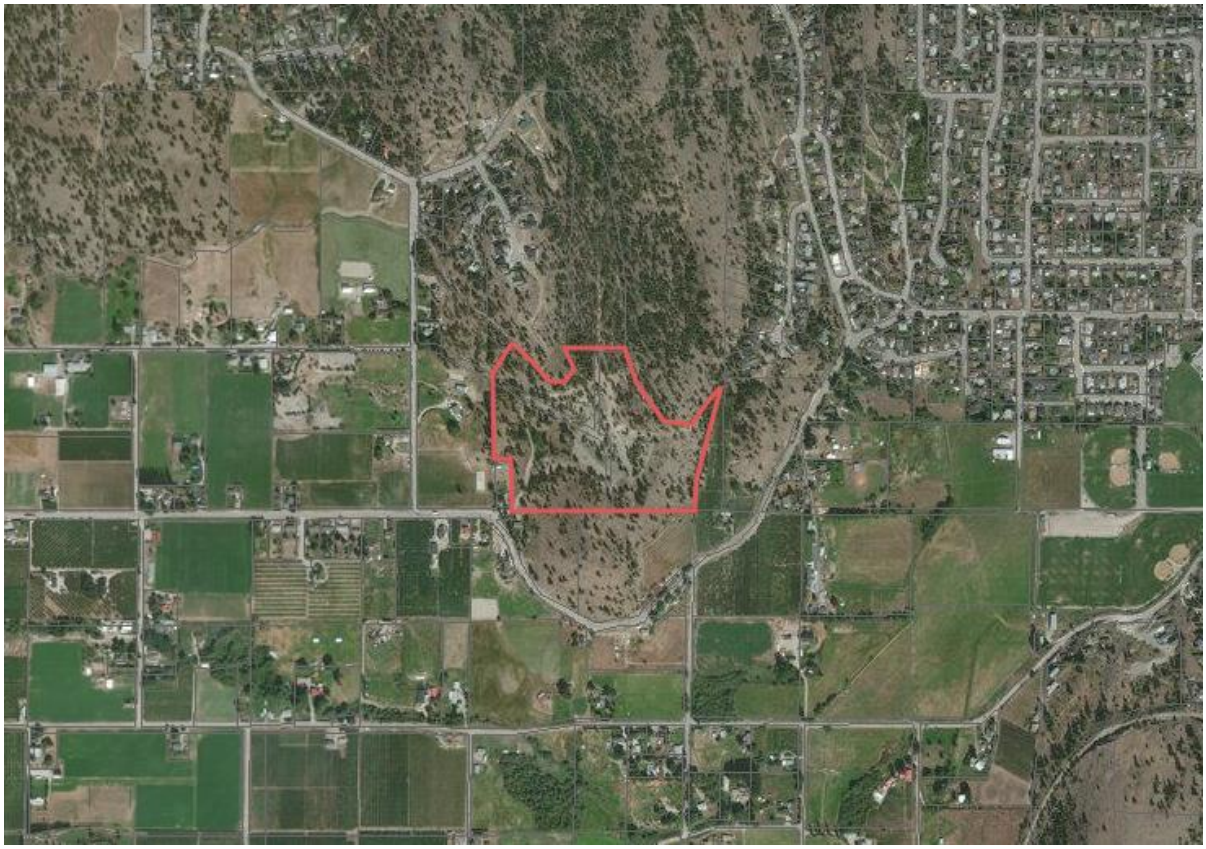
DISTRICT OF SUMMERLAND

SUMMERLAND SOLAR ARRAY

STAGE 2 PRELIMINARY SITE INVESTIGATION

FEBRUARY 20, 2020

CONFIDENTIAL



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February 20, 2020

CONFIDENTIAL

District of Summerland
13211 Henry Avenue
Summerland, BC
V0H 1Z0

Attention: Ms. Tami Rothery, Sustainability / Alternative Energy Coordinator

Subject: **Stage 2 Preliminary Site Investigation**

13500 Prairie Valley Road, 12591 Morrow Avenue, and Ottley Avenue Future Road Right-of-Way

Dear Madam:

WSP Canada Inc. is pleased to submit a PDF copy of the Stage 2 Preliminary Site Investigation report for the above-referenced property.

We trust that the enclosed report meets your current requirements. If you have any questions regarding this project, the enclosed reports, or our services, please do not hesitate to call the undersigned at (778) 796-0107.

Thank you for utilizing our professional services. We look forward to serving your future environmental and engineering needs.

Kind regards,

Jason Newington, M.Sc., PMP, P.Ag., EP
Project Manager

Encl. Stage 2 Preliminary Site Investigation

WSP ref.: 191-15279-00

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INSTITUTE OF AGROLOGISTS

No site investigation can wholly eliminate uncertainty regarding the potential for recognized environmental conditions relating to the Site. Performance of a standardized Preliminary Site Assessment protocol is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with the Site, given reasonable limits of time and cost.

This report was prepared by WSP Canada Inc. (WSP) for the District of Summerland for due diligence purposes. The disclosure of any information contained in this report is the sole responsibility of the intended recipient. The material in it reflects WSP's best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. WSP accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This limitations statement is considered part of this report.

The original of the technology-based document sent herewith has been authenticated and will be retained by WSP for a minimum of ten years. Since the file transmitted is now out of WSP's control and its integrity can no longer be ensured, no guarantee may be given with regards to any modifications made to this document.

EXECUTIVE SUMMARY

The District of Summerland (DoS and the "Client"), retained WSP Canada Inc. (WSP) to conduct a Stage 2 Preliminary Site Investigation (PSI) for the properties located on 13500 Prairie Valley Road (Lot 2, Plan KAP8353 DL 2543; PID 009-833-722), 12591 Morrow Avenue (Lot 18, Plan KAP 182, DL 2543, except plan 13580 KAP60859 KAP72843; PID 012-646-695), and a future road right-of-way at Ottley Avenue (PID 012-646-717, no other legal information) in Summerland, British Columbia (henceforth referred to as "the Site").

WSP understands that the Stage 2 PSI is required by the Client for due diligence purposes prior to the redevelopment of the Site into a solar array facility. This report has not been completed with the intention to submit to the BC Ministry of Environment & Climate Change Strategy (ENV) at this time.

This Stage 2 PSI report has been prepared in general accordance with the Canadian Mortgage Housing Corporation (CMHC) and Canadian Standards Association (CSA) guidelines and general requirements of the BC Environmental Management Act (EMA), Contaminated Sites Regulation (CSR) and associated protocols, procedures and guidelines.

SITE LOCATION AND HISTORY

The Site is comprised of three legally titled lots located southwest of downtown Summerland. The Site is approximately 25.7 acres (10.4 hectares) in size and is accessed via Prairie Valley Road.

The Site is primarily undeveloped land with a gravel haul road running from the southwest corner to the center and several walking/bike trails throughout. The remainder of the Site is either bare land or forested with a previously excavated gravel pit in the center of the lot. The land is currently unoccupied.

The Site is bounded to the south and east by forest, agricultural, and residential land. The Site is bounded to the north by forest and residential properties and to the west by residential and agricultural properties.

According to the DoS, the project site was historically a public works yard and storage area operating from 1910 to circa 1970. Known historical activities at the site included gravel crushing, cutting and bevelling of asbestos-cement pipes and electrical equipment storage.

STAGE 1 PSI

In January 2020, WSP completed a Stage 1 PSI for the Site. Based on the reviewed information and the Site reconnaissance, WSP identified Potential Contaminants of Concern (PCOCs) within four (4) on-Site Areas of Potential Environmental Concern (APECs). Information for the APECs are summarized in the following table:

Summary of Identified APECs and PCOCs

APEC NO.	APEC DESCRIPTION	REGULATED PCOCS IN SOIL AND GROUNDWATER	REGULATED PCOCS IN VAPOUR	RISK RATING*
APEC #1 (on-Site)	Area of historical transformer storage in the southeast portion of the Site where PCB's were historically emptied onto unpaved, permeable ground surface. Area was also used for storage of various items/materials including ACM pipes.	PCBs, screening for: BTEX/VPH, LEPH/HEPH/PAHs, asbestos, metals	VOCs/VPH, naphthalene if detectable in soil and/or water	Low to moderate
APEC # 2 (on-Site)	The haul road and unpaved parking area located south of the haul road were historically used as a mixing and storage area for crush and oil mixture.	BTEX/VPH, LEPH/HEPH/PAHs, metals	VOCs/VPH, naphthalene if detectable in soil and/or water	Low to moderate
APEC #3 (on-Site)	Area of copper pipe and miscellaneous metal parts storage above the flatland storage in the east portion of the Site.	Metals, screening for: BTEX/VPH, LEPH/HEPH/PAHs	VOCs/VPH, naphthalene if detectable in soil and/or water	Low to moderate
APEC #4 (on-Site)	Central flatland storage area used for a laydown area/storage of various steel pipes, concrete, crush, etc.	Metals, screening for: BTEX/VPH, LEPH/HEPH/PAHs	VOCs/VPH, naphthalene if detectable in soil and/or water	Low to moderate

Notes:

* Relative scale indicating potential for contamination to be present at the Site
  - High - Evidence of actual significant contamination
  - Moderate - Inferred potential significant contamination or evidence of minor contamination
  - Low to Moderate - Inferred potential minor contamination
  - Low - No inferred contamination

BTEX - Benzene, toluene, ethylbenzene, xylenes in soil groundwater and in vapour
VPH - Volatile petroleum hydrocarbons in soil and groundwater
VPH_V - Volatile petroleum hydrocarbons in vapour
VOC - Volatile organic compounds in soil and groundwater
VOC_V - Volatile organic compounds in vapour
LEPH - Light extractable petroleum hydrocarbons
HEPH - Heavy extractable petroleum hydrocarbons
PAHs - Polycyclic aromatic hydrocarbons

Based on the reviewed information and current Site conditions, a sub-surface investigation in the form of a Stage 2 Preliminary Site Investigation (PSI) in the identified APECs was recommended at the Site.

WSP's further recommendations were as follows:

- General housekeeping throughout the site including removal of various debris piles and disposal of the stored miscellaneous pipes.
    - Depending on the content of the debris piles, hazardous materials sampling of debris and transformer/pipe materials may be required prior to disposal.
- If any environmentally suspect fill material is encountered onsite during any future redevelopment activities, such fill should be characterized prior to disposal offsite or at a permitted facility.
- In the future, if any abandoned underground storage tanks (USTs) are encountered at the Site, such USTs should be decommissioned in accordance with the requirements of the BC Fire Code. A qualified environmental consultant should be retained to document any UST removal activities along with the characterization and disposal of any environmentally suspect material.

STAGE 2 PSI METHODOLOGY

A total of six environmental boreholes were advanced at the Site, including the installation of three groundwater monitoring wells to assess the identified APECs. Soil samples were collected and submitted for laboratory analysis of PCOCs.

STAGE 2 PSI CONCLUSIONS

Borehole Soil

Concentrations of select metals and salinity were detected in each borehole sample; however, they were all below British Columbia Contaminated Site Regulations (CSR) Parkland, Low-density Residential, High-density residential and Commercial (PL, RL_{ld}, RL_{hd}, CL) Land Use Standards in APECs #1, 2, 3 and 4.

Borehole soil analytical data, collected during the Stage 2 PSI, suggests that the soil within identified APECs on-Site is not impacted with PCOCs associated with the former public works yard and storage area on Site.

Surficial Soil

Concentrations of select metals, Light Extractable Petroleum Hydrocarbons/Heavy Extractable Petroleum Hydrocarbons/Polycyclic Aromatic Hydrocarbons (LEPH/HEPH/PAH) and Polychlorinated Biphenyls (PCBs) were detected in various surficial soil samples; however, they were all below CSR PL, RL_{ld}, RL_{hd} and CL Standards in APECs #1, 2, 3 and 4.

Surficial soil analytical data, collected during the Stage 2 PSI, suggests that the soil within identified APECs on-Site is not impacted with PCOCs associated with the former public works yard and storage area on Site.

Groundwater

Groundwater was not assessed as the installed wells did not produce a viable volume during this Stage 2 PSI.

Hazardous Materials

- Pipe mastic sampled in APEC #4 was found to be asbestos containing;
- Asbestos cement pipes were found in APEC #1;
- Metal pipes with bell and spigot joints found in the northeast portion of APEC #3 are suspected to contain asbestos-containing pipe gaskets and lead seals;
- A pipe suspected to be constructed of lead was identified on Site attached to a remnant concrete structure located along the north boundary of APEC #4;
- Crystalline silica is suspected to be present within the remnant concrete structures on the Site.

No other hazardous materials were identified during the Site visit.

RECOMMENDATIONS

Based on the results of the Stage 2 PSI, WSP recommends further assessment and housekeeping items as follows:

- An additional round of groundwater monitoring during spring freshet is recommended to assess groundwater within the installed wells and if present, sample and analyze for PCOCs.
  - Based on the soil analytical results it is unlikely that groundwater contamination is present;
- Once the groundwater monitoring wells are determined to be no longer in use, they are should be decommissioned. In the case where groundwater is encountered, they may be required to be decommissioned if no longer in use in accordance with the Groundwater Protection Regulation under the *Water Sustainability Act*.
- During any future development or excavation at the Site, if any hidden source(s) of contamination or any suspected/odorous soils are discovered, a qualified professional should be contacted prior to the source removal to initiate soil characterization and management.
- Based on the results of the Stage 2 PSI, if the Site is to be redeveloped or re-zoned, a Ministry Legal Instrument, such as a Determination of Contamination may be required.
- All asbestos-containing materials must be removed using safe work practices and procedures prior to activities that may disturb them. The WorkSafeBC publication "Safe Work Practices for Handling Asbestos" and the Occupational Health and Safety (OHS) Guideline G6.8 describes acceptable practices;
- A risk assessment for asbestos-containing materials should be performed prior to work beginning to determine the exposure risk to workers and other persons as per OHS Guideline G20.112;

- A qualified professional should be notified if any suspect asbestos-containing material or hazardous materials not identified in this report are exposed or encountered during work activities on the Site. Suspect materials should be considered hazardous pending further review;
- Proper procedures and documentation such as safe work practices, an exposure control plan, risk assessments and/or other controls must be developed for all workers prior to any activities involving destruction of materials containing crystalline silica;
- Ensure any Contractors hired to work on or near asbestos-containing materials have reviewed available surveyed material results, have all documents, procedures, training and other responsibilities completed and in place prior to commencement of work;
- Retain a copy of this report and provide it to any contractors who may be undertaking work at the Site involving hazardous materials as required by Section 20.112 of the WorkSafeBC regulations;
- And following completion of the hazardous materials removal an inspection must be conducted by a Qualified Person to confirm that the hazardous materials have all been removed and an inspection report confirming the removal must be posted on site prior to further work activities; and,
- Should regulations or on-site conditions change, a qualified professional should be retained to re-evaluate the conclusions and recommendations contained in this report.

This executive summary is intended to be read in conjunction with, and is subject to the same limitations as the remainder of this report.

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1 INTRODUCTION

The District of Summerland (DoS and the "Client"), retained WSP Canada Inc. (WSP) to conduct a Stage 2 Preliminary Site Investigation (PSI) for the properties located on 13500 Prairie Valley Road (Lot 2, Plan KAP8353 DL 2543; PID 009-833-722), 12591 Morrow Avenue (Lot 18, Plan KAP 182, DL 2543, except plan 13580 KAP60859 KAP72843; PID 012-646-695), and a future road right-of-way at Ottley Avenue (PID 012-646-717, KAP 182 REM Lot 18) in Summerland, British Columbia (henceforth referred to as "the Site").

WSP understands that the Stage 2 PSI is required by the Client for due diligence purposes prior to the redevelopment of the Site into a solar array facility. This report has not been completed with the intention to submit to the BC Ministry of Environment & Climate Change Strategy (ENV) at this time. The Site location is provided on Figure 1 – Appendix A.

This Stage 2 PSI report has been prepared in general accordance with the Canadian Mortgage Housing Corporation (CMHC) and Canadian Standards Association (CSA) guidelines and general requirements of the BC *Environmental Management Act* (EMA), Contaminated Sites Regulation (CSR) and associated protocols, procedures and guidelines.

2 SITE DESCRIPTION AND SETTING

As required by the BC ENV, the information for the Site is provided in the following table:

Table 2-1 Summary of Site Information

ITEM	INFORMATION
Common Name	None
Municipal Address	13500 Prairie Valley Road, 12591 Morrow Avenue, and none (PID 012-646-717)
Legal Description	Lot 2, Plan KAP8353 DL 2543; Lot 18, Plan KAP 182, DL 2543, except plan 13580 KAP60859 and KAP72843; No legal description.
P.I.D.	009-833-722; 012-646-695; 012-646-717
Latitude/Longitude[1]	49°35'43.64"N/ 119°42'2.31"W (Site center)

[1] Obtained from Google Earth™

2.1 LOCATION AND DESCRIPTION

The Site is comprised of three legally titled lots located southeast of downtown Summerland. The Site is approximately 25.7 acres (10.4 hectares) in size and is accessed via Prairie Valley Road.

The Site is primarily undeveloped land with a gravel haul road running from the southwest corner to the center and several walking/bike trails throughout. The remainder of the Site is either bare land or forested with a previously excavated gravel pit in the center of the lot. The land is currently unoccupied.

The Site is bounded to the south and east by forest, agricultural, and residential land. The Site is bounded to the north by forest and residential properties and to the west by residential and agricultural properties. An overview of the site and surrounding land use are shown in Figure 2, Appendix A.

2.2 TOPOGRAPHY

Based on the surface elevation data obtained from the Water Resource Atlas of British Columbia, the Site and immediate surrounding area generally slopes down from the north to the south towards Prairie Creek, with the lowest elevation in the southeast corner. A topographic plan is depicted in Figure 3, Appendix A.

The nearest aquatic receptor is an on-site stream located in the north portion that runs to the southwest portion of the Site. The stream runs south towards Prairie Creek which is located approximately 392 m south of the Site. For the purposes of this Stage 2 PSI, shallow groundwater at the Site is inferred to be generally consistent with the overall surface topography and flows in a southerly direction. Further hydrogeological studies would be required to confirm actual groundwater flow direction.

2.3 SURFICIAL GEOLOGY

The surficial sediments in the vicinity of the Site, as identified by the Geological Survey of Canada are Glaciolacustrine Deposits (GLo). These offshore sediments are comprised mainly of clay, silt, and sand with minor traces of gravel.

2.4 SURFACE DRAINAGE AND HYDROGEOLOGY

At the time of the Stage 1 visit, the Site was undeveloped and there were no buildings present. The majority of surface water runoff from unpaved areas is anticipated to infiltrate into the underlying soils or evaporate. In the southwest corner there is a small portion of paved road (approximately 0.15 ha). Surface water runoff from this area is anticipated to flow into nearby ditches and infiltrate into the underlying soils.

Shallow local groundwater can be influenced by many factors such as underground utilities, building foundations, topography and fill material/soil type. Based on general Site and immediate surrounding topography, WSP infers that the immediate shallow local groundwater flows towards the south.

2.5 AQUIFERS AND WATER WELL DATABASE

The east end of the Site is underlain by a mapped aquifer, which is considered to have moderate demand, high productivity, and moderate vulnerability[2]. The following table provides details of the aquifer in the area of the Site.

Table 2-2 Aquifer Characterization

NAME	DESCRIPTION / LOCATION	MATERIALS	LITHOSTRATOGRAPHIC UNIT	CLASSIFICATION	SIZE (KM2)	TYPE OF WATER USE
300 IIC (10)	Faulder (Enesas Creek)	Bedrock	N/A	11C	55.1	Domestic

The existence and location of groundwater wells near the Site was searched on the BC ENV Water Resources Atlas database. The online database of the Water Management Division of BC ENV indicated that there are no known water wells located on-Site and two (2) water wells located within 500 m of the Site. Both off-Site wells are listed as private domestic use. The results of the BC ENV water well search are included in Figure 4, Appendix A.

2.6 PRECIPITATION RECORDS

The nearest climate station to the Site is known as "Summerland CS"; however, there was no available data for this station. The next closest station is known as "Penticton A". According to Environment Canada Canadian Climate Normals[3] , the mean annual rainfall for the climate station is 298.5 mm and the mean annual precipitation is 346 mm. The greatest amount of precipitation occurs during the months of May and June, while the driest months are February and March.

[2] BC ENV web site, "BC Water Resources Atlas" aquifer data search December 2019.
[3] Environment Canada. *Canadian Climate Normals 1981-2010*. http://climate.weatheroffice.ec.gc.ca/climate_normals/index_e.html

3 PREVIOUS ENVIRONMENTAL REPORTS

Apart from a 2020 WSP Stage 1 PSI[4], there are no known previous environmental reports for the Site.

4 SITE CURRENT INFORMATION

In January 2020, WSP completed a Stage 1 PSI for the Site. Based on the information reviewed, four (4) on-Site areas of potential environmental concern (APECs) and associated potential contaminants of concern (PCOCs) were identified as follows:

Table 4-1 Summary of APECs and PCOCs (WSP, 2020)

APEC NO.	APEC DESCRIPTION	REGULATED PCOCS IN SOIL AND GROUNDWATER	REGULATED PCOCS IN VAPOUR	RISK RATING*
APEC #1 (on-Site)	Area of historical transformer storage in the southeast portion of the Site where PCB's were historically emptied onto unpaved, permeable ground surface. Area was also used for storage of various items/materials including ACM pipes.	PCBs, screening for: BTEX/VPH, LEPH/HEPH/PAHs, asbestos, metals	VOCs/VPH, naphthalene if detectable in soil and/or water	Low to moderate
APEC # 2 (on-Site)	The haul road and unpaved parking area located south of the haul road were historically used as a mixing and storage area for crush and oil mixture.	BTEX/VPH, LEPH/HEPH/PAHs, metals	VOCs/VPH, naphthalene if detectable in soil and/or water	Low to moderate
APEC #3 (on-Site)	Area of copper pipe and miscellaneous metal parts storage above the flatland storage in the east portion of the Site.	Metals, screening for: BTEX/VPH, LEPH/HEPH/PAHs	VOCs/VPH, naphthalene if detectable in soil and/or water	Low to moderate
APEC #4 (on-Site)	Central flatland storage area used for a laydown area/storage of various steel pipes, concrete, crush, etc.	Metals, screening for: BTEX/VPH, LEPH/HEPH/PAHs	VOCs/VPH, naphthalene if detectable in soil and/or water	Low to moderate

Notes:
* Relative scale indicating potential for contamination to be present at the Site

[4] Summerland Solar Array – Stage 1 Preliminary Site Investigation (2020). WSP Canada Inc. Project Reference #191-15279-00.

High - Evidence of actual significant contamination
Moderate - Inferred potential significant contamination or evidence of minor contamination
Low to Moderate - Inferred potential minor contamination
Low - No inferred contamination

BTEX	- Benzene, toluene, ethylbenzene, xylenes in soil groundwater and in vapour
VPH	- Volatile petroleum hydrocarbons in soil and groundwater
VPH_v	- Volatile petroleum hydrocarbons in vapour
VOC	- Volatile organic compounds in soil and groundwater
VOC_v	- Volatile organic compounds in vapour
LEPH	- Light extractable petroleum hydrocarbons
HEPH	- Heavy extractable petroleum hydrocarbons
PAHs	- Polycyclic aromatic hydrocarbons

Based on the reviewed information and current Site conditions, a sub-surface investigation in the form of a Stage 2 PSI in the identified APECs was recommended at the Site.

WSP's further recommendations were as follows:

- General housekeeping throughout the site including removal of various debris piles and disposal of the stored miscellaneous pipes.
    - Depending on the content of the debris piles, hazardous materials sampling of debris and transformer/pipe materials may be required prior to disposal.
- If any environmentally suspect fill material is encountered onsite during any future redevelopment activities, such fill should be characterized prior to disposal offsite or at a permitted facility.
- In the future, if any abandoned underground storage tanks (USTs) are encountered at the Site, such USTs should be decommissioned in accordance with the requirements of the BC Fire Code. A qualified environmental consultant should be retained to document any UST removal activities along with the characterization and disposal of any environmentally suspect material.

5 STAGE 2 PSI PROCEDURE

5.1 OBJECTIVE

The primary objective of the Stage 2 PSI is to assess the presence or absence of soil and/or groundwater impacts and identify the potential need to assess for soil vapour impacts at the Site due to the identified APECs and PCOCs described above in Table 4-1. A APEC Location Plan is shown in Figure 5, Appendix A.

The investigation was conducted in general accordance with the BC ENV guidance documents for conducting intrusive sub-surface environmental investigations.

5.2 SCOPE OF WORK

WSP's scope of work for the Stage 2 PSI is summarized below:

- Prepare a drilling and sampling plan targeting the APECs and PCOCs identified in the Stage 1 PSI;

- Prepare a Site-specific Health and Safety plan as required by WorkSafeBC and WSP's Health and Safety program;
- Obtain appropriate District permits and licenses at least 5 days in advance of the drilling program as follows:
  - District of Summerland business license or Okanagan-Similkameen Inter-Community Mobile Business license; and
  - Permit to Perform Work within a Highway of Municipal Property.
- Complete a BC One-Call to collect information from various agencies regarding underground utility lines within the Site, prior to the drilling operation;
- Retain the services of a private utility locator to complete locating underground utilities at proposed drill locations;
- Retain the services of a drilling contractor for advancing six (6) boreholes up to a maximum of approximately 6m below grade, targeting the identified APECs with a track mounted sonic drill rig. Three (3) of the six (6) boreholes will be converted into groundwater monitoring wells;
- Collect soil samples from each borehole location at different depths depending upon the encountered stratigraphy and field measurements and observations for potential laboratory analyses for targeted PCOCs identified in the Stage 1 PSI;
- Collect samples of pipe wrap to assess for asbestos containing materials (ACMs);
- Backfill boreholes with hydrated bentonite;
- Collect surficial soil samples (15);
- Log the encountered soil stratigraphy at all the borehole locations;
- Field screen the soil samples with a photoionization detector (PID) and/or a combustible vapour detector operating in methane elimination mode;
- Restore areas damaged or disturbed by the activities;
- Develop the installed monitoring wells using a dedicated bailer or Waterra™ foot valves following well installation;
- Complete a relative horizontal survey of the monitoring wells, as well as a vertical survey of the monitoring well locations using field survey equipment;
- Complete groundwater sampling at least 24 hours following the wells development and analyse the samples for PCOCs;
- Submit soil and groundwater samples to a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA) and follows BC ENV recognized procedures for laboratory analyses; and,
- Prepare a Stage 2 PSI report summarizing the Site activities, methodology and results of the investigations and WSP's conclusions and recommendations (if any).

5.3 MODIFICATIONS TO THE SCOPE OF WORK

The above intended scope of work was completed with the following exceptions:

- Based on the results of the borehole stratigraphy and anticipated depth of groundwater, groundwater was not present within the installed monitoring wells and therefore groundwater samples were not collected or analyzed for PCOCs;
- A sonic drill rig was used to advance the boreholes based on specifications and considerations of a concurrent geotechnical assessment at the Site and based on the likelihood of encountering bedrock; and
- Suspect asbestos containing pipe wrap noted in the Stage 1 PSI was sampled and analyzed for asbestos content.

5.4 ASSESSMENT RATIONALE

The following section describes the Stage 2 PSI rationale prior to conducting the on-site field activities. Refer to Figure 6 – Appendix A for a Site plan including assessment locations.

The identified APECs #1, 2, 3 and 4 are located on site within or adjacent to former storage areas, therefore, the inferred mode of contaminant transport would be through direct soil contact (gravity) and indirect groundwater contact. Three (3) boreholes (MW19-01 – APEC 1, MW19-02 – APEC 4 and MW19-03 – APEC 2) were advanced and completed as monitoring wells. One (1) soil sample from each borehole / monitoring well was selected for analysis of PCOCs based on the APEC and method of contaminant transport.

Additionally, three (3) boreholes (BH19-04 – APEC 3, BH19-05 – APEC 4 and BH19-06 – APEC 4) were advanced to assess soil contamination in APECS #3 and 4. One (1) soil sample from each borehole was selected for analysis of PCOCs based on the APEC and method of contaminant transport.

Surficial soil samples (SS19-01 through SS19-07 - APEC 1, SS19-08 through SS19-09 – APEC 3, SS19-12 through SS19-13 – APEC 2, SS19-10, SS19-11, SS19-14 and SS19-15 – APEC 4) were collected for analyses of PCOCs based on the APEC.

Analyses of soil samples included provincially regulated PCOCs using approved analytical methods, including: LEPH, HEPH, PAHs, BTEX, VPHs, PCBs, and metals.

To provide confidence in the field data collected from the Site, a Quality Assurance/Quality Control (QA/QC) component was included in the sampling program. As per standard industry protocols, a "field duplicate" sample was collected and analysed for every approximate ten-separate media parent sample (soil and groundwater) analysed. The selected laboratory for this investigation, ALS Environmental (ALS) of Burnaby, BC, also conducts their own internal QA/QC program.

5.5 APPLICABLE STANDARDS & REGULATORY FRAMEWORK

The Site is currently zoned as Institutional (I) and is currently vacant but heavily frequented by recreational users. Based on this and the planned future use as a solar array installation site, the BC CSR soil standards for commercial land use (CL) would apply. For groundwater, the CSR Drinking Water (DW) and Freshwater Aquatic Life (AW-f) will apply. In addition, CSR Parkland (PL) and Residential (RLld and RLhd) will be compared against as requested by the District of Summerland for reference purposes.

For soil classification/disposal purposes, the BC Hazard Waste Regulation (HWR) standards/criteria would also apply to the Site. Site-specific factors that would apply at the Site are outlined in Appendix F.

6 FIELD METHODOLOGIES

The following sections describe WSP's observations and recorded data from the field work activities.

6.1 FIELD WORK SCHEDULE

6.1.1 DECEMBER 2019 DRILLING AND SURFICIAL SOIL SAMPLING PROGRAM

Prior to the subsurface investigation, a BC One Call was completed and a private utility locate was performed at the Site by Quadra Utility Locating Ltd. out of Kelowna BC and WSP on November 30, 2019.

Six (6) boreholes were advanced using a track mounted sonic drill rig operated by Mud Bay Drilling out of Kelowna, BC on December 1 and 2, 2019. Mr. Scott Rusnak of WSP was on site to supervise and monitor the drilling activities and three well installations.

Groundwater monitoring wells were installed in three locations on December 1, 2019. Monitoring was completed on December 2, 2019. All three (3) newly installed monitoring wells were dry.

Surficial soil samples were collected from fifteen (15) locations up to 30cm below grade using hand tools.

The drilling and surficial sample locations at the Site are presented in Figure 6 in Appendix A. Selected photographs captured during the investigation are provided in Appendix B.

6.2 BOREHOLE AND SURFICIAL SOIL SAMPLING

A sonic drill rig was used to advance and install the monitoring wells. Surficial soil samples at each location were collected using hand tools at depths of up to 30cm below grade. Sonic drill flights were advanced in approximately 1.5m lengths to allow for sampling and visual logging of soil constituents.

Soil logging was conducted by observing soil conditions when the soil sleeves were removed from the boreholes during drilling. The soil grab sample methodology was used to obtain samples from the sleeves. During these activities, WSP adhered to the following procedures:

- Fresh powder-free nitrile gloves were used to collect all soil samples.
- The soil samples at each borehole location were collected from soil sleeves.
- Laboratory supplied sterile 125 mL glass jars (with Teflon lids) were used to collect soil from the augers. Soil samples were also collected into a plastic bag to an approximate 50% volume. Bagged samples were sealed and temporarily stored at ambient temperature for subsequent headspace vapour measurement.
- Soils anticipated for the analysis of volatile organic compounds (BTEX and VPH) were placed into sterile glass vials with a methanol preservative.
- Sample identification, sampling date, and the project number were recorded on each sample container.
- All collected soil sample jars and vials were placed into a laboratory-supplied cooler with ice-packs.
- Soil samples were submitted to ALS Environmental located in Burnaby, BC.

Chain of custody protocol was followed during the transportation and handling of all samples. The chain of custody record included information such as: project name, shippers name, destination shipped to, sample location point, field ID number, date and time collected, sample type and analysis requested. The number of individuals handling sample containers was kept to a minimum. The analyses were conducted on select soil samples based on depth and/or similarity of material to previously identified PCOCs. ALS Environmental is accredited by the Canadian Association for Laboratory Accreditation (CALA, formerly known as CAEAL) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

6.3 GROUNDWATER WELL INSTALLATION

Monitoring wells were installed in three (3) of the boreholes (MW19-01 through MW19-03) and were constructed of new 50 mm (2 inch) diameter threaded Schedule 40 PVC pipe and consisted of 3.0 m (maximum) of slotted (0.25 mm) screen at the end of unslotted riser pipe. The annulus formed between the well pipe and the borehole wall was filled with 10/20 silica sand around the screen of the well to approximately 0.6 m above the screened section. A hydraulic seal for the well's screened section was created by using hydrated bentonite seal from approximately 0.6 m above the screen to approximately 0.15 m below grade. A J-plug was used to cap the PVC riser and encased in a flush mount protective steel casing.

6.4 GROUNDWATER SAMPLING

After the well installations, the wells were allowed to sit for at least 24 hours to allow to fully recharge. The newly installed wells were dry at the time of development. No groundwater samples were collected.

6.5 HAZARDOUS MATERIALS SURVEY

For the purposes of this survey, hazardous materials will be defined as:

- Asbestos-containing materials (ACM);
- Lead products;
- Crystalline silica; and
- Other flammable, explosive, or potentially toxic/hazardous materials.

Visual review of the Site was conducted for suspect hazardous materials. Materials typically containing suspect hazardous materials were reviewed from accessible areas. Photographs taken during the site visit are presented in Appendix B.

Asbestos Containing Materials (ACM)

The bulk sample collection frequency for suspect asbestos materials was consistent with recognized industry standards and principles of good occupational hygiene practice. The number of samples collected was based on experienced professional judgment in consideration of, but not necessarily limited to, the era of construction, and uniformity of materials, and size of area of homogeneous materials.

One (1) suspect asbestos sample was collected from pipe-wrap material, located east of MW19-02, in APEC #4.

Collected samples were placed in a labelled plastic bags and double bagged for the proposed analysis. The sample material descriptions, sample locations, and associated sample numbers were indicated on sample bags and the Chain-of-Custody (COC) forms. Chain-of-custody protocol was observed during handling and transportation of the bulk samples.

Lead Products

The Site was visually inspected for the presence of lead-containing building materials and products. No samples were collected of these materials.

Other Hazardous Materials

The Site was visually reviewed for the presence of thermostat switches, mercury arc lamps, fluorescent light ballasts, transformers, and fluorescent tubes which could contain mercury or PCBs; equipment which might contain ODS-containing halons or refrigerants; smoke detectors and exit signs which may contain RAM; potentially silica containing building materials and any stored flammable or explosive materials.

7 QUALITY ASSURANCE / QUALITY CONTROL

To provide confidence in the field data collected from the Site, a Quality Control/Quality Assurance (QA/QC) component was included in the sampling program. The field QA/QC component is summarized below. The laboratory chosen to conduct analyses on soil and groundwater samples collected during this project have their own internal QA/QC program, which is also briefly summarized below.

Table 7-1 Field & Laboratory QA/QC

Field QA/QC	Field equipment was cleaned, calibrated and maintained in good working condition. Common equipment was cleaned in the field, between each sampling location. New powder-free nitrile gloves were used for each sample collected. All tools were cleaned between samples. All sample containers were provided by the laboratory which were clean and sterile, and were appropriate for the parameters analyzed. All sample containers and lids were labelled with the consultant's name (i.e., WSP), their respective sampling location identification, date and project reference number. Samples were kept cool by storing and transporting them in a laboratory-supplied cooler with ice packs. Field duplicates were collected during the investigation program to ascertain field collection QA/QC procedures. Chain-of-custody protocol was followed.
Laboratory QA/QC	ALS routinely analyses laboratory replicates, standard reference materials and method blanks as part of its internal QA/QC program. ALS also determines matrix spike recoveries and surrogate spike recoveries. Analytical results are compared to internal data quality objectives and results not meeting their internal QA/QC criteria are flagged. The laboratory results are reviewed by the chief project chemist and results are released when the data meets the internal data quality objectives of ALS.

7.1 QA/QC FOR ANALYTICAL DATA

WSP implemented a QA/QC program to evaluate the quality of sampling and analytical testing. WSP collected and submitted blind field duplicate soil samples for analyses of PCOCs along with the other soil samples collected during the investigation program.

The results of the duplicate analyses were evaluated using a statistic called relative percentage difference (RPD). The RPD between measured concentrations of a PCOC in a sample and the measured concentrations of a PCOC in a duplicate sample was calculated as follows:

$$RPD(\%) = 100 \times ABS\left|\frac{X_1 - X_2}{(X_1 + X_2)/2}\right|$$

ABS	= Absolute Value
X_1	= Measured concentration in the original sample
X_2	= Measured concentration in the duplicate sample

The criteria for determining field sample quality assurance are adapted from the BC Field Sampling Manual (2003);

1) The ratio of duplicates to total samples should be approximately 10%,
2) Both parent and duplicate values must be greater than five times the laboratory detection limit (RDL), and
3) RPD values >20% indicate a possible problem, and > 50% indicate a definite problem, most likely either sample contamination or lack of sample representativeness.

Because analytical error increases near the laboratory detection limit (RDL or MRL), an RPD calculation should be only applied when the measured concentration in both samples is greater than five times the reported detection limit (RDL).

Furthermore, in the BC ENV on-line question/answer section titled "Standards", the BC ENV has recommended that the relative percent difference (RPD) for duplicate field samples should not exceed 1.5 times the acceptable lab RPD for the same compound.

If the RPD of duplicate samples is < 20%, then it would be concluded that the QA is acceptable. If the RPD of duplicate samples ranges from >20% to <= 50%, then reasons for higher variation should be discussed. These would typically include, for instance, natural heterogeneity. If the RPD of duplicate samples exceeds 50%, then the possibility of inadequate QA should be explicitly addressed and dealt with.

Results of the field QA/QC for soil samples collected during this investigation are discussed in Section 10.

8 FIELD OBSERVATIONS

8.1 SOIL SAMPLING AND STRATIGRAPHY

Detailed descriptions of the subsurface soils encountered at the borehole locations are presented in the borehole logs included in Appendix C along with details regarding soil sampling, monitoring well installation, and groundwater elevations details.

The soil stratigraphy encountered at the investigation area of the Site generally consisted of a silty sandy from surface meters below ground (mbgs) to the maximum depth of investigation at approximately 6.0 mbgs.

Soil vapour headspace concentrations were measured from the soil samples collected at each borehole and surficial sample locations using an RKI™ Eagle with PID and combustible vapour detector operating in methane elimination mode.

The combustible vapour detector readings for the surficial soil samples are presented in the following table.

Table 8-1 Surficial Soil Sample Vapour Readings

SAMPLE ID	COMBUSTIBLE VAPOUR (PPM)	PID (PPM)
SS19-01	n/d	n/d
SS19-02	n/d	n/d
SS19-03	n/d	n/d
SS19-04	n/d	n/d
SS19-05	n/d	n/d
SS19-06	n/d	n/d
SS19-07	n/d	n/d
SS19-08	n/d	n/d
SS19-09	n/d	n/d
SS19-10	n/d	n/d
SS19-11	n/d	n/d
SS19-12	n/d	n/d
SS19-13	n/d	n/d
SS19-14	n/d	n/d
SS19-15	n/d	n/d

Notes:
PID – photoionization detector
ppm – parts per million
n/d – not detected

The combustible vapour detector readings for borehole locations are presented in the borehole logs in Appendix C.

Soil samples collected were selected for metals, LEPH, HEPH, PAHs, VPHs, VOCs and PCBs for their associated APECs and PCOCs. The color of the soil, presence of debris materials, soil vapour screening results, and indirect odour was used in determining which samples to be selected for analysis.

8.2 ACM SAMPLING

The Site was visually inspected for the presence of asbestos-containing building products. One (1) representative bulk sample was collected for suspect ACMs from the Site. The suspect ACM sample was submitted for asbestos analysis.

The locations and material descriptions of the collected samples were described in field notes, and the corresponding sample numbers were indicated on the Chain-of-Custody forms submitted along with the original samples. Samples were analyzed in accordance with polarized light microscopy (PLM): Bulk Asbestos Building Materials EPA 600 R 93 / 116. 1993.

The analytical results for asbestos content of the bulk material samples are presented in the Laboratory Reports, included in Appendix E.

9 ANALYTICAL RESULTS

Tabulated results of the soil analyses are included in Appendix D. Appendix E contains the Chain-of-Custody forms and the laboratory certificates for the analytical data obtained from ALS Environmental. Borehole location maps are provided in Figure 6 in Appendix A.

Applicable regulatory standards and site-specific guidelines are provided in Appendix F.

9.1 SOIL ANALYTICAL RESULTS & DISCUSSION

Soil samples were analyzed for various parameters, including LEPHs, HEPHs, PAHs, VOCs, VPH, PAHs, PCBs, metals and salinity as follows:

Table 9-1 Borehole Soil Analytical Results

LOCATION	SAMPLE ID	SAMPLE DEPTH (MBGS)	ANALYSES PERFORMED	DETECTABLE CONCENTRATIONS	EXCEEDS APPLICABLE CSR SOIL STANDARDS
APEC #1	MW19-01-03	1.22 – 1.83	Salinity	Salinity	No
	MW19-01-06	3.05 – 3.66	Metals, LEPH/HEPH/PAH, VPH/VOCs	Metals	No

LOCATION	SAMPLE ID	SAMPLE DEPTH (MBGS)	ANALYSES PERFORMED	DETECTABLE CONCENTRATIONS	EXCEEDS APPLICABLE CSR SOIL STANDARDS
APEC #2	MW19-03-02	0.91 – 1.22	Metals, LEPH/HEPH/PAH, VPH/VOCs	Metals	No
	MW19-03-03	1.52 – 1.83	Salinity	Salinity	No
APEC #3	BH19-04-03	1.52 – 1.83	Salinity	Salinity	No
	BH19-04-07	4.88 – 5.18	Metals, LEPH/HEPH/PAH, VPH/VOCs	Metals	No
APEC #4	MW19-02-02	0.91 – 1.22	Metals, LEPH/HEPH/PAH, VPH/VOCs	Metals	No
	MW19-02-03	1.52 – 1.83	Salinity, Metals	Salinity, Metals	No
	BH19-05-03	1.52 – 1.83	Salinity, Metals, LEPH/HEPH/PAH, VPH/VOCs	Salinity, Metals	No
	BH19-05-04	2.44 – 2.74	Salinity, Metals, LEPH/HEPH/PAH, VPH/VOCs	Salinity, Metals	No
	BH19-06-03	1.52 – 1.83	Salinity	Salinity	No
	BH19-06-05	3.35 – 3.66	Metals, LEPH/HEPH/PAH, VPH/VOCs	Metals	No

All analytical results were below the applicable CSR PL, RL_{ld}, RL_{hd} and CL Soil Standards.

Detailed soil analytical results can be found in Tables 1 through 4 in Appendix D.

9.1.1 SURFICIAL SOIL ANALYTICAL RESULTS & DISCUSSION

Table 9-2 Surficial Soil Analytical Results

LOCATION	SAMPLE ID	ANALYSES PERFORMED	DETECTABLE CONCENTRATIONS	EXCEEDS APPLICABLE CSR SOIL STANDARDS
APEC #1	SS19-01	PCBs	PCBs	No
	SS19-02	PCBs	No	No
	SS19-03	PCBs	No	No
	SS19-04	PCBs	No	No
	SS19-05	PCBs	No	No
	SS19-06	PCBs	No	No
	SS19-07	PCBs	No	No
APEC #2	SS19-12	Metals, Salinity, LEPH/HEPH/PAH, VPH/VOCs	Metals	No
	SS19-13	Metals, Salinity, LEPH/HEPH/PAH, VPH/VOCs	Metals, LEPH/HEPH/PAH	No
APEC #3	SS19-08	Metals, Salinity, LEPH/HEPH/PAH, VPH/VOCs	Metals, Salinity, LEPH/HEPH/PAH	No
	SS19-09	Metals, Salinity, LEPH/HEPH/PAH, VPH/VOCs	Metals, Salinity, LEPH/HEPH/PAH	No
APEC #4	SS19-10	Metals, Salinity, LEPH/HEPH/PAH, VPH/VOCs	Metals	No
	SS19-11	Metals, Salinity, LEPH/HEPH/PAH, VPH/VOCs	Metals, LEPH/HEPH/PAH	No

LOCATION	SAMPLE ID	ANALYSES PERFORMED	DETECTABLE CONCENTRATIONS	EXCEEDS APPLICABLE CSR SOIL STANDARDS
	SS19-14	Metals, Salinity, LEPH/HEPH/PAH, VPH/VOCs	Metals, LEPH/HEPH/PAH	No
	SS19-15	Metals, Salinity, LEPH/HEPH/PAH, VPH/VOCs	Metals, LEPH/HEPH/PAH	No

All analytical results were below the applicable CSR PL, RL_{ld}, RL_{hd} and CL Soil Standards.

Detailed soil analytical results can be found in Tables 1 through 4 in Appendix D.

9.2 HAZARDOUS MATERIALS SURVEY

WSP collected one (1) building material samples suspected to contain asbestos from the Site. The sample location, material description, Sample ID and the corresponding laboratory analytical results are presented in the following table.

Table 9-3 Asbestos Analytical Results

LOCATION	SAMPLE ID	MATERIAL SAMPLED	ANALYSES PERFORMED	ASBESTOS CONTENT/TYPE
APEC #4	**AS01 - Pipe Mastic**	**Black Pipe Mastic**	**Polarized Light Microscopy**	**20 – 30% Chrysotile**

Note: **Bold** indicates asbestos detected above 0.5% criteria

According to WorkSafeBC, the definition of an asbestos-containing material, other than vermiculite, is 0.5% asbestos by weight.

Based on the representative sampling, corresponding CARO laboratory results for asbestos content, WorkSafeBC criteria, and site review survey, the sample collected was found to be asbestos-containing.

Asbestos Cement Pipes

Two asbestos cement pipes were identified in APEC #1 during the Stage 1 Site visit. These were not sampled as they were visually identified as asbestos-containing pipe. Photos of the pipe(s) can be found in the Photolog in Appendix B.

Suspect Asbestos-Containing Pipe Gaskets

Metal pipes with bell and spigot joints were identified on site in the northeast portion of APEC #3. These joints may contain asbestos gaskets, but the suspect asbestos-containing material is not accessible to sample. Photos of the pipes can be found in the Photolog in Appendix B.

Lead Products

Metal pipes with bell and spigot joints were identified on site in the northeast portion of APEC #3. These joints were commonly sealed with lead.

A pipe suspected to be constructed of lead was identified on site attached to debris from a concrete structure located along north boundary of APEC #4.

Photos of the lead products can be found in the Photolog in Appendix B.

Other Hazardous Materials

It is anticipated that crystalline silica is present within the remnant concrete structures on site. No other hazardous materials were identified during the Site visits.

The completed Chain-of-Custodies (COCs) and the Laboratory Reports of analytical results are presented in Appendix E.

10 RESULTS OF THE QA/QC PROGRAM

10.1 FIELD QA/QC

Soil

Collected soil samples were submitted to ALS Environmental in Burnaby, BC. Analyses were completed within the applicable sample hold times. Twenty-seven (27) soil samples and two (2) duplicate samples were selected for analysis. The duplicate soil sample MW99-01-06 and SS99-01 correspond to MW19-01-06 and SS19-01, respectively. Duplicates were analyzed for Metals, LEPHs, HEPHs, PAHs, VPH, VOCs and/or PCBs.

- RPD of Phosphorous in MW19-01-06 and the duplicate MW99-01-06 was calculated to be 21%. Both Phosphorous results in MW19-01-06 and MW99-01-06 were below the CSR PL, RL_{ld}, RL_{hd} and CL standards.
- RPD of Total PCBs in SS19-01 and the duplicate SS99-01 was calculated to be 74.9%. Both Phosphorous results in SS19-01 and SS99-01 were below the CSR PL, RL_{ld}, RL_{hd} and CL standards.

All other RPD values between the soil samples and their duplicates for the analyses of LEPHs, HEPHs, PAHs, VPHs and VOCs, were either below 20% or could not be calculated because one or more of the parameters were less than five times the detection limit or the concentrations were below the laboratory detection limits.

Based on the results of the soil QA/QC program, the data met the data quality objectives.

Overall, the field QA/QC results are considered to be acceptable.

10.2 LABORATORY QA/QC

WSP also reviewed the laboratory QA/QC data provided by ALS Environmental in the laboratory certificates. The laboratory certificates included results for laboratory blanks, replicates, reference samples and calibration checks.

The laboratory runs blanks to determine if their analytical instruments are clean and do not positively bias sample results. Reference samples are analyzed to determine if recoveries are within the range allowed by the BC ENV. Replicates are analyzed to prove that the analytical results for the duplicate sample are within the allowable range of laboratory acceptance, in accordance with the BC ENV laboratory manual and procedures.

The ALS Environmental QA/QC analytical results met all of the ALS Environmental data quality objectives, therefore the ALS Environmental results are considered acceptable. The results of ALS Environmental internal QA/QC samples are included in each of the laboratory certificates attached in Appendix E.

11 DISCUSSION AND CONCLUSIONS

Borehole Soil

Concentrations of select metals and salinity were detected in each borehole sample; however, they were all below CSR PL, RLld, RLhd and CL Standards in APECs #1, 2, 3 and 4.

Borehole soil analytical data, collected during the Stage 2 PSI, suggests that the soil within identified APECs on site is not impacted with PCOCs associated with the former public works yard and storage area on the lot.

Surficial Soil

Concentrations of select metals, LEPH/HEPH/PAH and PCBs were detected in various surficial soil samples; however, they were all below CSR PL, RL_{ld}, RL_{hd} and CL Standards in APECs #1, 2, 3 and 4.

Surficial soil analytical data, collected during the Stage 2 PSI, suggests that the soil within identified APECs on site is not impacted with PCOCs associated with the former public works yard and storage area on the lot.

Groundwater

Groundwater was not assessed as the installed wells did not produce a viable volume during this Stage 2 PSI.

Hazardous Materials

- Pipe mastic sampled in APEC #4 was found to be asbestos containing;
- Asbestos cement pipes were found in APEC #1;
- Metal pipes with bell and spigot joints found in the northeast portion of APEC #3 are suspected to contain asbestos-containing pipe gaskets and lead seals;
- A pipe suspected to be constructed of lead was identified on Site attached to a remnant concrete structure located along the north boundary of APEC #4;
- Crystalline silica is suspected to be present within the remnant concrete structures on the Site.

No other hazardous materials were identified during the Site visit.

12 RECOMMENDATIONS

Based on the results of the Stage 2 PSI, WSP recommends further assessment and house keeping items as follows:

- An additional round of groundwater monitoring during spring freshet is recommended to assess groundwater within the installed wells and if present, sample and analyze for PCOCs.
  - Based on the soil analytical results it is unlikely that groundwater contamination is present;
- Once the groundwater monitoring wells are determined to be no longer in use, they are should be decommissioned. In the case where groundwater is encountered, they may be required to be decommissioned if no longer in use in accordance with the Groundwater Protection Regulation under the *Water Sustainability Act*.
- During any future development or excavation at the Site, if any hidden source(s) of contamination or any suspected/odorous soils are discovered, a qualified professional should be contacted prior to the source removal to initiate soil characterization and management.
- Based on the results of the Stage 2 PSI, if the Site is to be redeveloped or re-zoned, a Ministry Legal Instrument, such as a Determination of Contamination may be required.
- All asbestos-containing materials must be removed using safe work practices and procedures prior to activities that may disturb them. The WorkSafeBC publication "Safe Work Practices for Handling Asbestos" and the Occupational Health and Safety (OHS) Guideline G6.8 describes acceptable practices;
- A risk assessment for asbestos-containing materials should be performed prior to work beginning to determine the exposure risk to workers and other persons as per OHS Guideline G20.112;
- A qualified professional should be notified if any suspect asbestos-containing material or hazardous materials not identified in this report are exposed or encountered during work activities on the Site. Suspect materials should be considered hazardous pending further review;

- Proper procedures and documentation such as safe work practices, an exposure control plan, risk assessments and/or other controls must be developed for all workers prior to any activities involving destruction of materials containing crystalline silica;
- Ensure any Contractors hired to work on or near asbestos-containing materials have reviewed available surveyed material results, have all documents, procedures, training and other responsibilities completed and in place prior to commencement of work;
- Retain a copy of this report and provide it to any contractors who may be undertaking work at the Site involving hazardous materials as required by Section 20.112 of the WorkSafeBC regulations;
- And following completion of the hazardous materials removal an inspection must be conducted by a Qualified Person to confirm that the hazardous materials have all been removed and an inspection report confirming the removal must be posted on site prior to further work activities; and,
- Should regulations or on-site conditions change, a qualified professional should be retained to re-evaluate the conclusions and recommendations contained in this report.

13 PROFESSIONAL STATEMENT

As required under Part 16, Section 63 of the "Environmental Management Act", Contaminated Sites Regulations (CSR, BC Reg. 375/96 including amendments up to BC Reg. 13/2019, January 24, 2019), WSP confirms that:

1. The Preliminary Site Investigation report has been prepared in accordance with requirements of the Act and its regulations, policies, procedures and protocols; and
2. The person(s) signing this report has (have) demonstrable experience in conducting investigations of this type and are familiar with the investigation completed at the Site.

13.1 ROLES AND RESPONSIBILITIES

Mr. Jason Newington, M.Sc., PMP, P.Ag., EP, Project Manager
Senior report review

Mr. Jason Newington has over 17 years of experience in the environmental industry. He specializes in contaminated sites and has worked on projects in British Columbia, Alberta, Saskatchewan, and Ontario. Jason has managed, reviewed and conducted numerous environmental investigations, assessments and remediation including: spill response, Stage 1, 2, and 3 Preliminary Site Investigations (PSIs), Detailed Site Investigations (DSI's), Phase I, II, and III Environmental Site Assessments (ESAs), landfill gas monitoring, landfill leachate assessments, in-situ chemical oxidation injections, thermal desorption, vapour extraction, dual-phase extraction, underground / aboveground storage tank (UST/AST) decommissioning, tailings pond assessments, effluent monitoring, water diversion assessments and water extraction and treatments. Jason has reviewed hundreds of environmental assessments including senior review for in-house projects and external consultant reports for data gap analyses.

Mr. Scott Rusnak, B.Sc., Environmental Scientist
Primary Author, Fieldwork Scientist

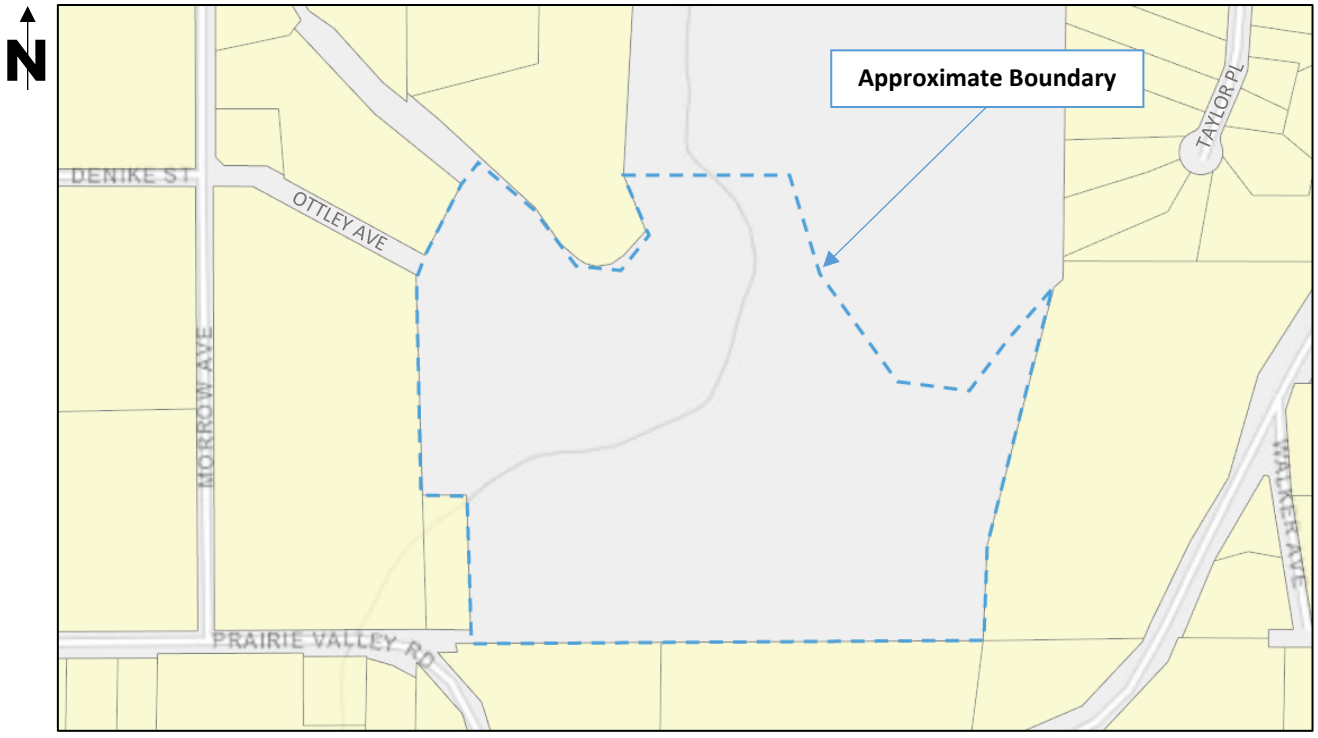
Mr. Scott Rusnak was involved in conducting the fieldwork for this investigation and preparing the report draft. Mr. Rusnak holds a Bachelor of Science in Physics and Chemistry from the University of Alberta (UofA), and is currently fulfilling requirements to become a Geologist in Training. Mr. Rusnak has experience in Stage 1 and 2 Preliminary Site Investigations, spill response, and soil, soil vapour, groundwater, and surface water monitoring and sampling.

14 CLOSURE STATEMENT

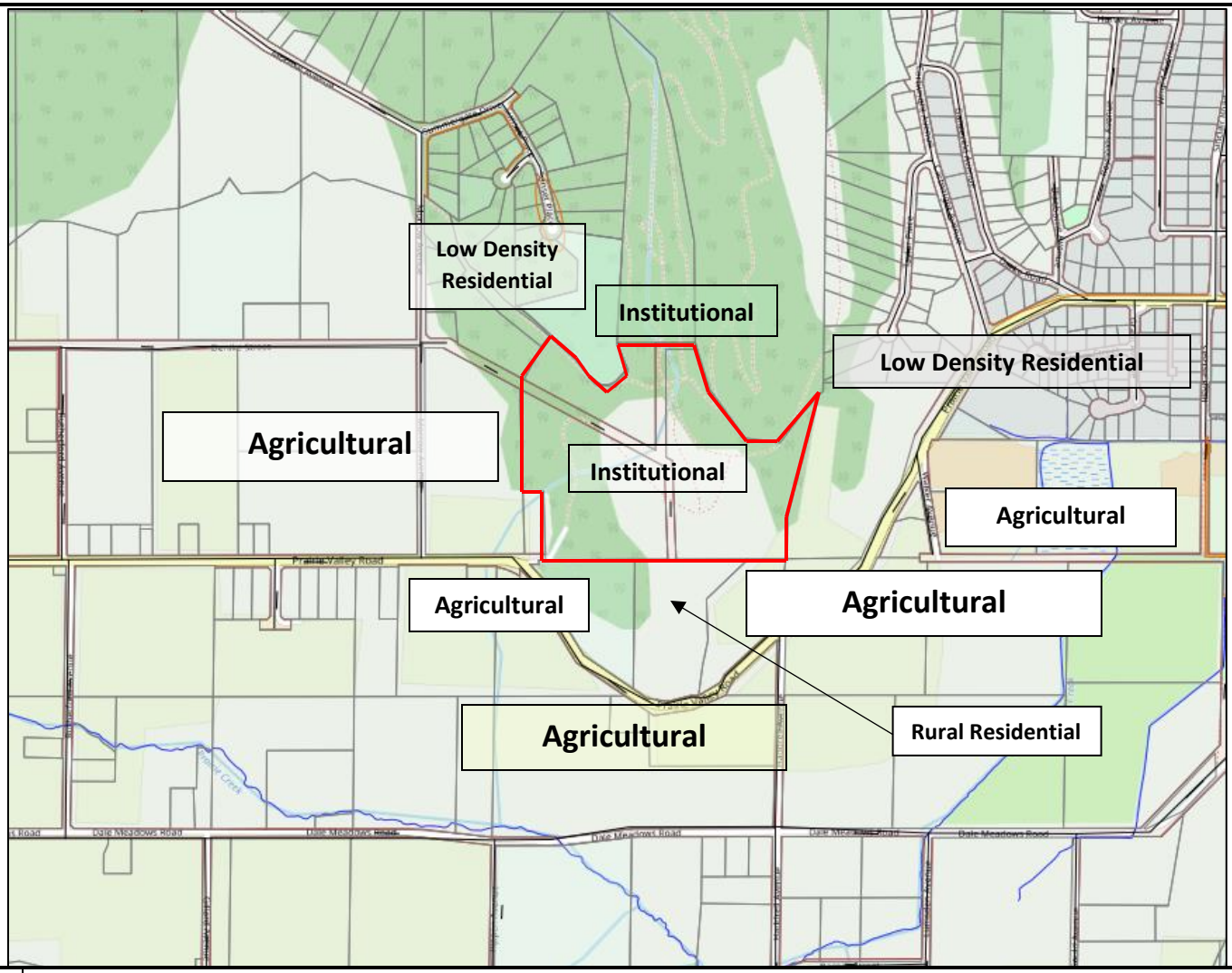
This report has been prepared by WSP Canada Inc. (WSP) exclusively for The District of Summerland. The conclusions made in this report reflect the information available at the time of preparation. No other warranty, expressed or implied, is made. Any use which a third party makes of this report, or any reliance on or decisions to be made or actions based on it, are the responsibility of such third parties. WSP accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this report. A copy of the Standard Limitations is included in Appendix G.

APPENDIX

A FIGURES



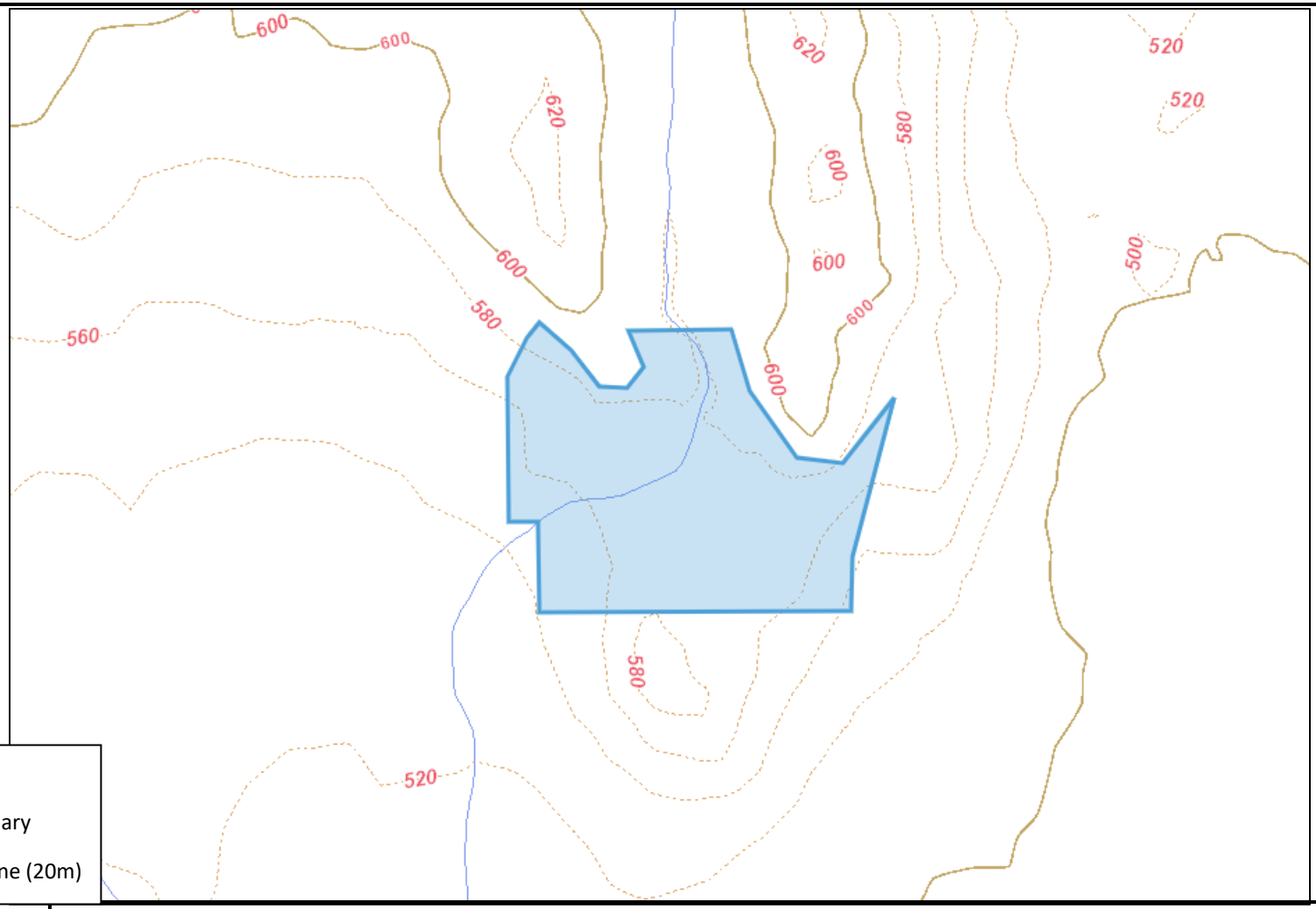
wsp	PROJECT: SUMMERLAND SOLAR ARRAY STAGE 2 PRELIMINARY SITE INVESTIGATION				
	TITLE: SITE LOCATION AND SITE PLAN				
	CLIENT: DISTRICT OF SUMMERLAND				
FIGURE NO.: 1	DATE: FEB 2020	FILE NO.: 191-15279-00	SCALE: NTS	DRAWN BY: AM	REV NO.: 1



LEGEND

Site Boundaries

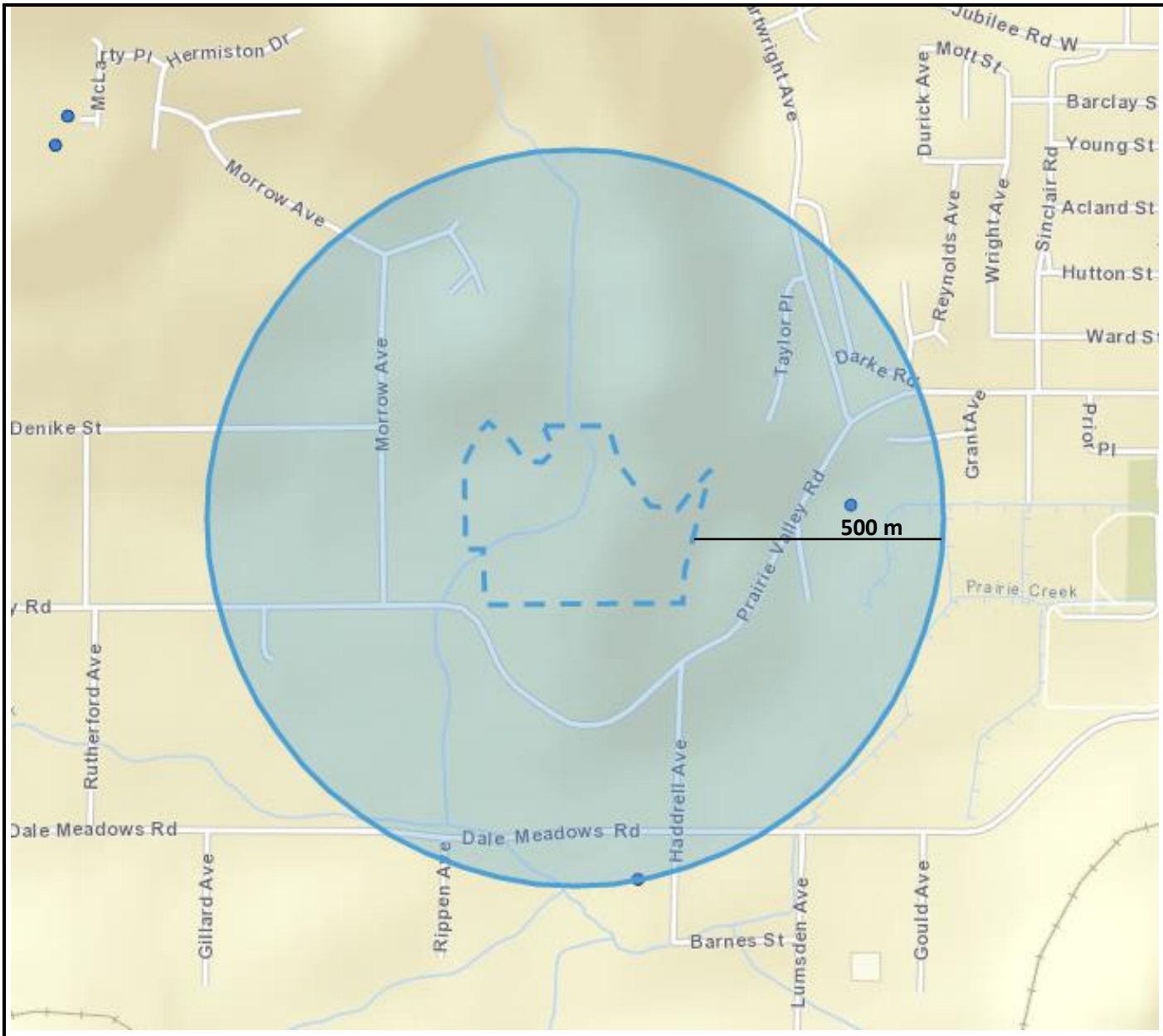
PROJECT: SUMMERLAND SOLAR ARRAY STAGE 2 PRELIMINARY SITE INVESTIGATION					
TITLE: SURROUNDING LAND USE PLAN					
CLIENT: THE DISTRICT OF SUMMERLAND					
FIGURE NO.: 2	DATE: FEB 2020	FILE NO.: 191-15279-00	SCALE: NTS	DRAWN BY: AM	REV NO.: 2



Legend

- Site Boundary
- Contour Line (20m)

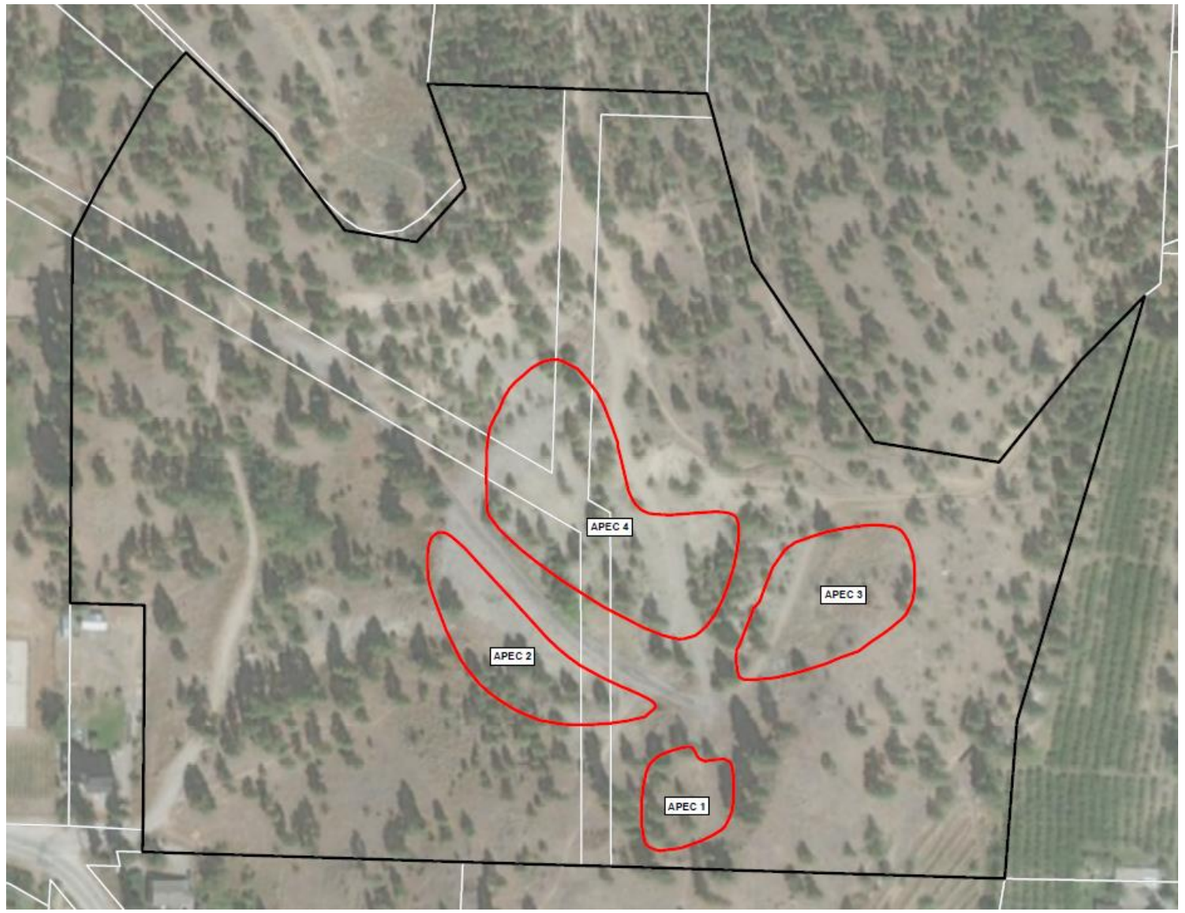
PROJECT: SUMMERLAND SOLAR ARRAY STAGE 2 PRELIMINARY SITE INVESTIGATION					
TITLE: SITE AND SURROUNDING TOPOGRAPHY					
CLIENT: DISTRICT OF SUMMERLAND					
FIGURE NO.: 3	DATE: FEB 2020	FILE NO.: 191-15279-00	SCALE: NTS	DRAWN BY: AM	REV NO.: 1



LEGEND

- Water Well
- Subject Site

wsp	PROJECT: SUMMERLAND SOLAR ARRAY STAGE 2 PRELIMINARY SITE INVESTIGATION				
	TITLE: WATER WELL SEARCH RESULTS				
	CLIENT: THE DISTRICT OF SUMMERLAND				
FIGURE NO.: 4	DATE: FEB 2020	FILE NO.: 191-15279-00	SCALE: NTS	DRAWN BY: AM	REV NO.: 1



Summary of Identified APECs and PCOCs

APEC NO.	APEC DESCRIPTION	REGULATED PCOCS IN SOIL AND GROUNDWATER	REGULATED PCOCS IN VAPOUR	RISK RATING*
APEC #1 (on-Site)	Area of historical transformer storage in the southeast portion of the Site where PCB's were historically emptied onto unpaved, permeable ground surface. Area was also used for storage of various items/materials including ACM pipes.	PCBs, screening for: BTEX/VPH, LEPH/HEPH/PAHs, asbestos, metals	VOCs/VPH, naphthalene if detectable in soil and/or water	Low to moderate
APEC # 2 (on-Site)	The haul road and unpaved parking area located south of the haul road were historically used as a mixing and storage area for crush and oil mixture.	BTEX/VPH, LEPH/HEPH/PAHs, metals	VOCs/VPH, naphthalene if detectable in soil and/or water	Low to moderate
APEC #3 (on-Site)	Area of copper pipe and miscellaneous metal parts storage above the flatland storage in the east portion of the Site.	Metals, screening for: BTEX/VPH, LEPH/HEPH/PAHs	VOCs/VPH, naphthalene if detectable in soil and/or water	Low to moderate
APEC #4 (on-Site)	Central flatland storage area used for a laydown area/storage of various steel pipes, concrete, crush, etc.	Metals, screening for: BTEX/VPH, LEPH/HEPH/PAHs	VOCs/VPH, naphthalene if detectable in soil and/or water	Low to moderate

Notes:

* Relative scale indicating potential for contamination to be present at the Site
- High - Evidence of actual significant contamination
- Moderate - Inferred potential significant contamination or evidence of minor contamination
- Low to Moderate - Inferred potential minor contamination
- Low - No inferred contamination

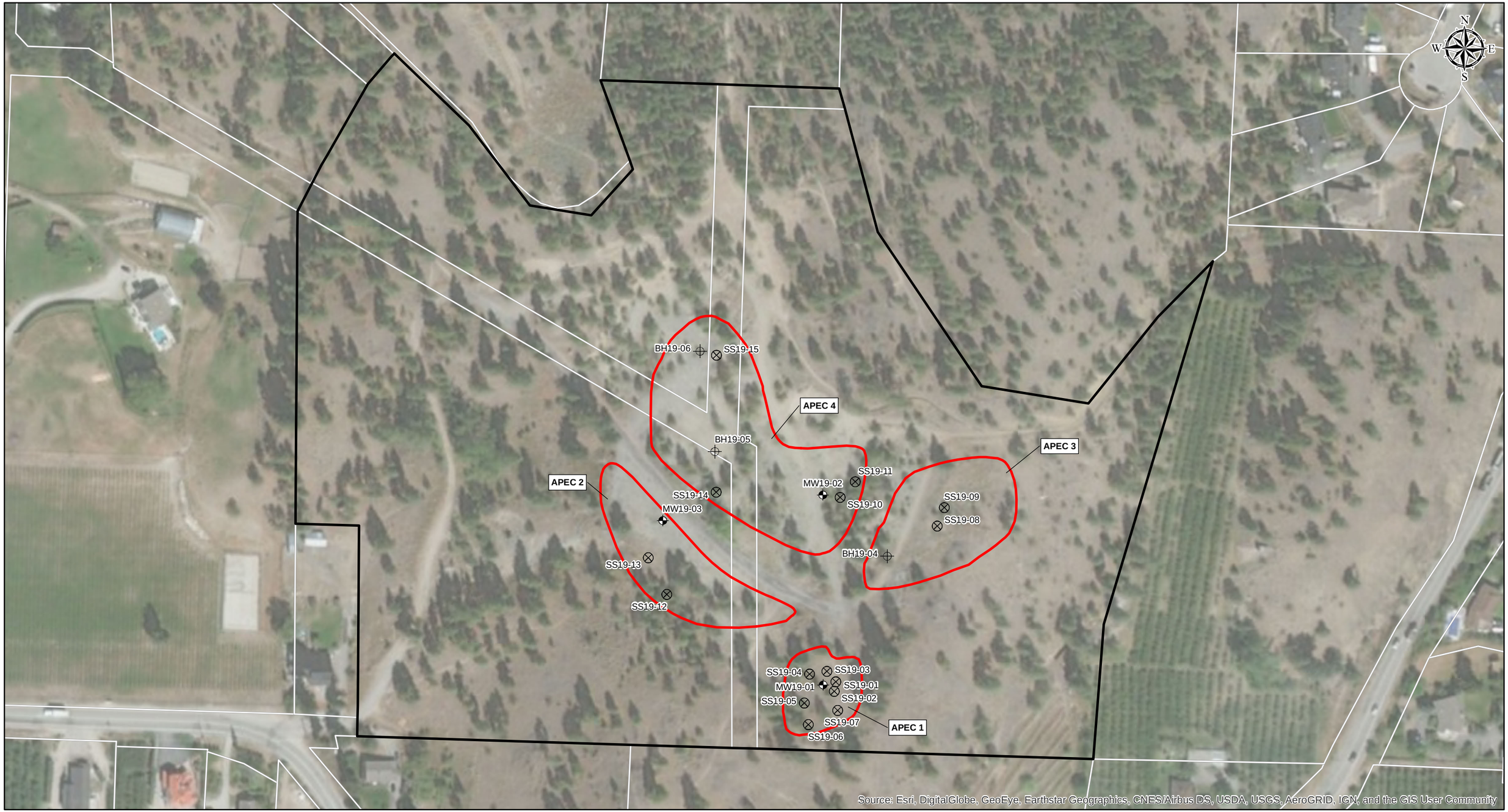
BTEX - Benzene, toluene, ethylbenzene, xylenes in soil groundwater and in vapour
VPH - Volatile petroleum hydrocarbons in soil and groundwater
VPH_v - Volatile petroleum hydrocarbons in vapour
VOC - Volatile organic compounds in soil and groundwater
VOC_v - Volatile organic compounds in vapour
LEPH - Light extractable petroleum hydrocarbons
HEPH - Heavy extractable petroleum hydrocarbons
PAHs - Polycyclic aromatic hydrocarbons

PROJECT:
SUMMERLAND SOLAR ARRAY
STAGE 2 PRELIMINARY SITE INVESTIGATION

TITLE:
APEC LOCATION PLAN

CLIENT:
THE DISTRICT OF SUMMERLAND

FIGURE NO.:	DATE:	FILE NO.:	SCALE:	DRAWN BY:	REV NO.:
5	FEB 2020	191-15279-00	NTS	AM	1



Legend

- Monitoring Well
- Borehole
- Surficial Soil Sampling
- Parcel
- Project Area
- APEC (Areas of Potential Environmental Concern)

0 10 20 30 40 50 Meters

Scale: 1:1,750

References:
Data BC - BC Catalogue
Open Government License
(http://www.data.gov.bc.ca/)
NRCAN Geogratis
Open Government License
(http://geogratis.cgdi.gc.ca/)

PROJECT:
Summerland Solar Array
Stage 2 Preliminary Site Investigation

TITLE:
Sample Location Map

CLIENT:
District of Summerland

DATE:	ANALYST:	REVIEWED:	
January 20, 2020	MY	SR	**Figure 6**

GIS FILE:
01-01-002_Site_Location_v2.mxd

PROJECT NO:
191-15279-00

COORDINATE SYSTEM:
NAD 1983 UTM Zone 11N

Y:\GIS\Projects\2019\191-15279-00 _Summerland_Solar_Array\Mapping\01_general\01_overview\01-01-002_Site_Location_v2.mxd

APPENDIX

B SITE PHOTOGRAPHS

Photograph 1: View of APECs #2 and 4 looking West from the central area of the Site (November 29, 2019).

Photograph 2: View of APEC #1 looking South/Southeast (November 29, 2019).

Photograph 3: View of APEC #3 looking South. (November 29, 2019).

Photograph 4: View of an Asbestos Cement Pipe in APEC #1 (November 30, 2019).

Photograph 5: View of the Suspect Asbestos Containing Pipe Gaskets (December 3, 2019).

Photograph 6: View of suspected lead pipe located along the north boundary of APEC #4 (December 3, 2019).

Photograph 7: View of the Pipes with suspected lead sealed joints located in the northeast portion of APEC #3 (December 3, 2019).

Photograph 8: View of concrete debris located North of APEC #4 (November 29, 2019).

APPENDIX

C BOREHOLE LOGS

MW19-01

Pg 1 of 1

Project No: 191-15279-00

The District of Summerland
Solar Array and Battery Storage Facility, Summerland, BC

WSP
700 - 1631 Dickson Avenue
Kelowna, BC

Depth (ft)	Depth (m)	Description	Symbol	Depth (ft)	Sample Number/ ID	Sample Type	Well and Backfill Details	Headspace Vapour Concentration (ppm_v)	Laboratory Analysis /Comments
0		Compact, brown, silty SAND, trace gravel, with rootlets, moist.			01			10	
2		- Trace to some silt, loose below 0.6 m.			02			5	
4					03			5	Salinity, Particle Size
6	2			6.0	04				
		Compact, brown, silty SAND, moist.		8.0					
8		Compact, brown, SILT, some sand to sandy, moist.			05				
10					06			50	Hydrocarbons, Metals
12					07				
14	4								
		- Trace gravel, occasional cobbles below 4.3 m.		15.0	08				
16		Dense, brown, SILT, some sand, trace gravel, moist.		17.5					
18		Compact, brown, silty SAND, some gravel, occasional cobbles, moist.			09				
20	6			20.0					
		Compact, brown, sandy SILT, some gravel, occasional cobbles, moist.		20.5	10				
22		Borehole terminated at 6.2 m.							
24									
26	8								
28									
30									
32									

Sample Symbols

Backfill Symbols

- Filter Sand
- Bentonite
- Solid Pipe
- Slotted Pipe
- Slough/Cuttings
- Concrete

Soil Symbols

- Silty SAND
- sandy SILT
- SILT

Notes

Logged By	SR/KM
Drilled/ Excavated By	Mud Bay
Date Drilled or Excavated	02/12/2019
Elevation (grade)	
Water Level Recorded On	
Drill Method	Sonic

HAZMAT SUMMERLAND SOLAR ARRAY BH LOGS - COPY.GPJ LEVELTON DATA TEMPLATE.GDT 24/1/20

WSP
700 - 1631 Dickson Avenue
Kelowna, BC

The District of Summerland
Solar Array and Battery Storage Facility, Summerland, BC

MW19-02

Pg 1 of 1

Project No: 191-15279-00

Depth (ft)	Depth (m)	Description	Symbol	Depth (ft)	Sample Number/ ID	Sample Type	Well and Backfill Details	Headspace Vapour Concentration ▲ (ppm_v) ▲ 10 100 1000	Laboratory Analysis /Comments
0		Very dense, brown, gravelly SAND FILL, trace silt, with rootlets, moist.		2.0	01				
2		Compact, brown, SAND, trace silt, moist.		4.0	02				Hydrocarbons, Metals
4		Compact, brown, sandy SILT, moist.		5.0	03				Salinity, Particle Size
6	2	Compact, brown, SAND, some silt, moist. - Silty below 2.1 m.			04				
8									
10					05				
12	4			13.5	06				
14		Compact, brown, SAND, some silt to silty, moist.		15.0	07				
16		Compact, brown, sandy SILT, slightly plastic fines, moist.		17.5	08				
18		Compact, brown, silty SAND, occasional cobbles, moist.							
20	6				09				
22				22.0					
24		Borehole terminated at 6.7 m.							
26	8								
28									
30									
32									

Sample Symbols

Backfill Symbols

- Filter Sand
- Bentonite
- Solid Pipe
- Slotted Pipe
- Slough/Cuttings
- Concrete

Soil Symbols

- Fill (made ground)
- SAND
- sandy SILT
- Silty SAND

Notes

Logged By	SR/KM
Drilled/ Excavated By	Mud Bay
Date Drilled or Excavated	02/12/2019
Elevation (grade)	
Water Level Recorded On	
Drill Method	Sonic

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WSP
700 - 1631 Dickson Avenue
Kelowna, BC

The District of Summerland
Solar Array and Battery Storage Facility, Summerland, BC

MW19-03

Pg 1 of 1

Project No: 191-15279-00

Depth (ft)	Depth (m)	Description	Symbol	Depth (ft)	Sample Number/ ID	Sample Type	Well and Backfill Details	Headspace Vapour Concentration ▲ (ppm_v) ▲ 10 100 1000	Laboratory Analysis /Comments
0		ASPHALT (75 mm thick).		0.3	01				
2		Compact, brown to black, sandy SILT FILL, some gravel, moist.		2.0	02				Hydrocarbons, Metals
4		Loose, brown, silty SAND, trace gravel, moist. - Black below 1.1 m.		4.0	03				Salinity, Particle Size
6	2	Loose, brown, silty SAND, moist.			04				
8									
10					05				
12	4				06				
14									
16				16.0	07				
18		Dense, brown, sandy SILT, some gravel, occasional cobbles, moist, non-cohesive.			08				
20	6			20.8	09				
22		Borehole terminated at 6.3 m.							
24									
26	8								
28									
30									
32									

Sample Symbols

Backfill Symbols

- Filter Sand
- Bentonite
- Solid Pipe
- Slotted Pipe
- Slough/Cuttings
- Concrete

Soil Symbols

- Asphalt
- Fill (made ground)
- Silty SAND
- sandy SILT

Notes

Logged By	SR/KM
Drilled/ Excavated By	Mud Bay
Date Drilled or Excavated	02/12/2019
Elevation (grade)	
Water Level Recorded On	
Drill Method	Sonic

HAZMAT SUMMERLAND SOLAR ARRAY BH LOGS - COPY.GPJ LEVELTON DATA TEMPLATE.GDT 24/1/20

BH19-04

Pg 1 of 1

WSP
700 - 1631 Dickson Avenue
Kelowna, BC

The District of Summerland
Solar Array and Battery Storage Facility, Summerland, BC

Project No: 191-15279-00

Depth (ft)	Depth (m)	Description	Symbol	Depth (ft)	Sample Number/ ID	Sample Type	Well and Backfill Details	Headspace Vapour Concentration ▲ (ppm_v) ▲ 10 100 1000	Laboratory Analysis /Comments
		Compact, brown, silty SAND FILL, trace gravel, moist.		2.0	01			10	
2		Compact, brown, gravelly SAND, some silt, dry to moist.		4.0	02				
4		Compact, brown, silty GRAVEL, moist.		5.0	03				Salinity, Particle Size
6	2	Compact, brown, gravelly SAND, trace silt, moist.			04				
8		- Some gravel below 2.3 m.		10.0					
10		Compact, brown, SAND, trace silt, moist.			05				
12	4				06				
14					07			45	Hydrocarbons, Metals
16				16.0					
		Compact, brown, silty SAND, moist.		17.5	08				
18		Compact, brown, sandy SILT, moist, non-cohesive.							
20	6				09				
22				22.0					
24		Borehole terminated at 6.7 m.							
26	8								
28									
30									
32									

Sample Symbols

Backfill Symbols

- Filter Sand
- Bentonite
- Solid Pipe
- Slotted Pipe
- Slough/Cuttings
- Concrete

Soil Symbols

- Fill (made ground)
- Gravelly SAND
- Gravel
- SAND
- Silty SAND
- sandy SILT

Notes

Logged By	SR/KM
Drilled/ Excavated By	Mud Bay
Date Drilled or Excavated	03/12/2019
Elevation (grade)	
Water Level Recorded On	
Drill Method	Sonic

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BH19-05

Pg 1 of 1

WSP
700 - 1631 Dickson Avenue
Kelowna, BC

The District of Summerland
Solar Array and Battery Storage Facility, Summerland, BC

Project No: 191-15279-00

Depth (ft)	Depth (m)	Description	Symbol	Depth (ft)	Sample Number/ ID	Sample Type	Well and Backfill Details	Headspace Vapour Concentration ▲ (ppm_v) ▲ 10 100 1000	Laboratory Analysis /Comments
2		Dense, brown, SAND FILL, some gravel, some silt, moist.		3.0	01 02				
4		Compact, brown, silty SAND, trace gravel, moist.		6.0	03				Hydrocarbons, Metals, Salinity, Particle Size
6	2	Compact to loose, brown, SAND and SILT, trace gravel, moist.			04				
8									
10					05				
12		- Slightly plastic fines below 3.7 m.		12.5	06				
14	4	Compact, brown, SAND, some silt, moist.							
16		- Silty below 4.6 m.			07				
18					08				
20	6				09				
22				22.0					
24		Borehole terminated at 6.7 m.							
26	8								
28									
30									
32									

Sample Symbols

Backfill Symbols

- Filter Sand
- Bentonite
- Solid Pipe
- Slotted Pipe
- Slough/Cuttings
- Concrete

Soil Symbols

- Fill (made ground)
- Silty SAND
- Silty Sand/Sandy Silt
- SAND

Notes

Logged By	SR/KM
Drilled/ Excavated By	Mud Bay
Date Drilled or Excavated	03/12/2019
Elevation (grade)	
Water Level Recorded On	
Drill Method	Sonic

HAZMAT SUMMERLAND SOLAR ARRAY BH LOGS - COPY.GPJ LEVELTON DATA TEMPLATE.GDT 24/1/20

BH19-06

Pg 1 of 1

WSP
700 - 1631 Dickson Avenue
Kelowna, BC

The District of Summerland
Solar Array and Battery Storage Facility, Summerland, BC

Project No: 191-15279-00

Depth (ft)	Depth (m)	Description	Symbol	Depth (ft)	Sample Number/ ID	Sample Type	Well and Backfill Details	Headspace Vapour Concentration ▲ (ppm_v) ▲ 10 100 1000	Laboratory Analysis /Comments
0		Very dense, brown, SAND and GRAVEL FILL, trace silt, moist.		2.0	01				
2		Compact, light brown, silty SAND, trace gravel, moist.			02				
4					03				Salinity, Particle Size
6	2	- Some silt below 1.5 m.		7.0					
8		Compact, brown, SAND, some gravel, trace silt, moist.			04				
10				10.0	05			10 ▲	Hydrocarbons, Metals
12		Compact, brown, silty SAND, moist.		12.5	06				
14	4	Compact, brown, SAND, some gravel, some silt, moist.			07				
16				16.5					
18		Dense, brown, silty SAND, some gravel, moist. - Gravelly, some silt below 5.3 m.			08				
20	6				09				
22				22.0					
24		Borehole terminated at 6.7 m.							
26	8								
28									
30									
32									

Sample Symbols

Backfill Symbols

- Filter Sand
- Bentonite
- Solid Pipe
- Slotted Pipe
- Slough/Cuttings
- Concrete

Soil Symbols

- Fill (made ground)
- Silty SAND
- SAND

Notes

Logged By	SR/KM
Drilled/ Excavated By	Mud Bay
Date Drilled or Excavated	02/12/2019
Elevation (grade)	
Water Level Recorded On	
Drill Method	Sonic

HAZMAT SUMMERLAND SOLAR ARRAY BH LOGS - COPY.GPJ LEVELTON DATA TEMPLATE.GDT 24/1/20

APPENDIX

D ANALYTICAL RESULTS TABLES

Table 1
Soil Analytical Results
Metals Analyses
Page 1 of 4

PARAMETERS	RDL	CSR PL Standards (1)	CSR RLld Standards (1)	CSR RLhd Standards (1)	CSR CL Standards (1)	MW19-01-03	MW19-01-06		RPD	MW19-02-02	MW19-02-03	MW19-03-02	MW19-03-03	BH19-04-03	BH19-04-07	BH19-05-03	BH19-05-04	BW19-06-03	BH19-06-05	SS19-08	SS19-09	SS19-10	SS19-11	SS19-12	SS19-13	SS19-14	SS19-15
Sample Date						2-Dec-19	2-Dec-19			2-Dec-19	2-Dec-19	2-Dec-19	2-Dec-19	3-Dec-19	3-Dec-19	3-Dec-19	3-Dec-19	3-Dec-19	3-Dec-19	3-Dec-19	3-Dec-19	3-Dec-19	3-Dec-19	3-Dec-19	3-Dec-19	3-Dec-19	3-Dec-19
Sample Depth						1.22 - 1.83	3.05 - 3.66			0.91 - 1.22	1.52 - 1.83	0.91 - 1.22	1.52 - 1.83	1.52 - 1.83	4.88 - 5.18	1.52 - 1.83	2.44 - 2.74	1.52 - 1.83	3.35 - 3.66	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
QA/QC								MW99-01-06																			
pH	0.10	NS	NS	NS	NS	-	9.22	9.22	0.0%	9.25	8.90	8.85	-	-	9.05	8.92	7.05	-	9.20	6.91	6.81	8.89	8.94	7.47	7.20	8.54	**7.79**
Chloride - Saturated Paste	2.0	100 (2), 350 (3)	100 (2), 350 (3)	100 (2), 2 500 (3)	100 (2), 2 500 (3)	**2.6**	-	-	-	-	<2.0	-	**2.60**	<2.0	-	<2.0	<2.0	<2.0	-	**5.5**	**9.8**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Sodium - Saturated Paste	1.00	15 000 (2), 200 (3)	15 000 (2), 200 (3)	15 000 (2), 1 000 (3)	15 000 (2), 1 000 (3)	**2.00**	-	-	-	-	**1.96**	-	**3.55**	**2.23**	-	**1.93**	**1.54**	**1.06**	-	**3.72**	**2.28**	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Aluminum	50	40 000 (2)	40 000 (2)	40 000 (2)	250 000 (2)	-	**6020**	**5600**	7.2%	**6010**	**4990**	**6480**	-	-	**6470**	**4800**	**10100**	-	**4970**	**8910**	**10300**	**4820**	**5320**	**8100**	**6540**	**6280**	**6370**
Antimony	0.10	500 (2), 20 (3)	250 (2), 20 (3)	500 (2), 40 (3)	1 500 (2), 40 (3)	-	**0.13**	**0.14**	7.4%	**0.13**	**0.13**	**0.14**	-	-	**0.12**	**0.14**	**0.54**	-	**0.13**	**0.18**	**0.14**	**0.12**	**0.16**	**0.16**	**0.14**	**0.17**	**0.14**
Arsenic	0.10	10	10	10	10	-	**1.92**	**1.9**	1.0%	**1.56**	**1.73**	**1.96**	-	-	**2.15**	**1.51**	**1.39**	-	**1.72**	**2.83**	**1.58**	**1.31**	**1.28**	**1.48**	**1.4**	**1.57**	**1.48**
Barium	0.50	350	350	350	350	-	**32.4**	**31.2**	3.8%	**26.4**	**26.9**	**39.8**	-	-	**35.3**	**26.4**	**74.1**	-	**25.0**	**70.9**	**82.7**	**23.2**	**23.4**	**54.1**	**40.4**	**30.2**	**38**
Beryllium	0.10	1 - 150	1 - 85	1 - 150	1 - 350	-	**0.22**	**0.21**	4.7%	**0.27**	**0.22**	**0.2**	-	-	**0.26**	**0.22**	**0.41**	-	**0.26**	**0.36**	**0.41**	**0.22**	**0.28**	**0.32**	**0.3**	**0.31**	**0.31**
Bismuth	0.20	NS	NS	NS	NS	-	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	-	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron	5.0	15 000 (2)	8 500 (2)	15 000 (2)	50 000 (2)	-	<5.0	<5.0	-	<5.0	<5.0	<5.0	-	-	<5.0	<5.0	<5.0	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	0.020	1 - 30	1 - 20	1 - 40	1 - 75	-	**0.068**	**0.063**	7.6%	**0.055**	**0.050**	**0.074**	-	-	**0.062**	**0.054**	**0.115**	-	**0.049**	**0.072**	**0.093**	**0.05**	**0.053**	**0.081**	**0.092**	**0.066**	**0.083**
Calcium	50	NS	NS	NS	NS	-	**8560**	**8360**	2.4%	**7460**	**6510**	**18200**	-	-	**5430**	**6760**	**3330**	-	**7170**	**3560**	**3900**	**5750**	**6380**	**4460**	**5560**	**5870**	**4780**
Chromium	0.50	60 (4), 200 (5)	60 (4), 100 (5)	60 (4), 250 (5)	60 (4), 250 (5)	-	**10.7**	**10.5**	1.9%	**7.66**	**9.22**	**10.1**	-	-	**10.8**	**9.85**	**9.44**	-	**9.92**	**10.9**	**10.7**	**7.3**	**7.23**	**11.2**	**8.82**	**9.25**	**9.8**
Cobalt	0.10	25	25	25	25	-	**4.38**	**4.04**	8.1%	**4.58**	**4.66**	**4.53**	-	-	**4.66**	**4.86**	**5.11**	-	**4.19**	**4.59**	**4.86**	**4.16**	**4.81**	**4.81**	**4.77**	**4.33**	**5.13**
Copper	0.50	75 - 150	75 - 150	75 - 300	75 - 300	-	**12**	**10.7**	11.5%	**14.2**	**12.1**	**14.9**	-	-	**13.5**	**11.1**	**12.2**	-	**10.0**	**13.3**	**12.4**	**10.4**	**32.1**	**12.8**	**14.1**	**12.3**	**17.3**
Iron	50	35 000 (2)	35 000 (2)	35 000 (2)	150 000 (2)	-	**18600**	**17800**	4.4%	**16500**	**21000**	**17100**	-	-	**18300**	**24500**	**17600**	-	**17700**	**18600**	**16900**	**17200**	**16800**	**19200**	**16100**	**15300**	**18600**
Lead	0.50	200 (6)	200 (6)	200 (6)	200 (6)	-	**3.79**	**3.64**	4.0%	**4.09**	**3.68**	**3.39**	-	-	**3.94**	**3.35**	**6.23**	-	**3.88**	**5.07**	**6.62**	**4.02**	**7.34**	**5.3**	**8.67**	**5.08**	**6.74**
Lithium	2.0	65 (2)	30 (2)	65 (2)	450 (2)	-	**4.7**	**4.3**	8.9%	**6.8**	**5.5**	**5.3**	-	-	**5.6**	**5.2**	**7.8**	-	**4.3**	**6.8**	**8.2**	**5.4**	**6.7**	**6.6**	**7.8**	**7.4**	**7.3**
Magnesium	20	NS	NS	NS	NS	-	**2910**	**2400**	19.2%	**3630**	**2510**	**3060**	-	-	**2930**	**2380**	**2560**	-	**2270**	**2270**	**2820**	**2630**	**3150**	**2590**	**4460**	**3420**	**4180**
Manganese**	1.0	2 000	2 000	2 000	2 000	-	**234**	**215**	8.5%	**267**	**219**	**221**	-	-	**245**	**219**	**352**	-	**203**	**272**	**387**	**218**	**252**	**295**	**316**	**264**	**307**
Mercury	0.0050	25	10	25	75	-	<0.0500	<0.0500	-	<0.0500	<0.0500	<0.0500	-	-	<0.0500	<0.0500	<0.0050	-	<0.0500	**0.0077**	**0.0089**	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	<0.0050
Molybdenum	0.10	15	15	15	15	-	**0.34**	**0.33**	3.0%	**0.36**	**0.34**	**0.26**	-	-	**0.32**	**0.34**	**0.33**	-	**0.33**	**0.44**	**0.78**	**0.25**	**0.24**	**0.42**	**0.43**	**0.32**	**0.39**
Nickel	0.50	75 - 150 (6)	75 - 150 (6)	75- 250 (6)	75- 250 (6)	-	**5.07**	**4.5**	11.9%	**4.80**	**4.40**	**5.69**	-	-	**5.60**	**4.32**	**6.51**	-	**4.68**	**6.02**	**6.59**	**4.11**	**4.76**	**5.92**	**7.67**	**5.38**	**8.08**
Phosphorus	50	NS	NS	NS	NS	-	**1010**	**818**	***21.0%***	**638**	**639**	**1330**	-	-	**808**	**632**	**411**	-	**786**	**604**	**652**	**515**	**566**	**672**	**636**	**616**	**699**
Potassium	100	NS	NS	NS	NS	-	**650**	**610**	6.3%	**520**	**480**	**670**	-	-	**560**	**460**	**1170**	-	**440**	**1420**	**1710**	**460**	**520**	**1270**	**960**	**640**	**670**
Selenium	0.20	1	1	1	1	-	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	-	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver	0.10	400 (2), 20 (3)	200 (2), 20 (3)	400 (2), 40 (3)	1 500 (2), 40 (3)	-	<0.10	<0.10	-	<0.10	<0.10	**0.11**	-	-	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	50	NS	NS	NS	NS	-	284	267	6.2%	**171**	**179**	**281**	-	-	**258**	**183**	**158**	-	**210**	**205**	**178**	**149**	**130**	**193**	**155**	**155**	**195**
Strontium	0.50	20 000 (2)	9 500 (2)	20 000 (2)	150 000 (2)	-	**47.8**	**52.7**	9.8%	**42.6**	**47.0**	**67.3**	-	-	**48.4**	**47.8**	**36.1**	-	**44.6**	**45.6**	**47.5**	**46.4**	**41.3**	**45.9**	**45.5**	**47.3**	**44.9**
Sulfur	1000	NS	NS	NS	NS	-	<1000	<1000	-	<1000	<1000	<1000	-	-	<1000	<1000	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Thallium	0.050	9 (3)	9 (3)	25 (3)	25 (3)	-	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	**0.057**	-	<0.050	**0.055**	**0.059**	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tin	2.0	50 000 (2), 50 (3)	25 000 (2), 50 (3)	50 000 (2), 300 (3)	150 000 (2), 300 (3)	-	<2.0	<2.0	-	<2.0	<2.0	<2.0	-	-	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	1.0	NS	NS	NS	NS	-	**686**	**700**	2.0%	**648**	**489**	**582**	-	-	**681**	**506**	**771**	-	**717**	**723**	**737**	**495**	**541**	**765**	**681**	**617**	**647**
Tungsten	0.50	25 (2)	15 (2)	25 (2)	200 (2)	-	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium	0.050	30	30	30	30	-	**0.688**	**0.766**	10.7%	**0.725**	**0.625**	**0.681**	-	-	**0.638**	**0.610**	**0.710**	-	**0.826**	**0.655**	**0.699**	**0.530**	**0.552**	**0.918**	**0.671**	**0.611**	**0.726**
Vanadium	0.20	100	100	100	100	-	**56.9**	**56.7**	0.4%	**46.2**	**62.4**	**51.3**	-	-	**56.2**	**74.3**	**44.3**	-	**55.0**	**47.3**	**42.8**	**49.4**	**46.6**	**54.8**	**49.0**	**42.1**	**59.3**
Zinc	2.0	150 - 450	150 - 450	150 - 450	150 - 450	-	**25.4**	**21**	19.0%	**29.1**	**22.0**	**21.2**	-	-	**25.3**	**21.2**	**60.3**	-	**20.2**	**32.6**	**43.0**	**22.6**	**29.6**	**33.3**	**39.6**	**31.1**	**50.2**
Zirconium	1.0	150 - 450	150 - 450	150 - 450	150 - 450	-	**3.5**	**3.6**	2.8%	**4.8**	**3.2**	**2.4**	-	-	**4.5**	**3.2**	**9.9**	-	**5.7**	**8.3**	**7.8**	**3.8**	**4.6**	**6.0**	**2.6**	**4.4**	**4.3**

NOTES

Results and standards in µg/g or parts per million (ppm) unless otherwise stated
RDL - Reported Detection Limit
* - Hot Water Soluble Boron
"-" - Not analyzed / cannot be calculated
* - Hot Water Soluble Boron
** - Manganese standards apply if site used for an industrial or commercial purpose or activitiy set out in Schedule 2 as: B1, C1, C3, C4, D2, D3, D5, D6, E4, H3, H11, H14, or H20.
NS indicates that no standard applies
1 - CSR Schedule 3.1, Part 1 - Matrix Numerical Soil Standards unless noted otherwise
2 - CSR Schedule 3.1 - Part 2 - Generic Soil Standards to Protect Human Health
3 - CSR Schedule 3.1 - Part 3 - Generic Soil Standards to Protect Ecological Health
4 - Standard for hexavalent chromium
5 - Standard for all chromium speciations
6 - Protocol 4 - Determining Background Soil Quality (Lower Mainland - Regional Background Concentration) - CHECK YOUR REGION

BOLD	Sample concentration exceeds the applicable standard or criteria
BOLD	Sample concentration detectable
BOLD	RPD values exceed 20%

Table 2
Soil Analytical Results
LEPH/HEPH/PAH Analyses
Page 2 of 4

PARAMETERS	RDL	CSR PL Standards (1)	CSR RLld Standards (1)	CSR RLhd Standards (1)	CSR CL Standards (1)	MW19-01-06		RPD	MW19-02-02	MW19-03-02	BH19-04-07	BH19-05-03	BH19-05-04	BH19-06-05	SS19-08	SS19-09	SS19-10	SS19-11	SS19-12	SS19-13	SS19-14	SS19-15
Sample Date						02-Dec-19			02-Dec-19	02-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19
Sample Depth						3.05 - 3.66			0.91 - 1.22	0.91 - 1.22	4.88 - 5.18	1.52 - 1.83	2.44 - 2.74	3.35 - 3.66	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
QA/QC							MW99-01-06															
EPHs (10-19)	200	~ 1 000	~ 1 000	~1 000 (2), ~2 000 (3)	~ 2 000	<200	<200	-	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
EPHs (19-32)	200	~ 1 000	~ 1 000	~1 000 (2), ~5 000 (3)	~ 5 000	<200	<200	-	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
LEPH	200	1 000 (2,3)	1 000 (2,3)	1 000 (2), 2 000 (3)	2 000 (2, 3)	<200	<200	-	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
HEPH	200	1 000 (2,3)	1 000 (2,3)	1 000 (2), 5 000 (3)	5 000 (2,3)	<200	<200	-	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Acenaphthene	0.0050	2 000 (2)	950 (2)	2 000 (2)	15 000 (2)	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.0189**	<0.0050	<0.0050
Acenaphthylene	0.0050	NS	NS	NS	NS	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.0280**	**0.0161**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	0.0040	2.5	2.5	30	30	<0.0040	<0.0040	-	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	**0.0330**	**0.0180**	<0.0040	<0.0040	<0.0040	**0.0846**	<0.0040	<0.0080
Benz (a) anthracene	0.010	95 (2), 1 (3)	50 (2), 1 (3)	95 (2), 10 (3)	300 (2), 10 (3)	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.075**	**0.056**	<0.010	**0.012**	<0.010	**0.529**	<0.010	**0.018**
Benzo (a) pyrene	0.010	10	5	10	30	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.054**	**0.060**	<0.010	<0.010	<0.010	**0.378**	<0.010	**0.021**
Benzo (b+j) fluoranthenes	0.010	95 (2), 1 (3)	50 (2), 1 (3)	95 (2), 10 (3)	300 (2), 10 (3)	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.089**	**0.080**	<0.010	**0.016**	<0.010	**0.578**	**0.015**	**0.042**
Benzo(g,h,i)perylene	0.010	NS	NS	NS	NS	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.031**	**0.030**	<0.010	<0.010	<0.010	**0.202**	<0.010	**0.016**
Benzo (k) fluoranthene	0.010	95 (2), 1 (3)	50 (2), 1 (3)	95 (2), 10 (3)	300 (2), 10 (3)	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.042**	**0.039**	<0.010	<0.010	<0.010	**0.288**	<0.010	**0.014**
Chrysene	0.010	400 (2)	200 (2)	400 (2)	4 500 (2)	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.093**	**0.069**	<0.010	**0.015**	<0.010	**0.726**	**0.012**	<0.030
Dibenz (a,h) anthracene	0.0050	10 (2), 1 (3)	5 (2), 1 (3)	10 (2,3)	30 (2), 10 (3)	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.0124**	**0.0095**	<0.0050	<0.0050	<0.0050	**0.0518**	<0.0050	<0.0050
Fluoranthene	0.010	50	50	200	200	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.302**	**0.083**	<0.010	**0.034**	<0.010	**1.56**	**0.022**	**0.022**
Fluorene	0.010	1 000 (2)	600 (2)	1 000 (2)	9 500 (2)	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.017**	<0.010	<0.010
Indeno (1,2,3-cd) pyrene	0.010	95 (2), 1 (3)	50 (2), 1 (3)	95 (2), 10 (3)	300 (2), 10 (3)	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.040**	**0.037**	<0.010	<0.010	<0.010	**0.216**	<0.010	**0.013**
1-Methylnaphthalene	0.010	500 (2)	250 (2)	500 (2)	1000 (2)	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
2-Methylnaphthalene	0.010	100 (2)	60 (2)	100 (2)	950 (2)	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Naphthalene	0.010	0.6	0.6	20	20	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phenanthrene	0.010	3 500 (2), 5 (3)	1 500 (2), 5 (3)	3 500 (2), 50 (3)	10 000 (2), 50 (3)	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.256**	**0.035**	<0.010	**0.015**	<0.010	**0.623**	<0.010	<0.020
Pyrene	0.010	2 500 (2), 10 (3)	1 000 (2), 10 (3)	2 500 (2), 100 (3)	7 500 (2), 100 (3)	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.149**	**0.063**	<0.010	**0.026**	<0.010	**1.32**	**0.020**	**0.039**
Quinoline	0.010	NS	NS	NS	NS	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

NOTES

Results and standards in µg/g or parts per million (ppm) unless otherwise stated
"~" - Compared to LEPH/HEPH standards
"-" - Not analyzed / cannot be calculated
NS indicates that no standard applies
RPD Relative percent difference
1 - CSR Schedule 3.1, Part 1 - Matrix Numerical Soil Standards unless noted otherwise
2 - CSR Schedule 3.1 - Part 2 - Generic Soil Standards to Protect Human Health
3 - CSR Schedule 3.1 - Part 3 - Generic Soil Standards to Protect Ecological Health

BOLD	Sample concentration exceeds the applicable standard or criteria
BOLD	Sample concentration detectable
BOLD	RPD values exceed 20%

Table 3
Soil Analytical Results
VPH/VOCs Analyses
Page 3 of 4

PARAMETERS	RDL	CSR PL Standards (1)	CSR RLld Standards (1)	CSR RLhd Standards (1)	CSR CL Standards (1)	MW19-01-06		RPD	MW19-02-02	MW19-03-02	BH19-04-07	BH19-05-03	BH19-05-04	BH19-06-05	SS19-08	SS19-09	SS19-10	SS19-11	SS19-12	SS19-13	SS19-14	SS19-15
Sample Date						02-Dec-19			02-Dec-19	02-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19
Sample Depth						3.05 - 3.66			0.91 - 1.22	0.91 - 1.22	4.88 - 5.18	1.52 - 1.83	2.44 - 2.74	3.35 - 3.66	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
QA/QC							MW99-01-06															
VH6-10	100	NS	NS	NS	NS	<100	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
VPH	100	200 (2,3)	200 (2,3)	200 (2,3)	200 (2,3)	<100	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Benzene	0.0050	0.035	0.035	0.035	0.035	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Ethylbenzene	0.015	15	15	15	15	<0.015	<0.015	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Methyl tert-butyl ether	0.200	8 000 (2)	4 000 (2)	8 000 (2)	20 000 (2)	<0.200	<0.200	-	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Styrene	0.050	15 000 (2), 5 (3)	8 500 (2), 5 (3)	15 000 (2), 50 (3)	50 000 (2), 50 (3)	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	0.050	0.5	0.5	0.5	0.5	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Xylenes (total)	0.075	6.5	6.5	6.5	6.5	<0.075	<0.075	-	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075

NOTES

Results and standards in µg/g or parts per million (ppm) unless otherwise stated
RDL - Reported Detection Limit
"-" - Not analyzed / cannot be calculated
NS indicates that no standard applies
1 - CSR Schedule 3.1, Part 1 - Matrix Numerical Soil Standards unless noted otherwise
2 - CSR Schedule 3.1 - Part 2 - Generic Soil Standards to Protect Human Health
3 - CSR Schedule 3.1 - Part 3 - Generic Soil Standards to Protect Ecological Health
RPD - Relative Percentage Difference

BOLD	Sample concentration exceeds the applicable standard or criteria
BOLD	Sample concentration is detectable
BOLD	RPD values exceed 20%

Table 4
Soil Analytical Results
PCBs Analyses
Page 4 of 4

PARAMETERS	RDL	CSR PL Standards (1)	CSR RLld Standards (1)	CSR RLhd Standards (1)	CSR CL Standards (1)	SS19-01		RPD	SS19-02	SS19-03	SS19-04	SS19-05	SS19-06	SS19-07
Sample Date						3-Dec-19			03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19	03-Dec-19
Sample Depth						<0.30			<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
QA/QC							SS99-19-01							
Aroclor 1016	0.010	NS	NS	NS	NS	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1221	0.010	NS	NS	NS	NS	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1232	0.010	NS	NS	NS	NS	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1242	0.010	NS	NS	NS	NS	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1248	0.010	NS	NS	NS	NS	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1254	0.010	NS	NS	NS	NS	<0.010	<0.010	-	<0.020	**0.035**	<0.010	<0.010	<0.020	<0.010
Aroclor 1260	0.010	NS	NS	NS	NS	**0.111**	**0.244**	***74.9%***	**0.283**	<0.010	<0.010	<0.010	**0.025**	<0.010
Aroclor 1262	0.010	NS	NS	NS	NS	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1268	0.010	NS	NS	NS	NS	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total PCBs	0.030	1.5 - 10	1.5 - 5	10 - 35	35	**0.111**	**0.244**	***74.9%***	**0.283**	**0.035**	<0.030	<0.030	<0.035	<0.030

NOTES

Results and standards in µg/g or parts per million (ppm) unless otherwise stated
RDL - Reported Detection Limit
"-" - Not analyzed / cannot be calculated
NS indicates that no standard applies
1 - CSR Schedule 3.1, Part 1 - Numerical Soil Standards unless noted otherwise
2 - CSR Schedule 3.1 - Part 2 - Generic Soil Standards to Protect Human Health
RPD - Relative Percentage Difference

BOLD	Sample concentration exceeds the applicable standard or criteria
BOLD	Sample concentration detectable
BOLD	RPD values exceed 20%

APPENDIX

E LABORATORY CERTIFICATES AND CHAINS OF CUSTODY

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA19A0489**	Page	: 1 of 24
Client	: **WSP Canada Inc.**	Laboratory	: Vancouver - Environmental
Contact	: Jason Newington	Account Manager	: Carla Fuginski
Address	: Unit 100 - 20339 96 Avenue Langley BC Canada V1M 2L1	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 191-15279-00	Date Samples Received	: 10-Dec-2019 08:27
PO	: ----	Date Analysis Commenced	: 11-Dec-2019
C-O-C number	: 17-786865->68, 17-786872	Issue Date	: 19-Dec-2019 11:47
Sampler	: S. Rusnak		
Site	: ----		
Quote number	: ----		
No. of samples received	: 57		
No. of samples analysed	: 29		

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*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Brieanna Allen	Department Manager - Organics	Inorganics - Water Quality, Burnaby, British Columbia
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Dwayne Bennett	Technical Specialist	Inorganics, Saskatoon, Saskatchewan
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Janice Leung	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Mae Soropia	Lab Analyst	Metals, Burnaby, British Columbia
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, 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
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

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

Qualifiers

Qualifier	*Description*
DLCI	*Detection Limit Raised: Chromatographic interference due to co-elution.*
DLQ	*Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.*
SUR-ND	*Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.*

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	SS19-01	SS99-01	SS19-02	SS19-03	SS19-04
					Client sampling date / time	03-Dec-2019 14:00	03-Dec-2019 14:00	03-Dec-2019 14:10	03-Dec-2019 14:20	03-Dec-2019 14:30
						VA19A0489-001	VA19A0489-002	VA19A0489-003	VA19A0489-004	VA19A0489-005
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		6.29	6.30	9.30	5.37	8.09
Polychlorinated Biphenyls										
Aroclor 1016	12674-11-2	E685	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1221	11104-28-2	E685	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1232	11141-16-5	E685	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1242	53469-21-9	E685	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1248	12672-29-6	E685	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1254	11097-69-1	E685	0.010	mg/kg		<0.010	<0.010	<0.020 DLCI	0.035	<0.010
Aroclor 1260	11096-82-5	E685	0.010	mg/kg		0.111	0.244	0.283	<0.010	<0.010
Aroclor 1262	37324-23-5	E685	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1268	11100-14-4	E685	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
polychlorinated biphenyls [PCBs], total	----	E685	0.030	mg/kg		0.111	0.244	0.283	0.035	<0.030
Decachlorobiphenyl	2051-24-3	E685	0.010	%		104	101	93.0	97.0	93.2
tetrachloro-m-xylene	877-09-8	E685	0.010	%		99.0	97.0	85.8	89.0	91.8

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	SS19-05	SS19-06	SS19-07	SS19-08	SS19-09
					Client sampling date / time	03-Dec-2019 14:40	03-Dec-2019 14:50	03-Dec-2019 15:00	03-Dec-2019 15:10	03-Dec-2019 15:20
						VA19A0489-006	VA19A0489-007	VA19A0489-008	VA19A0489-009	VA19A0489-010
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		3.15	3.08	8.37	1.76	5.08
pH (1:2 soil:water)	----	E108	0.10	pH units		----	----	----	6.91	6.81
% saturation	----	E141	1.0	%		----	----	----	29.3	35.0
Particle Size										
clay (<0.004mm)	----	EC185A	1.0	%		----	----	----	4.7	3.2
passing (0.0312 mm)	----	E184	1.0	%		----	----	----	19.9	14.2
passing (0.020 mm)	----	E184	1.0	%		----	----	----	16.6	11.8
silt (0.063mm - 0.004mm)	----	EC185A	1.0	%		----	----	----	27.8	19.9
passing (0.005 mm)	----	E184	1.0	%		----	----	----	5.4	3.7
silt (0.063mm - 0.0312mm)	----	EC185A	1.0	%		----	----	----	12.6	8.9
passing (0.004 mm)	----	E184	1.0	%		----	----	----	4.7	3.2
silt (0.0312mm - 0.004mm)	----	EC185A	1.0	%		----	----	----	15.2	11.0
passing (0.002 mm)	----	E184	1.0	%		----	----	----	3.4	2.2
sand (2.0mm - 0.063mm)	----	EC185A	1.0	%		----	----	----	62.8	50.9
sand (0.125mm - 0.063mm)	----	EC185A	1.0	%		----	----	----	14.7	10.0
sand (0.25mm - 0.125mm)	----	EC185A	1.0	%		----	----	----	15.2	10.1
sand (0.5mm - 0.25mm)	----	EC185A	1.0	%		----	----	----	13.6	10.4
sand (1.0mm - 0.50mm)	----	EC185A	1.0	%		----	----	----	9.8	10.8
sand (2.0mm - 1.0mm)	----	EC185A	1.0	%		----	----	----	9.5	9.6
gravel (>2mm)	----	EC185A	1.0	%		----	----	----	4.7	26.0
Saturated Paste Extractables										
chloride	16887-00-6	EC239A.Cl	2.0	mg/kg		----	----	----	5.5	9.8
chloride	16887-00-6	E239.Cl	2.0	mg/L		----	----	----	18.8	28.0
sodium	7440-23-5	EC485-L	1.00	mg/kg		----	----	----	3.72	2.28
sodium	7440-23-5	E485-L	1.0	mg/L		----	----	----	12.7	6.5
Metals										
aluminum	7429-90-5	E440	50	mg/kg		----	----	----	8910	10300
antimony	7440-36-0	E440	0.10	mg/kg		----	----	----	0.18	0.14
arsenic	7440-38-2	E440	0.10	mg/kg		----	----	----	2.83	1.58
barium	7440-39-3	E440	0.50	mg/kg		----	----	----	70.9	82.7
beryllium	7440-41-7	E440	0.10	mg/kg		----	----	----	0.36	0.41

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	SS19-05	SS19-06	SS19-07	SS19-08	SS19-09
					Client sampling date / time	03-Dec-2019 14:40	03-Dec-2019 14:50	03-Dec-2019 15:00	03-Dec-2019 15:10	03-Dec-2019 15:20
						VA19A0489-006	VA19A0489-007	VA19A0489-008	VA19A0489-009	VA19A0489-010
						Result	Result	Result	Result	Result
Metals										
bismuth	7440-69-9	E440	0.20	mg/kg		----	----	----	<0.20	<0.20
boron	7440-42-8	E440	5.0	mg/kg		----	----	----	<5.0	<5.0
cadmium	7440-43-9	E440	0.020	mg/kg		----	----	----	0.072	0.093
calcium	7440-70-2	E440	50	mg/kg		----	----	----	3560	3900
chromium	7440-47-3	E440	0.50	mg/kg		----	----	----	10.9	10.7
cobalt	7440-48-4	E440	0.10	mg/kg		----	----	----	4.59	4.86
copper	7440-50-8	E440	0.50	mg/kg		----	----	----	13.3	12.4
iron	7439-89-6	E440	50	mg/kg		----	----	----	18600	16900
lead	7439-92-1	E440	0.50	mg/kg		----	----	----	5.07	6.62
lithium	7439-93-2	E440	2.0	mg/kg		----	----	----	6.8	8.2
magnesium	7439-95-4	E440	20	mg/kg		----	----	----	2270	2820
manganese	7439-96-5	E440	1.0	mg/kg		----	----	----	272	387
mercury	7439-97-6	E510	0.0050	mg/kg		----	----	----	0.0077	0.0089
molybdenum	7439-98-7	E440	0.10	mg/kg		----	----	----	0.44	0.78
nickel	7440-02-0	E440	0.50	mg/kg		----	----	----	6.02	6.59
phosphorus	7723-14-0	E440	50	mg/kg		----	----	----	604	652
potassium	7440-09-7	E440	100	mg/kg		----	----	----	1420	1710
selenium	7782-49-2	E440	0.20	mg/kg		----	----	----	<0.20	<0.20
silver	7440-22-4	E440	0.10	mg/kg		----	----	----	<0.10	<0.10
sodium	7440-23-5	E440	50	mg/kg		----	----	----	205	178
strontium	7440-24-6	E440	0.50	mg/kg		----	----	----	45.6	47.5
sulfur	7704-34-9	E440	1000	mg/kg		----	----	----	<1000	<1000
thallium	7440-28-0	E440	0.050	mg/kg		----	----	----	0.055	0.059
tin	7440-31-5	E440	2.0	mg/kg		----	----	----	<2.0	<2.0
titanium	7440-32-6	E440	1.0	mg/kg		----	----	----	723	737
tungsten	7440-33-7	E440	0.50	mg/kg		----	----	----	<0.50	<0.50
uranium	7440-61-1	E440	0.050	mg/kg		----	----	----	0.655	0.699
vanadium	7440-62-2	E440	0.20	mg/kg		----	----	----	47.3	42.8
zinc	7440-66-6	E440	2.0	mg/kg		----	----	----	32.6	43.0
zirconium	7440-67-7	E440	1.0	mg/kg		----	----	----	8.3	7.8
Volatile Organic Compounds										

Analytical Results

Sub-Matrix: Soil
(Matrix: Soil)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	SS19-05	SS19-06	SS19-07	SS19-08	SS19-09
					Client sampling date / time	03-Dec-2019 14:40	03-Dec-2019 14:50	03-Dec-2019 15:00	03-Dec-2019 15:10	03-Dec-2019 15:20
						VA19A0489-006	VA19A0489-007	VA19A0489-008	VA19A0489-009	VA19A0489-010
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
benzene	71-43-2	E611A	0.0050	mg/kg		----	----	----	<0.0050	<0.0050
ethylbenzene	100-41-4	E611A	0.015	mg/kg		----	----	----	<0.015	<0.015
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg		----	----	----	<0.200	<0.200
styrene	100-42-5	E611A	0.050	mg/kg		----	----	----	<0.050	<0.050
toluene	108-88-3	E611A	0.050	mg/kg		----	----	----	<0.050	<0.050
xylene, m+p-	179601-23-1	E611A	0.050	mg/kg		----	----	----	<0.050	<0.050
xylene, o-	95-47-6	E611A	0.050	mg/kg		----	----	----	<0.050	<0.050
xylenes, total	1330-20-7	E611A	0.075	mg/kg		----	----	----	<0.075	<0.075
bromofluorobenzene, 4-	460-00-4	E611A	0.0050	%		----	----	----	97.3	93.3
difluorobenzene, 1,4-	540-36-3	E611A	0.0050	%		----	----	----	96.3	87.3
Hydrocarbons										
dichlorotoluene, 3,4-	97-75-0	E581.VH	1.0	%		----	----	----	108	85.0
EPH (C10-C19)	----	E601A	200	mg/kg		----	----	----	<200	<200
EPH (C19-C32)	----	E601A	200	mg/kg		----	----	----	<200	<200
VHs (C6-C10)	----	E581.VH	100	mg/kg		----	----	----	<100	<100
HEPHs	----	EC600A	200	mg/kg		----	----	----	<200	<200
LEPHs	----	EC600A	200	mg/kg		----	----	----	<200	<200
VPHs	----	EC580A	100	mg/kg		----	----	----	<100	<100
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		----	----	----	98.8	94.2
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		----	----	----	<0.0050	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		----	----	----	0.0280	0.0161
acridine	260-94-6	E641A-L	0.010	mg/kg		----	----	----	<0.010	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		----	----	----	0.0330	0.0180
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		----	----	----	0.075	0.056
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		----	----	----	0.054	0.060
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		----	----	----	0.089	0.080
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		----	----	----	0.132	0.119
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		----	----	----	0.031	0.030
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		----	----	----	0.042	0.039
chrysene	218-01-9	E641A-L	0.010	mg/kg		----	----	----	0.093	0.069

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	SS19-05	SS19-06	SS19-07	SS19-08	SS19-09
					Client sampling date / time	03-Dec-2019 14:40	03-Dec-2019 14:50	03-Dec-2019 15:00	03-Dec-2019 15:10	03-Dec-2019 15:20
						VA19A0489-006	VA19A0489-007	VA19A0489-008	VA19A0489-009	VA19A0489-010
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		----	----	----	0.0124	0.0095
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		----	----	----	0.302	0.083
fluorene	86-73-7	E641A-L	0.010	mg/kg		----	----	----	<0.010	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		----	----	----	0.040	0.037
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		----	----	----	<0.010	<0.010
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		----	----	----	<0.010	<0.010
methylnaphthalenes, 1+2-	----	E641A-L	0.015	mg/kg		----	----	----	<0.015	<0.015
naphthalene	91-20-3	E641A-L	0.010	mg/kg		----	----	----	<0.010	<0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		----	----	----	0.256	0.035
pyrene	129-00-0	E641A-L	0.010	mg/kg		----	----	----	0.149	0.063
quinoline	6027-02-7	E641A-L	0.010	mg/kg		----	----	----	<0.010	<0.010
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		----	----	----	0.092	0.091
IACR (CCME)	----	E641A-L	0.15	mg/kg		----	----	----	1.31	1.17
acridine-d9	34749-75-2	E641A-L	0.010	%		----	----	----	80.6	88.9
chrysene-d12	1719-03-5	E641A-L	0.010	%		----	----	----	88.8	93.0
naphthalene-d8	1146-65-2	E641A-L	0.010	%		----	----	----	92.5	99.8
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		----	----	----	94.0	100.0
Polychlorinated Biphenyls										
Aroclor 1016	12674-11-2	E685	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
Aroclor 1221	11104-28-2	E685	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
Aroclor 1232	11141-16-5	E685	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
Aroclor 1242	53469-21-9	E685	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
Aroclor 1248	12672-29-6	E685	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
Aroclor 1254	11097-69-1	E685	0.010	mg/kg		<0.010	<0.020 DLCI	<0.010	----	----
Aroclor 1260	11096-82-5	E685	0.010	mg/kg		<0.010	0.025	<0.010	----	----
Aroclor 1262	37324-23-5	E685	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
Aroclor 1268	11100-14-4	E685	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
polychlorinated biphenyls [PCBs], total	----	E685	0.030	mg/kg		<0.030	<0.035	<0.030	----	----
Decachlorobiphenyl	2051-24-3	E685	0.010	%		91.8	92.8	96.5	----	----
tetrachloro-m-xylene	877-09-8	E685	0.010	%		94.2	89.2	95.8	----	----

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	SS19-10	SS19-11	SS19-12	SS19-13	SS19-14
					Client sampling date / time	03-Dec-2019 15:30	03-Dec-2019 15:40	03-Dec-2019 15:50	03-Dec-2019 16:00	03-Dec-2019 16:10
						VA19A0489-011	VA19A0489-012	VA19A0489-013	VA19A0489-014	VA19A0489-015
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		6.59	3.50	4.56	5.75	3.97
pH (1:2 soil:water)	----	E108	0.10	pH units		8.89	8.94	7.47	7.20	8.54
% saturation	----	E141	1.0	%		31.4	27.4	21.4	31.8	20.9
Particle Size										
clay (<0.004mm)	----	EC185A	1.0	%		1.0	1.2	2.0	1.1	2.2
passing (0.0312 mm)	----	E184	1.0	%		3.8	3.0	8.2	4.1	6.0
passing (0.020 mm)	----	E184	1.0	%		3.2	2.6	6.8	3.5	5.1
silt (0.063mm - 0.004mm)	----	EC185A	1.0	%		6.6	3.8	11.9	5.5	6.8
passing (0.005 mm)	----	E184	1.0	%		1.1	1.3	2.3	1.2	2.4
silt (0.063mm - 0.0312mm)	----	EC185A	1.0	%		3.9	2.0	5.7	2.5	3.0
passing (0.004 mm)	----	E184	1.0	%		1.0	1.2	2.0	1.1	2.2
silt (0.0312mm - 0.004mm)	----	EC185A	1.0	%		2.7	1.8	6.2	3.0	3.7
passing (0.002 mm)	----	E184	1.0	%		<1.0	1.0	1.5	<1.0	1.8
sand (2.0mm - 0.063mm)	----	EC185A	1.0	%		91.6	90.5	46.8	42.9	63.9
sand (0.125mm - 0.063mm)	----	EC185A	1.0	%		9.2	3.9	8.7	3.6	5.6
sand (0.25mm - 0.125mm)	----	EC185A	1.0	%		27.4	14.1	11.8	7.8	13.6
sand (0.5mm - 0.25mm)	----	EC185A	1.0	%		44.5	38.8	12.3	13.3	22.6
sand (1.0mm - 0.50mm)	----	EC185A	1.0	%		9.5	28.5	7.6	11.2	13.8
sand (2.0mm - 1.0mm)	----	EC185A	1.0	%		1.0	5.2	6.4	7.0	8.3
gravel (>2mm)	----	EC185A	1.0	%		<1.0	4.5	39.3	50.5	27.1
Saturated Paste Extractables										
chloride	16887-00-6	EC239A.Cl	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0
chloride	16887-00-6	E239.Cl	2.0	mg/L		4.2	3.2	5.2	2.6	4.9
sodium	7440-23-5	EC485-L	1.00	mg/kg		<1.00	<1.00	<1.00	<1.00	<1.00
sodium	7440-23-5	E485-L	1.0	mg/L		2.3	2.0	1.8	1.2	2.4
Metals										
aluminum	7429-90-5	E440	50	mg/kg		4820	5320	8100	6540	6280
antimony	7440-36-0	E440	0.10	mg/kg		0.12	0.16	0.16	0.14	0.17
arsenic	7440-38-2	E440	0.10	mg/kg		1.31	1.28	1.48	1.40	1.57
barium	7440-39-3	E440	0.50	mg/kg		23.2	23.4	54.1	40.4	30.2
beryllium	7440-41-7	E440	0.10	mg/kg		0.22	0.28	0.32	0.30	0.31

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	SS19-10	SS19-11	SS19-12	SS19-13	SS19-14
					Client sampling date / time	03-Dec-2019 15:30	03-Dec-2019 15:40	03-Dec-2019 15:50	03-Dec-2019 16:00	03-Dec-2019 16:10
						VA19A0489-011	VA19A0489-012	VA19A0489-013	VA19A0489-014	VA19A0489-015
						Result	Result	Result	Result	Result
Metals										
bismuth	7440-69-9	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20
boron	7440-42-8	E440	5.0	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
cadmium	7440-43-9	E440	0.020	mg/kg		0.050	0.053	0.081	0.092	0.066
calcium	7440-70-2	E440	50	mg/kg		5750	6380	4460	5560	5870
chromium	7440-47-3	E440	0.50	mg/kg		7.30	7.23	11.2	8.82	9.25
cobalt	7440-48-4	E440	0.10	mg/kg		4.16	4.81	4.81	4.77	4.33
copper	7440-50-8	E440	0.50	mg/kg		10.4	32.1	12.8	14.1	12.3
iron	7439-89-6	E440	50	mg/kg		17200	16800	19200	16100	15300
lead	7439-92-1	E440	0.50	mg/kg		4.02	7.34	5.30	8.67	5.08
lithium	7439-93-2	E440	2.0	mg/kg		5.4	6.7	6.6	7.8	7.4
magnesium	7439-95-4	E440	20	mg/kg		2630	3150	2590	4460	3420
manganese	7439-96-5	E440	1.0	mg/kg		218	252	295	316	264
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	<0.0050	0.0073	<0.0050	<0.0050
molybdenum	7439-98-7	E440	0.10	mg/kg		0.25	0.24	0.42	0.43	0.32
nickel	7440-02-0	E440	0.50	mg/kg		4.11	4.76	5.92	7.67	5.38
phosphorus	7723-14-0	E440	50	mg/kg		515	566	672	636	616
potassium	7440-09-7	E440	100	mg/kg		460	520	1270	960	640
selenium	7782-49-2	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20
silver	7440-22-4	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
sodium	7440-23-5	E440	50	mg/kg		149	130	193	155	155
strontium	7440-24-6	E440	0.50	mg/kg		46.4	41.3	45.9	45.5	47.3
sulfur	7704-34-9	E440	1000	mg/kg		<1000	<1000	<1000	<1000	<1000
thallium	7440-28-0	E440	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
tin	7440-31-5	E440	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0
titanium	7440-32-6	E440	1.0	mg/kg		495	541	765	681	617
tungsten	7440-33-7	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
uranium	7440-61-1	E440	0.050	mg/kg		0.530	0.552	0.918	0.671	0.611
vanadium	7440-62-2	E440	0.20	mg/kg		49.4	46.6	54.8	49.0	42.1
zinc	7440-66-6	E440	2.0	mg/kg		22.6	29.6	33.3	39.6	31.1
zirconium	7440-67-7	E440	1.0	mg/kg		3.8	4.6	6.0	2.6	4.4
Volatile Organic Compounds										

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	SS19-10	SS19-11	SS19-12	SS19-13	SS19-14
					Client sampling date / time	03-Dec-2019 15:30	03-Dec-2019 15:40	03-Dec-2019 15:50	03-Dec-2019 16:00	03-Dec-2019 16:10
						VA19A0489-011	VA19A0489-012	VA19A0489-013	VA19A0489-014	VA19A0489-015
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
benzene	71-43-2	E611A	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
ethylbenzene	100-41-4	E611A	0.015	mg/kg		<0.015	<0.015	<0.015	<0.015	<0.015
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg		<0.200	<0.200	<0.200	<0.200	<0.200
styrene	100-42-5	E611A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
toluene	108-88-3	E611A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylene, m+p-	179601-23-1	E611A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylene, o-	95-47-6	E611A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylenes, total	1330-20-7	E611A	0.075	mg/kg		<0.075	<0.075	<0.075	<0.075	<0.075
bromofluorobenzene, 4-	460-00-4	E611A	0.0050	%		94.2	95.4	86.8	97.9	91.6
difluorobenzene, 1,4-	540-36-3	E611A	0.0050	%		92.5	90.6	76.4	89.6	86.6
Hydrocarbons										
dichlorotoluene, 3,4-	97-75-0	E581.VH	1.0	%		87.4	87.3	69.0 SUR-ND	80.4	74.0
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	100	mg/kg		<100	<100	<100	<100	<100
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
LEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
VPHs	----	EC580A	100	mg/kg		<100	<100	<100	<100	<100
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		90.2	91.5	90.4	88.6	91.7
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	0.0189	<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	0.026	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	<0.0040	<0.0040	0.0846	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	0.012	<0.010	0.529	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.378	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	0.016	<0.010	0.578	0.015
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	0.016	<0.015	0.867	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.202	<0.010
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.288	<0.010
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	0.015	<0.010	0.726	0.012

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	SS19-10	SS19-11	SS19-12	SS19-13	SS19-14
					Client sampling date / time	03-Dec-2019 15:30	03-Dec-2019 15:40	03-Dec-2019 15:50	03-Dec-2019 16:00	03-Dec-2019 16:10
						VA19A0489-011	VA19A0489-012	VA19A0489-013	VA19A0489-014	VA19A0489-015
						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	0.0518	<0.0050
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	0.034	<0.010	1.56	0.022
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.017	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	0.216	<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
methylnaphthalenes, 1+2-	----	E641A-L	0.015	mg/kg		<0.015	<0.015	<0.015	<0.015	<0.015
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	0.015	<0.010	0.623	<0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	0.026	<0.010	1.32	0.020
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		<0.020	<0.020	<0.020	0.600	<0.020
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.15	<0.15	<0.15	8.72	<0.15
acridine-d9	34749-75-2	E641A-L	0.010	%		78.8	77.8	82.3	91.5	81.3
chrysene-d12	1719-03-5	E641A-L	0.010	%		85.3	81.5	87.3	98.6	82.4
naphthalene-d8	1146-65-2	E641A-L	0.010	%		99.7	93.6	92.9	101	98.5
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		95.8	93.1	93.4	101	95.6

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	SS19-15	MW19-02-02	MW19-02-03	MW19-01-03	MW19-01-06
					Client sampling date / time	03-Dec-2019 16:20	02-Dec-2019 11:30	02-Dec-2019 11:45	02-Dec-2019 10:20	02-Dec-2019 10:50
						VA19A0489-016	VA19A0489-018	VA19A0489-019	VA19A0489-027	VA19A0489-030
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		4.78	2.09	----	----	13.6
pH (1:2 soil:water)	----	E108	0.10	pH units		7.79	9.25	8.90	----	9.22
% saturation	----	E141	1.0	%		18.7	----	29.2	29.8	----
Particle Size										
clay (<0.004mm)	----	EC185A	1.0	%		<1.0	----	3.2	1.2	----
passing (0.0312 mm)	----	E184	1.0	%		3.5	----	12.6	3.1	----
passing (0.020 mm)	----	E184	1.0	%		2.9	----	10.6	2.7	----
silt (0.063mm - 0.004mm)	----	EC185A	1.0	%		4.6	----	18.2	4.4	----
passing (0.005 mm)	----	E184	1.0	%		1.1	----	3.7	1.3	----
silt (0.063mm - 0.0312mm)	----	EC185A	1.0	%		2.1	----	8.8	2.4	----
passing (0.004 mm)	----	E184	1.0	%		<1.0	----	3.2	1.2	----
silt (0.0312mm - 0.004mm)	----	EC185A	1.0	%		2.5	----	9.4	1.9	----
passing (0.002 mm)	----	E184	1.0	%		<1.0	----	2.3	1.0	----
sand (2.0mm - 0.063mm)	----	EC185A	1.0	%		53.3	----	76.6	94.4	----
sand (0.125mm - 0.063mm)	----	EC185A	1.0	%		3.3	----	15.2	6.2	----
sand (0.25mm - 0.125mm)	----	EC185A	1.0	%		9.9	----	37.8	23.1	----
sand (0.5mm - 0.25mm)	----	EC185A	1.0	%		16.6	----	19.8	48.7	----
sand (1.0mm - 0.50mm)	----	EC185A	1.0	%		13.3	----	3.0	16.0	----
sand (2.0mm - 1.0mm)	----	EC185A	1.0	%		10.2	----	<1.0	<1.0	----
gravel (>2mm)	----	EC185A	1.0	%		41.1	----	2.0	<1.0	----
Saturated Paste Extractables										
chloride	16887-00-6	EC239A.Cl	2.0	mg/kg		<2.0	----	<2.0	<2.0	----
chloride	16887-00-6	E239.Cl	2.0	mg/L		3.2	----	4.4	2.6	----
sodium	7440-23-5	EC485-L	1.00	mg/kg		<1.00	----	1.96	2.00	----
sodium	7440-23-5	E485-L	1.0	mg/L		2.0	----	6.7	6.7	----
Metals										
aluminum	7429-90-5	E440	50	mg/kg		6370	6010	4990	----	6020
antimony	7440-36-0	E440	0.10	mg/kg		0.14	0.13	0.13	----	0.13
arsenic	7440-38-2	E440	0.10	mg/kg		1.48	1.56	1.73	----	1.92
barium	7440-39-3	E440	0.50	mg/kg		38.0	26.4	26.9	----	32.4
beryllium	7440-41-7	E440	0.10	mg/kg		0.31	0.27	0.22	----	0.22

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	SS19-15	MW19-02-02	MW19-02-03	MW19-01-03	MW19-01-06
					Client sampling date / time	03-Dec-2019 16:20	02-Dec-2019 11:30	02-Dec-2019 11:45	02-Dec-2019 10:20	02-Dec-2019 10:50
						VA19A0489-016	VA19A0489-018	VA19A0489-019	VA19A0489-027	VA19A0489-030
						Result	Result	Result	Result	Result
Metals										
bismuth	7440-69-9	E440	0.20	mg/kg		<0.20	<0.20	<0.20	----	<0.20
boron	7440-42-8	E440	5.0	mg/kg		<5.0	<5.0	<5.0	----	<5.0
cadmium	7440-43-9	E440	0.020	mg/kg		0.083	0.055	0.050	----	0.068
calcium	7440-70-2	E440	50	mg/kg		4780	7460	6510	----	8560
chromium	7440-47-3	E440	0.50	mg/kg		9.80	7.66	9.22	----	10.7
cobalt	7440-48-4	E440	0.10	mg/kg		5.13	4.58	4.66	----	4.38
copper	7440-50-8	E440	0.50	mg/kg		17.3	14.2	12.1	----	12.0
iron	7439-89-6	E440	50	mg/kg		18600	16500	21000	----	18600
lead	7439-92-1	E440	0.50	mg/kg		6.74	4.09	3.68	----	3.79
lithium	7439-93-2	E440	2.0	mg/kg		7.3	6.8	5.5	----	4.7
magnesium	7439-95-4	E440	20	mg/kg		4180	3630	2510	----	2910
manganese	7439-96-5	E440	1.0	mg/kg		307	267	219	----	234
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	----	----	----	----
mercury	7439-97-6	E510	0.0500	mg/kg		----	<0.0500	<0.0500	----	<0.0500
molybdenum	7439-98-7	E440	0.10	mg/kg		0.39	0.36	0.34	----	0.34
nickel	7440-02-0	E440	0.50	mg/kg		8.08	4.80	4.40	----	5.07
phosphorus	7723-14-0	E440	50	mg/kg		699	638	639	----	1010
potassium	7440-09-7	E440	100	mg/kg		670	520	480	----	650
selenium	7782-49-2	E440	0.20	mg/kg		<0.20	<0.20	<0.20	----	<0.20
silver	7440-22-4	E440	0.10	mg/kg		<0.10	<0.10	<0.10	----	<0.10
sodium	7440-23-5	E440	50	mg/kg		195	171	179	----	284
strontium	7440-24-6	E440	0.50	mg/kg		44.9	42.6	47.0	----	47.8
sulfur	7704-34-9	E440	1000	mg/kg		<1000	<1000	<1000	----	<1000
thallium	7440-28-0	E440	0.050	mg/kg		<0.050	<0.050	<0.050	----	<0.050
tin	7440-31-5	E440	2.0	mg/kg		<2.0	<2.0	<2.0	----	<2.0
titanium	7440-32-6	E440	1.0	mg/kg		647	648	489	----	686
tungsten	7440-33-7	E440	0.50	mg/kg		<0.50	<0.50	<0.50	----	<0.50
uranium	7440-61-1	E440	0.050	mg/kg		0.726	0.725	0.625	----	0.688
vanadium	7440-62-2	E440	0.20	mg/kg		59.3	46.2	62.4	----	56.9
zinc	7440-66-6	E440	2.0	mg/kg		50.2	29.1	22.0	----	25.4
zirconium	7440-67-7	E440	1.0	mg/kg		4.3	4.8	3.2	----	3.5

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	SS19-15	MW19-02-02	MW19-02-03	MW19-01-03	MW19-01-06
					Client sampling date / time	03-Dec-2019 16:20	02-Dec-2019 11:30	02-Dec-2019 11:45	02-Dec-2019 10:20	02-Dec-2019 10:50
						VA19A0489-016	VA19A0489-018	VA19A0489-019	VA19A0489-027	VA19A0489-030
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
benzene	71-43-2	E611A	0.0050	mg/kg		<0.0050	<0.0050	----	----	<0.0050
ethylbenzene	100-41-4	E611A	0.015	mg/kg		<0.015	<0.015	----	----	<0.015
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg		<0.200	<0.200	----	----	<0.200
styrene	100-42-5	E611A	0.050	mg/kg		<0.050	<0.050	----	----	<0.050
toluene	108-88-3	E611A	0.050	mg/kg		<0.050	<0.050	----	----	<0.050
xylene, m+p-	179601-23-1	E611A	0.050	mg/kg		<0.050	<0.050	----	----	<0.050
xylene, o-	95-47-6	E611A	0.050	mg/kg		<0.050	<0.050	----	----	<0.050
xylenes, total	1330-20-7	E611A	0.075	mg/kg		<0.075	<0.075	----	----	<0.075
bromofluorobenzene, 4-	460-00-4	E611A	0.0050	%		90.5	88.4	----	----	88.8
difluorobenzene, 1,4-	540-36-3	E611A	0.0050	%		86.0	83.0	----	----	86.3
Hydrocarbons										
dichlorotoluene, 3,4-	97-75-0	E581.VH	1.0	%		77.4	94.0	----	----	80.7
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	100	mg/kg		<100	<100	----	----	<100
HEPHs	----	EC600A	200	mg/kg		<200	<200	----	----	<200
LEPHs	----	EC600A	200	mg/kg		<200	<200	----	----	<200
VPHs	----	EC580A	100	mg/kg		<100	<100	----	----	<100
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		98.9	92.9	----	----	93.5
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	<0.0050	----	----	<0.0050
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		<0.0080 DLQ	<0.0040	----	----	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		0.018	<0.010	----	----	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		0.021	<0.010	----	----	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		0.042	<0.010	----	----	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		0.056	<0.015	----	----	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		0.016	<0.010	----	----	<0.010
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		0.014	<0.010	----	----	<0.010
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.030 DLCI	<0.010	----	----	<0.010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: SS19-15	MW19-02-02	MW19-02-03	MW19-01-03	MW19-01-06
					Client sampling date / time: 03-Dec-2019 16:20	02-Dec-2019 11:30	02-Dec-2019 11:45	02-Dec-2019 10:20	02-Dec-2019 10:50
					VA19A0489-016	VA19A0489-018	VA19A0489-019	VA19A0489-027	VA19A0489-030
					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
fluoranthene	206-44-0	E641A-L	0.010	mg/kg	0.022	<0.010	----	----	<0.010
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	0.013	<0.010	----	----	<0.010
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
methylnaphthalenes, 1+2-	----	E641A-L	0.015	mg/kg	<0.015	<0.015	----	----	<0.015
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	<0.020 DLQ	<0.010	----	----	<0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg	0.039	<0.010	----	----	<0.010
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	0.030	<0.020	----	----	<0.020
IACR (CCME)	----	E641A-L	0.15	mg/kg	0.47	<0.15	----	----	<0.15
acridine-d9	34749-75-2	E641A-L	0.010	%	86.4	79.8	----	----	84.8
chrysene-d12	1719-03-5	E641A-L	0.010	%	92.7	85.1	----	----	91.2
naphthalene-d8	1146-65-2	E641A-L	0.010	%	92.5	93.4	----	----	100
phenanthrene-d10	1517-22-2	E641A-L	0.010	%	93.6	91.4	----	----	98.2

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW99-01-06	MW19-03-02	MW19-03-03	BH19-04-03	BH19-04-07
					Client sampling date / time	02-Dec-2019 10:50	02-Dec-2019 13:40	02-Dec-2019 13:50	03-Dec-2019 08:00	03-Dec-2019 08:40
						VA19A0489-034	VA19A0489-036	VA19A0489-037	VA19A0489-043	VA19A0489-045
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		13.2	4.61	----	----	13.4
pH (1:2 soil:water)	----	E108	0.10	pH units		9.22	8.85	----	----	9.05
% saturation	----	E141	1.0	%		----	----	29.1	19.4	----
Particle Size										
clay (<0.004mm)	----	EC185A	1.0	%		----	----	2.7	<1.0	----
passing (0.0312 mm)	----	E184	1.0	%		----	----	23.1	1.9	----
passing (0.020 mm)	----	E184	1.0	%		----	----	18.7	1.6	----
silt (0.063mm - 0.004mm)	----	EC185A	1.0	%		----	----	44.6	2.2	----
passing (0.005 mm)	----	E184	1.0	%		----	----	3.1	<1.0	----
silt (0.063mm - 0.0312mm)	----	EC185A	1.0	%		----	----	24.2	<1.0	----
passing (0.004 mm)	----	E184	1.0	%		----	----	2.7	<1.0	----
silt (0.0312mm - 0.004mm)	----	EC185A	1.0	%		----	----	20.4	1.2	----
passing (0.002 mm)	----	E184	1.0	%		----	----	1.9	<1.0	----
sand (2.0mm - 0.063mm)	----	EC185A	1.0	%		----	----	52.7	50.6	----
sand (0.125mm - 0.063mm)	----	EC185A	1.0	%		----	----	32.5	1.9	----
sand (0.25mm - 0.125mm)	----	EC185A	1.0	%		----	----	19.1	5.3	----
sand (0.5mm - 0.25mm)	----	EC185A	1.0	%		----	----	1.0	14.8	----
sand (1.0mm - 0.50mm)	----	EC185A	1.0	%		----	----	<1.0	18.5	----
sand (2.0mm - 1.0mm)	----	EC185A	1.0	%		----	----	<1.0	10.1	----
gravel (>2mm)	----	EC185A	1.0	%		----	----	<1.0	46.5	----
Saturated Paste Extractables										
chloride	16887-00-6	EC239A.Cl	2.0	mg/kg		----	----	2.6	<2.0	----
chloride	16887-00-6	E239.Cl	2.0	mg/L		----	----	9.1	8.3	----
sodium	7440-23-5	EC485-L	1.00	mg/kg		----	----	3.55	2.23	----
sodium	7440-23-5	E485-L	1.0	mg/L		----	----	12.2	11.5	----
Metals										
aluminum	7429-90-5	E440	50	mg/kg		5600	6480	----	----	6470
antimony	7440-36-0	E440	0.10	mg/kg		0.14	0.14	----	----	0.12
arsenic	7440-38-2	E440	0.10	mg/kg		1.90	1.96	----	----	2.15
barium	7440-39-3	E440	0.50	mg/kg		31.2	39.8	----	----	35.3
beryllium	7440-41-7	E440	0.10	mg/kg		0.21	0.20	----	----	0.26

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW99-01-06	MW19-03-02	MW19-03-03	BH19-04-03	BH19-04-07
					Client sampling date / time	02-Dec-2019 10:50	02-Dec-2019 13:40	02-Dec-2019 13:50	03-Dec-2019 08:00	03-Dec-2019 08:40
						VA19A0489-034	VA19A0489-036	VA19A0489-037	VA19A0489-043	VA19A0489-045
						Result	Result	Result	Result	Result
Metals										
bismuth	7440-69-9	E440	0.20	mg/kg		<0.20	<0.20	----	----	<0.20
boron	7440-42-8	E440	5.0	mg/kg		<5.0	<5.0	----	----	<5.0
cadmium	7440-43-9	E440	0.020	mg/kg		0.063	0.074	----	----	0.062
calcium	7440-70-2	E440	50	mg/kg		8360	18200	----	----	5430
chromium	7440-47-3	E440	0.50	mg/kg		10.5	10.1	----	----	10.8
cobalt	7440-48-4	E440	0.10	mg/kg		4.04	4.53	----	----	4.66
copper	7440-50-8	E440	0.50	mg/kg		10.7	14.9	----	----	13.5
iron	7439-89-6	E440	50	mg/kg		17800	17100	----	----	18300
lead	7439-92-1	E440	0.50	mg/kg		3.64	3.39	----	----	3.94
lithium	7439-93-2	E440	2.0	mg/kg		4.3	5.3	----	----	5.6
magnesium	7439-95-4	E440	20	mg/kg		2400	3060	----	----	2930
manganese	7439-96-5	E440	1.0	mg/kg		215	221	----	----	245
mercury	7439-97-6	E510	0.0500	mg/kg		<0.0500	<0.0500	----	----	<0.0500
molybdenum	7439-98-7	E440	0.10	mg/kg		0.33	0.26	----	----	0.32
nickel	7440-02-0	E440	0.50	mg/kg		4.50	5.69	----	----	5.60
phosphorus	7723-14-0	E440	50	mg/kg		818	1330	----	----	808
potassium	7440-09-7	E440	100	mg/kg		610	670	----	----	560
selenium	7782-49-2	E440	0.20	mg/kg		<0.20	<0.20	----	----	<0.20
silver	7440-22-4	E440	0.10	mg/kg		<0.10	0.11	----	----	<0.10
sodium	7440-23-5	E440	50	mg/kg		267	281	----	----	258
strontium	7440-24-6	E440	0.50	mg/kg		52.7	67.3	----	----	48.4
sulfur	7704-34-9	E440	1000	mg/kg		<1000	<1000	----	----	<1000
thallium	7440-28-0	E440	0.050	mg/kg		<0.050	<0.050	----	----	<0.050
tin	7440-31-5	E440	2.0	mg/kg		<2.0	<2.0	----	----	<2.0
titanium	7440-32-6	E440	1.0	mg/kg		700	582	----	----	681
tungsten	7440-33-7	E440	0.50	mg/kg		<0.50	<0.50	----	----	<0.50
uranium	7440-61-1	E440	0.050	mg/kg		0.766	0.681	----	----	0.638
vanadium	7440-62-2	E440	0.20	mg/kg		56.7	51.3	----	----	56.2
zinc	7440-66-6	E440	2.0	mg/kg		21.0	21.2	----	----	25.3
zirconium	7440-67-7	E440	1.0	mg/kg		3.6	2.4	----	----	4.5
Volatile Organic Compounds										

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW99-01-06	MW19-03-02	MW19-03-03	BH19-04-03	BH19-04-07
					Client sampling date / time	02-Dec-2019 10:50	02-Dec-2019 13:40	02-Dec-2019 13:50	03-Dec-2019 08:00	03-Dec-2019 08:40
						VA19A0489-034	VA19A0489-036	VA19A0489-037	VA19A0489-043	VA19A0489-045
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
benzene	71-43-2	E611A	0.0050	mg/kg		<0.0050	<0.0050	----	----	<0.0050
ethylbenzene	100-41-4	E611A	0.015	mg/kg		<0.015	<0.015	----	----	<0.015
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg		<0.200	<0.200	----	----	<0.200
styrene	100-42-5	E611A	0.050	mg/kg		<0.050	<0.050	----	----	<0.050
toluene	108-88-3	E611A	0.050	mg/kg		<0.050	<0.050	----	----	<0.050
xylene, m+p-	179601-23-1	E611A	0.050	mg/kg		<0.050	<0.050	----	----	<0.050
xylene, o-	95-47-6	E611A	0.050	mg/kg		<0.050	<0.050	----	----	<0.050
xylenes, total	1330-20-7	E611A	0.075	mg/kg		<0.075	<0.075	----	----	<0.075
bromofluorobenzene, 4-	460-00-4	E611A	0.0050	%		91.7	92.9	----	----	93.5
difluorobenzene, 1,4-	540-36-3	E611A	0.0050	%		90.9	87.6	----	----	84.0
Hydrocarbons										
dichlorotoluene, 3,4-	97-75-0	E581.VH	1.0	%		72.0	79.5	----	----	98.0
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	100	mg/kg		<100	<100	----	----	<100
HEPHs	----	EC600A	200	mg/kg		<200	<200	----	----	<200
LEPHs	----	EC600A	200	mg/kg		<200	<200	----	----	<200
VPHs	----	EC580A	100	mg/kg		<100	<100	----	----	<100
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		94.6	91.8	----	----	97.3
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	<0.0050	----	----	<0.0050
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	<0.0040	----	----	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<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
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	<0.010
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	<0.010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW99-01-06	MW19-03-02	MW19-03-03	BH19-04-03	BH19-04-07
					Client sampling date / time	02-Dec-2019 10:50	02-Dec-2019 13:40	02-Dec-2019 13:50	03-Dec-2019 08:00	03-Dec-2019 08:40
						VA19A0489-034	VA19A0489-036	VA19A0489-037	VA19A0489-043	VA19A0489-045
						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
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	<0.010
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	<0.010	----	----	<0.010
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
methylnaphthalenes, 1+2-	----	E641A-L	0.015	mg/kg		<0.015	<0.015	----	----	<0.015
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	<0.010	----	----	<0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	<0.010
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		<0.020	<0.020	----	----	<0.020
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.15	<0.15	----	----	<0.15
acridine-d9	34749-75-2	E641A-L	0.010	%		84.7	74.1	----	----	87.2
chrysene-d12	1719-03-5	E641A-L	0.010	%		90.4	79.2	----	----	93.8
naphthalene-d8	1146-65-2	E641A-L	0.010	%		94.8	85.6	----	----	102
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		95.5	85.3	----	----	101

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BH19-05-03	BH19-05-04	BH19-06-03	BH19-06-05	----
					Client sampling date / time	03-Dec-2019 09:40	03-Dec-2019 09:50	03-Dec-2019 10:40	03-Dec-2019 11:00	----
						VA19A0489-047	VA19A0489-048	VA19A0489-050	VA19A0489-052	--------
						Result	Result	Result	Result	----
Physical Tests										
moisture	----	E144	0.25	%		15.5	8.73	----	8.93	----
pH (1:2 soil:water)	----	E108	0.10	pH units		8.92	7.05	----	9.20	----
% saturation	----	E141	1.0	%		33.3	28.5	28.8	----	----
Particle Size										
clay (<0.004mm)	----	EC185A	1.0	%		3.2	2.2	2.5	----	----
passing (0.0312 mm)	----	E184	1.0	%		21.3	11.8	15.7	----	----
passing (0.020 mm)	----	E184	1.0	%		17.4	9.8	12.9	----	----
silt (0.063mm - 0.004mm)	----	EC185A	1.0	%		39.5	22.6	29.6	----	----
passing (0.005 mm)	----	E184	1.0	%		3.6	2.4	2.8	----	----
silt (0.063mm - 0.0312mm)	----	EC185A	1.0	%		21.4	12.9	16.4	----	----
passing (0.004 mm)	----	E184	1.0	%		3.2	2.2	2.5	----	----
silt (0.0312mm - 0.004mm)	----	EC185A	1.0	%		18.1	9.6	13.2	----	----
passing (0.002 mm)	----	E184	1.0	%		2.4	1.9	1.9	----	----
sand (2.0mm - 0.063mm)	----	EC185A	1.0	%		52.7	73.4	67.3	----	----
sand (0.125mm - 0.063mm)	----	EC185A	1.0	%		30.9	22.7	25.4	----	----
sand (0.25mm - 0.125mm)	----	EC185A	1.0	%		16.6	45.7	38.0	----	----
sand (0.5mm - 0.25mm)	----	EC185A	1.0	%		3.0	3.8	3.5	----	----
sand (1.0mm - 0.50mm)	----	EC185A	1.0	%		1.3	<1.0	<1.0	----	----
sand (2.0mm - 1.0mm)	----	EC185A	1.0	%		<1.0	<1.0	<1.0	----	----
gravel (>2mm)	----	EC185A	1.0	%		4.6	1.8	<1.0	----	----
Saturated Paste Extractables										
chloride	16887-00-6	EC239A.Cl	2.0	mg/kg		<2.0	<2.0	<2.0	----	----
chloride	16887-00-6	E239.Cl	2.0	mg/L		5.8	4.0	2.8	----	----
sodium	7440-23-5	EC485-L	1.00	mg/kg		1.93	1.54	1.06	----	----
sodium	7440-23-5	E485-L	1.0	mg/L		5.8	5.4	3.7	----	----
Metals										
aluminum	7429-90-5	E440	50	mg/kg		4800	10100	----	4970	----
antimony	7440-36-0	E440	0.10	mg/kg		0.14	0.54	----	0.13	----
arsenic	7440-38-2	E440	0.10	mg/kg		1.51	1.39	----	1.72	----
barium	7440-39-3	E440	0.50	mg/kg		26.4	74.1	----	25.0	----
beryllium	7440-41-7	E440	0.10	mg/kg		0.22	0.41	----	0.26	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BH19-05-03	BH19-05-04	BH19-06-03	BH19-06-05	----
					Client sampling date / time	03-Dec-2019 09:40	03-Dec-2019 09:50	03-Dec-2019 10:40	03-Dec-2019 11:00	----
						VA19A0489-047	VA19A0489-048	VA19A0489-050	VA19A0489-052	--------
						Result	Result	Result	Result	----
Metals										
bismuth	7440-69-9	E440	0.20	mg/kg		<0.20	<0.20	----	<0.20	----
boron	7440-42-8	E440	5.0	mg/kg		<5.0	<5.0	----	<5.0	----
cadmium	7440-43-9	E440	0.020	mg/kg		0.054	0.115	----	0.049	----
calcium	7440-70-2	E440	50	mg/kg		6760	3330	----	7170	----
chromium	7440-47-3	E440	0.50	mg/kg		9.85	9.44	----	9.92	----
cobalt	7440-48-4	E440	0.10	mg/kg		4.86	5.11	----	4.19	----
copper	7440-50-8	E440	0.50	mg/kg		11.1	12.2	----	10.0	----
iron	7439-89-6	E440	50	mg/kg		24500	17600	----	17700	----
lead	7439-92-1	E440	0.50	mg/kg		3.35	6.23	----	3.88	----
lithium	7439-93-2	E440	2.0	mg/kg		5.2	7.8	----	4.3	----
magnesium	7439-95-4	E440	20	mg/kg		2380	2560	----	2270	----
manganese	7439-96-5	E440	1.0	mg/kg		219	352	----	203	----
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	<0.0050	----	----	----
mercury	7439-97-6	E510	0.0500	mg/kg		----	----	----	<0.0500	----
molybdenum	7439-98-7	E440	0.10	mg/kg		0.34	0.33	----	0.33	----
nickel	7440-02-0	E440	0.50	mg/kg		4.32	6.51	----	4.68	----
phosphorus	7723-14-0	E440	50	mg/kg		632	411	----	786	----
potassium	7440-09-7	E440	100	mg/kg		460	1170	----	440	----
selenium	7782-49-2	E440	0.20	mg/kg		<0.20	<0.20	----	<0.20	----
silver	7440-22-4	E440	0.10	mg/kg		<0.10	<0.10	----	<0.10	----
sodium	7440-23-5	E440	50	mg/kg		183	158	----	210	----
strontium	7440-24-6	E440	0.50	mg/kg		47.8	36.1	----	44.6	----
sulfur	7704-34-9	E440	1000	mg/kg		<1000	<1000	----	<1000	----
thallium	7440-28-0	E440	0.050	mg/kg		<0.050	0.057	----	<0.050	----
tin	7440-31-5	E440	2.0	mg/kg		<2.0	<2.0	----	<2.0	----
titanium	7440-32-6	E440	1.0	mg/kg		506	771	----	717	----
tungsten	7440-33-7	E440	0.50	mg/kg		<0.50	<0.50	----	<0.50	----
uranium	7440-61-1	E440	0.050	mg/kg		0.610	0.710	----	0.826	----
vanadium	7440-62-2	E440	0.20	mg/kg		74.3	44.3	----	55.0	----
zinc	7440-66-6	E440	2.0	mg/kg		21.2	60.3	----	20.2	----
zirconium	7440-67-7	E440	1.0	mg/kg		3.2	9.9	----	5.7	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BH19-05-03	BH19-05-04	BH19-06-03	BH19-06-05	----
					Client sampling date / time	03-Dec-2019 09:40	03-Dec-2019 09:50	03-Dec-2019 10:40	03-Dec-2019 11:00	----
						VA19A0489-047	VA19A0489-048	VA19A0489-050	VA19A0489-052	--------
						Result	Result	Result	Result	----
Volatile Organic Compounds										
benzene	71-43-2	E611A	0.0050	mg/kg		<0.0050	<0.0050	----	<0.0050	----
ethylbenzene	100-41-4	E611A	0.015	mg/kg		<0.015	<0.015	----	<0.015	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg		<0.200	<0.200	----	<0.200	----
styrene	100-42-5	E611A	0.050	mg/kg		<0.050	<0.050	----	<0.050	----
toluene	108-88-3	E611A	0.050	mg/kg		<0.050	<0.050	----	<0.050	----
xylene, m+p-	179601-23-1	E611A	0.050	mg/kg		<0.050	<0.050	----	<0.050	----
xylene, o-	95-47-6	E611A	0.050	mg/kg		<0.050	<0.050	----	<0.050	----
xylenes, total	1330-20-7	E611A	0.075	mg/kg		<0.075	<0.075	----	<0.075	----
bromofluorobenzene, 4-	460-00-4	E611A	0.0050	%		86.4	95.9	----	98.6	----
difluorobenzene, 1,4-	540-36-3	E611A	0.0050	%		86.1	91.0	----	99.1	----
Hydrocarbons										
dichlorotoluene, 3,4-	97-75-0	E581.VH	1.0	%		93.7	69.0 SUR-ND	----	64.1 SUR-ND	----
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	100	mg/kg		<100	<100	----	<100	----
HEPHs	----	EC600A	200	mg/kg		<200	<200	----	<200	----
LEPHs	----	EC600A	200	mg/kg		<200	<200	----	<200	----
VPHs	----	EC580A	100	mg/kg		<100	<100	----	<100	----
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		92.6	96.2	----	94.8	----
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	<0.0050	----	<0.0050	----
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	<0.0040	----	<0.0040	----
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	----	<0.010	----
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	----	<0.010	----
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	----	<0.010	----
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<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	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	----	<0.010	----
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	----	<0.010	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BH19-05-03	BH19-05-04	BH19-06-03	BH19-06-05	----
					Client sampling date / time	03-Dec-2019 09:40	03-Dec-2019 09:50	03-Dec-2019 10:40	03-Dec-2019 11:00	----
						VA19A0489-047	VA19A0489-048	VA19A0489-050	VA19A0489-052	--------
						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	----
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	----	<0.010	----
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	<0.010	----	<0.010	----
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	----
methylnaphthalenes, 1+2-	----	E641A-L	0.015	mg/kg		<0.015	<0.015	----	<0.015	----
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	<0.010	----	<0.010	----
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	----	<0.010	----
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		<0.020	<0.020	----	<0.020	----
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.15	<0.15	----	<0.15	----
acridine-d9	34749-75-2	E641A-L	0.010	%		84.0	79.7	----	91.9	----
chrysene-d12	1719-03-5	E641A-L	0.010	%		90.0	89.1	----	97.2	----
naphthalene-d8	1146-65-2	E641A-L	0.010	%		97.9	97.9	----	108	----
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		97.8	96.5	----	107	----

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

QUALITY CONTROL REPORT

Work Order	: **VA19A0489**	Page	: 1 of 36
Client	: WSP Canada Inc.	Laboratory	: Vancouver - Environmental
Contact	: Jason Newington	Account Manager	: Carla Fuginski
Address	: Unit 100 - 20339 96 Avenue Langley BC Canada V1M 2L1	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 191-15279-00	Date Samples Received	: 10-Dec-2019 08:27
PO	: ----	Date Analysis Commenced	: 11-Dec-2019
C-O-C number	: 17-786865->68, 17-786872	Issue Date	: 19-Dec-2019 11:47
Sampler	: S. Rusnak		
Site	: ----		
Quote number	: ----		
No. of samples received	: 57		
No. of samples analysed	: 29		

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*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Brieanna Allen	Department Manager - Organics	Inorganics - Water Quality, Burnaby, British Columbia
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Dwayne Bennett	Technical Specialist	Inorganics, Saskatoon, Saskatchewan
Erick Magalhaes	Laboratory Analyst	Organics, Burnaby, British Columbia
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Janice Leung	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Mae Soropia	Lab Analyst	Metals, Burnaby, British Columbia
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, 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**

					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: 6166)											
VA19A0489-018	MW19-02-02	pH (1:2 soil:water)	----	E108	0.10	pH units	9.25	9.32	0.754%	5%	
Physical Tests (QC Lot: 6167)											
VA19A0489-001	SS19-01	moisture	----	E144	0.25	%	6.29	6.19	1.60%	20%	
Physical Tests (QC Lot: 6171)											
VA19A0489-034	MW99-01-06	pH (1:2 soil:water)	----	E108	0.10	pH units	9.22	9.21	0.108%	5%	
Physical Tests (QC Lot: 6177)											
VA19A0489-034	MW99-01-06	moisture	----	E144	0.25	%	13.2	13.4	1.56%	20%	
Physical Tests (QC Lot: 7002)											
VA19A0489-013	SS19-12	pH (1:2 soil:water)	----	E108	0.10	pH units	7.47	7.43	0.537%	5%	
Physical Tests (QC Lot: 7199)											
VA19A0489-048	BH19-05-04	pH (1:2 soil:water)	----	E108	0.10	pH units	7.05	7.06	0.142%	5%	
Particle Size (QC Lot: 6528)											
VA19A0489-027	MW19-01-03	passing (0.002 mm)	----	E184	1.0	%	1.0	1.2	0.2	Diff <2x LOR	
		passing (0.004 mm)	----	E184	1.0	%	1.2	1.3	0.1	Diff <2x LOR	
		passing (0.005 mm)	----	E184	1.0	%	1.3	1.4	0.1	Diff <2x LOR	
		passing (0.020 mm)	----	E184	1.0	%	2.7	3.1	0.3	Diff <2x LOR	
		passing (0.0312 mm)	----	E184	1.0	%	3.1	3.5	0.4	Diff <2x LOR	
Saturated Paste Extractables (QC Lot: 6161)											

Sub-Matrix: **Soil**

					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*
Saturated Paste Extractables (QC Lot: 6161) - continued											
VA19A0489-009	SS19-08	chloride	16887-00-6	E239.Cl	2.0	mg/L	18.8	22.4	17.4%	30%	
Saturated Paste Extractables (QC Lot: 6162)											
VA19A0489-009	SS19-08	% saturation	----	E141	1.0	%	29.3	30.4	3.59%	20%	
Saturated Paste Extractables (QC Lot: 6163)											
VA19A0489-009	SS19-08	sodium	7440-23-5	E485-L	1.0	mg/L	12.7	14.3	12.2%	30%	
Saturated Paste Extractables (QC Lot: 6174)											
VA19A0489-037	MW19-03-03	chloride	16887-00-6	E239.Cl	2.0	mg/L	9.1	7.9	1.2	Diff <2x LOR	
Saturated Paste Extractables (QC Lot: 6175)											
VA19A0489-037	MW19-03-03	% saturation	----	E141	1.0	%	29.1	28.7	1.48%	20%	
Saturated Paste Extractables (QC Lot: 6176)											
VA19A0489-037	MW19-03-03	sodium	7440-23-5	E485-L	1.0	mg/L	12.2	11.5	5.75%	30%	
Metals (QC Lot: 6165)											
VA19A0489-018	MW19-02-02	aluminum	7429-90-5	E440	50	mg/kg	6010	5710	5.11%	40%	
		antimony	7440-36-0	E440	0.10	mg/kg	0.13	0.12	0.010	Diff <2x LOR	
		barium	7440-39-3	E440	0.50	mg/kg	26.4	25.2	4.69%	40%	
		beryllium	7440-41-7	E440	0.10	mg/kg	0.27	0.25	0.02	Diff <2x LOR	
		bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	
		boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	
		cadmium	7440-43-9	E440	0.020	mg/kg	0.055	0.054	0.001	Diff <2x LOR	
		calcium	7440-70-2	E440	50	mg/kg	7460	7390	0.834%	30%	
		chromium	7440-47-3	E440	0.50	mg/kg	7.66	9.18	18.1%	30%	
		cobalt	7440-48-4	E440	0.10	mg/kg	4.58	4.69	2.25%	30%	
		copper	7440-50-8	E440	0.50	mg/kg	14.2	14.5	2.20%	30%	
		iron	7439-89-6	E440	50	mg/kg	16500	18400	11.0%	30%	
		lead	7439-92-1	E440	0.50	mg/kg	4.09	3.69	10.2%	40%	
		lithium	7439-93-2	E440	2.0	mg/kg	6.8	6.8	0.06	Diff <2x LOR	
		magnesium	7439-95-4	E440	20	mg/kg	3630	3450	5.23%	30%	
		manganese	7439-96-5	E440	1.0	mg/kg	267	263	1.26%	30%	
		molybdenum	7439-98-7	E440	0.10	mg/kg	0.36	0.40	0.05	Diff <2x LOR	
		nickel	7440-02-0	E440	0.50	mg/kg	4.80	5.10	6.07%	30%	
		phosphorus	7723-14-0	E440	50	mg/kg	638	683	6.95%	30%	
		potassium	7440-09-7	E440	100	mg/kg	520	500	4.28%	40%	
		selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	
		silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	
		sodium	7440-23-5	E440	50	mg/kg	171	159	12	Diff <2x LOR	

Sub-Matrix: **Soil**

					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*
Metals (QC Lot: 6165) - continued											
VA19A0489-018	MW19-02-02	strontium	7440-24-6	E440	0.50	mg/kg	42.6	51.2	18.3%	40%	
		sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	
		thallium	7440-28-0	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	
		tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR	
		titanium	7440-32-6	E440	1.0	mg/kg	648	571	12.6%	40%	
		tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	
		uranium	7440-61-1	E440	0.050	mg/kg	0.725	0.734	1.20%	30%	
		vanadium	7440-62-2	E440	0.20	mg/kg	46.2	53.6	14.9%	30%	
		zinc	7440-66-6	E440	2.0	mg/kg	29.1	28.3	3.06%	30%	
		zirconium	7440-67-7	E440	1.0	mg/kg	4.8	4.1	0.7	Diff <2x LOR	
Metals (QC Lot: 6169)											
VA19A0489-034	MW99-01-06	mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	
Metals (QC Lot: 6170)											
VA19A0489-034	MW99-01-06	aluminum	7429-90-5	E440	50	mg/kg	5600	6110	8.66%	40%	
		antimony	7440-36-0	E440	0.10	mg/kg	0.14	0.15	0.002	Diff <2x LOR	
		arsenic	7440-38-2	E440	0.10	mg/kg	1.90	1.92	0.816%	30%	
		barium	7440-39-3	E440	0.50	mg/kg	31.2	35.0	11.4%	40%	
		beryllium	7440-41-7	E440	0.10	mg/kg	0.21	0.24	0.02	Diff <2x LOR	
		bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	
		boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	
		cadmium	7440-43-9	E440	0.020	mg/kg	0.063	0.066	0.003	Diff <2x LOR	
		calcium	7440-70-2	E440	50	mg/kg	8360	9990	17.9%	30%	
		chromium	7440-47-3	E440	0.50	mg/kg	10.5	10.5	0.424%	30%	
		cobalt	7440-48-4	E440	0.10	mg/kg	4.04	4.27	5.48%	30%	
		copper	7440-50-8	E440	0.50	mg/kg	10.7	11.9	10.2%	30%	
		iron	7439-89-6	E440	50	mg/kg	17800	17800	0.424%	30%	
		lead	7439-92-1	E440	0.50	mg/kg	3.64	3.97	8.68%	40%	
		lithium	7439-93-2	E440	2.0	mg/kg	4.3	4.8	0.5	Diff <2x LOR	
		magnesium	7439-95-4	E440	20	mg/kg	2400	2750	13.8%	30%	
		manganese	7439-96-5	E440	1.0	mg/kg	215	232	7.80%	30%	
		molybdenum	7439-98-7	E440	0.10	mg/kg	0.33	0.34	0.02	Diff <2x LOR	
		nickel	7440-02-0	E440	0.50	mg/kg	4.50	4.62	2.86%	30%	
		phosphorus	7723-14-0	E440	50	mg/kg	818	882	7.49%	30%	
		potassium	7440-09-7	E440	100	mg/kg	610	650	5.55%	40%	
		selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	

Sub-Matrix: **Soil**

					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*
Metals (QC Lot: 6170) - continued											
VA19A0489-034	MW99-01-06	silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	
		sodium	7440-23-5	E440	50	mg/kg	267	297	10.7%	40%	
		strontium	7440-24-6	E440	0.50	mg/kg	52.7	59.0	11.3%	40%	
		sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	
		thallium	7440-28-0	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	
		tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR	
		titanium	7440-32-6	E440	1.0	mg/kg	700	734	4.73%	40%	
		tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	
		uranium	7440-61-1	E440	0.050	mg/kg	0.766	0.744	2.99%	30%	
		vanadium	7440-62-2	E440	0.20	mg/kg	56.7	54.8	3.41%	30%	
		zinc	7440-66-6	E440	2.0	mg/kg	21.0	23.5	11.1%	30%	
		zirconium	7440-67-7	E440	1.0	mg/kg	3.6	4.0	0.4	Diff <2x LOR	
Metals (QC Lot: 6368)											
VA19A0489-018	MW19-02-02	arsenic	7440-38-2	E440	0.10	mg/kg	1.56	1.61	3.52%	30%	
Metals (QC Lot: 6484)											
VA19A0489-010	SS19-09	mercury	7439-97-6	E510	0.0050	mg/kg	0.0089	0.0099	0.0010	Diff <2x LOR	
Metals (QC Lot: 7000)											
VA19A0489-019	MW19-02-03	aluminum	7429-90-5	E440	50	mg/kg	4990	4900	1.78%	40%	
		antimony	7440-36-0	E440	0.10	mg/kg	0.13	0.15	0.01	Diff <2x LOR	
		arsenic	7440-38-2	E440	0.10	mg/kg	1.73	1.57	9.82%	30%	
		barium	7440-39-3	E440	0.50	mg/kg	26.9	25.2	6.63%	40%	
		beryllium	7440-41-7	E440	0.10	mg/kg	0.22	0.22	0.009	Diff <2x LOR	
		bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	
		boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	
		cadmium	7440-43-9	E440	0.020	mg/kg	0.050	0.047	0.003	Diff <2x LOR	
		calcium	7440-70-2	E440	50	mg/kg	6510	6260	3.94%	30%	
		chromium	7440-47-3	E440	0.50	mg/kg	9.22	9.16	0.585%	30%	
		cobalt	7440-48-4	E440	0.10	mg/kg	4.66	4.54	2.67%	30%	
		copper	7440-50-8	E440	0.50	mg/kg	12.1	10.7	12.5%	30%	
		iron	7439-89-6	E440	50	mg/kg	21000	22500	6.47%	30%	
		lead	7439-92-1	E440	0.50	mg/kg	3.68	3.40	7.91%	40%	
		lithium	7439-93-2	E440	2.0	mg/kg	5.5	5.0	0.6	Diff <2x LOR	
		magnesium	7439-95-4	E440	20	mg/kg	2510	2300	8.52%	30%	
		manganese	7439-96-5	E440	1.0	mg/kg	219	217	1.04%	30%	
		molybdenum	7439-98-7	E440	0.10	mg/kg	0.34	0.36	0.02	Diff <2x LOR	

Sub-Matrix: **Soil**

					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*
Metals (QC Lot: 7000) - continued											
VA19A0489-019	MW19-02-03	nickel	7440-02-0	E440	0.50	mg/kg	4.40	4.42	0.586%	30%	
		phosphorus	7723-14-0	E440	50	mg/kg	639	672	5.14%	30%	
		potassium	7440-09-7	E440	100	mg/kg	480	450	30	Diff <2x LOR	
		selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	
		silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	
		sodium	7440-23-5	E440	50	mg/kg	179	191	12	Diff <2x LOR	
		strontium	7440-24-6	E440	0.50	mg/kg	47.0	44.6	5.21%	40%	
		sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	
		thallium	7440-28-0	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	
		tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR	
		titanium	7440-32-6	E440	1.0	mg/kg	489	518	5.80%	40%	
		tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	
		uranium	7440-61-1	E440	0.050	mg/kg	0.625	0.609	2.58%	30%	
		vanadium	7440-62-2	E440	0.20	mg/kg	62.4	66.6	6.51%	30%	
		zinc	7440-66-6	E440	2.0	mg/kg	22.0	22.7	3.15%	30%	
		zirconium	7440-67-7	E440	1.0	mg/kg	3.2	3.3	0.1	Diff <2x LOR	
Metals (QC Lot: 7001)											
VA19A0489-019	MW19-02-03	mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	
Metals (QC Lot: 7119)											
VA19A0489-048	BH19-05-04	aluminum	7429-90-5	E440	50	mg/kg	10100	9890	1.67%	40%	
		antimony	7440-36-0	E440	0.10	mg/kg	0.54	0.55	0.01	Diff <2x LOR	
		arsenic	7440-38-2	E440	0.10	mg/kg	1.39	1.49	6.53%	30%	
		barium	7440-39-3	E440	0.50	mg/kg	74.1	73.2	1.29%	40%	
		beryllium	7440-41-7	E440	0.10	mg/kg	0.41	0.44	0.02	Diff <2x LOR	
		bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	
		boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	
		cadmium	7440-43-9	E440	0.020	mg/kg	0.115	0.102	0.012	Diff <2x LOR	
		calcium	7440-70-2	E440	50	mg/kg	3330	3380	1.67%	30%	
		chromium	7440-47-3	E440	0.50	mg/kg	9.44	9.31	1.38%	30%	
		cobalt	7440-48-4	E440	0.10	mg/kg	5.11	5.22	2.09%	30%	
		copper	7440-50-8	E440	0.50	mg/kg	12.2	12.3	0.813%	30%	
		iron	7439-89-6	E440	50	mg/kg	17600	17400	1.43%	30%	
		lead	7439-92-1	E440	0.50	mg/kg	6.23	6.31	1.26%	40%	
		lithium	7439-93-2	E440	2.0	mg/kg	7.8	8.0	0.1	Diff <2x LOR	
		magnesium	7439-95-4	E440	20	mg/kg	2560	2580	0.679%	30%	

Sub-Matrix: **Soil**

					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*
Metals (QC Lot: 7119) - continued											
VA19A0489-048	BH19-05-04	manganese	7439-96-5	E440	1.0	mg/kg	352	342	3.07%	30%	
		molybdenum	7439-98-7	E440	0.10	mg/kg	0.33	0.40	0.07	Diff <2x LOR	
		nickel	7440-02-0	E440	0.50	mg/kg	6.51	6.25	4.09%	30%	
		phosphorus	7723-14-0	E440	50	mg/kg	411	453	9.85%	30%	
		potassium	7440-09-7	E440	100	mg/kg	1170	1140	2.67%	40%	
		selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	
		silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	
		sodium	7440-23-5	E440	50	mg/kg	158	151	7	Diff <2x LOR	
		strontium	7440-24-6	E440	0.50	mg/kg	36.1	34.2	5.53%	40%	
		sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	
		thallium	7440-28-0	E440	0.050	mg/kg	0.057	0.055	0.002	Diff <2x LOR	
		tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR	
		titanium	7440-32-6	E440	1.0	mg/kg	771	748	3.02%	40%	
		tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	
		uranium	7440-61-1	E440	0.050	mg/kg	0.710	0.701	1.28%	30%	
		vanadium	7440-62-2	E440	0.20	mg/kg	44.3	43.4	1.88%	30%	
		zinc	7440-66-6	E440	2.0	mg/kg	60.3	60.0	0.460%	30%	
		zirconium	7440-67-7	E440	1.0	mg/kg	9.9	10.4	4.56%	30%	
Volatile Organic Compounds (QC Lot: 6459)											
VA19A0423-007	Anonymous	benzene	71-43-2	E611A	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	
		ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg	<0.200	<0.200	0	Diff <2x LOR	
		styrene	100-42-5	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	
		toluene	108-88-3	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	
		xylene, m+p-	179601-23-1	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	
		xylene, o-	95-47-6	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	
Hydrocarbons (QC Lot: 6159)											
VA19A0489-009	SS19-08	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: 6173)											
VA19A0489-034	MW99-01-06	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: 6342)											
VA19A0472-002	Anonymous	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	

Sub-Matrix: **Soil**

					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*
Hydrocarbons (QC Lot: 6460)											
VA19A0423-007	Anonymous	VHs (C6-C10)	----	E581.VH	100	mg/kg	<100	<100	0	Diff <2x LOR	
Polycyclic Aromatic Hydrocarbons (QC Lot: 6160)											
VA19A0489-009	SS19-08	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	0.0280	0.0387	32.3%	50%	
		acridine	260-94-6	E641A-L	0.010	mg/kg	<0.010	0.010	0.0002	Diff <2x LOR	
		anthracene	120-12-7	E641A-L	0.0040	mg/kg	0.0330	0.0399	18.8%	50%	
		benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg	0.075	0.101	29.6%	50%	
		benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg	0.054	0.072	30.0%	50%	
		benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg	0.089	0.120	28.8%	50%	
		benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg	0.031	0.041	0.010	Diff <2x LOR	
		benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	0.042	0.061	37.1%	50%	
		chrysene	218-01-9	E641A-L	0.010	mg/kg	0.093	0.128	31.2%	50%	
		dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	0.0124	0.0137	0.0014	Diff <2x LOR	
		fluoranthene	206-44-0	E641A-L	0.010	mg/kg	0.302	0.363	18.4%	50%	
		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	0.040	0.054	29.8%	50%	
		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	0.256	0.283	9.73%	50%	
		pyrene	129-00-0	E641A-L	0.010	mg/kg	0.149	0.183	20.4%	50%	
		quinoline	6027-02-7	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
Polycyclic Aromatic Hydrocarbons (QC Lot: 6172)											
VA19A0489-034	MW99-01-06	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	

Sub-Matrix: **Soil**

					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: 6172) - continued											
VA19A0489-034	MW99-01-06	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: 6341)											
VA19A0472-002	Anonymous	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	
Polychlorinated Biphenyls (QC Lot: 6158)											
VA19A0489-001	SS19-01	Aroclor 1016	12674-11-2	E685	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Aroclor 1221	11104-28-2	E685	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Aroclor 1232	11141-16-5	E685	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Aroclor 1242	53469-21-9	E685	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Aroclor 1248	12672-29-6	E685	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	

Sub-Matrix: **Soil**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Polychlorinated Biphenyls (QC Lot: 6158) - continued											
VA19A0489-001	SS19-01	Aroclor 1254	11097-69-1	E685	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Aroclor 1260	11096-82-5	E685	0.010	mg/kg	0.111	0.104	7.06%	50%	
		Aroclor 1262	37324-23-5	E685	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Aroclor 1268	11100-14-4	E685	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	

Method Blank (MB) Report

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

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 6167)						
moisture	----	E144	0.25	%	<0.25	
Physical Tests (QCLot: 6177)						
moisture	----	E144	0.25	%	<0.25	
Saturated Paste Extractables (QCLot: 6161)						
chloride	16887-00-6	E239.Cl	2	mg/L	<2.0	
Saturated Paste Extractables (QCLot: 6162)						
% saturation	----	E141	1	%	50.0	
Saturated Paste Extractables (QCLot: 6163)						
sodium	7440-23-5	E485-L	1	mg/L	<1.0	
Saturated Paste Extractables (QCLot: 6174)						
chloride	16887-00-6	E239.Cl	2	mg/L	<2.0	
Saturated Paste Extractables (QCLot: 6175)						
% saturation	----	E141	1	%	50.0	
Saturated Paste Extractables (QCLot: 6176)						
sodium	7440-23-5	E485-L	1	mg/L	<1.0	
Metals (QCLot: 6165)						
aluminum	7429-90-5	E440	50	mg/kg	<50	
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	
barium	7440-39-3	E440	0.5	mg/kg	<0.50	
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	
bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	
boron	7440-42-8	E440	5	mg/kg	<5.0	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 6165) - continued						
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	
calcium	7440-70-2	E440	50	mg/kg	<50	
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	
copper	7440-50-8	E440	0.5	mg/kg	<0.50	
iron	7439-89-6	E440	50	mg/kg	<50	
lead	7439-92-1	E440	0.5	mg/kg	<0.50	
lithium	7439-93-2	E440	2	mg/kg	<2.0	
magnesium	7439-95-4	E440	20	mg/kg	<20	
manganese	7439-96-5	E440	1	mg/kg	<1.0	
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	
phosphorus	7723-14-0	E440	50	mg/kg	<50	
potassium	7440-09-7	E440	100	mg/kg	<100	
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	
silver	7440-22-4	E440	0.1	mg/kg	<0.10	
sodium	7440-23-5	E440	50	mg/kg	<50	
strontium	7440-24-6	E440	0.5	mg/kg	<0.50	
sulfur	7704-34-9	E440	1000	mg/kg	<1000	
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	
tin	7440-31-5	E440	2	mg/kg	<2.0	
titanium	7440-32-6	E440	1	mg/kg	<1.0	
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	
zinc	7440-66-6	E440	2	mg/kg	<2.0	
zirconium	7440-67-7	E440	1	mg/kg	<1.0	
Metals (QCLot: 6169)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	
Metals (QCLot: 6170)						
aluminum	7429-90-5	E440	50	mg/kg	<50	
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	
barium	7440-39-3	E440	0.5	mg/kg	<0.50	
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 6170) - continued						
bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	
boron	7440-42-8	E440	5	mg/kg	<5.0	
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	
calcium	7440-70-2	E440	50	mg/kg	<50	
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	
copper	7440-50-8	E440	0.5	mg/kg	<0.50	
iron	7439-89-6	E440	50	mg/kg	<50	
lead	7439-92-1	E440	0.5	mg/kg	<0.50	
lithium	7439-93-2	E440	2	mg/kg	<2.0	
magnesium	7439-95-4	E440	20	mg/kg	<20	
manganese	7439-96-5	E440	1	mg/kg	<1.0	
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	
phosphorus	7723-14-0	E440	50	mg/kg	<50	
potassium	7440-09-7	E440	100	mg/kg	<100	
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	
silver	7440-22-4	E440	0.1	mg/kg	<0.10	
sodium	7440-23-5	E440	50	mg/kg	<50	
strontium	7440-24-6	E440	0.5	mg/kg	<0.50	
sulfur	7704-34-9	E440	1000	mg/kg	<1000	
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	
tin	7440-31-5	E440	2	mg/kg	<2.0	
titanium	7440-32-6	E440	1	mg/kg	<1.0	
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	
zinc	7440-66-6	E440	2	mg/kg	<2.0	
zirconium	7440-67-7	E440	1	mg/kg	<1.0	
Metals (QCLot: 6368)						
aluminum	7429-90-5	E440	50	mg/kg	<50	
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	
barium	7440-39-3	E440	0.5	mg/kg	<0.50	
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 6368) - continued						
bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	
boron	7440-42-8	E440	5	mg/kg	<5.0	
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	
calcium	7440-70-2	E440	50	mg/kg	<50	
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	
copper	7440-50-8	E440	0.5	mg/kg	<0.50	
iron	7439-89-6	E440	50	mg/kg	<50	
lead	7439-92-1	E440	0.5	mg/kg	<0.50	
lithium	7439-93-2	E440	2	mg/kg	<2.0	
magnesium	7439-95-4	E440	20	mg/kg	<20	
manganese	7439-96-5	E440	1	mg/kg	<1.0	
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	
phosphorus	7723-14-0	E440	50	mg/kg	<50	
potassium	7440-09-7	E440	100	mg/kg	<100	
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	
silver	7440-22-4	E440	0.1	mg/kg	<0.10	
sodium	7440-23-5	E440	50	mg/kg	<50	
strontium	7440-24-6	E440	0.5	mg/kg	<0.50	
sulfur	7704-34-9	E440	1000	mg/kg	<1000	
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	
tin	7440-31-5	E440	2	mg/kg	<2.0	
titanium	7440-32-6	E440	1	mg/kg	<1.0	
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	
zinc	7440-66-6	E440	2	mg/kg	<2.0	
zirconium	7440-67-7	E440	1	mg/kg	<1.0	
Metals (QCLot: 6484)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	
Metals (QCLot: 7000)						
aluminum	7429-90-5	E440	50	mg/kg	<50	
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 7000) - continued						
barium	7440-39-3	E440	0.5	mg/kg	<0.50	
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	
bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	
boron	7440-42-8	E440	5	mg/kg	<5.0	
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	
calcium	7440-70-2	E440	50	mg/kg	<50	
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	
copper	7440-50-8	E440	0.5	mg/kg	<0.50	
iron	7439-89-6	E440	50	mg/kg	<50	
lead	7439-92-1	E440	0.5	mg/kg	<0.50	
lithium	7439-93-2	E440	2	mg/kg	<2.0	
magnesium	7439-95-4	E440	20	mg/kg	<20	
manganese	7439-96-5	E440	1	mg/kg	<1.0	
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	
phosphorus	7723-14-0	E440	50	mg/kg	<50	
potassium	7440-09-7	E440	100	mg/kg	<100	
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	
silver	7440-22-4	E440	0.1	mg/kg	<0.10	
sodium	7440-23-5	E440	50	mg/kg	<50	
strontium	7440-24-6	E440	0.5	mg/kg	<0.50	
sulfur	7704-34-9	E440	1000	mg/kg	<1000	
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	
tin	7440-31-5	E440	2	mg/kg	<2.0	
titanium	7440-32-6	E440	1	mg/kg	<1.0	
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	
zinc	7440-66-6	E440	2	mg/kg	<2.0	
zirconium	7440-67-7	E440	1	mg/kg	<1.0	
Metals (QCLot: 7001)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	
Metals (QCLot: 7119)						
aluminum	7429-90-5	E440	50	mg/kg	<50	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 7119) - continued						
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	
barium	7440-39-3	E440	0.5	mg/kg	<0.50	
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	
bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	
boron	7440-42-8	E440	5	mg/kg	<5.0	
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	
calcium	7440-70-2	E440	50	mg/kg	<50	
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	
copper	7440-50-8	E440	0.5	mg/kg	<0.50	
iron	7439-89-6	E440	50	mg/kg	<50	
lead	7439-92-1	E440	0.5	mg/kg	<0.50	
lithium	7439-93-2	E440	2	mg/kg	<2.0	
magnesium	7439-95-4	E440	20	mg/kg	<20	
manganese	7439-96-5	E440	1	mg/kg	<1.0	
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	
phosphorus	7723-14-0	E440	50	mg/kg	<50	
potassium	7440-09-7	E440	100	mg/kg	<100	
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	
silver	7440-22-4	E440	0.1	mg/kg	<0.10	
sodium	7440-23-5	E440	50	mg/kg	<50	
strontium	7440-24-6	E440	0.5	mg/kg	<0.50	
sulfur	7704-34-9	E440	1000	mg/kg	<1000	
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	
tin	7440-31-5	E440	2	mg/kg	<2.0	
titanium	7440-32-6	E440	1	mg/kg	<1.0	
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	
zinc	7440-66-6	E440	2	mg/kg	<2.0	
zirconium	7440-67-7	E440	1	mg/kg	<1.0	
Volatile Organic Compounds (QCLot: 6459)						
benzene	71-43-2	E611A	0.005	mg/kg	<0.0050	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 6459) - continued						
ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.05	mg/kg	<0.050	
styrene	100-42-5	E611A	0.05	mg/kg	<0.050	
toluene	108-88-3	E611A	0.05	mg/kg	<0.050	
xylene, m+p-	179601-23-1	E611A	0.05	mg/kg	<0.050	
xylene, o-	95-47-6	E611A	0.05	mg/kg	<0.050	
Hydrocarbons (QCLot: 6159)						
EPH (C10-C19)	----	E601A	200	mg/kg	<200	
					<200	
EPH (C19-C32)	----	E601A	200	mg/kg	<200	
					<200	
Hydrocarbons (QCLot: 6173)						
EPH (C10-C19)	----	E601A	200	mg/kg	<200	
					<200	
EPH (C19-C32)	----	E601A	200	mg/kg	<200	
					<200	
Hydrocarbons (QCLot: 6342)						
EPH (C10-C19)	----	E601A	200	mg/kg	<200	
					<200	
EPH (C19-C32)	----	E601A	200	mg/kg	<200	
					<200	
Hydrocarbons (QCLot: 6460)						
VHs (C6-C10)	----	E581.VH	10	mg/kg	<10	
Polycyclic Aromatic Hydrocarbons (QCLot: 6160)						
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	<0.0050	
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	<0.0050	
acridine	260-94-6	E641A-L	0.01	mg/kg	<0.010	
anthracene	120-12-7	E641A-L	0.004	mg/kg	<0.0040	
					<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	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 6160) - continued						
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	
					<0.010	
naphthalene	91-20-3	E641A-L	0.01	mg/kg	<0.010	
					<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	
Polycyclic Aromatic Hydrocarbons (QCLot: 6172)						
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	<0.0050	
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	<0.0050	
acridine	260-94-6	E641A-L	0.01	mg/kg	<0.010	
anthracene	120-12-7	E641A-L	0.004	mg/kg	<0.0040	
					<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	
					<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	
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	# 0.0075	MB-LOR
					# 0.0075	MB-LOR
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	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 6172) - continued						
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	
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	<0.010	
					<0.010	
naphthalene	91-20-3	E641A-L	0.01	mg/kg	<0.010	
					<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	
Polycyclic Aromatic Hydrocarbons (QCLot: 6341)						
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	<0.0050	
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	<0.0050	
acridine	260-94-6	E641A-L	0.01	mg/kg	<0.010	
anthracene	120-12-7	E641A-L	0.004	mg/kg	<0.0040	
					<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	
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	
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	
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	
					<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	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 6341) - continued						
quinoline	6027-02-7	E641A-L	0.01	mg/kg	<0.010	
Polychlorinated Biphenyls (QCLot: 6158)						
Aroclor 1016	12674-11-2	E685	0.01	mg/kg	<0.010	
Aroclor 1221	11104-28-2	E685	0.01	mg/kg	<0.010	
Aroclor 1232	11141-16-5	E685	0.01	mg/kg	<0.010	
Aroclor 1242	53469-21-9	E685	0.01	mg/kg	<0.010	
Aroclor 1248	12672-29-6	E685	0.01	mg/kg	<0.010	
Aroclor 1254	11097-69-1	E685	0.01	mg/kg	<0.010	
Aroclor 1260	11096-82-5	E685	0.01	mg/kg	<0.010	
Aroclor 1262	37324-23-5	E685	0.01	mg/kg	<0.010	
Aroclor 1268	11100-14-4	E685	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**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 6166)									
pH (1:2 soil:water)	----	E108	----	pH units	7 pH units	99.7	95.0	105	
Physical Tests (QCLot: 6167)									
moisture	----	E144	0.25	%	50 %	100	90.0	110	
Physical Tests (QCLot: 6171)									
pH (1:2 soil:water)	----	E108	----	pH units	7 pH units	99.4	95.0	105	
Physical Tests (QCLot: 6177)									
moisture	----	E144	0.25	%	50 %	100	90.0	110	
Physical Tests (QCLot: 7002)									
pH (1:2 soil:water)	----	E108	----	pH units	7 pH units	99.3	95.0	105	
Physical Tests (QCLot: 7199)									
pH (1:2 soil:water)	----	E108	----	pH units	7 pH units	99.4	95.0	105	
Saturated Paste Extractables (QCLot: 6161)									
chloride	16887-00-6	E239.Cl	2	mg/L	100 mg/L	105	80.0	120	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Saturated Paste Extractables (QCLot: 6162)									
% saturation	----	E141	1	%	100 %	97.8	90.0	110	
Saturated Paste Extractables (QCLot: 6163)									
sodium	7440-23-5	E485-L	1	mg/L	50 mg/L	96.1	70.0	130	
Saturated Paste Extractables (QCLot: 6174)									
chloride	16887-00-6	E239.Cl	2	mg/L	100 mg/L	104	80.0	120	
Saturated Paste Extractables (QCLot: 6175)									
% saturation	----	E141	1	%	100 %	99.1	90.0	110	
Saturated Paste Extractables (QCLot: 6176)									
sodium	7440-23-5	E485-L	1	mg/L	50 mg/L	94.1	70.0	130	
Metals (QCLot: 6165)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	104	80.0	120	
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	95.2	80.0	120	
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	101	80.0	120	
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	96.1	80.0	120	
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	88.4	80.0	120	
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	93.8	80.0	120	
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	90.6	80.0	120	
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	103	80.0	120	
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	92.4	80.0	120	
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	101	80.0	120	
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	101	80.0	120	
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	104	80.0	120	
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	94.4	80.0	120	
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	86.2	80.0	120	
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	102	80.0	120	
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	99.8	80.0	120	
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	96.6	80.0	120	
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	101	80.0	120	
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	103	80.0	120	
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	97.3	80.0	120	
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	105	80.0	120	
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	92.8	80.0	120	
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	102	80.0	120	

Sub-Matrix: **Soil**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 6165) - continued									
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	94.0	80.0	120	
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	94.7	80.0	120	
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	92.6	80.0	120	
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	93.6	80.0	120	
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	99.6	80.0	120	
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	98.1	80.0	120	
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	99.8	80.0	120	
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	104	80.0	120	
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	106	80.0	120	
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	91.8	80.0	120	
Metals (QCLot: 6169)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	103	80.0	120	
Metals (QCLot: 6170)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	105	80.0	120	
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	103	80.0	120	
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	102	80.0	120	
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	104	80.0	120	
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	94.2	80.0	120	
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	97.6	80.0	120	
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	97.7	80.0	120	
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	102	80.0	120	
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	96.8	80.0	120	
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	102	80.0	120	
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	104	80.0	120	
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	103	80.0	120	
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	97.6	80.0	120	
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	95.5	80.0	120	
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	106	80.0	120	
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	101	80.0	120	
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	102	80.0	120	
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	103	80.0	120	
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	106	80.0	120	
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	101	80.0	120	
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	104	80.0	120	

Sub-Matrix: **Soil**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 6170) - continued									
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	99.7	80.0	120	
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	98.5	80.0	120	
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	102	80.0	120	
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	94.3	80.0	120	
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	101	80.0	120	
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	102	80.0	120	
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	99.8	80.0	120	
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	102	80.0	120	
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	106	80.0	120	
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	103	80.0	120	
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	101	80.0	120	
Metals (QCLot: 6368)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	109	80.0	120	
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	117	80.0	120	
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	108	80.0	120	
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	106	80.0	120	
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	106	80.0	120	
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	99.0	80.0	120	
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	107	80.0	120	
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	107	80.0	120	
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	105	80.0	120	
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	110	80.0	120	
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	108	80.0	120	
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	107	80.0	120	
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	104	80.0	120	
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	110	80.0	120	
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	105	80.0	120	
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	118	80.0	120	
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	107	80.0	120	
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	107	80.0	120	
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	104	80.0	120	
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	108	80.0	120	
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	111	80.0	120	
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	107	80.0	120	

Sub-Matrix: **Soil**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 6368) - continued									
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	104	80.0	120	
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	115	80.0	120	
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	103	80.0	120	
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	105	80.0	120	
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	106	80.0	120	
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	103	80.0	120	
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	104	80.0	120	
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	106	80.0	120	
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	108	80.0	120	
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	106	80.0	120	
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	100	80.0	120	
Metals (QCLot: 6484)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	98.2	80.0	120	
Metals (QCLot: 7000)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	107	80.0	120	
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	# 124	80.0	120	
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	103	80.0	120	
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	111	80.0	120	
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	99.8	80.0	120	
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	114	80.0	120	
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	103	80.0	120	
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	102	80.0	120	
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	102	80.0	120	
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	107	80.0	120	
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	104	80.0	120	
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	98.0	80.0	120	
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	112	80.0	120	
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	96.7	80.0	120	
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	113	80.0	120	
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	108	80.0	120	
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	104	80.0	120	
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	104	80.0	120	
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	105	80.0	120	

Sub-Matrix: **Soil**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 7000) - continued									
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	116	80.0	120	
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	106	80.0	120	
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	99.9	80.0	120	
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	108	80.0	120	
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	116	80.0	120	
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	102	80.0	120	
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	117	80.0	120	
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	102	80.0	120	
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	113	80.0	120	
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	104	80.0	120	
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	101	80.0	120	
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	106	80.0	120	
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	103	80.0	120	
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	101	80.0	120	
Metals (QCLot: 7001)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	106	80.0	120	
Metals (QCLot: 7119)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	107	80.0	120	
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	118	80.0	120	
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	99.4	80.0	120	
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	97.9	80.0	120	
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	105	80.0	120	
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	102	80.0	120	
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	98.9	80.0	120	
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	100	80.0	120	
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	102	80.0	120	
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	100.0	80.0	120	
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	99.7	80.0	120	
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	105	80.0	120	
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	94.2	80.0	120	
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	118	80.0	120	
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	107	80.0	120	
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	103	80.0	120	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 7119) - continued									
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	101	80.0	120	
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	102	80.0	120	
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	110	80.0	120	
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	102	80.0	120	
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	97.4	80.0	120	
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	112	80.0	120	
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	106	80.0	120	
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	108	80.0	120	
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	111	80.0	120	
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	99.8	80.0	120	
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	107	80.0	120	
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	102	80.0	120	
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	95.6	80.0	120	
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	105	80.0	120	
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	104	80.0	120	
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	94.7	80.0	120	
Volatile Organic Compounds (QCLot: 6459)									
benzene	71-43-2	E611A	0.005	mg/kg	2.5 mg/kg	95.6	70.0	130	
ethylbenzene	100-41-4	E611A	0.015	mg/kg	2.5 mg/kg	114	70.0	130	
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.05	mg/kg	2.5 mg/kg	100	70.0	130	
styrene	100-42-5	E611A	0.05	mg/kg	2.5 mg/kg	93.4	70.0	130	
toluene	108-88-3	E611A	0.05	mg/kg	2.5 mg/kg	86.5	70.0	130	
xylene, m+p-	179601-23-1	E611A	0.05	mg/kg	5 mg/kg	110	70.0	130	
xylene, o-	95-47-6	E611A	0.05	mg/kg	2.5 mg/kg	103	70.0	130	
Hydrocarbons (QCLot: 6159)									
EPH (C10-C19)	----	E601A	200	mg/kg	1248.8 mg/kg	94.2	70.0	130	
					7113 mg/kg	101	70.0	130	
EPH (C19-C32)	----	E601A	200	mg/kg	643.1 mg/kg	93.0	70.0	130	
					10183 mg/kg	101	70.0	130	
Hydrocarbons (QCLot: 6173)									
EPH (C10-C19)	----	E601A	200	mg/kg	1248.8 mg/kg	94.9	70.0	130	
					7113 mg/kg	105	70.0	130	
EPH (C19-C32)	----	E601A	200	mg/kg	10183 mg/kg	108	70.0	130	
					643.1 mg/kg	93.1	70.0	130	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Hydrocarbons (QCLot: 6342)									
EPH (C10-C19)	----	E601A	200	mg/kg	1248.8 mg/kg	89.2	70.0	130	
					7113 mg/kg	95.4	70.0	130	
EPH (C19-C32)	----	E601A	200	mg/kg	10183 mg/kg	95.5	70.0	130	
					643.1 mg/kg	87.8	70.0	130	
Hydrocarbons (QCLot: 6460)									
VHs (C6-C10)	----	E581.VH	10	mg/kg	85.8 mg/kg	113	70.0	130	
Polycyclic Aromatic Hydrocarbons (QCLot: 6160)									
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	108	60.0	130	
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.5 mg/kg	107	60.0	130	
acridine	260-94-6	E641A-L	0.01	mg/kg	0.5 mg/kg	95.0	60.0	130	
anthracene	120-12-7	E641A-L	0.004	mg/kg	0.5 mg/kg	104	60.0	130	
					0.32 mg/kg	116	60.0	130	
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	0.5 mg/kg	108	60.0	130	
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	0.5 mg/kg	95.3	60.0	130	
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	0.5 mg/kg	103	60.0	130	
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.5 mg/kg	108	60.0	130	
					0.377 mg/kg	101	60.0	130	
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	0.5 mg/kg	110	60.0	130	
chrysene	218-01-9	E641A-L	0.01	mg/kg	0.5 mg/kg	116	60.0	130	
					0.666 mg/kg	107	60.0	130	
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	0.5 mg/kg	104	60.0	130	
					1.196 mg/kg	96.2	60.0	130	
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	0.5 mg/kg	110	60.0	130	
					1.757 mg/kg	99.4	60.0	130	
fluorene	86-73-7	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	0.5 mg/kg	104	60.0	130	
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.5 mg/kg	108	60.0	130	
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	111	60.0	130	
					1.088 mg/kg	93.9	60.0	130	
naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	106	50.0	130	
					1.03 mg/kg	93.6	60.0	130	
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130	
pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	107	60.0	130	
quinoline	6027-02-7	E641A-L	0.01	mg/kg	0.5 mg/kg	95.8	60.0	130	
Polycyclic Aromatic Hydrocarbons (QCLot: 6172)									
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	108	60.0	130	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 6172) - continued									
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.5 mg/kg	108	60.0	130	
acridine	260-94-6	E641A-L	0.01	mg/kg	0.5 mg/kg	97.7	60.0	130	
anthracene	120-12-7	E641A-L	0.004	mg/kg	0.5 mg/kg	106	60.0	130	
					0.32 mg/kg	116	60.0	130	
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	0.5 mg/kg	105	60.0	130	
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	0.5 mg/kg	100	60.0	130	
					0.135 mg/kg	92.4	60.0	130	
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	0.5 mg/kg	104	60.0	130	
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.5 mg/kg	107	60.0	130	
					0.377 mg/kg	105	60.0	130	
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	0.5 mg/kg	112	60.0	130	
chrysene	218-01-9	E641A-L	0.01	mg/kg	0.5 mg/kg	113	60.0	130	
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	0.5 mg/kg	107	60.0	130	MB-LOR
					1.196 mg/kg	100	60.0	130	MB-LOR
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	0.5 mg/kg	107	60.0	130	
					1.757 mg/kg	106	60.0	130	
fluorene	86-73-7	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130	
					0.445 mg/kg	99.2	60.0	130	
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.5 mg/kg	109	60.0	130	
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	111	60.0	130	
					1.088 mg/kg	103	60.0	130	
naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	106	50.0	130	
					1.03 mg/kg	101	60.0	130	
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	0.5 mg/kg	107	60.0	130	
pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	109	60.0	130	
quinoline	6027-02-7	E641A-L	0.01	mg/kg	0.5 mg/kg	97.3	60.0	130	
Polycyclic Aromatic Hydrocarbons (QCLot: 6341)									
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	109	60.0	130	
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.5 mg/kg	108	60.0	130	
acridine	260-94-6	E641A-L	0.01	mg/kg	0.5 mg/kg	98.7	60.0	130	
anthracene	120-12-7	E641A-L	0.004	mg/kg	0.5 mg/kg	106	60.0	130	
					0.32 mg/kg	127	60.0	130	
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	0.5 mg/kg	111	60.0	130	
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	0.5 mg/kg	97.0	60.0	130	
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130	
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.5 mg/kg	109	60.0	130	

Sub-Matrix: **Soil**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 6341) - continued									
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	0.5 mg/kg	108	60.0	130	
					0.34 mg/kg	104	60.0	130	
chrysene	218-01-9	E641A-L	0.01	mg/kg	0.5 mg/kg	117	60.0	130	
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	0.5 mg/kg	105	60.0	130	
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	0.5 mg/kg	110	60.0	130	
fluorene	86-73-7	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130	
					0.989 mg/kg	104	60.0	130	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	0.5 mg/kg	107	60.0	130	
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.5 mg/kg	109	60.0	130	
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	110	60.0	130	
naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	106	50.0	130	
					1.03 mg/kg	105	60.0	130	
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	0.5 mg/kg	107	60.0	130	
					1.13 mg/kg	104	60.0	130	
pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	109	60.0	130	
quinoline	6027-02-7	E641A-L	0.01	mg/kg	0.5 mg/kg	97.2	60.0	130	
Aroclor 1254	11097-69-1	E685	0.01	mg/kg	5.93 mg/kg	98.2	65.0	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.

Sub-Matrix: **Soil**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report: Spike Concentration	Recovery (%): MS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 6459)									
VA19A0423-007	Anonymous	benzene	71-43-2	E611A	3.125 mg/kg	90.1	60.0	140	
		ethylbenzene	100-41-4	E611A	3.125 mg/kg	95.2	60.0	140	
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	3.125 mg/kg	95.0	60.0	140	
		styrene	100-42-5	E611A	3.125 mg/kg	91.8	60.0	140	
		toluene	108-88-3	E611A	3.125 mg/kg	71.3	60.0	140	
		xylene, m+p-	179601-23-1	E611A	6.25 mg/kg	91.2	60.0	140	
		xylene, o-	95-47-6	E611A	3.125 mg/kg	90.7	60.0	140	
Hydrocarbons (QCLot: 6460)									

Sub-Matrix: **Soil**

					Matrix Spike (MS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	MS	Low	High	Qualifier
Hydrocarbons (QCLot: 6460) - continued									
VA19A0423-010	Anonymous	VHs (C6-C10)	----	E581.VH	171.9 mg/kg	98.2	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**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Particle Size (QCLot: 6528)									
QC-6528-001	RM	passing (0.002 mm)	----	E184	14 %	107	90.0	110	
QC-6528-001	RM	passing (0.004 mm)	----	E184	16.5 %	97.0	90.0	110	
QC-6528-001	RM	passing (0.005 mm)	----	E184	16.5 %	97.0	90.0	110	
QC-6528-001	RM	passing (0.020 mm)	----	E184	36 %	104	90.0	110	
QC-6528-001	RM	passing (0.0312 mm)	----	E184	48 %	91.7	90.0	110	
Saturated Paste Extractables (QCLot: 6161)									
QC-6161-003	RM	chloride	16887-00-6	E239.Cl	994 mg/L	97.8	70.0	130	
Saturated Paste Extractables (QCLot: 6162)									
QC-6162-003	RM	% saturation	----	E141	50.2 %	100	80.0	120	
Saturated Paste Extractables (QCLot: 6163)									
QC-6163-003	RM	sodium	7440-23-5	E485-L	610 mg/L	87.6	70.0	130	
Saturated Paste Extractables (QCLot: 6174)									
QC-6174-003	RM	chloride	16887-00-6	E239.Cl	994 mg/L	96.1	70.0	130	
Saturated Paste Extractables (QCLot: 6175)									
QC-6175-003	RM	% saturation	----	E141	50.2 %	111	80.0	120	
Saturated Paste Extractables (QCLot: 6176)									
QC-6176-003	RM	sodium	7440-23-5	E485-L	610 mg/L	95.4	70.0	130	
Metals (QCLot: 6165)									
QC-6165-003	RM	aluminum	7429-90-5	E440	29384 mg/kg	97.0	70.0	130	
QC-6165-003	RM	antimony	7440-36-0	E440	0.484 mg/kg	89.9	70.0	130	
QC-6165-003	RM	arsenic	7440-38-2	E440	24.1 mg/kg	105	70.0	130	
QC-6165-003	RM	barium	7440-39-3	E440	102 mg/kg	94.0	70.0	130	
QC-6165-003	RM	beryllium	7440-41-7	E440	1.6 mg/kg	92.7	70.0	130	
QC-6165-003	RM	bismuth	7440-69-9	E440	5 mg/kg	98.3	70.0	130	
QC-6165-003	RM	cadmium	7440-43-9	E440	0.34 mg/kg	109	70.0	130	
QC-6165-003	RM	calcium	7440-70-2	E440	1663 mg/kg	94.7	70.0	130	
QC-6165-003	RM	chromium	7440-47-3	E440	36.8 mg/kg	103	70.0	130	
QC-6165-003	RM	cobalt	7440-48-4	E440	13 mg/kg	104	70.0	130	
QC-6165-003	RM	copper	7440-50-8	E440	145.8 mg/kg	106	70.0	130	

Sub-Matrix: **Soil**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 6165) - continued									
QC-6165-003	RM	iron	7439-89-6	E440	33232 mg/kg	103	70.0	130	
QC-6165-003	RM	lead	7439-92-1	E440	22.4 mg/kg	97.3	70.0	130	
QC-6165-003	RM	lithium	7439-93-2	E440	35.5 mg/kg	93.0	70.0	130	
QC-6165-003	RM	magnesium	7439-95-4	E440	7350 mg/kg	97.5	70.0	130	
QC-6165-003	RM	manganese	7439-96-5	E440	652 mg/kg	97.7	70.0	130	
QC-6165-003	RM	molybdenum	7439-98-7	E440	13.1 mg/kg	96.8	70.0	130	
QC-6165-003	RM	nickel	7440-02-0	E440	30.9 mg/kg	106	70.0	130	
QC-6165-003	RM	phosphorus	7723-14-0	E440	568 mg/kg	105	70.0	130	
QC-6165-003	RM	potassium	7440-09-7	E440	3670 mg/kg	96.3	70.0	130	
QC-6165-003	RM	silver	7440-22-4	E440	0.268 mg/kg	96.6	50.0	150	
QC-6165-003	RM	sodium	7440-23-5	E440	307 mg/kg	96.3	70.0	130	
QC-6165-003	RM	strontium	7440-24-6	E440	15.1 mg/kg	95.7	70.0	130	
QC-6165-003	RM	thallium	7440-28-0	E440	0.376 mg/kg	91.7	50.0	150	
QC-6165-003	RM	titanium	7440-32-6	E440	1109 mg/kg	103	70.0	130	
QC-6165-003	RM	uranium	7440-61-1	E440	3.29 mg/kg	99.2	70.0	130	
QC-6165-003	RM	vanadium	7440-62-2	E440	43.9 mg/kg	104	70.0	130	
QC-6165-003	RM	zinc	7440-66-6	E440	112.1 mg/kg	108	70.0	130	
Metals (QCLot: 6169)									
QC-6169-003	RM	mercury	7439-97-6	E510	0.062 mg/kg	108	70.0	130	
Metals (QCLot: 6170)									
QC-6170-003	RM	aluminum	7429-90-5	E440	29384 mg/kg	101	70.0	130	
QC-6170-003	RM	antimony	7440-36-0	E440	0.484 mg/kg	97.2	70.0	130	
QC-6170-003	RM	arsenic	7440-38-2	E440	24.1 mg/kg	104	70.0	130	
QC-6170-003	RM	barium	7440-39-3	E440	102 mg/kg	100	70.0	130	
QC-6170-003	RM	beryllium	7440-41-7	E440	1.6 mg/kg	94.6	70.0	130	
QC-6170-003	RM	bismuth	7440-69-9	E440	5 mg/kg	101	70.0	130	
QC-6170-003	RM	cadmium	7440-43-9	E440	0.34 mg/kg	101	70.0	130	
QC-6170-003	RM	calcium	7440-70-2	E440	1663 mg/kg	101	70.0	130	
QC-6170-003	RM	chromium	7440-47-3	E440	36.8 mg/kg	104	70.0	130	
QC-6170-003	RM	cobalt	7440-48-4	E440	13 mg/kg	102	70.0	130	
QC-6170-003	RM	copper	7440-50-8	E440	145.8 mg/kg	103	70.0	130	
QC-6170-003	RM	iron	7439-89-6	E440	33232 mg/kg	101	70.0	130	
QC-6170-003	RM	lead	7439-92-1	E440	22.4 mg/kg	100	70.0	130	

Sub-Matrix: **Soil**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 6170) - continued									
QC-6170-003	RM	lithium	7439-93-2	E440	35.5 mg/kg	95.2	70.0	130	
QC-6170-003	RM	magnesium	7439-95-4	E440	7350 mg/kg	94.2	70.0	130	
QC-6170-003	RM	manganese	7439-96-5	E440	652 mg/kg	98.6	70.0	130	
QC-6170-003	RM	molybdenum	7439-98-7	E440	13.1 mg/kg	98.2	70.0	130	
QC-6170-003	RM	nickel	7440-02-0	E440	30.9 mg/kg	106	70.0	130	
QC-6170-003	RM	phosphorus	7723-14-0	E440	568 mg/kg	103	70.0	130	
QC-6170-003	RM	potassium	7440-09-7	E440	3670 mg/kg	105	70.0	130	
QC-6170-003	RM	silver	7440-22-4	E440	0.268 mg/kg	102	50.0	150	
QC-6170-003	RM	sodium	7440-23-5	E440	307 mg/kg	97.8	70.0	130	
QC-6170-003	RM	strontium	7440-24-6	E440	15.1 mg/kg	106	70.0	130	
QC-6170-003	RM	thallium	7440-28-0	E440	0.376 mg/kg	102	50.0	150	
QC-6170-003	RM	titanium	7440-32-6	E440	1109 mg/kg	113	70.0	130	
QC-6170-003	RM	uranium	7440-61-1	E440	3.29 mg/kg	102	70.0	130	
QC-6170-003	RM	vanadium	7440-62-2	E440	43.9 mg/kg	104	70.0	130	
QC-6170-003	RM	zinc	7440-66-6	E440	112.1 mg/kg	101	70.0	130	
Metals (QCLot: 6368)									
QC-6368-003	RM	aluminum	7429-90-5	E440	29384 mg/kg	105	70.0	130	
QC-6368-003	RM	antimony	7440-36-0	E440	0.484 mg/kg	92.4	70.0	130	
QC-6368-003	RM	arsenic	7440-38-2	E440	24.1 mg/kg	106	70.0	130	
QC-6368-003	RM	barium	7440-39-3	E440	102 mg/kg	94.0	70.0	130	
QC-6368-003	RM	beryllium	7440-41-7	E440	1.6 mg/kg	102	70.0	130	
QC-6368-003	RM	bismuth	7440-69-9	E440	5 mg/kg	94.8	70.0	130	
QC-6368-003	RM	cadmium	7440-43-9	E440	0.34 mg/kg	97.4	70.0	130	
QC-6368-003	RM	calcium	7440-70-2	E440	1663 mg/kg	105	70.0	130	
QC-6368-003	RM	chromium	7440-47-3	E440	36.8 mg/kg	107	70.0	130	
QC-6368-003	RM	cobalt	7440-48-4	E440	13 mg/kg	103	70.0	130	
QC-6368-003	RM	copper	7440-50-8	E440	145.8 mg/kg	103	70.0	130	
QC-6368-003	RM	iron	7439-89-6	E440	33232 mg/kg	98.7	70.0	130	
QC-6368-003	RM	lead	7439-92-1	E440	22.4 mg/kg	98.7	70.0	130	
QC-6368-003	RM	lithium	7439-93-2	E440	35.5 mg/kg	108	70.0	130	
QC-6368-003	RM	magnesium	7439-95-4	E440	7350 mg/kg	105	70.0	130	
QC-6368-003	RM	manganese	7439-96-5	E440	652 mg/kg	101	70.0	130	

Sub-Matrix: **Soil**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 6368) - continued									
QC-6368-003	RM	molybdenum	7439-98-7	E440	13.1 mg/kg	98.3	70.0	130	
QC-6368-003	RM	nickel	7440-02-0	E440	30.9 mg/kg	99.6	70.0	130	
QC-6368-003	RM	phosphorus	7723-14-0	E440	568 mg/kg	98.9	70.0	130	
QC-6368-003	RM	potassium	7440-09-7	E440	3670 mg/kg	100.0	70.0	130	
QC-6368-003	RM	silver	7440-22-4	E440	0.268 mg/kg	95.4	50.0	150	
QC-6368-003	RM	sodium	7440-23-5	E440	307 mg/kg	100	70.0	130	
QC-6368-003	RM	strontium	7440-24-6	E440	15.1 mg/kg	96.3	70.0	130	
QC-6368-003	RM	thallium	7440-28-0	E440	0.376 mg/kg	97.9	50.0	150	
QC-6368-003	RM	titanium	7440-32-6	E440	1109 mg/kg	106	70.0	130	
QC-6368-003	RM	uranium	7440-61-1	E440	3.29 mg/kg	100	70.0	130	
QC-6368-003	RM	vanadium	7440-62-2	E440	43.9 mg/kg	104	70.0	130	
QC-6368-003	RM	zinc	7440-66-6	E440	112.1 mg/kg	103	70.0	130	
Metals (QCLot: 6484)									
QC-6484-003	RM	mercury	7439-97-6	E510	0.062 mg/kg	106	70.0	130	
Metals (QCLot: 7000)									
QC-7000-003	RM	aluminum	7429-90-5	E440	29384 mg/kg	111	70.0	130	
QC-7000-003	RM	antimony	7440-36-0	E440	0.484 mg/kg	97.3	70.0	130	
QC-7000-003	RM	arsenic	7440-38-2	E440	24.1 mg/kg	105	70.0	130	
QC-7000-003	RM	barium	7440-39-3	E440	102 mg/kg	102	70.0	130	
QC-7000-003	RM	beryllium	7440-41-7	E440	1.6 mg/kg	104	70.0	130	
QC-7000-003	RM	bismuth	7440-69-9	E440	5 mg/kg	105	70.0	130	
QC-7000-003	RM	cadmium	7440-43-9	E440	0.34 mg/kg	105	70.0	130	
QC-7000-003	RM	calcium	7440-70-2	E440	1663 mg/kg	107	70.0	130	
QC-7000-003	RM	chromium	7440-47-3	E440	36.8 mg/kg	106	70.0	130	
QC-7000-003	RM	cobalt	7440-48-4	E440	13 mg/kg	104	70.0	130	
QC-7000-003	RM	copper	7440-50-8	E440	145.8 mg/kg	105	70.0	130	
QC-7000-003	RM	iron	7439-89-6	E440	33232 mg/kg	102	70.0	130	
QC-7000-003	RM	lead	7439-92-1	E440	22.4 mg/kg	104	70.0	130	
QC-7000-003	RM	lithium	7439-93-2	E440	35.5 mg/kg	99.5	70.0	130	
QC-7000-003	RM	magnesium	7439-95-4	E440	7350 mg/kg	107	70.0	130	
QC-7000-003	RM	manganese	7439-96-5	E440	652 mg/kg	111	70.0	130	
QC-7000-003	RM	molybdenum	7439-98-7	E440	13.1 mg/kg	101	70.0	130	
QC-7000-003	RM	nickel	7440-02-0	E440	30.9 mg/kg	107	70.0	130	

Sub-Matrix: **Soil**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 7000) - continued									
QC-7000-003	RM	phosphorus	7723-14-0	E440	568 mg/kg	100.0	70.0	130	
QC-7000-003	RM	potassium	7440-09-7	E440	3670 mg/kg	102	70.0	130	
QC-7000-003	RM	silver	7440-22-4	E440	0.268 mg/kg	100	50.0	150	
QC-7000-003	RM	sodium	7440-23-5	E440	307 mg/kg	97.8	70.0	130	
QC-7000-003	RM	strontium	7440-24-6	E440	15.1 mg/kg	102	70.0	130	
QC-7000-003	RM	thallium	7440-28-0	E440	0.376 mg/kg	108	50.0	150	
QC-7000-003	RM	titanium	7440-32-6	E440	1109 mg/kg	112	70.0	130	
QC-7000-003	RM	uranium	7440-61-1	E440	3.29 mg/kg	103	70.0	130	
QC-7000-003	RM	vanadium	7440-62-2	E440	43.9 mg/kg	106	70.0	130	
QC-7000-003	RM	zinc	7440-66-6	E440	112.1 mg/kg	105	70.0	130	
Metals (QCLot: 7001)									
QC-7001-003	RM	mercury	7439-97-6	E510	0.062 mg/kg	102	70.0	130	
Metals (QCLot: 7119)									
QC-7119-003	RM	aluminum	7429-90-5	E440	29384 mg/kg	103	70.0	130	
QC-7119-003	RM	antimony	7440-36-0	E440	0.484 mg/kg	89.3	70.0	130	
QC-7119-003	RM	arsenic	7440-38-2	E440	24.1 mg/kg	99.5	70.0	130	
QC-7119-003	RM	barium	7440-39-3	E440	102 mg/kg	98.6	70.0	130	
QC-7119-003	RM	beryllium	7440-41-7	E440	1.6 mg/kg	90.3	70.0	130	
QC-7119-003	RM	bismuth	7440-69-9	E440	5 mg/kg	95.3	70.0	130	
QC-7119-003	RM	cadmium	7440-43-9	E440	0.34 mg/kg	97.7	70.0	130	
QC-7119-003	RM	calcium	7440-70-2	E440	1663 mg/kg	97.7	70.0	130	
QC-7119-003	RM	chromium	7440-47-3	E440	36.8 mg/kg	99.4	70.0	130	
QC-7119-003	RM	cobalt	7440-48-4	E440	13 mg/kg	100	70.0	130	
QC-7119-003	RM	copper	7440-50-8	E440	145.8 mg/kg	99.5	70.0	130	
QC-7119-003	RM	iron	7439-89-6	E440	33232 mg/kg	98.1	70.0	130	
QC-7119-003	RM	lead	7439-92-1	E440	22.4 mg/kg	94.6	70.0	130	
QC-7119-003	RM	lithium	7439-93-2	E440	35.5 mg/kg	90.8	70.0	130	
QC-7119-003	RM	magnesium	7439-95-4	E440	7350 mg/kg	107	70.0	130	
QC-7119-003	RM	manganese	7439-96-5	E440	652 mg/kg	103	70.0	130	
QC-7119-003	RM	molybdenum	7439-98-7	E440	13.1 mg/kg	95.0	70.0	130	
QC-7119-003	RM	nickel	7440-02-0	E440	30.9 mg/kg	102	70.0	130	
QC-7119-003	RM	phosphorus	7723-14-0	E440	568 mg/kg	93.3	70.0	130	
QC-7119-003	RM	potassium	7440-09-7	E440	3670 mg/kg	90.6	70.0	130	

Sub-Matrix: **Soil**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 7119) - continued									
QC-7119-003	RM	silver	7440-22-4	E440	0.268 mg/kg	93.4	50.0	150	
QC-7119-003	RM	sodium	7440-23-5	E440	307 mg/kg	93.6	70.0	130	
QC-7119-003	RM	strontium	7440-24-6	E440	15.1 mg/kg	90.7	70.0	130	
QC-7119-003	RM	thallium	7440-28-0	E440	0.376 mg/kg	93.3	50.0	150	
QC-7119-003	RM	titanium	7440-32-6	E440	1109 mg/kg	99.5	70.0	130	
QC-7119-003	RM	uranium	7440-61-1	E440	3.29 mg/kg	91.6	70.0	130	
QC-7119-003	RM	vanadium	7440-62-2	E440	43.9 mg/kg	98.7	70.0	130	
QC-7119-003	RM	zinc	7440-66-6	E440	112.1 mg/kg	99.7	70.0	130	
Polycyclic Aromatic Hydrocarbons (QCLot: 6160)									
QC-6160-003	RM	acenaphthene	83-32-9	E641A-L	0.638 mg/kg	93.7	60.0	130	
QC-6160-003	RM	acenaphthylene	208-96-8	E641A-L	0.2 mg/kg	124	60.0	130	
QC-6160-003	RM	benz(a)anthracene	56-55-3	E641A-L	0.545 mg/kg	95.7	60.0	130	
QC-6160-003	RM	benzo(a)pyrene	50-32-8	E641A-L	0.135 mg/kg	91.1	60.0	130	
QC-6160-003	RM	benzo(b+j)fluoranthene	----	E641A-L	0.793 mg/kg	91.9	60.0	130	
QC-6160-003	RM	benzo(k)fluoranthene	207-08-9	E641A-L	0.34 mg/kg	102	60.0	130	
QC-6160-003	RM	fluorene	86-73-7	E641A-L	0.989 mg/kg	92.4	60.0	130	
QC-6160-003	RM	indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.445 mg/kg	95.0	60.0	130	
QC-6160-003	RM	methylnaphthalene, 1-	90-12-0	E641A-L	1.256 mg/kg	95.8	60.0	130	
QC-6160-003	RM	phenanthrene	85-01-8	E641A-L	1.13 mg/kg	92.6	60.0	130	
QC-6160-003	RM	pyrene	129-00-0	E641A-L	1.325 mg/kg	95.8	60.0	130	
Polycyclic Aromatic Hydrocarbons (QCLot: 6172)									
QC-6172-003	RM	acenaphthene	83-32-9	E641A-L	0.638 mg/kg	104	60.0	130	
QC-6172-003	RM	acenaphthylene	208-96-8	E641A-L	0.2 mg/kg	126	60.0	130	
QC-6172-003	RM	benz(a)anthracene	56-55-3	E641A-L	0.545 mg/kg	97.0	60.0	130	
QC-6172-003	RM	benzo(b+j)fluoranthene	----	E641A-L	0.793 mg/kg	94.4	60.0	130	
QC-6172-003	RM	benzo(k)fluoranthene	207-08-9	E641A-L	0.34 mg/kg	113	60.0	130	
QC-6172-003	RM	chrysene	218-01-9	E641A-L	0.666 mg/kg	106	60.0	130	
QC-6172-003	RM	fluorene	86-73-7	E641A-L	0.989 mg/kg	102	60.0	130	
QC-6172-003	RM	methylnaphthalene, 1-	90-12-0	E641A-L	1.256 mg/kg	104	60.0	130	
QC-6172-003	RM	phenanthrene	85-01-8	E641A-L	1.13 mg/kg	100	60.0	130	
QC-6172-003	RM	pyrene	129-00-0	E641A-L	1.325 mg/kg	102	60.0	130	
Polycyclic Aromatic Hydrocarbons (QCLot: 6341)									
QC-6341-003	RM	acenaphthene	83-32-9	E641A-L	0.638 mg/kg	105	60.0	130	

Sub-Matrix: **Soil**

					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: 6341) - continued									
QC-6341-003	RM	acenaphthylene	208-96-8	E641A-L	0.2 mg/kg	129	60.0	130	
QC-6341-003	RM	benz(a)anthracene	56-55-3	E641A-L	0.545 mg/kg	102	60.0	130	
QC-6341-003	RM	benzo(a)pyrene	50-32-8	E641A-L	0.135 mg/kg	104	60.0	130	
QC-6341-003	RM	benzo(b+j)fluoranthene	----	E641A-L	0.793 mg/kg	100	60.0	130	
QC-6341-003	RM	benzo(g,h,i)perylene	191-24-2	E641A-L	0.377 mg/kg	111	60.0	130	
QC-6341-003	RM	chrysene	218-01-9	E641A-L	0.666 mg/kg	118	60.0	130	
QC-6341-003	RM	dibenz(a,h)anthracene	53-70-3	E641A-L	1.196 mg/kg	101	60.0	130	
QC-6341-003	RM	fluoranthene	206-44-0	E641A-L	1.757 mg/kg	110	60.0	130	
QC-6341-003	RM	indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.445 mg/kg	102	60.0	130	
QC-6341-003	RM	methylnaphthalene, 1-	90-12-0	E641A-L	1.256 mg/kg	106	60.0	130	
QC-6341-003	RM	methylnaphthalene, 2-	91-57-6	E641A-L	1.088 mg/kg	106	60.0	130	
QC-6341-003	RM	pyrene	129-00-0	E641A-L	1.325 mg/kg	105	60.0	130	

Qualifiers

Qualifier	Description
MB-LOR	*Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.*

ALS Environmental

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA19A0489**	Page	: 1 of 31
Client	: **WSP Canada Inc.**	Laboratory	: Vancouver - Environmental
Contact	: Jason Newington	Account Manager	: Carla Fuginski
Address	: Unit 100 - 20339 96 Avenue Langley BC Canada V1M 2L1	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 191-15279-00	Date Samples Received	: 10-Dec-2019 08:27
PO	: ----	Issue Date	: 19-Dec-2019 11:47
C-O-C number	: 17-786865->68, 17-786872		
Sampler	: S. Rusnak		
Site	: ----		
Quote number	: ----		
No. of samples received	: 57		
No. of samples analysed	: 29		

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

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.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Soil**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Polycyclic Aromatic Hydrocarbons	QC-MRG2-6172001	----	**dibenz(a,h)anthracene**	53-70-3	E641A-L	0.0075 mg/kg MB-LOR	0.005 mg/kg	**Blank result exceeds permitted value**
Laboratory Control Sample (LCS) Recoveries								
Metals	QC-MRG2-700002	----	**antimony**	7440-36-0	E440	124 % MES	80.0-120%	**Recovery greater than upper control limit**

Regular Sample Surrogates

Sub-Matrix: **Soil**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
Hydrocarbons	VA19A0489-013	SS19-12	**dichlorotoluene, 3,4-**	97-75-0	69.0 %	70.0-130 %	**Recovery less than lower data quality objective**
Hydrocarbons	VA19A0489-048	BH19-05-04	**dichlorotoluene, 3,4-**	97-75-0	69.0 %	70.0-130 %	**Recovery less than lower data quality objective**
Hydrocarbons	VA19A0489-052	BH19-06-05	**dichlorotoluene, 3,4-**	97-75-0	64.1 %	70.0-130 %	**Recovery less than lower data quality objective**

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**

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										
MW19-01-06	**E601A**	**02-Dec-2019**	**12-Dec-2019**	14 days	10 days	✓	**13-Dec-2019**	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
MW19-02-02	**E601A**	**02-Dec-2019**	**12-Dec-2019**	14 days	10 days	✓	**13-Dec-2019**	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
BH19-04-07	**E601A**	**03-Dec-2019**	**11-Dec-2019**	14 days	7 days	✓	**13-Dec-2019**	40 days	2 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
BH19-05-03	**E601A**	**03-Dec-2019**	**11-Dec-2019**	14 days	7 days	✓	**13-Dec-2019**	40 days	2 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
BH19-05-04	**E601A**	**03-Dec-2019**	**11-Dec-2019**	14 days	7 days	✓	**13-Dec-2019**	40 days	2 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
BH19-06-05	**E601A**	**03-Dec-2019**	**11-Dec-2019**	14 days	7 days	✓	**13-Dec-2019**	40 days	2 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
SS19-08	**E601A**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**13-Dec-2019**	40 days	0 days	✓

Matrix: **Soil**

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										
SS19-09	**E601A**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**13-Dec-2019**	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
SS19-11	**E601A**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**13-Dec-2019**	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
SS19-12	**E601A**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**13-Dec-2019**	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
SS19-13	**E601A**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**13-Dec-2019**	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
SS19-15	**E601A**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**13-Dec-2019**	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
SS19-10	**E601A**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**13-Dec-2019**	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
SS19-14	**E601A**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**13-Dec-2019**	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
MW19-03-02	**E601A**	**02-Dec-2019**	**11-Dec-2019**	14 days	8 days	✓	**13-Dec-2019**	40 days	2 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
MW99-01-06	**E601A**	**02-Dec-2019**	**11-Dec-2019**	14 days	8 days	✓	**13-Dec-2019**	40 days	2 days	✓

Matrix: **Soil**

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 by Headspace GC-FID										
Glass soil methanol vial BH19-04-07	**E581.VH**	**03-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial BH19-05-03	**E581.VH**	**03-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial BH19-05-04	**E581.VH**	**03-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial MW19-01-06	**E581.VH**	**02-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial MW19-02-02	**E581.VH**	**02-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial MW19-03-02	**E581.VH**	**02-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial MW99-01-06	**E581.VH**	**02-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial BH19-06-05	**E581.VH**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial SS19-08	**E581.VH**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓

Matrix: **Soil**

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 by Headspace GC-FID										
Glass soil methanol vial SS19-09	**E581.VH**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial SS19-10	**E581.VH**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial SS19-11	**E581.VH**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial SS19-12	**E581.VH**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial SS19-13	**E581.VH**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial SS19-14	**E581.VH**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Hydrocarbons : VH by Headspace GC-FID										
Glass soil methanol vial SS19-15	**E581.VH**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap MW19-02-03	**E510**	**02-Dec-2019**	**18-Dec-2019**	28 days	15 days	✓	**18-Dec-2019**	12 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap BH19-04-07	**E510**	**03-Dec-2019**	**12-Dec-2019**	28 days	8 days	✓	**12-Dec-2019**	19 days	0 days	✓

Matrix: **Soil**

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
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
BH19-05-03	**E510**	**03-Dec-2019**	**12-Dec-2019**	28 days	8 days	✓	**12-Dec-2019**	19 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
BH19-05-04	**E510**	**03-Dec-2019**	**12-Dec-2019**	28 days	8 days	✓	**12-Dec-2019**	19 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
BH19-06-05	**E510**	**03-Dec-2019**	**12-Dec-2019**	28 days	8 days	✓	**12-Dec-2019**	19 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
SS19-08	**E510**	**03-Dec-2019**	**12-Dec-2019**	28 days	8 days	✓	**12-Dec-2019**	19 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
SS19-09	**E510**	**03-Dec-2019**	**12-Dec-2019**	28 days	8 days	✓	**12-Dec-2019**	19 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
SS19-10	**E510**	**03-Dec-2019**	**12-Dec-2019**	28 days	8 days	✓	**12-Dec-2019**	19 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
SS19-11	**E510**	**03-Dec-2019**	**12-Dec-2019**	28 days	8 days	✓	**12-Dec-2019**	19 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
SS19-12	**E510**	**03-Dec-2019**	**12-Dec-2019**	28 days	8 days	✓	**12-Dec-2019**	19 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
SS19-13	**E510**	**03-Dec-2019**	**12-Dec-2019**	28 days	8 days	✓	**12-Dec-2019**	19 days	0 days	✓

Matrix: **Soil**

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
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
SS19-14	**E510**	**03-Dec-2019**	**12-Dec-2019**	28 days	8 days	✓	**12-Dec-2019**	19 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
SS19-15	**E510**	**03-Dec-2019**	**12-Dec-2019**	28 days	8 days	✓	**12-Dec-2019**	19 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
MW19-01-06	**E510**	**02-Dec-2019**	**12-Dec-2019**	28 days	9 days	✓	**12-Dec-2019**	18 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
MW19-02-02	**E510**	**02-Dec-2019**	**12-Dec-2019**	28 days	9 days	✓	**12-Dec-2019**	18 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
MW19-03-02	**E510**	**02-Dec-2019**	**12-Dec-2019**	28 days	9 days	✓	**12-Dec-2019**	18 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
MW99-01-06	**E510**	**02-Dec-2019**	**12-Dec-2019**	28 days	9 days	✓	**12-Dec-2019**	18 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
SS19-08	**E440**	**03-Dec-2019**	**18-Dec-2019**	180 days	14 days	✓	**18-Dec-2019**	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
SS19-09	**E440**	**03-Dec-2019**	**18-Dec-2019**	180 days	14 days	✓	**18-Dec-2019**	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
SS19-10	**E440**	**03-Dec-2019**	**18-Dec-2019**	180 days	14 days	✓	**18-Dec-2019**	165 days	0 days	✓

Matrix: **Soil**

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
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
SS19-11	**E440**	**03-Dec-2019**	**18-Dec-2019**	180 days	14 days	✓	**18-Dec-2019**	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
SS19-12	**E440**	**03-Dec-2019**	**18-Dec-2019**	180 days	14 days	✓	**18-Dec-2019**	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
SS19-13	**E440**	**03-Dec-2019**	**18-Dec-2019**	180 days	14 days	✓	**18-Dec-2019**	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
SS19-14	**E440**	**03-Dec-2019**	**18-Dec-2019**	180 days	14 days	✓	**18-Dec-2019**	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
SS19-15	**E440**	**03-Dec-2019**	**18-Dec-2019**	180 days	14 days	✓	**18-Dec-2019**	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
BH19-05-03	**E440**	**03-Dec-2019**	**18-Dec-2019**	180 days	15 days	✓	**18-Dec-2019**	164 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
BH19-05-04	**E440**	**03-Dec-2019**	**18-Dec-2019**	180 days	15 days	✓	**18-Dec-2019**	164 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
MW19-02-03	**E440**	**02-Dec-2019**	**18-Dec-2019**	180 days	15 days	✓	**18-Dec-2019**	164 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
BH19-04-07	**E440**	**03-Dec-2019**	**12-Dec-2019**	180 days	8 days	✓	**12-Dec-2019**	171 days	0 days	✓

Matrix: **Soil**

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
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
BH19-06-05	**E440**	**03-Dec-2019**	**12-Dec-2019**	180 days	8 days	✓	**12-Dec-2019**	171 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
MW19-01-06	**E440**	**02-Dec-2019**	**12-Dec-2019**	180 days	9 days	✓	**12-Dec-2019**	170 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
MW19-02-02	**E440**	**02-Dec-2019**	**12-Dec-2019**	180 days	9 days	✓	**12-Dec-2019**	170 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
MW19-03-02	**E440**	**02-Dec-2019**	**12-Dec-2019**	180 days	9 days	✓	**12-Dec-2019**	170 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
MW99-01-06	**E440**	**02-Dec-2019**	**12-Dec-2019**	180 days	9 days	✓	**12-Dec-2019**	170 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag										
BH19-04-03	**E184**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	----	----	
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag										
BH19-05-03	**E184**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	----	----	
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag										
BH19-05-04	**E184**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	----	----	
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag										
BH19-06-03	**E184**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	----	----	

Matrix: **Soil**

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
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag MW19-01-03	E184	02-Dec-2019	----	----	----		13-Dec-2019	----	----	
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag MW19-02-03	E184	02-Dec-2019	----	----	----		13-Dec-2019	----	----	
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag MW19-03-03	E184	02-Dec-2019	----	----	----		13-Dec-2019	----	----	
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag SS19-08	E184	03-Dec-2019	----	----	----		13-Dec-2019	----	----	
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag SS19-09	E184	03-Dec-2019	----	----	----		13-Dec-2019	----	----	
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag SS19-10	E184	03-Dec-2019	----	----	----		13-Dec-2019	----	----	
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag SS19-11	E184	03-Dec-2019	----	----	----		13-Dec-2019	----	----	
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag SS19-12	E184	03-Dec-2019	----	----	----		13-Dec-2019	----	----	
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag SS19-13	E184	03-Dec-2019	----	----	----		13-Dec-2019	----	----	

Matrix: **Soil**

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
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag										
SS19-14	**E184**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	----	----	
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag										
SS19-15	**E184**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
BH19-04-07	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
BH19-05-03	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
BH19-05-04	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
BH19-06-05	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-01	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-02	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-03	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓

Matrix: **Soil**

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										
SS19-04	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-05	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-06	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-07	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-08	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-09	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-10	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-11	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-12	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓

Matrix: **Soil**

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										
SS19-13	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-14	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS19-15	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
SS99-01	**E144**	**03-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	8 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
MW19-01-06	**E144**	**02-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	9 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
MW19-02-02	**E144**	**02-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	9 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
MW19-03-02	**E144**	**02-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	9 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
MW99-01-06	**E144**	**02-Dec-2019**	**----**	----	----		**11-Dec-2019**	14 days	9 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
SS19-08	**E108**	**03-Dec-2019**	**18-Dec-2019**	30 days	14 days	✓	**18-Dec-2019**	15 days	0 days	✓

Matrix: **Soil**

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 : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
SS19-09	**E108**	**03-Dec-2019**	**18-Dec-2019**	30 days	14 days	✓	**18-Dec-2019**	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
SS19-10	**E108**	**03-Dec-2019**	**18-Dec-2019**	30 days	14 days	✓	**18-Dec-2019**	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
SS19-11	**E108**	**03-Dec-2019**	**18-Dec-2019**	30 days	14 days	✓	**18-Dec-2019**	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
SS19-12	**E108**	**03-Dec-2019**	**18-Dec-2019**	30 days	14 days	✓	**18-Dec-2019**	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
SS19-13	**E108**	**03-Dec-2019**	**18-Dec-2019**	30 days	14 days	✓	**18-Dec-2019**	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
SS19-14	**E108**	**03-Dec-2019**	**18-Dec-2019**	30 days	14 days	✓	**18-Dec-2019**	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
SS19-15	**E108**	**03-Dec-2019**	**18-Dec-2019**	30 days	14 days	✓	**18-Dec-2019**	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
BH19-05-03	**E108**	**03-Dec-2019**	**18-Dec-2019**	30 days	15 days	✓	**18-Dec-2019**	14 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
BH19-05-04	**E108**	**03-Dec-2019**	**18-Dec-2019**	30 days	15 days	✓	**18-Dec-2019**	14 days	0 days	✓

Matrix: **Soil**

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 : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
MW19-02-03	**E108**	**02-Dec-2019**	**18-Dec-2019**	30 days	15 days	✓	**18-Dec-2019**	14 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
BH19-04-07	**E108**	**03-Dec-2019**	**12-Dec-2019**	30 days	8 days	✓	**12-Dec-2019**	21 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
BH19-06-05	**E108**	**03-Dec-2019**	**12-Dec-2019**	30 days	8 days	✓	**12-Dec-2019**	21 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
MW19-01-06	**E108**	**02-Dec-2019**	**12-Dec-2019**	30 days	9 days	✓	**12-Dec-2019**	20 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
MW19-02-02	**E108**	**02-Dec-2019**	**12-Dec-2019**	30 days	9 days	✓	**12-Dec-2019**	20 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
MW19-03-02	**E108**	**02-Dec-2019**	**12-Dec-2019**	30 days	9 days	✓	**12-Dec-2019**	20 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
MW99-01-06	**E108**	**02-Dec-2019**	**12-Dec-2019**	30 days	9 days	✓	**12-Dec-2019**	20 days	0 days	✓
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
MW19-01-03	**E141**	**02-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	10 days	✓
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
MW19-02-03	**E141**	**02-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	10 days	✓

Matrix: **Soil**

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 : Saturation Percentage										
Glass soil jar/Teflon lined cap										
MW19-03-03	**E141**	**02-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	10 days	✓
Physical Tests : Saturation Percentage										
LDPE bag										
BH19-04-03	**E141**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	9 days	✓
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
BH19-05-03	**E141**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	9 days	✓
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
BH19-05-04	**E141**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	9 days	✓
Physical Tests : Saturation Percentage										
LDPE bag										
BH19-06-03	**E141**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	9 days	✓
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
SS19-08	**E141**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	9 days	✓
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
SS19-09	**E141**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	9 days	✓
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
SS19-10	**E141**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	9 days	✓
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
SS19-11	**E141**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	9 days	✓

Matrix: **Soil**

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 : Saturation Percentage										
Glass soil jar/Teflon lined cap										
SS19-12	**E141**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	9 days	✓
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
SS19-13	**E141**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	9 days	✓
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
SS19-14	**E141**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	9 days	✓
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
SS19-15	**E141**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	28 days	9 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-ECD										
Glass soil jar/Teflon lined cap										
SS19-01	**E685**	**03-Dec-2019**	**11-Dec-2019**	----	----		**12-Dec-2019**	0 days	0 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-ECD										
Glass soil jar/Teflon lined cap										
SS19-02	**E685**	**03-Dec-2019**	**11-Dec-2019**	----	----		**12-Dec-2019**	0 days	0 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-ECD										
Glass soil jar/Teflon lined cap										
SS19-03	**E685**	**03-Dec-2019**	**11-Dec-2019**	----	----		**12-Dec-2019**	0 days	0 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-ECD										
Glass soil jar/Teflon lined cap										
SS19-04	**E685**	**03-Dec-2019**	**11-Dec-2019**	----	----		**12-Dec-2019**	0 days	0 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-ECD										
Glass soil jar/Teflon lined cap										
SS19-05	**E685**	**03-Dec-2019**	**11-Dec-2019**	----	----		**12-Dec-2019**	0 days	0 days	✓

Matrix: **Soil**

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
Polychlorinated Biphenyls : PCB Aroclors by GC-ECD										
Glass soil jar/Teflon lined cap SS19-06	E685	03-Dec-2019	11-Dec-2019	----	----		12-Dec-2019	0 days	0 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-ECD										
Glass soil jar/Teflon lined cap SS19-07	E685	03-Dec-2019	11-Dec-2019	----	----		12-Dec-2019	0 days	0 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-ECD										
Glass soil jar/Teflon lined cap SS99-01	E685	03-Dec-2019	11-Dec-2019	----	----		12-Dec-2019	0 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap MW19-01-06	E641A-L	02-Dec-2019	12-Dec-2019	14 days	10 days	✓	12-Dec-2019	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap MW19-02-02	E641A-L	02-Dec-2019	12-Dec-2019	14 days	10 days	✓	12-Dec-2019	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap BH19-04-07	E641A-L	03-Dec-2019	11-Dec-2019	14 days	7 days	✓	12-Dec-2019	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap BH19-05-03	E641A-L	03-Dec-2019	11-Dec-2019	14 days	7 days	✓	12-Dec-2019	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap BH19-05-04	E641A-L	03-Dec-2019	11-Dec-2019	14 days	7 days	✓	12-Dec-2019	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap BH19-06-05	E641A-L	03-Dec-2019	11-Dec-2019	14 days	7 days	✓	12-Dec-2019	40 days	1 days	✓

Matrix: **Soil**

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 SS19-08	**E641A-L**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**12-Dec-2019**	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap SS19-09	**E641A-L**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**12-Dec-2019**	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap SS19-11	**E641A-L**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**12-Dec-2019**	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap SS19-12	**E641A-L**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**12-Dec-2019**	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap SS19-13	**E641A-L**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**12-Dec-2019**	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap SS19-15	**E641A-L**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**12-Dec-2019**	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap MW19-03-02	**E641A-L**	**02-Dec-2019**	**11-Dec-2019**	14 days	8 days	✓	**12-Dec-2019**	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap MW99-01-06	**E641A-L**	**02-Dec-2019**	**11-Dec-2019**	14 days	8 days	✓	**12-Dec-2019**	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap SS19-10	**E641A-L**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**13-Dec-2019**	40 days	1 days	✓

Matrix: **Soil**

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										
SS19-14	**E641A-L**	**03-Dec-2019**	**12-Dec-2019**	14 days	8 days	✓	**13-Dec-2019**	40 days	1 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
MW19-03-03	**E485-L**	**02-Dec-2019**	**----**	----	----		**12-Dec-2019**	180 days	10 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
MW19-01-03	**E485-L**	**02-Dec-2019**	**----**	----	----		**13-Dec-2019**	180 days	11 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
MW19-02-03	**E485-L**	**02-Dec-2019**	**----**	----	----		**13-Dec-2019**	180 days	11 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
LDPE bag										
BH19-04-03	**E485-L**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	180 days	9 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
BH19-05-03	**E485-L**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	180 days	9 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
BH19-05-04	**E485-L**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	180 days	9 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
LDPE bag										
BH19-06-03	**E485-L**	**03-Dec-2019**	**----**	----	----		**12-Dec-2019**	180 days	9 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
SS19-08	**E485-L**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	180 days	9 days	✓

Matrix: **Soil**

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
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
SS19-09	**E485-L**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	180 days	9 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
SS19-10	**E485-L**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	180 days	9 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
SS19-11	**E485-L**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	180 days	9 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
SS19-12	**E485-L**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	180 days	9 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
SS19-13	**E485-L**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	180 days	9 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
SS19-14	**E485-L**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	180 days	9 days	✓
Saturated Paste Extractables : Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)										
Glass soil jar/Teflon lined cap										
SS19-15	**E485-L**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	180 days	9 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
LDPE bag										
BH19-04-03	**E239.Cl**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
BH19-05-03	**E239.Cl**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓

Matrix: **Soil**

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
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
BH19-05-04	**E239.Cl**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
LDPE bag										
BH19-06-03	**E239.Cl**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
MW19-01-03	**E239.Cl**	**02-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
MW19-02-03	**E239.Cl**	**02-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
MW19-03-03	**E239.Cl**	**02-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
SS19-08	**E239.Cl**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
SS19-09	**E239.Cl**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
SS19-10	**E239.Cl**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
SS19-11	**E239.Cl**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓

Matrix: **Soil**

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
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
SS19-12	**E239.Cl**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
SS19-13	**E239.Cl**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
SS19-14	**E239.Cl**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
SS19-15	**E239.Cl**	**03-Dec-2019**	**----**	----	----		**13-Dec-2019**	1 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial										
BH19-04-07	**E611A**	**03-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial										
BH19-05-03	**E611A**	**03-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial										
BH19-05-04	**E611A**	**03-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial										
MW19-01-06	**E611A**	**02-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial										
MW19-02-02	**E611A**	**02-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓

Matrix: **Soil**

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 : BTEX by Headspace GC-MS										
Glass soil methanol vial MW19-03-02	**E611A**	**02-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial MW99-01-06	**E611A**	**02-Dec-2019**	**13-Dec-2019**	40 days	10 days	✓	**14-Dec-2019**	29 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial BH19-06-05	**E611A**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial SS19-08	**E611A**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial SS19-09	**E611A**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial SS19-10	**E611A**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial SS19-11	**E611A**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial SS19-12	**E611A**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial SS19-13	**E611A**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓

Matrix: **Soil**

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 : BTEX by Headspace GC-MS										
Glass soil methanol vial SS19-14	**E611A**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial SS19-15	**E611A**	**03-Dec-2019**	**13-Dec-2019**	40 days	9 days	✓	**14-Dec-2019**	30 days	0 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Soil**

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	6159	3	21	**14.2**	**5.0**	✓
BTEX by Headspace GC-MS	E611A	6459	1	18	**5.5**	**5.0**	✓
Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)	E485-L	6163	2	15	**13.3**	**5.0**	✓
Chloride by IC (Saturated Paste)	E239.Cl	6161	2	15	**13.3**	**5.0**	✓
Mercury in Soil/Solid by CVAAS	E510	6169	3	27	**11.1**	**5.0**	✓
Metals in Soil/Solid by CRC ICPMS	E440	6165	5	19	**26.3**	**5.0**	✓
Moisture Content by Gravimetry	E144	6167	2	24	**8.3**	**5.0**	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	6160	3	21	**14.2**	**5.0**	✓
Particle Size Analysis - Pipette Method	E184	6528	1	15	**6.6**	**5.0**	✓
PCB Aroclors by GC-ECD	E685	6158	1	8	**12.5**	**5.0**	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	6166	4	23	**17.3**	**5.0**	✓
Saturation Percentage	E141	6162	2	15	**13.3**	**5.0**	✓
VH by Headspace GC-FID	E581.VH	6460	1	18	**5.5**	**5.0**	✓
Laboratory Control Samples (LCS)							
BC PHC - EPH by GC-FID	E601A	6159	6	21	**28.5**	**10.0**	✓
BTEX by Headspace GC-MS	E611A	6459	1	18	**5.5**	**5.0**	✓
Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)	E485-L	6163	4	15	**26.6**	**10.0**	✓
Chloride by IC (Saturated Paste)	E239.Cl	6161	4	15	**26.6**	**10.0**	✓
Mercury in Soil/Solid by CVAAS	E510	6169	6	27	**22.2**	**10.0**	✓
Metals in Soil/Solid by CRC ICPMS	E440	6165	10	19	**52.6**	**10.0**	✓
Moisture Content by Gravimetry	E144	6167	2	24	**8.3**	**5.0**	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	6160	6	21	**28.5**	**10.0**	✓
Particle Size Analysis - Pipette Method	E184	6528	1	15	**6.6**	**5.0**	✓
PCB Aroclors by GC-ECD	E685	6158	1	8	**12.5**	**5.0**	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	6166	4	23	**17.3**	**5.0**	✓
Saturation Percentage	E141	6162	4	15	**26.6**	**10.0**	✓
VH by Headspace GC-FID	E581.VH	6460	1	18	**5.5**	**5.0**	✓
Method Blanks (MB)							
BC PHC - EPH by GC-FID	E601A	6159	3	21	**14.2**	**5.0**	✓
BTEX by Headspace GC-MS	E611A	6459	1	18	**5.5**	**5.0**	✓
Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)	E485-L	6163	2	15	**13.3**	**5.0**	✓
Chloride by IC (Saturated Paste)	E239.Cl	6161	2	15	**13.3**	**5.0**	✓
Mercury in Soil/Solid by CVAAS	E510	6169	3	27	**11.1**	**5.0**	✓
Metals in Soil/Solid by CRC ICPMS	E440	6165	5	19	**26.3**	**5.0**	✓
Moisture Content by Gravimetry	E144	6167	2	24	**8.3**	**5.0**	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	6160	3	21	**14.2**	**5.0**	✓
PCB Aroclors by GC-ECD	E685	6158	1	8	**12.5**	**5.0**	✓

Matrix: **Soil**

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*
Method Blanks (MB) - Continued							
Saturation Percentage	E141	6162	2	15	**13.3**	**5.0**	✓
VH by Headspace GC-FID	E581.VH	6460	1	18	**5.5**	**5.0**	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	6459	1	18	**5.5**	**5.0**	✓
VH by Headspace GC-FID	E581.VH	6460	1	18	**5.5**	**5.0**	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Vancouver - Environmental	Soil	BC MOE Lab Manual/CSSS 16.2	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 ºC) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Saturation Percentage	E141 Vancouver - Environmental	Soil	CSSS Ch. 18 (mod)/AER D50	Saturation Percentage (SP) is determined as the total volume of water present in a saturated paste (in mL) divided by the dry weight of the sample (in grams), expressed as a percentage.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C for a minimum of six hours or to constant weight. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Particle Size Analysis - Pipette Method	E184 Saskatoon - Environmental	Soil	SSIR-51 Method 3.2.1	Soil material is separated from coarse material (>2mm). A specimen is then disaggregated through mixing with Calgon solution. The material is then suspended in solution wherein regular aliquots are taken using a mechanical pipette at specific time intervals. The aliquots are dried and material in suspension determined gravimetrically. The principles of Stokes' Law are applied to determine the amount of material remaining in solution as well as the maximum particle size remaining in solution at the specified time.
Chloride by IC (Saturated Paste)	E239.Cl Vancouver - Environmental	Soil	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Metals in Soil/Solid by CRC ICPMS	E440 Vancouver - Environmental	Soil	EPA 200.2/6020B (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.
Ca,K,Mg,Na by ICPOES (Saturated Paste, Low Level)	E485-L Vancouver - Environmental	Soil	CSSS CH15/EPA 6010B	A soil extract produced by the saturated paste extraction procedure is analyzed for Calcium, Magnesium, Potassium, Sodium by ICPOES.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Mercury in Soil/Solid by CVAAS	E510 Vancouver - Environmental	Soil	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
VH by Headspace GC-FID	E581.VH Vancouver - Environmental	Soil	BC MOE Lab Manual (VH in Water and Soilds) (mod)	Volatile Hydrocarbons (VH) 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	BC MOE Lab Manual (EPH in Solids by GC/FID) (mod)	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
BTEX by Headspace GC-MS	E611A Vancouver - Environmental	Soil	EPA 8260D (mod)	Volatiles 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	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
PCB Aroclors by GC-ECD	E685 Vancouver - Environmental	Soil	EPA 8082A (mod)	The procedure involves a solid-liquid extraction of a subsample of the sediment/soil using a mixture of hexane and acetone. Water is added to the extract and the resulting hexane extract undergoes one or more of the following clean-up procedures (if required): florisil clean-up, silica gel clean-up, sulphur clean-up and/or sulphuric acid clean-up. The final extract is analysed by capillary column gas chromatography with electron capture detection (GC/ECD).
Particle Size Analysis - Wentworth Classification	EC185A Saskatoon - Environmental	Soil	Modified Wentworth	The particle size determination is performed by various methods to generate a Grain Size curve. The data from the curve is then used to produce particle size ranges based on the Modified Wentworth Classification system.
Chloride by IC (Saturated Paste) (mg/kg)	EC239A.Cl Vancouver - Environmental	Soil	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Ca,K,Mg,Na by ICPOES (Saturated Paste, mg/kg)	EC485-L Vancouver - Environmental	Soil	CSSS CH15/EPA 6010B	A soil extract produced by the saturated paste extraction procedure is analyzed for Calcium, Magnesium, Potassium, Sodium by ICPOES.
VPH: VH-BTEX-Styrene	EC580A Vancouver - Environmental	Soil	BC MOE Lab Manual (VPH in Water and Soilds) (mod)	Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VH-BTEX = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
LEPH and HEPH: EPH-PAH	EC600A Vancouver - Environmental	Soil	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
Leach 1:2 Soil:Water for pH	EP108 Vancouver - Environmental	Soil	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Digestion for Metals and Mercury	EP440 Vancouver - Environmental	Soil	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
VOCs Methanol Extraction for Headspace Analysis	EP581 Vancouver - Environmental	Soil	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	CCME CWS Petroleum Hydrocabons Tier 1	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.
PCB Aroclors Extraction	EP685 Vancouver - Environmental	Soil	EPA 3570/3550C (mod)	Samples are subsampled and PCBs are extracted with solvents using a mechanical shaking extractor.

Result Qualifiers

Qualifier	Description
MB-LOR	*Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.*
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **VA19A0489**		
Client	: **WSP Canada Inc.**	Laboratory	: Vancouver - Environmental
Contact	: Jason Newington	Contact	: Carla Fuginski
Address	: Unit 100 - 20339 96 Avenue Langley, BC Canada V1M 2L1	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
E-mail	: Jason.Newington@wsp.com	E-mail	: Carla.Fuginski@alsglobal.com
Telephone	: ----	Telephone	: +1 604 253 4188
Facsimile	: ----	Facsimile	: +1 604 253 6700
Project	: 191-15279-00	Page	: 1 of 14
Purchase order number	: ----	Quote number	: VA2019WSPI1000003 (Price List)
C-O-C number	: 17-786865->68, 17-786872	QC Level	: ALS Canada Standard Quality Control
Site	: ----		
Sampler	: S. Rusnak		

Dates

Date Samples Received	: 10-Dec-2019 08:27	Issue Date	: 11-Dec-2019
Client Requested Due Date	: 16-Dec-2019	Scheduled Reporting Date	: See due dates below

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 5, 5, 6, 6°c - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 57 / 29

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- No soil bag was received for sample BH19-05-08
- Sample MW99-01-01: Sample Received but not listed on submitted Chain of Custody / analytical request form.
- Vials for sample BH19-05-08 had client label BH19-03-08. Labelled as per CofC.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE.

Method		
Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Chloride by IC (Saturated Paste) : E239.Cl		
BH19-04-03	- LDPE bag	- Glass soil jar/Teflon lined cap
BH19-06-03	- LDPE bag	- Glass soil jar/Teflon lined cap

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Matrix: **Soil**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	(On Hold) Soil No analysis requested	Soil - BC06 CSR Metals in Soil	Soil - CA12 Basic Soil Salinity Package (mg/kg)	Soil - E144 Moisture Content by Gravimetry	Soil - E184 Particle Size Analysis - Pipette Method	Soil - E510 Mercury in Soil/Solid by CVAAS	Soil - E685 PCB Aroclors by GC-ECD
VA19A0489-001	03-Dec-2019 14:00	SS19-01				✓			✓
VA19A0489-002	03-Dec-2019 14:00	SS99-01				✓			✓
VA19A0489-003	03-Dec-2019 14:10	SS19-02				✓			✓
VA19A0489-004	03-Dec-2019 14:20	SS19-03				✓			✓
VA19A0489-005	03-Dec-2019 14:30	SS19-04				✓			✓
VA19A0489-006	03-Dec-2019 14:40	SS19-05				✓			✓
VA19A0489-007	03-Dec-2019 14:50	SS19-06				✓			✓
VA19A0489-008	03-Dec-2019 15:00	SS19-07				✓			✓
VA19A0489-009	03-Dec-2019 15:10	SS19-08			✓	✓	✓	✓	
VA19A0489-010	03-Dec-2019 15:20	SS19-09			✓	✓	✓	✓	
VA19A0489-011	03-Dec-2019 15:30	SS19-10			✓	✓	✓	✓	
VA19A0489-012	03-Dec-2019 15:40	SS19-11			✓	✓	✓	✓	

			(On Hold) Soil No analysis requested	Soil - BC06 CSR Metals in Soil	Soil - CA12 Basic Soil Salinity Package (mg/kg)	Soil - E144 Moisture Content by Gravimetry	Soil - E184 Particle Size Analysis - Pipette Method	Soil - E510 Mercury in Soil/Solid by CVAAS	Soil - E685 PCB Aroclors by GC-ECD
VA19A0489-013	03-Dec-2019 15:50	SS19-12			✓	✓	✓	✓	
VA19A0489-014	03-Dec-2019 16:00	SS19-13			✓	✓	✓	✓	
VA19A0489-015	03-Dec-2019 16:10	SS19-14			✓	✓	✓	✓	
VA19A0489-016	03-Dec-2019 16:20	SS19-15			✓	✓	✓	✓	
VA19A0489-017	02-Dec-2019 11:15	MW19-02-01	✓						
VA19A0489-018	02-Dec-2019 11:30	MW19-02-02		✓		✓		✓	
VA19A0489-019	02-Dec-2019 11:45	MW19-02-03			✓		✓		
VA19A0489-020	02-Dec-2019 12:00	MW19-02-04	✓						
VA19A0489-021	02-Dec-2019 12:15	MW19-02-05	✓						
VA19A0489-022	02-Dec-2019 12:30	MW19-02-06	✓						
VA19A0489-023	02-Dec-2019 12:45	MW19-02-07	✓						
VA19A0489-024	02-Dec-2019 13:00	MW19-02-08	✓						
VA19A0489-025	02-Dec-2019 10:00	MW19-01-01	✓						
VA19A0489-026	02-Dec-2019 10:10	MW19-01-02	✓						
VA19A0489-027	02-Dec-2019 10:20	MW19-01-03			✓		✓		
VA19A0489-028	02-Dec-2019 10:30	MW19-01-04	✓						
VA19A0489-029	02-Dec-2019 10:40	MW19-01-05	✓						
VA19A0489-030	02-Dec-2019 10:50	MW19-01-06		✓		✓		✓	
VA19A0489-031	02-Dec-2019 11:00	MW19-01-07	✓						
VA19A0489-032	02-Dec-2019 11:10	MW19-01-08	✓						
VA19A0489-033	02-Dec-2019 11:20	MW19-01-09	✓						
VA19A0489-034	02-Dec-2019 10:50	MW99-01-06		✓		✓		✓	
VA19A0489-035	02-Dec-2019 13:30	MW19-03-01	✓						
VA19A0489-036	02-Dec-2019 13:40	MW19-03-02		✓		✓		✓	

			(On Hold) Soil No analysis requested	Soil - BC06 CSR Metals in Soil	Soil - CA12 Basic Soil Salinity Package (mg/kg)	Soil - E144 Moisture Content by Gravimetry	Soil - E184 Particle Size Analysis - Pipette Method	Soil - E510 Mercury in Soil/Solid by CVAAS	Soil - E685 PCB Aroclors by GC-ECD
VA19A0489-037	02-Dec-2019 13:50	MW19-03-03			✓		✓		
VA19A0489-038	02-Dec-2019 14:00	MW19-03-04	✓						
VA19A0489-039	02-Dec-2019 14:10	MW19-03-05	✓						
VA19A0489-040	02-Dec-2019 14:20	MW19-03-06	✓						
VA19A0489-041	02-Dec-2019 14:30	MW19-03-07	✓						
VA19A0489-042	02-Dec-2019 14:40	MW19-03-08	✓						
VA19A0489-043	03-Dec-2019 08:00	BH19-04-03			✓		✓		
VA19A0489-044	03-Dec-2019 08:10	BH19-04-04	✓						
VA19A0489-045	03-Dec-2019 08:40	BH19-04-07		✓		✓		✓	
VA19A0489-046	03-Dec-2019 08:50	BH19-04-08	✓						
VA19A0489-047	03-Dec-2019 09:40	BH19-05-03			✓	✓	✓	✓	
VA19A0489-048	03-Dec-2019 09:50	BH19-05-04			✓	✓	✓	✓	
VA19A0489-049	03-Dec-2019 10:00	BH19-05-08	✓						
VA19A0489-050	03-Dec-2019 10:40	BH19-06-03			✓		✓		
VA19A0489-051	03-Dec-2019 10:50	BH19-06-04	✓						
VA19A0489-052	03-Dec-2019 11:00	BH19-06-05		✓		✓		✓	
VA19A0489-053	03-Dec-2019 11:10	BH19-06-06	✓						
VA19A0489-054	03-Dec-2019 11:20	BH19-06-08	✓						
VA19A0489-055	03-Dec-2019 08:20	BH19-04-05	✓						
VA19A0489-056	03-Dec-2019 09:55	BH19-05-05	✓						
VA19A0489-057	[02-Dec-2019]	MW99-01-01	✓						

Matrix: **Soil**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	Soil - EC185A Particle Size Analysis - Wentworth Classification	Soil - S600A LEPH/HEPH+EPH+PAH	Soil - S611A BTEX/VPH in Soil
VA19A0489-009	03-Dec-2019 15:10	SS19-08	✓	✓	✓
VA19A0489-010	03-Dec-2019 15:20	SS19-09	✓	✓	✓
VA19A0489-011	03-Dec-2019 15:30	SS19-10	✓	✓	✓
VA19A0489-012	03-Dec-2019 15:40	SS19-11	✓	✓	✓
VA19A0489-013	03-Dec-2019 15:50	SS19-12	✓	✓	✓
VA19A0489-014	03-Dec-2019 16:00	SS19-13	✓	✓	✓
VA19A0489-015	03-Dec-2019 16:10	SS19-14	✓	✓	✓
VA19A0489-016	03-Dec-2019 16:20	SS19-15	✓	✓	✓
VA19A0489-018	02-Dec-2019 11:30	MW19-02-02		✓	✓
VA19A0489-019	02-Dec-2019 11:45	MW19-02-03	✓		
VA19A0489-027	02-Dec-2019 10:20	MW19-01-03	✓		
VA19A0489-030	02-Dec-2019 10:50	MW19-01-06		✓	✓
VA19A0489-034	02-Dec-2019 10:50	MW99-01-06		✓	✓
VA19A0489-036	02-Dec-2019 13:40	MW19-03-02		✓	✓
VA19A0489-037	02-Dec-2019 13:50	MW19-03-03	✓		
VA19A0489-043	03-Dec-2019 08:00	BH19-04-03	✓		
VA19A0489-045	03-Dec-2019 08:40	BH19-04-07		✓	✓
VA19A0489-047	03-Dec-2019 09:40	BH19-05-03	✓	✓	✓
VA19A0489-048	03-Dec-2019 09:50	BH19-05-04	✓	✓	✓
VA19A0489-050	03-Dec-2019 10:40	BH19-06-03	✓		
VA19A0489-052	03-Dec-2019 11:00	BH19-06-05		✓	✓

Reporting times including Express Turnaround

Overall Schedule Reporting Date

Matrix: **Soil**

Client sample ID	(On Hold) Soil No analysis requested	Soil - BC06 CSR Metals in Soil	Soil - CA12 Basic Soil Salinity Package (mg/kg)	Soil - E144 Moisture Content by Gravimetry	Soil - E184 Particle Size Analysis - Pipette Method	Soil - E510 Mercury in Soil/Solid by CVAAS	Soil - E685 PCB Aroclors by GC-ECD
BH19-04-03			16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17		
BH19-04-04	16-Dec-2019 17:00						
BH19-04-05	16-Dec-2019 17:00						
BH19-04-07		16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17	
BH19-04-08	16-Dec-2019 17:00						
BH19-05-03			16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	
BH19-05-04			16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	
BH19-05-05	16-Dec-2019 17:00						
BH19-05-08	16-Dec-2019 17:00						
BH19-06-03			16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17		
BH19-06-04	16-Dec-2019 17:00						
BH19-06-05		16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17	
BH19-06-06	16-Dec-2019 17:00						
BH19-06-08	16-Dec-2019 17:00						
MW19-01-01	16-Dec-2019 17:00						

	(On Hold) Soil No analysis requested	Soil - BC06 CSR Metals in Soil	Soil - CA12 Basic Soil Salinity Package (mg/kg)	Soil - E144 Moisture Content by Gravimetry	Soil - E184 Particle Size Analysis - Pipette Method	Soil - E510 Mercury in Soil/Solid by CVAAS	Soil - E685 PCB Aroclors by GC-ECD
MW19-01-02	16-Dec-2019 17:00						
MW19-01-03			16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17		
MW19-01-04	16-Dec-2019 17:00						
MW19-01-05	16-Dec-2019 17:00						
MW19-01-06		16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17	
MW19-01-07	16-Dec-2019 17:00						
MW19-01-08	16-Dec-2019 17:00						
MW19-01-09	16-Dec-2019 17:00						
MW19-02-01	16-Dec-2019 17:00						
MW19-02-02		16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17	
MW19-02-03			16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17		
MW19-02-04	16-Dec-2019 17:00						
MW19-02-05	16-Dec-2019 17:00						
MW19-02-06	16-Dec-2019 17:00						
MW19-02-07	16-Dec-2019 17:00						

	(On Hold) Soil No analysis requested	Soil - BC06 CSR Metals in Soil	Soil - CA12 Basic Soil Salinity Package (mg/kg)	Soil - E144 Moisture Content by Gravimetry	Soil - E184 Particle Size Analysis - Pipette Method	Soil - E510 Mercury in Soil/Solid by CVAAS	Soil - E685 PCB Aroclors by GC-ECD
MW19-02-08	16-Dec-2019 17:00						
MW19-03-01	16-Dec-2019 17:00						
MW19-03-02		16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17	
MW19-03-03			16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17		
MW19-03-04	16-Dec-2019 17:00						
MW19-03-05	16-Dec-2019 17:00						
MW19-03-06	16-Dec-2019 17:00						
MW19-03-07	16-Dec-2019 17:00						
MW19-03-08	16-Dec-2019 17:00						
MW99-01-01	16-Dec-2019 17:00						
MW99-01-06		16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17		16-Dec-2019 17:00 4.17	
SS19-01				16-Dec-2019 17:00 4.17			16-Dec-2019 17:00 4.17
SS19-02				16-Dec-2019 17:00 4.17			16-Dec-2019 17:00 4.17
SS19-03				16-Dec-2019 17:00 4.17			16-Dec-2019 17:00 4.17
SS19-04				16-Dec-2019 17:00 4.17			16-Dec-2019 17:00 4.17

	(On Hold) Soil No analysis requested	Soil - BC06 CSR Metals in Soil	Soil - CA12 Basic Soil Salinity Package (mg/kg)	Soil - E144 Moisture Content by Gravimetry	Soil - E184 Particle Size Analysis - Pipette Method	Soil - E510 Mercury in Soil/Solid by CVAAS	Soil - E685 PCB Aroclors by GC-ECD
SS19-05				16-Dec-2019 17:00 4.17			16-Dec-2019 17:00 4.17
SS19-06				16-Dec-2019 17:00 4.17			16-Dec-2019 17:00 4.17
SS19-07				16-Dec-2019 17:00 4.17			16-Dec-2019 17:00 4.17
SS19-08			16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	
SS19-09			16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	
SS19-10			16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	
SS19-11			16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	
SS19-12			16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	
SS19-13			16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	
SS19-14			16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	
SS19-15			16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	
SS99-01				16-Dec-2019 17:00 4.17			16-Dec-2019 17:00 4.17

Matrix: **Soil**

Client sample ID	Soil - EC185A Particle Size Analysis - Wentworth Classification	Soil - S600A LEPH/HEPH+EPH+PAH	Soil - S611A BTEX/VPH in Soil
BH19-04-03	16-Dec-2019 17:00 4.17		
BH19-04-07		16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
BH19-05-03	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
BH19-05-04	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
BH19-06-03	16-Dec-2019 17:00 4.17		
BH19-06-05		16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
MW19-01-03	16-Dec-2019 17:00 4.17		
MW19-01-06		16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
MW19-02-02		16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
MW19-02-03	16-Dec-2019 17:00 4.17		
MW19-03-02		16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
MW19-03-03	16-Dec-2019 17:00 4.17		
MW99-01-06		16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
SS19-08	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
SS19-09	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17

	Soil - EC185A Particle Size Analysis - Wentworth Classification	Soil - S600A LEPH/HEPH+EPH+PAH	Soil - S611A BTEX/VPH in Soil
SS19-10	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
SS19-11	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
SS19-12	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
SS19-13	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
SS19-14	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17
SS19-15	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17	16-Dec-2019 17:00 4.17

Express Turnaround Key:

4.17	4 Days by 17:00

Requested Deliverables

Jason Newington

ALS Excel Report (ALS_MTABXL_CAN)	Email	Jason.Newington@wsp.com
Certificate of Analysis (Crosstab) (COA - CrossTab (CAN))	Email	Jason.Newington@wsp.com
Chain of Custody (CoC) (COC)	Email	Jason.Newington@wsp.com
Interpretive Quality Control Report (QCI (CAN))	Email	Jason.Newington@wsp.com
Quality Control (QC (CAN))	Email	Jason.Newington@wsp.com
Sample Receipt Notification (standard format) (SRN - Short (CAN))	Email	Jason.Newington@wsp.com
Tax Invoice (INVOICE (CAN))	Email	Jason.Newington@wsp.com

Katelyn Zinz

ALS Excel Report (ALS_MTABXL_CAN)	Email	Katelyn.Zinz@wsp.com
Certificate of Analysis (Crosstab) (COA - CrossTab (CAN))	Email	Katelyn.Zinz@wsp.com
Chain of Custody (CoC) (COC)	Email	Katelyn.Zinz@wsp.com
Interpretive Quality Control Report (QCI (CAN))	Email	Katelyn.Zinz@wsp.com
Quality Control (QC (CAN))	Email	Katelyn.Zinz@wsp.com
Sample Receipt Notification (standard format) (SRN - Short (CAN))	Email	Katelyn.Zinz@wsp.com

Methods with Laboratory

Sale item

Method	Laboratory	Address	City	Province	Country
Basic Soil Salinity Package (mg/kg)					
E141	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
E239.Cl	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
E485-L	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
EC239A.Cl	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
EC485-L	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
BTEX/VPH in Soil					
E581.VH	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
E611A	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
EC580A	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
CSR Metals in Soil					
E108	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
E440	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
E510	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
LEPH/HEPH+EPH+PAH					
E601A	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
E641A-L	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
EC600A	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
Mercury in Soil/Solid by CVAAS					
E510	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
Moisture Content by Gravimetry					
E144	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada
Particle Size Analysis - Pipette Method					
E184	Saskatoon	819 58 Street East	Saskatoon	Saskatchewan	Canada
Particle Size Analysis - Wentworth Classification					
EC185A	Saskatoon	819 58 Street East	Saskatoon	Saskatchewan	Canada
PCB Aroclors by GC-ECD					
E685	Vancouver	8081 Lougheed Highway	Burnaby	British Columbia	Canada

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 - 786865

Page 1 of 5

Report To	Contact and company name below will appear on the final report
Company:	WSP
Contact:	Jason Newington
Phone:	250-317-5348
Company address below will appear on the final report	
Street:	700-1631 Dickson Ave
City/Province:	Kelowna / BC
Postal Code:	V1Y0B5
Invoice To	Same as Report To [X] YES [ ] NO
	Copy of Invoice with Report [X] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	[X] PDF [X] EXCEL [ ] EDD (DIGITAL)
Quality Control (QC) Report with Report	[X] YES [ ] NO
[ ] Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	[X] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	Jason.Newington@wsp.com
Email 2	Scott.Rusnak@wsp.com
Email 3	Katelyn.Zinz@wsp.com

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

Project Information	
ALS Account # / Quote #:	
Job #:	191-15279-00
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: S. Rusnak

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): [X] 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	PCBs	BTEX/VPH	LEPH/HEPH/PAH	Detailed Salinity	Metals	Particle Size
1	SS19-01	03-Dec-19	14:00	Soil	1	X					
2	SS99-01		14:00		1	X					
3	SS19-02		14:10		1	X					
4	SS19-03		14:20		1	X					
5	SS19-04		14:30		1	X					
6	SS19-05		14:40		1	X					
7	SS19-06		14:50		1	X					
8	~~SS19-08~~ SS19-07		15:00		1	X					
9	~~SS19-09~~ SS19-08		15:10		5		X	X	X	X	X
10	~~SS19-10~~ SS19-09		15:20		5		X	X	X	X	X
11	~~SS19-11~~ SS19-10		15:30		5		X	X	X	X	X
12	~~SS19-12~~ SS19-11	03-Dec-19	15:40		5		X	X	X	X	X

HOLD

SUSPECTED HAZARD (see Special Instructions)

Environmental Division
Vancouver
Work Order Reference
VA19A0489

Telephone : +1 604 253 4188

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 [X] NO	3 coolers
Are samples for human consumption/ use? [ ] YES [X] 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
	5.5, 6.6

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: S. Rusnak	Date: 6/12/19	Time: 16:00	Received by:	Date:	Time:	Received by: JG	Date: 10 Dec 19	Time: 8:27AM

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 - 786866

Page 2 of 5

Report To	Contact and company name below will appear on the final report
Company:	
Contact:	SEE PAGE 1
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

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.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:		Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: S. Rusnak

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	BTEX/VPH	LEPH/HEPH/PAH	Detailed Salinity	Metals	Particle Size	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
13	SS19-12	03-Dec-19	15:50	SOIL	5	X	X	X	X	X		
14	SS19-13	↓	16:00		5	X	X	X	X	X		
15	SS19-14	↓	16:10		5	X	X	X	X	X		
16	SS19-15	3-Dec-19	16:20		5	X	X	X	X	X		
17	MW19-02-01	2-Dec-19	11:15		4						X	
18	MW19-02-02	↓	11:30		4	X	X		X			
19	MW19-02-03	↓	11:45		4			X		X		
20	MW19-02-04	↓	12:00		4						X	
21	MW19-02-05	↓	12:15		4						X	
22	MW19-02-06	↓	12:30		4						X	
23	MW19-02-07	↓	12:45		4						X	
24	MW19-02-08	2-Dec-19	13:00	↓	4						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)

3 coolers

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			
				5.5	6.1	6.0	°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:
S. Rusnak	6/12/19	16:00				JG	10 Dec 19	8:27 AM

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 - 786867

Page 3 of 5

Report To	Contact and company name below will appear on the final report
Company:	
Contact:	SEE PAGE 1
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: S. Rusnak

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	BTEX/VPH	LEPH/HEPH/MM	Dissolved Metals	Particle Size	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
25	MW19-01-01	2-Dec-19	10:00	Soil	4					X	
26	MW19-01-02		10:10		4					X	
27	MW19-01-03		10:20		4			X	X		
28	MW19-01-04		10:30		4					X	
29	MW19-01-05		10:40		4					X	
30	MW19-01-06		10:50		4	X	X		X		
31	MW19-01-07		11:00		4					X	
32	MW19-01-08		11:10		4					X	
33	MW19-01-09		11:20		4					X	
34	MW99-01-06		10:50		4	X	X		X		
35	MW19-03-01		13:30		5					X	
36	MW19-03-02	2-Dec-19	13:40		5	X	X		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)

3 coolers

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			
				5.5	6.1	6	°C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: S. Rusnak	Date: 6/12/19	Time: 16:00	Received by:	Date:	Time:	Received by: JCh	Date: 10 Dec 19	Time: 8:21AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2016 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

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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 - 786868

Page 4 of 5

Report To	Contact and company name below will appear on the final report
Company:	
Contact:	SEE PAGE 1
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

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.

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: S. Rusnak

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	BTEX/VPH	LEPH/HEPH/PAH	Dissolved Salinity	Metals	Particle Size	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
37	MW19-03-03	02-Dec-19	13:50	SOIL	5			X		X		
38	MW19-03-04	"	14:00	"	5						X	
39	MW19-03-05	"	14:10	"	5						X	
40	MW19-03-06	"	14:20	"	5						X	
41	MW19-03-07	"	14:30	"	5						X	
42	MW19-03-08	02-Dec-19	14:40	"	5						X	
43	BH19-04-03	3-Dec-19	8:00	"	1			X		X		
44	BH19-04-04	"	8:10	"	1						X	
45	BH19-04-07	"	8:40	"	5	X	X		X			
46	BH19-04-08	"	8:50	"	5						X	
47	BH19-05-03	"	9:40	"	5	X	X	X	X	X		
48	BH19-05-04	3-Dec-19	9:50	"	5	X	X	X	X	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)

3 coolers

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			
				5	5.6	6.6	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: S. Rusnak	Date: 6/12/19	Time: 16:00	Received by:	Date:	Time:	Received by: JG	Date: 10 Dec 19	Time: 8:21 AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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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 - 786872

Page 5 of 5

Report To	Contact and company name below will appear on the final report
Company:	
Contact:	SEE PAGE 1
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)] ☐

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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	BTEX/VPH	LEPH/HEPH/DAH	Detailed Salinity	Metals	Particle Size	Moisture Content	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
49	BH19-05-08	03-Dec-19	10:00	Soil	5							X	
50	BH19-06-03		10:40		1			X		X			
51	BH19-06-04		10:50		1							X	
52	BH19-06-05		11:00		5	X	X		X				
53	BH19-06-06		11:10		5							XXX	
54	BH19-06-08	3-Dec-19	11:20	Soil	1								
55	BH19-04-05	3-Dec-19	8:20	Soil	1			X					
56	BH19-05-05	3-Dec-19	9:55	Soil	5							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)

3 coolers

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			
				5.5	6.1	6.2	

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
S. Rusnak	6/12/19	16:00

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
JG	10 Dec 19	8:27 AM

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**.

CERTIFICATE OF ANALYSIS

REPORTED TO	WSP Canada Inc. - Kelowna 108-3677 Highway 97N Kelowna, BC V1X 5C3		
ATTENTION	Katelyn Zinz	**WORK ORDER**	9121870
PO NUMBER		**RECEIVED / TEMP**	2019-12-19 16:40 / NA
PROJECT	191-15279-00	**REPORTED**	2020-01-16 14:06
PROJECT INFO		**COC NUMBER**	B81920

Introduction:

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

Big Picture Sidekicks

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

We've Got Chemistry

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

Ahead of the Curve

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

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

Authorized By:

Bryan Shaw, Ph.D., P.Chem.
Client Service Coordinator

TEST RESULTS

REPORTED TO	WSP Canada Inc. - Kelowna	**WORK ORDER**	9121870
PROJECT	191-15279-00	**REPORTED**	2020-01-16 14:06

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
AS01 - Pipe Mastic (9121870-01) | Matrix: Solid | Sampled: 2019-12-03						
Polarized Light Microscopy Analysis						
Chrysotile Asbestos	**(20 - 30)**	N/A	0.5	% dry	2019-12-20	
Non-Asbestos Fibres	**(5 - 10)**	N/A	1.0	% dry	2019-12-20	
Non-Fibrous Materials	**(60 - 70)**	N/A	1.0	% dry	2019-12-20	

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	WSP Canada Inc. - Kelowna	**WORK ORDER**	9121870
PROJECT	191-15279-00	**REPORTED**	2020-01-16 14:06

Analysis Description	Method Ref.	Technique	Location
Asbestos in Bulk Materials in Solid	EPA 600/R-93/116	Polarized Light Microscopy (PLM)	Kelowna

Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
EPA	United States Environmental Protection Agency Test Methods

Guidelines Referenced in this Report:

BC CSR Schedule 3.1 Commercial
BC CSR Schedule 3.1 Urban Park

Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user

General Comments:

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

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:bshaw@caro.ca

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	WSP Canada Inc. - Kelowna	**WORK ORDER**	9121870
PROJECT	191-15279-00	**REPORTED**	2020-01-16 14:06

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

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

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

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Polarized Light Microscopy Analysis, Batch B9L1514										
Blank (B9L1514-BLK1)				Prepared: 2019-12-18, Analyzed: 2019-12-18						
Asbestos Fibres	Absent	0.5	% dry							
Non-Asbestos Fibres	< 1.0	1.0	% dry							
Non-Fibrous Materials	> 99	1.0	% dry							
Blank (B9L1514-BLK2)				Prepared: 2019-12-18, Analyzed: 2019-12-18						
Asbestos Fibres	Absent	0.5	% dry							
Non-Asbestos Fibres	< 1.0	1.0	% dry							
Non-Fibrous Materials	> 99	1.0	% dry							
Blank (B9L1514-BLK3)				Prepared: 2019-12-18, Analyzed: 2019-12-18						
Asbestos Fibres	Absent	0.5	% dry							
Non-Asbestos Fibres	< 1.0	1.0	% dry							
Non-Fibrous Materials	> 99	1.0	% dry							
Reference (B9L1514-SRM1)				Prepared: 2019-12-18, Analyzed: 2019-12-18						
Amosite Asbestos	(5 - 10)	0.5	% dry	9.00		78	80-120			
Non-Fibrous Materials	(90 - 95)	1.0	% dry	91.0		102	80-120			
Reference (B9L1514-SRM2)				Prepared: 2019-12-18, Analyzed: 2019-12-18						
Amosite Asbestos	(5 - 10)	0.5	% dry	9.00		89	80-120			
Non-Fibrous Materials	(90 - 95)	1.0	% dry	91.0		101	80-120			
Reference (B9L1514-SRM3)				Prepared: 2019-12-18, Analyzed: 2019-12-18						
Amosite Asbestos	(5 - 10)	0.5	% dry	9.00		78	80-120			
Non-Fibrous Materials	(90 - 95)	1.0	% dry	91.0		102	80-120			

APPENDIX

F REGULATORY FRAMEWORK & ASSESSMENT STANDARDS

REGULATORY FRAMEWORK

The potential contaminants of concern at the site were compared to current standards contained in the following provincial regulations:

- Contaminated Sites Regulation, B.C. Reg. 375 / 96; including amendments up to B.C. Reg. 13/2019, January 24, 2019; Victoria, British Columbia.

SOIL STANDARDS

The CSR provides generic and matrix soil standards for different land use categories and groundwater standards for different groundwater or water use categories. These categories are summarized as follows:

- Agricultural Land Use (AL);
- Urban Park Land Use (PL);
- Residential Land Use (RL);
- Commercial Land Use (CL);
- Industrial Land Use (IL); and
- Wildlands Use (WL).

For soils, the CSR Schedule 3.1 includes both generic numerical soil standards and matrix numerical soil standards. In the case of the latter, standards for potential contaminants are provided for each of the site-specific factors set out in Schedule 3.1. To determine the appropriate standard for a contaminant, the applicable site-specific factor from Schedule 3.1 need to be established. The most stringent standard associated with the applicable factors is then defined as the standard. The applicability of the site-specific factors is presented in the following table. The CSR matrix numerical standards depend on site-specific factors such as use of groundwater or travel time of groundwater to nearby receptors. The Site is underlain by a mapped aquifer and based on a search of the BC Water Resources Atlas, two (2) unlicensed private domestic groundwater wells are located within 500 m of the Site.

The current zoning of the Site is Institutional. The District of Summerland zoning at the site is not defined by the CSR but will be compared against CSR PL, RL_{hd}, RL_{ld} and CL Standards.

The nearest surface water body is Prairie Creek which is approximately 392 m south of the Site. As a result, the site-specific factors of 'groundwater flow to surface water used by 'freshwater aquatic life' and 'groundwater used for drinking water' are applicable. As a result, the criteria which were used to determine the appropriate site-specific factors are as follows:

APPLICABLE SITE-SPECIFIC FACTORS FOR SOIL

SITE-SPECIFIC FACTOR	APPLICABILITY	RATIONALE
Intake of contaminated soil	Yes	Applicable at all sites
Groundwater used for drinking water	Yes	Applicable at all sites
Toxicity to soil invertebrates and plants	Yes	Applicable at all sites
Groundwater flow to surface water used by freshwater aquatic life	Yes	Prairie Creek located approximately 392 m south of the Site.
Groundwater used for livestock watering	No	No livestock likely kept within 500 m radius of the Site.
Groundwater used for irrigation watering	No	No registered irrigation wells or surface water intakes within 500 m of the Site.

GROUNDWATER STANDARDS

CSR Schedule 3.2 provides generic numerical standards for the assessment and remediation of water, including groundwater. Prairie Creek located approximately 392 m south of the Site, therefore the CSR freshwater aquatic life (AW_f) standards are applicable.

As per the CSR, Drinking Water use (DW) standards are applied by default on all sites for future potential groundwater. Considering the potential receptors, water uses for groundwater at the site, and potential preferential pathways, the criteria outlined in the table below forms the basis for the applicable numeric groundwater standards used in the evaluation of analytical data.

APPLICABLE SITE-SPECIFIC FACTORS FOR GROUNDWATER

SITE-SPECIFIC FACTOR	APPLICABILITY	RATIONALE
Freshwater aquatic life (AW_f)	Yes	Prairie Creek located approximately 392 m south of the Site.
Drinking water use	Yes	Applicable at all sites.
Livestock watering	No	No livestock likely kept within 500 m radius of the Site.
Irrigation watering	No	No registered irrigation wells or surface water intakes within 500 m of the Site.

HAZARDOUS MATERIAL REFERENCES

1. Occupational Health and Safety Regulation (Including amendments up to Jan 1, 2018),
2. Safe Work Practices for Handling Asbestos, WorkSafeBC, (Publication Date April 2017).
3. Hazardous Waste Regulation, BC Ministry Of Environment. (Including amendments up to
4. B.C. Reg. 243/2016, Nov. 1, 2017).
5. Ozone Depleting Substances and other Halocarbons Regulation. (Including amendments up to B.C. Reg. 317/2012, Nov. 9, 2012).
6. Ozone-depleting Substances and Halocarbon Alternatives Regulations, SOR/2016-137
7. BC Environmental Management Act SBC 2003, c53 (including amendments to October 30, 2017).
8. PCB Regulations, SOR / 2008-273, Canadian Environmental Protection Act.
9. Lead-Containing Paint and Coatings, Preventing Exposure in the Construction Industry, WorkSafeBC, June 2011.
10. Safe Work Practices for Handling Lead, WorkSafeBC, 2017.
11. BC Ministry of Environment Technical Guidance 4, Environmental Management Act Applications, Guideline To Managing Lead-Containing Construction and Demolition Waste In BC, Version 1.0, January 2015
12. Transportation of Dangerous Goods Regulations SOR / 2017-253, Transportation of Dangerous Goods Act.
13. Canadian Occupational Health and Safety Regulations SOR / 86-304 (Including amendments up to June 20, 2017).
14. Canada Labour Code, Part II, - R.S.C., 1985, c. L-2

APPENDIX

G STANDARD LIMITATIONS

STANDARD LIMITATIONS

WSP CANADA INC. CONDUCTED A STAGE 2 PRELIMINARY SITE INVESTIGATION (THE "Project") FOR 13500 PRAIRIE VALLEY ROAD, 12591 MORROW AVENUE, AND OTTLEY AVENUE FUTURE ROAD RIGHT-OF-WAY IN SUMMERLAND, BC (THE "Site") AS REQUESTED BY THE DISTRICT OF SUMMERLAND (THE "Client") AND AGREED UPON IN THE PROPOSAL DATED NOVEMBER 1, 2019 (THE "Proposal"). THE FINDINGS AND CONCLUSIONS ARE DOCUMENTED IN THIS REPORT (THE "Report"). SUCH USE AND RELIANCE BY Client IN THIS Report IS SUBJECT TO THE TERMS, CONDITIONS AND LIMITATIONS SET OUT IN WSP'S TERMS OF ENGAGEMENT FOR THE Project.

1. The findings and conclusions documented in this Report have been prepared for specific application to this Project and have been developed in a manner consistent with that level of care normally exercised by environmental professionals currently practicing under similar conditions in the area.

2. The findings of this Report are based solely on data collected on Site during this investigation and pertain only to the locations that have been investigated and on the conditions of the Site during the completion of the work and services. WSP Canada Inc. has relied on good faith on information provided by individuals and sources noted in the Report. No other warranty, expressed or implied, is made.

3. If new information is developed in future work that affects the conclusions of this Report, WSP Canada Inc. should be contacted to re-evaluate the conclusions of this Report and provide amendments as required.

4. The service provided by WSP Canada Inc. in completing this Report is intended to assist the Client in a business decision. The liability of the Site is not transferred to WSP Canada Inc. as a result of such work and services, and WSP Canada Inc. does not make recommendation regarding the purchase, sale, or investment in the property.

5. This document is intended for the exclusive use of the District of Summerland for whom it has been prepared. WSP does not accept responsibility to any third party for the use of information presented in this Report, or decisions made or actions taken based on its content.

6. The information presented in this Report is based on, and limited by, the circumstances and conditions acknowledged herein, and on information available at the time of its preparation. WSP has exercised reasonable skill, care, and diligence to assess the information acquired during the preparation of this Report, but cannot guarantee or warrant the accuracy or completeness of the information. Information provided by others, whether represented or otherwise utilized, is believed to be accurate but cannot be guaranteed.