Site #914, Lot 2, Block HB, Dawson City, Yukon

Phase II Environmental Site Assessment

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Final

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Government of Yukon

Executive Summary

The Government of Yukon's (YG's) Department of Environment, Site Assessment and Remediation Unit, retained CH2M HILL Canada Limited, now a Jacobs Engineering Group Inc. Company, to complete a comprehensive Phase II Environmental Site Assessment (ESA) at Lot 2, Block HB - Haper Estate, Dawson, Yukon (herein referred to as the Site). The objective of the Phase II ESA was to investigate existing environmental impacts in the soil and groundwater at the Site, as identified by a previous historical investigation. Previous environmental investigations identified petroleum hydrocarbon impacts in the soil.

The Site is regulated under the Yukon *Environment Act*, specifically the *Contaminated Sites Regulation* (CSR). CSR residential standards are applicable to soil. Aquatic life and residential standards apply to groundwater.

Five boreholes were drilled at the Site, four of which were completed as groundwater monitoring wells (MWs). Soil and groundwater samples were collected and submitted for laboratory analysis. Results of the Phase II ESA investigation showed that soil analytical results met CSR residential standards. Groundwater analytical results met aquatic life and drinking water standards, with a single exception - groundwater from 20MW-04, which exceeded the drinking water guideline for benzene. Due to the absence of groundwater likely due to the presence of permafrost, groundwater impacts are not delineated to the east corner of the Site.

The closest receptors at the Site are the Yukon River, located 100 metres (m) generally west (cross gradient), and municipal water wells, located 220 m southwest (downgradient). The municipal water wells used for public water supply are completed approximately 18.2 to 20.1 metres below grade. During the investigation, groundwater was noted at depths of 5.01 to 5.89 m below grade, which translates to elevations from 312.93 to 312.94 m above sea level. In October 2020, groundwater had an inferred gradient of 0.002 m per metre to the southwest.

Residential development of the Site is possible; however, groundwater may require ongoing monitoring and management during construction to mitigate the presence of benzene dependent on the specific development plans for the Site. Potable (drinking water supply) water wells should not be constructed on the Site.

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Acronyms and Abbreviations

°C	degree(s) Celsius
µg/L	microgram(s) per litre
ALS	ALS Environmental Ltd.
AST	aboveground storage tank
AW	Aquatic Life Water Use Standard
Challenger	Challenger Geomatics Ltd.
CSR	*Contaminated Sites Regulation*
DW	Drinking Water Use Standard
EPH	extractable petroleum hydrocarbons
ESA	environmental site assessment
HDPE	high-density polyethylene
HEX	hexane
IBL	isobutylene
IL	Industrial Land Use Standard
IW	Irrigation Water Use Standard
Jacobs	Jacobs Engineering Group Inc.
LEPH	light extractable petroleum hydrocarbons
LW	Livestock Water Use Standard
m	metre(s)
m/m	metre per metre
masl	metre(s) above sea level
mbg	metre(s) below grade
Midnight Sun	Midnight Sun Drilling Inc.
mL	millilitre(s)
mm	millimetre(s)

MW	monitoring well
PAH	polycyclic aromatic hydrocarbon
PHC	petroleum hydrocarbon
PID	photoionization detector
QA/QC	quality assurance/quality control
RL	Residential Land Use
RPD	relative percent difference
VOC	volatile organic compound
WPYR	White Pass and Yukon Route
YG	Government of Yukon
YGS	Yukon Geological Survey

1. Project Introduction

The Government of Yukon's (YG's) Department of Environment, Site Assessment and Remediation Unit, retained CH2M HILL Canada Limited (Jacobs), now part of Jacobs Engineering Group Inc., to complete a comprehensive Phase II Environmental Site Assessment (ESA) at Lot 2, Block HB - Haper Estate, Dawson, Yukon (herein referred to as the Site), as outlined in the *Proposal for Completion of Phase II ESA at Site #914, Block HB, Dawson City, Yukon* (Jacobs 2020). This report is prepared in accordance with the requirements of the Canadian Standards Association Standard: Z769-00: Phase II ESA, the *Contaminated Sites Regulation* (CSR), and the Yukon *Environment Act*.

1.1 Objectives and Scope of Work

The objective of the Phase II ESA is to investigate the existing environmental impacts in the soil and groundwater at the Site, as identified by a previous historical investigation (Section 2.2). The scope of work completed for the Phase II ESA by Jacobs included the following:

- Complete locates and identify underground utilities
- Advance five boreholes and complete groundwater monitoring wells (MWs)
- Classify soil and collect soil samples for analysis
- Develop newly installed groundwater MWs
- Complete a groundwater monitoring and sampling program
- Survey newly installed intrusive investigation points and tie into the existing MW network
- Submit soil and water samples for accredited laboratory analysis
- Complete a quality assurance/quality control (QA/QC) program
- Summarize field activities and findings in a final report
- Provide a recommendation for further actions related to the environmental condition of the Site

2. Background and Setting

2.1 Site Location

The Site is located along the western edge of Dawson City, Yukon, at Site #914, Lot 2, Block HB. Aerial imagery of the Site and surrounding land use appear in Figure 1. Located in an urban residential area, the Site is bordered by Second Avenue and a back alley along the northwestern and southeastern boundaries, respectively. Urban residential properties border the northeastern and southwestern edge of the Site. A Site plan is provided on Figure 2.

2.2 Previous Environmental Investigations

Three separate historical environmental investigations have been conducted at the Site by Chilkoot Geological Engineers Ltd. These investigations include a Phase I ESA (Chilkoot 2015a), a Geotechnical Evaluation Report (Chilkoot 2015b), and a supplementary Phase II ESA (Chilkoot 2016). Previous environmental investigations identified petroleum hydrocarbon (PHC) impacts in the soil; however, further investigations are required to assess the soil and groundwater conditions at the Site. A previous Phase II ESA investigation (Chilkoot 2016) does not appear to have been completed according to the requisites of the Canadian Standards Association for Phase II ESA.

2.3 Regional Setting

Surrounding the Site, the nearby properties mainly consist of private residential buildings, with a butcher (BonTon Butcherie and Charcuterie) 40 metres (m) northeast, and an industrial sales building and storage yard (Klondike Metallic Industrial, previously White Pass and Yukon Route (WPYR)) 40 m to the southwest.

The nearest surface water body is the Yukon River, which is located approximately 100 m west of the Site. The Site is at an approximate elevation of 340 metres above sea level (masl) and is located in a flood plain that gradually slopes toward the Yukon River. The Yukon River is at an approximate elevation of 340 masl as well.

The Site is in the Boreal Cordillera Ecozone, within the Klondike Plateau (YEWG, 2002). Within this ecozone, permafrost is discontinuous; however, valley-bottom deposits usually contain ice-rich horizons, dependent on soil moisture content and organic layer thickness.

According to the Yukon Geological Survey (YGS) of the Dawson Region (YGS 2014), the surficial geology is characterized as Holocene Fluvial, which consists of sediments transported and deposited by modern streams and rivers. The fluvial deposit typically consists of well-sorted, stratified sand and gravel up to 10 m in thickness. The underlying bedrock is Devonian to lower Permian of the Slide Mountain Formation, as classified by the YGS (YGS 2016). The Slide Mountain Formation is characterized as an oceanic assemblage of chert, argillite, minor sandstone, and conglomerate. Additional information on the Site stratigraphy conditions appears in Section 5.1.

2.4 Site Setting

The Site is currently owned by YG. The entirety of the Site is undeveloped, flat, and naturally vegetated. The Site has never been developed but is suspected to have been previously used as industrial storage for the historic operations of the WPYR during initial industrial development of Dawson.

The Site is at a slightly lower elevation than the bordering Second Avenue and back alley, making it susceptible to seasonal ponding of surface water. There are no aboveground nor belowground infrastructure on the Site; however, in the neighbouring residential property northeast of the Site, there are two aboveground storage tanks (ASTs) located near the property line. At the time of the investigation, these ASTs both stored heating oil. The northeast neighbouring residential property encroaches onto the north corner of the Site, where a recreational vehicle is currently being stored.

2.4.1 Water Use

The YG Water Well Registry website (YG 2020) was searched to identify water wells onsite and within a 1-km radius of the Site. The map identified a group of seven municipal source water wells within a 1-km radius. The wells are located approximately 220 m southwest from the Site, along the eastern bank of the Yukon River. All seven wells are listed as Dawson City public water supply wells. Four of the wells are classed as large and the remaining three as classed as small. The four large wells are actively used for public water supply for the City of Dawson and are completed at depths ranging from 18.2 to 20.1 metres below grade (mbg, Tetra Tech 2017). A summary of the water well search and accompanying map is attached as Appendix A.

3. Regulatory Framework

As the Site is owned by YG, environmental quality at the Site is regulated under the Yukon *Environment Act*. Under the *Environment Act,* the CSR (OIC 2002/171) prescribes numerical standards for soil and water for specific uses, which are applicable at the Site.

3.1 Soil Standards

Soil standards applied in the Yukon are determined by the five land use categories defined in the CSR: Residential Land Use (RL), Agricultural Land Use, Park Land Use, Commercial Land Use, and Industrial Land Use (IL). The Site is adjacent to a residential area and, at this point, it is Jacobs' understanding that the Site is intended to be developed as a residential property. To evaluate the Site based on its most stringent conditions, CSR residential standards are used for guidance at this Site. The numerical soil standards are provided in Schedule 1: Generic Numerical Soil Standards and Schedule 2: Matrix Numerical Soil Standards (Environment Yukon 2002) of the CSR.

Three applicable site-specific factors for consideration of the existing and potential human and ecological receptors as well as primary exposure pathways:

1) Ingestion of contaminated soil (for human health protection)
2) Toxicity to soil invertebrates and plants (for environmental protection)
3) Groundwater flow to surface water used by aquatic life freshwater organisms (for environmental protection)

For these site-specific factors, the most stringent standards are compared with the laboratory analytical results to provide the most conservative characterization of soil conditions at the Site.

3.2 Groundwater Standards

CSR *Protocol No. 6: Application of Water Quality Standards* (Environment Yukon 2011a) specifies which water quality standards are applicable to a given site in the Yukon. The groundwater standards state that, depending on the water use at a site, the CSR designates four water use categories: Aquatic Life (AW), Irrigation (IW), Livestock (LW), and Drinking Water (DW). CSR IW and LW standards do not apply to this Site as neither of these activities are performed onsite or nearby. CSR AW standards apply due to the proximity of the Site to the Yukon River, and DW standards apply due to the Site's proximity to public water supply wells. The most conservative characterization of groundwater standards (DW and AW) are applicable at the Site.

4. Methodology

Jacobs completed an investigation of the Site, including advancing borehole using solid stem augers, installation of groundwater MWs, and collecting soil and groundwater samples. The general Site layout and investigation locations are shown on Figure 2, and a photo log of the field activities appears as Appendix B.

4.1 Utility Locates

Prior to starting the drilling program, a private utility locator company, Challenger Geomatics Ltd. (Challenger), was retained to conduct underground utility locates at the Site. Jacob's field lead met with Challenger to confirm the area to be cleared for locates. The borehole locations were sited using a handheld Garmin Global Positioning System unit while referencing the existing MW-01. A blind sweep of the Site and 25 m surrounding the work area was completed. Two underground utilities were identified, a buried water line along Second Avenue on the northwestern edge of Site and a powerline along the southeastern edge, along the back alley. Neither underground utility was located within the work areas.

4.2 Borehole Drilling and Monitoring Well Installation

In total, five boreholes were drilled at the Site on October 10 and 11, 2020, using a track-mounted Marl M4CT drill rig supplied and operated by Midnight Sun Drilling Inc. (Midnight Sun). The rig was equipped with 150-millimetre (mm) and 200-mm solid and hollow stem augers, with nominal lengths of 1.5m. The boreholes were completed at predetermined locations within the Site to assess soil and groundwater impacts associated with hydrocarbon contamination as identified by a third-party during a previous investigation. The boreholes were terminated at 6.1 mbg. Jacobs logged soil stratigraphy using cuttings retrieved from each auger flight and compared these soils against the Unified Soil Classification System (ASTM 2000). Individual borehole logs appear in Appendix C.

Four of the five boreholes advanced were completed as groundwater MWs in accordance with ASTM Standard D5092, *Standard Practice for Design and Installation of Groundwater Monitoring Wells* (ASTM 2016) and CSR *Protocol No. 7: Groundwater Monitoring Well Installation, Sampling and Decommissioning* Environment Yukon 2011c). 20BH-01 was originally completed as a MW; however it was decommissioned due to absence of groundwater likely due to the presence of permafrost. The construction details of the installed MWs are presented on the borehole logs in Appendix C.

The MWs were constructed from 50-mm-diameter Schedule 40 polyvinyl chloride casing with threaded connections; well screens consisted of 0.10-mm slotted pipe, ranging from 0.46 m (1.5 feet) to 3.05 m (10 feet) long. A filter pack consisting of 10/20 filter sand was installed around the well screen, approximately 0.15 m above the top of the screen. A bentonite seal was installed above the filter pack using 3/8-inch bentonite chips. Wells were installed as stickups above ground surface. Each MW was capped with a J-plug. Well completion details are included in the borehole logs provided in Appendix C and are summarized in Table 1.

4.3 Soil Sampling

Soil samples were collected directly from the auger flights during drilling. Soil sample intervals generally ranged from 0.15 to 0.76 m (0.5 foot to 2.5 feet). Soil samples were collected into 120-millilitre (mL) glass jars and were also extracted into methanol-preserved 40-mL glass vials using Terracore samplers, provided by the laboratory. Soil samples were placed on ice in laboratory provided coolers and taken to ALS Environmental Ltd. (ALS). Additional sample volumes were collected simultaneously into soil bags to allow field screening for PHC headspace using a MiniRae 3000 photoionization detector (PID). Drilling was completed in winter conditions, meaning that soil temperatures were near 0 C. Once collected in soil bags and prior to field screening, soils were

warmed to approximately to 15 degrees Celsius (C) to enhance the release of PHC compounds from the collected soil samples, to better enable field screening of the soil vapours. Increased water vapours was not observed in the soil bags during warming and PID readings were not corrected to account for water vapours in the head space. PID readings are also noted in the borehole logs provided in Appendix C.

Soil cuttings were deposited to ground surface adjacent to the well completions.

4.3.1 Laboratory Analytical Program for Soils

Soil samples were selected for laboratory analyses based on field screening results and visual observations. Soil samples were submitted to ALS for the following analyses:

- Polycyclic aromatic hydrocarbons (PAHs)
- Light extractable petroleum hydrocarbons ($LEPH_{S\ 10-19}$), heavy extractable petroleum hydrocarbons ($HEPH_{S\ 19-32}$), and volatile petroleum hydrocarbons ($VPH_{S\ 6-10}$)

Laboratory Certificates of Analyses appear in Appendix D. Soil sample analytical results are also summarized in Table 2.

4.4 Groundwater Monitoring and Sampling

Monitoring wells were developed prior to groundwater sample collection approximately 24 hours after initial installation. The wells were developed using 5/8-inch Waterra tubing fitted with surge blocks and foot-valves. Each well was surged to promote flow of formation water through the filter pack. Surging was accomplished by rapidly oscillating the foot-valve and surge block along the length of the submerged well screen. Following surging, the surge blocks were removed, and each well was pumped rapidly to remove the suspended sediment in the well casing and to continue to promote groundwater flow through the filter pack.

Each well was purged until three well casing volumes were extracted from the well. If the well went dry, the well was left to recharge before purging dry again, until the water levels recharged to the initial measurement. This method was repeated until the well was purged-dry three times.

The purge water produced during development was placed into two clean, 45-gallon high-density polyethylene (HDPE) drums provided by Midnight Sun. The drums were labelled and left onsite. Groundwater analytical data were used to define groundwater quality for disposal purposes (discussed in Section 5.4).

The MWs were sampled on October 22, 2020. Low-flow sampling was attempted, but due to ambient temperatures of -23 C it was not a practical approach. Subsequently, the wells were purged using dedicated polycarbonate bailers. Three well volumes were purged from each well prior to sample collection.

Field parameters, including pH, specific conductivity, temperature, oxidation-reduction potential, dissolved oxygen, and turbidity were measured from the water recovered in the final bailer volume prior to sampling.

Groundwater samples were immediately put on ice in laboratory provided coolers and were transported to ALS. Some sample bottles and vials are pre-charged with preservative (that is, sodium bisulphate for volatile organic compounds [VOCs]). Care was taken not to spill any of the preservative. Groundwater purge logs are provided in Appendix E and groundwater field parameters are summarized in Table 3. MW-01 was not sampled, as the MW was dry.

4.4.1.1 Laboratory Analytical Program for Groundwater

Groundwater samples were submitted to ALS for the following analyses:

- Benzene, toluene, ethylbenzene, and xylenes and methyl tert-butyl ether
- $LEPH_{W\ 10\text{-}19}$, extractable petroleum hydrocarbons ($EPH_{W\ 10\text{-}19}$), $VPH_{W\ 6\text{-}10}$, and volatile hydrocarbons ($VH_{w\ 6\text{-}10}$)
- PAHs
- VOCs

Laboratory Certificates of Analyses appear in Appendix D. Groundwater sample analytical results are summarized in Table 4.

4.5 Surveying

Challenger surveyed the MWs on October 23, 2020 and the results are incorporated into this report. Challenger surveyed the top of pipe and the ground elevation for each MW. Due to an equipment malfunction of a water level tape, Jacobs had Challenger survey groundwater elevations in each MW as well. The groundwater elevation details, based on the Challenger survey, were used to help infer the groundwater flow direction at the Site.

5. Results

5.1 Soil Lithology

In general, the lithology observed was ground surface covered by a layer of up to 0.20 to 0.30 m of very stiff and dry silt. A review of the borehole logs indicates that the dominant constituent at the Site is sand, with varying levels of silt encountered from ground surface to 4.57 mbg. The soil gradually becomes more coarse-grained as depth increases, with sandy gravel encountered below the silt and sand at a depth of 6.10 mbg. Occasionally, organic materials are encountered at ground surface up to 0.15 mbg, or a silty sand with gravel fill from ground surface to 0.91 mbg. Several anthropogenic impacts were found, such as trace debris, woodchips, glass, and trace metallic flecks in the uppermost metre of soil.

Based on the regional geology presented in Section 2.3, the sediments near the Site are sand and gravel fluvial deposits, due to the Yukon River, with fine-grained sediments deposited above. The data collected during the Site investigation is consistent with this regional interpretation.

5.2 Soil Analytical Results

5.2.1 Field Screening

Apart from 20MW-01, field screening assessment vapour readings were at or less than 5 parts per million for isobutylene (IBL) and hexane (HEX). The largest PID readings were observed at 20MW-01, where two field samples yielded HEX vapour readings at a 5 percent lower explosive limit, at depths of 2.16 to 2.44 mbg, and 3.35 to 3.96 mbg.

5.2.2 Analytical Results

A total of 16 soil samples were analyzed by the laboratory during the October 2020 investigation. The requested soil analytical results are presented in Table 2. Given the historical data collected at the Site, hydrocarbons are the primary contaminant of concern. Based on the reported data, the soil samples analyzed met the CSR RL guidelines.

Soil sample results analyzed for PAH were less than method detection limits at 20MW-02 and 20MW-03, at depths of 0.8 to 4.6 mbg, and 0-0.3 mbg, respectively. Toluene was detected at 20MW-04 from 2.75 to 3.05 mbg, at 0.072 milligram(s) per kilogram. Benzene was detected at 20MW-03 at 4.9 to 5.2 mbg, and at 20MW-04, at depths of 3.35 to 3.6 mbg, and at 5.5 to 5.8 mbg. The benzene and toluene measured concentrations were 1,000 and 100 times less than the RL standard, respectively. All other results were less than analytical detection limits.

5.3 Groundwater Flow and Gradient

Groundwater elevations ranged from 312.93 (20MW-04) to 312.94 masl (20MW-01, 20MW-02, and 20MW-03). Groundwater was encountered from 5.01 to 5.89 mbg. To calculate depth to groundwater below grade, depth to groundwater measurements were subtracted from ground elevations. Depth to groundwater calculations were calculated as shown in Exhibit 1.

Exhibit 1. Depth to Groundwater Calculations
Phase II Environmental Site Assessment, Site #914, Dawson City, Yukon

Location	Ground Elevation (m)	Groundwater Elevation (m)	Depth to Groundwater (mbg)
20MW-01	318.39	312.94	5.45
20MW-02	317.95	312.94	5.01
20MW-03	318.16	312.94	5.22
20MW-04	318.82	312.93	5.89

To evaluate the groundwater flow direction, groundwater elevations were plotted on Figure 3. Based on the groundwater contours shown, groundwater flow direction during the October 2020 monitoring event had a slight gradient in the direction of the Yukon River, to the west of Site. The Site has a hydraulic gradient of 0.002 metre per metre (m/m). The hydraulic gradients were calculated as shown in Exhibit 2.

Exhibit 2. Summary of Hydraulic Gradient Calculation
Phase II Environmental Site Assessment, Site #914, Dawson City, Yukon

Location	Hydraulic Distance	Hydraulic Gradient
Along the flow path between 20MW-02 to 20MW-04	312.94 to 312.93 contours 6.396 m	0.002 m/m

Due to the limited groundwater monitoring data currently available from the well network on the Site, additional monitoring may be required to confirm the groundwater gradient found in October 2020.

5.4 Groundwater Analytical Results

Groundwater from MWs 20MW-01, 20MW-02, 20MW-03, and 20MW-04 was submitted for laboratory analysis of PHCs, PAHs, and VOCs. Groundwater samples analyzed for PAHs and VOCs met the CSR AW and DW standards. The samples submitted for PHC analyses met the CSR AW standards.

When CSR DW standards are applied, groundwater from 20MW-04 contains benzene at a concentration that marginally exceeds the DW standards (the groundwater sample concentration is 5.28 microgram(s) per litre [µg/L)], and the DW standard is 5 µg/L). The remaining groundwater samples submitted for PHC analyses met the CSR DW standards. MWs 20MW-01 and 20MW-03 have detections of benzene concentrations, but met the DW standard of 5 µg/L. Groundwater samples from wells at 20MW-02, 20MW-03, and 20MW-04 have detected concentrations of PAHs (1-Methylnapthalene and 2-Methynapthlaene, and 20MW-04 has measurable concentrations of naphthalene), but groundwater samples analyzed from these wells met the CSR DW and AW standards.

6. Quality Assurance and Quality Control

Jacobs prepared and implemented QA/QC procedures throughout this investigation, inclusive of field measurements, field blanks and field duplicate samples.

6.1 Field Measures

QA/QC field measures conducted by Jacobs included the following:

- Donning a clean pair of nitrile gloves to collect each sample
- Decontamination of field tools and sampling equipment, as required between each monitoring well
- Following appropriate Jacobs standard operating procedures for sampling and decontamination activities
- Collecting and analyzing appropriate field QA/QC samples, as proposed in the work plan
- Using proper lab provided sampling containers, storage methods, and shipping containers
- Maintaining and documenting chain of custody of all samples throughout collection, storage, and shipment to the receiving laboratory

Additionally, specific measures were taken in the field to avoid cross-contamination between samples, field tools, external contamination, and contamination from the samples to external sources.

6.2 Field Duplicates

Field duplicates were collected and analyzed at an approximate frequency of 10 percent (1 duplicate for approximately every 10 field samples). One duplicate groundwater sample and two duplicate soil samples were collected.

The field duplicate sample results are evaluated by calculating a relative percent difference (RPD), a measure of the reproducibility and variability of the data. Jacobs assessed the analytical data precision in the soil field duplicate samples by calculating an RPD using the following formula:

$$RPD\% = \frac{|S - D|}{\frac{1}{2}(S + D)} \times 100\%$$

Where:

RPD = relative percent difference
S = parent sample result
D = duplicate sample result

The closer the calculated RPD result is to 0 percent, the better the precision and the smaller the variability of the represented dataset. The following RPD values were used during the QA/QC (and both concentrations are greater than five times the laboratory detection limit):

Soil: PAHs (50 percent), EPH (40 percent), organics (40%)

Groundwater: VOCs (30 percent), organics (30 percent)

If the calculated RPD is greater than the applicable control limit, further assessment may be required to establish the cause and determine whether the elevated variability has an effect on the reported results investigation (that is, changing the classification of a sample from uncontaminated to contaminated based on the applicable standards, guidelines, or criteria). However, RPD values found to be greater than the applicable control limit are evaluated in relation to other factors. These factors include the sample matrix, the specific analytical parameter, and the relative concentration.

The RPDs calculated for each parameter in each set of samples during this investigation were within the appropriate control limits.

The associated results in both the parent and duplicate samples should be considered as estimates. However, the noted RPD exceedances herein do not change the conclusion of the data and the discussion. Values for the parameters were either both less than the applicable CSR AW, DW, and RL standards, or the parameter did not have a standard.

6.3 Laboratory Quality Assurance and Quality Control

The laboratory completed a separate internal QA/QC process, which involves matrix spike recovery, spiked blank recovery, method blank recovery, and laboratory duplicate RPD values. Some notable qualifiers were identified, such as: detection limits being raised and or adjusted, laboratory duplicate RPD exceedances, method blank exceedances, and surrogate recovery exceedances. Overall, the laboratory reported acceptable results, suitable to represent Site conditions.

7. Discussion

The key findings of the Phase II ESA investigation are as follows:

- Interpreted Site stratigraphy consists of a thin fill layer at ground surface, with underlying coarse-grained fluvial deposits. Anthropogenic impacts can be observed near ground surface.
- Groundwater was present at depths of 5.01 to 5.89 m below ground surface, or 312.92 to 312.93 masl. Groundwater has an inferred gradient of 0.002 m/m to the west, toward the Yukon River.
- Soil analytical results met the CSR RL standards tested.
- Groundwater analytical results met the CSR AW standards, which are applied due to the proximity to the Yukon River, located 100 m west.
- Groundwater analytical results do not meet DW standards tested at 20MW-04, which exceeded the DW guideline for benzene. DW guidelines are applied due to the proximity of a nearby receptors, and municipal water wells located 220 m southwest of the Site (down gradient). Groundwater from 20MW-04 contains benzene at a concentration that marginally exceeds the DW standards (the groundwater sample concentration is 5.28 microgram(s) per litre [µg/L)], and the DW standard is 5 µg/L).
- Due to the absence of groundwater likely due to the presence of permafrost, groundwater impacts are not delineated to the east corner of the Site.

8. Conclusions and Recommendations

Jacobs completed a Phase II ESA investigation of soil and groundwater at #914, Block HB, Dawson City, Yukon in October 2020. The overall objectives were to investigate suspected environmental contamination and provide recommendations for further remediation.

Soil quality of the contaminants of concern met the CSR RL standards. No evidence of soil impacts described in the previous Phase II investigation (Chilkoot 2016) were found during our field investigation.

Groundwater samples were collected from the four MWs installed on the Site. One boring was not completed as a monitoring well due to absence of groundwater likely due to the presence of permafrost. Of the four groundwater MWs tested groundwater quality met the AW and DW standards at three, with benzene slightly exceeding the DW standard at well 20MW-04.

Regarding the presence of contamination in groundwater at the Site, residential development of the Site is possible. Given the presence of low concentrations of benzene in groundwater, groundwater may require management during construction to address the presence of benzene. However additional information regarding development plan details for the site are required to provide comments on groundwater management methods that may be required to support development or occupancy of the Site. Drinking water source wells should not be installed on the Site.

It is recommended that additional groundwater sampling and analysis of the monitoring well network be completed to provide more data to support the understanding of groundwater contamination and groundwater levels, this data would also support planning for future development. Groundwater at 20MW-04 should be resampled to confirm the exceedance of benzene that marginally exceeds the DW standards.

This report is prepared in accordance with the requirements of the Canadian Standards Association Standard: Z769-00: Phase II ESA, the *Contaminated Sites Regulation* (CSR), and the Yukon *Environment Act* and is submitted independent of previous historical investigations.

9. Closure

The conclusions represent the best judgment of the assessor based on the Site conditions observed from October 10 to 22, 2020, and current environmental standards and guidelines. The Site investigation and the Phase II ESA report have been completed and reviewed by qualified environmental professionals with demonstratable experience, within the fields of expertise required for the scope of work.

We trust that the information provided in this report meets your current requirements. If you have any questions or concerns, please do not hesitate to contact Charles Shewen at (867) 334-8481.

Sincerely,

CH2M HILL Canada Limited

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Tables

Table 1. Summary of Groundwater Elevations
Phase II Environmental Site Assessment, Site #914, Lot 2, Block HB, Dawson City, Yukon
Government of Yukon

Location ID	NAD83 CSRS UTM Zone 7		Casing Style	Surveyed Top-of-Pipe Elevation[a] (masl)	Surveyed Ground Elevation[a] (masl)	Screened Interval (mbg)	Stratigraphy Within Well Screen	Classification[b]	Elevation of Top of Screen (masl)	Depth to Installed Bottom (mbg)	Depth to Apparent Bottom (mbtop)	Depth to Groundwater (mbg)	Elevation of Apparent Bottom (masl)	Elevation of Groundwater (masl)
	Northing	Easting												
MW-01	7104615	576291	Stick-up	318.99	318.19	NR	NR	shallow	--	--	--	dry	--	--
20MW-01	7104610	576291	Stick-up	319.31	318.39	4.6-6.1	Sandy gravel	deep	310.77	6.1	7.260	5.45	312.05	312.94
20MW-02	7104618	576287	Stick-up	318.89	317.95	3.9-5.4	Sandy gravel	deep	314.05	5.4	6.676	5.01	312.21	312.94
20MW-03	7104628	576275	Stick-up	318.84	318.16	4.3-5.8	Silty sand with gravel	deep	313.86	5.8	6.575	5.22	312.27	312.94
20MW-04	7104622	576273	Stick-up	319.54	318.82	4.6-6.1	Silty sand with gravel	deep	314.22	6.1	7.080	5.89	312.46	312.93

[a]Unless noted otherwise, survey data were provided by Challenger Geomatics Ltd. in October 2020.
[b]Shallow aquifer is approximately 2.5 to 4.5 mbg; deep aquifer is approximately 5.0 to 6.5 mbg.

Notes:
-- = not applicable
CSRS = Canadian Spatial Reference System
ID = identification
masl = metre(s) above sea level
mbg = metre(s) below grade
mbtop = metre(s) below top of pipe
MW = monitoring well
NAD83 = North American Datum 1983
NR = not reported
UTM = Universal Transverse Mercator

Table 2. Soil Analytical Results - Organic Parameters
Phase II Environmental Site Assessment, Site #914, Lot 2, Block HB, Dawson City, Yukon
Government of Yukon

Location ID			20MW-01			20MW-02					20MW-03			
Sample ID			20MW-01-SOA	20MW-01-SOC	20MW-01-SOF	20MW-02-SOB	DUP 2		20MW-02-SOE	20MW-02-SOF	20MW-03-SOA	20MW-03-SOC	DUP 1	
Sample Interval														
Sample Date			18-Oct-20	19-Oct-20	20-Oct-20	20-Oct-20	26-Oct-2020		20-Oct-20	20-Oct-2020	20-Oct-2020	20-Oct-2020	26-Oct-2020	
Laboratory Certificate			WR2001131	WR2001131	WR2001131	WR2001131	WR2001131	*RPD*	WR2001131	WR2001131	WR2001131	WR2001131	WR2001131	*RPD*
Chemical Name	**Units**	**CSR RL[a]**												
BTEX/VPH														
Benzene	mg/kg	10	< 0.0050	< 0.0050	NT	< 0.0050	< 0.0050	*	< 0.0050	0.0052	< 0.0050	< 0.0050	< 0.0050	*
Ethylbenzene	mg/kg	1	< 0.015	< 0.015	NT	< 0.015	< 0.015	*	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	*
MTBE	mg/kg	NS	< 0.050	< 0.050	NT	< 0.050	< 0.050	*	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	*
Styrene	mg/kg	5	< 0.050	< 0.050	NT	< 0.050	< 0.050	*	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	*
Toluene	mg/kg	1.5	< 0.050	< 0.050	NT	< 0.050	< 0.050	*	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	*
VH	mg/kg	NS	< 10	< 10	NT	< 10	< 10	*	< 10	< 10	< 10	< 10	< 10	*
VPH	mg/kg	200	< 10	< 10	NT	< 10	< 10	*	< 10	< 10	< 10	< 10	< 10	*
Xylene, o-	mg/kg	NS	< 0.050	< 0.050	NT	< 0.050	< 0.050	*	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	*
Xylenes, m- & p-	mg/kg	NS	< 0.050	< 0.050	NT	< 0.050	< 0.050	*	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	*
Xylenes, Total	mg/kg	5	< 0.075	< 0.075	NT	< 0.075	< 0.075	*	< 0.075	< 0.075	< 0.075	< 0.075	< 0.075	*
EPH														
EPH C10-C19	mg/kg	NS*	< 200	< 200	< 200	< 200	< 200	*	< 200	< 200	< 200	< 200	< 200	*
EPH C19-C32	mg/kg	NS	< 200	< 200	< 200	< 200	< 200	*	< 200	< 200	< 200	< 200	< 200	*
HEPH C19-C32	mg/kg	1000	< 200	< 200	< 200	< 200	< 200	*	< 200	< 200	< 200	< 200	< 200	*
LEPH C10-C19	mg/kg	1000	< 200	< 200	< 200	< 200	< 200	*	< 200	< 200	< 200	< 200	< 200	*
PAHs														
1-Methylnaphthalene	mg/kg	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	*
2-Methylnaphthalene	mg/kg	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	*
Acenaphthene	mg/kg	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	*
Acenaphthylene	mg/kg	NS	< 0.0050	< 0.0050	< 0.0050	0.0101	0.0129	*24%*	0.0543	0.0167	< 0.0050	< 0.0050	< 0.0050	*
Anthracene	mg/kg	NS	< 0.0040	< 0.0040	< 0.0040	0.0069	0.0089	*25%*	0.0299	0.0088	0.0060	< 0.0040	< 0.0040	*
Benzo(a)anthracene	mg/kg	1	< 0.010	< 0.010	< 0.010	0.045	0.057	*24%*	0.245	0.064	0.017	< 0.010	< 0.010	*
Benzo(a)pyrene	mg/kg	1	< 0.010	< 0.010	< 0.010	0.052	0.068	*27%*	0.276	0.072	0.022	< 0.010	< 0.010	*
Benzo(b&j)fluoranthene	mg/kg	NS	< 0.010	< 0.010	< 0.010	0.049	0.063	*25%*	0.264	0.070	0.031	< 0.010	< 0.010	*
Benzo(b)fluoranthene	mg/kg	1	NT	NT	NT	NT	NT		NT	NT	NT	NT	NT	
Benzo(g,h,i)perylene	mg/kg	NS	< 0.010	< 0.010	< 0.010	0.027	0.034	*23%*	0.129	0.036	0.020	< 0.010	< 0.010	*
Benzo(k)fluoranthene	mg/kg	1	< 0.010	< 0.010	< 0.010	0.022	0.032	*37%*	0.119	0.035	0.012	< 0.010	< 0.010	*
Chrysene	mg/kg	NS	< 0.010	< 0.010	< 0.010	0.043	0.059	*31%*	0.258	0.062	< 0.022	< 0.010	< 0.010	*
Dibenzo(a,h)anthracene	mg/kg	1	< 0.0050	< 0.0050	< 0.0050	< 0.0075	0.0095	*	0.0338	0.0115	< 0.0050	< 0.0050	< 0.0050	*
Fluoranthene	mg/kg	NS	< 0.010	< 0.010	< 0.010	0.050	0.064	*25%*	0.278	0.074	0.035	< 0.010	< 0.010	*
Fluorene	mg/kg	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	*
Indeno(1,2,3-Cd)Pyrene	mg/kg	1	< 0.010	< 0.010	< 0.010	0.031	0.040	*25%*	0.159	0.044	0.021	< 0.010	< 0.010	*
Naphthalene	mg/kg	5	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	*
Phenanthrene	mg/kg	5	< 0.010	< 0.010	< 0.010	0.010	0.016	*46%*	0.044	0.011	0.024	< 0.010	< 0.010	*
Pyrene	mg/kg	10	< 0.010	< 0.010	< 0.010	0.065	0.089	*31%*	0.396	0.110	0.039	< 0.010	< 0.010	*
Quinoline	mg/kg	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	*

Table 2. Soil Analytical Results - Organic Parameters
Phase II Environmental Site Assessment, Site #914, Lot 2, Block HB, Dawson City, Yukon
Government of Yukon

Location ID				20MW-04				BH-01		
Sample ID			20MW-03-SOH	20MW-04-SOA	20MW-04-SOD	20MW-04-SOE	20MW-04-SOG	20BH-01-SOA	20BH-01-SOB	20BH-01-SOE
Sample Interval										
Sample Date			21-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020	20-Oct-20	20-Oct-20	20-Oct-2020
Laboratory Certificate			WR2001131	WR2001131	WR2001131	WR2001131	WR2001131	WR2001131	WR2001131	WR2001131
Chemical Name	**Units**	**CSR RL[a]**								
BTEX/VPH										
Benzene	mg/kg	10	0.0124	< 0.0050	< 0.0050	0.0075	0.0522	< 0.0050	< 0.0050	< 0.0050
Ethylbenzene	mg/kg	1	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
MTBE	mg/kg	NS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Styrene	mg/kg	5	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Toluene	mg/kg	1.5	< 0.050	< 0.050	0.072	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
VH	mg/kg	NS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
VPH	mg/kg	200	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Xylene, o-	mg/kg	NS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Xylenes, m- & p-	mg/kg	NS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Xylenes, Total	mg/kg	5	< 0.075	< 0.075	< 0.075	< 0.075	< 0.075	< 0.075	< 0.075	< 0.075
EPH										
EPH C10-C19	mg/kg	NS*	< 200	< 200	< 200	< 200	< 200	< 200	< 200	< 200
EPH C19-C32	mg/kg	NS	< 200	< 200	< 200	< 200	< 200	< 200	< 200	< 200
HEPH C19-C32	mg/kg	1000	< 200	< 200	< 200	< 200	< 200	< 200	< 200	< 200
LEPH C10-C19	mg/kg	1000	< 200	< 200	< 200	< 200	< 200	< 200	< 200	< 200
PAHs										
1-Methylnaphthalene	mg/kg	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
2-Methylnaphthalene	mg/kg	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	mg/kg	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Acenaphthylene	mg/kg	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Anthracene	mg/kg	NS	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Benzo(a)anthracene	mg/kg	1	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(a)pyrene	mg/kg	1	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(b&j)fluoranthene	mg/kg	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.011
Benzo(b)fluoranthene	mg/kg	1	NT	NT	NT	NT	NT	NT	NT	NT
Benzo(g,h,i)perylene	mg/kg	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(k)fluoranthene	mg/kg	1	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Chrysene	mg/kg	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Dibenzo(a,h)anthracene	mg/kg	1	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Fluoranthene	mg/kg	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluorene	mg/kg	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Indeno(1,2,3-Cd)Pyrene	mg/kg	1	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Naphthalene	mg/kg	5	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	mg/kg	5	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Pyrene	mg/kg	10	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.012
Quinoline	mg/kg	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.014	< 0.010	< 0.010

[a] Government of Yukon. 2002. Contaminated Sites F

Notes:
Highlighting indicates that the value exceeds the CS
NS* For the purpose of this investigation, EPH10-19
* Relative percentage difference could not be calcul
% = percent
< = less than
BTEX = benzene, toluene, ethylbenzene, xylenes
CSR = *Contaminated Sites Regulation*
DUP = field duplicate sample
EPH = extractable petroleum hydrocarbons
HEPH = heavy extractable petroleum hydrocarbons
ID = identification
LEPH = light extractable petroleum hydrocarbons
mg/kg = milligram(s) per kilogram
MTBE = methyl tert-butyl ether
MW = monitoring well
NS = not specified
NT = not tested
PAH = polycyclic aromatic hydrocarbon
RL = Residential Land Use
RPD = relative percent difference
VH = volatile hydrocarbon
VPH = volatile petroleum hydrocarbon

Table 3. Summary of Groundwater Quality Field Parameters
Phase II Environmental Site Assessment, Site #914, Lot 2, Block HB, Dawson City, Yukon
Government of Yukon

Location ID	Date	Time	Volume Removed (L)	pH	Electrical Conductivity (mS/cm)	Temperature (°C)	ORP (mV)	DO (mg/L)	TDS (mg/L)	Turbidity (NTU)	Water Level (mbtop)
MW-01	10/22/2020	ND	Dry	NM	NM	NM	NM	NM	NM	NM	Dry
20MW-01	10/22/2020	15:51	12	6.48	0.983	0	89.8	3.01	20.6	465.5	NM
20MW-02	10/22/2020	15:19	12	6.41	0.942	0	89.8	5.45	37.4	718.6	NM
20MW-03	10/22/2020	13:20	15	6.24	0.754	0	92.7	2.26	15.5	23.2	NM
20MW-04	10/22/2020	14:09	14	6.48	1.043	0	69.8	3.37	23.1	310.1	NM

Notes:
°C = degree(s) Celsius
DO = dissolved oxygen
ID = identification
L = litre(s)
mbtop = metre(s) below top of pipe
mg/L = milligram(s) per litre
MW = monitoring well
mS/cm = microSiemen(s) per centimetre
mV = millivolt(s)
ND = no data recorded
NM = not monitored
NTU = nephelometric turbidity unit
ORP = oxidation-reduction potential
TDS = total dissolved solids

Table 4. Groundwater Analytical Results - Organic Parameters

Phase II Environmental Site Assessment, Site #914, Lot 2, Block HB, Dawson City, Yukon

Government of Yukon

			Location ID	20MW-01	20MW-02	DUP 1		20MW-03	20MW-04	MW-01
			Sample ID	20MW-01	20MW-02	DUP 1		20MW-03	20MW-04	Well
			Sample Date	22-Oct-2020	22-Oct-2020	22-Oct-2020		22-Oct-2020	22-Oct-2020	31-Jul-16
			Laboratory Certificate	WR2001130	WR2001130	WR2001130	*RPD*	WR2001130	WR2001130	2127443
Chemical Name	**Units**	**CSR AW Standards[a]**	**CSR DW Standards[a]**							
BTEX/VPH										
Methyl tert-butyl ether (MTBE)	µg/L	NS	NS	35.2	6.93	7.29	*5%*	3.54	10.7	19.4
Benzene	µg/L	4000	5	2.55	< 0.50	< 0.50	*	4.34	**5.28**	< 0.50
Toluene	µg/L	390	24	< 0.40	< 0.40	< 0.40	*	< 0.40	< 0.40	< 0.40
Ethylbenzene	µg/L	2000	2.4	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	< 0.50
Xylenes, m- & p-	µg/L	NS	NS	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	< 0.50
Xylene, o-	µg/L	NS	NS	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	< 0.50
Xylenes, Total	µg/L	NS	300	< 0.75	< 0.75	< 0.75	*	< 0.75	< 0.75	< 0.75
Styrene	µg/L	720	NS	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	< 0.50
VH	µg/L	15000	NS	< 100	< 100	< 100	*	< 100	< 100	< 50
VPH	µg/L	1500	NS	< 100	< 100	< 100	*	< 100	< 100	< 50
EPH										
EPH C10-C19	µg/L	5000	5000	< 250	< 250	< 250	*	< 250	< 250	< 200
EPH C19-C32	µg/L	NS	NS	< 250	< 250	< 250	*	< 250	< 250	< 200
HEPH C19-C32	µg/L	NS	NS	< 250	< 250	< 250	*	< 250	< 250	NT
LEPH C10-C19	µg/L	500	NS	< 250	< 250	< 250	*	< 250	< 250	NT
Polycyclic Aromatic Hydrocarbons										
1-Methylnaphthalene	µg/L	NS	NS	< 0.010	0.011	0.010	*10%*	0.015	0.016	NT
2-Methylnaphthalene	µg/L	NS	NS	< 0.010	0.017	0.016	*6%*	0.017	0.014	NT
Acenaphthene	µg/L	60	NS	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	NT
Acenaphthylene	µg/L	NS	NS	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	NT
Acridine	µg/L	0.5	NS	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	NT
Anthracene	µg/L	1	NS	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	NT
Benzo(a)anthracene	µg/L	1	NS	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	NT
Benzo(a)pyrene	µg/L	0.1	0.01	< 0.0050	< 0.0070	< 0.0050	*	< 0.0050	< 0.0050	NT
Benzo(b)fluoranthene	µg/L	NS	NS	NT	NT	NT	*	NT	NT	NT
Benzo(b+j)fluoranthene	µg/L	NS	NS	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	NT
Benzo(g,h,i)perylene	µg/L	NS	NS	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	NT
Benzo(j)fluoranthene	µg/L	NS	NS	NT	NT	NT	*	NT	NT	NT
Benzo(k)fluoranthene	µg/L	NS	NS	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	NT
Chrysene	µg/L	NS	NS	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	NT
Dibenzo(a,h)anthracene	µg/L	NS	NS	< 0.0050	< 0.0050	< 0.0050	*	< 0.0050	< 0.0050	NT
Fluoranthene	µg/L	2	NS	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	NT
Fluorene	µg/L	120	NS	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	NT
Indeno(1,2,3-cd)pyrene	µg/L	NS	NS	< 0.010	< 0.010	< 0.010	*	< 0.010	< 0.010	NT
Naphthalene	µg/L	10	NS	< 0.050	< 0.050	< 0.050	*	< 0.050	0.076	NT
Phenanthrene	µg/L	3	NS	< 0.020	< 0.020	< 0.020	*	< 0.020	< 0.020	NT
Pyrene	µg/L	0.2	NS	< 0.010	0.010	< 0.010	*	< 0.010	< 0.010	NT
Quinoline	µg/L	34	NS	< 0.050	< 0.050	< 0.050	*	< 0.050	< 0.050	NT

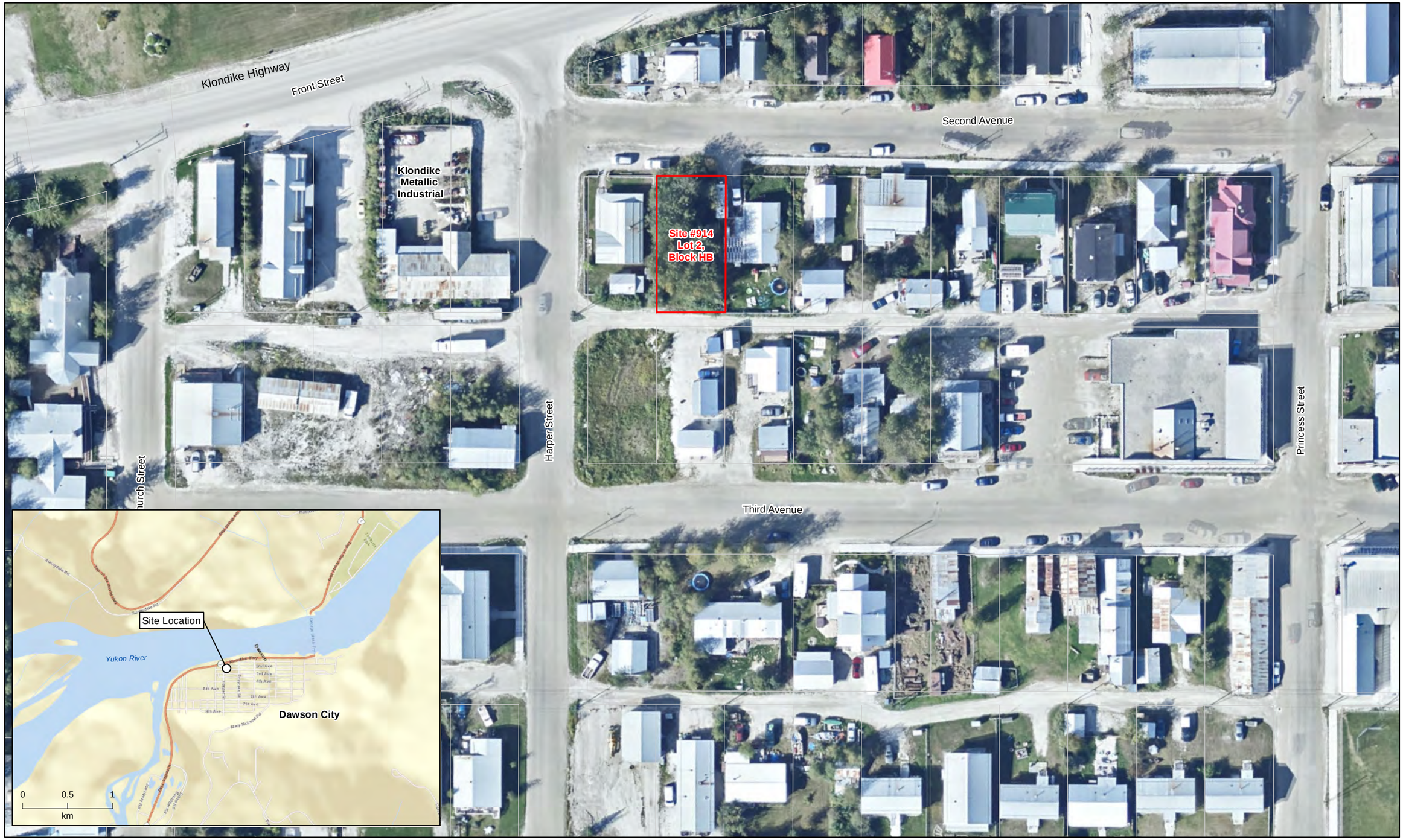
Table 4. Groundwater Analytical Results - Organic Parameters
Phase II Environmental Site Assessment, Site #914, Lot 2, Block HB, Dawson City, Yukon
Government of Yukon

			Location ID	20MW-01	20MW-02	DUP 1		20MW-03	20MW-04	MW-01
			Sample ID	20MW-01	20MW-02	DUP 1		20MW-03	20MW-04	Well
			Sample Date	22-Oct-2020	22-Oct-2020	22-Oct-2020		22-Oct-2020	22-Oct-2020	31-Jul-16
			Laboratory Certificate	WR2001130	WR2001130	WR2001130	*RPD*	WR2001130	WR2001130	2127443
Chemical Name	**Units**	**CSR AW Standards[a]**	**CSR DW Standards[a]**							
VOCs										
1,1,1,2-tetrachloroethane	µg/L	NS	NS	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	NT
1,1,2,2-tetrachloroethane	µg/L	1100	30	< 0.20	< 0.20	< 0.20	*	< 0.20	< 0.20	NT
1,1,2-trichloroethane	µg/L	NS	NS	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	NT
1,2-dichlorobenzene	µg/L	420	3	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	NT
1,3-dichlorobenzene	µg/L	1500	NS	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	NT
1,4-dichlorobenzene	µg/L	260	1	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	NT
Bromodichloromethane	µg/L	NS	NS	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	NT
Bromoform	µg/L	NS	NS	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	NT
Carbon tetrachloride	µg/L	130	5	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	NT
Chlorobenzene	µg/L	NS	NS	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	NT
Chloroethane	µg/L	NS	NS	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	NT
Chloroform	µg/L	20	100	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	NT
Chloromethane	µg/L	NS	NS	< 0.50	< 0.50	< 0.50	*	< 0.50	< 0.50	NT

[a] Government of Yukon. 2002. Contaminated Sites Regulation. Environment Act. Accessed November 2020 .

Notes:
Highlighting indicates that the value exceeds the CSR AW standard.
Bold and underline indicates that the value exceeds the CSR DW standard.
* Relative percentage difference could not be calculated as the reported concentrations were less than five times the reportable detection limit
% = percent
< = less than
µg/L = microgram(s) per litre
AW = Aquatic Life Water Use Standard
BTEX = benzene, toluene, ethylbenzene, xylenes
CSR = *Contaminated Sites Regulation*
DW = drinking water use
DUP = field duplicate sample
EPH = extractable petroleum hydrocarbons
HEPH = heavy extractable petroleum hydrocarbons
ID = identification
LEPH = light extractable petroleum hydrocarbons
MW = monitoring well
NS = not specified
NT = not tested
RPD = relative percent difference
VH = volatile hydrocarbon
VOC = volatile organic compound
VPH = volatile petroleum hydrocarbon

Figures



Site Boundary
Land Parcels

0 10 20 30 40
Metres

Notes:
1. Aerial Photo, Parcels, Roads: Government of Yukon, Data Services Online, 2020.
Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Government of Yukon

Figure 1
Site Location
Phase 2 Report
Yukon Government
Site #914 Lot 2, Block HB, Dawson City, Yukon

Jacobs

\\JACOBS.COM\COMMON\SHARES\CNR\GIS_PROJ3\YUKONGOV\DAWSONHAPER\MAPFILES\SITELOCATION.MXD SCYR 12/1/2020 12:09:40 PM

N

0 1 2 3 4 5

Metres

- Borehole
- Monitoring Well (new)
- Monitoring Well (previously installed)
- Groundwater Hydrocarbons Exceedance
- Meets Groundwater Hydrocarbon Standards
- Site Boundary
- Land Parcels

Notes:
1. Aerial Photo, Parcels, Roads: Government of Yukon, Data Services Online, 2020.

Figure 2
Site Plan with Groundwater Exceedances
Phase 2 Report
Yukon Government
Site #914 Lot 2, Block HB, Dawson City, Yukon

Jacobs

\\JACOBS.COM\COMMON\SHARES\CNR\GIS_PROJ3\YUKONGOV\DAWSONHAPER\MAPFILES\SITEPLAN_EXCEEDANCES.MXD SCYR 12/1/2020 12:22:10 PM

N

0 1 2 3 4 5

Metres

Borehole
Monitoring Well
Flow Direction
Interpreted Groundwater Contour (masl)
Site Boundary
Land Parcels

Notes:
1. Aerial Photo, Parcels, Roads: Government of Yukon, Data Services Online, 2020.

Figure 3
Groundwater Contour Map (October 23, 2020)
Phase 2 Report
Yukon Government
Site #914 Lot 2, Block HB, Dawson City, Yukon

Jacobs

P:\GIS_PROJ3\YUKONGOV\DAWSONHAPER\MAPFILES\GW_CONTOURS.MXD SBEGG1 12/2/2020 8:17:00 AM

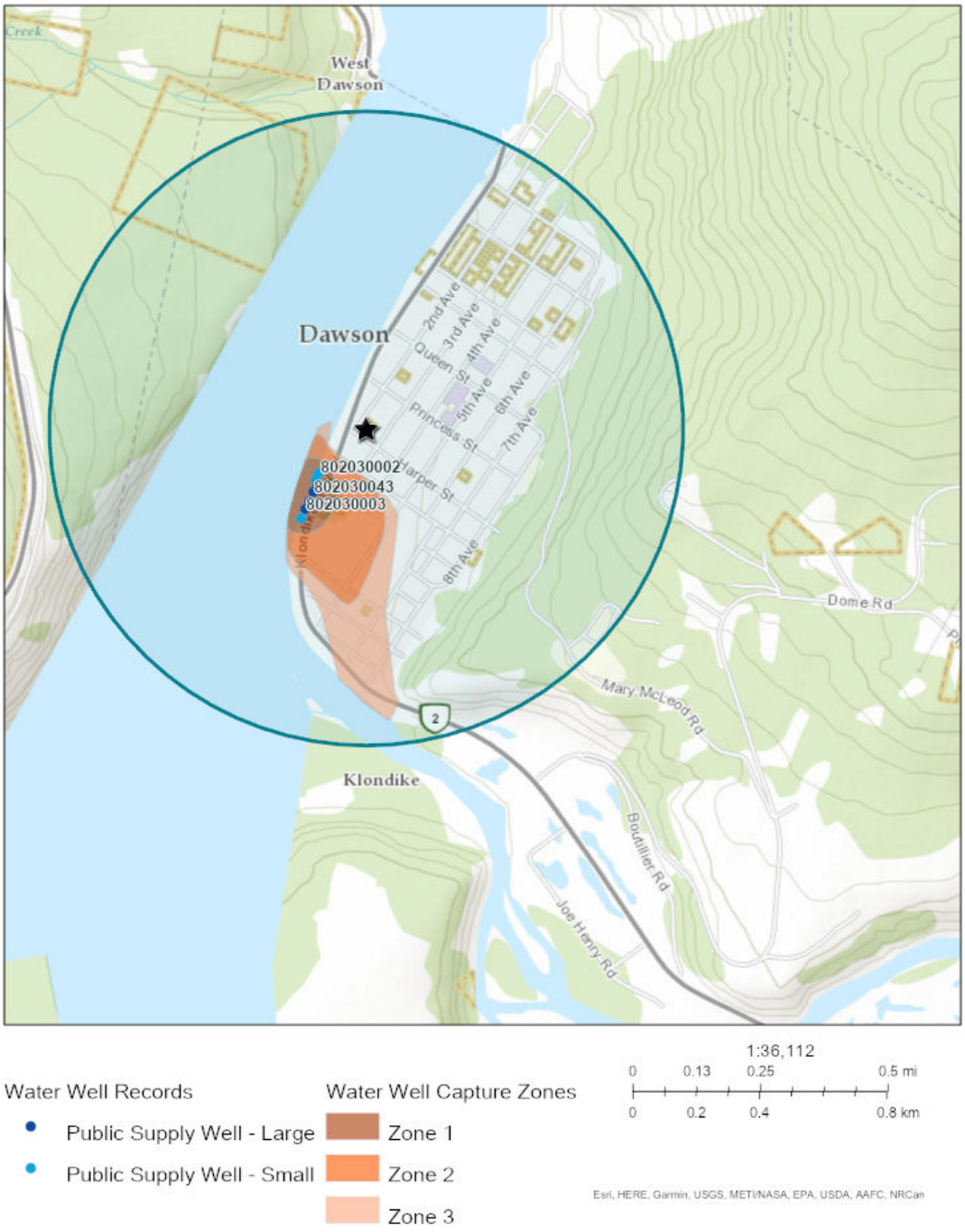
Appendix A
Water Well Search

Dawson Water Well Search - 1 km

Area of Interest (AOI) Information

Area : 3,137,819.19 m²

Nov 16 2020 12:19:20 Mountain Standard Time



Summary

Name	Count	Area(m²)	Length(m)
Water Well Sites	7	N/A	N/A

Water Well Sites

#	Community	Purpose	Count
1	Dawson City	Public Supply Well - Large	4
2	Dawson City	Public Supply Well - Small	3

Appendix B
Photo Log

20MW-05

2020-10-21 11:24:09

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): 576265.9375 7104634.5

Accuracy (m +/-): 6.0

Azimuth: 0

Grab Sample SOG (18'-19').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-05_2020-10-21_112409.jpg

20MW-05

2020-10-21 11:27:53

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): 576265.9375 7104634.5

Accuracy (m +/-): 6.0

Azimuth: 0

Grab Sample SOH (16'-17').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-05_2020-10-21_112753.jpg

20MW-01

2020-10-19 16:58:02

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone): 1 1

Accuracy (m +/-):

Azimuth: 0

Solid stem cuttings from 3-5'

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-01_2020-10-19_165803.jpg

20MW-01

2020-10-19 17:01:41

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone): Accuracy (m +/-):

1 1

Azimuth: 0

Grab Sample SOA (3'-5').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-01_2020-10-19_170141.jpg

20MW-01

2020-10-19 17:05:28

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone): Accuracy (m +/-):

1 1

Azimuth: 0

5-10' cuttings

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-01_2020-10-19_170528.jpg

20MW-01

2020-10-19 17:10:55

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone): Accuracy (m +/-):

1 1

Azimuth: 0

Grab Sample SOB (5'-6.5').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-01_2020-10-19_171055.jpg

20MW-01

2020-10-19 17:12:17

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone): Accuracy (m +/-):

1 1

Azimuth: 0

Grab Sample SOC (7'-8').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-01_2020-10-19_171217.jpg

20MW-01

2020-10-19 17:18:19

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone): Accuracy (m +/-):

1 1

Azimuth: 0

Cuttings 10-15'

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-01_2020-10-19_171819.jpg

20MW-01

2020-10-19 17:33:57

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone): Accuracy (m +/-):

1 1

Azimuth: 0

Cobbles pulled up from 15-20'

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-01_2020-10-19_173357.jpg

20MW-01

2020-10-19 17:34:27

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone): Accuracy (m +/-):

1 1

Azimuth: 0

15-20' cuttings

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-01_2020-10-19_173427.jpg

20MW-01

2020-10-19 17:41:04

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone): Accuracy (m +/-):

1 1

Azimuth: 0

Grab Sample SOD (11'-13').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-01_2020-10-19_174104.jpg

20MW-01

2020-10-19 17:45:51

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone): Accuracy (m +/-):

1 1

Azimuth: 0

Grab Sample SOE (14'-15').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-01_2020-10-19_174551.jpg

20MW-01

2020-10-19 17:48:11

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone): Accuracy (m +/-):

1 1

Azimuth: 0

Grab Sample SOF (17'-18').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-01_2020-10-19_174811.jpg

20MW-01

2020-10-20 10:49:24

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576291.5 7104624.5 8.0

Azimuth: 0

Completed install

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-01_2020-10-20_104924.jpg

20MW-02

2020-10-20 10:55:55

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

Drill setup

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_105555.jpg

20MW-02

2020-10-20 10:56:29

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

Drill setup

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_105629.jpg

20MW-02

2020-10-20 11:02:07

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

Solid stem cuttings from 0-5'

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_110207.jpg

20MW-02

2020-10-20 11:08:53

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

Grab Sample SOA (0'-2.5').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_110853.jpg

20MW-02

2020-10-20 11:13:28

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

Grab Sample SOB (2.5'-5').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_111328.jpg

20MW-02

2020-10-20 11:17:22

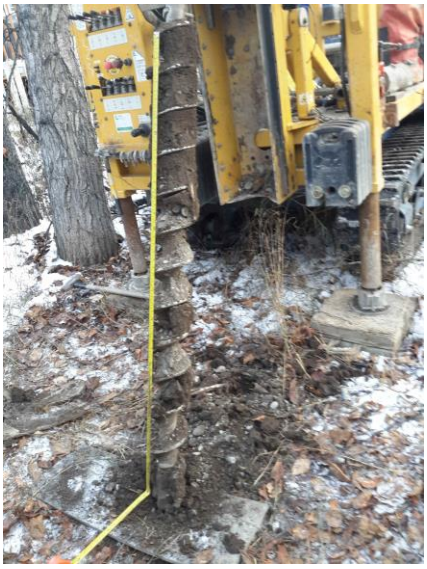
Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

5-10' cuttings



C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_111722.jpg

20MW-02

2020-10-20 11:28:51

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

Closeup of streaks of orange oxidation in fill from 6'

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_112851.jpg

20MW-02

2020-10-20 11:30:21

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

Grab Sample SOC (6'-7').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_113021.jpg

20MW-02

2020-10-20 11:31:32

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

Grab Sample SOD (7'-9').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_113132.jpg

20MW-02

2020-10-20 11:37:00

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

Cuttings 10-15'

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_113700.jpg

20MW-02

2020-10-20 11:50:15

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

Grab Sample SOE (10'-11').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_115015.jpg

20MW-02

2020-10-20 11:54:34

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

15-20' cuttings

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_115434.jpg

20MW-02

2020-10-20 11:59:17

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

Grab Sample SOF (13'-15').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_115917.jpg

20MW-02

2020-10-20 11:59:45

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576292.75 7104600.0 8.0

Azimuth: 0

Grab Sample SOG (16'-17').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-02_2020-10-20_115945.jpg

20MW-03

2020-10-20 13:12:35

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576305.5625 7104595.5 8.0

Azimuth: 0

Drill setup

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-03_2020-10-20_131235.jpg

20MW-03

2020-10-20 13:12:53

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576305.5625 7104595.5 8.0

Azimuth: 0

Drill setup

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-03_2020-10-20_131253.jpg

20MW-03

2020-10-20 13:16:56

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): 576305.5625 7104595.5

Accuracy (m +/-): 8.0

Azimuth: 0

Solid stem cuttings from 0-5'

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-03_2020-10-20_131656.jpg

20MW-03

2020-10-20 13:23:48

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): 576305.5625 7104595.5

Accuracy (m +/-): 8.0

Azimuth: 0

Grab Sample SOA (.5'-2').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-03_2020-10-20_132348.jpg

20MW-03

2020-10-20 13:24:23

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): 576305.5625 7104595.5

Accuracy (m +/-): 8.0

Azimuth: 0

Grab Sample SOB (3'-5').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-03_2020-10-20_132423.jpg

20MW-03

2020-10-20 13:27:35

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576305.5625 7104595.5 8.0

Azimuth: 0

5-10' cuttings

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-03_2020-10-20_132735.jpg

20MW-03

2020-10-20 13:34:18

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576305.5625 7104595.5 8.0

Azimuth: 0

Grab Sample SOC ('-').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-03_2020-10-20_133418.jpg

20MW-03

2020-10-20 13:34:53

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576305.5625 7104595.5 8.0

Azimuth: 0

Grab Sample SOD (8'-9').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-03_2020-10-20_133453.jpg

20MW-03

2020-10-20 13:37:56

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576305.5625 7104595.5 8.0

Azimuth: 0

Cuttings 10-15'

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-03_2020-10-20_133756.jpg

20MW-03

2020-10-20 13:45:12

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576305.5625 7104595.5 8.0

Azimuth: 0

Grab Sample SOE (12'-13').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-03_2020-10-20_134512.jpg

20MW-03

2020-10-20 13:55:01

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576305.5625 7104595.5 8.0

Azimuth: 0

15-20' cuttings

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-03_2020-10-20_135501.jpg

20MW-03

2020-10-20 14:46:48

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576305.5625 7104595.5 8.0

Azimuth: 0

Grab Sample SOF (17'-18').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-03_2020-10-20_144648.jpg

20MW-04

2020-10-20 16:11:47

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

Solid stem cuttings from 0-5'

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-20_161147.jpg

20MW-04

2020-10-20 16:24:32

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

5-10' cuttings

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-20_162432.jpg

20MW-04

2020-10-20 16:32:05

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

Grab Sample SOA (0'-1').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-20_163205.jpg

20MW-04

2020-10-20 16:32:58

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

Grab Sample SOB (2'-4').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-20_163258.jpg

20MW-04

2020-10-20 16:36:02

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

Cuttings 10-15'

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-20_163602.jpg

20MW-04

2020-10-20 16:44:22

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

Grab Sample SOC (6'-7').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-20_164422.jpg

20MW-04

2020-10-20 16:45:48

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

Grab Sample SOD (8'-9').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-20_164548.jpg

20MW-04

2020-10-20 16:46:45

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

Grab Sample SOE (11'-12').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-20_164645.jpg

20MW-04

2020-10-20 16:48:30

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

Grab Sample SOF (14'-15').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-20_164830.jpg

20MW-04

2020-10-20 16:51:47

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

15-20' cuttings

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-20_165147.jpg

20MW-04

2020-10-20 17:26:33

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

Drill setup

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-20_172633.jpg

20MW-04

2020-10-20 17:28:05

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

Drill setup

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-20_172805.jpg

20MW-04

2020-10-21 14:51:27

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576276.0 7104630.0 6.0

Azimuth: 0

Grab Sample SOH (16'-17').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-04_2020-10-21_145127.jpg

20MW-05

2020-10-21 09:27:11

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576265.9375 7104634.5 6.0

Azimuth: 0

Solid stem cuttings from 0-5'

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-05_2020-10-21_092711.jpg

20MW-05

2020-10-21 09:36:30

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576265.9375 7104634.5 6.0

Azimuth: 0

Grab Sample SOA (1'-2').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-05_2020-10-21_093630.jpg

20MW-05

2020-10-21 09:37:28

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576265.9375 7104634.5 6.0

Azimuth: 0

Grab Sample SOB (4'-5').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-05_2020-10-21_093728.jpg

20MW-05

2020-10-21 09:41:47

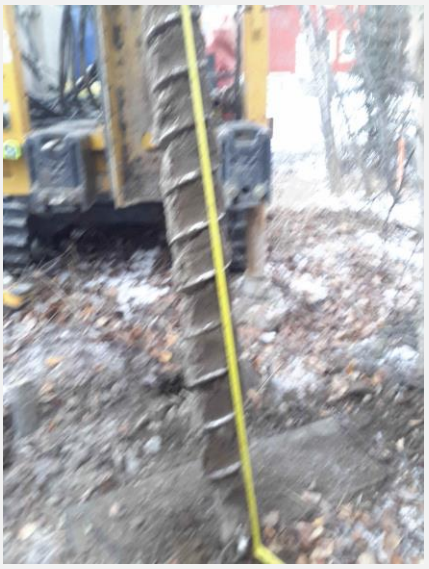
Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): Accuracy (m +/-):

576265.9375 7104634.5 6.0

Azimuth: 0

5-10' cuttings



C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-05_2020-10-21_094147.jpg

20MW-05

2020-10-21 09:46:45

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): 576265.9375 7104634.5

Accuracy (m +/-): 6.0

Azimuth: 0

Grab Sample SOC (6'-7').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-05_2020-10-21_094645.jpg

20MW-05

2020-10-21 09:47:39

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): 576265.9375 7104634.5

Accuracy (m +/-): 6.0

Azimuth: 0

Grab Sample SOD (9'-10').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-05_2020-10-21_094739.jpg

20MW-05

2020-10-21 09:54:37

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): 576265.9375 7104634.5

Accuracy (m +/-): 6.0

Azimuth: 0

Cuttings 10-15'

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-05_2020-10-21_095437.jpg

20MW-05

2020-10-21 10:11:53

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): 576265.9375 7104634.5

Accuracy (m +/-): 6.0

Azimuth: 0

15-20' cuttings

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-05_2020-10-21_101153.jpg

20MW-05

2020-10-21 11:18:15

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): 576265.9375 7104634.5

Accuracy (m +/-): 6.0

Azimuth: 0

Grab Sample SOE (11'-12').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-05_2020-10-21_111815.jpg

20MW-05

2020-10-21 11:20:08

Field Team: A. Campbell

Coordinates (UTM NAD83 Zone7W): 576265.9375 7104634.5

Accuracy (m +/-): 6.0

Azimuth: 0

Grab Sample SOF (13'-14').

C:\Users\acampb18.JEG\Documents\Dawson\TabletExports\20MW-05_2020-10-21_112008.jpg

Appendix C
Borehole Logs

RECORD OF BOREHOLE: 20BH-01

JACOBS®

Location Coordinates: Northing: 7104595.5 m Easting: 576305.5625 m

LOCATION: East Corner of Property

DRILLER: Midnight Sun Drilling

DATE DRILLED: 10/20/2020 1:11:00 PM

GROUND ELEVATION: 318.46

DRILLING METHOD: Marl M4CT Rotary Rig w\ Solid Stem Auger (150mm OD) and Hollow Stem Auger (200 mm OD) on Rubber Track Canycom Chassis

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES ID	SOIL DESCRIPTION	STRATA PLOT	(masl) ELEV. / DEPTH (mbgs)	MONITORING WELL DETAILS	DRILLING COMMENT
		Organics (PT) -- brown, moist, rootlets, sticks, decaying wood chips and leaves		318.31	Bentonite Chips	
	SOA 0 ppm 0 % LEL (Isobutylene)(Hexane)	Silt with sand (ML) -- brown, moist, (~30% sand, ~70% fines), very soft, non-plastic, fine sand (Fill), few organics (~10%), sticks, peat, woodchips, no apparent odour		0.15		
				317.55		
1	SOB 0 ppm 0 % LEL (Isobutylene)(Hexane)	Poorly-graded sand with silt (SP-SM) -- grey-brown, moist, (~0% gravel, ~90% sand, ~10% fines), fine to medium sand, (Fill), trace metal flecks, trace organics, no apparent odour		0.91		
2	SOC 1 ppm 0 % LEL (Isobutylene)(Hexane)			316.02		
	SOD 0 ppm 0 % LEL (Isobutylene)(Hexane)	Silty sand (SM) -- grey-brown, moist, (~15% gravel, ~65% sand, ~20% fines), fine to medium sand, fine subrounded to rounded gravel, no apparent odour		2.44		
3				315.41	Slough	
		Well-graded sandy gravel (GW) -- (~40% sand, ~55% gravel, ~5% fines) grey-brown, moist, medium to coarse sand, fine to coarse subrounded to rounded gravel, trace silt, trace organics, no apparent odour		3.05		
	SOE 1 ppm 0 % LEL (Isobutylene)(Hexane)					Installed well to 6.1 m on 10/19; well was dry. Removed well and overdrilled to 6.7m on 10/21. Center bit from hollow stem was wet after retrieving from 6.7m; however no standing water was detected in bottom of casing. Suspect permafrost. Abandoned hole.
4						
5					Bentonie Chips	
	SOF 2 ppm 0 % LEL (Isobutylene)(Hexane)					
6				312.36		
				6.10		
7						

RECORD OF BOREHOLE: 20MW-01

JACOBS®

Location Coordinates: Northing: 7104624.5 m Easting: 576291.5 m

LOCATION: South Corner of Property
TOP OF PIPE: 319.31
DRILLER: Midnight Sun Drilling

DATE DRILLED: 10/19/2020 4:54:00 PM
GROUND ELEVATION: 318.39
DRILLING METHOD: Marl M4CT Rotary Rig w\ Solid Stem Auger (150mm OD) and Hollow Stem Auger (200 mm OD) on Rubber Track Canycom Chassis

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES ID	SOIL DESCRIPTION	STRATA PLOT	(masl) ELEV. / DEPTH (mbgs)	MONITORING WELL DETAILS	DRILLING COMMENT
	SPT-01 1 ppm 0 % LEL (Isobutylene)(Hexane)	Organics (PT) -- brown, moist, (~0% gravel, ~0% sand, ~0% fines), (Fill). Rootlets, woodchips		318.24	50mm Schedule 40 PVC. Backfilled with 3/8" bentonite chips	
		Poorly graded sand with silt (SP-ML) -- brown, moist, (~0% gravel, ~90% sand, ~10% fines), soft, fine sand, laminated 2mm, orange oxidation to 1m		0.15		
	SPT-02 1 ppm 0 % LEL (Isobutylene)(Hexane)					
1	SOA 1 ppm 0 % LEL (Isobutylene)(Hexane)			317.39		
		Silty sand (SM) -- brown, moist, (~0% gravel, ~70% sand, ~30% fines), fine sand, homogeneous, trace orange oxidation, trace metallic flecks		1.00		
	SOB 0 ppm 0 % LEL (Isobutylene)(Hexane)			316.41		
2		Well-graded sand with gravel (SW) -- grey-brown, moist, (~40% gravel, ~60% sand, ~0% fines), fine to coarse sand, fine to coarse subrounded to rounded gravel. No apparent hc odour		1.98		
	SOC 4 ppm 5 % LEL (Isobutylene)(Hexane)					
3				315.04		
	SOD 2 ppm 5 % LEL (Isobutylene)(Hexane)	Poorly-graded sand with gravel (SP) -- grey-brown, moist, medium to coarse sand, fine to coarse subrounded to rounded gravel		3.35		
				314.43		
4		Well-graded sandy gravel (GW) -- grey-brown, wet, (~60% gravel, ~40% sand, ~0% fines), fine to coarse sand, fine to coarse subrounded to rounded gravel, (Alluvium). ~20% subrounded cobbles up to 90mm		3.96		
	SOE 3 ppm 0 % LEL (Isobutylene)(Hexane)				0.010" machine slotted PVC screen with threaded sandpoint bottom cap. Backfilled with 10-20 sand (10/23/2020)	
5						
	SOF 0 ppm 0 % LEL (Isobutylene)(Hexane)					
6				312.29		
				6.10		
7						

MW (M) APP OUTPUT DAWSON.GPJ 12/2/20

RECORD OF BOREHOLE: 20MW-02

JACOBS®

Location Coordinates: Northing: 7104600 m Easting: 576292.75 m

LOCATION: Center Of Property
TOP OF PIPE: 318.89
DRILLER: Midnight Sun Drilling

DATE DRILLED: 10/20/2020 10:55:00 AM
GROUND ELEVATION: 317.95
DRILLING METHOD: Marl M4CT Rotary Rig w\ Solid Stem Auger (150mm OD) and Hollow Stem Auger (200 mm OD) on Rubber Track Canycom Chassis

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES ID	SOIL DESCRIPTION	STRATA PLOT	(masl) ELEV. / DEPTH (mbgs)	MONITORING WELL DETAILS	DRILLING COMMENT
	SOA 0 ppm 0 % LEL (Isobutylene)(Hexane)	Silt with sand (ML) -- brown, moist, (~5% gravel, ~20% sand, ~75% fines), very soft, non-plastic, fine sand, fine subrounded gravel, (Fill), few organics (~10%), sticks, peat, woodchips, trace debris (nails, glass), no apparent odour.		317.34	50mm Schedule 40 PVC. Backfilled with 3/8" bentonite chips	
1	SOB 1 ppm 0 % LEL (Isobutylene)(Hexane)	Silt with sand (ML) -- grey-brown, moist, (~5% gravel, ~20% sand, ~75% fines), non-plastic, fine sand, fine subrounded to rounded gravel, (Fill), trace organics, trace debris (glass, nails), streaks of orange oxidation, trace metallic flecks, no apparent odour Increased gravel to ~15% from 1.8m. Subrounded to rounded, fine to coarse, possibly pulled up from underlying stratum		0.61		
2	SOC 0 ppm 0 % LEL (Isobutylene)(Hexane)			315.82		
	SOD 1 ppm 0 % LEL (Isobutylene)(Hexane)	Well-graded gravel with sand (GW) -- grey-brown, moist, (~60% gravel, ~40% sand, ~0% fines), medium to coarse sand, fine to coarse subrounded to rounded gravel, no apparent odour		2.13 315.21		
3	SOE 0 ppm 0 % LEL (Isobutylene)(Hexane)	Poorly-graded sand with silt and gravel (SP-SM) -- grey-brown, moist, (~40% gravel, ~50% sand, ~10% fines), medium to coarse sand, fine to coarse subrounded to rounded gravel, trace organics, no apparent odour		2.74 314.60		
4	SOF 2 ppm 0 % LEL (Isobutylene)(Hexane)	Well-graded sandy gravel (GW) -- grey-brown, moist, medium to coarse sand, fine to coarse subrounded to rounded gravel, no apparent odour Becomes wet at 5m		3.35	0.010" machine slotted PVC screen with threaded sandpoint bottom cap. Backfilled with 10-20 sand (10/23/2020)	
5	SOG 0 ppm 0 % LEL (Isobutylene)(Hexane)					
6				311.85 6.10	Slough	
7						

MW (M) APP OUTPUT DAWSON.GPJ 12/2/20

RECORD OF BOREHOLE: 20MW-03

JACOBS®

Location Coordinates: Northing: 7104630 m Easting: 576276 m

LOCATION: North Corner of Property
TOP OF PIPE: 318.84
DRILLER: Midnight Sun Drilling

DATE DRILLED: 10/20/2020 4:11:00 PM
GROUND ELEVATION: 318.16
DRILLING METHOD: Marl M4CT Rotary Rig w\ Solid Stem Auger (150mm OD) and Hollow Stem Auger (200 mm OD) on Rubber Track Canycom Chassis

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES ID	SOIL DESCRIPTION	STRATA PLOT	(masl) ELEV. / DEPTH (mbgs)	MONITORING WELL DETAILS	DRILLING COMMENT
	SOA 0 ppm 0 % LEL (Isobutylene)(Hexane)	Sandy silt (ML) -- grey, dry, (~5% gravel, ~40% sand, ~55% fines), very soft, non-cohesive, non-plastic, fine sand, fine subrounded gravel, non-cohesive, no apparent odour (Fill)		317.86	50mm Schedule 40 PVC. Backfilled with 3/8" bentonite chips	
		Organics (PT) -- dark-brown, moist, rootlets, decaying wood		0.30 317.70		
	SOB 0 ppm 0 % LEL (Isobutylene)(Hexane)	Sandy silt (ML) -- grey-brown, moist, (~0% gravel, ~40% sand, ~60% fines), soft, non-plastic, fine sand, trace metallic flecks, no apparent odour Streaks of orange oxidation at 1.8-2.1m Trace fine to coarse subrounded gravel starting from 4m		0.46		
1						
2	SOC 1 ppm 0 % LEL (Isobutylene)(Hexane)					
	SOD 1 ppm 0 % LEL (Isobutylene)(Hexane)					
3						
	SOE 1 ppm 0 % LEL (Isobutylene)(Hexane)					
4						
	SOF 1 ppm 0 % LEL (Isobutylene)(Hexane)			313.59	0.010" machine slotted PVC screen with threaded sandpoint bottom cap. Backfilled with 10-20 sand (10/23/2020)	
	SOG 0 ppm 0 % LEL (Isobutylene)(Hexane)	Silty sand with gravel (SM) -- grey, moist, (~30% gravel, ~40% sand, ~30% fines), fine to coarse sand, fine to coarse subrounded to rounded gravel, (bulk material includes ~5% cobbles up to 100mm, (Alluvium), trace organics, no apparent odour Lenses of clean sand and gravel at 4.5-4.9m and 5.2-5.5m		4.57		
5	SOH 2 ppm 0 % LEL (Isobutylene)(Hexane)					
6				312.06 6.10		
7						

MW (M) APP OUTPUT DAWSON.GPJ 12/2/20

RECORD OF BOREHOLE: 20MW-04

JACOBS®

Location Coordinates: Northing: 7104634.5 m Easting: 576265.9375 m

LOCATION: West Corner of Property
TOP OF PIPE: 319.54
DRILLER: Midnight Sun Drilling

DATE DRILLED: 10/21/2020 9:17:00 AM
GROUND ELEVATION: 318.82
DRILLING METHOD: Marl M4CT Rotary Rig w\ Solid Stem Auger (150mm OD) and Hollow Stem Auger (200 mm OD) on Rubber Track Canycom Chassis

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES ID	SOIL DESCRIPTION	STRATA PLOT	(masl) ELEV. / DEPTH (mbgs)	MONITORING WELL DETAILS	DRILLING COMMENT
	SOA 0.ppm 0 % LEL (Isobutylene)(Hexane)	Well-graded sand with gravel (SW) -- grey, moist, (~30% gravel, ~70% sand, ~5% fines), fine to coarse sand, fine to coarse subangular to subrounded gravel, (bulk material includes ~5% cobbles up to 90mm), trace debris (glass), trace organics, no apparent odour (Fill)		317.91	50mm Schedule 40 PVC. Backfilled with 3/8" bentonite chips	
1		Organic silt (OL) -- dark-brown, moist		0.91 317.75		
	SOB 0.ppm 0 % LEL (Isobutylene)(Hexane)	Sandy silt (ML) -- grey-brown, moist, (~0% gravel, ~40% sand, ~60% fines), soft, non-plastic, fine sand, trace metallic flecks, trace organics, no apparent odour Intermittent streaks of orange oxidation starting from 2.7m Grades to fine sand at 3m		1.07		
2	SOC 0.ppm 0 % LEL (Isobutylene)(Hexane)					
3	SOD 1.ppm 0 % LEL (Isobutylene)(Hexane)			315.77		
		Poorly-graded sand (SP) -- grey-brown, moist, (~100% sand,), fine sand, no apparent odour		3.05		
	SOE 0.ppm 10 % LEL (Isobutylene)(Hexane)			315.16		
		Silty sand (SM) -- grey-brown, moist, (~0% gravel, ~60% sand, ~40% fines), fine sand, no apparent odour (Alluvium)		3.66		
4	SOF 0.ppm 0 % LEL (Isobutylene)(Hexane)			314.55		
		Silty sand with gravel (SM) -- grey, moist, (~30% gravel, ~40% sand, ~30% fines), fine to coarse sand, fine to coarse subrounded to rounded gravel, (bulk material includes ~5% cobbles up to 100mm), (Alluvium), trace organics, no apparent odour Wet at 4.9m		4.27	0.010" machine slotted PVC screen with threaded sandpoint bottom cap. Backfilled with 10-20 sand	
5	SOH 1.ppm 0 % LEL (Isobutylene)(Hexane)	100mm Lenses of clean sand and gravel at 5.2m, 5.8m				
	SOG 1.ppm 5 % LEL (Isobutylene)(Hexane)					
6				312.72 6.10	(10/23/2020)	
7						

MW (M) APP OUTPUT DAWSON.GPJ 12/2/20

Appendix D
Laboratory Certificate of Analysis

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2001130**	Page	: 1 of 5
Client	: **CH2M Hill Canada Limited**	Laboratory	: Whitehorse - Environmental
Contact	: Charles Shewen	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: CE796500	Date Samples Received	: 23-Oct-2020 17:00
PO	: CW2150564	Date Analysis Commenced	: 29-Oct-2020
C-O-C number	: 17-773504	Issue Date	: 05-Nov-2020 14:13
Sampler	: ----		
Site	: 145002740		
Quote number	: Payment Terms for Finance		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Harsha Attanayake	Laboratory Analyst	Organics, Burnaby, British Columbia

General Comments

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

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

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

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

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

Unit	*Description*
µg/L	micrograms per litre

<: less than.

>: greater than.

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

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

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

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLQ	*Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20MW-01	20MW-02	20MW-03	20MW-04	Dup 1
					Client sampling date / time	22-Oct-2020 11:00	22-Oct-2020 15:30	22-Oct-2020 14:20	22-Oct-2020 15:00	22-Oct-2020
						WR2001130-001	WR2001130-002	WR2001130-003	WR2001130-004	WR2001130-005
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloromethane	74-87-3	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.75	µg/L		<0.75	<0.75	<0.75	<0.75	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorofluoromethane	75-69-4	E611C	0.50	µg/L		0.62	0.76	<0.75 DLQ	<1.50 DLQ	0.67
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloroethane	75-00-3	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.60 DLQ	<0.50
dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, cis-1,2-	156-59-4	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloromethane	75-09-2	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethylene	127-18-4	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethylene	79-01-6	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
vinyl chloride	75-01-4	E611C	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611C	0.50	µg/L		2.55	<0.50	4.34	5.28	<0.50
ethylbenzene	100-41-4	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L		35.2	6.93	3.54	10.7	7.29

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: 20MW-01	20MW-02	20MW-03	20MW-04	Dup 1
					Client sampling date / time: 22-Oct-2020 11:00	22-Oct-2020 15:30	22-Oct-2020 14:20	22-Oct-2020 15:00	22-Oct-2020
					WR2001130-001	WR2001130-002	WR2001130-003	WR2001130-004	WR2001130-005
					Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]									
styrene	100-42-5	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611C	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50
xylene, o-	95-47-6	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50
xylenes, total	1330-20-7	E611C	0.75	µg/L	<0.75	<0.75	<0.75	<0.75	<0.75
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	E611C	0.50	%	91.1	87.6	90.7	90.7	87.2
difluorobenzene, 1,4-	540-36-3	E611C	0.50	%	99.1	86.2	75.6	96.7	93.3
Hydrocarbons									
EPH (C10-C19)	----	E601A	250	µg/L	<250	<250	<250	<250	<250
EPH (C19-C32)	----	E601A	250	µg/L	<250	<250	<250	<250	<250
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	<100	<100	<100
HEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	<250
LEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	<250
VPHw	----	EC580A	100	µg/L	<100	<100	<100	<100	<100
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%	89.7	93.4	94.5	88.7	89.3
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%	79.8	88.4	92.8	93.6	92.7
Polycyclic Aromatic Hydrocarbons									
acenaphthene	83-32-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
acenaphthylene	208-96-8	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
acridine	260-94-6	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
anthracene	120-12-7	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	<0.0050	<0.0070 DLQ	<0.0050	<0.0050	<0.0050
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	<0.015	<0.015	<0.015	<0.015
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
chrysene	218-01-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20MW-01	20MW-02	20MW-03	20MW-04	Dup 1
					Client sampling date / time	22-Oct-2020 11:00	22-Oct-2020 15:30	22-Oct-2020 14:20	22-Oct-2020 15:00	22-Oct-2020
						WR2001130-001	WR2001130-002	WR2001130-003	WR2001130-004	WR2001130-005
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
fluoranthene	206-44-0	E641A	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	<0.010
fluorene	86-73-7	E641A	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L		<0.010	0.011	0.015	0.016	0.010
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L		<0.010	0.017	0.017	0.014	0.016
naphthalene	91-20-3	E641A	0.050	µg/L		<0.050	<0.050	<0.050	0.076	<0.050
phenanthrene	85-01-8	E641A	0.020	µg/L		<0.020	<0.020	<0.020	<0.020	<0.020
pyrene	129-00-0	E641A	0.010	µg/L		<0.010	0.010	<0.010	<0.010	<0.010
quinoline	6027-02-7	E641A	0.050	µg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A	0.010	%		87.8	93.2	88.3	84.5	93.1
chrysene-d12	1719-03-5	E641A	0.010	%		102	106	105	102	104
naphthalene-d8	1146-65-2	E641A	0.010	%		87.8	89.6	90.1	87.5	90.5
phenanthrene-d10	1517-22-2	E641A	0.010	%		102	103	102	99.8	102
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromoform	75-25-2	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	67-66-3	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromochloromethane	124-48-1	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WR2001130**	Page	: 1 of 9
Client	: **CH2M Hill Canada Limited**	Laboratory	: Whitehorse - Environmental
Contact	: Charles Shewen	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: CE796500	Date Samples Received	: 23-Oct-2020 17:00
PO	: CW2150564	Issue Date	: 05-Nov-2020 14:13
C-O-C number	: 17-773504		
Sampler	: ----		
Site	: 145002740		
Quote number	: Payment Terms for Finance		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
20MW-02	E601A	22-Oct-2020	29-Oct-2020	14 days	6 days	✓	30-Oct-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
20MW-04	E601A	22-Oct-2020	29-Oct-2020	14 days	6 days	✓	30-Oct-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
Dup 1	E601A	22-Oct-2020	29-Oct-2020	14 days	6 days	✓	30-Oct-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
20MW-01	E601A	22-Oct-2020	29-Oct-2020	14 days	7 days	✓	30-Oct-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
20MW-03	E601A	22-Oct-2020	29-Oct-2020	14 days	7 days	✓	30-Oct-2020	40 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
20MW-01	E581.VH+F1	22-Oct-2020	01-Nov-2020	14 days	10 days	✓	02-Nov-2020	3 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
20MW-02	E581.VH+F1	22-Oct-2020	02-Nov-2020	14 days	10 days	✓	03-Nov-2020	3 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 20MW-03	E581.VH+F1	22-Oct-2020	02-Nov-2020	14 days	10 days	✓	03-Nov-2020	3 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 20MW-04	E581.VH+F1	22-Oct-2020	02-Nov-2020	14 days	10 days	✓	03-Nov-2020	3 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) Dup 1	E581.VH+F1	22-Oct-2020	02-Nov-2020	14 days	10 days	✓	03-Nov-2020	3 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-02	E641A	22-Oct-2020	29-Oct-2020	14 days	6 days	✓	30-Oct-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04	E641A	22-Oct-2020	29-Oct-2020	14 days	6 days	✓	30-Oct-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) Dup 1	E641A	22-Oct-2020	29-Oct-2020	14 days	6 days	✓	30-Oct-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-01	E641A	22-Oct-2020	29-Oct-2020	14 days	7 days	✓	30-Oct-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-03	E641A	22-Oct-2020	29-Oct-2020	14 days	7 days	✓	30-Oct-2020	40 days	0 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-01	E611C	22-Oct-2020	01-Nov-2020	----	----		02-Nov-2020	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-02	E611C	22-Oct-2020	02-Nov-2020	----	----		03-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-03	E611C	22-Oct-2020	02-Nov-2020	----	----		03-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04	E611C	22-Oct-2020	02-Nov-2020	----	----		03-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup 1	E611C	22-Oct-2020	02-Nov-2020	----	----		03-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-01	E611C	22-Oct-2020	01-Nov-2020	----	----		02-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-02	E611C	22-Oct-2020	02-Nov-2020	----	----		03-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-03	E611C	22-Oct-2020	02-Nov-2020	----	----		03-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04	E611C	22-Oct-2020	02-Nov-2020	----	----		03-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup 1	E611C	22-Oct-2020	02-Nov-2020	----	----		03-Nov-2020	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-01	E611C	22-Oct-2020	01-Nov-2020	14 days	10 days	✓	02-Nov-2020	3 days	0 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-02	E611C	22-Oct-2020	02-Nov-2020	14 days	10 days	✓	03-Nov-2020	3 days	0 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-03	E611C	22-Oct-2020	02-Nov-2020	14 days	10 days	✓	03-Nov-2020	3 days	0 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04	E611C	22-Oct-2020	02-Nov-2020	14 days	10 days	✓	03-Nov-2020	3 days	0 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup 1	E611C	22-Oct-2020	02-Nov-2020	14 days	10 days	✓	03-Nov-2020	3 days	0 days	✓
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-01	E611C	22-Oct-2020	01-Nov-2020	----	----		02-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-02	E611C	22-Oct-2020	02-Nov-2020	----	----		03-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-03	E611C	22-Oct-2020	02-Nov-2020	----	----		03-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04	E611C	22-Oct-2020	02-Nov-2020	----	----		03-Nov-2020	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
Dup 1	E611C	22-Oct-2020	02-Nov-2020	----	----		03-Nov-2020	----	----	

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
VH and F1 by Headspace GC-FID	E581.VH+F1	111840	2	32	6.2	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	111839	2	38	5.2	5.0	✓
Laboratory Control Samples (LCS)							
BC PHC - EPH by GC-FID	E601A	110266	1	20	5.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	110267	1	19	5.2	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	111840	2	32	6.2	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	111839	2	38	5.2	5.0	✓
Method Blanks (MB)							
BC PHC - EPH by GC-FID	E601A	110266	1	20	5.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	110267	1	19	5.2	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	111840	2	32	6.2	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	111839	2	38	5.2	5.0	✓
Matrix Spikes (MS)							
VH and F1 by Headspace GC-FID	E581.VH+F1	111840	2	32	6.2	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	111839	2	38	5.2	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VH and F1 by Headspace GC-FID	E581.VH+F1 Vancouver - Environmental	Water	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
BC PHC - EPH by GC-FID	E601A Vancouver - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
VOCs (BC List) by Headspace GC-MS	E611C Vancouver - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS	E641A Vancouver - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
VPH: VH-BTEX-Styrene	EC580A Vancouver - Environmental	Water	BC MOE Lab Manual (VPH in Water and Solids) (mod)	Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VPHw = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene.
LEPH and HEPH: EPH-PAH	EC600A Vancouver - Environmental	Water	BC MOE Lab Manual (LEPH and HEPH) (mod)	Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Acenaphthene, Acridine, Anthracene, Fluorene, Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(a)pyrene, Fluoranthene, and Pyrene.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis	EP581 Vancouver - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 Vancouver - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: **WR2001130**	Page	: 1 of 14
Client	: CH2M Hill Canada Limited	Laboratory	: Whitehorse - Environmental
Contact	: Charles Shewen	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: CE796500	Date Samples Received	: 23-Oct-2020 17:00
PO	: CW2150564	Date Analysis Commenced	: 29-Oct-2020
C-O-C number	: 17-773504	Issue Date	: 05-Nov-2020 14:13
Sampler	: ----		
Site	: 145002740		
Quote number	: Payment Terms for Finance		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
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General Comments

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

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 111839)											
VA20B9035-002	Anonymous	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromodichloromethane	75-27-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromoform	75-25-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		carbon tetrachloride	56-23-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chlorobenzene	108-90-7	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroethane	75-00-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroform	67-66-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloromethane	74-87-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromochloromethane	124-48-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloromethane	75-09-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L	0.64	0.66	0.02	Diff <2x LOR	----
		styrene	100-42-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		tetrachloroethylene	127-18-4	E611C	0.50	µg/L	0.65	0.65	0.005	Diff <2x LOR	----
		toluene	108-88-3	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethylene	79-01-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorofluoromethane	75-69-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 111839) - continued											
VA20B9035-002	Anonymous	vinyl chloride	75-01-4	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 111848)											
VA20B8945-004	Anonymous	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromodichloromethane	75-27-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromoform	75-25-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		carbon tetrachloride	56-23-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chlorobenzene	108-90-7	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroethane	75-00-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroform	67-66-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloromethane	74-87-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromochloromethane	124-48-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloromethane	75-09-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		styrene	100-42-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		tetrachloroethylene	127-18-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		toluene	108-88-3	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethylene	79-01-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorofluoromethane	75-69-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 111848) - continued											
VA20B8945-004	Anonymous	vinyl chloride	75-01-4	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 111840)											
VA20B9035-002	Anonymous	VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.00%	30%	----
Hydrocarbons (QC Lot: 111850)											
VA20B9050-001	Anonymous	VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.00%	30%	----

Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 111839)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
bromoform	75-25-2	E611C	0.5	µg/L	<0.50	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	<0.50	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	<0.50	----
chloroethane	75-00-3	E611C	0.5	µg/L	<0.50	----
chloroform	67-66-3	E611C	0.5	µg/L	<0.50	----
chloromethane	74-87-3	E611C	0.5	µg/L	<0.50	----
dibromochloromethane	124-48-1	E611C	0.5	µg/L	<0.50	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	<0.50	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	<0.50	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	<0.50	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	<0.50	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	<0.50	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	<0.50	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	<0.50	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	<0.50	----
dichloromethane	75-09-2	E611C	0.5	µg/L	<0.50	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	<0.50	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	<0.50	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	<0.50	----
ethylbenzene	100-41-4	E611C	0.5	µg/L	<0.50	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	<0.50	----
styrene	100-42-5	E611C	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	<0.20	----
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	<0.50	----
toluene	108-88-3	E611C	0.4	µg/L	<0.40	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	<0.50	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	<0.50	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	<0.50	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	<0.50	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	<0.40	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 111839) - continued						
xylene, m+p-	179601-23-1	E611C	0.5	µg/L	<0.50	----
xylene, o-	95-47-6	E611C	0.5	µg/L	<0.50	----
Volatile Organic Compounds (QCLot: 111848)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
bromoform	75-25-2	E611C	0.5	µg/L	<0.50	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	<0.50	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	<0.50	----
chloroethane	75-00-3	E611C	0.5	µg/L	<0.50	----
chloroform	67-66-3	E611C	0.5	µg/L	<0.50	----
chloromethane	74-87-3	E611C	0.5	µg/L	<0.50	----
dibromochloromethane	124-48-1	E611C	0.5	µg/L	<0.50	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	<0.50	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	<0.50	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	<0.50	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	<0.50	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	<0.50	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	<0.50	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	<0.50	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	<0.50	----
dichloromethane	75-09-2	E611C	0.5	µg/L	<0.50	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	<0.50	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	<0.50	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	<0.50	----
ethylbenzene	100-41-4	E611C	0.5	µg/L	<0.50	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	<0.50	----
styrene	100-42-5	E611C	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	<0.20	----
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	<0.50	----
toluene	108-88-3	E611C	0.4	µg/L	<0.40	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	<0.50	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	<0.50	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	<0.50	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	<0.50	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	<0.40	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 111848) - continued						
xylene, m+p-	179601-23-1	E611C	0.5	µg/L	<0.50	----
xylene, o-	95-47-6	E611C	0.5	µg/L	<0.50	----
Hydrocarbons (QCLot: 110266)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 111840)						
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Hydrocarbons (QCLot: 111850)						
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Polycyclic Aromatic Hydrocarbons (QCLot: 110267)						
acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	----
acridine	260-94-6	E641A	0.01	µg/L	<0.010	----
anthracene	120-12-7	E641A	0.01	µg/L	<0.010	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	<0.010	----
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	----
chrysene	218-01-9	E641A	0.01	µg/L	<0.010	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	----
fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	----
fluorene	86-73-7	E641A	0.01	µg/L	<0.010	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	----
naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	----
phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	----
pyrene	129-00-0	E641A	0.01	µg/L	<0.010	----
quinoline	6027-02-7	E641A	0.05	µg/L	<0.050	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 111839)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	81.2	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	93.7	70.0	130	----
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	97.1	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	81.3	70.0	130	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	98.2	70.0	130	----
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	88.0	60.0	140	----
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	85.7	70.0	130	----
chloromethane	74-87-3	E611C	0.5	µg/L	100 µg/L	77.1	60.0	140	----
dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	98.3	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	98.3	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	99.5	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	97.1	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	78.8	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	89.4	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	84.9	70.0	130	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	82.3	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	70.4	70.0	130	----
dichloromethane	75-09-2	E611C	0.5	µg/L	100 µg/L	77.5	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	92.4	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	82.9	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	88.0	70.0	130	----
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	96.9	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	93.3	70.0	130	----
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	99.1	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	102	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	102	70.0	130	----
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	86.6	70.0	130	----
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	113	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	81.1	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	98.6	70.0	130	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	81.4	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	61.4	60.0	140	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	82.5	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.5	µg/L	200 µg/L	104	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 111839) - continued									
xylene, o-	95-47-6	E611C	0.5	µg/L	100 µg/L	102	70.0	130	----
Volatile Organic Compounds (QCLot: 111848)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	114	70.0	130	----
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	99.7	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	100	70.0	130	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	89.8	60.0	140	----
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	102	70.0	130	----
chloromethane	74-87-3	E611C	0.5	µg/L	100 µg/L	114	60.0	140	----
dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	109	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	97.6	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	90.6	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	94.0	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	102	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	117	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	92.2	70.0	130	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
dichloromethane	75-09-2	E611C	0.5	µg/L	100 µg/L	110	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	109	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	118	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	112	70.0	130	----
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	99.4	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	113	70.0	130	----
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	96.6	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	117	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	107	70.0	130	----
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	95.0	70.0	130	----
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	89.5	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	82.6	60.0	140	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	122	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.5	µg/L	200 µg/L	116	70.0	130	----
xylene, o-	95-47-6	E611C	0.5	µg/L	100 µg/L	102	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Hydrocarbons (QCLot: 110266)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	111	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	108	70.0	130	----
Hydrocarbons (QCLot: 111840)									
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	96.6	70.0	130	----
Hydrocarbons (QCLot: 111850)									
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	90.4	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 110267)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	98.2	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	99.2	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	87.5	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	99.1	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	101	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	92.8	60.0	130	----
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	1 µg/L	92.6	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	95.9	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	92.4	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	98.9	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	100	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	95.8	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	107	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	95.8	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	100	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	103	50.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	98.2	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	109	60.0	130	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 111839)										
VA20B9035-003	Anonymous	benzene	71-43-2	E611C	84.5 µg/L	100 µg/L	84.5	60.0	140	----
		bromodichloromethane	75-27-4	E611C	95.5 µg/L	100 µg/L	95.5	60.0	140	----
		bromoform	75-25-2	E611C	93.5 µg/L	100 µg/L	93.5	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	87.2 µg/L	100 µg/L	87.2	60.0	140	----
		chlorobenzene	108-90-7	E611C	94.9 µg/L	100 µg/L	94.9	60.0	140	----
		chloroethane	75-00-3	E611C	54.5 µg/L	100 µg/L	54.5	50.0	150	----
		chloroform	67-66-3	E611C	90.8 µg/L	100 µg/L	90.8	60.0	140	----
		chloromethane	74-87-3	E611C	74.8 µg/L	100 µg/L	74.8	50.0	150	----
		dibromochloromethane	124-48-1	E611C	91.2 µg/L	100 µg/L	91.2	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	93.8 µg/L	100 µg/L	93.8	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	101 µg/L	100 µg/L	101	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	97.4 µg/L	100 µg/L	97.4	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	84.1 µg/L	100 µg/L	84.1	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	93.5 µg/L	100 µg/L	93.5	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611C	65.9 µg/L	100 µg/L	65.9	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	86.7 µg/L	100 µg/L	86.7	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	74.1 µg/L	100 µg/L	74.1	60.0	140	----
		dichloromethane	75-09-2	E611C	82.5 µg/L	100 µg/L	82.5	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	67.8 µg/L	100 µg/L	67.8	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	84.6 µg/L	100 µg/L	84.6	60.0	140	----
		ethylbenzene	100-41-4	E611C	91.6 µg/L	100 µg/L	91.6	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	89.0 µg/L	100 µg/L	89.0	60.0	140	----
		styrene	100-42-5	E611C	89.4 µg/L	100 µg/L	89.4	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	96.4 µg/L	100 µg/L	96.4	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	90.6 µg/L	100 µg/L	90.6	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	88.3 µg/L	100 µg/L	88.3	60.0	140	----
		toluene	108-88-3	E611C	114 µg/L	100 µg/L	114	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	85.9 µg/L	100 µg/L	85.9	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	93.5 µg/L	100 µg/L	93.5	60.0	140	----
		trichloroethylene	79-01-6	E611C	84.9 µg/L	100 µg/L	84.9	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	67.1 µg/L	100 µg/L	67.1	50.0	150	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 111839) - continued										
VA20B9035-003	Anonymous	vinyl chloride	75-01-4	E611C	76.8 µg/L	100 µg/L	76.8	50.0	150	----
		xylene, m+p-	179601-23-1	E611C	201 µg/L	200 µg/L	100	60.0	140	----
		xylene, o-	95-47-6	E611C	96.1 µg/L	100 µg/L	96.1	60.0	140	----
Volatile Organic Compounds (QCLot: 111848)										
VA20B8945-005	Anonymous	benzene	71-43-2	E611C	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		bromodichloromethane	75-27-4	E611C	112 µg/L	100 µg/L	112	60.0	140	----
		bromoform	75-25-2	E611C	98.9 µg/L	100 µg/L	98.9	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	101 µg/L	100 µg/L	101	60.0	140	----
		chlorobenzene	108-90-7	E611C	98.8 µg/L	100 µg/L	98.8	60.0	140	----
		chloroethane	75-00-3	E611C	82.5 µg/L	100 µg/L	82.5	50.0	150	----
		chloroform	67-66-3	E611C	101 µg/L	100 µg/L	101	60.0	140	----
		chloromethane	74-87-3	E611C	97.9 µg/L	100 µg/L	97.9	50.0	150	----
		dibromochloromethane	124-48-1	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	95.5 µg/L	100 µg/L	95.5	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	91.4 µg/L	100 µg/L	91.4	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	94.9 µg/L	100 µg/L	94.9	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	98.8 µg/L	100 µg/L	98.8	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	113 µg/L	100 µg/L	113	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611C	87.6 µg/L	100 µg/L	87.6	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	99.0 µg/L	100 µg/L	99.0	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		dichloromethane	75-09-2	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	113 µg/L	100 µg/L	113	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		ethylbenzene	100-41-4	E611C	95.0 µg/L	100 µg/L	95.0	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	109 µg/L	100 µg/L	109	60.0	140	----
		styrene	100-42-5	E611C	92.1 µg/L	100 µg/L	92.1	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	111 µg/L	100 µg/L	111	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	101 µg/L	100 µg/L	101	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	95.1 µg/L	100 µg/L	95.1	60.0	140	----
		toluene	108-88-3	E611C	85.2 µg/L	100 µg/L	85.2	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	103 µg/L	100 µg/L	103	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		trichloroethylene	79-01-6	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	94.1 µg/L	100 µg/L	94.1	50.0	150	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 111848) - continued										
VA20B8945-005	Anonymous	vinyl chloride	75-01-4	E611C	112 µg/L	100 µg/L	112	50.0	150	----
		xylene, m+p-	179601-23-1	E611C	227 µg/L	200 µg/L	113	60.0	140	----
		xylene, o-	95-47-6	E611C	98.0 µg/L	100 µg/L	98.0	60.0	140	----
Hydrocarbons (QCLot: 111840)										
VA20B9035-004	Anonymous	VHw (C6-C10)	----	E581.VH+F1	5330 µg/L	6310 µg/L	84.5	60.0	140	----
Hydrocarbons (QCLot: 111850)										
VA20B9050-002	Anonymous	VHw (C6-C10)	----	E581.VH+F1	6050 µg/L	6310 µg/L	95.8	60.0	140	----

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Environmental Division Whitehorse

Work Order Reference WR2001130

Telephone : +1 867 668 6689

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM t
Company:	Jacobs Engineering	Select Report Format: PDF EXCEL EDD (DIGITAL)	Regular [R] Standard TAT if received by 3 p
Contact:	Chuck Sheuen	Quality Control (QC) Report with Report YES NO	PRIORITY (Business Days): 4 day [P4-20%] / 3 day [P3-25%] / 2 day [P2-50%]
Phone:	867 334-8481	Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Busines / Same Day, (Laborator
	Company address below will appear on the final report	Select Distribution: EMAIL MAIL FAX	
Street:		Email 1 or Fax	Date and Time Required for all E&P TATs:
City/Province:		Email 2	For tests that can not be performed according to the service level selecte
Postal Code:		Email 3	Analysis

Invoice To		Invoice Distribution	
	Same as Report To YES NO	Select Invoice Distribution: EMAIL MAIL FAX	
	Copy of Invoice with Report YES NO	Email 1 or Fax	Charles.Sheuen@Jacobs.com
Company:		Email 2	Alan.campbell@Jacobs.com
Contact:			

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	CE796500	AFE/Cost Center:	PO#
Job #:		Major/Minor Code:	Routing Code:
PO / AFE:	CW2150564	Requisitioner:	
LSD:	14500 27 40	Location:	

ALS Lab Work Order # (lab use only):	ALS Contact:	Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS: LEPH / HEPH	BTEX / VOCs	Dissolved Metals	Anions	pH	TDS	SAMPLES ON H	SUSPECTED HAZARD (see Special Instru
	20MW-01	22-10-20	11:00		X	X						
	20MW-02		15:30		X	X						
	20MW-03		14:20		X	X						
	20MW-04		15:00		X	X						
	Dup 1	22-10-20	—		X	X						

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? YES NO	
Are samples for human consumption/ use? YES NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen		SIF Observations	Yes	No
Ice Packs	Ice Cubes	Custody seal intact	Yes	No
Cooling Initiated				

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
7°							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Alan Campbell	23-10-2020	17:00		OCT 23/20	16:57			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2001131**	Page	: 1 of 10
Client	: **CH2M Hill Canada Limited**	Laboratory	: Whitehorse - Environmental
Contact	: Charles Shewen	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: CE796500	Date Samples Received	: 23-Oct-2020 17:00
PO	:	Date Analysis Commenced	: 02-Nov-2020
C-O-C number	: 17-773503, 17-773052	Issue Date	: 09-Nov-2020 16:52
Sampler	: ----		
Site	: ----		
Quote number	: Payment Terms for Finance		
No. of samples received	: 29		
No. of samples analysed	: 18		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia

General Comments

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

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

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

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

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

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

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

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

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

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Workorder Comments

Additional samples 25-29 received. Sample ID 20MW-01-SPT-02; one jar and two vials. 20MW-01-SPT-01; one jar and two vials. 20MW-2-16-17-SOG; one jar and one vial. 20MW-01-SOD; one vial. 20MW2-SOG; one vial.

Qualifiers

Qualifier	*Description*
DLCI	*Detection Limit Raised: Chromatographic interference due to co-elution.*

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20MW-01-SOA	20MW-01-SOC	20MW-01-SOF	20MW-02-SOB	20MW-02-SOE
					Client sampling date / time	18-Oct-2020 17:00	19-Oct-2020 17:15	19-Oct-2020 17:50	20-Oct-2020 11:15	20-Oct-2020 11:50
						WR2001131-001	WR2001131-003	WR2001131-006	WR2001131-008	WR2001131-011
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		23.6	6.89	9.10	24.6	13.2
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
LEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		102	101	102	102	97.2
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	0.0101	0.0543
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	<0.0040	<0.0040	0.0069	0.0299
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.045	0.245
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.052	0.276
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.049	0.264
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	<0.015	<0.015	0.071	0.383
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.027	0.129
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.022	0.119
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.043	0.258
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0075 DLCI	0.0338
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.050	0.278
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.031	0.159
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.010	0.044
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.065	0.396
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20MW-01-SOA	20MW-01-SOC	20MW-01-SOF	20MW-02-SOB	20MW-02-SOE
					Client sampling date / time	18-Oct-2020 17:00	19-Oct-2020 17:15	19-Oct-2020 17:50	20-Oct-2020 11:15	20-Oct-2020 11:50
						WR2001131-001	WR2001131-003	WR2001131-006	WR2001131-008	WR2001131-011
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	<0.010	<0.010	0.067	0.393
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	<0.11	<0.11	0.76	4.23
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		104	102	91.4	84.0	88.8
chrysene-d12	1719-03-5	E641A-L	0.010	%		113	108	97.5	104	109
naphthalene-d8	1146-65-2	E641A-L	0.010	%		91.7	78.6	76.2	103	98.0
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		110	107	95.0	91.8	94.4

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

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20BH-01-SOA	20BH-01-SOB	20BH-01-SOE	20MW-03-SOA	20MW-03-SOC
					Client sampling date / time	20-Oct-2020 13:25	20-Oct-2020 13:25	20-Oct-2020 13:45	20-Oct-2020 16:30	20-Oct-2020 16:44
						WR2001131-012	WR2001131-013	WR2001131-014	WR2001131-015	WR2001131-016
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		27.2	27.2	14.2	9.75	19.9
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
LEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		100	102	106	97.6	96.4
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	<0.0040	<0.0040	0.0060	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.017	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.022	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.011 DLCI	0.031	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	<0.015	<0.015	0.044	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.020	<0.010
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.012	<0.010
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.022 DLCI	<0.010
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.035	<0.010
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.021	<0.010
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.024	<0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	0.012	0.039	<0.010
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.014 DLCI	<0.010	<0.010	<0.010	<0.010
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	<0.010	<0.010	0.031	<0.010

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20BH-01-SOA	20BH-01-SOB	20BH-01-SOE	20MW-03-SOA	20MW-03-SOC
					Client sampling date / time	20-Oct-2020 13:25	20-Oct-2020 13:25	20-Oct-2020 13:45	20-Oct-2020 16:30	20-Oct-2020 16:44
						WR2001131-012	WR2001131-013	WR2001131-014	WR2001131-015	WR2001131-016
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	<0.11	<0.11	0.40	<0.11
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		82.8	89.8	94.7	82.7	77.2
chrysene-d12	1719-03-5	E641A-L	0.010	%		120	115	108	97.8	95.0
naphthalene-d8	1146-65-2	E641A-L	0.010	%		96.1	112	102	94.3	95.3
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		86.9	102	93.2	86.5	84.8

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

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20MW-03-SOH	20MW-04-SOA	20MW-04-SOD	20MW-04-SOE	20MW-04-SOG
					Client sampling date / time	21-Oct-2020 16:50	21-Oct-2020 09:30	21-Oct-2020 09:45	21-Oct-2020 11:15	21-Oct-2020 11:23
						WR2001131-017	WR2001131-018	WR2001131-019	WR2001131-020	WR2001131-021
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		19.5	7.85	21.6	9.36	18.3
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
LEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		105	104	102	99.9	99.4
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	<0.015	<0.015	<0.015	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20MW-03-SOH	20MW-04-SOA	20MW-04-SOD	20MW-04-SOE	20MW-04-SOG
					Client sampling date / time	21-Oct-2020 16:50	21-Oct-2020 09:30	21-Oct-2020 09:45	21-Oct-2020 11:15	21-Oct-2020 11:23
						WR2001131-017	WR2001131-018	WR2001131-019	WR2001131-020	WR2001131-021
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	<0.11	<0.11	<0.11	<0.11
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		85.5	89.3	90.1	108	82.3
chrysene-d12	1719-03-5	E641A-L	0.010	%		112	111	112	129	102
naphthalene-d8	1146-65-2	E641A-L	0.010	%		107	105	109	126	102
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		99.1	94.5	97.5	128	91.6

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

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Dup 1	Dup 2	20MW-02-SOF	----	----
					Client sampling date / time	26-Oct-2020	26-Oct-2020	20-Oct-2020 11:55	----	----
						WR2001131-022	WR2001131-023	WR2001131-024	--------	--------
						Result	Result	Result	----	----
Physical Tests										
moisture	----	E144	0.25	%		19.8	24.7	10.2	----	----
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	<200	<200	----	----
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	<200	----	----
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	----	----
LEPHs	----	EC600A	200	mg/kg		<200	<200	<200	----	----
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		103	96.2	101	----	----
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	----	----
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	0.0129	0.0167	----	----
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	0.0089	0.0088	----	----
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	0.057	0.064	----	----
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	0.068	0.072	----	----
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	0.063	0.070	----	----
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	0.095	0.104	----	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	0.034	0.036	----	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	0.032	0.035	----	----
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	0.059	0.062	----	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	0.0095	0.0115	----	----
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	0.064	0.074	----	----
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	0.040	0.044	----	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	0.016	0.011	----	----
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	0.089	0.110	----	----
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	0.097	0.106	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Dup 1	Dup 2	20MW-02-SOF	----	----
					Client sampling date / time	26-Oct-2020	26-Oct-2020	20-Oct-2020 11:55	----	----
						WR2001131-022	WR2001131-023	WR2001131-024	--------	--------
						Result	Result	Result	----	----
Polycyclic Aromatic Hydrocarbons										
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	1.04	1.14	----	----
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		80.1	79.2	80.8	----	----
chrysene-d12	1719-03-5	E641A-L	0.010	%		106	99.6	102	----	----
naphthalene-d8	1146-65-2	E641A-L	0.010	%		97.5	93.6	92.6	----	----
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		93.4	84.2	85.8	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WR2001131**	Page	: 1 of 11
Client	: **CH2M Hill Canada Limited**	Laboratory	: Whitehorse - Environmental
Contact	: Charles Shewen	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: CE796500	Date Samples Received	: 23-Oct-2020 17:00
PO	:	Issue Date	: 09-Nov-2020 16:52
C-O-C number	: 17-773503, 17-773052		
Sampler	: ----		
Site	: ----		
Quote number	: Payment Terms for Finance		
No. of samples received	: 29		
No. of samples analysed	: 18		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-03-SOH	E601A	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-04-SOA	E601A	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-04-SOD	E601A	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-04-SOE	E601A	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-04-SOG	E601A	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20BH-01-SOA	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20BH-01-SOB	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20BH-01-SOE	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-01-SOC	E601A	19-Oct-2020	02-Nov-2020	14 days	14 days	✓	03-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-01-SOF	E601A	19-Oct-2020	02-Nov-2020	14 days	14 days	✓	03-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-02-SOB	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-02-SOE	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-02-SOF	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-03-SOA	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-03-SOC	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-01-SOA	E601A	18-Oct-2020	02-Nov-2020	14 days	15 days	× EHT	03-Nov-2020	40 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
Dup 1	E601A	26-Oct-2020	03-Nov-2020	16 days	11 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
Dup 2	E601A	26-Oct-2020	03-Nov-2020	16 days	11 days	✓	04-Nov-2020	40 days	0 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20BH-01-SOA	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20BH-01-SOB	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20BH-01-SOE	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-01-SOA	E144	18-Oct-2020	----	----	----		05-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-01-SOC	E144	19-Oct-2020	----	----	----		05-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-01-SOF	E144	19-Oct-2020	----	----	----		05-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-02-SOB	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-02-SOE	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-02-SOF	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-03-SOA	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-03-SOC	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-03-SOH	E144	21-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-04-SOA	E144	21-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-04-SOD	E144	21-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-04-SOE	E144	21-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-04-SOG	E144	21-Oct-2020	----	----	----		03-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Dup 1	E144	26-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Dup 2	E144	26-Oct-2020	----	----	----		03-Nov-2020	----	----	
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-03-SOH	E641A-L	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-04-SOA	E641A-L	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-04-SOD	E641A-L	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-04-SOE	E641A-L	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-04-SOG	E641A-L	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20BH-01-SOA	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20BH-01-SOB	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20BH-01-SOE	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-02-SOB	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-02-SOE	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-02-SOF	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-03-SOA	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-03-SOC	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-01-SOC	E641A-L	19-Oct-2020	02-Nov-2020	14 days	14 days	✓	03-Nov-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-01-SOF	E641A-L	19-Oct-2020	02-Nov-2020	14 days	14 days	✓	03-Nov-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-01-SOA	E641A-L	18-Oct-2020	02-Nov-2020	14 days	15 days	× EHT	03-Nov-2020	40 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
Dup 1	E641A-L	26-Oct-2020	03-Nov-2020	16 days	11 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
Dup 2	E641A-L	26-Oct-2020	03-Nov-2020	16 days	11 days	✓	04-Nov-2020	40 days	0 days	✓

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
BC PHC - EPH by GC-FID	E601A	112266	2	19	10.5	5.0	✓
Moisture Content by Gravimetry	E144	112689	2	27	7.4	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	112265	2	19	10.5	5.0	✓
Laboratory Control Samples (LCS)							
BC PHC - EPH by GC-FID	E601A	112266	4	19	21.0	10.0	✓
Moisture Content by Gravimetry	E144	112689	2	27	7.4	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	112265	4	19	21.0	10.0	✓
Method Blanks (MB)							
BC PHC - EPH by GC-FID	E601A	112266	2	19	10.5	5.0	✓
Moisture Content by Gravimetry	E144	112689	2	27	7.4	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	112265	2	19	10.5	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
BC PHC - EPH by GC-FID	E601A Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual (EPH in Solids by GC/FID) (mod)	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L Vancouver - Environmental	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are extracted with hexane/acetone and analyzed by GC-MS. If reported, IACR (index of additive cancer risk, unitless) and B(a)P toxic potency equivalent (in soil concentration units) are calculated as per CCME PAH Soil Quality Guidelines fact sheet (2010) or ABT1.
LEPH and HEPH: EPH-PAH	EC600A Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual (LEPH and HEPH) (mod)	Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(b+j+k)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, and Pyrene.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.

QUALITY CONTROL REPORT

Work Order	: **WR2001131**	Page	: 1 of 10
Client	: CH2M Hill Canada Limited	Laboratory	: Whitehorse - Environmental
Contact	: Charles Shewen	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: CE796500	Date Samples Received	: 23-Oct-2020 17:00
PO	:	Date Analysis Commenced	: 02-Nov-2020
C-O-C number	: 17-773503, 17-773052	Issue Date	: 09-Nov-2020 16:53
Sampler	: ----		
Site	: ----		
Quote number	: Payment Terms for Finance		
No. of samples received	: 29		
No. of samples analysed	: 18		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia

General Comments

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

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 112689)											
WR2001131-008	20MW-02-SOB	moisture	----	E144	0.25	%	24.6	24.3	1.36%	20%	----
Physical Tests (QC Lot: 113849)											
VA20B9503-001	Anonymous	moisture	----	E144	0.25	%	20.8	20.7	0.250%	20%	----
Hydrocarbons (QC Lot: 112266)											
WR2001131-001	20MW-01-SOA	EPH (C10-C19)	----	E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	----
		EPH (C19-C32)	----	E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 112688)											
VA20B9779-003	Anonymous	EPH (C10-C19)	----	E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	----
		EPH (C19-C32)	----	E601A	200	mg/kg	760	580	180	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 112265)											
WR2001131-001	20MW-01-SOA	acenaphthene	83-32-9	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		acridine	260-94-6	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		anthracene	120-12-7	E641A-L	0.0040	mg/kg	<0.0040	<0.0040	0	Diff <2x LOR	----
		benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		chrysene	218-01-9	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		fluoranthene	206-44-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		fluorene	86-73-7	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		naphthalene	91-20-3	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		phenanthrene	85-01-8	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		pyrene	129-00-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		quinoline	6027-02-7	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 112687)											
VA20B9006-001	Anonymous	acenaphthene	83-32-9	E641A-L	28.0	mg/kg	<28.0	<23.0	5.00	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Polycyclic Aromatic Hydrocarbons (QC Lot: 112687) - continued											
VA20B9006-001	Anonymous	acenaphthylene	208-96-8	E641A-L	7.00	mg/kg	<7.00	<9.00	2.00	Diff <2x LOR	----
		acridine	260-94-6	E641A-L	69.0	mg/kg	<69.0	<66.0	3.00	Diff <2x LOR	----
		anthracene	120-12-7	E641A-L	8.00	mg/kg	<8.00	<70.0	62.0	Diff <2x LOR	----
		benz(a)anthracene	56-55-3	E641A-L	4.00	mg/kg	<4.00	<5.00	1.00	Diff <2x LOR	----
		benzo(a)pyrene	50-32-8	E641A-L	28.0	mg/kg	<28.0	<27.0	1.00	Diff <2x LOR	----
		benzo(b+j)fluoranthene	----	E641A-L	3.90	mg/kg	<3.90	<3.50	0.400	Diff <2x LOR	----
		benzo(g,h,i)perylene	191-24-2	E641A-L	0.123	mg/kg	2.08	2.04	1.93%	50%	----
		benzo(k)fluoranthene	207-08-9	E641A-L	0.700	mg/kg	<0.700	<0.500	0.200	Diff <2x LOR	----
		chrysene	218-01-9	E641A-L	18.0	mg/kg	<18.0	<18.0	0	Diff <2x LOR	----
		dibenz(a,h)anthracene	53-70-3	E641A-L	1.80	mg/kg	<1.80	<1.90	0.100	Diff <2x LOR	----
		fluoranthene	206-44-0	E641A-L	5.00	mg/kg	<5.00	<4.00	1.00	Diff <2x LOR	----
		fluorene	86-73-7	E641A-L	0.123	mg/kg	73.3	63.9	13.7%	50%	----
		indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.500	mg/kg	<0.500	<0.500	0	Diff <2x LOR	----
		methylnaphthalene, 1-	90-12-0	E641A-L	0.123	mg/kg	514	482	6.34%	50%	----
		methylnaphthalene, 2-	91-57-6	E641A-L	0.123	mg/kg	781	724	7.51%	50%	----
		naphthalene	91-20-3	E641A-L	0.123	mg/kg	213	196	8.28%	50%	----
		phenanthrene	85-01-8	E641A-L	0.123	mg/kg	197	189	4.40%	50%	----
		pyrene	129-00-0	E641A-L	0.123	mg/kg	11.5	11.4	0.558%	50%	----
		quinoline	6027-02-7	E641A-L	7.00	mg/kg	<7.00	<7.00	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 112689)						
moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 113849)						
moisture	----	E144	0.25	%	<0.25	----
Hydrocarbons (QCLot: 112266)						
EPH (C10-C19)	----	E601A	200	mg/kg	<200	----
					<200	----
EPH (C19-C32)	----	E601A	200	mg/kg	<200	----
					<200	----
Hydrocarbons (QCLot: 112688)						
EPH (C10-C19)	----	E601A	200	mg/kg	<200	----
					<200	----
EPH (C19-C32)	----	E601A	200	mg/kg	<200	----
					<200	----
Polycyclic Aromatic Hydrocarbons (QCLot: 112265)						
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	<0.0050	----
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	<0.0050	----
					<0.0050	----
acridine	260-94-6	E641A-L	0.01	mg/kg	<0.010	----
anthracene	120-12-7	E641A-L	0.004	mg/kg	<0.0040	----
					<0.0040	----
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	<0.010	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	<0.010	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	<0.010	----
chrysene	218-01-9	E641A-L	0.01	mg/kg	<0.010	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	<0.0050	----
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	<0.010	----
fluorene	86-73-7	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	<0.010	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	<0.010	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 112265) - continued						
naphthalene	91-20-3	E641A-L	0.01	mg/kg	<0.010	----
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
pyrene	129-00-0	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
quinoline	6027-02-7	E641A-L	0.01	mg/kg	<0.010	----
Polycyclic Aromatic Hydrocarbons (QCLot: 112687)						
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	<0.0050	----
					<0.0050	----
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	<0.0050	----
acridine	260-94-6	E641A-L	0.01	mg/kg	<0.010	----
anthracene	120-12-7	E641A-L	0.004	mg/kg	<0.0040	----
					<0.0040	----
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	<0.010	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	<0.010	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	<0.010	----
chrysene	218-01-9	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	<0.0050	----
					<0.0050	----
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
fluorene	86-73-7	E641A-L	0.01	mg/kg	<0.010	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	<0.010	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	<0.010	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	<0.010	----
naphthalene	91-20-3	E641A-L	0.01	mg/kg	<0.010	----
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	<0.010	----
pyrene	129-00-0	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
quinoline	6027-02-7	E641A-L	0.01	mg/kg	<0.010	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 112689)									
moisture	----	E144	0.25	%	50 %	102	90.0	110	----
Physical Tests (QCLot: 113849)									
moisture	----	E144	0.25	%	50 %	101	90.0	110	----
Hydrocarbons (QCLot: 112266)									
EPH (C10-C19)	----	E601A	200	mg/kg	1134.37 mg/kg	109	70.0	130	----
					7113 mg/kg	108	70.0	130	----
EPH (C19-C32)	----	E601A	200	mg/kg	575.98 mg/kg	111	70.0	130	----
					10183 mg/kg	106	70.0	130	----
Hydrocarbons (QCLot: 112688)									
EPH (C10-C19)	----	E601A	200	mg/kg	1134.37 mg/kg	108	70.0	130	----
					7113 mg/kg	106	70.0	130	----
EPH (C19-C32)	----	E601A	200	mg/kg	575.98 mg/kg	111	70.0	130	----
					10183 mg/kg	106	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 112265)									
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	90.3	60.0	130	----
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.5 mg/kg	90.5	60.0	130	----
					0.2 mg/kg	112	60.0	130	----
acridine	260-94-6	E641A-L	0.01	mg/kg	0.5 mg/kg	96.2	60.0	130	----
anthracene	120-12-7	E641A-L	0.004	mg/kg	0.5 mg/kg	96.8	60.0	130	----
					0.32 mg/kg	108	60.0	130	----
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	0.5 mg/kg	88.9	60.0	130	----
					0.545 mg/kg	95.0	60.0	130	----
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	0.5 mg/kg	97.1	60.0	130	----
					0.135 mg/kg	110	60.0	130	----
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	0.5 mg/kg	93.5	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.5 mg/kg	92.1	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	0.5 mg/kg	91.2	60.0	130	----
chrysene	218-01-9	E641A-L	0.01	mg/kg	0.5 mg/kg	84.7	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	0.5 mg/kg	92.0	60.0	130	----
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	0.5 mg/kg	93.7	60.0	130	----
fluorene	86-73-7	E641A-L	0.01	mg/kg	0.5 mg/kg	94.9	60.0	130	----
					0.989 mg/kg	94.7	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	0.5 mg/kg	95.4	60.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 112265) - continued									
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.5 mg/kg	80.6	60.0	130	----
					1.256 mg/kg	88.0	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	79.6	60.0	130	----
naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	67.0	50.0	130	----
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	0.5 mg/kg	95.9	60.0	130	----
					1.13 mg/kg	94.9	60.0	130	----
pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	99.1	60.0	130	----
					1.325 mg/kg	97.6	60.0	130	----
quinoline	6027-02-7	E641A-L	0.01	mg/kg	0.5 mg/kg	79.5	60.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 112687)									
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	87.0	60.0	130	----
					0.638 mg/kg	97.0	60.0	130	----
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.5 mg/kg	90.3	60.0	130	----
acridine	260-94-6	E641A-L	0.01	mg/kg	0.5 mg/kg	94.0	60.0	130	----
anthracene	120-12-7	E641A-L	0.004	mg/kg	0.5 mg/kg	95.8	60.0	130	----
					0.32 mg/kg	110	60.0	130	----
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	0.5 mg/kg	80.9	60.0	130	----
					0.545 mg/kg	97.4	60.0	130	----
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	0.5 mg/kg	87.3	60.0	130	----
					0.135 mg/kg	104	60.0	130	----
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	0.5 mg/kg	84.2	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.5 mg/kg	79.6	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	0.5 mg/kg	87.2	60.0	130	----
chrysene	218-01-9	E641A-L	0.01	mg/kg	0.5 mg/kg	83.4	60.0	130	----
					0.666 mg/kg	102	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	0.5 mg/kg	92.7	60.0	130	----
					1.196 mg/kg	94.5	60.0	130	----
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	0.5 mg/kg	90.0	60.0	130	----
					1.757 mg/kg	95.5	60.0	130	----
fluorene	86-73-7	E641A-L	0.01	mg/kg	0.5 mg/kg	92.4	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	0.5 mg/kg	87.0	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.5 mg/kg	95.6	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	80.8	60.0	130	----
naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	86.0	50.0	130	----
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	0.5 mg/kg	94.9	60.0	130	----
pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	95.2	60.0	130	----
					1.325 mg/kg	97.7	60.0	130	----
quinoline	6027-02-7	E641A-L	0.01	mg/kg	0.5 mg/kg	88.2	60.0	130	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier

Reference Material (RM) Report

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

Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report: RM Target Concentration	Recovery (%): RM	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 112265)									
QC-112265-003	RM	acenaphthene	83-32-9	E641A-L	0.638 mg/kg	93.1	60.0	130	----
QC-112265-003	RM	benzo(b+j)fluoranthene	----	E641A-L	0.793 mg/kg	97.9	60.0	130	----
QC-112265-003	RM	benzo(g,h,i)perylene	191-24-2	E641A-L	0.377 mg/kg	99.0	60.0	130	----
QC-112265-003	RM	benzo(k)fluoranthene	207-08-9	E641A-L	0.34 mg/kg	96.5	60.0	130	----
QC-112265-003	RM	chrysene	218-01-9	E641A-L	0.666 mg/kg	97.0	60.0	130	----
QC-112265-003	RM	dibenz(a,h)anthracene	53-70-3	E641A-L	1.196 mg/kg	99.2	60.0	130	----
QC-112265-003	RM	fluoranthene	206-44-0	E641A-L	1.757 mg/kg	93.8	60.0	130	----
QC-112265-003	RM	indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.445 mg/kg	98.4	60.0	130	----
QC-112265-003	RM	methylnaphthalene, 2-	91-57-6	E641A-L	1.088 mg/kg	86.3	60.0	130	----
QC-112265-003	RM	naphthalene	91-20-3	E641A-L	1.03 mg/kg	87.1	50.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 112687)									
QC-112687-003	RM	acenaphthylene	208-96-8	E641A-L	0.2 mg/kg	102	60.0	130	----
QC-112687-003	RM	benzo(b+j)fluoranthene	----	E641A-L	0.793 mg/kg	95.8	60.0	130	----
QC-112687-003	RM	benzo(g,h,i)perylene	191-24-2	E641A-L	0.377 mg/kg	86.8	60.0	130	----
QC-112687-003	RM	benzo(k)fluoranthene	207-08-9	E641A-L	0.34 mg/kg	101	60.0	130	----
QC-112687-003	RM	fluorene	86-73-7	E641A-L	0.989 mg/kg	99.4	60.0	130	----
QC-112687-003	RM	indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.445 mg/kg	91.2	60.0	130	----
QC-112687-003	RM	methylnaphthalene, 1-	90-12-0	E641A-L	1.256 mg/kg	96.4	60.0	130	----
QC-112687-003	RM	methylnaphthalene, 2-	91-57-6	E641A-L	1.088 mg/kg	100	60.0	130	----
QC-112687-003	RM	naphthalene	91-20-3	E641A-L	1.03 mg/kg	99.6	50.0	130	----
QC-112687-003	RM	phenanthrene	85-01-8	E641A-L	1.13 mg/kg	99.9	60.0	130	----

ALS Environmental

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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 - 773503

Page 1 of 2

Environmental Division
Whitehorse
Work Order Reference
WR2001131

Telephone : +1 867 668 6689

Report To	Contact and company name below will appear on the final report
Company:	Jacobs Engineering
Contact:	Chinat Shewm
Phone:	867 334-8481
Company address below will appear on the final report	
Street:	
City/Province:	
Postal Code:	

Invoice To	
Same as Report To	[X] YES [ ] NO
Copy of Invoice with Report	[ ] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: [ ] PDF [ ] EXCEL [ ] EDD (DIGITAL)

Quality Control (QC) Report with Report [ ] YES [ ] NO

[ ] Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: [ ] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax

Email 2

Email 3

Invoice Distribution

Select Invoice Distribution: [ ] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax

Email 2

Select Service Level Below - Contac

Regular [R] [ ] Standard TAT if r

PRIORITY (Business Days): 4 day [P4-20%] [ ] 3 day [P3-25%] [ ] 2 day [P2-50%] [ ]

EMERGENCY

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the servic

Indicate Filtered (F), Preservec

pply)

0%

Project Information	
ALS Account # / Quote #:	
Job #:	CE798800
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only):

ALS Contact:

Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	20MW-01-SOA	18/10	17:00	Soil	3	X	
	20MW-01-SOB	19/10	17:10	↑	│	↑	
	20MW-01-SOC	19/10	17:15	│	│	│	
	20MW-01-SOD	19/10	17:40	│	│	│	
	20MW-01-SOE	19/10	17:45	│	│	│	
	20MW-01-SOF	19/10	17:50	│	│	│	
	20MW-02-SOA	20/10	11:05	│	│	│	
	20MW-02-SOB	20/10	11:15	│	│	│	
	20MW-02-SOC	20/10	11:30	│	│	│	
	20MW-02-SOD	20/10	11:31	│	│	│	
	20MW-02-SOE	20/10	11:50	↓	│	↓	
	20BH-01-SOA	20/10	13:25	Soil	3	X	

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? [ ] YES [ ] NO

Are samples for human consumption/ use? [ ] YES [ ] NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]

Ice Packs [ ] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]

Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C: 3 0°

FINAL COOLER TEMPERATURES °C:

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: [signature]	Date: 2020/10/23	Time: 17:00	Received by: D.	Date: OCT 23/20	Time: 17:00	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 - 773502

Page 2 of 2

Report To	Contact and company name below will appear on the final report
Company:	
Contact:	
Phone:	
Company address below will appear on the final report	
Street:	
City/Province:	
Postal Code:	
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax
Email 2
Email 3

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax
Email 2

Project Information

ALS Account # / Quote #:
Job #:
PO / AFE:
LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#
Major/Minor Code: Routing Code:
Requisitioner:
Location:

ALS Lab Work Order # (lab use only): **ALS Contact:** **Sampler:**

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☐ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	20BH-01-SOB	20/10	13:25		3	X	
	20BH-01-SOE	20/10	13:45				
	20MW-03-SOA	20/10	16:30				
	20MW-03-SOC	20/10	16:44				
	20MW-03-SOH	20/10	16:50				
	20MW-04-SOA	21/10	9:30				
	20MW-04-SOD	21/10	9:45				
	20MW-04-SOE	21/10	11:15				
	20MW-04-SOG	21/10	11:23				
	Dup 1						
	Dup 2						
	20MW-02-SOF	20/10	11:55		3	X	

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☐ NO
Are samples for human consumption/ use?
☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2001131**	Page	: 1 of 14
Amendment	: **2**		
Client	: **CH2M Hill Canada Limited**	Laboratory	: Whitehorse - Environmental
Contact	: Charles Shewen	Account Manager	: Edward Ngai
Address	: Nuvo Bldg, Suite 401 C, 309 Strickland St Whitehorse YT Canada Y1A 2J9	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: ----	Date Samples Received	: 23-Oct-2020 17:00
PO	:	Date Analysis Commenced	: 02-Nov-2020
C-O-C number	: 17-773503, 17-773052	Issue Date	: 23-Nov-2020 15:33
Sampler	: ----		
Site	: ----		
Quote number	: VA20-CHMH100-011		
No. of samples received	: 29		
No. of samples analysed	: 18		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia

General Comments

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

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

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

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

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

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

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

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

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

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Workorder Comments

Additional samples 25-29 received. Sample ID 20MW-01-SPT-02; one jar and two vials. 20MW-01-SPT-01; one jar and two vials. 20MW-2-16-17-SOG; one jar and one vial. 20MW-01-SOD; one vial. 20MW2-SOG; one vial.

Qualifiers

Qualifier	*Description*
DLCI	*Detection Limit Raised: Chromatographic interference due to co-elution.*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20MW-01-SOA	20MW-01-SOC	20MW-01-SOF	20MW-02-SOB	20MW-02-SOE
					Client sampling date / time	18-Oct-2020 17:00	19-Oct-2020 17:15	19-Oct-2020 17:50	20-Oct-2020 11:15	20-Oct-2020 11:50
						WR2001131-001	WR2001131-003	WR2001131-006	WR2001131-008	WR2001131-011
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		23.6	6.89	9.10	24.6	13.2
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
chloromethane	74-87-3	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg		<0.075	<0.075	----	<0.075	<0.075
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
chloroethane	75-00-3	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
dichloromethane	75-09-2	E611C	0.050	mg/kg		<0.050	0.341	----	0.206 RRV	0.088 RRV
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
trichloroethylene	79-01-6	E611C	0.010	mg/kg		<0.010	<0.010	----	<0.010	<0.010
vinyl chloride	75-01-4	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611C	0.0050	mg/kg		<0.0050	<0.0050	----	<0.0050	<0.0050

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20MW-01-SOA	20MW-01-SOC	20MW-01-SOF	20MW-02-SOB	20MW-02-SOE
					Client sampling date / time	18-Oct-2020 17:00	19-Oct-2020 17:15	19-Oct-2020 17:50	20-Oct-2020 11:15	20-Oct-2020 11:50
						WR2001131-001	WR2001131-003	WR2001131-006	WR2001131-008	WR2001131-011
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]										
ethylbenzene	100-41-4	E611C	0.015	mg/kg		<0.015	<0.015	----	<0.015	<0.015
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
styrene	100-42-5	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
toluene	108-88-3	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
xylene, m+p-	179601-23-1	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
xylene, o-	95-47-6	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
xylenes, total	1330-20-7	E611C	0.075	mg/kg		<0.075	<0.075	----	<0.075	<0.075
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.050	%		105	106	----	90.0	104
difluorobenzene, 1,4-	540-36-3	E611C	0.050	%		107	97.6	----	92.5	109
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg		<10	<10	----	<10	<10
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
LEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
VPHs	----	EC580A	10	mg/kg		<10	<10	----	<10	<10
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		102	101	102	102	97.2
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		99.3	94.5	----	94.0	97.0
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	0.0101	0.0543
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	<0.0040	<0.0040	0.0069	0.0299
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.045	0.245
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.052	0.276
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.049	0.264
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	<0.015	<0.015	0.071	0.383
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.027	0.129
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.022	0.119

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20MW-01-SOA	20MW-01-SOC	20MW-01-SOF	20MW-02-SOB	20MW-02-SOE
					Client sampling date / time	18-Oct-2020 17:00	19-Oct-2020 17:15	19-Oct-2020 17:50	20-Oct-2020 11:15	20-Oct-2020 11:50
						WR2001131-001	WR2001131-003	WR2001131-006	WR2001131-008	WR2001131-011
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.043	0.258
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0075 DLCI	0.0338
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.050	0.278
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.031	0.159
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.010	0.044
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.065	0.396
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	<0.010	<0.010	0.067	0.393
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	<0.11	<0.11	0.76	4.23
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		104	102	91.4	84.0	88.8
chrysene-d12	1719-03-5	E641A-L	0.010	%		113	108	97.5	104	109
naphthalene-d8	1146-65-2	E641A-L	0.010	%		91.7	78.6	76.2	103	98.0
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		110	107	95.0	91.8	94.4
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
bromoform	75-25-2	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
chloroform	67-66-3	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050
dibromochloromethane	124-48-1	E611C	0.050	mg/kg		<0.050	<0.050	----	<0.050	<0.050

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

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20BH-01-SOA	20BH-01-SOB	20BH-01-SOE	20MW-03-SOA	20MW-03-SOC
					Client sampling date / time	20-Oct-2020 13:25	20-Oct-2020 13:25	20-Oct-2020 13:45	20-Oct-2020 16:30	20-Oct-2020 16:44
						WR2001131-012	WR2001131-013	WR2001131-014	WR2001131-015	WR2001131-016
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		27.2	27.2	14.2	9.75	19.9
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chloromethane	74-87-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg		<0.075	<0.075	<0.075	<0.075	<0.075
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chloroethane	75-00-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloromethane	75-09-2	E611C	0.050	mg/kg		0.544 RRV	0.198 RRV	<0.050	<0.050	0.694 RRV
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethylene	79-01-6	E611C	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
vinyl chloride	75-01-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611C	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
ethylbenzene	100-41-4	E611C	0.015	mg/kg		<0.015	<0.015	<0.015	<0.015	<0.015

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20BH-01-SOA	20BH-01-SOB	20BH-01-SOE	20MW-03-SOA	20MW-03-SOC
					Client sampling date / time	20-Oct-2020 13:25	20-Oct-2020 13:25	20-Oct-2020 13:45	20-Oct-2020 16:30	20-Oct-2020 16:44
						WR2001131-012	WR2001131-013	WR2001131-014	WR2001131-015	WR2001131-016
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]										
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
styrene	100-42-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
toluene	108-88-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylene, m+p-	179601-23-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylene, o-	95-47-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylenes, total	1330-20-7	E611C	0.075	mg/kg		<0.075	<0.075	<0.075	<0.075	<0.075
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.050	%		98.1	96.6	95.5	87.8	95.8
difluorobenzene, 1,4-	540-36-3	E611C	0.050	%		93.6	98.8	99.4	79.9	92.6
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg		<10	<10	<10	<10	<10
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
LEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
VPHs	----	EC580A	10	mg/kg		<10	<10	<10	<10	<10
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		100	102	106	97.6	96.4
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		77.9	96.2	91.7	92.9	90.2
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	<0.0040	<0.0040	0.0060	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.017	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.022	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.011 DLCI	0.031	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	<0.015	<0.015	0.044	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.020	<0.010
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.012	<0.010
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.022 DLCI	<0.010

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20BH-01-SOA	20BH-01-SOB	20BH-01-SOE	20MW-03-SOA	20MW-03-SOC
					Client sampling date / time	20-Oct-2020 13:25	20-Oct-2020 13:25	20-Oct-2020 13:45	20-Oct-2020 16:30	20-Oct-2020 16:44
						WR2001131-012	WR2001131-013	WR2001131-014	WR2001131-015	WR2001131-016
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.035	<0.010
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.021	<0.010
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.024	<0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	0.012	0.039	<0.010
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.014 DLCI	<0.010	<0.010	<0.010	<0.010
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	<0.010	<0.010	0.031	<0.010
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	<0.11	<0.11	0.40	<0.11
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		82.8	89.8	94.7	82.7	77.2
chrysene-d12	1719-03-5	E641A-L	0.010	%		120	115	108	97.8	95.0
naphthalene-d8	1146-65-2	E641A-L	0.010	%		96.1	112	102	94.3	95.3
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		86.9	102	93.2	86.5	84.8
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
bromoform	75-25-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chloroform	67-66-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dibromochloromethane	124-48-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050

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

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20MW-03-SOH	20MW-04-SOA	20MW-04-SOD	20MW-04-SOE	20MW-04-SOG
					Client sampling date / time	21-Oct-2020 16:50	21-Oct-2020 09:30	21-Oct-2020 09:45	21-Oct-2020 11:15	21-Oct-2020 11:23
						WR2001131-017	WR2001131-018	WR2001131-019	WR2001131-020	WR2001131-021
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		19.5	7.85	21.6	9.36	18.3
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chloromethane	74-87-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg		<0.075	<0.075	<0.075	<0.075	<0.075
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chloroethane	75-00-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloromethane	75-09-2	E611C	0.050	mg/kg		<0.050	0.113	1.88	0.052	0.338
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethylene	79-01-6	E611C	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
vinyl chloride	75-01-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611C	0.0050	mg/kg		0.0124	<0.0050	<0.0050	0.0075	0.0522
ethylbenzene	100-41-4	E611C	0.015	mg/kg		<0.015	<0.015	<0.015	<0.015	<0.015

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20MW-03-SOH	20MW-04-SOA	20MW-04-SOD	20MW-04-SOE	20MW-04-SOG
					Client sampling date / time	21-Oct-2020 16:50	21-Oct-2020 09:30	21-Oct-2020 09:45	21-Oct-2020 11:15	21-Oct-2020 11:23
						WR2001131-017	WR2001131-018	WR2001131-019	WR2001131-020	WR2001131-021
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]										
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
styrene	100-42-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
toluene	108-88-3	E611C	0.050	mg/kg		<0.050	<0.050	0.072	<0.050	<0.050
xylene, m+p-	179601-23-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylene, o-	95-47-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylenes, total	1330-20-7	E611C	0.075	mg/kg		<0.075	<0.075	<0.075	<0.075	<0.075
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.050	%		93.2	104	98.6	104	93.6
difluorobenzene, 1,4-	540-36-3	E611C	0.050	%		90.9	100	102	103	95.4
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg		<10	<10	<10	<10	<10
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
LEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
VPHs	----	EC580A	10	mg/kg		<10	<10	<10	<10	<10
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		105	104	102	99.9	99.4
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		83.6	97.8	82.3	95.7	82.5
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	<0.015	<0.015	<0.015	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	20MW-03-SOH	20MW-04-SOA	20MW-04-SOD	20MW-04-SOE	20MW-04-SOG
					Client sampling date / time	21-Oct-2020 16:50	21-Oct-2020 09:30	21-Oct-2020 09:45	21-Oct-2020 11:15	21-Oct-2020 11:23
						WR2001131-017	WR2001131-018	WR2001131-019	WR2001131-020	WR2001131-021
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	<0.11	<0.11	<0.11	<0.11
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		85.5	89.3	90.1	108	82.3
chrysene-d12	1719-03-5	E641A-L	0.010	%		112	111	112	129	102
naphthalene-d8	1146-65-2	E641A-L	0.010	%		107	105	109	126	102
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		99.1	94.5	97.5	128	91.6
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
bromoform	75-25-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chloroform	67-66-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dibromochloromethane	124-48-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050

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

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Dup 1	Dup 2	20MW-02-SOF	----	----
					Client sampling date / time	26-Oct-2020	26-Oct-2020	20-Oct-2020 11:55	----	----
						WR2001131-022	WR2001131-023	WR2001131-024	--------	--------
						Result	Result	Result	----	----
Physical Tests										
moisture	----	E144	0.25	%		19.8	24.7	10.2	----	----
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
chloromethane	74-87-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg		<0.075	<0.075	<0.075	----	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
chloroethane	75-00-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloromethane	75-09-2	E611C	0.050	mg/kg		0.206	0.262	0.088	----	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
trichloroethylene	79-01-6	E611C	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
vinyl chloride	75-01-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611C	0.0050	mg/kg		<0.0050	<0.0050	0.0052	----	----
ethylbenzene	100-41-4	E611C	0.015	mg/kg		<0.015	<0.015	<0.015	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Dup 1	Dup 2	20MW-02-SOF	----	----
					Client sampling date / time	26-Oct-2020	26-Oct-2020	20-Oct-2020 11:55	----	----
						WR2001131-022	WR2001131-023	WR2001131-024	--------	--------
						Result	Result	Result	----	----
Volatile Organic Compounds [Fuels]										
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
styrene	100-42-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
toluene	108-88-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
xylene, m+p-	179601-23-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
xylene, o-	95-47-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
xylenes, total	1330-20-7	E611C	0.075	mg/kg		<0.075	<0.075	<0.075	----	----
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.050	%		99.0	92.2	97.5	----	----
difluorobenzene, 1,4-	540-36-3	E611C	0.050	%		102	91.0	101	----	----
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	<200	<200	----	----
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	<200	----	----
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg		<10	<10	<10	----	----
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	----	----
LEPHs	----	EC600A	200	mg/kg		<200	<200	<200	----	----
VPHs	----	EC580A	10	mg/kg		<10	<10	<10	----	----
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		103	96.2	101	----	----
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		96.2	86.7	89.1	----	----
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	----	----
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	0.0129	0.0167	----	----
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	0.0089	0.0088	----	----
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	0.057	0.064	----	----
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	0.068	0.072	----	----
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	0.063	0.070	----	----
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	0.095	0.104	----	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	0.034	0.036	----	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	0.032	0.035	----	----
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	0.059	0.062	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Dup 1	Dup 2	20MW-02-SOF	----	----
					Client sampling date / time	26-Oct-2020	26-Oct-2020	20-Oct-2020 11:55	----	----
						WR2001131-022	WR2001131-023	WR2001131-024	--------	--------
						Result	Result	Result	----	----
Polycyclic Aromatic Hydrocarbons										
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	0.0095	0.0115	----	----
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	0.064	0.074	----	----
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	0.040	0.044	----	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	0.016	0.011	----	----
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	0.089	0.110	----	----
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	0.097	0.106	----	----
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	1.04	1.14	----	----
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		80.1	79.2	80.8	----	----
chrysene-d12	1719-03-5	E641A-L	0.010	%		106	99.6	102	----	----
naphthalene-d8	1146-65-2	E641A-L	0.010	%		97.5	93.6	92.6	----	----
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		93.4	84.2	85.8	----	----
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
bromoform	75-25-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
chloroform	67-66-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dibromochloromethane	124-48-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WR2001131**	Page	: 1 of 21
Amendment	: **2**		
Client	: **CH2M Hill Canada Limited**	Laboratory	: Whitehorse - Environmental
Contact	: Charles Shewen	Account Manager	: Edward Ngai
Address	: Nuvo Bldg, Suite 401 C, 309 Strickland St Whitehorse YT Canada Y1A 2J9	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: ----	Date Samples Received	: 23-Oct-2020 17:00
PO	:	Issue Date	: 23-Nov-2020 15:33
C-O-C number	: 17-773503, 17-773052		
Sampler	: ----		
Site	: ----		
Quote number	: VA20-CHMH100-011		
No. of samples received	: 29		
No. of samples analysed	: 18		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

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

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Soil/Solid**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Volatile Organic Compounds	QC-118362-002	----	dichloropropylene, trans-1,3-	10061-02-6	E611C	64.4 % LCS-ND	70.0-130%	Recovery less than lower control limit
Volatile Organic Compounds	QC-MRG2-1187250 02	----	dichloropropylene, trans-1,3-	10061-02-6	E611C	58.4 % LCS-ND	70.0-130%	Recovery less than lower control limit

Result Qualifiers

Qualifier	*Description*
LCS-ND	*Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.*

Analysis Holding Time Compliance

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

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

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-03-SOH	E601A	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-04-SOA	E601A	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-04-SOD	E601A	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-04-SOE	E601A	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-04-SOG	E601A	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20BH-01-SOA	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20BH-01-SOB	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20BH-01-SOE	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-01-SOC	E601A	19-Oct-2020	02-Nov-2020	14 days	14 days	✓	03-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-01-SOF	E601A	19-Oct-2020	02-Nov-2020	14 days	14 days	✓	03-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-02-SOB	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-02-SOE	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-02-SOF	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-03-SOA	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-03-SOC	E601A	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
20MW-01-SOA	E601A	18-Oct-2020	02-Nov-2020	14 days	15 days	× EHT	03-Nov-2020	40 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
Dup 1	E601A	26-Oct-2020	03-Nov-2020	16 days	11 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
Dup 2	E601A	26-Oct-2020	03-Nov-2020	16 days	11 days	✓	04-Nov-2020	40 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
20MW-03-SOH	E581.VH+F1	21-Oct-2020	18-Nov-2020	40 days	27 days	✓	19-Nov-2020	12 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
20MW-04-SOE	E581.VH+F1	21-Oct-2020	18-Nov-2020	40 days	27 days	✓	19-Nov-2020	12 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
20MW-04-SOG	E581.VH+F1	21-Oct-2020	18-Nov-2020	40 days	27 days	✓	19-Nov-2020	12 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
20MW-02-SOF	E581.VH+F1	20-Oct-2020	18-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
20MW-04-SOA	E581.VH+F1	21-Oct-2020	18-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
20MW-04-SOD	E581.VH+F1	21-Oct-2020	18-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
20BH-01-SOA	E581.VH+F1	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 20BH-01-SOB	E581.VH+F1	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 20BH-01-SOE	E581.VH+F1	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 20MW-01-SOC	E581.VH+F1	19-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 20MW-02-SOB	E581.VH+F1	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 20MW-02-SOE	E581.VH+F1	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 20MW-03-SOA	E581.VH+F1	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 20MW-03-SOC	E581.VH+F1	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial 20MW-01-SOA	E581.VH+F1	18-Oct-2020	17-Nov-2020	40 days	29 days	✓	19-Nov-2020	10 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial Dup 1	E581.VH+F1	26-Oct-2020	18-Nov-2020	42 days	25 days	✓	19-Nov-2020	16 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial Dup 2	E581.VH+F1	26-Oct-2020	18-Nov-2020	42 days	25 days	✓	19-Nov-2020	17 days	0 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap 20BH-01-SOA	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap 20BH-01-SOB	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap 20BH-01-SOE	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap 20MW-01-SOA	E144	18-Oct-2020	----	----	----		05-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap 20MW-01-SOC	E144	19-Oct-2020	----	----	----		05-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap 20MW-01-SOF	E144	19-Oct-2020	----	----	----		05-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap 20MW-02-SOB	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap 20MW-02-SOE	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-02-SOF	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-03-SOA	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-03-SOC	E144	20-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-03-SOH	E144	21-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-04-SOA	E144	21-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-04-SOD	E144	21-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-04-SOE	E144	21-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
20MW-04-SOG	E144	21-Oct-2020	----	----	----		03-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Dup 1	E144	26-Oct-2020	----	----	----		03-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Dup 2	E144	26-Oct-2020	----	----	----		03-Nov-2020	----	----	
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-03-SOH	E641A-L	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-04-SOA	E641A-L	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-04-SOD	E641A-L	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-04-SOE	E641A-L	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20MW-04-SOG	E641A-L	21-Oct-2020	03-Nov-2020	14 days	13 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20BH-01-SOA	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20BH-01-SOB	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
20BH-01-SOE	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap 20MW-02-SOB	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap 20MW-02-SOE	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap 20MW-02-SOF	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap 20MW-03-SOA	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap 20MW-03-SOC	E641A-L	20-Oct-2020	03-Nov-2020	14 days	14 days	✓	04-Nov-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap 20MW-01-SOC	E641A-L	19-Oct-2020	02-Nov-2020	14 days	14 days	✓	03-Nov-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap 20MW-01-SOF	E641A-L	19-Oct-2020	02-Nov-2020	14 days	14 days	✓	03-Nov-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap 20MW-01-SOA	E641A-L	18-Oct-2020	02-Nov-2020	14 days	15 days	× EHT	03-Nov-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap Dup 1	E641A-L	26-Oct-2020	03-Nov-2020	16 days	11 days	✓	04-Nov-2020	40 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap Dup 2	E641A-L	26-Oct-2020	03-Nov-2020	16 days	11 days	✓	04-Nov-2020	40 days	0 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20BH-01-SOA	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20BH-01-SOB	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20BH-01-SOE	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-01-SOA	E611C	18-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-01-SOC	E611C	19-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-02-SOB	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-02-SOE	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-02-SOF	E611C	20-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-03-SOA	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-03-SOC	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-03-SOH	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-04-SOA	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-04-SOD	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-04-SOE	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-04-SOG	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
Dup 1	E611C	26-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
Dup 2	E611C	26-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20BH-01-SOA	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20BH-01-SOB	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20BH-01-SOE	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-01-SOA	E611C	18-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-01-SOC	E611C	19-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-02-SOB	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-02-SOE	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-02-SOF	E611C	20-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-03-SOA	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-03-SOC	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-03-SOH	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-04-SOA	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-04-SOD	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-04-SOE	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-04-SOG	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
Dup 1	E611C	26-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
Dup 2	E611C	26-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-03-SOH	E611C	21-Oct-2020	18-Nov-2020	40 days	27 days	✓	19-Nov-2020	12 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-04-SOE	E611C	21-Oct-2020	18-Nov-2020	40 days	27 days	✓	19-Nov-2020	12 days	0 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-04-SOG	E611C	21-Oct-2020	18-Nov-2020	40 days	27 days	✓	19-Nov-2020	12 days	0 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-02-SOF	E611C	20-Oct-2020	18-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	0 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-04-SOA	E611C	21-Oct-2020	18-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	0 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-04-SOD	E611C	21-Oct-2020	18-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	0 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20BH-01-SOA	E611C	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20BH-01-SOB	E611C	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20BH-01-SOE	E611C	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-01-SOC	E611C	19-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-02-SOB	E611C	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-02-SOE	E611C	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-03-SOA	E611C	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-03-SOC	E611C	20-Oct-2020	17-Nov-2020	40 days	28 days	✓	19-Nov-2020	11 days	1 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-01-SOA	E611C	18-Oct-2020	17-Nov-2020	40 days	29 days	✓	19-Nov-2020	10 days	1 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial Dup 1	E611C	26-Oct-2020	18-Nov-2020	42 days	25 days	✓	19-Nov-2020	16 days	0 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial Dup 2	E611C	26-Oct-2020	18-Nov-2020	42 days	25 days	✓	19-Nov-2020	17 days	0 days	✓
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20BH-01-SOA	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20BH-01-SOB	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20BH-01-SOE	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-01-SOA	E611C	18-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-01-SOC	E611C	19-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-02-SOB	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-02-SOE	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-02-SOF	E611C	20-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-03-SOA	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-03-SOC	E611C	20-Oct-2020	17-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial										
20MW-03-SOH	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-04-SOA	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-04-SOD	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-04-SOE	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-04-SOG	E611C	21-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial Dup 1	E611C	26-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial Dup 2	E611C	26-Oct-2020	18-Nov-2020	----	----		19-Nov-2020	----	----	

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
BC PHC - EPH by GC-FID	E601A	112688	2	19	10.5	5.0	✓
Moisture Content by Gravimetry	E144	113849	2	27	7.4	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	112265	2	19	10.5	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	118726	2	27	7.4	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	118727	2	28	7.1	5.0	✓
Laboratory Control Samples (LCS)							
BC PHC - EPH by GC-FID	E601A	112688	4	19	21.0	10.0	✓
Moisture Content by Gravimetry	E144	113849	2	27	7.4	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	112265	4	19	21.0	10.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	118726	2	27	7.4	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	118727	2	28	7.1	5.0	✓
Method Blanks (MB)							
BC PHC - EPH by GC-FID	E601A	112688	2	19	10.5	5.0	✓
Moisture Content by Gravimetry	E144	113849	2	27	7.4	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	112265	2	19	10.5	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	118726	2	27	7.4	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	118727	2	28	7.1	5.0	✓
Matrix Spikes (MS)							
VH and F1 by Headspace GC-FID	E581.VH+F1	118726	2	27	7.4	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	118727	2	28	7.1	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
VH and F1 by Headspace GC-FID	E581.VH+F1 Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
BC PHC - EPH by GC-FID	E601A Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual (EPH in Solids by GC/FID) (mod)	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
VOCs (BC List) by Headspace GC-MS	E611C Vancouver - Environmental	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L Vancouver - Environmental	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are extracted with hexane/acetone and analyzed by GC-MS. If reported, IACR (index of additive cancer risk, unitless) and B(a)P toxic potency equivalent (in soil concentration units) are calculated as per CCME PAH Soil Quality Guidelines fact sheet (2010) or ABT1.
VPH: VH-BTEX-Styrene	EC580A Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual (VPH in Water and Solids) (mod)	Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VH-BTEX = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene.
LEPH and HEPH: EPH-PAH	EC600A Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual (LEPH and HEPH) (mod)	Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(b+j+k)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, and Pyrene.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Methanol Extraction for Headspace Analysis	EP581 Vancouver - Environmental	Soil/Solid	EPA 5035A (mod)	VOCs in samples are extracted with methanol. Extracts are then prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **WR2001131**	Page	: 1 of 20
Amendment	: **2**		

Client	: CH2M Hill Canada Limited	Laboratory	: Whitehorse - Environmental
Contact	: Charles Shewen	Account Manager	: Edward Ngai
Address	: Nuvo Bldg, Suite 401 C, 309 Strickland St Whitehorse YT Canada Y1A 2J9	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: ----	Date Samples Received	: 23-Oct-2020 17:00
PO	:	Date Analysis Commenced	: 02-Nov-2020
C-O-C number	: 17-773503, 17-773052	Issue Date	: 23-Nov-2020 15:34
Sampler	: ----		
Site	: ----		
Quote number	: VA20-CHMH100-011		
No. of samples received	: 29		
No. of samples analysed	: 18		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia

General Comments

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

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 112689)											
WR2001131-008	20MW-02-SOB	moisture	----	E144	0.25	%	24.6	24.3	1.36%	20%	----
Physical Tests (QC Lot: 113849)											
VA20B9503-001	Anonymous	moisture	----	E144	0.25	%	20.8	20.7	0.250%	20%	----
Volatile Organic Compounds (QC Lot: 118362)											
VA20C0691-001	Anonymous	benzene	71-43-2	E611C	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		bromodichloromethane	75-27-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		bromoform	75-25-2	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		carbon tetrachloride	56-23-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chlorobenzene	108-90-7	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chloroethane	75-00-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chloroform	67-66-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chloromethane	74-87-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dibromochloromethane	124-48-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloromethane	75-09-2	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611C	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		styrene	100-42-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tetrachloroethylene	127-18-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		toluene	108-88-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 118362) - continued											
VA20C0691-001	Anonymous	trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		trichloroethylene	79-01-6	E611C	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		vinyl chloride	75-01-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 118727)											
WR2001131-017	20MW-03-SOH	benzene	71-43-2	E611C	0.0050	mg/kg	0.0124	0.0127	0.0003	Diff <2x LOR	----
		bromodichloromethane	75-27-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		bromoform	75-25-2	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		carbon tetrachloride	56-23-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chlorobenzene	108-90-7	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chloroethane	75-00-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chloroform	67-66-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chloromethane	74-87-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dibromochloromethane	124-48-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloromethane	75-09-2	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611C	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		styrene	100-42-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tetrachloroethylene	127-18-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		toluene	108-88-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 118727) - continued											
WR2001131-017	20MW-03-SOH	trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		trichloroethylene	79-01-6	E611C	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		vinyl chloride	75-01-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 112266)											
WR2001131-001	20MW-01-SOA	EPH (C10-C19)	----	E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	----
		EPH (C19-C32)	----	E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 112688)											
VA20B9779-003	Anonymous	EPH (C10-C19)	----	E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	----
		EPH (C19-C32)	----	E601A	200	mg/kg	760	580	180	Diff <2x LOR	----
Hydrocarbons (QC Lot: 118363)											
WR2001131-001	20MW-01-SOA	VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	<10	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 118726)											
VA20C0907-001	Anonymous	VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	<10	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 112265)											
WR2001131-001	20MW-01-SOA	acenaphthene	83-32-9	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		acridine	260-94-6	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		anthracene	120-12-7	E641A-L	0.0040	mg/kg	<0.0040	<0.0040	0	Diff <2x LOR	----
		benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		chrysene	218-01-9	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		fluoranthene	206-44-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		fluorene	86-73-7	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		naphthalene	91-20-3	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Polycyclic Aromatic Hydrocarbons (QC Lot: 112265) - continued											
WR2001131-001	20MW-01-SOA	phenanthrene	85-01-8	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		pyrene	129-00-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		quinoline	6027-02-7	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 112687)											
VA20B9006-001	Anonymous	acenaphthene	83-32-9	E641A-L	28.0	mg/kg	<28.0	<23.0	5.00	Diff <2x LOR	----
		acenaphthylene	208-96-8	E641A-L	7.00	mg/kg	<7.00	<9.00	2.00	Diff <2x LOR	----
		acridine	260-94-6	E641A-L	69.0	mg/kg	<69.0	<66.0	3.00	Diff <2x LOR	----
		anthracene	120-12-7	E641A-L	8.00	mg/kg	<8.00	<70.0	62.0	Diff <2x LOR	----
		benz(a)anthracene	56-55-3	E641A-L	4.00	mg/kg	<4.00	<5.00	1.00	Diff <2x LOR	----
		benzo(a)pyrene	50-32-8	E641A-L	28.0	mg/kg	<28.0	<27.0	1.00	Diff <2x LOR	----
		benzo(b+j)fluoranthene	----	E641A-L	3.90	mg/kg	<3.90	<3.50	0.400	Diff <2x LOR	----
		benzo(g,h,i)perylene	191-24-2	E641A-L	0.123	mg/kg	2.08	2.04	1.93%	50%	----
		benzo(k)fluoranthene	207-08-9	E641A-L	0.700	mg/kg	<0.700	<0.500	0.200	Diff <2x LOR	----
		chrysene	218-01-9	E641A-L	18.0	mg/kg	<18.0	<18.0	0	Diff <2x LOR	----
		dibenz(a,h)anthracene	53-70-3	E641A-L	1.80	mg/kg	<1.80	<1.90	0.100	Diff <2x LOR	----
		fluoranthene	206-44-0	E641A-L	5.00	mg/kg	<5.00	<4.00	1.00	Diff <2x LOR	----
		fluorene	86-73-7	E641A-L	0.123	mg/kg	73.3	63.9	13.7%	50%	----
		indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.500	mg/kg	<0.500	<0.500	0	Diff <2x LOR	----
		methylnaphthalene, 1-	90-12-0	E641A-L	0.123	mg/kg	514	482	6.34%	50%	----
		methylnaphthalene, 2-	91-57-6	E641A-L	0.123	mg/kg	781	724	7.51%	50%	----
		naphthalene	91-20-3	E641A-L	0.123	mg/kg	213	196	8.28%	50%	----
		phenanthrene	85-01-8	E641A-L	0.123	mg/kg	197	189	4.40%	50%	----
		pyrene	129-00-0	E641A-L	0.123	mg/kg	11.5	11.4	0.558%	50%	----
		quinoline	6027-02-7	E641A-L	7.00	mg/kg	<7.00	<7.00	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 112689)						
moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 113849)						
moisture	----	E144	0.25	%	<0.25	----
Volatile Organic Compounds (QCLot: 118362)						
benzene	71-43-2	E611C	0.005	mg/kg	<0.0050	----
bromodichloromethane	75-27-4	E611C	0.05	mg/kg	<0.050	----
bromoform	75-25-2	E611C	0.05	mg/kg	<0.050	----
carbon tetrachloride	56-23-5	E611C	0.05	mg/kg	<0.050	----
chlorobenzene	108-90-7	E611C	0.05	mg/kg	<0.050	----
chloroethane	75-00-3	E611C	0.05	mg/kg	<0.050	----
chloroform	67-66-3	E611C	0.05	mg/kg	<0.050	----
chloromethane	74-87-3	E611C	0.05	mg/kg	<0.050	----
dibromochloromethane	124-48-1	E611C	0.05	mg/kg	<0.050	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.05	mg/kg	<0.050	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.05	mg/kg	<0.050	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.05	mg/kg	<0.050	----
dichloroethane, 1,1-	75-34-3	E611C	0.05	mg/kg	<0.050	----
dichloroethane, 1,2-	107-06-2	E611C	0.05	mg/kg	<0.050	----
dichloroethylene, 1,1-	75-35-4	E611C	0.05	mg/kg	<0.050	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.05	mg/kg	<0.050	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.05	mg/kg	<0.050	----
dichloromethane	75-09-2	E611C	0.05	mg/kg	<0.050	----
dichloropropane, 1,2-	78-87-5	E611C	0.05	mg/kg	<0.050	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.05	mg/kg	<0.050	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.05	mg/kg	<0.050	----
ethylbenzene	100-41-4	E611C	0.015	mg/kg	<0.015	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.05	mg/kg	<0.050	----
styrene	100-42-5	E611C	0.05	mg/kg	<0.050	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.05	mg/kg	<0.050	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.05	mg/kg	<0.050	----
tetrachloroethylene	127-18-4	E611C	0.05	mg/kg	<0.050	----
toluene	108-88-3	E611C	0.05	mg/kg	<0.050	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 118362) - continued						
trichloroethane, 1,1,2-	79-00-5	E611C	0.05	mg/kg	<0.050	----
trichloroethylene	79-01-6	E611C	0.01	mg/kg	<0.010	----
trichlorofluoromethane	75-69-4	E611C	0.05	mg/kg	<0.050	----
vinyl chloride	75-01-4	E611C	0.05	mg/kg	<0.050	----
xylene, m+p-	179601-23-1	E611C	0.05	mg/kg	<0.050	----
xylene, o-	95-47-6	E611C	0.05	mg/kg	<0.050	----
Volatile Organic Compounds (QCLot: 118727)						
benzene	71-43-2	E611C	0.005	mg/kg	<0.0050	----
bromodichloromethane	75-27-4	E611C	0.05	mg/kg	<0.050	----
bromoform	75-25-2	E611C	0.05	mg/kg	<0.050	----
carbon tetrachloride	56-23-5	E611C	0.05	mg/kg	<0.050	----
chlorobenzene	108-90-7	E611C	0.05	mg/kg	<0.050	----
chloroethane	75-00-3	E611C	0.05	mg/kg	<0.050	----
chloroform	67-66-3	E611C	0.05	mg/kg	<0.050	----
chloromethane	74-87-3	E611C	0.05	mg/kg	<0.050	----
dibromochloromethane	124-48-1	E611C	0.05	mg/kg	<0.050	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.05	mg/kg	<0.050	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.05	mg/kg	<0.050	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.05	mg/kg	<0.050	----
dichloroethane, 1,1-	75-34-3	E611C	0.05	mg/kg	<0.050	----
dichloroethane, 1,2-	107-06-2	E611C	0.05	mg/kg	<0.050	----
dichloroethylene, 1,1-	75-35-4	E611C	0.05	mg/kg	<0.050	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.05	mg/kg	<0.050	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.05	mg/kg	<0.050	----
dichloromethane	75-09-2	E611C	0.05	mg/kg	<0.050	----
dichloropropane, 1,2-	78-87-5	E611C	0.05	mg/kg	<0.050	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.05	mg/kg	<0.050	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.05	mg/kg	<0.050	----
ethylbenzene	100-41-4	E611C	0.015	mg/kg	<0.015	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.05	mg/kg	<0.050	----
styrene	100-42-5	E611C	0.05	mg/kg	<0.050	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.05	mg/kg	<0.050	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.05	mg/kg	<0.050	----
tetrachloroethylene	127-18-4	E611C	0.05	mg/kg	<0.050	----
toluene	108-88-3	E611C	0.05	mg/kg	<0.050	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 118727) - continued						
trichloroethane, 1,1,2-	79-00-5	E611C	0.05	mg/kg	<0.050	----
trichloroethylene	79-01-6	E611C	0.01	mg/kg	<0.010	----
trichlorofluoromethane	75-69-4	E611C	0.05	mg/kg	<0.050	----
vinyl chloride	75-01-4	E611C	0.05	mg/kg	<0.050	----
xylene, m+p-	179601-23-1	E611C	0.05	mg/kg	<0.050	----
xylene, o-	95-47-6	E611C	0.05	mg/kg	<0.050	----
Hydrocarbons (QCLot: 112266)						
EPH (C10-C19)	----	E601A	200	mg/kg	<200	----
EPH (C19-C32)	----	E601A	200	mg/kg	<200	----
Hydrocarbons (QCLot: 112688)						
EPH (C10-C19)	----	E601A	200	mg/kg	<200	----
					<200	----
EPH (C19-C32)	----	E601A	200	mg/kg	<200	----
Hydrocarbons (QCLot: 118363)						
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	----
Hydrocarbons (QCLot: 118726)						
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	----
Polycyclic Aromatic Hydrocarbons (QCLot: 112265)						
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	<0.0050	----
					<0.0050	----
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	<0.0050	----
acridine	260-94-6	E641A-L	0.01	mg/kg	<0.010	----
anthracene	120-12-7	E641A-L	0.004	mg/kg	<0.0040	----
					<0.0040	----
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	<0.010	----
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	<0.010	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	<0.010	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	<0.010	----
chrysene	218-01-9	E641A-L	0.01	mg/kg	<0.010	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	<0.0050	----
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	<0.010	----
fluorene	86-73-7	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	<0.010	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 112265) - continued						
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	<0.010	----
naphthalene	91-20-3	E641A-L	0.01	mg/kg	<0.010	----
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
pyrene	129-00-0	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
quinoline	6027-02-7	E641A-L	0.01	mg/kg	<0.010	----
Polycyclic Aromatic Hydrocarbons (QCLot: 112687)						
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	<0.0050	----
					<0.0050	----
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	<0.0050	----
acridine	260-94-6	E641A-L	0.01	mg/kg	<0.010	----
anthracene	120-12-7	E641A-L	0.004	mg/kg	<0.0040	----
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	<0.010	----
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	<0.010	----
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	<0.010	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
chrysene	218-01-9	E641A-L	0.01	mg/kg	<0.010	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	<0.0050	----
					<0.0050	----
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
fluorene	86-73-7	E641A-L	0.01	mg/kg	<0.010	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	<0.010	----
naphthalene	91-20-3	E641A-L	0.01	mg/kg	<0.010	----
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	<0.010	----
pyrene	129-00-0	E641A-L	0.01	mg/kg	<0.010	----
quinoline	6027-02-7	E641A-L	0.01	mg/kg	<0.010	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 112689)									
moisture	----	E144	0.25	%	50 %	102	90.0	110	----
Physical Tests (QCLot: 113849)									
moisture	----	E144	0.25	%	50 %	101	90.0	110	----
Volatile Organic Compounds (QCLot: 118362)									
benzene	71-43-2	E611C	0.005	mg/kg	2.5 mg/kg	110	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.05	mg/kg	2.5 mg/kg	116	70.0	130	----
bromoform	75-25-2	E611C	0.05	mg/kg	2.5 mg/kg	107	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.05	mg/kg	2.5 mg/kg	94.6	70.0	130	----
chlorobenzene	108-90-7	E611C	0.05	mg/kg	2.5 mg/kg	101	70.0	130	----
chloroethane	75-00-3	E611C	0.05	mg/kg	2.5 mg/kg	95.0	60.0	140	----
chloroform	67-66-3	E611C	0.05	mg/kg	2.5 mg/kg	105	70.0	130	----
chloromethane	74-87-3	E611C	0.05	mg/kg	2.5 mg/kg	86.9	60.0	140	----
dibromochloromethane	124-48-1	E611C	0.05	mg/kg	2.5 mg/kg	106	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.05	mg/kg	2.5 mg/kg	104	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.05	mg/kg	2.5 mg/kg	101	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.05	mg/kg	2.5 mg/kg	102	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.05	mg/kg	2.5 mg/kg	92.4	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.05	mg/kg	2.5 mg/kg	113	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.05	mg/kg	2.5 mg/kg	94.4	70.0	130	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.05	mg/kg	2.5 mg/kg	102	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.05	mg/kg	2.5 mg/kg	95.0	70.0	130	----
dichloromethane	75-09-2	E611C	0.05	mg/kg	2.5 mg/kg	108	60.0	140	----
dichloropropane, 1,2-	78-87-5	E611C	0.05	mg/kg	2.5 mg/kg	102	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.05	mg/kg	2.5 mg/kg	93.7	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.05	mg/kg	2.5 mg/kg	# 64.4	70.0	130	LCS-ND
ethylbenzene	100-41-4	E611C	0.015	mg/kg	2.5 mg/kg	98.5	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.05	mg/kg	2.5 mg/kg	109	70.0	130	----
styrene	100-42-5	E611C	0.05	mg/kg	2.5 mg/kg	105	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.05	mg/kg	2.5 mg/kg	91.7	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.05	mg/kg	2.5 mg/kg	105	70.0	130	----
tetrachloroethylene	127-18-4	E611C	0.05	mg/kg	2.5 mg/kg	91.6	70.0	130	----
toluene	108-88-3	E611C	0.05	mg/kg	2.5 mg/kg	95.6	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.05	mg/kg	2.5 mg/kg	85.0	70.0	130	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 118362) - continued									
trichloroethane, 1,1,2-	79-00-5	E611C	0.05	mg/kg	2.5 mg/kg	104	70.0	130	----
trichloroethylene	79-01-6	E611C	0.01	mg/kg	2.5 mg/kg	110	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.05	mg/kg	2.5 mg/kg	110	60.0	140	----
vinyl chloride	75-01-4	E611C	0.05	mg/kg	2.5 mg/kg	89.8	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.05	mg/kg	5 mg/kg	100	70.0	130	----
xylene, o-	95-47-6	E611C	0.05	mg/kg	2.5 mg/kg	102	70.0	130	----
Volatile Organic Compounds (QCLot: 118727)									
benzene	71-43-2	E611C	0.005	mg/kg	2.5 mg/kg	102	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.05	mg/kg	2.5 mg/kg	112	70.0	130	----
bromoform	75-25-2	E611C	0.05	mg/kg	2.5 mg/kg	114	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.05	mg/kg	2.5 mg/kg	92.4	70.0	130	----
chlorobenzene	108-90-7	E611C	0.05	mg/kg	2.5 mg/kg	98.9	70.0	130	----
chloroethane	75-00-3	E611C	0.05	mg/kg	2.5 mg/kg	89.3	60.0	140	----
chloroform	67-66-3	E611C	0.05	mg/kg	2.5 mg/kg	104	70.0	130	----
chloromethane	74-87-3	E611C	0.05	mg/kg	2.5 mg/kg	79.5	60.0	140	----
dibromochloromethane	124-48-1	E611C	0.05	mg/kg	2.5 mg/kg	113	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.05	mg/kg	2.5 mg/kg	100	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.05	mg/kg	2.5 mg/kg	93.0	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.05	mg/kg	2.5 mg/kg	93.2	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.05	mg/kg	2.5 mg/kg	91.0	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.05	mg/kg	2.5 mg/kg	106	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.05	mg/kg	2.5 mg/kg	88.3	70.0	130	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.05	mg/kg	2.5 mg/kg	94.0	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.05	mg/kg	2.5 mg/kg	82.6	70.0	130	----
dichloromethane	75-09-2	E611C	0.05	mg/kg	2.5 mg/kg	99.0	60.0	140	----
dichloropropane, 1,2-	78-87-5	E611C	0.05	mg/kg	2.5 mg/kg	97.2	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.05	mg/kg	2.5 mg/kg	77.1	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.05	mg/kg	2.5 mg/kg	# 58.4	70.0	130	LCS-ND
ethylbenzene	100-41-4	E611C	0.015	mg/kg	2.5 mg/kg	97.4	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.05	mg/kg	2.5 mg/kg	108	70.0	130	----
styrene	100-42-5	E611C	0.05	mg/kg	2.5 mg/kg	103	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.05	mg/kg	2.5 mg/kg	97.7	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.05	mg/kg	2.5 mg/kg	109	70.0	130	----
tetrachloroethylene	127-18-4	E611C	0.05	mg/kg	2.5 mg/kg	85.1	70.0	130	----
toluene	108-88-3	E611C	0.05	mg/kg	2.5 mg/kg	84.8	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.05	mg/kg	2.5 mg/kg	84.4	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.05	mg/kg	2.5 mg/kg	106	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 118727) - continued									
trichloroethylene	79-01-6	E611C	0.01	mg/kg	2.5 mg/kg	98.4	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.05	mg/kg	2.5 mg/kg	122	60.0	140	----
vinyl chloride	75-01-4	E611C	0.05	mg/kg	2.5 mg/kg	82.9	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.05	mg/kg	5 mg/kg	96.6	70.0	130	----
xylene, o-	95-47-6	E611C	0.05	mg/kg	2.5 mg/kg	101	70.0	130	----
Hydrocarbons (QCLot: 112266)									
EPH (C10-C19)	----	E601A	200	mg/kg	1134.37 mg/kg	109	70.0	130	----
EPH (C19-C32)	----	E601A	200	mg/kg	575.98 mg/kg	111	70.0	130	----
Hydrocarbons (QCLot: 112688)									
EPH (C10-C19)	----	E601A	200	mg/kg	1134.37 mg/kg	108	70.0	130	----
					7113 mg/kg	106	70.0	130	----
EPH (C19-C32)	----	E601A	200	mg/kg	575.98 mg/kg	111	70.0	130	----
Hydrocarbons (QCLot: 118363)									
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	85.8 mg/kg	73.5	70.0	130	----
Hydrocarbons (QCLot: 118726)									
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	85.8 mg/kg	105	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 112265)									
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	90.3	60.0	130	----
					0.638 mg/kg	93.1	60.0	130	----
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.5 mg/kg	90.5	60.0	130	----
acridine	260-94-6	E641A-L	0.01	mg/kg	0.5 mg/kg	96.2	60.0	130	----
anthracene	120-12-7	E641A-L	0.004	mg/kg	0.5 mg/kg	96.8	60.0	130	----
					0.32 mg/kg	108	60.0	130	----
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	0.5 mg/kg	88.9	60.0	130	----
					0.545 mg/kg	95.0	60.0	130	----
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	0.5 mg/kg	97.1	60.0	130	----
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	0.5 mg/kg	93.5	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.5 mg/kg	92.1	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	0.5 mg/kg	91.2	60.0	130	----
chrysene	218-01-9	E641A-L	0.01	mg/kg	0.5 mg/kg	84.7	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	0.5 mg/kg	92.0	60.0	130	----
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	0.5 mg/kg	93.7	60.0	130	----
fluorene	86-73-7	E641A-L	0.01	mg/kg	0.5 mg/kg	94.9	60.0	130	----
					0.989 mg/kg	94.7	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	0.5 mg/kg	95.4	60.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 112265) - continued									
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.5 mg/kg	80.6	60.0	130	----
					1.256 mg/kg	88.0	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	79.6	60.0	130	----
naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	67.0	50.0	130	----
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	0.5 mg/kg	95.9	60.0	130	----
					1.13 mg/kg	94.9	60.0	130	----
pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	99.1	60.0	130	----
					1.325 mg/kg	97.6	60.0	130	----
quinoline	6027-02-7	E641A-L	0.01	mg/kg	0.5 mg/kg	79.5	60.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 112687)									
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	87.0	60.0	130	----
					0.638 mg/kg	97.0	60.0	130	----
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.5 mg/kg	90.3	60.0	130	----
acridine	260-94-6	E641A-L	0.01	mg/kg	0.5 mg/kg	94.0	60.0	130	----
anthracene	120-12-7	E641A-L	0.004	mg/kg	0.5 mg/kg	95.8	60.0	130	----
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	0.5 mg/kg	80.9	60.0	130	----
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	0.5 mg/kg	87.3	60.0	130	----
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	0.5 mg/kg	84.2	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.5 mg/kg	79.6	60.0	130	----
					0.377 mg/kg	86.8	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	0.5 mg/kg	87.2	60.0	130	----
					0.34 mg/kg	101	60.0	130	----
chrysene	218-01-9	E641A-L	0.01	mg/kg	0.5 mg/kg	83.4	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	0.5 mg/kg	92.7	60.0	130	----
					1.196 mg/kg	94.5	60.0	130	----
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	0.5 mg/kg	90.0	60.0	130	----
					1.757 mg/kg	95.5	60.0	130	----
fluorene	86-73-7	E641A-L	0.01	mg/kg	0.5 mg/kg	92.4	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	0.5 mg/kg	87.0	60.0	130	----
					0.445 mg/kg	91.2	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.5 mg/kg	95.6	60.0	130	----
					1.256 mg/kg	96.4	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	80.8	60.0	130	----
naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	86.0	50.0	130	----
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	0.5 mg/kg	94.9	60.0	130	----
pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	95.2	60.0	130	----
quinoline	6027-02-7	E641A-L	0.01	mg/kg	0.5 mg/kg	88.2	60.0	130	----

Qualifiers

Qualifier	Description
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.

Matrix Spike (MS) Report

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

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 118362)										
VA20C0691-003	Anonymous	benzene	71-43-2	E611C	2.02 mg/kg	3.125 mg/kg	99.9	60.0	140	----
		bromodichloromethane	75-27-4	E611C	2.17 mg/kg	3.125 mg/kg	107	60.0	140	----
		bromoform	75-25-2	E611C	2.19 mg/kg	3.125 mg/kg	108	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	1.73 mg/kg	3.125 mg/kg	85.2	60.0	140	----
		chlorobenzene	108-90-7	E611C	1.94 mg/kg	3.125 mg/kg	95.6	60.0	140	----
		chloroethane	75-00-3	E611C	1.82 mg/kg	3.125 mg/kg	89.5	60.0	140	----
		chloroform	67-66-3	E611C	1.95 mg/kg	3.125 mg/kg	96.0	60.0	140	----
		chloromethane	74-87-3	E611C	1.76 mg/kg	3.125 mg/kg	87.0	60.0	140	----
		dibromochloromethane	124-48-1	E611C	2.15 mg/kg	3.125 mg/kg	106	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	1.99 mg/kg	3.125 mg/kg	98.0	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	1.92 mg/kg	3.125 mg/kg	94.5	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	1.94 mg/kg	3.125 mg/kg	95.8	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	1.71 mg/kg	3.125 mg/kg	84.4	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	2.14 mg/kg	3.125 mg/kg	105	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611C	1.75 mg/kg	3.125 mg/kg	86.3	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	1.88 mg/kg	3.125 mg/kg	92.7	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	1.75 mg/kg	3.125 mg/kg	86.2	60.0	140	----
		dichloromethane	75-09-2	E611C	1.99 mg/kg	3.125 mg/kg	98.0	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	1.88 mg/kg	3.125 mg/kg	92.8	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	1.73 mg/kg	3.125 mg/kg	85.5	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	1.29 mg/kg	3.125 mg/kg	63.6	60.0	140	----
		ethylbenzene	100-41-4	E611C	1.89 mg/kg	3.125 mg/kg	93.1	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	2.15 mg/kg	3.125 mg/kg	106	60.0	140	----
		styrene	100-42-5	E611C	2.02 mg/kg	3.125 mg/kg	99.6	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	1.79 mg/kg	3.125 mg/kg	88.5	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	2.08 mg/kg	3.125 mg/kg	102	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	1.70 mg/kg	3.125 mg/kg	83.7	60.0	140	----
		toluene	108-88-3	E611C	1.83 mg/kg	3.125 mg/kg	90.3	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	1.56 mg/kg	3.125 mg/kg	76.7	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	2.06 mg/kg	3.125 mg/kg	101	60.0	140	----
		trichloroethylene	79-01-6	E611C	2.00 mg/kg	3.125 mg/kg	98.4	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	2.36 mg/kg	3.125 mg/kg	116	60.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 118362) - continued										
VA20C0691-003	Anonymous	vinyl chloride	75-01-4	E611C	1.78 mg/kg	3.125 mg/kg	87.8	60.0	140	----
		xylene, m+p-	179601-23-1	E611C	3.80 mg/kg	6.25 mg/kg	93.8	60.0	140	----
		xylene, o-	95-47-6	E611C	1.94 mg/kg	3.125 mg/kg	95.8	60.0	140	----
Volatile Organic Compounds (QCLot: 118727)										
WR2001131-018	20MW-04-SOA	benzene	71-43-2	E611C	3.96 mg/kg	3.125 mg/kg	97.6	60.0	140	----
		bromodichloromethane	75-27-4	E611C	4.21 mg/kg	3.125 mg/kg	104	60.0	140	----
		bromoform	75-25-2	E611C	4.33 mg/kg	3.125 mg/kg	107	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	3.63 mg/kg	3.125 mg/kg	89.4	60.0	140	----
		chlorobenzene	108-90-7	E611C	3.96 mg/kg	3.125 mg/kg	97.6	60.0	140	----
		chloroethane	75-00-3	E611C	3.43 mg/kg	3.125 mg/kg	84.5	60.0	140	----
		chloroform	67-66-3	E611C	3.95 mg/kg	3.125 mg/kg	97.2	60.0	140	----
		chloromethane	74-87-3	E611C	3.11 mg/kg	3.125 mg/kg	76.6	60.0	140	----
		dibromochloromethane	124-48-1	E611C	4.49 mg/kg	3.125 mg/kg	110	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	3.82 mg/kg	3.125 mg/kg	94.0	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	3.51 mg/kg	3.125 mg/kg	86.5	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	3.47 mg/kg	3.125 mg/kg	85.4	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	3.56 mg/kg	3.125 mg/kg	87.6	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	4.00 mg/kg	3.125 mg/kg	98.6	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611C	3.40 mg/kg	3.125 mg/kg	83.6	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	3.58 mg/kg	3.125 mg/kg	88.1	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	3.08 mg/kg	3.125 mg/kg	75.9	60.0	140	----
		dichloromethane	75-09-2	E611C	3.83 mg/kg	3.125 mg/kg	94.3	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	3.64 mg/kg	3.125 mg/kg	89.6	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	2.84 mg/kg	3.125 mg/kg	70.0	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	2.46 mg/kg	3.125 mg/kg	60.6	60.0	140	----
		ethylbenzene	100-41-4	E611C	3.96 mg/kg	3.125 mg/kg	97.6	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	4.15 mg/kg	3.125 mg/kg	102	60.0	140	----
		styrene	100-42-5	E611C	4.07 mg/kg	3.125 mg/kg	100	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	3.90 mg/kg	3.125 mg/kg	96.2	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	4.05 mg/kg	3.125 mg/kg	99.6	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	3.52 mg/kg	3.125 mg/kg	86.6	60.0	140	----
		toluene	108-88-3	E611C	3.86 mg/kg	3.125 mg/kg	95.0	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	3.28 mg/kg	3.125 mg/kg	80.8	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	4.22 mg/kg	3.125 mg/kg	104	60.0	140	----
		trichloroethylene	79-01-6	E611C	3.75 mg/kg	3.125 mg/kg	92.3	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	4.62 mg/kg	3.125 mg/kg	114	60.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 118727) - continued										
WR2001131-018	20MW-04-SOA	vinyl chloride	75-01-4	E611C	3.24 mg/kg	3.125 mg/kg	79.9	60.0	140	----
		xylene, m+p-	179601-23-1	E611C	7.81 mg/kg	6.25 mg/kg	96.1	60.0	140	----
		xylene, o-	95-47-6	E611C	4.10 mg/kg	3.125 mg/kg	101	60.0	140	----
Hydrocarbons (QCLot: 118363)										
WR2001131-003	20MW-01-SOC	VHs (C6-C10)	----	E581.VH+F1	136 mg/kg	171.9 mg/kg	90.4	60.0	140	----
Hydrocarbons (QCLot: 118726)										
VA20C0913-001	Anonymous	VHs (C6-C10)	----	E581.VH+F1	521 mg/kg	171.9 mg/kg	91.3	60.0	140	----

Reference Material (RM) Report

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

Sub-Matrix: **Soil/Solid**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Hydrocarbons (QCLot: 112266)									
QC-112266-003	Petroleum Hydrocarbon IRM	EPH (C10-C19)	----	E601A	7113 mg/kg	108	70.0	130	----
QC-112266-003	Petroleum Hydrocarbon IRM	EPH (C19-C32)	----	E601A	10183 mg/kg	106	70.0	130	----
Hydrocarbons (QCLot: 112688)									
QC-112688-003	Petroleum Hydrocarbon IRM	EPH (C19-C32)	----	E601A	10183 mg/kg	106	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 112265)									
QC-112265-003	RM	acenaphthylene	208-96-8	E641A-L	0.2 mg/kg	112	60.0	130	----
QC-112265-003	RM	benzo(a)pyrene	50-32-8	E641A-L	0.135 mg/kg	110	60.0	130	----
QC-112265-003	RM	benzo(b+j)fluoranthene	----	E641A-L	0.793 mg/kg	97.9	60.0	130	----
QC-112265-003	RM	benzo(g,h,i)perylene	191-24-2	E641A-L	0.377 mg/kg	99.0	60.0	130	----
QC-112265-003	RM	benzo(k)fluoranthene	207-08-9	E641A-L	0.34 mg/kg	96.5	60.0	130	----
QC-112265-003	RM	chrysene	218-01-9	E641A-L	0.666 mg/kg	97.0	60.0	130	----
QC-112265-003	RM	dibenz(a,h)anthracene	53-70-3	E641A-L	1.196 mg/kg	99.2	60.0	130	----
QC-112265-003	RM	fluoranthene	206-44-0	E641A-L	1.757 mg/kg	93.8	60.0	130	----
QC-112265-003	RM	indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.445 mg/kg	98.4	60.0	130	----
QC-112265-003	RM	methylnaphthalene, 2-	91-57-6	E641A-L	1.088 mg/kg	86.3	60.0	130	----
QC-112265-003	RM	naphthalene	91-20-3	E641A-L	1.03 mg/kg	87.1	50.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 112687)									
QC-112687-003	RM	acenaphthylene	208-96-8	E641A-L	0.2 mg/kg	102	60.0	130	----
QC-112687-003	RM	anthracene	120-12-7	E641A-L	0.32 mg/kg	110	60.0	130	----
QC-112687-003	RM	benz(a)anthracene	56-55-3	E641A-L	0.545 mg/kg	97.4	60.0	130	----
QC-112687-003	RM	benzo(a)pyrene	50-32-8	E641A-L	0.135 mg/kg	104	60.0	130	----
QC-112687-003	RM	benzo(b+j)fluoranthene	----	E641A-L	0.793 mg/kg	95.8	60.0	130	----
QC-112687-003	RM	chrysene	218-01-9	E641A-L	0.666 mg/kg	102	60.0	130	----
QC-112687-003	RM	fluorene	86-73-7	E641A-L	0.989 mg/kg	99.4	60.0	130	----
QC-112687-003	RM	methylnaphthalene, 2-	91-57-6	E641A-L	1.088 mg/kg	100	60.0	130	----
QC-112687-003	RM	naphthalene	91-20-3	E641A-L	1.03 mg/kg	99.6	50.0	130	----
QC-112687-003	RM	phenanthrene	85-01-8	E641A-L	1.13 mg/kg	99.9	60.0	130	----

Sub-Matrix: **Soil/Solid**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 112687) - continued									
QC-112687-003	RM	pyrene	129-00-0	E641A-L	1.325 mg/kg	97.7	60.0	130	----

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 - 773503

Page 1 of 2

Environmental Division
Whitehorse
Work Order Reference
WR2001131
Telephone : +1 867 668 6689

Report To	Contact and company name below will appear on the final report
Company:	Jacobs Engineering
Contact:	Chn at Shewm
Phone:	867 334-8481
Company address below will appear on the final report	
Street:	
City/Province:	
Postal Code:	

Invoice To	
Same as Report To	[X] YES [ ] NO
Copy of Invoice with Report	[ ] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: [ ] PDF [ ] EXCEL [ ] EDD (DIGITAL)
Quality Control (QC) Report with Report [ ] YES [ ] NO
[ ] Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: [ ] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax
Email 2
Email 3

Invoice Distribution

Select Invoice Distribution: [ ] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax
Email 2

Select Service Level Below - Contac...

Regular [R] [ ] Standard TAT if r...
PRIORITY (Business Days): 4 day [P4-20%] [ ] 3 day [P3-25%] [ ] 2 day [P2-50%] [ ]
EMERGENCY
Date and Time Required for all E&P TATs:
For tests that can not be performed according to the servic...
Indicate Filtered (F), Preserved...

Project Information

ALS Account # / Quote #:	
Job #:	CE798800
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only):

ALS Contact:

Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	20MW-01-SOA	19/10	17:00	Soil	3	X	
	20MW-01-SOB	19/10	17:10	↑		↑	
	20MW-01-SOC	19/10	17:15				
	20MW-01-SOD	19/10	17:40				
	20MW-01-SOE	19/10	17:45				
	20MW-01-SOF	19/10	17:50				
	20MW-02-SOA	20/10	11:05				
	20MW-02-SOB	20/10	11:15				
	20MW-02-SOC	20/10	11:30				
	20MW-02-SOD	20/10	11:31				
	20MW-02-SOE	20/10	11:50	↓		↓	
	20BH-01-SOA	20/10	13:25	Soil	3	X	

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? [ ] YES [ ] NO

Are samples for human consumption/ use? [ ] YES [ ] NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]
Ice Packs [ ] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]
Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C: 3.0°
FINAL COOLER TEMPERATURES °C:

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: [signature]	Date: 2020/10/23	Time: 17:00	Received by: D.	Date: OCT 23/20	Time: 17:00	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 - 773502

Page 2 of 2

Report To	Contact and company name below will appear on the final report
Company:	
Contact:	
Phone:	
Company address below will appear on the final report	
Street:	
City/Province:	
Postal Code:	
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax
Email 2
Email 3

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax
Email 2

Project Information

ALS Account # / Quote #:
Job #:
PO / AFE:
LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#
Major/Minor Code: Routing Code:
Requisitioner:
Location:

ALS Lab Work Order # (lab use only): **ALS Contact:** **Sampler:**

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☐ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	20BH-01-SOB	20/10	13:25		3	X	
	20BH-01-SOE	20/10	13:45				
	20MW-03-SOA	20/10	16:30				
	20MW-03-SOC	20/10	16:44				
	20MW-03-SOH	20/10	16:50				
	20MW-04-SOA	21/10	9:30				
	20MW-04-SOD	21/10	9:45				
	20MW-04-SOE	21/10	11:15				
	20MW-04-SOG	21/10	11:23				
	Dup 1						
	Dup 2						
	20MW-02-SOF	20/10	11:55		3	X	

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☐ NO
Are samples for human consumption/ use?
☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

Appendix E
Groundwater Purge Log

Location:	20MW-01	Field Team	A. Campbell	Start Time:	2020-10-22 15:22:46
Depth to Water (mBTOC)	6.31				
Depth to Bottom (mbgs):	6.34				
Well Inner Diameter (mm)	50	Borehole Inner Diameter (mm)	200		
Top of Screen (mbgs):	4.84	Bottom of Screen (mbgs):	6.34	Well Volume (L)	10.5

Sonde Model:	YSI 6920	Sonde ID:	22573
Pump Model:	Bailer	Pump ID:	NA
Water Level Meter Model	NA	Water Level Meter ID	NA

Comment: Water level meter defective. Water levels measured after sample collection using a tape measure and cut paste.

Date / Time	Volume Purged (L)	pH (pH units)	Specific Conductivity (mS/cm)	Temperature (degC)	ORP (mV)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	Turbidity (NTU)	Depth to Water (mBTOC)	Purge Flowrate (L/min)	Comment
2020-10-22 15:23:57		6.62	0.951	-0.06	93.6	6.55	44.9	845			Start monitoring field parameters on final bailer purge volume.
2020-10-22 15:27:57		6.55	0.954	-0.06	89.7	3.65	25	749.4			
2020-10-22 15:31:57		6.53	0.953	-0.06	88.7	3.18	21.8	691.3			
2020-10-22 15:35:57		6.52	0.954	-0.06	88.1	3.09	21.2	634.4			
2020-10-22 15:39:57		6.5	0.955	-0.06	88.1	3.05	20.9	617			
2020-10-22 15:43:57		6.5	0.957	-0.06	88.4	3	20.5	532			
2020-10-22 15:47:57		6.49	0.96	-0.05	89.3	2.99	20.5	518.3			
2020-10-22 15:51:57		6.48	0.983	-0.03	89.8	3.01	20.6	465.5			
2020-10-22 15:53:50	12										12 Litres purged. Collect GW sample.

Location:	20MW-02	Field Team	A. Campbell	Start Time:	2020-10-22 10:13:05	Depth to Water (mBTOC)	5.85
Well Inner Diameter (mm)	50	Borehole Inner Diameter (mm)	200			Depth to Bottom (mbgs):	5.74
Top of Screen (mbgs):	4.24	Bottom of Screen (mbgs):	5.74			Well Volume (L)	7.7

Sonde Model:	YSI 6920	Sonde ID:	22573
Pump Model:	Peristaltic / Bailer	Pump ID:	AC-02
Water Level Meter Model	NA	Water Level Meter ID	NA

Comment: Water level meter defective. Water levels measured after sample collection using a tape measure and cut paste.

Date / Time	Volume Purged (L)	pH (pH units)	Specific Conductivity (mS/cm)	Temperature (degC)	ORP (mV)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	Turbidity (NTU)	Depth to Water (mBTOC)	Purge Flowrate (L/min)	Comment
2020-10-22 10:16:03		7.58	0.193	3.99	162.8	14.3	109.1	1			Measure field parameters on purge water from final bailer volume.
2020-10-22 10:20:51		6.72	0.945	2.34	112	6.98	51.1	30.8			
2020-10-22 10:21:02		6.45	0.946	2.29	111.1	6.97	51	30.9			
2020-10-22 10:21:07		6.55	0.947	2.23	110.6	6.99	51	30.9			
2020-10-22 10:24:03											Purge water froze in tubing. Stopped purging.
2020-10-22 14:34:23											Resumed purging using a bailer.
2020-10-22 14:59:20		6.5	0.927	0.05	81.5	6.13	42.1	896.8			
2020-10-22 15:03:20		6.46	0.925	-0.02	81.1	5.5	37.7	748.5			
2020-10-22 15:19:07		6.41	0.942	-0.01	89.8	5.45	37.4	718.6			
2020-10-22 15:20:37	12										12 litres purged. Collect sample.

Location:	20MW-03	Field Team	A. Campbell	Start Time:	2020-10-22 09:24:45

Depth to Water (mBTOC)	5.83				
Depth to Bottom (mbgs):	5.89				
Well Inner Diameter (mm)	50	Borehole Inner Diameter (mm)	200		
Top of Screen (mbgs):	4.39	Bottom of Screen (mbgs):	5.89	Well Volume (L)	8.7

Sonde Model:	YSI 6920	Sonde ID:	22573
Pump Model:	Peristaltic / Bailer	Pump ID:	AC-02
Water Level Meter Model	NA	Water Level Meter ID	NA

Comment: Water level meter defective. Water levels measured after sample collection using a tape measure and cut paste.

Date / Time	Volume Purged (L)	pH (pH units)	Specific Conductivity (mS/cm)	Temperature (degC)	ORP (mV)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	Turbidity (NTU)	Depth to Water (mBTOC)	Purge Flowrate (L/min)	Comment
2020-10-22 09:27:20											Started purge 5 min ago
2020-10-22 09:27:25										0.3	
2020-10-22 09:54:25											Flow is slowed to 0.1L/min
2020-10-22 10:05:31											Purge water has frozen in tubing. Switch to purge with bailer.
2020-10-22 13:08:51		6.36	0.752	-0.05	92.6	2.88	19.8	28.4			Start measuring field parameters from final bailer purge volume.
2020-10-22 13:08:54		6.36	0.752	-0.04	92.6	2.87	19.7	28.5			
2020-10-22 13:12:54		6.28	0.752	-0.02	91.3	2.61	17.9	26.6			
2020-10-22 13:16:54		6.26	0.753	-0.08	92.2	2.62	17.9	27.9			
2020-10-22 13:20:54		6.24	0.754	-0.11	92.7	2.26	15.5	23.2			

2020-10-22 13:26:33		Purged 15L. Collect sample.
2020-10-22 13:26:38	15	

Location:	20MW-04	Field Team	A. Campbell	Start Time:	2020-10-22 13:27:23
Depth to Water (mBTOC)	6.53				
Well Inner Diameter (mm)	50	Borehole Inner Diameter (mm)	200	Depth to Bottom (mbgs):	6.36
Top of Screen (mbgs):	4.86	Bottom of Screen (mbgs):	6.36	Well Volume (L)	6.6

Sonde Model:	YSI 6920	Sonde ID:	22573
Pump Model:	Bailer	Pump ID:	NA
Water Level Meter Model	NA	Water Level Meter ID	NA

Comment: Water level meter defective. Water levels measured after sample collection using a tape measure and cut paste.

Date / Time	Volume Purged (L)	pH (pH units)	Specific Conductivity (mS/cm)	Temperature (degC)	ORP (mV)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	Turbidity (NTU)	Depth to Water (mBTOC)	Purge Flowrate (L/min)	Comment
2020-10-22 13:29:26		6.41	0.974	-0.06	88.5	6.31	43.2	784			Start measuring field parameters on purge water from final bailer volume.
2020-10-22 13:33:26		6.46	0.977	-0.06	81.7	3.14	21.5	697.9			
2020-10-22 13:40:58		6.45	0.985	-0.06	75.6	3.12	21.3	551.8			
2020-10-22 13:53:43		6.44	0.996	-0.06	70.3	3.14	21.5	432.5			
2020-10-22 13:57:43		6.43	0.996	-0.05	69.6	3.17	21.7	398.4			
2020-10-22 14:01:43		6.46	1.012	-0.07	68.2	3.23	22.1	401.7			
2020-10-22 14:05:43		6.48	1.03	-0.07	68.6	3.38	23.2	338.1			
2020-10-22 14:09:43		6.48	1.043	-0.07	69.8	3.37	23.1	310.1			
2020-10-22 14:12:08	14										14 Litres purged. Collect sample.