-21*	
Surrogate: Perylene-d12	*103*	*50-140*	%	*2018-11-21*	
Total Metals					
Aluminum, total	< 0.0050	0.0050	mg/L	2018-11-19	
Antimony, total	< 0.00020	0.00020	mg/L	2018-11-19	
Arsenic, total	**0.00055**	0.00050	mg/L	2018-11-19	
Barium, total	**0.0079**	0.0050	mg/L	2018-11-19	
Beryllium, total	< 0.00010	0.00010	mg/L	2018-11-19	
Boron, total	**0.0084**	0.0050	mg/L	2018-11-19	
Cadmium, total	< 0.000010	0.000010	mg/L	2018-11-19	
Calcium, total	**50.7**	0.20	mg/L	2018-11-19	
Chromium, total	**0.00111**	0.00050	mg/L	2018-11-19	
Cobalt, total	< 0.00010	0.00010	mg/L	2018-11-19	
Copper, total	**0.0139**	0.00040	mg/L	2018-11-19	
Iron, total	**0.012**	0.010	mg/L	2018-11-19	
Lead, total	< 0.00020	0.00020	mg/L	2018-11-19	
Lithium, total	**0.00305**	0.00010	mg/L	2018-11-19	

TEST RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Analyte	Result	RL	Units	Analyzed	Qualifier
751 (8111113-21) | Matrix: Water | Sampled: 2018-11-07, Continued					
Total Metals, Continued					
Magnesium, total	**4.08**	0.010	mg/L	2018-11-19	
Manganese, total	< 0.00020	0.00020	mg/L	2018-11-19	
Mercury, total	< 0.000010	0.000010	mg/L	2018-11-20	
Molybdenum, total	**0.00086**	0.00010	mg/L	2018-11-19	
Nickel, total	< 0.00040	0.00040	mg/L	2018-11-19	
Selenium, total	< 0.00050	0.00050	mg/L	2018-11-19	
Silver, total	< 0.000050	0.000050	mg/L	2018-11-19	
Sodium, total	**1.22**	0.10	mg/L	2018-11-19	
Strontium, total	**0.252**	0.0010	mg/L	2018-11-19	
Thallium, total	< 0.000020	0.000020	mg/L	2018-11-19	
Tin, total	< 0.00020	0.00020	mg/L	2018-11-19	
Titanium, total	< 0.0050	0.0050	mg/L	2018-11-19	
Tungsten, total	< 0.0010	0.0010	mg/L	2018-11-19	
Uranium, total	**0.000277**	0.000020	mg/L	2018-11-19	
Vanadium, total	< 0.0010	0.0010	mg/L	2018-11-19	
Zinc, total	**0.0079**	0.0040	mg/L	2018-11-19	
Volatile Organic Compounds (VOC)					
Benzene	< 0.5	0.5	µg/L	2018-11-20	
Bromodichloromethane	< 1.0	1.0	µg/L	2018-11-20	
Bromoform	< 1.0	1.0	µg/L	2018-11-20	
Carbon tetrachloride	< 0.5	0.5	µg/L	2018-11-20	
Chlorobenzene	< 1.0	1.0	µg/L	2018-11-20	
Chloroethane	< 2.0	2.0	µg/L	2018-11-20	
Chloroform	< 1.0	1.0	µg/L	2018-11-20	
Dibromochloromethane	< 1.0	1.0	µg/L	2018-11-20	
1,2-Dibromoethane	< 0.3	0.3	µg/L	2018-11-20	
Dibromomethane	< 1.0	1.0	µg/L	2018-11-20	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	2018-11-20	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	2018-11-20	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	2018-11-20	
1,1-Dichloroethane	< 1.0	1.0	µg/L	2018-11-20	
1,2-Dichloroethane	< 1.0	1.0	µg/L	2018-11-20	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
Dichloromethane	< 3.0	3.0	µg/L	2018-11-20	
1,2-Dichloropropane	< 1.0	1.0	µg/L	2018-11-20	
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L	2018-11-20	
Ethylbenzene	< 1.0	1.0	µg/L	2018-11-20	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	2018-11-20	
Styrene	< 1.0	1.0	µg/L	2018-11-20	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	2018-11-20	

TEST RESULTS

Analyte	Result	RL	Units	Analyzed	Qualifier
751 (8111113-21) | Matrix: Water | Sampled: 2018-11-07, Continued					
Volatile Organic Compounds (VOC), Continued					
Tetrachloroethylene	< 1.0	1.0	µg/L	2018-11-20	
Toluene	< 1.0	1.0	µg/L	2018-11-20	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	2018-11-20	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	2018-11-20	
Trichloroethylene	< 1.0	1.0	µg/L	2018-11-20	
Trichlorofluoromethane	< 1.0	1.0	µg/L	2018-11-20	
Vinyl chloride	< 1.0	1.0	µg/L	2018-11-20	
Xylenes (total)	< 2.0	2.0	µg/L	2018-11-20	
Surrogate: Toluene-d8	*101*	*70-130*	%	*2018-11-20*	
Surrogate: 4-Bromofluorobenzene	*98*	*70-130*	%	*2018-11-20*	
Surrogate: 1,4-Dichlorobenzene-d4	*87*	*70-130*	%	*2018-11-20*	

Sample Qualifiers:

S09	The surrogate recovery for this sample is outside of established control limits .

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Analysis Description	Method Ref.	Technique	Location
EPH in Soil	EPA 3570* / BCMOE EPHs*	Shaker Extraction (Hexane-Acetone 1:1) / Gas Chromatography (GC-FID)	Richmond
EPH in Water	EPA 3511* / BCMOE EPHw	Hexane MicroExtraction (Base/Neutral) / Gas Chromatography (GC-FID)	Richmond
Hardness in Water	SM 2340 B* (2011)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
HEPHs in Soil	BCMOE LEPH/HEPH	Calculation	N/A
HEPHw in Water	BCMOE LEPH/HEPH	Calculation	N/A
LEPHs in Soil	BCMOE LEPH/HEPH	Calculation	N/A
LEPHw in Water	BCMOE LEPH/HEPH	Calculation	N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Moisture in Soil	ASTM D2974-87*	Gravimetry (Dried at 105C)	N/A
pH in Soil	Carter 16.2 / SM 4500-H+ B (2011)	1:2 Soil/Water Slurry / Electrometry	Richmond
Polycyclic Aromatic Hydrocarbons in Soil	EPA 3570* / EPA 8270D	Shaker Extraction (Hexane-Acetone 1:1) / GC-MSD (SIM)	Richmond
Polycyclic Aromatic Hydrocarbons in Water	EPA 3511* / EPA 8270D	Hexane MicroExtraction (Base/Neutral) / GC-MSD (SIM)	Richmond
SALM in Soil	BCMOE SALM V.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
VH in Soil	EPA 5035A/5030B / BCMOE VHs	Methanol Extract, Purge&Trap / Purge&Trap or Headspace, Gas Chromatography (GC-FID)	Richmond
VH in Water	EPA 5030B / BCMOE VHw	Purge&Trap / Gas Chromatography (GC-FID)	Richmond
Volatile Organic Compounds in Soil	EPA 5035A/5030B / EPA 8260D	Methanol Extract, Purge&Trap / GC-MSD (SIM)	Richmond
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	Richmond
VPHs in Soil	BCMOE VPH	Calculation: VH - (Benzene + Toluene + Ethylbenzene + Xylenes + Styrene)	N/A
VPHw in Water	BCMOE VPH	Calculation: VH - (Benzene + Toluene + Ethylbenzene + Xylenes + Styrene)	N/A

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
% wet	Percent (as received basis)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/kg dry	Milligrams per kilogram (dry weight basis)
mg/L	Milligrams per litre
pH units	pH < 7 = acidic, ph > 7 = basic
µg/L	Micrograms per litre
ASTM	ASTM International Test Methods
BCMOE	British Columbia Environmental Laboratory Manual, British Columbia Ministry of Environment
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
BCMOE Aggregate Hydrocarbons, Batch B8K1334										
Blank (B8K1334-BLK1)				Prepared: 2018-11-16, Analyzed: 2018-11-18						
VHs (6-10)	< 20	20	mg/kg wet							
LCS (B8K1334-BS2)				Prepared: 2018-11-16, Analyzed: 2018-11-18						
VHs (6-10)	330	20	mg/kg wet	410		82	70-130			
Duplicate (B8K1334-DUP1)	**Source: 8111113-13**			Prepared: 2018-11-07, Analyzed: 2018-11-18						
VHs (6-10)	< 20	20	mg/kg dry		< 20				27	
BCMOE Aggregate Hydrocarbons, Batch B8K1339										
Blank (B8K1339-BLK1)				Prepared: 2018-11-20, Analyzed: 2018-11-20						
VHw (6-10)	< 100	100	µg/L							
LCS (B8K1339-BS2)				Prepared: 2018-11-20, Analyzed: 2018-11-20						
VHw (6-10)	3050	100	µg/L	3280		93	70-130			
Duplicate (B8K1339-DUP1)	**Source: 8111113-18**			Prepared: 2018-11-20, Analyzed: 2018-11-20						
VHw (6-10)	< 100	100	µg/L		< 100				19	
BCMOE Aggregate Hydrocarbons, Batch B8K1425										
Blank (B8K1425-BLK1)				Prepared: 2018-11-19, Analyzed: 2018-11-19						
EPHs10-19	< 50	50	mg/kg wet							
EPHs19-32	< 50	50	mg/kg wet							
Surrogate: 2-Methylnonane (EPH/F2-4)	*16.3*		*mg/kg wet*	16.6		*98*	*60-140*			
LCS (B8K1425-BS2)				Prepared: 2018-11-19, Analyzed: 2018-11-19						
EPHs10-19	2500	50	mg/kg wet	2830		89	70-130			
EPHs19-32	3000	50	mg/kg wet	4100		74	70-130			
Surrogate: 2-Methylnonane (EPH/F2-4)	*18.9*		*mg/kg wet*	16.3		*116*	*60-140*			
Duplicate (B8K1425-DUP1)	**Source: 8111113-08**			Prepared: 2018-11-19, Analyzed: 2018-11-19						
EPHs10-19	< 50	50	mg/kg dry		< 50				40	
EPHs19-32	< 50	50	mg/kg dry		< 50				40	
Surrogate: 2-Methylnonane (EPH/F2-4)	*16.8*		*mg/kg dry*	16.1		*104*	*60-140*			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

BCMOE Aggregate Hydrocarbons, Batch B8K1425, Continued

Reference (B8K1425-SRM1) Prepared: 2018-11-19, Analyzed: 2018-11-19

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
EPHs10-19	3400	75	mg/kg wet	3020		113	65-130			
EPHs19-32	4500	75	mg/kg wet	4330		105	65-130			
Surrogate: 2-Methylnonane (EPH/F2-4)	*28.8*		*mg/kg wet*	24.9		*116*	*60-140*			

BCMOE Aggregate Hydrocarbons, Batch B8K1507

Blank (B8K1507-BLK1) Prepared: 2018-11-20, Analyzed: 2018-11-20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
EPHw10-19	< 250	250	µg/L							
EPHw19-32	< 250	250	µg/L							
Surrogate: 2-Methylnonane (EPH/F2-4)	*285*		*µg/L*	444		*64*	*60-140*			

LCS (B8K1507-BS2) Prepared: 2018-11-20, Analyzed: 2018-11-20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
EPHw10-19	13100	250	µg/L	15400		85	70-130			
EPHw19-32	17500	250	µg/L	22200		79	70-130			
Surrogate: 2-Methylnonane (EPH/F2-4)	*406*		*µg/L*	444		*91*	*60-140*			

General Parameters, Batch B8K1228

Duplicate (B8K1228-DUP2) **Source: 8111113-11** Prepared: 2018-11-16, Analyzed: 2018-11-16

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Moisture	2.8	1.0	% wet		2.8			0.0	40	

General Parameters, Batch B8K1456

Reference (B8K1456-SRM1) Prepared: 2018-11-20, Analyzed: 2018-11-20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
pH (1:2 H2O Solution)	7.11	0.10	pH units	7.27		98	95-105			

Reference (B8K1456-SRM2) Prepared: 2018-11-20, Analyzed: 2018-11-20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
pH (1:2 H2O Solution)	7.10	0.10	pH units	7.27		98	95-105			

Polycyclic Aromatic Hydrocarbons (PAH), Batch B8K1425

Blank (B8K1425-BLK1) Prepared: 2018-11-19, Analyzed: 2018-11-19

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Acenaphthene	< 0.050	0.050	mg/kg wet							
Acenaphthylene	< 0.050	0.050	mg/kg wet							
Anthracene	< 0.050	0.050	mg/kg wet							
Benz(a)anthracene	< 0.050	0.050	mg/kg wet							
Benzo(a)pyrene	< 0.050	0.050	mg/kg wet							
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg wet							
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg wet							
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg wet							
2-Chloronaphthalene	< 0.050	0.050	mg/kg wet							
Chrysene	< 0.050	0.050	mg/kg wet							
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg wet							
Fluoranthene	< 0.050	0.050	mg/kg wet							
Fluorene	< 0.050	0.050	mg/kg wet							
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg wet							
1-Methylnaphthalene	< 0.050	0.050	mg/kg wet							
2-Methylnaphthalene	< 0.050	0.050	mg/kg wet							
Naphthalene	< 0.050	0.050	mg/kg wet							
Phenanthrene	< 0.050	0.050	mg/kg wet							
Pyrene	< 0.050	0.050	mg/kg wet							
Surrogate: Acenaphthene-d10	*1.32*		*mg/kg wet*	1.66		*80*	*71-118*			
Surrogate: Chrysene-d12	*2.00*		*mg/kg wet*	1.66		*120*	*58-121*			
Surrogate: Naphthalene-d8	*1.27*		*mg/kg wet*	1.66		*76*	*59-132*			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Polycyclic Aromatic Hydrocarbons (PAH), Batch B8K1425, Continued

Blank (B8K1425-BLK1), Continued Prepared: 2018-11-19, Analyzed: 2018-11-19

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Surrogate: Perylene-d12	*1.77*		*mg/kg wet*	1.66		*107*	*50-133*			
Surrogate: Phenanthrene-d10	*1.33*		*mg/kg wet*	1.66		*80*	*72-109*			

LCS (B8K1425-BS1) Prepared: 2018-11-19, Analyzed: 2018-11-19

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Acenaphthene	1.28	0.050	mg/kg wet	1.65		78	58-120			
Acenaphthylene	1.33	0.050	mg/kg wet	1.65		81	61-125			
Anthracene	1.36	0.050	mg/kg wet	1.67		82	69-116			
Benz(a)anthracene	1.75	0.050	mg/kg wet	1.67		105	64-115			
Benzo(a)pyrene	1.67	0.050	mg/kg wet	1.65		101	60-105			
Benzo(b+j)fluoranthene	3.87	0.050	mg/kg wet	3.33		116	57-126			
Benzo(g,h,i)perylene	1.68	0.050	mg/kg wet	1.65		102	61-132			
Benzo(k)fluoranthene	1.35	0.050	mg/kg wet	1.67		81	63-127			
2-Chloronaphthalene	1.34	0.050	mg/kg wet	1.67		80	50-140			
Chrysene	1.93	0.050	mg/kg wet	1.66		116	65-118			
Dibenz(a,h)anthracene	1.47	0.050	mg/kg wet	1.66		89	59-125			
Fluoranthene	1.26	0.050	mg/kg wet	1.63		77	77-121			
Fluorene	1.25	0.050	mg/kg wet	1.65		76	62-110			
Indeno(1,2,3-cd)pyrene	1.53	0.050	mg/kg wet	1.67		92	62-125			
1-Methylnaphthalene	1.24	0.050	mg/kg wet	1.64		76	56-122			
2-Methylnaphthalene	1.34	0.050	mg/kg wet	1.63		82	56-123			
Naphthalene	1.43	0.050	mg/kg wet	1.67		86	57-129			
Phenanthrene	1.45	0.050	mg/kg wet	1.65		88	69-115			
Pyrene	1.27	0.050	mg/kg wet	1.67		76	74-122			
Surrogate: Acenaphthene-d10	*1.47*		*mg/kg wet*	1.67		*88*	*71-118*			
Surrogate: Chrysene-d12	*1.97*		*mg/kg wet*	1.67		*118*	*58-121*			
Surrogate: Naphthalene-d8	*1.56*		*mg/kg wet*	1.67		*93*	*59-132*			
Surrogate: Perylene-d12	*1.75*		*mg/kg wet*	1.67		*105*	*50-133*			
Surrogate: Phenanthrene-d10	*1.53*		*mg/kg wet*	1.67		*92*	*72-109*			

Duplicate (B8K1425-DUP1) **Source: 8111113-08** Prepared: 2018-11-19, Analyzed: 2018-11-19

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Acenaphthene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Acenaphthylene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Anthracene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Benz(a)anthracene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Benzo(a)pyrene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Benzo(b+j)fluoranthene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Benzo(g,h,i)perylene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Benzo(k)fluoranthene	< 0.050	0.050	mg/kg dry		< 0.050				50	
2-Chloronaphthalene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Chrysene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Dibenz(a,h)anthracene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Fluoranthene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Fluorene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	mg/kg dry		< 0.050				50	
1-Methylnaphthalene	< 0.050	0.050	mg/kg dry		< 0.050				50	
2-Methylnaphthalene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Naphthalene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Phenanthrene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Pyrene	< 0.050	0.050	mg/kg dry		< 0.050				50	
Surrogate: Acenaphthene-d10	*1.28*		*mg/kg dry*	1.61		*79*	*71-118*			
Surrogate: Chrysene-d12	*1.82*		*mg/kg dry*	1.61		*113*	*58-121*			
Surrogate: Naphthalene-d8	*1.16*		*mg/kg dry*	1.61		*72*	*59-132*			
Surrogate: Perylene-d12	*1.41*		*mg/kg dry*	1.61		*87*	*50-133*			
Surrogate: Phenanthrene-d10	*1.27*		*mg/kg dry*	1.61		*79*	*72-109*			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Polycyclic Aromatic Hydrocarbons (PAH), Batch B8K1425, Continued

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Matrix Spike (B8K1425-MS1)	**Source: 8111113-08**			Prepared: 2018-11-19, Analyzed: 2018-11-19						
Acenaphthene	1.30	0.050	mg/kg dry	1.64	< 0.050	79	50-140			
Acenaphthylene	1.33	0.050	mg/kg dry	1.64	< 0.050	81	50-140			
Anthracene	1.30	0.050	mg/kg dry	1.65	< 0.050	79	50-140			
Benz(a)anthracene	1.80	0.050	mg/kg dry	1.65	< 0.050	109	50-140			
Benzo(a)pyrene	1.49	0.050	mg/kg dry	1.64	< 0.050	91	50-140			
Benzo(b+j)fluoranthene	3.85	0.050	mg/kg dry	3.31	< 0.050	116	50-140			
Benzo(g,h,i)perylene	1.41	0.050	mg/kg dry	1.64	< 0.050	86	50-140			
Benzo(k)fluoranthene	1.90	0.050	mg/kg dry	1.65	< 0.050	115	50-140			
2-Chloronaphthalene	1.32	0.050	mg/kg dry	1.65	< 0.050	80	50-140			
Chrysene	1.98	0.050	mg/kg dry	1.65	< 0.050	120	50-140			
Dibenz(a,h)anthracene	1.40	0.050	mg/kg dry	1.65	< 0.050	85	50-140			
Fluoranthene	1.25	0.050	mg/kg dry	1.62	< 0.050	77	50-140			
Fluorene	1.26	0.050	mg/kg dry	1.64	< 0.050	77	50-140			
Indeno(1,2,3-cd)pyrene	1.33	0.050	mg/kg dry	1.65	< 0.050	80	50-140			
1-Methylnaphthalene	1.26	0.050	mg/kg dry	1.63	< 0.050	78	50-140			
2-Methylnaphthalene	1.28	0.050	mg/kg dry	1.62	< 0.050	79	50-140			
Naphthalene	1.47	0.050	mg/kg dry	1.65	< 0.050	89	50-140			
Phenanthrene	1.44	0.050	mg/kg dry	1.64	< 0.050	88	50-140			
Pyrene	1.29	0.050	mg/kg dry	1.65	< 0.050	78	50-140			
Surrogate: Acenaphthene-d10	*1.43*		*mg/kg dry*	1.65		*87*	*71-118*			
Surrogate: Chrysene-d12	*2.00*		*mg/kg dry*	1.65		*121*	*58-121*			
Surrogate: Naphthalene-d8	*1.52*		*mg/kg dry*	1.65		*92*	*59-132*			
Surrogate: Perylene-d12	*1.64*		*mg/kg dry*	1.65		*99*	*50-133*			
Surrogate: Phenanthrene-d10	*1.50*		*mg/kg dry*	1.65		*91*	*72-109*			

Polycyclic Aromatic Hydrocarbons (PAH), Batch B8K1507

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Blank (B8K1507-BLK1)				Prepared: 2018-11-20, Analyzed: 2018-11-21						
Acenaphthene	< 0.050	0.050	µg/L							
Acenaphthylene	< 0.200	0.200	µg/L							
Acridine	< 0.050	0.050	µg/L							
Anthracene	< 0.010	0.010	µg/L							
Benz(a)anthracene	< 0.010	0.010	µg/L							
Benzo(a)pyrene	< 0.010	0.010	µg/L							
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L							
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L							
Benzo(k)fluoranthene	< 0.050	0.050	µg/L							
2-Chloronaphthalene	< 0.100	0.100	µg/L							
Chrysene	< 0.050	0.050	µg/L							
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L							
Fluoranthene	< 0.030	0.030	µg/L							
Fluorene	< 0.050	0.050	µg/L							
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L							
1-Methylnaphthalene	< 0.100	0.100	µg/L							
2-Methylnaphthalene	< 0.100	0.100	µg/L							
Naphthalene	< 0.200	0.200	µg/L							
Phenanthrene	< 0.100	0.100	µg/L							
Pyrene	< 0.020	0.020	µg/L							
Quinoline	< 0.050	0.050	µg/L							
Surrogate: Acridine-d9	*3.38*		*µg/L*	4.44		*76*	*50-140*			
Surrogate: Naphthalene-d8	*3.57*		*µg/L*	4.44		*80*	*50-140*			
Surrogate: Perylene-d12	*4.66*		*µg/L*	4.44		*105*	*50-140*			
LCS (B8K1507-BS1)				Prepared: 2018-11-20, Analyzed: 2018-11-20						
Acenaphthene	3.63	0.050	µg/L	4.40		83	58-125			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Polycyclic Aromatic Hydrocarbons (PAH), Batch B8K1507, Continued										
LCS (B8K1507-BS1), Continued				Prepared: 2018-11-20, Analyzed: 2018-11-20						
Acenaphthylene	3.69	0.200	µg/L	4.40		84	54-128			
Acridine	2.86	0.050	µg/L	4.44		64	50-112			
Anthracene	3.66	0.010	µg/L	4.44		82	66-125			
Benz(a)anthracene	4.58	0.010	µg/L	4.44		103	59-123			
Benzo(a)pyrene	4.51	0.010	µg/L	4.40		103	62-116			
Benzo(b+j)fluoranthene	9.35	0.050	µg/L	8.89		105	69-121			
Benzo(g,h,i)perylene	4.28	0.050	µg/L	4.40		97	58-129			
Benzo(k)fluoranthene	4.72	0.050	µg/L	4.44		106	67-128			
2-Chloronaphthalene	2.82	0.100	µg/L	4.44		64	50-140			
Chrysene	4.25	0.050	µg/L	4.42		96	58-125			
Dibenz(a,h)anthracene	4.58	0.010	µg/L	4.42		104	58-126			
Fluoranthene	3.44	0.030	µg/L	4.36		79	67-133			
Fluorene	3.51	0.050	µg/L	4.40		80	55-122			
Indeno(1,2,3-cd)pyrene	4.51	0.050	µg/L	4.44		101	62-126			
1-Methylnaphthalene	3.12	0.100	µg/L	4.38		71	53-125			
2-Methylnaphthalene	3.13	0.100	µg/L	4.36		72	52-122			
Naphthalene	3.32	0.200	µg/L	4.44		75	50-130			
Phenanthrene	3.79	0.100	µg/L	4.40		86	67-127			
Pyrene	3.49	0.020	µg/L	4.44		78	68-133			
Quinoline	5.17	0.050	µg/L	4.44		116	51-140			
Surrogate: Acridine-d9	*3.33*		*µg/L*	4.44		*75*	*50-140*			
Surrogate: Naphthalene-d8	*3.40*		*µg/L*	4.44		*76*	*50-140*			
Surrogate: Perylene-d12	*4.54*		*µg/L*	4.44		*102*	*50-140*			
LCS Dup (B8K1507-BSD1)				Prepared: 2018-11-20, Analyzed: 2018-11-21						
Acenaphthene	3.51	0.050	µg/L	4.40		80	58-125	3	16	
Acenaphthylene	3.49	0.200	µg/L	4.40		79	54-128	5	16	
Acridine	2.39	0.050	µg/L	4.44		54	50-112	18	26	
Anthracene	3.66	0.010	µg/L	4.44		82	66-125	< 1	14	
Benz(a)anthracene	4.55	0.010	µg/L	4.44		102	59-123	< 1	23	
Benzo(a)pyrene	4.44	0.010	µg/L	4.40		101	62-116	2	16	
Benzo(b+j)fluoranthene	9.12	0.050	µg/L	8.89		103	69-121	2	14	
Benzo(g,h,i)perylene	4.18	0.050	µg/L	4.40		95	58-129	2	25	
Benzo(k)fluoranthene	4.97	0.050	µg/L	4.44		112	67-128	5	18	
2-Chloronaphthalene	2.65	0.100	µg/L	4.44		60	50-140	6	30	
Chrysene	4.21	0.050	µg/L	4.42		95	58-125	< 1	24	
Dibenz(a,h)anthracene	4.47	0.010	µg/L	4.42		101	58-126	2	23	
Fluoranthene	3.44	0.030	µg/L	4.36		79	67-133	< 1	18	
Fluorene	3.47	0.050	µg/L	4.40		79	55-122	1	16	
Indeno(1,2,3-cd)pyrene	4.42	0.050	µg/L	4.44		99	62-126	2	22	
1-Methylnaphthalene	3.03	0.100	µg/L	4.38		69	53-125	3	16	
2-Methylnaphthalene	3.05	0.100	µg/L	4.36		70	52-122	2	17	
Naphthalene	3.32	0.200	µg/L	4.44		75	50-130	< 1	18	
Phenanthrene	3.78	0.100	µg/L	4.40		86	67-127	< 1	14	
Pyrene	3.48	0.020	µg/L	4.44		78	68-133	< 1	18	
Quinoline	5.32	0.050	µg/L	4.44		120	51-140	3	12	
Surrogate: Acridine-d9	*2.79*		*µg/L*	4.44		*63*	*50-140*			
Surrogate: Naphthalene-d8	*3.29*		*µg/L*	4.44		*74*	*50-140*			
Surrogate: Perylene-d12	*4.30*		*µg/L*	4.44		*97*	*50-140*			
Strong Acid Leachable Metals, Batch B8K1250										
Blank (B8K1250-BLK1)				Prepared: 2018-11-16, Analyzed: 2018-11-16						
Aluminum	< 40	40	mg/kg dry							
Antimony	< 0.10	0.10	mg/kg dry							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Strong Acid Leachable Metals, Batch B8K1250, Continued

Blank (B8K1250-BLK1), Continued Prepared: 2018-11-16, Analyzed: 2018-11-16

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Arsenic	< 0.30	0.30	mg/kg dry							
Barium	< 1.0	1.0	mg/kg dry							
Beryllium	< 0.10	0.10	mg/kg dry							
Boron	< 2.0	2.0	mg/kg dry							
Cadmium	< 0.040	0.040	mg/kg dry							
Chromium	< 1.0	1.0	mg/kg dry							
Cobalt	< 0.10	0.10	mg/kg dry							
Copper	< 0.40	0.40	mg/kg dry							
Iron	< 20	20	mg/kg dry							
Lead	< 0.20	0.20	mg/kg dry							
Lithium	< 0.10	0.10	mg/kg dry							
Manganese	< 0.40	0.40	mg/kg dry							
Mercury	< 0.040	0.040	mg/kg dry							
Molybdenum	< 0.10	0.10	mg/kg dry							
Nickel	< 0.60	0.60	mg/kg dry							
Selenium	< 0.20	0.20	mg/kg dry							
Silver	< 0.10	0.10	mg/kg dry							
Strontium	< 0.20	0.20	mg/kg dry							
Thallium	< 0.10	0.10	mg/kg dry							
Tin	< 0.20	0.20	mg/kg dry							
Tungsten	< 0.20	0.20	mg/kg dry							
Uranium	< 0.050	0.050	mg/kg dry							
Vanadium	< 1.0	1.0	mg/kg dry							
Zinc	< 2.0	2.0	mg/kg dry							

Blank (B8K1250-BLK2) Prepared: 2018-11-16, Analyzed: 2018-11-16

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Aluminum	< 40	40	mg/kg dry							
Antimony	< 0.10	0.10	mg/kg dry							
Arsenic	< 0.30	0.30	mg/kg dry							
Barium	< 1.0	1.0	mg/kg dry							
Beryllium	< 0.10	0.10	mg/kg dry							
Boron	< 2.0	2.0	mg/kg dry							
Cadmium	< 0.040	0.040	mg/kg dry							
Chromium	< 1.0	1.0	mg/kg dry							
Cobalt	< 0.10	0.10	mg/kg dry							
Copper	< 0.40	0.40	mg/kg dry							
Iron	< 20	20	mg/kg dry							
Lead	< 0.20	0.20	mg/kg dry							
Lithium	< 0.10	0.10	mg/kg dry							
Manganese	< 0.40	0.40	mg/kg dry							
Mercury	< 0.040	0.040	mg/kg dry							
Molybdenum	< 0.10	0.10	mg/kg dry							
Nickel	< 0.60	0.60	mg/kg dry							
Selenium	< 0.20	0.20	mg/kg dry							
Silver	< 0.10	0.10	mg/kg dry							
Strontium	< 0.20	0.20	mg/kg dry							
Thallium	< 0.10	0.10	mg/kg dry							
Tin	< 0.20	0.20	mg/kg dry							
Tungsten	< 0.20	0.20	mg/kg dry							
Uranium	< 0.050	0.050	mg/kg dry							
Vanadium	< 1.0	1.0	mg/kg dry							
Zinc	< 2.0	2.0	mg/kg dry							

Blank (B8K1250-BLK3) Prepared: 2018-11-16, Analyzed: 2018-11-16

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Aluminum	< 40	40	mg/kg dry							
Antimony	< 0.10	0.10	mg/kg dry							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825
WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B8K1250, Continued										
Blank (B8K1250-BLK3), Continued				Prepared: 2018-11-16, Analyzed: 2018-11-16						
Arsenic	< 0.30	0.30	mg/kg dry							
Barium	< 1.0	1.0	mg/kg dry							
Beryllium	< 0.10	0.10	mg/kg dry							
Boron	< 2.0	2.0	mg/kg dry							
Cadmium	< 0.040	0.040	mg/kg dry							
Chromium	< 1.0	1.0	mg/kg dry							
Cobalt	< 0.10	0.10	mg/kg dry							
Copper	< 0.40	0.40	mg/kg dry							
Iron	< 20	20	mg/kg dry							
Lead	< 0.20	0.20	mg/kg dry							
Lithium	< 0.10	0.10	mg/kg dry							
Manganese	< 0.40	0.40	mg/kg dry							
Mercury	< 0.040	0.040	mg/kg dry							
Molybdenum	< 0.10	0.10	mg/kg dry							
Nickel	< 0.60	0.60	mg/kg dry							
Selenium	< 0.20	0.20	mg/kg dry							
Silver	< 0.10	0.10	mg/kg dry							
Strontium	< 0.20	0.20	mg/kg dry							
Thallium	< 0.10	0.10	mg/kg dry							
Tin	< 0.20	0.20	mg/kg dry							
Tungsten	< 0.20	0.20	mg/kg dry							
Uranium	< 0.050	0.050	mg/kg dry							
Vanadium	< 1.0	1.0	mg/kg dry							
Zinc	< 2.0	2.0	mg/kg dry							
Blank (B8K1250-BLK4)				Prepared: 2018-11-16, Analyzed: 2018-11-16						
Aluminum	< 40	40	mg/kg dry							
Antimony	< 0.10	0.10	mg/kg dry							
Arsenic	< 0.30	0.30	mg/kg dry							
Barium	< 1.0	1.0	mg/kg dry							
Beryllium	< 0.10	0.10	mg/kg dry							
Boron	< 2.0	2.0	mg/kg dry							
Cadmium	< 0.040	0.040	mg/kg dry							
Chromium	< 1.0	1.0	mg/kg dry							
Cobalt	< 0.10	0.10	mg/kg dry							
Copper	< 0.40	0.40	mg/kg dry							
Iron	< 20	20	mg/kg dry							
Lead	< 0.20	0.20	mg/kg dry							
Lithium	< 0.10	0.10	mg/kg dry							
Manganese	< 0.40	0.40	mg/kg dry							
Mercury	< 0.040	0.040	mg/kg dry							
Molybdenum	< 0.10	0.10	mg/kg dry							
Nickel	< 0.60	0.60	mg/kg dry							
Selenium	< 0.20	0.20	mg/kg dry							
Silver	< 0.10	0.10	mg/kg dry							
Strontium	< 0.20	0.20	mg/kg dry							
Thallium	< 0.10	0.10	mg/kg dry							
Tin	< 0.20	0.20	mg/kg dry							
Tungsten	< 0.20	0.20	mg/kg dry							
Uranium	< 0.050	0.050	mg/kg dry							
Vanadium	< 1.0	1.0	mg/kg dry							
Zinc	< 2.0	2.0	mg/kg dry							
Blank (B8K1250-BLK5)				Prepared: 2018-11-16, Analyzed: 2018-11-16						
Aluminum	< 40	40	mg/kg dry							
Antimony	< 0.10	0.10	mg/kg dry							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Strong Acid Leachable Metals, Batch B8K1250, Continued

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Blank (B8K1250-BLK5), Continued				Prepared: 2018-11-16, Analyzed: 2018-11-16						
Arsenic	< 0.30	0.30	mg/kg dry							
Barium	< 1.0	1.0	mg/kg dry							
Beryllium	< 0.10	0.10	mg/kg dry							
Boron	< 2.0	2.0	mg/kg dry							
Cadmium	< 0.040	0.040	mg/kg dry							
Chromium	< 1.0	1.0	mg/kg dry							
Cobalt	< 0.10	0.10	mg/kg dry							
Copper	< 0.40	0.40	mg/kg dry							
Iron	< 20	20	mg/kg dry							
Lead	< 0.20	0.20	mg/kg dry							
Lithium	< 0.10	0.10	mg/kg dry							
Manganese	< 0.40	0.40	mg/kg dry							
Mercury	< 0.040	0.040	mg/kg dry							
Molybdenum	< 0.10	0.10	mg/kg dry							
Nickel	< 0.60	0.60	mg/kg dry							
Selenium	< 0.20	0.20	mg/kg dry							
Silver	< 0.10	0.10	mg/kg dry							
Strontium	< 0.20	0.20	mg/kg dry							
Thallium	< 0.10	0.10	mg/kg dry							
Tin	< 0.20	0.20	mg/kg dry							
Tungsten	< 0.20	0.20	mg/kg dry							
Uranium	< 0.050	0.050	mg/kg dry							
Vanadium	< 1.0	1.0	mg/kg dry							
Zinc	< 2.0	2.0	mg/kg dry							
Blank (B8K1250-BLK6)				Prepared: 2018-11-16, Analyzed: 2018-11-16						
Aluminum	< 40	40	mg/kg dry							
Antimony	< 0.10	0.10	mg/kg dry							
Arsenic	< 0.30	0.30	mg/kg dry							
Barium	< 1.0	1.0	mg/kg dry							
Beryllium	< 0.10	0.10	mg/kg dry							
Boron	< 2.0	2.0	mg/kg dry							
Cadmium	< 0.040	0.040	mg/kg dry							
Chromium	< 1.0	1.0	mg/kg dry							
Cobalt	< 0.10	0.10	mg/kg dry							
Copper	< 0.40	0.40	mg/kg dry							
Iron	< 20	20	mg/kg dry							
Lead	< 0.20	0.20	mg/kg dry							
Lithium	< 0.10	0.10	mg/kg dry							
Manganese	< 0.40	0.40	mg/kg dry							
Mercury	< 0.040	0.040	mg/kg dry							
Molybdenum	< 0.10	0.10	mg/kg dry							
Nickel	< 0.60	0.60	mg/kg dry							
Selenium	< 0.20	0.20	mg/kg dry							
Silver	< 0.10	0.10	mg/kg dry							
Strontium	< 0.20	0.20	mg/kg dry							
Thallium	< 0.10	0.10	mg/kg dry							
Tin	< 0.20	0.20	mg/kg dry							
Tungsten	< 0.20	0.20	mg/kg dry							
Uranium	< 0.050	0.050	mg/kg dry							
Vanadium	< 1.0	1.0	mg/kg dry							
Zinc	< 2.0	2.0	mg/kg dry							
LCS (B8K1250-BS1)				Prepared: 2018-11-16, Analyzed: 2018-11-16						
Antimony	2.22	0.10	mg/kg dry	2.00		111	80-120			
Arsenic	1.95	0.30	mg/kg dry	2.00		98	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Strong Acid Leachable Metals, Batch B8K1250, Continued

LCS (B8K1250-BS1), Continued Prepared: 2018-11-16, Analyzed: 2018-11-16

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Barium	2.1	1.0	mg/kg dry	2.00		105	80-120			
Beryllium	2.05	0.10	mg/kg dry	2.00		103	80-120			
Boron	2.1	2.0	mg/kg dry	2.00		104	80-120			
Cadmium	2.12	0.040	mg/kg dry	2.00		106	80-120			
Chromium	2.2	1.0	mg/kg dry	2.00		108	80-120			
Cobalt	2.09	0.10	mg/kg dry	2.00		105	80-120			
Copper	2.17	0.40	mg/kg dry	2.00		109	80-120			
Iron	199	20	mg/kg dry	200		100	80-120			
Lead	2.09	0.20	mg/kg dry	2.00		104	80-120			
Lithium	2.23	0.10	mg/kg dry	2.00		112	80-120			
Manganese	2.08	0.40	mg/kg dry	2.00		104	80-120			
Mercury	0.087	0.040	mg/kg dry	0.100		87	80-120			
Molybdenum	2.05	0.10	mg/kg dry	2.00		103	80-120			
Nickel	2.09	0.60	mg/kg dry	2.00		105	80-120			
Selenium	2.12	0.20	mg/kg dry	2.00		106	80-120			
Silver	2.07	0.10	mg/kg dry	2.00		103	80-120			
Strontium	2.03	0.20	mg/kg dry	2.00		102	80-120			
Thallium	2.02	0.10	mg/kg dry	2.00		101	80-120			
Tin	2.21	0.20	mg/kg dry	2.00		110	80-120			
Tungsten	2.17	0.20	mg/kg dry	2.00		109	80-120			
Uranium	1.80	0.050	mg/kg dry	2.00		90	80-120			
Vanadium	2.1	1.0	mg/kg dry	2.00		105	80-120			
Zinc	2.3	2.0	mg/kg dry	2.00		115	80-120			

LCS (B8K1250-BS2) Prepared: 2018-11-16, Analyzed: 2018-11-16

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Antimony	2.11	0.10	mg/kg dry	2.00		106	80-120			
Arsenic	1.99	0.30	mg/kg dry	2.00		100	80-120			
Barium	2.1	1.0	mg/kg dry	2.00		107	80-120			
Beryllium	2.01	0.10	mg/kg dry	2.00		100	80-120			
Boron	< 2.0	2.0	mg/kg dry	2.00		97	80-120			
Cadmium	2.10	0.040	mg/kg dry	2.00		105	80-120			
Chromium	2.2	1.0	mg/kg dry	2.00		109	80-120			
Cobalt	2.13	0.10	mg/kg dry	2.00		106	80-120			
Copper	2.23	0.40	mg/kg dry	2.00		111	80-120			
Iron	201	20	mg/kg dry	200		100	80-120			
Lead	2.07	0.20	mg/kg dry	2.00		104	80-120			
Lithium	2.18	0.10	mg/kg dry	2.00		109	80-120			
Manganese	2.05	0.40	mg/kg dry	2.00		103	80-120			
Mercury	0.088	0.040	mg/kg dry	0.100		88	80-120			
Molybdenum	2.04	0.10	mg/kg dry	2.00		102	80-120			
Nickel	2.14	0.60	mg/kg dry	2.00		107	80-120			
Selenium	2.08	0.20	mg/kg dry	2.00		104	80-120			
Silver	2.07	0.10	mg/kg dry	2.00		103	80-120			
Strontium	2.02	0.20	mg/kg dry	2.00		101	80-120			
Thallium	2.02	0.10	mg/kg dry	2.00		101	80-120			
Tin	2.12	0.20	mg/kg dry	2.00		106	80-120			
Tungsten	2.12	0.20	mg/kg dry	2.00		106	80-120			
Uranium	1.81	0.050	mg/kg dry	2.00		91	80-120			
Vanadium	2.2	1.0	mg/kg dry	2.00		108	80-120			
Zinc	2.4	2.0	mg/kg dry	2.00		120	80-120			

Reference (B8K1250-SRM1) Prepared: 2018-11-16, Analyzed: 2018-11-16

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Aluminum	21300	40	mg/kg dry	17500		122	70-130			
Antimony	6.69	0.10	mg/kg dry	6.46		104	70-130			
Arsenic	15.9	0.30	mg/kg dry	15.1		106	70-130			
Barium	81.3	1.0	mg/kg dry	80.6		101	70-130			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Strong Acid Leachable Metals, Batch B8K1250, Continued

Reference (B8K1250-SRM1), Continued Prepared: 2018-11-16, Analyzed: 2018-11-16

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Beryllium	0.52	0.10	mg/kg dry	0.522		100	70-130			
Boron	3.7	2.0	mg/kg dry	3.00		123	70-130			
Cadmium	0.239	0.040	mg/kg dry	0.216		111	70-130			
Chromium	30.1	1.0	mg/kg dry	27.5		109	70-130			
Cobalt	12.8	0.10	mg/kg dry	12.4		103	70-130			
Copper	45.1	0.40	mg/kg dry	45.3		100	70-130			
Iron	31200	20	mg/kg dry	32600		96	70-130			
Lead	13.3	0.20	mg/kg dry	13.8		96	70-130			
Lithium	10.6	0.10	mg/kg dry	9.91		107	70-130			
Manganese	1170	0.40	mg/kg dry	1090		107	70-130			
Mercury	0.109	0.040	mg/kg dry	0.103		106	70-130			
Molybdenum	0.80	0.10	mg/kg dry	0.731		110	70-130			
Nickel	17.8	0.60	mg/kg dry	17.4		103	70-130			
Strontium	12.8	0.20	mg/kg dry	11.5		111	70-130			
Tin	1.10	0.20	mg/kg dry	1.03		106	70-130			
Uranium	0.772	0.050	mg/kg dry	0.837		92	70-130			
Vanadium	59.2	1.0	mg/kg dry	54.9		108	70-130			
Zinc	66.7	2.0	mg/kg dry	66.8		100	70-130			

Reference (B8K1250-SRM2) Prepared: 2018-11-16, Analyzed: 2018-11-16

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Aluminum	20500	40	mg/kg dry	17500		117	70-130			
Antimony	6.19	0.10	mg/kg dry	6.46		96	70-130			
Arsenic	15.2	0.30	mg/kg dry	15.1		101	70-130			
Barium	75.6	1.0	mg/kg dry	80.6		94	70-130			
Beryllium	0.48	0.10	mg/kg dry	0.522		93	70-130			
Boron	3.0	2.0	mg/kg dry	3.00		101	70-130			
Cadmium	0.219	0.040	mg/kg dry	0.216		102	70-130			
Chromium	28.8	1.0	mg/kg dry	27.5		105	70-130			
Cobalt	12.2	0.10	mg/kg dry	12.4		98	70-130			
Copper	43.4	0.40	mg/kg dry	45.3		96	70-130			
Iron	29300	20	mg/kg dry	32600		90	70-130			
Lead	12.5	0.20	mg/kg dry	13.8		91	70-130			
Lithium	9.92	0.10	mg/kg dry	9.91		100	70-130			
Manganese	1110	0.40	mg/kg dry	1090		102	70-130			
Mercury	0.098	0.040	mg/kg dry	0.103		95	70-130			
Molybdenum	0.70	0.10	mg/kg dry	0.731		96	70-130			
Nickel	17.3	0.60	mg/kg dry	17.4		99	70-130			
Strontium	12.0	0.20	mg/kg dry	11.5		104	70-130			
Tin	1.06	0.20	mg/kg dry	1.03		103	70-130			
Uranium	0.734	0.050	mg/kg dry	0.837		88	70-130			
Vanadium	56.7	1.0	mg/kg dry	54.9		103	70-130			
Zinc	63.8	2.0	mg/kg dry	66.8		96	70-130			

Total Metals, Batch B8K1467

Blank (B8K1467-BLK1) Prepared: 2018-11-19, Analyzed: 2018-11-20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Mercury, total	< 0.000010	0.000010	mg/L							

Blank (B8K1467-BLK2) Prepared: 2018-11-19, Analyzed: 2018-11-20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Mercury, total	< 0.000010	0.000010	mg/L							

Duplicate (B8K1467-DUP1) **Source: 8111113-20** Prepared: 2018-11-19, Analyzed: 2018-11-20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Mercury, total	< 0.000010	0.000010	mg/L		< 0.000010				20	

Matrix Spike (B8K1467-MS1) **Source: 8111113-21** Prepared: 2018-11-19, Analyzed: 2018-11-20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Mercury, total	0.000237	0.000010	mg/L	0.000250	< 0.000010	95	70-130			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B8K1467, Continued										
Reference (B8K1467-SRM1)				Prepared: 2018-11-19, Analyzed: 2018-11-20						
Mercury, total	0.00485	0.000010	mg/L	0.00489		99	80-120			
Reference (B8K1467-SRM2)				Prepared: 2018-11-19, Analyzed: 2018-11-20						
Mercury, total	0.00460	0.000010	mg/L	0.00489		94	80-120			
Total Metals, Batch B8K1482										
Blank (B8K1482-BLK1)				Prepared: 2018-11-19, Analyzed: 2018-11-19						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Blank (B8K1482-BLK2)				Prepared: 2018-11-19, Analyzed: 2018-11-19						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B8K1482, Continued										
Blank (B8K1482-BLK2), Continued				Prepared: 2018-11-19, Analyzed: 2018-11-19						
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Blank (B8K1482-BLK3)				Prepared: 2018-11-19, Analyzed: 2018-11-19						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
LCS (B8K1482-BS1)				Prepared: 2018-11-19, Analyzed: 2018-11-19						
Aluminum, total	0.0210	0.0050	mg/L	0.0200		105	80-120			
Antimony, total	0.0216	0.00020	mg/L	0.0200		108	80-120			
Arsenic, total	0.0222	0.00050	mg/L	0.0200		111	80-120			
Barium, total	0.0221	0.0050	mg/L	0.0200		110	80-120			
Beryllium, total	0.0173	0.00010	mg/L	0.0200		86	80-120			
Boron, total	0.0187	0.0050	mg/L	0.0200		94	80-120			
Cadmium, total	0.0200	0.000010	mg/L	0.0200		100	80-120			
Calcium, total	2.34	0.20	mg/L	2.00		117	80-120			
Chromium, total	0.0224	0.00050	mg/L	0.0200		112	80-120			
Cobalt, total	0.0214	0.00010	mg/L	0.0200		107	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B8K1482, Continued										
LCS (B8K1482-BS1), Continued				Prepared: 2018-11-19, Analyzed: 2018-11-19						
Copper, total	0.0216	0.00040	mg/L	0.0200		108	80-120			
Iron, total	2.13	0.010	mg/L	2.00		106	80-120			
Lead, total	0.0206	0.00020	mg/L	0.0200		103	80-120			
Lithium, total	0.0164	0.00010	mg/L	0.0200		82	80-120			
Magnesium, total	1.87	0.010	mg/L	2.00		94	80-120			
Manganese, total	0.0168	0.00020	mg/L	0.0200		84	80-120			
Molybdenum, total	0.0205	0.00010	mg/L	0.0200		103	80-120			
Nickel, total	0.0203	0.00040	mg/L	0.0200		102	80-120			
Selenium, total	0.0204	0.00050	mg/L	0.0200		102	80-120			
Silver, total	0.0179	0.000050	mg/L	0.0200		89	80-120			
Sodium, total	1.97	0.10	mg/L	2.00		99	80-120			
Strontium, total	0.0213	0.0010	mg/L	0.0200		107	80-120			
Thallium, total	0.0208	0.000020	mg/L	0.0200		104	80-120			
Tin, total	0.0214	0.00020	mg/L	0.0200		107	80-120			
Titanium, total	0.0240	0.0050	mg/L	0.0200		120	80-120			
Tungsten, total	0.0192	0.0010	mg/L	0.0200		96	80-120			
Uranium, total	0.0196	0.000020	mg/L	0.0200		98	80-120			
Vanadium, total	0.0206	0.0010	mg/L	0.0200		103	80-120			
Zinc, total	0.0239	0.0040	mg/L	0.0200		119	80-120			
Duplicate (B8K1482-DUP1)	**Source: 8111113-19**			Prepared: 2018-11-19, Analyzed: 2018-11-19						
Aluminum, total	0.0076	0.0050	mg/L		0.0072				20	
Antimony, total	< 0.00020	0.00020	mg/L		< 0.00020				20	
Arsenic, total	< 0.00050	0.00050	mg/L		0.00071				15	
Barium, total	0.0114	0.0050	mg/L		0.0118				9	
Beryllium, total	< 0.00010	0.00010	mg/L		< 0.00010				16	
Boron, total	0.0127	0.0050	mg/L		0.0119				20	
Cadmium, total	0.000015	0.000010	mg/L		0.000020				20	
Calcium, total	68.4	0.20	mg/L		68.8			< 1	12	
Chromium, total	0.00125	0.00050	mg/L		0.00123				12	
Cobalt, total	< 0.00010	0.00010	mg/L		< 0.00010				13	
Copper, total	< 0.00040	0.00040	mg/L		< 0.00040				20	
Iron, total	0.017	0.010	mg/L		0.015				18	
Lead, total	< 0.00020	0.00020	mg/L		< 0.00020				20	
Lithium, total	0.00388	0.00010	mg/L		0.00401			3	19	
Magnesium, total	8.00	0.010	mg/L		8.25			3	10	
Manganese, total	< 0.00020	0.00020	mg/L		< 0.00020				13	
Molybdenum, total	0.00129	0.00010	mg/L		0.00129			< 1	20	
Nickel, total	< 0.00040	0.00040	mg/L		< 0.00040				20	
Selenium, total	< 0.00050	0.00050	mg/L		< 0.00050				20	
Silver, total	0.000067	0.000050	mg/L		< 0.000050				18	
Sodium, total	3.27	0.10	mg/L		3.34			2	10	
Strontium, total	0.270	0.0010	mg/L		0.277			2	9	
Thallium, total	< 0.000020	0.000020	mg/L		< 0.000020				20	
Tin, total	< 0.00020	0.00020	mg/L		< 0.00020				20	
Titanium, total	< 0.0050	0.0050	mg/L		< 0.0050				20	
Tungsten, total	< 0.0010	0.0010	mg/L		< 0.0010				20	
Uranium, total	0.000514	0.000020	mg/L		0.000527			3	14	
Vanadium, total	< 0.0010	0.0010	mg/L		< 0.0010				17	
Zinc, total	< 0.0040	0.0040	mg/L		< 0.0040				8	
Reference (B8K1482-SRM1)				Prepared: 2018-11-19, Analyzed: 2018-11-19						
Aluminum, total	0.267	0.0050	mg/L	0.303		88	82-114			
Antimony, total	0.0550	0.00020	mg/L	0.0511		108	88-115			
Arsenic, total	0.128	0.00050	mg/L	0.118		108	88-111			
Barium, total	0.851	0.0050	mg/L	0.823		103	83-110			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Total Metals, Batch B8K1482, Continued

Reference (B8K1482-SRM1), Continued Prepared: 2018-11-19, Analyzed: 2018-11-19

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Beryllium, total	0.0415	0.00010	mg/L	0.0496		84	80-119			
Boron, total	2.93	0.0050	mg/L	3.45		85	80-118			
Cadmium, total	0.0475	0.000010	mg/L	0.0495		96	90-110			
Calcium, total	11.4	0.20	mg/L	11.6		99	85-113			
Chromium, total	0.271	0.00050	mg/L	0.250		109	88-111			
Cobalt, total	0.0405	0.00010	mg/L	0.0377		107	90-114			
Copper, total	0.523	0.00040	mg/L	0.486		108	90-117			
Iron, total	0.527	0.010	mg/L	0.488		108	90-116			
Lead, total	0.199	0.00020	mg/L	0.204		98	90-110			
Lithium, total	0.318	0.00010	mg/L	0.403		79	79-118			
Magnesium, total	3.61	0.010	mg/L	3.79		95	88-116			
Manganese, total	0.0971	0.00020	mg/L	0.109		89	88-108			
Molybdenum, total	0.208	0.00010	mg/L	0.198		105	88-110			
Nickel, total	0.251	0.00040	mg/L	0.249		101	90-112			
Selenium, total	0.118	0.00050	mg/L	0.121		98	90-122			
Sodium, total	6.89	0.10	mg/L	7.54		91	86-118			
Strontium, total	0.394	0.0010	mg/L	0.375		105	86-110			
Thallium, total	0.0793	0.000020	mg/L	0.0805		99	90-113			
Uranium, total	0.0280	0.000020	mg/L	0.0306		92	88-112			
Vanadium, total	0.388	0.0010	mg/L	0.386		100	87-110			
Zinc, total	2.69	0.0040	mg/L	2.49		108	90-113			

Volatile Organic Compounds (VOC), Batch B8K1334

Blank (B8K1334-BLK1) Prepared: 2018-11-16, Analyzed: 2018-11-18

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Benzene	< 0.020	0.020	mg/kg wet							
Bromodichloromethane	< 0.100	0.100	mg/kg wet							
Bromoform	< 0.100	0.100	mg/kg wet							
Carbon tetrachloride	< 0.050	0.050	mg/kg wet							
Chlorobenzene	< 0.050	0.050	mg/kg wet							
Chloroform	< 0.050	0.050	mg/kg wet							
Dibromochloromethane	< 0.100	0.100	mg/kg wet							
1,2-Dibromoethane	< 0.100	0.100	mg/kg wet							
Dibromomethane	< 0.100	0.100	mg/kg wet							
1,2-Dichlorobenzene	< 0.050	0.050	mg/kg wet							
1,3-Dichlorobenzene	< 0.050	0.050	mg/kg wet							
1,4-Dichlorobenzene	< 0.050	0.050	mg/kg wet							
1,1-Dichloroethane	< 0.050	0.050	mg/kg wet							
1,2-Dichloroethane	< 0.050	0.050	mg/kg wet							
1,1-Dichloroethylene	< 0.050	0.050	mg/kg wet							
cis-1,2-Dichloroethylene	< 0.050	0.050	mg/kg wet							
trans-1,2-Dichloroethylene	< 0.050	0.050	mg/kg wet							
Dichloromethane	< 0.100	0.100	mg/kg wet							
1,2-Dichloropropane	< 0.050	0.050	mg/kg wet							
1,3-Dichloropropene (cis + trans)	< 0.050	0.050	mg/kg wet							
Ethylbenzene	< 0.050	0.050	mg/kg wet							
Methyl tert-butyl ether	< 0.040	0.040	mg/kg wet							
Styrene	< 0.050	0.050	mg/kg wet							
1,1,2,2-Tetrachloroethane	< 0.050	0.050	mg/kg wet							
Tetrachloroethylene	< 0.050	0.050	mg/kg wet							
Toluene	< 0.200	0.200	mg/kg wet							
1,1,1-Trichloroethane	< 0.050	0.050	mg/kg wet							
1,1,2-Trichloroethane	< 0.050	0.050	mg/kg wet							
Trichloroethylene	< 0.040	0.040	mg/kg wet							
Trichlorofluoromethane	< 0.100	0.100	mg/kg wet							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Volatile Organic Compounds (VOC), Batch B8K1334, Continued										
Blank (B8K1334-BLK1), Continued				Prepared: 2018-11-16, Analyzed: 2018-11-18						
Vinyl chloride	< 0.100	0.100	mg/kg wet							
Xylenes (total)	< 0.100	0.100	mg/kg wet							
Surrogate: Toluene-d8	*3.28*		*mg/kg wet*	4.24		*77*	*60-140*			
Surrogate: 4-Bromofluorobenzene	*3.40*		*mg/kg wet*	3.99		*85*	*60-140*			
Surrogate: 1,4-Dichlorobenzene-d4	*3.07*		*mg/kg wet*	3.95		*78*	*60-140*			
LCS (B8K1334-BS1)				Prepared: 2018-11-16, Analyzed: 2018-11-18						
Benzene	1.59	0.020	mg/kg wet	2.00		79	73-131			
Bromodichloromethane	1.92	0.100	mg/kg wet	2.02		95	69-121			
Bromoform	1.61	0.100	mg/kg wet	2.01		80	60-109			
Carbon tetrachloride	1.66	0.050	mg/kg wet	2.01		82	63-118			
Chlorobenzene	1.81	0.050	mg/kg wet	2.01		90	84-127			
Chloroform	1.94	0.050	mg/kg wet	2.02		96	80-135			
Dibromochloromethane	1.85	0.100	mg/kg wet	2.02		92	60-114			
1,2-Dibromoethane	1.87	0.100	mg/kg wet	2.00		94	66-121			
Dibromomethane	1.88	0.100	mg/kg wet	2.00		94	71-130			
1,2-Dichlorobenzene	1.91	0.050	mg/kg wet	2.02		94	77-129			
1,3-Dichlorobenzene	1.89	0.050	mg/kg wet	2.02		93	76-129			
1,4-Dichlorobenzene	1.93	0.050	mg/kg wet	2.01		96	79-125			
1,1-Dichloroethane	1.84	0.050	mg/kg wet	2.02		91	76-133			
1,2-Dichloroethane	1.87	0.050	mg/kg wet	2.02		93	72-140			
1,1-Dichloroethylene	1.44	0.050	mg/kg wet	2.01		72	60-135			
cis-1,2-Dichloroethylene	1.83	0.050	mg/kg wet	2.00		92	77-126			
trans-1,2-Dichloroethylene	1.61	0.050	mg/kg wet	2.01		80	74-125			
Dichloromethane	1.84	0.100	mg/kg wet	2.01		91	71-134			
1,2-Dichloropropane	1.85	0.050	mg/kg wet	2.01		92	78-126			
1,3-Dichloropropene (cis + trans)	3.47	0.050	mg/kg wet	4.02		86	60-116			
Ethylbenzene	1.34	0.050	mg/kg wet	2.00		67	71-127			SPK
Methyl tert-butyl ether	1.26	0.040	mg/kg wet	2.00		63	60-131			
Styrene	1.20	0.050	mg/kg wet	2.00		60	65-126			SPK
1,1,2,2-Tetrachloroethane	2.29	0.050	mg/kg wet	2.02		113	71-132			
Tetrachloroethylene	2.09	0.050	mg/kg wet	2.01		104	69-134			
Toluene	1.76	0.200	mg/kg wet	2.01		88	74-136			
1,1,1-Trichloroethane	1.63	0.050	mg/kg wet	2.02		80	70-131			
1,1,2-Trichloroethane	2.05	0.050	mg/kg wet	2.02		102	75-133			
Trichloroethylene	1.95	0.040	mg/kg wet	2.01		97	82-127			
Trichlorofluoromethane	1.54	0.100	mg/kg wet	2.00		77	50-150			
Vinyl chloride	0.962	0.100	mg/kg wet	2.00		48	50-143			SPK
Xylenes (total)	4.27	0.100	mg/kg wet	6.00		71	71-125			
Surrogate: Toluene-d8	*3.28*		*mg/kg wet*	4.24		*77*	*60-140*			
Surrogate: 4-Bromofluorobenzene	*4.89*		*mg/kg wet*	3.99		*122*	*60-140*			
Surrogate: 1,4-Dichlorobenzene-d4	*5.24*		*mg/kg wet*	3.95		*133*	*60-140*			
Duplicate (B8K1334-DUP1)	**Source: 8111113-13**			Prepared: 2018-11-07, Analyzed: 2018-11-18						
Benzene	< 0.016	0.020	mg/kg dry		< 0.020				50	
Bromodichloromethane	< 0.080	0.100	mg/kg dry		< 0.100				50	
Bromoform	< 0.080	0.100	mg/kg dry		< 0.100				50	
Carbon tetrachloride	< 0.040	0.050	mg/kg dry		< 0.050				50	
Chlorobenzene	< 0.040	0.050	mg/kg dry		< 0.050				50	
Chloroform	< 0.040	0.050	mg/kg dry		< 0.050				50	
Dibromochloromethane	< 0.080	0.100	mg/kg dry		< 0.100				50	
1,2-Dibromoethane	< 0.080	0.100	mg/kg dry		< 0.100				50	
Dibromomethane	< 0.080	0.100	mg/kg dry		< 0.100				50	
1,2-Dichlorobenzene	< 0.040	0.050	mg/kg dry		< 0.050				50	
1,3-Dichlorobenzene	< 0.040	0.050	mg/kg dry		< 0.050				50	
1,4-Dichlorobenzene	< 0.040	0.050	mg/kg dry		< 0.050				50	

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO Bear Environmental
PROJECT BE1825

WORK ORDER 8111113
REPORTED 2018-11-21 15:23

Volatile Organic Compounds (VOC), Batch B8K1334, Continued

Duplicate (B8K1334-DUP1), Continued **Source: 8111113-13** Prepared: 2018-11-07, Analyzed: 2018-11-18

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
1,1-Dichloroethane	< 0.040	0.050	mg/kg dry		< 0.050				50	
1,2-Dichloroethane	< 0.040	0.050	mg/kg dry		< 0.050				50	
1,1-Dichloroethylene	< 0.040	0.050	mg/kg dry		< 0.050				50	
cis-1,2-Dichloroethylene	< 0.040	0.050	mg/kg dry		< 0.050				50	
trans-1,2-Dichloroethylene	< 0.040	0.050	mg/kg dry		< 0.050				50	
Dichloromethane	< 0.080	0.100	mg/kg dry		< 0.100				50	
1,2-Dichloropropane	< 0.040	0.050	mg/kg dry		< 0.050				50	
1,3-Dichloropropene (cis + trans)	< 0.040	0.050	mg/kg dry		< 0.050				50	
Ethylbenzene	< 0.040	0.050	mg/kg dry		< 0.050				50	
Methyl tert-butyl ether	< 0.032	0.040	mg/kg dry		< 0.040				50	
Styrene	< 0.040	0.050	mg/kg dry		< 0.050				50	
1,1,2,2-Tetrachloroethane	< 0.040	0.050	mg/kg dry		< 0.050				50	
Tetrachloroethylene	< 0.040	0.050	mg/kg dry		< 0.050				50	
Toluene	< 0.160	0.200	mg/kg dry		< 0.200				50	
1,1,1-Trichloroethane	< 0.040	0.050	mg/kg dry		< 0.050				50	
1,1,2-Trichloroethane	< 0.040	0.050	mg/kg dry		< 0.050				50	
Trichloroethylene	< 0.032	0.040	mg/kg dry		< 0.040				50	
Trichlorofluoromethane	< 0.080	0.100	mg/kg dry		< 0.100				50	
Vinyl chloride	< 0.080	0.100	mg/kg dry		< 0.100				50	
Xylenes (total)	< 0.080	0.100	mg/kg dry		< 0.100				50	
Surrogate: Toluene-d8	*2.32*		*mg/kg dry*	2.93		*79*	*60-140*			
Surrogate: 4-Bromofluorobenzene	*2.46*		*mg/kg dry*	2.76		*89*	*60-140*			
Surrogate: 1,4-Dichlorobenzene-d4	*2.15*		*mg/kg dry*	2.73		*79*	*60-140*			

Matrix Spike (B8K1334-MS1) **Source: 8111113-13** Prepared: 2018-11-07, Analyzed: 2018-11-18

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Benzene	0.033	0.0002	mg/kg dry	0.0332	< 0.020	95	60-140			
Bromodichloromethane	0.038	0.0008	mg/kg dry	0.0335	< 0.100	108	60-140			
Bromoform	0.030	0.0008	mg/kg dry	0.0334	< 0.100	90	60-140			
Carbon tetrachloride	0.035	0.0004	mg/kg dry	0.0334	< 0.050	103	60-140			
Chlorobenzene	0.036	0.0004	mg/kg dry	0.0334	< 0.050	86	60-140			
Chloroform	0.038	0.0004	mg/kg dry	0.0335	< 0.050	107	60-140			
Dibromochloromethane	0.037	0.0008	mg/kg dry	0.0335	< 0.100	112	60-140			
1,2-Dibromoethane	0.038	0.0008	mg/kg dry	0.0332	< 0.100	114	60-140			
Dibromomethane	0.036	0.0008	mg/kg dry	0.0332	< 0.100	107	60-140			
1,2-Dichlorobenzene	0.036	0.0004	mg/kg dry	0.0335	< 0.050	92	60-140			
1,3-Dichlorobenzene	0.036	0.0004	mg/kg dry	0.0335	< 0.050	90	60-140			
1,4-Dichlorobenzene	0.035	0.0004	mg/kg dry	0.0334	< 0.050	89	60-140			
1,1-Dichloroethane	0.036	0.0004	mg/kg dry	0.0335	< 0.050	103	60-140			
1,2-Dichloroethane	0.036	0.0004	mg/kg dry	0.0335	< 0.050	97	60-140			
1,1-Dichloroethylene	0.029	0.0004	mg/kg dry	0.0334	< 0.050	87	60-140			
cis-1,2-Dichloroethylene	0.037	0.0004	mg/kg dry	0.0332	< 0.050	106	60-140			
trans-1,2-Dichloroethylene	0.032	0.0004	mg/kg dry	0.0334	< 0.050	96	60-140			
Dichloromethane	0.036	0.0008	mg/kg dry	0.0334	< 0.100	108	60-140			
1,2-Dichloropropane	0.037	0.0004	mg/kg dry	0.0334	< 0.050	110	60-140			
1,3-Dichloropropene (cis + trans)	0.066	0.0004	mg/kg dry	0.0668	< 0.050	99	60-140			
Ethylbenzene	0.031	0.0004	mg/kg dry	0.0332	< 0.050	83	60-140			
Methyl tert-butyl ether	0.027	0.0003	mg/kg dry	0.0332	< 0.040	55	60-140			SPK
Styrene	0.029	0.0004	mg/kg dry	0.0332	< 0.050	81	60-140			
1,1,2,2-Tetrachloroethane	0.042	0.0004	mg/kg dry	0.0335	< 0.050	126	60-140			
Tetrachloroethylene	0.040	0.0004	mg/kg dry	0.0334	< 0.050	121	60-140			
Toluene	0.035	0.002	mg/kg dry	0.0334	< 0.200	59	60-140			SPK
1,1,1-Trichloroethane	0.032	0.0004	mg/kg dry	0.0335	< 0.050	90	60-140			
1,1,2-Trichloroethane	0.040	0.0004	mg/kg dry	0.0335	< 0.050	120	60-140			
Trichloroethylene	0.039	0.0003	mg/kg dry	0.0334	< 0.040	115	60-140			
Trichlorofluoromethane	0.031	0.0008	mg/kg dry	0.0332	< 0.100	92	50-150			
Vinyl chloride	0.021	0.0008	mg/kg dry	0.0332	< 0.100	62	50-150			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Volatile Organic Compounds (VOC), Batch B8K1334, Continued										
Matrix Spike (B8K1334-MS1), Continued	**Source: 8111113-13**			Prepared: 2018-11-07, Analyzed: 2018-11-18						
Xylenes (total)	0.100	0.0008	mg/kg dry	0.0996	< 0.100	91	60-140			
Surrogate: Toluene-d8	*2.36*		*mg/kg dry*	3.52		*67*	*60-140*			
Surrogate: 4-Bromofluorobenzene	*3.58*		*mg/kg dry*	3.31		*108*	*60-140*			
Surrogate: 1,4-Dichlorobenzene-d4	*3.68*		*mg/kg dry*	3.28		*112*	*60-140*			
Volatile Organic Compounds (VOC), Batch B8K1339										
Blank (B8K1339-BLK1)				Prepared: 2018-11-20, Analyzed: 2018-11-20						
Benzene	< 0.5	0.5	µg/L							
Bromodichloromethane	< 1.0	1.0	µg/L							
Bromoform	< 1.0	1.0	µg/L							
Carbon tetrachloride	< 0.5	0.5	µg/L							
Chlorobenzene	< 1.0	1.0	µg/L							
Chloroethane	< 2.0	2.0	µg/L							
Chloroform	< 1.0	1.0	µg/L							
Dibromochloromethane	< 1.0	1.0	µg/L							
1,2-Dibromoethane	< 0.3	0.3	µg/L							
Dibromomethane	< 1.0	1.0	µg/L							
1,2-Dichlorobenzene	< 0.5	0.5	µg/L							
1,3-Dichlorobenzene	< 1.0	1.0	µg/L							
1,4-Dichlorobenzene	< 1.0	1.0	µg/L							
1,1-Dichloroethane	< 1.0	1.0	µg/L							
1,2-Dichloroethane	< 1.0	1.0	µg/L							
1,1-Dichloroethylene	< 1.0	1.0	µg/L							
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
Dichloromethane	< 3.0	3.0	µg/L							
1,2-Dichloropropane	< 1.0	1.0	µg/L							
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L							
Ethylbenzene	< 1.0	1.0	µg/L							
Methyl tert-butyl ether	< 1.0	1.0	µg/L							
Styrene	< 1.0	1.0	µg/L							
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L							
Tetrachloroethylene	< 1.0	1.0	µg/L							
Toluene	< 1.0	1.0	µg/L							
1,1,1-Trichloroethane	< 1.0	1.0	µg/L							
1,1,2-Trichloroethane	< 1.0	1.0	µg/L							
Trichloroethylene	< 1.0	1.0	µg/L							
Trichlorofluoromethane	< 1.0	1.0	µg/L							
Vinyl chloride	< 1.0	1.0	µg/L							
Xylenes (total)	< 2.0	2.0	µg/L							
Surrogate: Toluene-d8	*25.4*		*µg/L*	26.2		*97*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*23.3*		*µg/L*	25.0		*93*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*20.8*		*µg/L*	25.0		*83*	*70-130*			
LCS (B8K1339-BS1)				Prepared: 2018-11-20, Analyzed: 2018-11-20						
Benzene	19.1	0.5	µg/L	20.0		96	70-130			
Bromodichloromethane	23.1	1.0	µg/L	20.2		114	70-130			
Bromoform	20.6	1.0	µg/L	20.1		103	70-130			
Carbon tetrachloride	20.6	0.5	µg/L	20.1		103	70-130			
Chlorobenzene	20.0	1.0	µg/L	20.1		100	70-130			
Chloroethane	13.6	2.0	µg/L	20.0		68	60-140			
Chloroform	22.0	1.0	µg/L	20.2		109	70-130			
Dibromochloromethane	23.0	1.0	µg/L	20.2		114	70-130			
1,2-Dibromoethane	21.5	0.3	µg/L	20.0		107	70-130			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Volatile Organic Compounds (VOC), Batch B8K1339, Continued

LCS (B8K1339-BS1), Continued Prepared: 2018-11-20, Analyzed: 2018-11-20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dibromomethane	22.7	1.0	µg/L	20.0		113	70-130			
1,2-Dichlorobenzene	19.2	0.5	µg/L	20.2		95	70-130			
1,3-Dichlorobenzene	18.5	1.0	µg/L	20.2		92	70-130			
1,4-Dichlorobenzene	19.4	1.0	µg/L	20.1		97	70-130			
1,1-Dichloroethane	20.4	1.0	µg/L	20.2		101	70-130			
1,2-Dichloroethane	23.8	1.0	µg/L	20.2		118	70-130			
1,1-Dichloroethylene	15.5	1.0	µg/L	20.1		77	70-130			
cis-1,2-Dichloroethylene	20.2	1.0	µg/L	20.0		101	70-130			
trans-1,2-Dichloroethylene	17.5	1.0	µg/L	20.1		87	70-130			
Dichloromethane	19.3	3.0	µg/L	20.1		96	70-130			
1,2-Dichloropropane	20.3	1.0	µg/L	20.1		101	70-130			
1,3-Dichloropropene (cis + trans)	40.5	1.0	µg/L	40.2		101	70-130			
Ethylbenzene	17.4	1.0	µg/L	20.0		87	70-130			
Methyl tert-butyl ether	16.4	1.0	µg/L	20.0		82	70-130			
Styrene	16.7	1.0	µg/L	20.0		83	70-130			
1,1,2,2-Tetrachloroethane	28.5	0.5	µg/L	20.2		141	70-130			SPK
Tetrachloroethylene	21.7	1.0	µg/L	20.1		108	70-130			
Toluene	22.2	1.0	µg/L	20.1		110	70-130			
1,1,1-Trichloroethane	20.0	1.0	µg/L	20.2		99	70-130			
1,1,2-Trichloroethane	22.4	1.0	µg/L	20.2		111	70-130			
Trichloroethylene	20.8	1.0	µg/L	20.1		103	70-130			
Trichlorofluoromethane	18.0	1.0	µg/L	20.0		90	60-140			
Vinyl chloride	14.4	1.0	µg/L	20.0		72	60-140			
Xylenes (total)	56.5	2.0	µg/L	60.0		94	70-130			
Surrogate: Toluene-d8	*25.5*		*µg/L*	26.2		*97*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*29.7*		*µg/L*	25.0		*119*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*31.3*		*µg/L*	25.0		*125*	*70-130*			

Duplicate (B8K1339-DUP1) **Source: 8111113-18** Prepared: 2018-11-20, Analyzed: 2018-11-20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Benzene	< 0.5	0.5	µg/L		< 0.5				22	
Bromodichloromethane	< 1.0	1.0	µg/L		< 1.0				23	
Bromoform	< 1.0	1.0	µg/L		< 1.0				23	
Carbon tetrachloride	< 0.5	0.5	µg/L		< 0.5				30	
Chlorobenzene	< 1.0	1.0	µg/L		< 1.0				26	
Chloroethane	< 2.0	2.0	µg/L		< 2.0				50	
Chloroform	< 1.0	1.0	µg/L		< 1.0				22	
Dibromochloromethane	< 1.0	1.0	µg/L		< 1.0				28	
1,2-Dibromoethane	< 0.3	0.3	µg/L		< 0.3				30	
Dibromomethane	< 1.0	1.0	µg/L		< 1.0				30	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L		< 0.5				27	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L		< 1.0				30	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L		< 1.0				30	
1,1-Dichloroethane	< 1.0	1.0	µg/L		< 1.0				24	
1,2-Dichloroethane	< 1.0	1.0	µg/L		< 1.0				24	
1,1-Dichloroethylene	< 1.0	1.0	µg/L		< 1.0				30	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L		< 1.0				22	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L		< 1.0				27	
Dichloromethane	< 3.0	3.0	µg/L		< 3.0				27	
1,2-Dichloropropane	< 1.0	1.0	µg/L		< 1.0				28	
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L		< 1.0				30	
Ethylbenzene	< 1.0	1.0	µg/L		< 1.0				30	
Methyl tert-butyl ether	< 1.0	1.0	µg/L		< 1.0				20	
Styrene	< 1.0	1.0	µg/L		< 1.0				30	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L		< 0.5				30	
Tetrachloroethylene	< 1.0	1.0	µg/L		< 1.0				30	
Toluene	< 1.0	1.0	µg/L		< 1.0				24	

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Bear Environmental	**WORK ORDER**	8111113
PROJECT	BE1825	**REPORTED**	2018-11-21 15:23

Volatile Organic Compounds (VOC), Batch B8K1339, Continued

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Duplicate (B8K1339-DUP1), Continued		**Source: 8111113-18**		Prepared: 2018-11-20, Analyzed: 2018-11-20						
1,1,1-Trichloroethane	< 1.0	1.0	µg/L		< 1.0				30	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L		< 1.0				30	
Trichloroethylene	< 1.0	1.0	µg/L		< 1.0				27	
Trichlorofluoromethane	< 1.0	1.0	µg/L		< 1.0				50	
Vinyl chloride	< 1.0	1.0	µg/L		< 1.0				40	
Xylenes (total)	< 2.0	2.0	µg/L		< 2.0				29	
Surrogate: Toluene-d8	*26.8*		*µg/L*	26.2		*102*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*24.3*		*µg/L*	25.0		*97*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*21.7*		*µg/L*	25.0		*87*	*70-130*			
Matrix Spike (B8K1339-MS1)		**Source: 8111113-18**		Prepared: 2018-11-20, Analyzed: 2018-11-20						
Benzene	18.9	0.5	µg/L	20.0	< 0.5	94	70-130			
Bromodichloromethane	23.3	1.0	µg/L	20.2	< 1.0	115	70-130			
Bromoform	20.3	1.0	µg/L	20.1	< 1.0	101	70-130			
Carbon tetrachloride	20.9	0.5	µg/L	20.1	< 0.5	104	70-130			
Chlorobenzene	20.0	1.0	µg/L	20.1	< 1.0	99	70-130			
Chloroethane	12.9	2.0	µg/L	20.0	< 2.0	64	60-140			
Chloroform	21.6	1.0	µg/L	20.2	< 1.0	107	70-130			
Dibromochloromethane	23.9	1.0	µg/L	20.2	< 1.0	118	70-130			
1,2-Dibromoethane	21.8	0.3	µg/L	20.0	< 0.3	109	70-130			
Dibromomethane	22.2	1.0	µg/L	20.0	< 1.0	111	70-130			
1,2-Dichlorobenzene	20.1	0.5	µg/L	20.2	< 0.5	99	70-130			
1,3-Dichlorobenzene	19.0	1.0	µg/L	20.2	< 1.0	94	70-130			
1,4-Dichlorobenzene	20.0	1.0	µg/L	20.1	< 1.0	100	70-130			
1,1-Dichloroethane	20.1	1.0	µg/L	20.2	< 1.0	99	70-130			
1,2-Dichloroethane	23.5	1.0	µg/L	20.2	< 1.0	116	70-130			
1,1-Dichloroethylene	15.0	1.0	µg/L	20.1	< 1.0	75	70-130			
cis-1,2-Dichloroethylene	19.8	1.0	µg/L	20.0	< 1.0	99	70-130			
trans-1,2-Dichloroethylene	17.2	1.0	µg/L	20.1	< 1.0	86	70-130			
Dichloromethane	18.9	3.0	µg/L	20.1	< 3.0	94	70-130			
1,2-Dichloropropane	20.5	1.0	µg/L	20.1	< 1.0	102	70-130			
1,3-Dichloropropene (cis + trans)	41.4	1.0	µg/L	40.2	< 1.0	103	70-130			
Ethylbenzene	17.8	1.0	µg/L	20.0	< 1.0	89	70-130			
Methyl tert-butyl ether	14.8	1.0	µg/L	20.0	< 1.0	74	70-130			
Styrene	14.1	1.0	µg/L	20.0	< 1.0	70	70-130			
Tetrachloroethylene	13.6	1.0	µg/L	20.1	< 1.0	68	70-130			SPK
Toluene	22.7	1.0	µg/L	20.1	< 1.0	112	70-130			
1,1,1-Trichloroethane	20.0	1.0	µg/L	20.2	< 1.0	99	70-130			
1,1,2-Trichloroethane	23.4	1.0	µg/L	20.2	< 1.0	116	70-130			
Trichloroethylene	15.5	1.0	µg/L	20.1	< 1.0	77	70-130			
Trichlorofluoromethane	18.0	1.0	µg/L	20.0	< 1.0	90	60-140			
Vinyl chloride	13.9	1.0	µg/L	20.0	< 1.0	70	60-140			
Xylenes (total)	57.6	2.0	µg/L	60.0	< 2.0	96	70-130			
Surrogate: Toluene-d8	*25.9*		*µg/L*	26.2		*99*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*32.7*		*µg/L*	25.0		*131*	*70-130*			*S02*
Surrogate: 1,4-Dichlorobenzene-d4	*29.4*		*µg/L*	25.0		*118*	*70-130*			

QC Qualifiers:

S02	Surrogate recovery outside of control limits. Data accepted based on acceptable recovery of other surrogates.
SPK	The recovery of this analyte was outside of established control limits.

APPENDIX E

LABORATORY CERTIFICATES

FOR SAMPLES COLLECTED BY THIRD PARTIES

Vancouver-PY Lab for Environmental Testing
2645 Dollarton Highway
North Vancouver, BC
V7H 1B1

Environment and Climate Change Canada
Environnement et Changement climatique Canada

Report of Analysis

811-Nelson Region-2018-07

Veron Novosad
MOE
BC
Lower Mainland

401-333 Victoria Street
Nelson, BC
V1L 4K3

Work Order: V18H070

Reported: 2018-10-11
Printed: 2018-10-11

Authorization: ______________________________

Mark Saffari For Graham van Aggelen
Manager, PYLET

ABSTRACT

Dayue Shang's legal: (604) 903-4462

8°C on arrival. August 23, 2018 (NF)

Sample Manager contact:
Email: ec.coordonnateurdusoutiendelaboratoir-labsupportcoordinator.ec@canada.ca
Phone: (604) 903-4413
QA Officer contact:
Email: ec.agentdassurancedelaqualiteleepy-qualityassuranceofficerpylet.ec@canada.ca
Phone: (604) 903-4411

Unit	Description
µg/g (dry)	microgram per gram (dry)
ng/mL	nanogram per millilitre

Qualifier	Description
RP	Received past holding time
*	Non-Accredited Analysis/Analyte
ND	Not Detected at Reporting Limit (RL)
NR	Not Recoverable

SAMPLE DESCRIPTION

Lab ID	Client ID	Station ID	Matrix	Date/Time Sampled	Date Received	Sample Type
V18H070-01	*Site 1-1*		Sediment	2018-08-01 16:03 PAC Sampled By: Veron Novosad	2018-08-23	Grab
V18H070-02	*Site 1-2*		Sediment	2018-08-01 16:04 PAC Sampled By: Veron Novosad	2018-08-23	Grab
V18H070-03	*Site 1-3*		Sediment	2018-08-01 16:05 PAC Sampled By: Veron Novosad	2018-08-23	Grab
V18H070-04	*Site 2-1*		Water	2018-08-01 00:00 PAC Sampled By: Veron Novosad	2018-08-23	Grab
V18H070-05	*Site 2-1A*		Water	2018-08-01 00:00 PAC Sampled By: Veron Novosad	2018-08-23	Grab
V18H070-06	*Site 3-1*		Sediment	2018-08-01 16:34 PAC Sampled By: Veron Novosad	2018-08-23	Grab
V18H070-07	*Site 3-2*		Sediment	2018-08-01 16:35 PAC Sampled By: Veron Novosad	2018-08-23	Grab
V18H070-08	*Site 3-3*		Sediment	2018-08-01 16:33 PAC Sampled By: Veron Novosad	2018-08-23	Grab
V18H070-09	*soil in paint can*		Sediment	2018-07-31 00:00 PAC Sampled By: Veron Novosad	2018-08-23	Grab

REFERENCES

Method ID	Laboratory Method	Reference
V0757D	V_TPAHMSMS	in house developed (polycyclic aromatic hydrocarbons & alkylated polycyclic aromatic hydrocarbons)

Toxicology Containers	Temperature °C

SAMPLE RESULTS

Site 1-1
V18H070-01

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Analyte	Result	RL	Units	Prepared	Analyzed	By	Method	Notes
Polynuclear Aromatic Hydrocarbons								
Acenaphthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Acenaphthylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(b)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(e)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(ghi)perylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(k)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Chrysene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Dibenz(a,h)anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Fluorene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Indeno(1,2,3-cd)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Naphthalene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Perylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Phenanthrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Acenaphthenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Biphenyls	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Biphenyls	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Benzopyrene/Perylene	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Dibenzothiophene	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Fluoranthene/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	

SAMPLE RESULTS
(Continued)

Site 1-1
V18H070-01
(Continued)

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Polynuclear Aromatic Hydrocarbons (Continued)

C4-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D

Surrogates

*Acenaphthene-d10 **	*86,9%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Chrysene-d12 **	*92,1%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Naphthalene-d8 **	*75,3%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Perylene-d12 **	*95,5%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Phenanthrene-d10 **	*97,9%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*

SAMPLE RESULTS
(Continued)

Site 1-2
V18H070-02

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Analyte	Result	RL	Units	Prepared	Analyzed	By	Method	Notes
Polynuclear Aromatic Hydrocarbons								
Acenaphthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Acenaphthylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(b)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(e)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(ghi)perylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(k)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Chrysene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Dibenz(a,h)anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Fluorene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Indeno(1,2,3-cd)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Naphthalene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Perylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Phenanthrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Acenaphthenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Biphenyls	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Biphenyls	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Benzopyrene/Perylene	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Dibenzothiophene	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Fluoranthene/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	

SAMPLE RESULTS
(Continued)

Site 1-2
V18H070-02
(Continued)

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Polynuclear Aromatic Hydrocarbons (Continued)

C4-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
Surrogates							
*Acenaphthene-d10 **	*91,8%*	*Limits: 60-140*		*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Chrysene-d12 **	*91,7%*	*Limits: 60-140*		*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Naphthalene-d8 **	*78,4%*	*Limits: 60-140*		*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Perylene-d12 **	*98,0%*	*Limits: 60-140*		*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Phenanthrene-d10 **	*99,3%*	*Limits: 60-140*		*2018-08-10*	*2018-08-10*	*HK*	*V0757D*

SAMPLE RESULTS
(Continued)

Site 1-3
V18H070-03

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Analyte	Result	RL	Units	Prepared	Analyzed	By	Method	Notes
Polynuclear Aromatic Hydrocarbons								
Acenaphthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Acenaphthylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(b)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(e)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(ghi)perylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(k)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Chrysene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Dibenz(a,h)anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Fluorene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Indeno(1,2,3-cd)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Naphthalene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Perylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Phenanthrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Acenaphthenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Biphenyls	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Biphenyls	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Benzopyrene/Perylene	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Dibenzothiophene	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Fluoranthene/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	

SAMPLE RESULTS
(Continued)

Site 1-3
V18H070-03
(Continued)

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Polynuclear Aromatic Hydrocarbons (Continued)

C4-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D

Surrogates

*Acenaphthene-d10 **	*94,8%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Chrysene-d12 **	*95,0%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Naphthalene-d8 **	*81,4%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Perylene-d12 **	*101%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Phenanthrene-d10 **	*103%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*

SAMPLE RESULTS
(Continued)

Site 2-1
V18H070-04

Vancouver-PY Lab for Environmental Testing

Polynuclear Aromatic Hydrocarbons

Analyte	Result	RL	Units	Prepared	Analyzed	By	Method	Notes
Acenaphthene	11500	10000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Acenaphthylene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Anthracene	11100	10000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)anthracene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)pyrene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Benzo(b)fluoranthene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Benzo(e)pyrene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Benzo(ghi)perylene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Benzo(k)fluoranthene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Chrysene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Dibenz(a,h)anthracene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Fluoranthene	3060	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Fluorene	34200	10000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Indeno(1,2,3-cd)pyrene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Naphthalene	128000	10000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Perylene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Phenanthrene	28600	10000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Pyrene	22500	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Acenaphthenes	1880000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Benz(a)anthracenes/Chrysenes	7160	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Benzopyrenes/Perylenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Biphenyls	125000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Dibenzothiophenes	29000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Fluoranthenes/Pyrenes	163000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Naphthalenes	337000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Phenanthrenes/Anthracenes	114000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Benz(a)anthracenes/Chrysenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Benzopyrenes/Perylenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Biphenyls	123000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Dibenzothiophenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Fluoranthenes/Pyrenes	133000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Naphthalenes	705000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Phenanthrenes/Anthracenes	157000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C3-Benz(a)anthracenes/Chrysenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C3-Benzopyrene/Perylene	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C3-Dibenzothiophene	27400	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C3-Fluoranthene/Pyrenes	42500	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C3-Naphthalenes	1390000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C3-Phenanthrenes/Anthracenes	97200	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C4-Benz(a)anthracenes/Chrysenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C4-Benzopyrenes/Perylenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C4-Fluoranthenes/Pyrenes	<20000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C4-Naphthalenes	850000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	

SAMPLE RESULTS
(Continued)

Site 2-1
V18H070-04
(Continued)

Vancouver-PY Lab for Environmental Testing

Polynuclear Aromatic Hydrocarbons (Continued)

C4-Phenanthrenes/Anthracenes	109000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D
C5-Benz(a)anthracenes/Chrysenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D
C5-Benzopyrenes/Perylenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D
C5-Fluoranthenes/Pyrenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D
C5-Naphthalenes	18100	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D
C5-Phenanthrenes/Anthracenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D

Surrogates

*Acenaphthene-d10 **	*96,2%*	*Limits: 70-130*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Chrysene-d12 **	*114%*	*Limits: 70-130*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Naphthalene-d8 **	*105%*	*Limits: 70-130*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Perylene-d12 **	*124%*	*Limits: 70-130*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Phenanthrene-d10 **	*118%*	*Limits: 70-130*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*

SAMPLE RESULTS
(Continued)

Site 2-1A
V18H070-05

Vancouver-PY Lab for Environmental Testing

Analyte	Result	RL	Units	Prepared	Analyzed	By	Method	Notes
Polynuclear Aromatic Hydrocarbons								
Acenaphthene	27600	10000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Acenaphthylene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Anthracene	12100	10000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)anthracene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)pyrene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Benzo(b)fluoranthene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Benzo(e)pyrene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Benzo(ghi)perylene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Benzo(k)fluoranthene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Chrysene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Dibenz(a,h)anthracene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Fluoranthene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Fluorene	19100	10000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Indeno(1,2,3-cd)pyrene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Naphthalene	80400	10000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Perylene	<1000	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Phenanthrene	26400	10000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
Pyrene	5900	1000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Acenaphthenes	1510000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Benz(a)anthracenes/Chrysenes	2810	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Benzopyrenes/Perylenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Biphenyls	124000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Dibenzothiophenes	29600	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Fluoranthenes/Pyrenes	52400	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Naphthalenes	354000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C1-Phenanthrenes/Anthracenes	110000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Benz(a)anthracenes/Chrysenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Benzopyrenes/Perylenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Biphenyls	115000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Dibenzothiophenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Fluoranthenes/Pyrenes	35300	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Naphthalenes	734000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C2-Phenanthrenes/Anthracenes	150000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C3-Benz(a)anthracenes/Chrysenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C3-Benzopyrene/Perylene	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C3-Dibenzothiophene	22900	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C3-Fluoranthene/Pyrenes	<20000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C3-Naphthalenes	1320000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C3-Phenanthrenes/Anthracenes	89200	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C4-Benz(a)anthracenes/Chrysenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C4-Benzopyrenes/Perylenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C4-Fluoranthenes/Pyrenes	<20000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	
C4-Naphthalenes	716000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D	

SAMPLE RESULTS
(Continued)

Site 2-1A
V18H070-05
(Continued)

Vancouver-PY Lab for Environmental Testing

Polynuclear Aromatic Hydrocarbons (Continued)

C4-Phenanthrenes/Anthracenes	101000	20000	ng/mL	2018-08-10	2018-08-10	HK	V0757D
C5-Benz(a)anthracenes/Chrysenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D
C5-Benzopyrenes/Perylenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D
C5-Fluoranthenes/Pyrenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D
C5-Naphthalenes	17100	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D
C5-Phenanthrenes/Anthracenes	<2000	2000	ng/mL	2018-08-10	2018-08-10	HK	V0757D

Surrogates

*Acenaphthene-d10 **	*88,1%*	*Limits: 70-130*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Chrysene-d12 **	*117%*	*Limits: 70-130*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Naphthalene-d8 **	*102%*	*Limits: 70-130*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Perylene-d12 **	*105%*	*Limits: 70-130*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Phenanthrene-d10 **	*118%*	*Limits: 70-130*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*

SAMPLE RESULTS
(Continued)

Site 3-1
V18H070-06

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Analyte	Result	RL	Units	Prepared	Analyzed	By	Method	Notes
Polynuclear Aromatic Hydrocarbons								
Acenaphthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Acenaphthylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(b)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(e)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(ghi)perylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(k)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Chrysene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Dibenz(a,h)anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Fluorene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Indeno(1,2,3-cd)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Naphthalene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Perylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Phenanthrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Phenanthrenes/Anthracenes	0.043	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Acenaphthenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Biphenyls	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Biphenyls	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Benzopyrene/Perylene	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Dibenzothiophene	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Fluoranthene/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	

SAMPLE RESULTS
(Continued)

Site 3-1
V18H070-06
(Continued)

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Polynuclear Aromatic Hydrocarbons (Continued)

C4-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
Surrogates							
*Acenaphthene-d10 **	*91,3%*	*Limits: 60-140*		*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Chrysene-d12 **	*92,4%*	*Limits: 60-140*		*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Naphthalene-d8 **	*77,1%*	*Limits: 60-140*		*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Perylene-d12 **	*104%*	*Limits: 60-140*		*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Phenanthrene-d10 **	*99,0%*	*Limits: 60-140*		*2018-08-10*	*2018-08-10*	*HK*	*V0757D*

SAMPLE RESULTS
(Continued)

Site 3-2
V18H070-07

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Analyte	Result	RL	Units	Prepared	Analyzed	By	Method	Notes
Polynuclear Aromatic Hydrocarbons								
Acenaphthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Acenaphthylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(b)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(e)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(ghi)perylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(k)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Chrysene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Dibenz(a,h)anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Fluorene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Indeno(1,2,3-cd)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Naphthalene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Perylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Phenanthrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Phenanthrenes/Anthracenes	0.050	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Acenaphthenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Biphenyls	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Biphenyls	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Benzopyrene/Perylene	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Dibenzothiophene	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Fluoranthene/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	

SAMPLE RESULTS
(Continued)

Site 3-2
V18H070-07
(Continued)

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Polynuclear Aromatic Hydrocarbons (Continued)

C4-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D

Surrogates

*Acenaphthene-d10 **	*101%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Chrysene-d12 **	*103%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Naphthalene-d8 **	*84,1%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Perylene-d12 **	*115%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Phenanthrene-d10 **	*112%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*

SAMPLE RESULTS
(Continued)

Site 3-3
V18H070-08

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Analyte	Result	RL	Units	Prepared	Analyzed	By	Method	Notes
Polynuclear Aromatic Hydrocarbons								
Acenaphthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Acenaphthylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(a)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(b)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(e)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(ghi)perylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Benzo(k)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Chrysene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Dibenz(a,h)anthracene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Fluorene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Indeno(1,2,3-cd)pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Naphthalene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Perylene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Phenanthrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
Pyrene	<0.020	0.020	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Acenaphthenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Biphenyls	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C1-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Biphenyls	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C2-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Benzopyrene/Perylene	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Dibenzothiophene	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Fluoranthene/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C3-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	
C4-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D	

SAMPLE RESULTS
(Continued)

Site 3-3
V18H070-08
(Continued)

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Polynuclear Aromatic Hydrocarbons (Continued)

C4-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Naphthalenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D
C5-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-10	2018-08-10	HK	V0757D

Surrogates

*Acenaphthene-d10 **	*91,7%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Chrysene-d12 **	*90,8%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Naphthalene-d8 **	*77,8%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Perylene-d12 **	*95,5%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*
*Phenanthrene-d10 **	*99,5%*	*Limits: 60-140*	*2018-08-10*	*2018-08-10*	*HK*	*V0757D*

SAMPLE RESULTS
(Continued)

soil in paint can
V18H070-09

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Analyte	Result	RL	Units	Prepared	Analyzed	By	Method	Notes
Polynuclear Aromatic Hydrocarbons								
Acenaphthene	0.022	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Acenaphthylene	<0.020	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Anthracene	0.027	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Benzo(a)anthracene	<0.020	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Benzo(a)pyrene	<0.020	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Benzo(b)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Benzo(e)pyrene	<0.020	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Benzo(ghi)perylene	<0.020	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Benzo(k)fluoranthene	<0.020	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Chrysene	<0.020	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Dibenz(a,h)anthracene	<0.020	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Fluoranthene	0.030	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Fluorene	0.110	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Indeno(1,2,3-cd)pyrene	<0.020	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Naphthalene	0.485	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Perylene	<0.020	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Phenanthrene	0.318	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
Pyrene	0.152	0.020	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C1-Phenanthrenes/Anthracenes	0.896	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C1-Acenaphthenes	2.76	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C1-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C1-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C1-Biphenyls	0.496	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C1-Dibenzothiophenes	0.237	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C1-Fluoranthenes/Pyrenes	0.839	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C1-Naphthalenes	1.25	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C2-Benz(a)anthracenes/Chrysenes	0.048	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C2-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C2-Biphenyls	0.816	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C2-Dibenzothiophenes	0.088	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C2-Fluoranthenes/Pyrenes	0.600	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C2-Naphthalenes	3.70	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C2-Phenanthrenes/Anthracenes	0.922	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C3-Benz(a)anthracenes/Chrysenes	0.065	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C3-Benzopyrene/Perylene	<0.040	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C3-Dibenzothiophene	0.153	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C3-Fluoranthene/Pyrenes	0.228	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C3-Naphthalenes	6.67	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C3-Phenanthrenes/Anthracenes	0.630	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C4-Benz(a)anthracenes/Chrysenes	0.043	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C4-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C4-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	
C4-Naphthalenes	5.18	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D	

SAMPLE RESULTS
(Continued)

soil in paint can
V18H070-09
(Continued)

Notes sur l'échantillon: RP

Vancouver-PY Lab for Environmental Testing

Polynuclear Aromatic Hydrocarbons (Continued)

C4-Phenanthrenes/Anthracenes	0.413	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D
C5-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D
C5-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D
C5-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D
C5-Naphthalenes	0.165	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D
C5-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	2018-08-23	2018-08-23	HK	V0757D

Surrogates

*Acenaphthene-d10 **	*105%*	*Limits: 60-140*	*2018-08-23*	*2018-08-23*	*HK*	*V0757D*
*Chrysene-d12 **	*119%*	*Limits: 60-140*	*2018-08-23*	*2018-08-23*	*HK*	*V0757D*
*Naphthalene-d8 **	*89,4%*	*Limits: 60-140*	*2018-08-23*	*2018-08-23*	*HK*	*V0757D*
*Perylene-d12 **	*110%*	*Limits: 60-140*	*2018-08-23*	*2018-08-23*	*HK*	*V0757D*
*Phenanthrene-d10 **	*80,0%*	*Limits: 60-140*	*2018-08-23*	*2018-08-23*	*HK*	*V0757D*

HYDROCARBON IDENTIFICATION BY GAS CHROMATOGRAPHY / TANDEM MASS SPECTROMETRY-V18H070

LAB SAMPLE ID: V18H070-01 Analyst: DS

PYLET SOP ID: HCIDGCMSMS V2.3

Date(s) of Analysis: 2018 September 24

Test Results: Sample V18H070-01 did not provide a GC/MS profile of Petroleum Hydrocarbon characteristic of light fuel oil. This conclusion is based on the comparison of GC/MS chromatogram pattern of the sample to that of a typical petroleum product in terms of polycyclic aromatic hydrocarbons, alkylated polycyclic aromatic hydrocarbons, and biomarkers.

LAB SAMPLE ID: V18H070-02 Analyst: DS

PYLET SOP ID: HCIDGCMSMS V2.3

Date(s) of Analysis: 2018 September 24

Test Results: Sample V18H070-02 did not provide a GC/MS profile of Petroleum Hydrocarbon characteristic of light fuel oil. This conclusion is based on the comparison of GC/MS chromatogram pattern of the sample to that of a typical petroleum product in terms of polycyclic aromatic hydrocarbons, alkylated polycyclic aromatic hydrocarbons, and biomarkers.

LAB SAMPLE ID: V18H070-03 Analyst: DS

PYLET SOP ID: HCIDGCMSMS V2.3

Date(s) of Analysis: 2018 September 24

Test Results: Sample V18H070-03 did not provide a GC/MS profile of Petroleum Hydrocarbon characteristic of light fuel oil. This conclusion is based on the comparison of GC/MS chromatogram pattern of the sample to that of a typical petroleum product in terms of polycyclic aromatic hydrocarbons, alkylated polycyclic aromatic hydrocarbons, and biomarkers.

LAB SAMPLE ID: V18H070-04 Analyst: DS

PYLET SOP ID: HCIDGCMSMS V2.3

Date(s) of Analysis: 2018 September 24

Test Results: Sample V18H070-04 provided a GC/MS profile of Petroleum Hydrocarbon characteristics of a mixture of diesel and lubricating oils. This conclusion is based on the comparison of GC/MS chromatogram pattern of the sample to that of typical petroleum products in terms of polycyclic aromatic hydrocarbons, alkylated polycyclic aromatic hydrocarbons, and biomarkers.

LAB SAMPLE ID: V18H070-05 Analyst: DS

PYLET SOP ID: HCIDGCMSMS V2.3

Date(s) of Analysis: 2018 September 24

Test Results: Sample V18H070-05 provided a GC/MS profile of Petroleum Hydrocarbon characteristics of a mixture of diesel and lubricating oils. This conclusion is based on the comparison of GC/MS chromatogram pattern of the sample to that of typical petroleum products in terms of polycyclic aromatic hydrocarbons, alkylated polycyclic aromatic hydrocarbons, and biomarkers.

LAB SAMPLE ID: V18H070-06 Analyst: DS

PYLET SOP ID: HCIDGCMSMS V2.3

Date(s) of Analysis: 2018 September 24

Test Results: Sample V18H070-06 did not provide a GC/MS profile of Petroleum Hydrocarbon characteristic of light fuel oil. This conclusion is based on the comparison of GC/MS chromatogram pattern of the sample to that of a typical petroleum product in terms of polycyclic aromatic hydrocarbons, alkylated polycyclic aromatic hydrocarbons, and biomarkers.

LAB SAMPLE ID: V18H070-07 Analyst: DS

PYLET SOP ID: HCIDGCMSMS V2.3

Date(s) of Analysis: 2018 September 24

Test Results: Sample V18H070-07 did not provide a GC/MS profile of Petroleum Hydrocarbon characteristic of light fuel oil. This conclusion is based on the comparison of GC/MS chromatogram pattern of the sample to that of a typical petroleum product in terms of polycyclic aromatic hydrocarbons, alkylated polycyclic aromatic hydrocarbons, and biomarkers.

LAB SAMPLE ID: V18H070-08 Analyst: DS

PYLET SOP ID: HCIDGCMSMS V2.3

Date(s) of Analysis: 2018 September 24

Test Results: Sample V18H070-08 did not provide a GC/MS profile of Petroleum Hydrocarbon. This conclusion is based on the comparison of GC/MS chromatogram pattern of the sample to that of a typical petroleum product in terms of polycyclic aromatic hydrocarbons, alkylated polycyclic aromatic hydrocarbons, and biomarkers.

LAB SAMPLE ID: V18H070-09 Analyst: DS

PYLET SOP ID: HCIDGCMSMS V2.3

Date(s) of Analysis: 2018 September 24

Test Results: Sample V18H070-09 provide a GC/MS profile of Petroleum Hydrocarbon characteristic of a mixture of diesel and lubricating oils. This conclusion is based on the comparison of GC/MS chromatogram pattern of the sample to that of typical petroleum products in terms of polycyclic aromatic hydrocarbons, alkylated polycyclic aromatic hydrocarbons, and biomarkers.

Test QAQC Results:

LAB SAMPLE ID: VFI0010-BLK1 Analyst: DS

PYLET SOP ID: HCIDGCMSMS V2.3

Date(s) of Analysis: 2018 September 24

Test Results: Sample VFI0010-BLK1 did not provide a GC/MS profile of Petroleum Hydrocarbon characteristic of light fuel oil. This conclusion is based on the comparison of GC/MS chromatogram pattern of the sample to that of a typical petroleum product in terms of polycyclic aromatic hydrocarbons, alkylated polycyclic aromatic hydrocarbons, and biomarkers.

LAB SAMPLE ID: VFI0010-DUP1 Analyst: DS

PYLET SOP ID: HCIDGCMSMS V2.3

Date(s) of Analysis: 2018 September 24

Test Results: Sample VFI0010-DUP1 did not provide a GC/MS profile of Petroleum Hydrocarbon. This conclusion is based on the comparison of GC/MS chromatogram pattern of the sample to that of a typical petroleum product in terms of polycyclic aromatic hydrocarbons, alkylated polycyclic aromatic hydrocarbons, and biomarkers.

LAB SAMPLE ID: VFI0010-DUP2 Analyst: DS

PYLET SOP ID: HCIDGCMSMS V2.3

Date(s) of Analysis: 2018 September 24

Test Results: Sample VFI0010-DUP2 provide a GC/MS profile of Petroleum Hydrocarbon characteristic of a mixture of diesel and lubricating oils. This conclusion is based on the comparison of GC/MS chromatogram pattern of the sample to that of typical petroleum products in terms of polycyclic aromatic hydrocarbons, alkylated polycyclic aromatic hydrocarbons, and biomarkers.

Conclusions:

Petroleum Hydrocarbons

- Petroleum Hydrocarbons were detected in the following samples: Sample V18H070-04, V18H070-05, and V18H070-09.

Oil type identification

- The type of Petroleum Hydrocarbons found in Sample V18H070-04, V18H070-05, and V18H070-09 is within the range of mixture diesel fuel and lubricating oil.

Source Identification

- **Match** Comparison of data shows that the Petroleum Hydrocarbons found in Sample V18H070-04 and V18H070-05 are virtually identical of that of found in Sample V18H070-09. The analytical results point to the same source of the two samples.

QUALITY CONTROL RESULTS

Vancouver-PY Lab for Environmental Testing

Accuracy

The accuracy of a methodology used to produce sample data is determined by the analysis of quality control samples. These samples are purchased from certified reference suppliers or created in-house from stock standards.

The results of the accuracy quality control data are reported as Percent Recovery (% Rec) and are as follows:

Polynuclear Aromatic Hydrocarbons

VFI0010 - VFI0010-BS1

Parameter	Result	RL	Unit	Expected	% Rec	% Limits	Notes
Acenaphthene	0.187	0.020	µg/g (dry)	0.19900	94.1	70-130	
Acenaphthylene	0.161	0.020	µg/g (dry)	0.19900	80.7	70-130	
Anthracene	0.166	0.020	µg/g (dry)	0.19900	83.4	70-130	
Benzo(a)anthracene	0.163	0.020	µg/g (dry)	0.19900	82.0	70-130	
Benzo(a)pyrene	0.213	0.020	µg/g (dry)	0.19900	107	70-130	
Benzo(b)fluoranthene	0.167	0.020	µg/g (dry)	0.19900	83.7	70-130	
Benzo(e)pyrene	0.217	0.020	µg/g (dry)	0.19900	109	70-130	
Benzo(ghi)perylene	0.194	0.020	µg/g (dry)	0.19900	97.6	70-130	
Benzo(k)fluoranthene	0.206	0.020	µg/g (dry)	0.19900	103	70-130	
Chrysene	0.217	0.020	µg/g (dry)	0.19900	109	70-130	
Dibenz(a,h)anthracene	0.203	0.020	µg/g (dry)	0.19900	102	70-130	
Fluoranthene	0.160	0.020	µg/g (dry)	0.19900	80.6	70-130	
Fluorene	0.181	0.020	µg/g (dry)	0.19900	91.0	70-130	
Indeno(1,2,3-cd)pyrene	0.186	0.020	µg/g (dry)	0.19900	93.6	70-130	
Naphthalene	0.201	0.020	µg/g (dry)	0.19900	101	70-130	
Perylene	0.198	0.020	µg/g (dry)	0.19900	99.6	70-130	
Phenanthrene	0.179	0.020	µg/g (dry)	0.19900	90.0	70-130	
Pyrene	0.167	0.020	µg/g (dry)	0.19900	84.0	70-130	
Surrogates:							
Acenaphthene-d10	*80.7*	%				*70-130*	
Chrysene-d12	*86.1*	%				*70-130*	
Naphthalene-d8	*70.1*	%				*70-130*	
Perylene-d12	*104*	%				*70-130*	
Phenanthrene-d10	*90.9*	%				*70-130*	

Polynuclear Aromatic Hydrocarbons

VFI0015 - VFI0015-BS1

Parameter	Result	RL	Unit	Expected	% Rec	% Limits	Notes
Acenaphthene	94.5	10.0	ng/mL	100.00	94.5	70-130	
Acenaphthylene	87.1	10.0	ng/mL	100.00	87.1	70-130	
Anthracene	81.7	10.0	ng/mL	100.00	81.7	70-130	
Benzo(a)anthracene	87.3	10.0	ng/mL	100.00	87.3	70-130	
Benzo(a)pyrene	96.9	10.0	ng/mL	100.00	96.9	70-130	
Benzo(b)fluoranthene	91.7	10.0	ng/mL	100.00	91.7	70-130	
Benzo(e)pyrene	106	10.0	ng/mL	100.00	106	70-130	
Benzo(ghi)perylene	98.9	10.0	ng/mL	100.00	98.9	70-130	
Benzo(k)fluoranthene	101	10.0	ng/mL	100.00	101	70-130	
Chrysene	107	10.0	ng/mL	100.00	107	70-130	
Dibenz(a,h)anthracene	93.8	10.0	ng/mL	100.00	93.8	70-130	
Fluoranthene	92.4	10.0	ng/mL	100.00	92.4	70-130	
Fluorene	92.9	10.0	ng/mL	100.00	92.9	70-130	
Indeno(1,2,3-cd)pyrene	112	10.0	ng/mL	100.00	112	70-130	
Naphthalene	102	10.0	ng/mL	100.00	102	70-130	
Perylene	105	10.0	ng/mL	100.00	105	70-130	
Phenanthrene	106	10.0	ng/mL	100.00	106	70-130	

QUALITY CONTROL RESULTS
(Continued)

Vancouver-PY Lab for Environmental Testing

Accuracy (Continued)

Polynuclear Aromatic Hydrocarbons (Continued)

VFI0015 - VFI0015-BS1 (Continued)

Parameter	Result	RL	Unit	Expected	% Rec	% Limits	Notes
Pyrene	96.4	10.0	ng/mL	100.00	96.4	70-130	
Surrogates:							
Acenaphthene-d10	*78.0*	%				*70-130*	
Chrysene-d12	*87.7*	%				*70-130*	
Naphthalene-d8	*82.4*	%				*70-130*	
Perylene-d12	*75.6*	%				*70-130*	
Phenanthrene-d10	*76.6*	%				*70-130*	

QUALITY CONTROL RESULTS
(Continued)

Vancouver-PY Lab for Environmental Testing

Precision

The precision of sample data is measured by the analysis of replicate samples. The relative percent difference (% RPD) is an indicator as to the level of precision of the data. The level of % RPD can vary depending upon the parameter and methodology. Low % RPDs for concentrations above the limit of quantitation indicate good precision, however the % RPD will rise as results approach the detection limit.

The results of the precision quality control data are as follows:

QUALITY CONTROL RESULTS
(Continued)

Vancouver-PY Lab for Environmental Testing

Precision (Continued)

Polynuclear Aromatic Hydrocarbons

VFI0010 - VFI0010-DUP1

Sample V18H070-08

Parameter	Result	RL	Unit	Source Result	% RPD	% RPD Limits	Notes
Acenaphthene	<0.020	0.020	µg/g (dry)	<0.020		20	
Acenaphthylene	<0.020	0.020	µg/g (dry)	<0.020		20	
Anthracene	<0.020	0.020	µg/g (dry)	<0.020		20	
Benzo(a)anthracene	<0.020	0.020	µg/g (dry)	<0.020		20	
Benzo(a)pyrene	<0.020	0.020	µg/g (dry)	<0.020		20	
Benzo(b)fluoranthene	<0.020	0.020	µg/g (dry)	<0.020		20	
Benzo(e)pyrene	<0.020	0.020	µg/g (dry)	<0.020		20	
Benzo(ghi)perylene	<0.020	0.020	µg/g (dry)	<0.020		20	
Benzo(k)fluoranthene	<0.020	0.020	µg/g (dry)	<0.020		20	
Chrysene	<0.020	0.020	µg/g (dry)	<0.020		20	
Dibenz(a,h)anthracene	<0.020	0.020	µg/g (dry)	<0.020		20	
Fluoranthene	<0.020	0.020	µg/g (dry)	<0.020		20	
Fluorene	<0.020	0.020	µg/g (dry)	<0.020		20	
Indeno(1,2,3-cd)pyrene	<0.020	0.020	µg/g (dry)	<0.020		20	
Naphthalene	<0.020	0.020	µg/g (dry)	<0.020		20	
Perylene	<0.020	0.020	µg/g (dry)	<0.020		20	
Phenanthrene	<0.020	0.020	µg/g (dry)	<0.020		20	
Pyrene	<0.020	0.020	µg/g (dry)	<0.020		20	
C1-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C1-Acenaphthenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C1-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C1-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C1-Biphenyls	<0.040	0.040	µg/g (dry)	<0.040		20	
C1-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C1-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C1-Naphthalenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C2-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C2-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C2-Biphenyls	<0.040	0.040	µg/g (dry)	<0.040		20	
C2-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C2-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C2-Naphthalenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C2-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C3-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C3-Benzopyrene/Perylene	<0.040	0.040	µg/g (dry)	<0.040		20	
C3-Dibenzothiophene	<0.040	0.040	µg/g (dry)	<0.040		20	
C3-Fluoranthene/Pyrenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C3-Naphthalenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C3-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C4-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C4-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C4-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C4-Naphthalenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C4-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C5-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C5-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C5-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C5-Naphthalenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C5-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	<0.040		20	

Surrogates:

Acenaphthene-d10	*99.2*	%
Chrysene-d12	*99.9*	%
Naphthalene-d8	*83.7*	%
Perylene-d12	*103*	%
Phenanthrene-d10	*108*	%

Precision (Continued)

Polynuclear Aromatic Hydrocarbons
VFI0010 - VFI0010-DUP2
Sample V18H070-09

Parameter	Result	RL	Unit	Source Result	% RPD	% RPD Limits	Notes
Acenaphthene	0.021	0.020	µg/g (dry)	0.022	4.02	20	
Acenaphthylene	<0.020	0.020	µg/g (dry)	<0.020		20	
Anthracene	0.023	0.020	µg/g (dry)	0.027	15.3	20	
Benzo(a)anthracene	<0.020	0.020	µg/g (dry)	<0.020		20	
Benzo(a)pyrene	<0.020	0.020	µg/g (dry)	<0.020		20	
Benzo(b)fluoranthene	<0.020	0.020	µg/g (dry)	<0.020		20	
Benzo(e)pyrene	<0.020	0.020	µg/g (dry)	<0.020		20	
Benzo(ghi)perylene	<0.020	0.020	µg/g (dry)	<0.020		20	
Benzo(k)fluoranthene	<0.020	0.020	µg/g (dry)	<0.020		20	
Chrysene	<0.020	0.020	µg/g (dry)	<0.020		20	
Dibenz(a,h)anthracene	<0.020	0.020	µg/g (dry)	<0.020		20	
Fluoranthene	0.026	0.020	µg/g (dry)	0.030	15.0	20	
Fluorene	0.103	0.020	µg/g (dry)	0.110	6.39	20	
Indeno(1,2,3-cd)pyrene	<0.020	0.020	µg/g (dry)	<0.020		20	
Naphthalene	0.461	0.020	µg/g (dry)	0.485	5.04	20	
Perylene	<0.020	0.020	µg/g (dry)	<0.020		20	
Phenanthrene	0.294	0.020	µg/g (dry)	0.318	7.89	20	
Pyrene	0.140	0.020	µg/g (dry)	0.152	7.83	20	
C1-Phenanthrenes/Anthracenes	0.798	0.040	µg/g (dry)	0.896	11.5	20	
C1-Acenaphthenes	2.71	0.040	µg/g (dry)	2.76	1.70	20	
C1-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C1-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C1-Biphenyls	0.480	0.040	µg/g (dry)	0.496	3.23	20	
C1-Dibenzothiophenes	0.226	0.040	µg/g (dry)	0.237	4.67	20	
C1-Fluoranthenes/Pyrenes	0.811	0.040	µg/g (dry)	0.839	3.50	20	
C1-Naphthalenes	1.14	0.040	µg/g (dry)	1.25	9.20	20	
C2-Benz(a)anthracenes/Chrysenes	0.050	0.040	µg/g (dry)	0.048	3.44	20	
C2-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C2-Biphenyls	0.780	0.040	µg/g (dry)	0.816	4.49	20	
C2-Dibenzothiophenes	0.087	0.040	µg/g (dry)	0.088	1.21	20	
C2-Fluoranthenes/Pyrenes	0.589	0.040	µg/g (dry)	0.600	1.83	20	
C2-Naphthalenes	3.42	0.040	µg/g (dry)	3.70	7.79	20	
C2-Phenanthrenes/Anthracenes	0.904	0.040	µg/g (dry)	0.922	1.96	20	
C3-Benz(a)anthracenes/Chrysenes	0.054	0.040	µg/g (dry)	0.065	18.1	20	
C3-Benzopyrene/Perylene	<0.040	0.040	µg/g (dry)	<0.040		20	
C3-Dibenzothiophene	0.149	0.040	µg/g (dry)	0.153	2.67	20	
C3-Fluoranthene/Pyrenes	0.221	0.040	µg/g (dry)	0.228	2.97	20	
C3-Naphthalenes	6.10	0.040	µg/g (dry)	6.67	8.85	20	
C3-Phenanthrenes/Anthracenes	0.630	0.040	µg/g (dry)	0.630	0.0404	20	
C4-Benz(a)anthracenes/Chrysenes	0.041	0.040	µg/g (dry)	0.043	5.00	20	
C4-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C4-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C4-Naphthalenes	5.24	0.040	µg/g (dry)	5.18	1.20	20	
C4-Phenanthrenes/Anthracenes	0.397	0.040	µg/g (dry)	0.413	4.03	20	
C5-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C5-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C5-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	<0.040		20	
C5-Naphthalenes	0.154	0.040	µg/g (dry)	0.165	7.15	20	
C5-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	<0.040		20	

Surrogates:

Acenaphthene-d10	*103*	%
Chrysene-d12	*97.0*	%
Naphthalene-d8	*97.0*	%
Perylene-d12	*116*	%
Phenanthrene-d10	*75.9*	%

Precision (Continued)

Polynuclear Aromatic Hydrocarbons

VFI0015 - VFI0015-DUP1

Sample V18H070-04

Parameter	Result	RL	Unit	Source Result	% RPD	% RPD Limits	Notes
Acenaphthene	11200	10000	ng/mL	11500	3.28	20	
Acenaphthylene	<1000	1000	ng/mL	<1000		20	
Anthracene	11100	10000	ng/mL	11100	0.590	20	
Benzo(a)anthracene	<1000	1000	ng/mL	<1000		20	
Benzo(a)pyrene	<1000	1000	ng/mL	<1000		20	
Benzo(b)fluoranthene	<1000	1000	ng/mL	<1000		20	
Benzo(e)pyrene	<1000	1000	ng/mL	<1000		20	
Benzo(ghi)perylene	<1000	1000	ng/mL	<1000		20	
Benzo(k)fluoranthene	<1000	1000	ng/mL	<1000		20	
Chrysene	<1000	1000	ng/mL	<1000		20	
Dibenz(a,h)anthracene	<1000	1000	ng/mL	<1000		20	
Fluoranthene	3060	1000	ng/mL	3060	0.0266	20	
Fluorene	34400	10000	ng/mL	34200	0.428	20	
Indeno(1,2,3-cd)pyrene	<1000	1000	ng/mL	<1000		20	
Naphthalene	129000	10000	ng/mL	128000	0.938	20	
Perylene	<1000	1000	ng/mL	<1000		20	
Phenanthrene	28800	10000	ng/mL	28600	0.711	20	
Pyrene	22500	1000	ng/mL	22500	0.314	20	
C1-Acenaphthenes	1890000	20000	ng/mL	1880000	0.534	20	
C1-Benz(a)anthracenes/Chrysenes	7290	2000	ng/mL	7160	1.70	20	
C1-Benzopyrenes/Perylenes	<2000	2000	ng/mL	<2000		20	
C1-Biphenyls	118000	20000	ng/mL	125000	5.84	20	
C1-Dibenzothiophenes	29100	20000	ng/mL	29000	0.183	20	
C1-Fluoranthenes/Pyrenes	162000	20000	ng/mL	163000	0.651	20	
C1-Naphthalenes	338000	20000	ng/mL	337000	0.450	20	
C1-Phenanthrenes/Anthracenes	115000	20000	ng/mL	114000	0.275	20	
C2-Benz(a)anthracenes/Chrysenes	<2000	2000	ng/mL	<2000		20	
C2-Benzopyrenes/Perylenes	<2000	2000	ng/mL	<2000		20	
C2-Biphenyls	115000	20000	ng/mL	123000	6.35	20	
C2-Dibenzothiophenes	<2000	2000	ng/mL	<2000		20	
C2-Fluoranthenes/Pyrenes	133000	20000	ng/mL	133000	0.0971	20	
C2-Naphthalenes	703000	20000	ng/mL	705000	0.157	20	
C2-Phenanthrenes/Anthracenes	157000	20000	ng/mL	157000	0.297	20	
C3-Benz(a)anthracenes/Chrysenes	<2000	2000	ng/mL	<2000		20	
C3-Benzopyrene/Perylene	<2000	2000	ng/mL	<2000		20	
C3-Dibenzothiophene	27700	20000	ng/mL	27400	1.06	20	
C3-Fluoranthene/Pyrenes	42300	20000	ng/mL	42500	0.419	20	
C3-Naphthalenes	1390000	20000	ng/mL	1390000	0.317	20	
C3-Phenanthrenes/Anthracenes	97300	20000	ng/mL	97200	0.0378	20	
C4-Benz(a)anthracenes/Chrysenes	<2000	2000	ng/mL	<2000		20	
C4-Benzopyrenes/Perylenes	<2000	2000	ng/mL	<2000		20	
C4-Fluoranthenes/Pyrenes	<2000	2000	ng/mL	5510		20	
C4-Naphthalenes	856000	20000	ng/mL	850000	0.748	20	
C4-Phenanthrenes/Anthracenes	109000	20000	ng/mL	109000	0.363	20	
C5-Benz(a)anthracenes/Chrysenes	<2000	2000	ng/mL	<2000		20	
C5-Benzopyrenes/Perylenes	<2000	2000	ng/mL	<2000		20	
C5-Fluoranthenes/Pyrenes	<2000	2000	ng/mL	<2000		20	
C5-Naphthalenes	18700	2000	ng/mL	18100	3.01	20	
C5-Phenanthrenes/Anthracenes	<2000	2000	ng/mL	<2000		20	

Surrogates:

Acenaphthene-d10	*100*	%
Chrysene-d12	*114*	%
Naphthalene-d8	*106*	%
Perylene-d12	*119*	%
Phenanthrene-d10	*128*	%

QUALITY CONTROL RESULTS
(Continued)

Vancouver-PY Lab for Environmental Testing

Blank

The blank sample lacks the parameters of interest, and is used to detect contamination during sample handling, preparation, and/or analysis.

The results of the blank quality control data are as follows:

QUALITY CONTROL RESULTS
(Continued)

Vancouver-PY Lab for Environmental Testing

Blank (Continued)

Polynuclear Aromatic Hydrocarbons

VFI0010 - VFI0010-BLK1

Parameter	Result	RL	Unit	Notes
Acenaphthene	<0.020	0.020	µg/g (dry)	
Acenaphthylene	<0.020	0.020	µg/g (dry)	
Anthracene	<0.020	0.020	µg/g (dry)	
Benzo(a)anthracene	<0.020	0.020	µg/g (dry)	
Benzo(a)pyrene	<0.020	0.020	µg/g (dry)	
Benzo(b)fluoranthene	<0.020	0.020	µg/g (dry)	
Benzo(e)pyrene	<0.020	0.020	µg/g (dry)	
Benzo(ghi)perylene	<0.020	0.020	µg/g (dry)	
Benzo(k)fluoranthene	<0.020	0.020	µg/g (dry)	
Chrysene	<0.020	0.020	µg/g (dry)	
Dibenz(a,h)anthracene	<0.020	0.020	µg/g (dry)	
Fluoranthene	<0.020	0.020	µg/g (dry)	
Fluorene	<0.020	0.020	µg/g (dry)	
Indeno(1,2,3-cd)pyrene	<0.020	0.020	µg/g (dry)	
Naphthalene	<0.020	0.020	µg/g (dry)	
Perylene	<0.020	0.020	µg/g (dry)	
Phenanthrene	<0.020	0.020	µg/g (dry)	
Pyrene	<0.020	0.020	µg/g (dry)	
C1-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	
C1-Acenaphthenes	<0.040	0.040	µg/g (dry)	
C1-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	
C1-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	
C1-Biphenyls	<0.040	0.040	µg/g (dry)	
C1-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	
C1-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	
C1-Naphthalenes	<0.040	0.040	µg/g (dry)	
C2-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	
C2-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	
C2-Biphenyls	<0.040	0.040	µg/g (dry)	
C2-Dibenzothiophenes	<0.040	0.040	µg/g (dry)	
C2-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	
C2-Naphthalenes	<0.040	0.040	µg/g (dry)	
C2-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	
C3-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	
C3-Benzopyrene/Perylene	<0.040	0.040	µg/g (dry)	
C3-Dibenzothiophene	<0.040	0.040	µg/g (dry)	
C3-Fluoranthene/Pyrenes	<0.040	0.040	µg/g (dry)	
C3-Naphthalenes	<0.040	0.040	µg/g (dry)	
C3-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	
C4-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	
C4-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	
C4-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	
C4-Naphthalenes	<0.040	0.040	µg/g (dry)	
C4-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	
C5-Benz(a)anthracenes/Chrysenes	<0.040	0.040	µg/g (dry)	
C5-Benzopyrenes/Perylenes	<0.040	0.040	µg/g (dry)	
C5-Fluoranthenes/Pyrenes	<0.040	0.040	µg/g (dry)	
C5-Naphthalenes	<0.040	0.040	µg/g (dry)	
C5-Phenanthrenes/Anthracenes	<0.040	0.040	µg/g (dry)	

Blank (Continued)

Polynuclear Aromatic Hydrocarbons (Continued)

VFI0010 - VFI0010-BLK1 (Continued)

Parameter	Result	RL	Unit	Notes
Surrogates:				
Acenaphthene-d10	*93.9*	%		
Chrysene-d12	*101*	%		
Naphthalene-d8	*79.9*	%		
Perylene-d12	*124*	%		
Phenanthrene-d10	*105*	%		

QUALITY CONTROL RESULTS
(Continued)

Vancouver-PY Lab for Environmental Testing

Blank (Continued)

Polynuclear Aromatic Hydrocarbons

VFI0015 - VFI0015-BLK1

Parameter	Result	RL	Unit	Notes
Acenaphthene	<10.0	10.0	ng/mL	
Acenaphthylene	<10.0	10.0	ng/mL	
Anthracene	<10.0	10.0	ng/mL	
Benzo(a)anthracene	<10.0	10.0	ng/mL	
Benzo(a)pyrene	<10.0	10.0	ng/mL	
Benzo(b)fluoranthene	<10.0	10.0	ng/mL	
Benzo(e)pyrene	<10.0	10.0	ng/mL	
Benzo(ghi)perylene	<10.0	10.0	ng/mL	
Benzo(k)fluoranthene	<10.0	10.0	ng/mL	
Chrysene	<10.0	10.0	ng/mL	
Dibenz(a,h)anthracene	<10.0	10.0	ng/mL	
Fluoranthene	<10.0	10.0	ng/mL	
Fluorene	<10.0	10.0	ng/mL	
Indeno(1,2,3-cd)pyrene	<10.0	10.0	ng/mL	
Naphthalene	<10.0	10.0	ng/mL	
Perylene	<10.0	10.0	ng/mL	
Phenanthrene	<10.0	10.0	ng/mL	
Pyrene	<10.0	10.0	ng/mL	
C1-Acenaphthenes	<20.0	20.0	ng/mL	
C1-Benz(a)anthracenes/Chrysenes	<20.0	20.0	ng/mL	
C1-Benzopyrenes/Perylenes	<20.0	20.0	ng/mL	
C1-Biphenyls	<20.0	20.0	ng/mL	
C1-Dibenzothiophenes	<20.0	20.0	ng/mL	
C1-Fluoranthenes/Pyrenes	<20.0	20.0	ng/mL	
C1-Naphthalenes	<20.0	20.0	ng/mL	
C1-Phenanthrenes/Anthracenes	<20.0	20.0	ng/mL	
C2-Benz(a)anthracenes/Chrysenes	<20.0	20.0	ng/mL	
C2-Benzopyrenes/Perylenes	<20.0	20.0	ng/mL	
C2-Biphenyls	<20.0	20.0	ng/mL	
C2-Dibenzothiophenes	<20.0	20.0	ng/mL	
C2-Fluoranthenes/Pyrenes	<20.0	20.0	ng/mL	
C2-Naphthalenes	<20.0	20.0	ng/mL	
C2-Phenanthrenes/Anthracenes	<20.0	20.0	ng/mL	
C3-Benz(a)anthracenes/Chrysenes	<20.0	20.0	ng/mL	
C3-Benzopyrene/Perylene	<20.0	20.0	ng/mL	
C3-Dibenzothiophene	<20.0	20.0	ng/mL	
C3-Fluoranthene/Pyrenes	<20.0	20.0	ng/mL	
C3-Naphthalenes	<20.0	20.0	ng/mL	
C3-Phenanthrenes/Anthracenes	<20.0	20.0	ng/mL	
C4-Benz(a)anthracenes/Chrysenes	<20.0	20.0	ng/mL	
C4-Benzopyrenes/Perylenes	<20.0	20.0	ng/mL	
C4-Fluoranthenes/Pyrenes	<20.0	20.0	ng/mL	
C4-Naphthalenes	<20.0	20.0	ng/mL	
C4-Phenanthrenes/Anthracenes	<20.0	20.0	ng/mL	
C5-Benz(a)anthracenes/Chrysenes	<20.0	20.0	ng/mL	
C5-Benzopyrenes/Perylenes	<20.0	20.0	ng/mL	
C5-Fluoranthenes/Pyrenes	<20.0	20.0	ng/mL	
C5-Naphthalenes	<20.0	20.0	ng/mL	
C5-Phenanthrenes/Anthracenes	<20.0	20.0	ng/mL	

QUALITY CONTROL RESULTS
(Continued)

Vancouver-PY Lab for Environmental Testing

Blank (Continued)

Polynuclear Aromatic Hydrocarbons (Continued)

VFI0015 - VFI0015-BLK1 (Continued)

Parameter	Result	RL	Unit	Notes
Surrogates:				
Acenaphthene-d10	*84.2*	%		
Chrysene-d12	*70.1*	%		
Naphthalene-d8	*87.2*	%		
Perylene-d12	*73.1*	%		
Phenanthrene-d10	*84.0*	%		

Dayne's legal

8°C
D.S. 3/8/2018

ENVIRONMENT AND CLIMATE CHANGE CANADA/ENVIRONNEMENT ET CHANGEMENT CLIMATIQUE CANADA

Sample Submission and Chain of Custody Sheet / Formulaire de soumission d'échantillons et chaîne de possession
Environmental Science and Technology Laboratories
Laboratoires environnementaux de la science et de la technologie

COPY

Page 1 of/de 1

Sampled by/Échantilloné par Veron Novosad
Submitted by/Soumis par Veron Novosad
Results to/Résultats à Veron Novosad
Address/Adresse 401-333 Victoria Street, Nelson BC V1L 4K3
Client /Client ~~BCMOE Nelson~~ BC MOE_BC **Project/Projet** 811-Nelson Region
Tel/Tél: (250) 919-1014 **FAX:**

August 23 2018 (NF)

Priority/Priorité Urgent ☐ Regular / Régulier ☐ Rush ☐
Legal/Légal ☑
REF # / Dossier / NEMISIS #
Work Order # / Numéro de demand d'analyse (Internal Use-Usage interne) V18H070

In gray **Laboratory** use **only** - En gris à l'usage du **laboratoire seulement**

Element Sample ID No de l'échantillon (internal use/usage interne) -NN	No. of containers Nbre de récipients	Sample ID / No de l'échantillon *No information about target of investigation or specific location should be recorded/ Aucune information sur la cible d'une enquête ou d'un emplacement spécifique ne doit être enregistrée*	Security Seal Broken Sceau de sécurité endommagé Cooler Glacière (Y/N) (O/N)	Bottle Bouteille (Y/N) (O/N)	Matrix & Size / Matrice & Volume	For all samples / Pour tous les échantillons: Date Sampled Date échantillonné (YYYY-MM-DD) (AAAA-MM-JJ)	Time Sampled Heure échantillonné	Composite Sample / Échantillon Composite: Date Began Date début (YYYY-MM-DD) (AAAA-MM-JJ)	Time Began Heure début	Time Zone Fuseau Horaire	Grab Instantanné	Temp °C	Description *No information about target of investigation or specific location should be recorded/ Aucune information sur la cible d'une enquête ou d'un emplacement spécifique ne doit être enregistrée*	Preserved Conservé (Y/N) (O/N)	Hazard Risque *	Analysis requested / Type d'analyse demandées: PAH/APAH GC/MS/MS	GCMS HCID								
01	1	Site 1-1	N	N	125 mL ~~Amber~~ Clear	2018-08-01 D.S	1693 Soil									✓	✓								
02	1	Site 1-2	N	N	125 mL ~~Amber~~ Clear	2018-08-01 D.S	1694 Soil									✓	✓								
03	1	Site 1-3	N	N	125 mL ~~Amber~~ Clear	2018-08-01 D.S	1695 Soil									✓	✓								
04	1	Site 2-1	N	N	250 mL Amber	2018-08-01	~~Soil~~ water D.S								Y		✓	✓								
05	1	Site 2-1A	N	N	250 mL Amber	20180801	water D.S								Y		✓	✓								
06	1	Site 3-1	N	N	125 mL Clear	20180801	~~water~~ Soil 1634									✓	✓								
07	1	Site 3-2	N	N	125 mL Clear	20180801	Soil 1635									✓	✓								
08	1	Site 3-3	N	N	125 mL Clear	20180801	Soil 1633									✓	✓								
09	1	Soil in paint can			1000 mL	20180731	Soil										DS✓								
																✓	✓								

* HAZARDS/RISQUES: 0- Nonhazardous/Non **dangereux** 1- Combustible 2- Corrosive/Corrosif 3- Radioactive/Radioactif 4- **Cyanide/Cyanure** 5 - **Toxic/Toxique** 6- Unknown/Inconnu 7- **Biohazard/Biologique dangereux**

Chain of Custody Record / Registre de chaine de possession

Relinquished by / Cédé par: (name & signature / nom et signature)	Date/Time/Heure:	Received by/ Reçu par: (name & signature / nom et signature)	Date/Time/Heure:	Remarks/Remarques:
Veron Novosad	3 August 2018	Dayne Shaw	Aug. 3 2018	

Page 37 of 38 V18H070_1 Detailed 2018 10 11 1116

COC (NF)
WOCN (NF)

Version 2.3- Jan 17, 2018

Page ____ of/de ____

Custody Seals / Sceau de chaîne de possession

ial Requests and Instructions (if required) / Demandes spéciales et instructions (si nécessaire):

LABORATORY USE ONLY / À l'USAGE DU LABORATOIRE SEULEMENT

Contacts / Contacts des laboratoires

Moncton
Hélène Harper ALET
443 University Ave.
Moncton, NB
E1A 6S8
Tel/Tél: 506-851-7208
Fax: 506-851-6608

Montreal
François Dumouchel LEEQ
105 McGill
Montréal, QC
H2Y 2E7
Tel/Tél: 514-283-0745

Ottawa
Carl Brown ESTS
335 River Road
Ottawa, ON
K1A 0H3
Tel/Tél: 613-991-1118
Fax: 613-991-9485

Burlington
Sharon Carrier NLET
867 Lakeshore Road
Burlington, ON
L7S 1A1
Tel/Tél: 905-336-6261
Fax: 905-336-6404

Edmonton
Paul Houle PNLET
5320 122 Street
Edmonton, AB
T6H 3S5
Tel/Tél: 780-435-7335
Fax: 780-435-7268

Vancouver
Graham vanAggelen PYLET
2645 Dollarton Highway
North Vancouver, BC
V7H 1B1
Tel/Tél: 604-903-4444
Fax: 604-903-4408

Canada

Version 2.3- Jan 17, 2018

CARO
ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

REPORTED TO Hain, Ashley
PO Box 1124, 751 Kaslo West Rd
Kaslo, BC V0G1M0

ATTENTION Ashley Hain

PO NUMBER
PROJECT Miscellaneous - Okanagan Individual
PROJECT INFO

WORK ORDER 8082142

RECEIVED / TEMP 2018-08-22 12:40 / 11°C
REPORTED 2018-12-20 12:16
COC NUMBER B71097

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

Work Order Comments:

This is a revised report; please refer to Appendix 3 for details.

If you have any questions or concerns, please contact me at teamcaro@caro.ca

Authorized By:

Team CARO
Client Service Representative

TEST RESULTS

REPORTED TO Hain, Ashley
PROJECT Miscellaneous - Okanagan Individual

WORK ORDER 8082142
REPORTED 2018-12-20 12:16

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Water Box 1 (8082142-01) | Matrix: Water | Sampled: 2018-08-20 09:30						
Anions						
Chloride	**1.27**	AO ≤ 250	0.10	mg/L	2018-08-23	
Fluoride	**0.19**	MAC = 1.5	0.10	mg/L	2018-08-23	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2018-08-23	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2018-08-23	
Sulfate	**11.4**	AO ≤ 500	1.0	mg/L	2018-08-23	
BCMOE Aggregate Hydrocarbons						
VHw (6-10)	< 100	N/A	100	µg/L	2018-08-27	
VPHw	< 100	N/A	100	µg/L	N/A	
EPHw10-19	< 250	N/A	250	µg/L	2018-08-28	
EPHw19-32	< 250	N/A	250	µg/L	2018-08-28	
Surrogate: 2-Methylnonane (EPH/F2-4)	*89*		*60-140*	*%*	*2018-08-28*	
Calculated Parameters						
Hardness, Total (as CaCO3)	**131**	None Required	0.500	mg/L	N/A	
Solids, Total Dissolved	**148**	AO ≤ 500	1.00	mg/L	N/A	
General Parameters						
Alkalinity, Total (as CaCO3)	**137**	N/A	1.0	mg/L	2018-08-24	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2018-08-24	
Alkalinity, Bicarbonate (as CaCO3)	**137**	N/A	1.0	mg/L	2018-08-24	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2018-08-24	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2018-08-24	
Conductivity (EC)	**282**	N/A	2.0	µS/cm	2018-08-24	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020	mg/L	2018-08-23	
pH	**7.89**	7.0-10.5	0.10	pH units	2018-08-24	HT2
Turbidity	**0.16**	OG < 1	0.10	NTU	2018-08-23	
Total Metals						
Aluminum, total	**0.0207**	OG < 0.1	0.0050	mg/L	2018-08-27	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2018-08-27	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050	mg/L	2018-08-27	
Barium, total	**0.0079**	MAC = 1	0.0050	mg/L	2018-08-27	
Boron, total	< 0.0050	MAC = 5	0.0050	mg/L	2018-08-27	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2018-08-27	
Calcium, total	**45.2**	None Required	0.20	mg/L	2018-08-27	
Chromium, total	**0.00122**	MAC = 0.05	0.00050	mg/L	2018-08-27	
Copper, total	**0.424**	AO ≤ 1	0.00040	mg/L	2018-08-27	
Iron, total	**0.027**	AO ≤ 0.3	0.010	mg/L	2018-08-27	
Lead, total	**0.00071**	MAC = 0.01	0.00020	mg/L	2018-08-27	
Magnesium, total	**4.43**	None Required	0.010	mg/L	2018-08-27	
Manganese, total	**0.00073**	AO ≤ 0.05	0.00020	mg/L	2018-08-27	
Potassium, total	**0.95**	N/A	0.10	mg/L	2018-08-27	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2018-08-27	

TEST RESULTS

REPORTED TO	Hain, Ashley	**WORK ORDER**	8082142
PROJECT	Miscellaneous - Okanagan Individual	**REPORTED**	2018-12-20 12:16

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Water Box 1 (8082142-01) | Matrix: Water | Sampled: 2018-08-20 09:30, Continued						
Total Metals, Continued						
Sodium, total	**1.38**	AO ≤ 200	0.10	mg/L	2018-08-27	
Uranium, total	**0.000295**	MAC = 0.02	0.000020	mg/L	2018-08-27	
Zinc, total	**0.0356**	AO ≤ 5	0.0040	mg/L	2018-08-27	
Volatile Organic Compounds (VOC)						
Benzene	< 0.5	MAC = 5	0.5	µg/L	2018-08-29	
Ethylbenzene	< 1.0	AO ≤ 1.6	1.0	µg/L	2018-08-27	
Methyl tert-butyl ether	< 1.0	AO ≤ 15	1.0	µg/L	2018-08-27	
Styrene	< 1.0	N/A	1.0	µg/L	2018-08-27	
Toluene	< 1.0	AO ≤ 24	1.0	µg/L	2018-08-29	
Xylenes (total)	< 2.0	AO ≤ 20	2.0	µg/L	2018-08-27	
Surrogate: Toluene-d8	*94*		*70-130*	%	*2018-08-27*	
Surrogate: 4-Bromofluorobenzene	*95*		*70-130*	%	*2018-08-27*	
Water Box 2 (8082142-02) | Matrix: Water | Sampled: 2018-08-21 10:00						
BCMOE Aggregate Hydrocarbons						
VHw (6-10)	< 100	N/A	100	µg/L	2018-08-27	
VPHw	< 100	N/A	100	µg/L	N/A	
EPHw10-19	< 250	N/A	250	µg/L	2018-08-28	
EPHw19-32	< 250	N/A	250	µg/L	2018-08-28	
Surrogate: 2-Methylnonane (EPH/F2-4)	*83*		*60-140*	%	*2018-08-28*	
Polycyclic Aromatic Hydrocarbons (PAH)						HT1
Acenaphthene	< 0.050	N/A	0.050	µg/L	2018-12-18	
Acenaphthylene	< 0.200	N/A	0.200	µg/L	2018-12-18	
Acridine	< 0.050	N/A	0.050	µg/L	2018-12-18	
Anthracene	< 0.010	N/A	0.010	µg/L	2018-12-18	
Benz(a)anthracene	< 0.010	N/A	0.010	µg/L	2018-12-18	
Benzo(a)pyrene	< 0.010	MAC = 0.04	0.010	µg/L	2018-12-18	
Benzo(b+j)fluoranthene	< 0.050	N/A	0.050	µg/L	2018-12-18	
Benzo(g,h,i)perylene	< 0.050	N/A	0.050	µg/L	2018-12-18	
Benzo(k)fluoranthene	< 0.050	N/A	0.050	µg/L	2018-12-18	
2-Chloronaphthalene	< 0.100	N/A	0.100	µg/L	2018-12-18	
Chrysene	< 0.050	N/A	0.050	µg/L	2018-12-18	
Dibenz(a,h)anthracene	< 0.010	N/A	0.010	µg/L	2018-12-18	
Fluoranthene	< 0.030	N/A	0.030	µg/L	2018-12-18	
Fluorene	< 0.050	N/A	0.050	µg/L	2018-12-18	
Indeno(1,2,3-cd)pyrene	< 0.050	N/A	0.050	µg/L	2018-12-18	
1-Methylnaphthalene	< 0.100	N/A	0.100	µg/L	2018-12-18	
2-Methylnaphthalene	< 0.100	N/A	0.100	µg/L	2018-12-18	
Naphthalene	< 0.200	N/A	0.200	µg/L	2018-12-18	
Phenanthrene	< 0.100	N/A	0.100	µg/L	2018-12-18	

TEST RESULTS

REPORTED TO Hain, Ashley
PROJECT Miscellaneous - Okanagan Individual

WORK ORDER 8082142
REPORTED 2018-12-20 12:16

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Water Box 2 (8082142-02) | Matrix: Water | Sampled: 2018-08-21 10:00, Continued						
Polycyclic Aromatic Hydrocarbons (PAH), Continued						HT1
Pyrene	< 0.020	N/A	0.020	µg/L	2018-12-18	
Quinoline	< 0.050	N/A	0.050	µg/L	2018-12-18	
Surrogate: Acridine-d9	*46*		*50-140*	%	*2018-12-18*	S02
Surrogate: Naphthalene-d8	*71*		*50-140*	%	*2018-12-18*	
Surrogate: Perylene-d12	*43*		*50-140*	%	*2018-12-18*	S02
Volatile Organic Compounds (VOC)						
Benzene	< 0.5	MAC = 5	0.5	µg/L	2018-08-27	
Ethylbenzene	< 1.0	AO ≤ 1.6	1.0	µg/L	2018-08-27	
Methyl tert-butyl ether	< 1.0	AO ≤ 15	1.0	µg/L	2018-08-27	
Styrene	< 1.0	N/A	1.0	µg/L	2018-08-27	
Toluene	< 1.0	AO ≤ 24	1.0	µg/L	2018-08-27	
Xylenes (total)	< 2.0	AO ≤ 20	2.0	µg/L	2018-08-27	
Surrogate: Toluene-d8	*90*		*70-130*	%	*2018-08-27*	
Surrogate: 4-Bromofluorobenzene	*91*		*70-130*	%	*2018-08-27*	

Sample Qualifiers:

HT1	The sample was prepared and/or analyzed past the recommended holding time.
HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
S02	Surrogate recovery outside of control limits. Data accepted based on acceptable recovery of other surrogates.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Hain, Ashley	**WORK ORDER**	8082142
PROJECT	Miscellaneous - Okanagan Individual	**REPORTED**	2018-12-20 12:16

Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2011)	Titration with H2SO4	Kelowna
Anions in Water	SM 4110 B (2011)	Ion Chromatography	Kelowna
BTEX in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	Richmond
Conductivity in Water	SM 2510 B (2011)	Conductivity Meter	Kelowna
Cyanide, SAD in Water	ASTM D7511-12	Flow Injection with In-Line UV Digestion and Amperometry	Kelowna
EPH in Water	EPA 3511* / BCMOE EPHw	Hexane MicroExtraction (Base/Neutral) / Gas Chromatography (GC-FID)	Richmond
Hardness in Water	SM 2340 B* (2011)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
pH in Water	SM 4500-H+ B (2011)	Electrometry	Kelowna
Polycyclic Aromatic Hydrocarbons in Water	EPA 3511* / EPA 8270D	Hexane MicroExtraction (Base/Neutral) / GC-MSD (SIM)	Richmond
Solids, Total Dissolved in Water	SM 1030 E (2011)	Calculation: 100 x ([Cations]-[Anions])/([Cations]+[Anions])	N/A
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
Turbidity in Water	SM 2130 B (2011)	Nephelometry	Kelowna
VH in Water	EPA 5030B / BCMOE VHw	Purge&Trap / Gas Chromatography (GC-FID)	Richmond
VPHw in Water	BCMOE VPH	Calculation: VH - (Benzene + Toluene + Ethylbenzene + Xylenes + Styrene)	N/A

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
OG	Operational Guideline (treated water)
pH units	pH < 7 = acidic, ph > 7 = basic
µg/L	Micrograms per litre
µS/cm	Microsiemens per centimetre
ASTM	ASTM International Test Methods
BCMOE	British Columbia Environmental Laboratory Manual, British Columbia Ministry of Environment
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Hain, Ashley	**WORK ORDER**	8082142
PROJECT	Miscellaneous - Okanagan Individual	**REPORTED**	2018-12-20 12:16

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in “batches” and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B8H1849										
Blank (B8H1849-BLK1)				Prepared: 2018-08-23, Analyzed: 2018-08-23						
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
Blank (B8H1849-BLK2)				Prepared: 2018-08-24, Analyzed: 2018-08-24						
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
LCS (B8H1849-BS1)				Prepared: 2018-08-23, Analyzed: 2018-08-23						
Chloride	15.1	0.10	mg/L	16.0		94	90-110			
Fluoride	4.03	0.10	mg/L	4.00		101	88-108			
Nitrate (as N)	3.99	0.010	mg/L	4.00		100	93-108			
Nitrite (as N)	2.06	0.010	mg/L	2.00		103	85-114			
Sulfate	15.7	1.0	mg/L	16.0		98	91-109			
LCS (B8H1849-BS2)				Prepared: 2018-08-24, Analyzed: 2018-08-24						
Chloride	15.7	0.10	mg/L	16.0		98	90-110			
Fluoride	3.97	0.10	mg/L	4.00		99	88-108			
Nitrate (as N)	4.01	0.010	mg/L	4.00		100	93-108			
Nitrite (as N)	2.09	0.010	mg/L	2.00		104	85-114			
Sulfate	15.6	1.0	mg/L	16.0		98	91-109			
BCMOE Aggregate Hydrocarbons, Batch B8H2053										
Blank (B8H2053-BLK1)				Prepared: 2018-08-26, Analyzed: 2018-08-27						
EPHw10-19	< 250	250	µg/L							
EPHw19-32	< 250	250	µg/L							
Surrogate: 2-Methylnonane (EPH/F2-4)	*392*		*µg/L*	*444*		*88*	*60-140*			

APPENDIX 2: QUALITY CONTROL RESULTS

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
BCMOE Aggregate Hydrocarbons, Batch B8H2053, Continued										
LCS (B8H2053-BS2)				Prepared: 2018-08-26, Analyzed: 2018-08-27						
EPHw10-19	13700	250	µg/L	15400		89	70-130			
EPHw19-32	18200	250	µg/L	22200		82	70-130			
Surrogate: 2-Methylnonane (EPH/F2-4)	*411*		*µg/L*	444		*93*	*60-140*			
BCMOE Aggregate Hydrocarbons, Batch B8H2060										
Blank (B8H2060-BLK1)				Prepared: 2018-08-27, Analyzed: 2018-08-27						
VHw (6-10)	< 100	100	µg/L							
LCS (B8H2060-BS2)				Prepared: 2018-08-27, Analyzed: 2018-08-28						
VHw (6-10)	2590	100	µg/L	3280		79	70-130			
General Parameters, Batch B8H1868										
Blank (B8H1868-BLK1)				Prepared: 2018-08-23, Analyzed: 2018-08-23						
Turbidity	< 0.10	0.10	NTU							
Blank (B8H1868-BLK2)				Prepared: 2018-08-23, Analyzed: 2018-08-23						
Turbidity	< 0.10	0.10	NTU							
LCS (B8H1868-BS1)				Prepared: 2018-08-23, Analyzed: 2018-08-23						
Turbidity	38.8	0.10	NTU	40.0		97	90-110			
LCS (B8H1868-BS2)				Prepared: 2018-08-23, Analyzed: 2018-08-23						
Turbidity	38.8	0.10	NTU	40.0		97	90-110			
General Parameters, Batch B8H1900										
Blank (B8H1900-BLK1)				Prepared: 2018-08-23, Analyzed: 2018-08-23						
Cyanide, Total	< 0.0020	0.0020	mg/L							
LCS (B8H1900-BS1)				Prepared: 2018-08-23, Analyzed: 2018-08-23						
Cyanide, Total	0.0201	0.0020	mg/L	0.0200		101	82-120			
LCS Dup (B8H1900-BSD1)				Prepared: 2018-08-23, Analyzed: 2018-08-23						
Cyanide, Total	0.0217	0.0020	mg/L	0.0200		109	82-120	8	10	
General Parameters, Batch B8H1990										
Blank (B8H1990-BLK1)				Prepared: 2018-08-24, Analyzed: 2018-08-24						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B8H1990-BLK2)				Prepared: 2018-08-24, Analyzed: 2018-08-24						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							

APPENDIX 2: QUALITY CONTROL RESULTS

General Parameters, Batch B8H1990, Continued

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
LCS (B8H1990-BS1)				Prepared: 2018-08-24, Analyzed: 2018-08-24						
Alkalinity, Total (as CaCO3)	102	1.0	mg/L	1000		10	92-106			
LCS (B8H1990-BS2)				Prepared: 2018-08-24, Analyzed: 2018-08-24						
Alkalinity, Total (as CaCO3)	102	1.0	mg/L	1000		10	92-106			
LCS (B8H1990-BS3)				Prepared: 2018-08-24, Analyzed: 2018-08-24						
Conductivity (EC)	1410	2.0	µS/cm	1410		100	95-104			
LCS (B8H1990-BS4)				Prepared: 2018-08-24, Analyzed: 2018-08-24						
Conductivity (EC)	1410	2.0	µS/cm	1410		100	95-104			
Reference (B8H1990-SRM1)				Prepared: 2018-08-24, Analyzed: 2018-08-24						
pH	7.01	0.10	pH units	7.01		100	98-102			HT2
Reference (B8H1990-SRM2)				Prepared: 2018-08-24, Analyzed: 2018-08-24						
pH	7.00	0.10	pH units	7.01		100	98-102			HT2

Polycyclic Aromatic Hydrocarbons (PAH), Batch B8H2053

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Blank (B8H2053-BLK1)				Prepared: 2018-08-26, Analyzed: 2018-08-28						
Acenaphthene	< 0.050	0.050	µg/L							
Acenaphthylene	< 0.200	0.200	µg/L							
Acridine	< 0.050	0.050	µg/L							
Anthracene	< 0.010	0.010	µg/L							
Benz(a)anthracene	< 0.010	0.010	µg/L							
Benzo(a)pyrene	< 0.010	0.010	µg/L							
Benzo(b+j)fluoranthene	< 0.050	0.050	µg/L							
Benzo(g,h,i)perylene	< 0.050	0.050	µg/L							
Benzo(k)fluoranthene	< 0.050	0.050	µg/L							
2-Chloronaphthalene	< 0.100	0.100	µg/L							
Chrysene	< 0.050	0.050	µg/L							
Dibenz(a,h)anthracene	< 0.010	0.010	µg/L							
Fluoranthene	< 0.030	0.030	µg/L							
Fluorene	< 0.050	0.050	µg/L							
Indeno(1,2,3-cd)pyrene	< 0.050	0.050	µg/L							
1-Methylnaphthalene	< 0.100	0.100	µg/L							
2-Methylnaphthalene	< 0.100	0.100	µg/L							
Naphthalene	< 0.200	0.200	µg/L							
Phenanthrene	< 0.100	0.100	µg/L							
Pyrene	< 0.020	0.020	µg/L							
Quinoline	< 0.050	0.050	µg/L							
Surrogate: Acridine-d9	*3.92*		*µg/L*	4.44		*88*	*50-140*			
Surrogate: Naphthalene-d8	*4.87*		*µg/L*	4.47		*109*	*50-140*			
Surrogate: Perylene-d12	*3.32*		*µg/L*	4.47		*74*	*50-140*			
LCS (B8H2053-BS1)				Prepared: 2018-08-26, Analyzed: 2018-08-28						
Acenaphthene	5.18	0.050	µg/L	4.40		118	58-125			
Acenaphthylene	5.58	0.200	µg/L	4.40		127	54-128			
Acridine	3.83	0.050	µg/L	4.44		86	50-112			
Anthracene	5.01	0.010	µg/L	4.44		113	66-125			
Benz(a)anthracene	5.40	0.010	µg/L	4.44		122	59-123			
Benzo(a)pyrene	4.79	0.010	µg/L	4.40		109	62-116			
Benzo(b+j)fluoranthene	9.34	0.050	µg/L	8.89		105	69-121			
Benzo(g,h,i)perylene	4.81	0.050	µg/L	4.40		109	58-129			
Benzo(k)fluoranthene	4.42	0.050	µg/L	4.44		99	67-128			
2-Chloronaphthalene	5.28	0.100	µg/L	4.44		119	50-140			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO Hain, Ashley
PROJECT Miscellaneous - Okanagan Individual

WORK ORDER 8082142
REPORTED 2018-12-20 12:16

Polycyclic Aromatic Hydrocarbons (PAH), Batch B8H2053, Continued

LCS (B8H2053-BS1), Continued Prepared: 2018-08-26, Analyzed: 2018-08-28

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Chrysene	5.02	0.050	µg/L	4.42		113	58-125			
Dibenz(a,h)anthracene	4.66	0.010	µg/L	4.42		105	58-126			
Fluoranthene	4.45	0.030	µg/L	4.36		102	67-133			
Fluorene	5.20	0.050	µg/L	4.40		118	55-122			
Indeno(1,2,3-cd)pyrene	4.35	0.050	µg/L	4.44		98	62-126			
1-Methylnaphthalene	5.18	0.100	µg/L	4.38		118	53-125			
2-Methylnaphthalene	5.20	0.100	µg/L	4.36		119	52-122			
Naphthalene	5.38	0.200	µg/L	4.44		121	50-130			
Phenanthrene	4.43	0.100	µg/L	4.40		101	67-127			
Pyrene	4.35	0.020	µg/L	4.44		98	68-133			
Quinoline	5.86	0.050	µg/L	4.44		132	51-140			
Surrogate: Acridine-d9	*3.61*		*µg/L*	4.44		*81*	*50-140*			
Surrogate: Naphthalene-d8	*4.79*		*µg/L*	4.47		*107*	*50-140*			
Surrogate: Perylene-d12	*3.57*		*µg/L*	4.47		*80*	*50-140*			

LCS Dup (B8H2053-BSD1) Prepared: 2018-08-26, Analyzed: 2018-08-28

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Acenaphthene	4.85	0.050	µg/L	4.40		110	58-125	7	16	
Acenaphthylene	5.17	0.200	µg/L	4.40		117	54-128	8	16	
Acridine	3.35	0.050	µg/L	4.44		75	50-112	14	26	
Anthracene	4.53	0.010	µg/L	4.44		102	66-125	10	14	
Benz(a)anthracene	4.81	0.010	µg/L	4.44		108	59-123	12	23	
Benzo(a)pyrene	4.34	0.010	µg/L	4.40		99	62-116	10	16	
Benzo(b+j)fluoranthene	8.19	0.050	µg/L	8.89		92	69-121	13	14	
Benzo(g,h,i)perylene	4.39	0.050	µg/L	4.40		100	58-129	9	25	
Benzo(k)fluoranthene	4.72	0.050	µg/L	4.44		106	67-128	7	18	
2-Chloronaphthalene	4.88	0.100	µg/L	4.44		110	50-140	8	30	
Chrysene	4.49	0.050	µg/L	4.42		101	58-125	11	24	
Dibenz(a,h)anthracene	4.24	0.010	µg/L	4.42		96	58-126	10	23	
Fluoranthene	4.00	0.030	µg/L	4.36		92	67-133	11	18	
Fluorene	4.83	0.050	µg/L	4.40		110	55-122	7	16	
Indeno(1,2,3-cd)pyrene	3.97	0.050	µg/L	4.44		89	62-126	9	22	
1-Methylnaphthalene	4.85	0.100	µg/L	4.38		111	53-125	6	16	
2-Methylnaphthalene	4.87	0.100	µg/L	4.36		112	52-122	6	17	
Naphthalene	5.02	0.200	µg/L	4.44		113	50-130	7	18	
Phenanthrene	4.15	0.100	µg/L	4.40		94	67-127	6	14	
Pyrene	3.94	0.020	µg/L	4.44		89	68-133	10	18	
Quinoline	5.98	0.050	µg/L	4.44		135	51-140	2	12	
Surrogate: Acridine-d9	*3.12*		*µg/L*	4.44		*70*	*50-140*			
Surrogate: Naphthalene-d8	*4.47*		*µg/L*	4.47		*100*	*50-140*			
Surrogate: Perylene-d12	*3.21*		*µg/L*	4.47		*72*	*50-140*			

Total Metals, Batch B8H1947

Blank (B8H1947-BLK1) Prepared: 2018-08-24, Analyzed: 2018-08-27

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							

CARO
ANALYTICAL SERVICES

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO Hain, Ashley
PROJECT Miscellaneous - Okanagan Individual
WORK ORDER 8082142
REPORTED 2018-12-20 12:16

Total Metals, Batch B8H1947, Continued

Blank (B8H1947-BLK1), Continued Prepared: 2018-08-24, Analyzed: 2018-08-27

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							

LCS (B8H1947-BS1) Prepared: 2018-08-24, Analyzed: 2018-08-27

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Aluminum, total	0.0224	0.0050	mg/L	0.0200		112	80-120			
Antimony, total	0.0222	0.00020	mg/L	0.0200		111	80-120			
Arsenic, total	0.0202	0.00050	mg/L	0.0200		101	80-120			
Barium, total	0.0209	0.0050	mg/L	0.0200		105	80-120			
Boron, total	0.0184	0.0050	mg/L	0.0200		92	80-120			
Cadmium, total	0.0204	0.000010	mg/L	0.0200		102	80-120			
Calcium, total	2.18	0.20	mg/L	2.00		109	80-120			
Chromium, total	0.0204	0.00050	mg/L	0.0200		102	80-120			
Copper, total	0.0216	0.00040	mg/L	0.0200		108	80-120			
Iron, total	1.96	0.010	mg/L	2.00		98	80-120			
Lead, total	0.0207	0.00020	mg/L	0.0200		104	80-120			
Magnesium, total	2.05	0.010	mg/L	2.00		103	80-120			
Manganese, total	0.0205	0.00020	mg/L	0.0200		103	80-120			
Potassium, total	2.09	0.10	mg/L	2.00		105	80-120			
Selenium, total	0.0188	0.00050	mg/L	0.0200		94	80-120			
Sodium, total	2.19	0.10	mg/L	2.00		110	80-120			
Uranium, total	0.0205	0.000020	mg/L	0.0200		102	80-120			
Zinc, total	0.0221	0.0040	mg/L	0.0200		110	80-120			

Reference (B8H1947-SRM1) Prepared: 2018-08-24, Analyzed: 2018-08-27

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Aluminum, total	0.315	0.0050	mg/L	0.303		104	82-114			
Antimony, total	0.0567	0.00020	mg/L	0.0511		111	88-115			
Arsenic, total	0.126	0.00050	mg/L	0.118		107	88-111			
Barium, total	0.849	0.0050	mg/L	0.823		103	83-110			
Boron, total	3.13	0.0050	mg/L	3.45		91	80-118			
Cadmium, total	0.0509	0.000010	mg/L	0.0495		103	90-110			
Calcium, total	11.0	0.20	mg/L	11.6		95	85-113			
Chromium, total	0.258	0.00050	mg/L	0.250		103	88-111			
Copper, total	0.518	0.00040	mg/L	0.486		107	90-117			
Iron, total	0.495	0.010	mg/L	0.488		101	90-116			
Lead, total	0.212	0.00020	mg/L	0.204		104	90-110			
Magnesium, total	3.78	0.010	mg/L	3.79		100	88-116			
Manganese, total	0.114	0.00020	mg/L	0.109		105	88-108			
Potassium, total	7.40	0.10	mg/L	7.21		103	87-116			
Selenium, total	0.118	0.00050	mg/L	0.121		97	90-122			
Sodium, total	7.57	0.10	mg/L	7.54		100	86-118			
Uranium, total	0.0310	0.000020	mg/L	0.0306		101	88-112			
Zinc, total	2.61	0.0040	mg/L	2.49		105	90-113			

Volatile Organic Compounds (VOC), Batch B8H2060

Blank (B8H2060-BLK1) Prepared: 2018-08-27, Analyzed: 2018-08-27

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Benzene	< 0.5	0.5	µg/L							
Ethylbenzene	< 1.0	1.0	µg/L							
Methyl tert-butyl ether	< 1.0	1.0	µg/L							
Styrene	< 1.0	1.0	µg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Hain, Ashley	**WORK ORDER**	8082142
PROJECT	Miscellaneous - Okanagan Individual	**REPORTED**	2018-12-20 12:16

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Volatile Organic Compounds (VOC), Batch B8H2060, Continued										
Blank (B8H2060-BLK1), Continued				Prepared: 2018-08-27, Analyzed: 2018-08-27						
Toluene	< 1.0	1.0	µg/L							
Xylenes (total)	< 2.0	2.0	µg/L							
Surrogate: Toluene-d8	*24.2*		*µg/L*	26.2		*93*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*24.5*		*µg/L*	25.0		*98*	*70-130*			
LCS (B8H2060-BS1)				Prepared: 2018-08-27, Analyzed: 2018-08-27						
Benzene	18.7	0.5	µg/L	20.0		94	70-130			
Ethylbenzene	20.8	1.0	µg/L	20.0		104	70-130			
Methyl tert-butyl ether	17.6	1.0	µg/L	20.0		88	70-130			
Styrene	19.2	1.0	µg/L	20.0		96	70-130			
Toluene	20.8	1.0	µg/L	20.1		104	70-130			
Xylenes (total)	56.6	2.0	µg/L	60.1		94	70-130			
Surrogate: Toluene-d8	*24.5*		*µg/L*	26.2		*94*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*22.6*		*µg/L*	25.0		*90*	*70-130*			

QC Qualifiers:

HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

APPENDIX 3: REVISION HISTORY

REPORTED TO Hain, Ashley
PROJECT Miscellaneous - Okanagan Individual
WORK ORDER 8082142
REPORTED 2018-12-20 12:16

Sample ID	Changed	Change	Analysis	Analyte(s)
8082142-01	2018-11-30	Added	Polycyclic Aromatic Hydrocarbons	
8082142-02	2018-11-30	Added	Polycyclic Aromatic Hydrocarbons	

CARO
ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

REPORTED TO Kaslo, Village of
PO Box 576
Kaslo, BC V0G 1M0

ATTENTION Stephanie Patience

PO NUMBER
PROJECT BE1823
PROJECT INFO Village of Kaslo Spill Response

WORK ORDER 8080248

RECEIVED / TEMP 2018-08-02 08:00 / 17°C
REPORTED 2018-08-03 16:07
COC NUMBER No Number

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at estclair@caro.ca

Authorized By:

Eilish St.Clair, B.Sc., C.I.T.
Client Service Representative

EStClair

TEST RESULTS

REPORTED TO Kaslo, Village of
PROJECT BE1823

WORK ORDER 8080248
REPORTED 2018-08-03 16:07

Analyte	Result	RL	Units	Analyzed	Qualifier
Spill Puddle (8080248-01) | Matrix: Water | Sampled: 2018-07-31 11:30					
BCMOE Aggregate Hydrocarbons					CT1, CT5, CT8, RS2
VHw (6-10)	**4980**	100	µg/L	2018-08-03	
VPHw	**4900**	1000	µg/L	N/A	
Volatile Organic Compounds (VOC)					CT1, CT5, CT8, RS2
Benzene	< 5.0	0.5	µg/L	2018-08-03	
Bromodichloromethane	< 10.0	1.0	µg/L	2018-08-03	
Bromoform	< 10.0	1.0	µg/L	2018-08-03	
Carbon tetrachloride	< 5.0	0.5	µg/L	2018-08-03	
Chlorobenzene	< 10.0	1.0	µg/L	2018-08-03	
Chloroethane	< 20.0	2.0	µg/L	2018-08-03	
Chloroform	< 10.0	1.0	µg/L	2018-08-03	
Dibromochloromethane	< 10.0	1.0	µg/L	2018-08-03	
1,2-Dibromoethane	< 3.0	0.3	µg/L	2018-08-03	
Dibromomethane	< 10.0	1.0	µg/L	2018-08-03	
1,2-Dichlorobenzene	< 8.0	0.5	µg/L	2018-08-03	RA1
1,3-Dichlorobenzene	< 10.0	1.0	µg/L	2018-08-03	
1,4-Dichlorobenzene	< 10.0	1.0	µg/L	2018-08-03	
1,1-Dichloroethane	< 10.0	1.0	µg/L	2018-08-03	
1,2-Dichloroethane	< 10.0	1.0	µg/L	2018-08-03	
1,1-Dichloroethylene	< 10.0	1.0	µg/L	2018-08-03	
cis-1,2-Dichloroethylene	< 10.0	1.0	µg/L	2018-08-03	
trans-1,2-Dichloroethylene	< 10.0	1.0	µg/L	2018-08-03	
Dichloromethane	< 30.0	3.0	µg/L	2018-08-03	
1,2-Dichloropropane	< 10.0	1.0	µg/L	2018-08-03	
1,3-Dichloropropene (cis + trans)	< 10.0	1.0	µg/L	2018-08-03	
Ethylbenzene	< 10.0	1.0	µg/L	2018-08-03	
Methyl tert-butyl ether	< 10.0	1.0	µg/L	2018-08-03	
Styrene	< 10.0	1.0	µg/L	2018-08-03	
1,1,2,2-Tetrachloroethane	< 5.0	0.5	µg/L	2018-08-03	
Tetrachloroethylene	< 10.0	1.0	µg/L	2018-08-03	
Toluene	< 10.0	1.0	µg/L	2018-08-03	
1,1,1-Trichloroethane	< 10.0	1.0	µg/L	2018-08-03	
1,1,2-Trichloroethane	< 10.0	1.0	µg/L	2018-08-03	
Trichloroethylene	< 10.0	1.0	µg/L	2018-08-03	
Trichlorofluoromethane	< 10.0	1.0	µg/L	2018-08-03	
Vinyl chloride	< 10.0	1.0	µg/L	2018-08-03	
Xylenes (total)	**79.1**	2.0	µg/L	2018-08-03	
Surrogate: Toluene-d8	*114*	*70-130*	%	*2018-08-03*	
Surrogate: 4-Bromofluorobenzene	*137*	*70-130*	%	*2018-08-03*	S02
Surrogate: 1,4-Dichlorobenzene-d4	*128*	*70-130*	%	*2018-08-03*	

TEST RESULTS

REPORTED TO Kaslo, Village of
PROJECT BE1823

WORK ORDER 8080248
REPORTED 2018-08-03 16:07

Sample Qualifiers:

CT1	Incorrect Container(s) supplied for VOC analysis
CT5	This sample has been incorrectly preserved for VOC analysis
CT8	Headspace in sample container is greater than 5% volume - VOC results may be compromised
RA1	The Reporting Limit has been raised due to matrix interference.
RS2	The Reporting Limits for this sample have been raised due to limited sample volume.
S02	Surrogate recovery outside of control limits. Data accepted based on acceptable recovery of other surrogates.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO Kaslo, Village of
PROJECT BE1823

WORK ORDER 8080248
REPORTED 2018-08-03 16:07

Analysis Description	Method Ref.	Technique	Location
VH in Water	EPA 5030B / BCMOE VHw	Purge&Trap / Gas Chromatography (GC-FID)	Richmond
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	Richmond
VPHw in Water	BCMOE VPH	Calculation: VH - (Benzene + Toluene + Ethylbenzene + Xylenes + Styrene)	N/A

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
µg/L	Micrograms per litre
BCMOE	British Columbia Environmental Laboratory Manual, British Columbia Ministry of Environment
EPA	United States Environmental Protection Agency Test Methods

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kaslo, Village of	**WORK ORDER**	8080248
PROJECT	BE1823	**REPORTED**	2018-08-03 16:07

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
BCMOE Aggregate Hydrocarbons, Batch B8H0116										
Blank (B8H0116-BLK1)				Prepared: 2018-08-03, Analyzed: 2018-08-03						
VHw (6-10)	< 100	100	µg/L							
LCS (B8H0116-BS2)				Prepared: 2018-08-03, Analyzed: 2018-08-03						
VHw (6-10)	3020	100	µg/L	3280		92	70-130			
Volatile Organic Compounds (VOC), Batch B8H0116										
Blank (B8H0116-BLK1)				Prepared: 2018-08-03, Analyzed: 2018-08-03						
Benzene	< 0.5	0.5	µg/L							
Bromodichloromethane	< 1.0	1.0	µg/L							
Bromoform	< 1.0	1.0	µg/L							
Carbon tetrachloride	< 0.5	0.5	µg/L							
Chlorobenzene	< 1.0	1.0	µg/L							
Chloroethane	< 2.0	2.0	µg/L							
Chloroform	< 1.0	1.0	µg/L							
Dibromochloromethane	< 1.0	1.0	µg/L							
1,2-Dibromoethane	< 0.3	0.3	µg/L							
Dibromomethane	< 1.0	1.0	µg/L							
1,2-Dichlorobenzene	< 0.5	0.5	µg/L							
1,3-Dichlorobenzene	< 1.0	1.0	µg/L							
1,4-Dichlorobenzene	< 1.0	1.0	µg/L							
1,1-Dichloroethane	< 1.0	1.0	µg/L							
1,2-Dichloroethane	< 1.0	1.0	µg/L							
1,1-Dichloroethylene	< 1.0	1.0	µg/L							
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
Dichloromethane	< 3.0	3.0	µg/L							
1,2-Dichloropropane	< 1.0	1.0	µg/L							
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L							
Ethylbenzene	< 1.0	1.0	µg/L							
Methyl tert-butyl ether	< 1.0	1.0	µg/L							
Styrene	< 1.0	1.0	µg/L							
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L							
Tetrachloroethylene	< 1.0	1.0	µg/L							
Toluene	< 1.0	1.0	µg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kaslo, Village of	**WORK ORDER**	8080248
PROJECT	BE1823	**REPORTED**	2018-08-03 16:07

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Volatile Organic Compounds (VOC), Batch B8H0116, Continued										
Blank (B8H0116-BLK1), Continued				Prepared: 2018-08-03, Analyzed: 2018-08-03						
1,1,1-Trichloroethane	< 1.0	1.0	µg/L							
1,1,2-Trichloroethane	< 1.0	1.0	µg/L							
Trichloroethylene	< 1.0	1.0	µg/L							
Trichlorofluoromethane	< 1.0	1.0	µg/L							
Vinyl chloride	< 1.0	1.0	µg/L							
Xylenes (total)	< 2.0	2.0	µg/L							
Surrogate: Toluene-d8	*27.4*		*µg/L*	26.2		*104*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*27.0*		*µg/L*	25.0		*108*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*28.6*		*µg/L*	25.0		*114*	*70-130*			
LCS (B8H0116-BS1)				Prepared: 2018-08-03, Analyzed: 2018-08-03						
Benzene	20.4	0.5	µg/L	20.0		102	70-130			
Bromodichloromethane	19.2	1.0	µg/L	20.2		95	70-130			
Bromoform	18.9	1.0	µg/L	20.1		94	70-130			
Carbon tetrachloride	17.1	0.5	µg/L	20.1		85	70-130			
Chlorobenzene	21.0	1.0	µg/L	20.1		104	70-130			
Chloroethane	20.5	2.0	µg/L	20.0		102	60-140			
Chloroform	20.3	1.0	µg/L	20.2		100	70-130			
Dibromochloromethane	18.8	1.0	µg/L	20.2		93	70-130			
1,2-Dibromoethane	18.4	0.3	µg/L	20.0		92	70-130			
Dibromomethane	19.9	1.0	µg/L	20.0		100	70-130			
1,2-Dichlorobenzene	20.2	0.5	µg/L	20.2		100	70-130			
1,3-Dichlorobenzene	21.5	1.0	µg/L	20.2		106	70-130			
1,4-Dichlorobenzene	21.8	1.0	µg/L	20.1		108	70-130			
1,1-Dichloroethane	20.2	1.0	µg/L	20.2		100	70-130			
1,2-Dichloroethane	19.3	1.0	µg/L	20.2		96	70-130			
1,1-Dichloroethylene	17.1	1.0	µg/L	20.1		85	70-130			
cis-1,2-Dichloroethylene	19.9	1.0	µg/L	20.0		100	70-130			
trans-1,2-Dichloroethylene	21.1	1.0	µg/L	20.1		105	70-130			
Dichloromethane	19.9	3.0	µg/L	20.1		99	70-130			
1,2-Dichloropropane	18.6	1.0	µg/L	20.1		93	70-130			
1,3-Dichloropropene (cis + trans)	32.2	1.0	µg/L	40.2		80	70-130			
Ethylbenzene	18.0	1.0	µg/L	20.0		90	70-130			
Methyl tert-butyl ether	11.7	1.0	µg/L	20.0		59	70-130			SPK
Styrene	15.9	1.0	µg/L	20.0		79	70-130			
1,1,2,2-Tetrachloroethane	6.5	0.5	µg/L	20.2		32	70-130			SPK
Tetrachloroethylene	17.6	1.0	µg/L	20.1		88	70-130			
Toluene	20.6	1.0	µg/L	20.1		102	70-130			
1,1,1-Trichloroethane	16.2	1.0	µg/L	20.2		80	70-130			
1,1,2-Trichloroethane	19.7	1.0	µg/L	20.2		97	70-130			
Trichloroethylene	21.3	1.0	µg/L	20.1		106	70-130			
Trichlorofluoromethane	18.2	1.0	µg/L	20.0		91	60-140			
Vinyl chloride	20.8	1.0	µg/L	20.0		104	60-140			
Xylenes (total)	56.3	2.0	µg/L	60.0		94	70-130			
Surrogate: Toluene-d8	*23.4*		*µg/L*	25.0		*89*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*26.4*		*µg/L*	25.0		*106*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*26.3*		*µg/L*	25.0		*105*	*70-130*			

QC Qualifiers:

S02	Surrogate recovery outside of control limits. Data accepted based on acceptable recovery of other surrogates.
SPK	The recovery of this analyte was outside of established control limits.

Client ID: Spill Puddle

CARO ID: 8080248-01 **x10 dilution**