Phase II Environmental Site Assessment

Ocean Street Former Steel Plant

Nova Scotia Lands Inc.

60680169

October 2022

Delivering a better world

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October 7, 2022

Project #
60680169

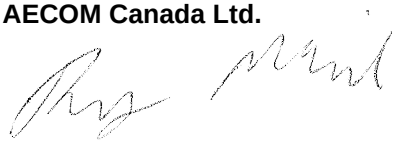
Subject: Phase II Environmental Site Assessment – Ocean Street Former Steel Plant

Dear Mr. MacPhee:

AECOM Canada Ltd. (AECOM) is pleased to present this Phase II Environmental Site Assessment (ESA) Report associated with the Ocean Street Former Steel Plant, located in Sydney Mines, Nova Scotia to Nova Scotia Lands Inc. (NSLI).

If you have any questions about the information presented within this report, please do not hesitate to contact me directly.

Sincerely,
AECOM Canada Ltd.



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Encl.

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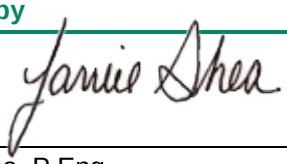

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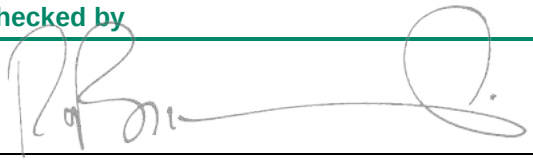

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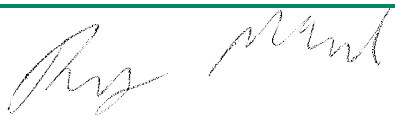

Rory McNeil P.Eng.

Revision History

Rev #	Revision Date	Revised By:	Revision Description
01	2022/10/07	JS	Addressed draft report comments

Distribution List

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Executive Summary

AECOM Canada Ltd. (AECOM) was retained by Nova Scotia Lands Inc. (NSLI) to complete a Phase II Environmental Site Assessment (ESA) for the Ocean Street Former Steel Plant located in Sydney Mines, Nova Scotia. The Site is situated on five (5) parcels of land with the following Parcel Identifier Numbers (PIDs): 15504913, 15509235, 15601636, 15505456, and 15504780. As requested by NSLI, the area of focus for the Phase II ESA is limited to the five (5) parcels of land identified above (hereafter referred to as the "Site").

The objective of this Phase II ESA program is to gain an understanding of the soil, groundwater, surface water, sediment and tailings conditions at the Site with respect to the areas of potential environmental concerns that were identified during the Phase I ESA completed by AECOM in April 2022 (AECOM, 2022).

AECOM submitted a Phase II Field Program Memo to NSLI in May 2022 (AECOM, 2022) which included a detailed sampling program consisting of groundwater investigations (well installation, monitoring, sampling), soil assessment and delineation (via borehole advancement and hand auger test pit program), and surface water and sediment sampling. However, borehole advancement and well installation were not able to be completed at the time of the Phase II ESA as Species at Risk (SAR) were identified at the Site, as further described in memo completed by AECOM - Borehole Coordination: Summary of potential Species at Risk that may be present at the Ocean St. Mine site, Cape Breton, NS. (AECOM, 2022). As such, this Phase II ESA will only include the details of the work completed at Site thus far (soil and surface water assessment). The borehole advancement and well installation is planned to be completed later this year when the SAR are not occupying the study area.

The Phase II ESA was conducted in accordance with the Nova Scotia Environment (NSE) Contaminated Sites Guidelines (2013) Phase II Environmental Site Assessment Protocol (PRO-400). This report describes the objectives of the Phase II ESA, the methodology employed to achieve those objectives, and the findings of the investigation.

The Phase II ESA program was conducted between June 21-June 23, 2022.

The Phase II ESA scope of work included hand augering test pit program along with soil and surface water sampling, chemical analysis of selected samples, and evaluation of the analytical data. Borehole advancement and well installation were not able to be completed at the time of the Phase II ESA as Species at Risk (SAR) were identified at the Site, as further described in memo completed by AECOM - Borehole Coordination: Summary of potential Species at Risk that may be present at the Ocean St. Mine site, Cape Breton, NS. (AECOM, 2022). The borehole advancement and well installation is planned to be completed later this year when the SAR are not occupying the study area

This report describes the objectives of the Phase II ESA, the methodology employed to achieve those objectives, and the findings of the investigation. The below conclusions summarize the findings related to soil and surface investigations completed as part of this Phase II ESA based on areas of potential environmental concern identified in the Phase I ESA (AECOM, 2022).

1. Waste Rock: The Phase II Environmental Site Assessment has identified that approximately 250 cubic meters (m^3), based on preliminary field observations only, of slag and waste rock is present on-Site. Slag and waste rock was not sampled; however, soil samples were collected from the slag disposal area. These soil samples contained elevated arsenic, manganese, vanadium and other metal concentrations that may present an unacceptable risk of elevated exposures to arsenic and other toxic metals through leaching and dust released from slag and waste rock piles for human and ecological receptors. Remedial measures may be required to mitigate this risk. Further assessment of the potential risk to human health and ecological health is warranted

2. Impacted Soil Area: The Phase II Environmental Site Assessment has identified impacted soil in many areas of the Site, as delineation has not been achieved, AECOM is unable to accurately assess the volume of contaminated soil requiring remedial action. Based on the limited data and aerial imagery, AECOM is estimating that approximately 1,000 m^3 of soil containing elevated arsenic, lead and other metals concentrations that may present a human health risk exists on the Site. Remedial measures may be required to mitigate this risk. Further assessment of the potential risk to human health and ecological health is warranted
3. Debris: Remnants of historical mining and steel plant operations remain at site, including machine parts, wood and metal were identified as part of the Phase II Environmental Site Assessment. An estimated volume of 16 m^3 of debris may require management.
4. Impacted Surface Water: The Phase II Environmental Site Assessment (AECOM, 2022) has identified surface water impacted by metals, specifically aluminum, arsenic, boron, cobalt, iron, lead, manganese, and zinc based on limited sampling and analyses. Remedial measures may be required to mitigate any adverse effects in aquatic organisms. Further assessment of the potential risk to human health and ecological health is warranted. Human health and ecological risks may also be mitigated by taking remedial actions at the source of the impacts (waste rock, soils, etc.)

Based on the results of the Phase II investigations, AECOM developed a Remedial Options Analysis for the site. The remedial options were evaluated using a simplified Multiple Accounts Analysis (MAA). This is a scoring method that considers multiple factors when evaluating remedial options, as further described in the report. The summary of the recommended remedial options for the Site are presented below:

Summary of Recommended Remedial Approach:

Environmental Concern	Recommended Remedial Approach
Waste Rock	▪ Excavate and dispose of at approved off-site facility
Impacted Soils	▪ Excavate and dispose of at approved off-site facility
Surface Debris (Non-Wood Materials)	▪ Off-site disposal and recycling
Impacted Surface Water	▪ No action required other than monitoring and risk assessment

In addition to the environmental issues and associated recommended remedial options above, there are additional site features, that may present physical hazards to the public, that should be considered:

Physical Hazards:

- Structures such as concrete foundations and exposed reinforcing steel pose physical hazards to members of the public who visit the Site. A survey of manmade structures should be conducted to identify those that require remedial actions to address physical hazards such as excessive drops, open pits, protruding steel and confined spaces. Required remedial actions should be conducted expeditiously.

Mine Workings:

- A detailed review of mining workings could be conducted to assess the potential for methane accumulation in the subsurface due to the presence of Princess/Queen Pit mine workings beneath the Site.

Based on the scope of work completed as a part of this Phase II ESA and as noted in the findings above, AECOM presents the following recommendations:

The overall regulatory goal for the site is to manage contamination to reduce related risks to acceptable levels in the environment, considering both humans and ecology and that these can be met by a variety of means acceptable to the Minister under the Regulation. To achieve this goal further environmental investigation and assessment is needed for supporting the development of a preferred remediation approach and Remedial Action Plan tailored to the site conditions and land use for the protection of human health and the environment.

Due to SAR, a full intrusive study of the subject Site(s) was not completed during the summer program as recommended by Department of Natural Resources and Renewables. Intrusive work is planned for the fall of 2022 which will help to further understand the subject site, including further delineation of impacts.

To further define the environmental impacts at the Site, the following additional information should be understood:

- Geophysics investigation to better define fill areas and potential groundwater plume areas.
- Full delineation of the impacted waste rock, and contaminated soil.
- Further assessment of the environmental availability and estimation of loadings of toxic metals in waste rock and impacted soils to groundwater and surface water, including wetlands, ponded water, Big Pond, and Spanish Bay.
- Test pitting within the waste rock piles areas to identify the depths.
- Survey of the waste rock piles to identify quantities on-Site.
- Further definition of the waste materials on-site including a hazardous materials assessment.
- Further assessment of the background quality of the soil.
- Further monitoring and assessment of metal uptake and bioaccumulation in terrestrial and aquatic organisms for evaluating the level of concern for ecological impacts and implications for exposure from ingestion of food and prey, including top predators and humans.
- Further groundwater investigations (borehole advancement and well installation) once Species at Risk (SAR) are not occupying the study area.

Several metals were identified as contaminants of concern (COCs) in soil and surface water. No exemptions to notification of contamination were identified based on the available information for the site (e.g., the estimated area and volume of impacted soil and the association of the COCs with releases with past mining activities, including tailings, groundwater and ponded water at the Site; the notification form of contamination should be completed and submitted within 90 days.

The following metals were identified as COCs, meaning one or more sample of one or more environmental media were in exceedance of the selected risk evaluation criteria (i.e., the applicable NSE Tier 1 EQSs or NS Geochemical Background levels in soil for select metals parameters (aluminum, iron, manganese and vanadium))
applied in the Phase II ESA specifically, aluminum, arsenic, boron, cobalt, iron, lead, manganese, vanadium and zinc. Of these metals, all are Substances Potentially Considered as Background Occurrences (listed in Table 5).

As the intended future land use for this Site was not known at the time of this ESA work, as such given the purpose of this ESA, and ROA we have compared all analytical data to the NSE Tier 1 EQS for a residential/ parkland land use. Overall, the intended future land use should be identified prior to finalizing the remedial actions for the Site.

The above COCs should be retained for further study and risk assessment. The proposed next steps involve the following:

1. Determination of appropriate local/regional background levels and screening evaluation to refine the list of COCs and for the development of monitoring/remedial action levels for inclusion in the risk management plan (this will require additional study/data analyses/sampling and analysis),

2. Completing a Tier 2 risk evaluation against the applicable PSS for each location and media to refine the list of COCs.
3. A Human Health and Ecological Risk Assessment for the Site, including a problem formulation report that identifies areas of concern based on level of risk including the evaluation of potential release mechanisms of toxic metals in media such as through leaching and transport in ground water, surface water and dispersion of dust/ airborne particulates, and outlines additional studies to assess the environmental availability of select toxic metals to reduce uncertainties related to exposure risks for human and ecological receptors.
4. The development of acceptable remediation levels (RLs or SSTLs) based on the risk assessment for use in Risk Management and remedial action plan for determining remediation completion and inclusion in the confirmation report for the site as per the Contaminated Sites Regulation and other applicable protocols.
5. The identification of the preferred option(s) of alternate but acceptable long-term exposure management measures (EMMs), including requirements for long-term monitoring of selected exposure pathways, or Controls (such as engineering, physical, and administrative). Some alternate Control options have been presented in this report. Additionally, Administrative Controls restricting access to contamination. Administrative Controls may be applied to select areas at the Site. Administrative restricted access controls (e.g., building restriction for land use bylaws, zoning; contingency plans) should be for further consideration going forward.
6. Development and documentation of the Risk Management Plan to be completed in discussion with NSLI and key stakeholders, as per the PRO-600 Remedial Action Plan Protocol and applicable Regulations. This includes establishing monitoring action target levels for exposure pathways of concern that need to be monitored, developing a monitoring sampling plan and outlining actions to be taken if results exceed monitoring action levels. The requirements for engineering controls should also include details of the design, demonstration of effectiveness, ongoing monitoring and inspection of proper control function, and rationale for selection and requirements for long-term exposure management. The requirements for administrative controls should also include contingency plans, demonstration of effectiveness, and monitoring and inspection to ensure administrative controls remain effective overtime.

The purpose of risk assessment is to inform the selection of the preferred risk management options, including development of HASPs and RMPs as appropriate to the situation, based on the available information on the distribution and environmental availability of contaminants and the magnitude and frequency of environmental exposures due to known impacts and loadings from identified sources and the desired land use protection.

The proposed further risk evaluation through an assessment of applicable local/regional background, screening against the applicable Tier 2 PSS in the HHERA will help determine which COCs are the drivers of risk for each media and source, corresponding to the critical human and ecological receptors and critical exposure pathways for various areas of concern on the Site. Risk-based site-specific target levels for selected COCs could be used to guide and confirm effectiveness of the remedial action plan. By focusing efforts on risk drivers for specified areas of concern, the benefits of a risk-based approach may decrease the quantity of material requiring remedial action subsequently lowering the liability of the Site but will also underpin the risk management communication among stakeholders, including members of the community, with the goal of improving consensus-building on the remedial action plan going forward.

At the time of writing this report, no information on the future land use was available. Further discussions with NSLI regarding the overall desired endpoint for the future land use of the site in terms of Site Closure (i.e. undeveloped natural forest restoration, residential, commercial, industrial development) will be necessary to work towards a sustainable closure scenario under the relevant Acts and Regulations and applicable guidance. It is anticipated that future discussions will focus on additional work for understanding the site and implications for risk to human health and adverse environmental effects, as well as working towards the development of a risk management plan/remedial action plan for the Site, considering a Conditional closure following a Limited Remediation pathway, involving a possible combination of Exposure Management Monitoring or Controls (engineering, physical, administrative) and risk-based corrective actions.

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1. Introduction

1.1 Purpose

AECOM Canada Ltd. (AECOM) was retained by Nova Scotia Lands Inc. (NSLI) to complete a Phase II Environmental Site Assessment (ESA) for the Ocean Street Former Steel Plant located in Sydney Mines, Nova Scotia. The Site is situated on five (5) parcels of land with the following Parcel Identifier Numbers (PIDs): 15504913, 15509235, 15601636, 15505456, and 15504780. As requested by NSLI, the area of focus for the Phase II ESA is limited to the five (5) parcels of land identified above (hereafter referred to as the "Site"). The general location of the Site is shown on **Figure 1**, **Appendix A**. The approximate property boundaries associated with the five (5) PIDs, as well as the Phase II ESA area of focus is presented on **Figure 2**, **Appendix A**. Site features, including waste rock, debris and former infrastructure, is presented on **Figure 3**, **Appendix A**.

The objective of this Phase II ESA program is to gain an understanding of the soil, groundwater, surface water, sediment and tailings conditions at the Site with respect to the areas of potential environmental concerns that were identified during the Phase I ESA completed by AECOM in April 2022 (AECOM, 2022).

AECOM submitted a Phase II Field Program Memo to NSLI in May 2022 (AECOM, 2022) which included a detailed sampling program consisting of groundwater investigations (well installation, monitoring, sampling), soil assessment and delineation (via borehole advancement and hand auger test pit program), and surface water and sediment sampling. However, borehole advancement and well installation were not able to be completed at the time of the Phase II ESA as Species at Risk (SAR) were identified at the Site, as further described in memo completed by AECOM - Borehole Coordination: Summary of potential Species at Risk that may be present at the Ocean St. Mine site, Cape Breton, NS. (AECOM, 2022). As such, this Phase II ESA will only include the details of the work completed at Site thus far (soil and surface water assessment). The borehole advancement and well installation is planned to be completed later this year when the SAR are not occupying the study area.

The Phase II ESA was conducted in accordance with the Nova Scotia Environment (NSE) Contaminated Sites Guidelines (2013) Phase II Environmental Site Assessment Protocol (PRO-400). This report describes the objectives of the Phase II ESA, the methodology employed to achieve those objectives, and the findings of the investigation.

2. Background

2.1 Subject Property Description

The former Ocean Street Former Steel Plant Site (the Site) is located in Sydney Mines, Nova Scotia, and situated on PIDs 15504913, 15509235, 15601636, 15505456, and 15504780 (outlined below). All parcels are owned by the Nova Scotia Department of Natural Resources (DNR).

For ease of reference, the Site has been broken down into five separate Site Classification Units (SCUs).

- PID 15504913 (SCU 1) covers 63.0 acres located east of Ocean St and to the north and south of Howell St in Sydney Mines, NS. The property is undeveloped and is mainly wooded areas. Residential properties exist to the west of the property boundary, and there the Princess Nature Trail is present in the eastern and southern portion of the property. There is no civic address, and NS Property Online reports the address as Ocean St, Sydney Mines. Access to this property is possible by foot via Black Point St (north side); or by foot through the access road on the former Princess Mine remediated properties located further east.
- PID 15509235 (SCU 2) covers 54.3 acres located between Ocean St and Atlantic St, Spanish Bay is north of the Site, and Howell street to the south. The Site is generally vegetated with long grass, bushes, and small trees, with swampy areas in the southern portion. There are many partially vegetated piles of slag of varying size across the property. The main features are in the south of the property comprising part vegetated and partially demolished brick/concrete structures with many open holes. In addition, the area to the west is used as a public beach. The civic address for the parcel is 295 Ocean Street (Sydney Mines, NS). Access to the property is possible in several ways including: on foot via Howell St (south side); by foot/vehicle via the former railway located to the west of the Site (accessed via Howell St); from Ocean Street to the east, or by water to the north.
- PID 15601636 (SCU 3) covers an area of 6.7 acres located on Ocean St, Sydney Mines, NS, bordering Big Pond to the north. It is covered mostly in tall grass, with sand surrounding the part of the property associated with the Big Pond Beach. There is no civic address for the property. Access to the property is possible by foot from Nicholas St in Florence, NS (west side) or by foot/vehicle via the former and current Cape Breton and Central Nova Railway rail lines to the southeast of the Site or by water from the south.
- PID 15505456 (SCU 4) covers an area of 50.0 acres located between Ocean St and Atlantic St, south of Howell St, in Sydney Mines, NS. It is mostly vegetated, with tall grass and trees, with wet areas in the western and southern portions. The main features are in the centre of the property comprising part vegetated and partially demolished brick/concrete structures, and various mounds of potentially stock piled material. There is no civic address, but NS Property Online reports the address as Pitt St, Sydney Mines. Access to the property is possible by foot via Howell St (north side); by foot via a former railway located on the west side of the property (accessed from Howell St or Pitt St); by foot through the Princess Nature Trail (south side of the property).
- PID 15504780 (SCU 5) covers an area of 4.9 acres located to the east of Atlantic St and to the southwest of Howell St in Sydney Mines, NS. The property is undeveloped and consists mainly of a vegetated/wooded area with a wet area in the northern portion. Most of the land area has been partially developed by residents as a grassed recreation area. Residential properties exist to the west of the property boundary. There is no civic address, but NS Property Online reports the address as Atlantic Street, Sydney Mines. Access to this property is possible in several ways including: by foot via Atlantic St to the west of the Site; or by foot/vehicle via the current Cape Breton and Central Nova Railway railway located to the east of the Site.

2.2 Historical Land Use

Historical activities associated with the Site include mining activity and steel manufacturing. Mining activities were recorded on and in the vicinity of the Site during the mid to late 1800s, ending in the mid 1900s. A former steel manufacturing plant (i.e., Scotia Steel) used to operate within the area of the Site between 1904 and 1920. The Site has been left vacant since the closure of the steel plant. It is currently used by the local community as a recreational area, and to a lesser extent, a waste disposal site.

2.3 Site Buildings and Structures

The Site is currently vacant. No buildings are located on the properties. However, remnants of foundations for the former steel plant exist on PIDs 15509235 (SCU 2) and 15505456 (SCU 4). These foundations extend onto PID 15589005, a privately-owned parcel that is not included in the study area of the present Phase I ESA. The remnants of foundations are primarily composed of brick, mortar, and concrete.

2.4 Physical Setting

The Site has undulating topography and several areas found to have standing water and water-saturated soil. In some locations the topography is irregular due to slag dump piles (in particular the northern portion of SCU2), where slag has eroded or been removed. Ground elevation at the Site is typically 10 m above mean sea level (amsl), ranging from 0.5 to 15 m amsl, sloping downwards gradually in a north-western direction towards the shoreline of Big Pond.

2.4.1 Regional Topography

Regional soils are characterized as flat to rolling stony till plains ranging in thickness from 2 to 20 m. They have a stony, sandy composition derived from local bedrock sources released from the base of a melting ice sheet. Soils on the northern portion of the Site consist of marine deposits, including gravel, sand, silt, and clay formed by coastline sedimentation through wave action, longshore currents, and tides (Stea 1992).

Underlying bedrock in the area consists of Late Carboniferous Era rock that is part of the Morien Group. The bedrock in the area has been mapped as fluvial and lacustrine mudstone, shale, siltstone, sandstone, limestone, and coal of the Sydney Mines Formation (Keppie 2000).

2.4.2 Regional Geology

Regional soils are characterized as flat to rolling stony till plains ranging in thickness from 2 to 20 m. They have a stony, sandy composition derived from local bedrock sources released from the base of a melting ice sheet. Soils on the northern portion of the Site consist of marine deposits, including gravel, sand, silt, and clay formed by coastline sedimentation through wave action, longshore currents, and tides (Stea 1992).

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2.4.3 Regional Hydrogeology / Hydrology

Based on topography and surface drainage in the area, the regional groundwater flow direction in the Site area appears to be northwesterly, towards Big Pond and Spanish Bay (Atlantic Ocean).

According to NSE, the aquifer within the Upper Morien hydrostratigraphic unit is classified as a Class II aquifer. Groundwater within this type of aquifer is typically rich in calcium carbonate, with high iron and manganese concentrations, a pH ranging from 7 to 7.8, and total organic carbon ranging from 1 to 4 mg/L. Additionally, hydrogen sulphide gas has been noted in several areas.

Based on yield data from 112 domestic wells in the area, 90% of the wells had a yield of 23 L/min or greater (Baechler 1986). Hydraulic conductivity has been identified to range from 4.2 x 10^{-7} m/s within areas of siltstone, shale, and mudstone, to 1.0 x 10^{-3} m/s in areas of sandstone.

Site-specific hydrology information includes the following water bodies, wetland areas, etc. that are either present on-Site or in the vicinity of the Site.

- Spanish Bay is located to the north of the Site (north and adjacent to SCU 2).
- Big Pond Beach and Florence Beach Provincial Park are located forth of the Site (north and adjacent to SCU 2).
- Big Pond is located to the west of SCUs 1, 2, 4, 5, and south and adjacent to SCU 3.
- There is a small ponded body of water located on SCU 5.
- Based on topographic maps of the Site, it appears that there may be a sewage settling pond located east of SCU 1. There also appears to be a number of small water bodies, streams, and marshy areas east of SCU 1.
- Based on topographic maps of the Site, it appears that there is a stream on the western side of SCU 2 that leads into Big Pond.

A search of the water wells present on-Site and within a 250 m radius of the Site was completed as part of the ERIS database search. The search results found that there is one (1) water well identified within approximately 250 m of the Site.

As the groundwater investigation has not yet been completed for the Site, groundwater flow direction has not yet been determined.

2.5 Adjacent Land Use

The Site is located in a mostly residential area. Properties/features adjacent to the Site are described below:

- North: Spanish Bay is located to the north of the Site (north of SCU 2)
- East: Residential properties along Ocean St are located to the west of SCU 1, and to the east SCUs 2, and 4, with the former Princess Mine remediated properties located further east.
- West: Residential properties are situated across Atlantic Street to the west of the Site. Further west is Big Pond and the Cape Breton and Central Nova Railway rail line and. Additionally, a former rail line is adjacent to the Site's western border, between SCU 2 and 4 (to the west) and SCU 5 (to the east).
- South: Princess Nature Trail (along Pitt St), once part of the Nova Scotia Steel and Coal Company property, is located to the south of the Site. Residential properties are located on the southern edge of SCU 2 along Howell St. Additionally, a large privately-owned parcel of land (PID 15589005) is located to the south and west of SCU 2. This parcel was formerly part of the steel plant property and contains the southern half of the remnants of the coke ovens' batteries.

  Based on a review of the results of the ERIS search, within 250 m of the Site there appears to be a number of abandoned mine openings, three (3) contaminated sites, and a number of water wells.

2.6 Previous Environmental Reports

Previous environmental reports were provided to AECOM by NSLI and a summary of each report is presented within the AECOM Phase I ESA (AECOM, 2022).

A summary of the findings from the Phase I ESA completed by AECOM is provided below.

2.6.1 Phase I ESA (AECOM, 2022)

Based on the results of the Phase I ESA, AECOM identified the following key information:

1. Historical activities associated with the Site include mining activity and steel manufacturing. Mining activities were recorded on and in the vicinity of the Site during the mid to late 1800s, ending in the mid 1900s. A former steel manufacturing plant (i.e., Scotia Steel) used to operate within the area of the Site between 1904 and 1920. Over the next 10 to 27 years the plant was dismantled until only foundations remained visible on the surface. The Site has been left vacant since the closure of the steel plant. With the exception of the slag disposal area, no significant changes have taken place on the Site since that time.
2. The slag disposal area appears to have been quarried and reworked several times since the steel plant was closed in 1920. Slag from this area was reportedly used in the construction of the interchange of Highways 105 and 125 c.197Q.
3. Areas of the Site are currently used by the local community as a recreational area (i.e., walking, jogging, off-road vehicle use), and to a lesser extent, waste disposal.
4. The Site is located in a mostly residential area. Properties/features adjacent to the Site are as follows:
   - **North:** Spanish Bay is located to the north of the Site (north of SCU 2)
   - **East:** Residential properties along Ocean St are located to the west of SCU 1, and to the east SCUs 2 and 4, with the former Princess Mine remediated properties located further east.
   - **West:** Residential properties are situated across Atlantic street to the west of the Site. Further west is Big Pond and the Cape Breton and Central Nova Railway rail line. Additionally, a former rail line is adjacent to the Site's western border, between SCU 2 and 4 (to the west) and SCU 5 (to the east).
   - **South:** Princess Nature Trail (along Pitt St), once part of the Nova Scotia Steel and Coal Company property, is located to the south of the Site. Residential properties are located on the southern edge of SCU 2 along Howell St. Additionally, a large privately-owned parcel of land (PID 15589005) is located to the south and west of SCU 2. This parcel was formerly part of the steel plant property and contains the southern half of the remnants of the coke ovens' batteries.
5. At the time of the site visit, various debris and waste (consisting of garbage, wood, metal, tires, etc.) were littered intermittently throughout the Site. Waste was generally located in areas that could be easily accessed by the walking trails or access roads on the Site.
6. Hazardous materials may be present solid waste piles or buried in fill material on the Site. As the composition of the debris and waste found on the Site are unknown, there may be potential for both environmental and health and safety issues.
7. Orange/brown staining was noted in watercourse located along the western and southern side of SCU 4. This staining may be a result of acid rock drainage (ARD) originating from past coal mining and related activities. This was also previously noted in past environmental reports. No other evidence of significant ARD was identified during the course of the study.
8. Cape Breton Development Corporation (CBDC) has installed equipment on the adjacent Princess Nature Trail property to ventilate methane from mine workings.
9. The operation of a steel plant on the Site between 1904 and 1920 presents the potential for environmental contamination to be present in soil and groundwater through the generation of air emissions, wastewater emissions, chemical releases and solid waste (i.e., slag and other residues). These potential contaminants of

concern include heavy metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs) and petroleum hydrocarbons (PHCs).

10. Historical soils samples collected indicates that heavy metal concentrations in soils samples from Big Pond Beach and residential-sized lots along Ocean Street may exceed the Canadian Council of Ministers of the Environment (CCME) Residential/Parkland Soil Quality Guidelines. These records imply that subsequent soil testing and reclamation activities may have taken place in these areas, but the related records were not available.

Additional noteworthy items were identified during the Phase I ESA:

1. Significant safety hazards remain at the Site, including foundations and debris. Mine shafts are not present on the DNRR lands, however the entire area is undermined with room and pillar mine workings at a depth of approximately 250 ft, which present a potential for ground subsidence.

Based on the results of the Phase I ESA, AECOM recommends the following:

Solid Waste Management:

1. All debris and other solid wastes, other than brick, stone and concrete, should be removed from the Site and disposed in compliance with Provincial and Municipal legislation. Characterization of the waste should take place prior to or coincidentally with removal.

Potential Environmental Contamination:

1. A Phase ll ESA program should be conducted to investigate potential environmental contamination of soil, surface water and groundwater on the Site as a result of historical steel plant operation and waste disposal activities. All land parcels that comprise the Site should be included in the Phase ll ESA, with focus on known areas of concern such as waste disposal areas, suspected storage tank locations, and wastewater transmission and discharge locations. lt is expected that the primary Contaminants of Concern will be heavy metals and PAHs, although analysis of other parameters such as PCBs, VOCs, PHCS and net neutralization potential will also be required.

Potential ARD:

1. A surface water and sediment sampling program should be conducted along the drainage ditch/stream located on the west side of the Site (SCU 4) near Atlantic Street to determine the extent and source of any adverse effects related to ARD.

Additional items to be considered include the following:

Future Land Use Planning:

1. The future land use for the property should be determined so that a clear regulatory context is established prior to the initiation of environmental sampling or infrastructure modifications. This work should include a public consultation component.

Physical Hazards:

1. ln addition to debris and solid waste, structures such as concrete foundations and exposed reinforcing steel pose physical hazards to members of the public who visit the Site. A survey of manmade structures should be conducted to identify those that require remedial actions to address physical hazards such as excessive drops, open pits, protruding steel and confined spaces. Required remedial actions should be conducted expeditiously.

2.7 Applicable Regulatory Standards

2.7.1 Nova Scotia Environment Contaminated Sites Regulations

The subject property evaluation was completed in accordance with the NSE Contaminated Sites Regulations (July 2013). NSE Tier I Environmental Quality Standards (EQS) criteria provide the applicable guidelines for the Site. Site characteristics that are used to determine the NSE Tier I EQS (NSE-EQS) are as follows: **residential land use, non-potable water supply, coarse-grained soils.**

Soil Guidelines:

- Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Soil – residential, non-potable water, coarse grained soils (Table 1B)

Estimates of geochemical background levels in soil for select metals parameters (aluminum, iron, manganese and vanadium) have been incorporated into this report. Nova Scotian geochemical background levels were based on soil geochemical data generated as part of the North American Soil Geochemical Landscapes Project (NASGLP) (67 sites) and the Environment Canada background soil database (63 sites). Nova Scotia soil (<2mm fraction) data (excluding outliers) collected from the Public Health interval (0-5cm) reveal the following 98th percentile geochemical background levels: aluminum: 21,340 mg/kg, iron: 38,196 mg/kg, manganese: 875 mg/kg, vanadium: 98 mg/kg.

Surface Water Guidelines:

- Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (Freshwater) (Table 3)
- Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (Marine) (Table 3) (for select samples)

Surface water samples 1636-SW1 and 1636-SW2 are compared to both marine and freshwater guidelines as this body of water is tidal influenced. The remainder of the surface water samples are compared to fresh water guidelines.

3. Phase II ESA

3.1 Methodology

The Phase II ESA scope of work included hand augering test pit program along with soil and surface water sampling, chemical analysis of selected samples, and evaluation of the analytical data.

AECOM submitted a Phase II Field Program Memo to NSLI in May 2022. An overview of the Phase II ESA sampling program that was completed at the Site is as follows:

Soil Impacts Assessment and Delineation

- Completion of a hand-auger soil sampling program. Advancement of thirty-nine (39) auger locations, strategically chosen to investigate the areas of environmental concern and to assist with delineation of the historic slag deposits. Samples were collected from each SCU (SCU 1 to SCU 5).
- Samples were submitted for available metals concentration (incl. mercury), PAH and PHC (select samples only) analysis.

Surface Water and Sediment Sampling

- Completion of a surface water sampling program. Collection of six (6) surface water samples strategically chosen to investigate the areas of environmental concern. Samples were collected from the surface water bodies located on SCU 1, SCU 3, SCU 4, SCU5.
- Samples were submitted for total metals concentration, PAH and general chemistry (select samples only) analysis.

Borehole advancement and well installation were not able to be completed at the time of the Phase II ESA as Species at Risk (SAR) were identified at the Site, as further described in memo completed by AECOM - Borehole Coordination: Summary of potential Species at Risk that may be present at the Ocean St. Mine site, Cape Breton, NS. (AECOM, 2022). The borehole advancement and well installation is planned to be completed later this year when the SAR are not occupying the study area. The scope of work included in the additional work to be completed is presented below.

Groundwater Well Installation, Monitoring, Sampling, and Flow

- Advancement of boreholes on PIDs 15509235 (3 boreholes) and 15505456 (3 boreholes), which will all be completed as monitoring wells. The location of the boreholes and monitoring wells will be strategically selected to assess the areas of environmental concern.
- A survey of the monitoring well and test pit locations will be completed to record their locations and elevations so that the groundwater levels recorded in each well can be used for determining the groundwater flow direction to meet the requirements of NSE CHK400.
- Groundwater monitoring and sampling will be conducted at each well. Groundwater samples will be submitted for one or more of the following parameters: total metals concentration, PAH, Modified TPH (MTPH) and general chemistry.

3.1.1 Sampling Program Rationale

Table 1 below provides a summary of the sample locations and the rationale, as applicable.

Table 1: Sampling Locations and Rationale

Phase II ESA Activities		Sampling Rationale	Analyses	Media	Potential Receptor Type
Soil - Impact Assessment and Delineation					
1.	Three (3) hand auger locations on SCU 1: 4913-H1 to 4913-H3	Strategically chosen to investigate the areas of environmental concern and to assist with delineation of the historic slag deposits.	▪ Available Metals Concentration incl. mercury ▪ PAHs	Soil	Human Health and Environment
2.	Twenty (20) hand auger locations on SCU 2: 9235-H1 to 9235-H20 *	Strategically chosen to investigate the areas of environmental concern and to assist with delineation of the historic slag deposits.	▪ Available Metals Concentration incl. mercury ▪ PAHs	Soil	Human Health and Environment
3.	Three (3) hand auger locations on SCU 3: 1636-H1 to 1636-H3	Strategically chosen to investigate the areas of environmental concern and to assist with delineation of the historic slag deposits.	▪ Available Metals Concentration incl. mercury ▪ PAHs ▪ PHCs	Soil	Human Health and Environment
4.	Twelve (12) hand auger locations on SCU 4: 5456-H1 to 5456-H13	Strategically chosen to investigate the areas of environmental concern and to assist with delineation of the historic slag deposits.	▪ Available Metals Concentration incl. mercury (all samples except 5456-H10, 5456-H12, 5456-H13) ▪ PAHs (all samples except 5456-H10, 5456-H12, 5456-H13) ▪ PHCs (5456-H12 only) ▪ Modified Acid-Base Accounting (5456-H10, 5456-H12, 5456-H13 only)	Soil	Human Health and Environment
5.	One (1) hand auger location on SCU 5: 4780-H1	Strategically chosen to investigate the areas of environmental concern and to assist with delineation of the historic slag deposits.	▪ Available Metals Concentration incl. mercury ▪ PAHs	Soil	Human Health and Environment
Surface Water and Sediment – Assessment					
6.	Two (2) surface water locations on SCU 1: 4913-SW1 to 4913-SW2	Strategically chosen to investigate the areas of environmental concern	▪ Total Metals ▪ PAHs ▪ General Chemistry	Surface Water	Human Health and Environment
7.	Two (2) surface water locations SCU 3: 1636-SW1 to 1636-SW2	Strategically chosen to investigate the areas of environmental concern	▪ Total Metals ▪ PAHs	Surface Water	Human Health and Environment
8.	One (1) surface water location on SCU 4: 5456-SW1	Strategically chosen to investigate the areas of environmental concern	▪ Total Metals ▪ PAHs ▪ General Chemistry	Surface Water	Human Health and Environment
9.	One (1) surface water location on SCU 5: 4780-SW1	Strategically chosen to investigate the areas of environmental concern	▪ Total Metals ▪ PAHs ▪ General Chemistry	Surface Water	Human Health and Environment

Note:
* Samples 9235-H8 and 9235-H9 were collected erroneously outside the property boundaries of PID15509235 (SCU 2). Therefore, the analytical results associated with these two (2) sample locations are not presented within the following report text figures (Appendix A) or analytical summary tables (Appendix B).

3.1.2 Sampling Procedures

3.1.2.1 Hand Auger Sampling Procedures

The hand auger sampling program was conducted between June 21-June 23, 2022. Hand auger samples were collected following AECOM's standard operating procedures (SOPs). A total of thirty-nine (39) soil samples (not including field duplicates) were collected between the five (5) SCUs (SCU 1 to SCU 5). Samples were submitted for available metals concentration (incl. mercury), PAH and PHC (select samples only) analysis.

All hand auger soil samples were collected with laboratory supplied jars for laboratory analysis. Hand auger locations are shown on **Figure 4**, **Appendix A**.

3.1.2.2 Surface Water Sampling Procedures

Surface water sampling took place on June 22, 2022. Surface water samples were collected following AECOM's SOPs from a depth of approximately 5 cm below the water surface. During the surface water sample collection process, the personnel located themselves downstream of the sampling point and as close to the middle of the channel as possible (where safe to do so), thereby minimising disturbance to the stream base and mobilisation of any silts / sediments. Samples were collected in pre-cleaned laboratory supplied containers and kept at or below a temperature of 10 degrees Celsius once sampled until submission to the laboratory.

A total of six (6) surface water samples (not including field duplicates) were collected during this field program from the surface water bodies located on SCU 1, SCU 3, SCU 4, SCU5. Samples were submitted for total metals concentration, PAH and general chemistry (select samples only) analysis.

Surface water sampling locations are shown on **Figure 5**, **Appendix A**.

3.1.3 Sample Collection and Analysis

All samples collected as part of this program were submitted to Bureau Veritas Laboratories (BV Labs) located in Bedford, Nova Scotia, for chemical analyses. BV Labs is accredited to ISO/IEC 17025 standards by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC). Laboratory methods and analytical results for each chemical analysis are provided with the laboratory Certificate of Analysis (COAs).

The field and laboratory program is summarized in **Table 2** below.

Table 2: Field and Laboratory Program

Media	Analysis *	Samples Submitted (not incl. FD)	Sample IDs	QAQC Samples	
				Field Duplicates (FD)	Analysis
Soil - Impact Assessment and Delineation					
Soil	▪ Metals (incl. mercury) ▪ PAHs ▪ PHCs ▪ Modified Acid-Base Accounting	Thirty-nine (39)	4913-H1 to 4913-H3 9235-H1 to 9235-H7 9235-H10 to 9235-H20 1636-H1 to 1636-H3 5456-H1 to 5456-H13 4780-H1	4	Metals, PAHs, PHCs
Surface Water – Assessment					
Surface Water	▪ Metals ▪ PAHs ▪ General Chemistry	Six (6)	4913-SW1 to 4913-SW2 1636-SW1 to 1636-SW2 5456-SW1 4780-SW1	1	Metals, PAHs, General Chemistry

Notes:
*: - All soil samples were submitted for metals (incl. mercury) and PAHs except for the following samples: 5456-H10, 5456-H12, 5456-H13
- 5456-H10, 5456-H12, 5456-H13 samples were submitted for Modified Acid-Base Accounting
- 1636-H1 to 1636-H3 and 5456-H12 were submitted for PHCs.

3.1.4 Quality Assurance and Quality Control

AECOM's site investigation and quality control program for Phase II ESA activities followed standard QA/QC procedures in accordance with AECOM standard operating procedures (SOPs) to minimize any cross-contamination between samples. Clean nitrile gloves were used throughout the investigation program to eliminate cross-contamination between sampling points.

All field personnel were instructed in proper sampling handling, documentation, and chain-of-custody (COC) procedures before beginning field activities. The field sampler was personally responsible for the care and custody of samples until transferred to the laboratory. A COC record was provided to the analytical laboratory at the time of sample submission. When transferring the possession of samples, the individuals relinquishing and receiving the samples completed the appropriate laboratory forms with the required signature, date and note the time on the record.

AECOM field personnel followed strict sample collecting handling practices, including changing disposable gloves for each sample collected and decontamination of field sampling equipment between samples, to ensure the integrity of sample collection. All samples were collected in pre-cleaned laboratory supplied containers with the appropriate preservatives provided within the sample containers and all samples were submitted for individual analysis within the laboratory prescribed hold times. Samples were packaged in coolers with sufficient packing material to ensure safe shipment of glass containers and ice was placed in coolers to maintain sample temperatures. All samples were kept at or below a temperature of 10^{o}C once sampled until submission to the laboratory.

AECOM collected field QA/QC samples to determine the precision of analytical results and to assess for laboratory or sampling inconsistencies. **Table 3** below shows the blind field duplicate samples that were submitted for laboratory analyses.

Table 3: Field Duplicate Sample Submission

Field Duplicate Sample ID	Corresponding Sample ID	Laboratory Analyses
Soil		
Dup 2	9235-H12	Metals (incl. mercury), PAHs
Dup 3	5456-H2	Metals (incl. mercury), PAHs
Dup 5	5456-H12	PHCs
Dup 6	9235-H20	Metals (incl. mercury), PAHs
Surface Water		
Dup 4	5456-SW1	Metals, PAHs, General Chemistry

BV Labs also undertakes an internal duplicate analyses for QA/QC purposes using laboratory duplicates, process blanks, process recovery and matrix spike analyses.

3.2 Field Investigation Observations

3.2.1 Soil and Bedrock

Free product was not encountered in any of the soil samples collected. No soil staining or odours were noted on-Site while sampling. Samples were collected from ground surface to a maximum depth of 0.38 m, subject to refusal

(rock). The majority of soils encountered in the program consisted of light to dark brown sandy silt, with some gravel and brick debris found in select sample locations. Coal and slag were also noted in select sample locations. Bedrock was not encountered at any of the Phase II ESA soil sample locations.

3.2.2 Surface Water

Surface water samples were noted to be clear in color. No odour or hydrocarbon sheen were noted in the surface water samples.

3.3 Laboratory Analytical Results

3.3.1 Soil Summary

Table 4 below shows the exceedances that were found during the soil sampling program.

Table 4: Soil Sample Exceedances

Sample ID	Sample Depth (m)	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)	NS Background [2] Guideline Concentration (mg/kg)
9235-H1	0.00 - 0.13	6/21/2022	Metals: ▪ Aluminum: 51,000 ▪ Manganese: 1,600	Metals: ▪ Aluminum: 15,400 ▪ Manganese: 360	Metals: ▪ Aluminum: 21,400 ▪ Manganese: 875
9235-H2	0.00 - 0.18	6/21/2022	Metals: ▪ Arsenic: 32 ▪ Iron: 41,000 ▪ Manganese: 4,100 ▪ Vanadium: 430	Metals: ▪ Arsenic: 31 ▪ Iron: 11,000 ▪ Manganese: 360 ▪ Vanadium: 39	Metals: ▪ Iron: 38,196 ▪ Manganese: 875 ▪ Vanadium: 98
9235-H3	0.05-0.30	6/21/2022	Metals: ▪ Aluminum: 47,000 ▪ Arsenic: 120 ▪ Iron: 60,000	Metals: ▪ Aluminum: 15,400 ▪ Arsenic: 31 ▪ Iron: 11,000	Metals: ▪ Aluminum: 21,400 ▪ Iron: 38,196
9235-H4	0.01-0.36	6/21/2022	PAHs: ▪ Naphthalene: 5.7	PAHs: ▪ Naphthalene: 2.2	PAHs: N/A
9235-H5	0.00-0.30	6/21/2022	Metals: ▪ Arsenic: 33	Metals: ▪ Arsenic: 31	Metals: N/A
9235-H10	0.01 - 0.28	6/22/2022	Metals: ▪ Iron: 49,000 ▪ Lead: 820	Metals: ▪ Iron: 11,000 ▪ Lead: 140	Metals: ▪ Iron: 38,196
9235-H11	0.00 - 0.33	6/22/2022	Metals: ▪ Iron: 71,000 ▪ Lead: 3,400 ▪ Manganese: 1,700 ▪ Vanadium: 120	Metals: ▪ Iron: 11,000 ▪ Lead: 140 ▪ Manganese: 360 ▪ Vanadium: 39	Metals: ▪ Iron: 38,196 ▪ Manganese: 875 ▪ Vanadium: 98
9235-H12	0.00 - 0.38	6/22/2022	Metals: ▪ Arsenic: 89 ▪ Iron: 60,000 PAHs: ▪ Naphthalene: 2.7	Metals: ▪ Arsenic: 31 ▪ Iron: 11,000 PAHs: ▪ Naphthalene: 2.2	Metals: ▪ Iron: 38,196 PAHs: N/A
9235-H12 (FD)	0.00 - 0.38	6/22/2022	Metals: ▪ Arsenic: 79 ▪ Iron: 55,000 PAHs: ▪ Naphthalene: 2.3	Metals: ▪ Arsenic: 31 ▪ Iron: 11,000 PAHs: ▪ Naphthalene: 2.2	Metals: ▪ Iron: 38,196 PAHs: N/A
9235-H13	0.00 - 0.13	6/23/2022	Metals: ▪ Arsenic: 57 ▪ Iron: 58,000 ▪ Lead: 150 ▪ Manganese: 6,500 ▪ Vanadium: 710	Metals: ▪ Arsenic: 31 ▪ Iron: 11,000 ▪ Lead: 140 ▪ Manganese: 360 ▪ Vanadium: 39	Metals: ▪ Iron: 38,196 ▪ Manganese: 875 ▪ Vanadium: 98

Sample ID	Sample Depth (m)	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)	NS Background [2] Guideline Concentration (mg/kg)
9235-H14	0.00 - 0.18	6/23/2022	Metals: ▪ Iron: 67,000 ▪ Manganese: 12,000 ▪ Vanadium: 1,100	Metals: ▪ Iron: 11,000 ▪ Manganese: 360 ▪ Vanadium: 39	Metals: ▪ Iron: 38,196 ▪ Manganese: 875 ▪ Vanadium: 98
9235-H15	0.01 - 0.21	6/23/2022	Metals: ▪ Lead: 240 ▪ Manganese: 900	Metals: ▪ Lead: 140 ▪ Manganese: 360	Metals: ▪ Manganese: 875
9235-H16	0.00 - 0.18	6/23/2022	Metals: ▪ Arsenic: 140 ▪ Iron: 39,000	Metals: ▪ Arsenic: 31 ▪ Iron: 11,000	Metals: ▪ Iron: 38,196
9235-H17	0.01 - 0.26	6/23/2022	Metals: ▪ Arsenic: 47 ▪ Iron: 85,000 ▪ Lead: 150 ▪ Manganese: 2,500 PAHs: ▪ BTPE: 13	Metals: ▪ Arsenic: 31 ▪ Iron: 11,000 ▪ Lead: 140 ▪ Manganese: 360 PAHs: ▪ BTPE: 5.3	Metals: ▪ Iron: 38,196 ▪ Manganese: 875 PAHs: N/A
9235-H18	0.00 - 0.30	6/23/2022	PAHs: Naphthalene: 7.6	PAHs: Naphthalene: 2.2	PAHs: N/A
9235-H19	0.00 - 0.23	6/23/2022	Metals: ▪ Iron: 40,000 ▪ Lead: 920	Metals: ▪ Iron: 11,000 ▪ Lead: 140	Metals: ▪ Iron: 38,196
9235-H20 (FD)	0.01 - 0.31	6/23/2022	Metals: ▪ Lead: 150	Metals: ▪ Lead: 140	Metals: N/A
5456-H1	0.00 – 0.25	6/22/2022	Metals: ▪ Manganese: 3,100	Metals: ▪ Manganese: 360	Metals: ▪ Manganese: 875
5456-H2	0.00 – 0.25	6/22/2022	Metals: ▪ Cobalt: 25 ▪ Manganese: 3,100	Metals: ▪ Cobalt: 22 ▪ Manganese: 360	Metals: ▪ Manganese: 875
5456-H2 (FD)	0.00 – 0.25	6/22/2022	Metals: ▪ Arsenic: 35 ▪ Cobalt: 23 ▪ Manganese: 3,300	Metals: ▪ Arsenic: 31 ▪ Cobalt: 22 ▪ Manganese: 360	Metals: ▪ Manganese: 875
5456-H3	0.00 – 0.13	6/22/2022	Metals: ▪ Arsenic: 64 ▪ Iron: 52,000 ▪ Lead: 380	Metals: ▪ Arsenic: 31 ▪ Iron: 11,000 ▪ Lead: 140	Metals: ▪ Iron: 38,196
5456-H6	0.01 - 0.20	6/22/2022	Metals: ▪ Arsenic: 80 ▪ Iron: 64,000 ▪ Lead: 270	Metals: ▪ Arsenic: 31 ▪ Iron: 11,000 ▪ Lead: 140	Metals: ▪ Iron: 38,196
5456-H8	0.00 – 0.13	6/22/2022	Metals: ▪ Iron: 150,000 ▪ Lead: 2,600 ▪ Manganese: 5,900 ▪ Vanadium: 440	Metals: ▪ Iron: 11,000 ▪ Lead: 140 ▪ Manganese: 360 ▪ Vanadium: 39	Metals: ▪ Iron: 38,196 ▪ Manganese: 875 ▪ Vanadium: 98
5456-H9	0.01 – 0.30	6/22/2022	Metals: ▪ Cobalt: 29 ▪ Manganese: 6,400	Metals: ▪ Cobalt: 22 ▪ Manganese: 360	Metals: ▪ Manganese: 875
5456-H11	0.01 - 0.30	6/22/2022	Metals: ▪ Arsenic: 92 ▪ Iron: 110,000 ▪ Lead: 380 ▪ Manganese: 1,400 ▪ Vanadium: 110	Metals: ▪ Arsenic: 31 ▪ Iron: 11,000 ▪ Lead: 140 ▪ Manganese: 360 ▪ Vanadium: 39	Metals: ▪ Iron: 38,196 ▪ Manganese: 875 ▪ Vanadium: 98

Sample ID	Sample Depth (m)	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)	NS Background [2] Guideline Concentration (mg/kg)
5456-H12	0.00 - 0.30	6/22/2022	PHCs: ■ Benzene: 5.2 ■ Xylene: 11 ■ MTPH: 630 (G/F/L)	PHCs: ■ Benzene: 0.021 ■ Xylene: 4.9 ■ MTPH: 75 (G), 340 (F), 1,800 (L)	PHCs: N/A
5456-H12 (FD) – also known as DUP 5	0.00 - 0.30	6/22/2022	PHCs: ■ Benzene: 5.1 ■ Xylene: 11 ■ MTPH: 580 (G/F/L)	PHCs: ■ Benzene: 0.021 ■ Xylene: 4.9 ■ MTPH: 75 (G), 340 (F), 1,800 (L)	PHCs: N/A
DUP 5 (FD for 5456-H12)	0.00 - 0.30	6/22/2022	Metals: ■ Arsenic: 60 PAHs: ■ Naphthalene: 2.3	Metals: ■ Arsenic: 31 PAHs: ■ Naphthalene: 2.2	Metals: N/A PAHs: N/A
4780-H1	0.00 - 0.20	6/22/2022	Metals: ■ Arsenic: 35 ■ Iron: 39,000	Metals: ■ Arsenic: 31 ■ Iron: 11,000	Metals: ■ Iron: 38,196
4913-H1	0.01 - 0.23	6/22/2022	Metals: ■ Manganese: 1,000	Metals: ■ Manganese: 360	Metals: ■ Manganese: 875
4913-H2	0.00 - 0.15	6/22/2022	Metals: ■ Arsenic: 32 ■ Lead: 160	Metals: ■ Arsenic: 31 ■ Lead: 140	Metals: N/A
4913-H3	0.00 - 0.20	6/22/2022	Metals: ■ Lead: 250	Metals: ■ Lead: 140	Metals: N/A
1636-H1	0.01 -0.31	6/23/2022	PHCs: ■ Benzene: 0.35 ■ MTPH: 180 (G/F/L)	PHCs: ■ Benzene: 0.021 ■ MTPH: 75 (G), 340 (F), 1,800 (L)	PHCs: N/A
1636-H2	0.01 -0.31	6/23/2022	PHCs: ■ Benzene: 0.94 ■ MTPH: 170 (G/F/L)	PHCs: ■ Benzene: 0.021 ■ MTPH: 75 (G), 340 (F), 1,800 (L)	PHCs: N/A
1636-H3	0.05 -0.30	6/23/2022	PHCs: ■ Benzene: 0.31	PHCs: ■ Benzene: 0.021	PHCs: N/A

Notes:
[1]: Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Soil – residential, non-potable water, coarse grained soils (Table 1B)
[2] Estimates of geochemical background levels in soil for select metals parameters (aluminum, iron, manganese, and vanadium) have been incorporated into this report. Nova Scotian geochemical background levels were based on soil geochemical data generated as part of the North American Soil Geochemical Landscapes Project (NASGLP) (67 sites) and the Environment Canada background soil database (63 sites). Nova Scotia soil (<2mm fraction) data (excluding outliers) collected from the Public Health interval (0-5cm) reveal the following 98th percentile geochemical background levels: aluminum: 21,340 mg/kg, iron: 38,196 mg/kg, manganese: 875 mg/kg, vanadium: 98 mg/kg.

3.3.2 Surface Water Summary

Table 5 below shows the exceedances that were found during the surface water sampling program.

Table 5: Surface Water Sample Exceedances

Sample ID	Sample Date	Parameter / Concentration	NSE-EQS [1] (Freshwater) Guideline Concentration	NSE-EQS [2] (Marine) Guideline Concentration
1636-SW1	6/22/2022	Metals: ▪ Boron: 1,800 µg/L	Metals: ▪ Boron: 1,500 µg/L	Metals: ▪ Boron: 1,200 µg/L
1636-SW2	6/22/2022	Metals: ▪ Boron: 1,800 µg/L	Metals: ▪ Boron: 1,500 µg/L	Metals: ▪ Boron: 1,200 µg/L
4780-SW1	6/22/2022	Metals: ▪ Aluminum: 8.2 µg/L ▪ Zinc: 8.0 µg/L Gen Chem: ▪ Dissolved Chloride: 190 mg/l	Metals: ▪ Aluminum: 5.0 µg/L ▪ Zinc: 7.0 µg/L Gen Chem: ▪ Dissolved Chloride: 120 mg/l	Metals: N/A Gen Chem: N/A
4913-SW1	6/22/2022	Metals: ▪ Aluminum: 140 µg/L ▪ Iron: 2,800 µg/L ▪ Lead: 1.2 µg/L ▪ Manganese: 630 µg/L	Metals: ▪ Aluminum: 5.0 µg/L ▪ Iron: 300 µg/L ▪ Lead: 1.0 µg/L ▪ Manganese: 430 µg/L	Metals: N/A
4913-SW2	6/22/2022	Metals: ▪ Aluminum: 460 µg/L ▪ Arsenic: 6.3 µg/L ▪ Cobalt: 1.3 µg/L ▪ Iron: 3,800 µg/L ▪ Lead: 4.4 µg/L ▪ Zinc: 15 µg/L	Metals: ▪ Aluminum: 5.0 µg/L ▪ Arsenic: 5.0 µg/L ▪ Cobalt: 1.0 µg/L ▪ Iron: 300 µg/L ▪ Lead: 1.0 µg/L ▪ Zinc: 7.0 µg/L	Metals: N/A
5456-SW1	6/22/2022	Metals: ▪ Aluminum: 17 µg/L ▪ Iron: 410 µg/L Gen Chem: ▪ Dissolved Sulphate: 250 mg/l	Metals: ▪ Aluminum: 5.0 µg/L ▪ Iron: 300 µg/L Gen Chem: ▪ Dissolved Sulphate: 128 mg/l	Metals: N/A Gen Chem: N/A
5456-SW1 (FD)	6/22/2022	Metals: ▪ Aluminum: 14 µg/L ▪ Iron: 390 µg/L Gen Chem: ▪ Dissolved Sulphate: 250 mg/l	Metals: ▪ Aluminum: 5.0 µg/L ▪ Iron: 300 µg/L Gen Chem: ▪ Dissolved Sulphate: 128 mg/l	Metals: N/A Gen Chem: N/A

Notes:

[1]: Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (Freshwater) (Table 3)

[2]: Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (Marine) (Table 3)

- Surface water samples 1636-SW1 and 1636-SW2 are compared to both marine and freshwater guidelines as this body of water is tidal influenced. The remainder of the surface water samples are compared to fresh water guidelines.

4. Summary and Findings

The findings and conclusions presented in this report apply only to the recognized environmental conditions assessed at the Site. **Table 6** below summarizes the findings related to soil, tailings, waste rock, groundwater, surface water, and sediment investigations completed as part of the scope of work for this Phase II ESA.

A remedial options analysis, as well as recommendations, are provided in the sections to follow.

Table 6: Phase II ESA Summary of Findings

Phase II ESA Activities		Phase II ESA Findings
Soil - Impact Assessment and Delineation		
1.	Three (3) hand auger locations on SCU 1: 4913-H1 to 4913-H3	Metals: ▪ Manganese, arsenic, and lead impacts were identified at one or more of the sampling locations: - Arsenic (Max. concentration: 32 mg/kg) - Manganese (Max. Concentration: 1,000 mg/kg) - Lead (Max. Concentration: 250 mg/kg) PAHs: ▪ No PAH impacts were identified.
2.	Twenty (20) hand auger locations on SCU 2: 9235-H1 to 9235-H7 9235-H10 to 9235-H20	Metals: ▪ Aluminum, arsenic, iron, lead, manganese, thallium, and vanadium impacts were noted at one of more of the sampling locations: - Aluminum (Max. Concentration: 51,000 mg/kg) - Arsenic (Max. Concentration: 140 mg/kg) - Iron (Max. Concentration: 85,000 mg/kg) - Lead (Max. Concentration: 3,400 mg/kg) - Manganese (Max. Concentration: 12,000 mg/kg) - Vanadium (Max. Concentration: 1,100 mg/kg) PAHs: ▪ Naphthalene and BTPE impacts were identified in one or more of the samples collected at this property: - Naphthalene (Max. Concentration: 7.6 mg/kg) - BTPE (Max. Concentration: 13 mg/kg)
3.	Three (3) hand auger locations on SCU 3: 1636-H1 to 1636-H3	Metals: ▪ No metals impacts were identified. PHCs: ▪ Benzene impacts were identified for all three (3) samples collected on this property, and MTPH impacts were noted for two (2) of the three (3) samples collected: - Benzene (Max. Concentration: 0.94 mg/kg) - MTPH (Max. Concentration: 180 mg/kg) PAHs: ▪ No PAH impacts were identified.
4.	Twelve (12) hand auger locations on SCU 4: 5456-H1 to 5456-H13	Metals: ▪ Arsenic, cobalt, iron, lead, manganese, and vanadium impacts were noted at one or more of the sampling locations: - Arsenic (Max. Concentration: 92 mg/kg) - Cobalt (Max. Concentration: 29 mg/kg) - Iron (Max. Concentration: 150,000 mg/kg) - Lead (Max. Concentration: 2,600 mg/kg) - Manganese (Max. Concentration: 6,400 mg/kg) - Vanadium (Max Concentration: 440 mg/kg) PHCs: ▪ Benzene (5.2 mg/kg), xylene (11 mg/kg) and MTPH (630 mg/kg) impacts were identified for the sample collected on this property.

Phase II ESA Activities		Phase II ESA Findings
		PAHs: ▪ Naphthalene (2.3 mg/kg) impacts were identified in one of the samples collected at this property.
5.	One (1) hand auger location on SCU 5: 4780-H1	Metals: ▪ Arsenic (35 mg/kg) and iron (39,000 mg/kg) impacts were noted on this property. PAHs: ▪ No PAH impacts were identified.
Surface Water– Assessment		
6.	Two (2) surface water locations on SCU 1: 4913-SW1 to 4913-SW2	Metals: ▪ Aluminum, iron and lead impacts were identified at both SW locations. ▪ In addition to those exceedances, the following impacts were also identified at one of the select SW locations: - Aluminum (Max. Concentration: 460 µg/L - Arsenic (Max. Concentration: 6.3 µg/L) - Cobalt (Max. Concentration: 1.3 µg/L) - Iron (Max. Concentration: 3,800 µg/L) - Lead (Max. Concentration: 4.4 µg/L) - Manganese (Max. Concentration: 630 µg/L) - Zinc (Max Concentration: 15 µg/L) PAHs: ▪ No PAH impacts were identified. Gen Chem: ▪ No Gen Chem impacts were identified.
7.	Two (2) surface water locations SCU 3: 1636-SW1 to 1636-SW2	Metals: ▪ Boron impacts were identified at both SW locations: - Boron (Max. Concentration: 1,800 µg/L) PAHs: ▪ No PAH impacts were identified. .
8.	One (1) surface water location on SCU 4: 5456-SW1	Metals: ▪ Aluminum (17 µg/L) and iron (410 µg/L) impacts were identified at this SW location. PAHs: ▪ No PAH impacts were identified. Gen Chem: ▪ Dissolved sulphate impacts (250 mg/L) were also identified at this SW location.
9.	One (1) surface water location on SCU 5: 4780-SW1	Metals: ▪ Aluminum (8.2 µg/L) and zinc (8 µg/L) impacts were identified at this SW location PAHs: ▪ No PAH impacts were identified. Gen Chem: ▪ Dissolved chloride impacts (190 mg/L) were also identified at this SW location

The vertical and horizontal extent of soil and groundwater contamination has not yet been determined. Additional work will need to be completed to determine this information, as described in **Section 9.0**.

5. Conceptual Site Model

The conceptual site model (CSM) for the Site is critical to understanding the sources from which the contaminants of concern (COCs) originate, the pathways through which these PCOCs can travel, and the receptors that are potentially exposed to these COCs.

The objective of the CSM is to is to characterize the surface and subsurface conditions that exist at the Site that can contribute to adverse effects and risks of excess exposures due to the release, fate and transport of contaminants of concern (COCs) from sources and surrounding impacted areas. This information will be used to identify risk management strategies to mitigate the sources and minimize the possibility for harmful exposures of human and ecological receptors to contaminant sources and releases of COCs.

At the Ocean Street Site, activities associated with the former steel plant and coal mining activities may have resulted in residual soil and groundwater impacts including the following PCOCs: heavy metals, PAHs, PCBs, VOCs, and PHCs. However, additional COCs identified in environmental samples collected from areas impacted by historic mining and steel plant activities at the Ocean Street Site and surrounding area would also be retained for further human health and ecological risk assessment.

The potential exposure pathways for human and ecological receptors at the Site include the following:

- Soil contact / ingestion
- Leaching to potable groundwater
- Inhalation of dusts and respirable particulate material (PM10; PM 2.5) in indoor / outdoor air; and
- Leaching to groundwater and groundwater discharging to surface water.
- Surface runoff to wetlands and surface water bodies.
- Plant root uptake and foliar uptake

5.1 Soil Contact / Ingestion

Impacted soil and waste rock are located on-Site and there are currently no barriers (i.e., fencing, asphalt, etc.) to protect human or ecological receptors from coming into contact with the impacted areas. Therefore the soil contact / ingestion pathway is considered to be operable.

5.2 Leaching to Potable Water

The surrounding area of the Site is non-potable. Therefore, the leaching to potable water pathway is not considered to be operable.

5.3 Inhalation of Indoor Air

The Inhalation of indoor air/vapour migration to indoor air pathway is considered to be operable since occupied buildings exist within 30 metres of the Site.

5.4 Inhalation of Outdoor Air

and the impacted soil and waste rock solids are relatively fine grained and are subject to dusting that can be carried with ground-level winds and dispersed along the direction of the prevailing winds. Therefore, the inhalation of outdoor air pathway is considered to be operable.

5.5 Leaching and Migrating to Off-Site Surface Water

Impacted soil and associated surface water runoff have been observed on-Site to be leading into Spanish Bay. The above Identified impacts are considered to be above the groundwater table, and leaching (from precipitation) to groundwater, and then migrating to surface water. Therefore, the leaching and migrating to off-site surface water pathway is considered to be operable.

6. Remedial Options Analysis

6.1 Remediation Components

Environmental investigations completed to-date have identified the following site components to require remedial measures:

1. Waste Rock: The Phase II Environmental Site Assessment has identified that approximately 250 cubic meters (m^3), based on preliminary field observations only, of slag and waste rock is present on-Site. Slag and waste rock was not sampled; however, soil samples were collected from the slag disposal area. These soil samples contained elevated arsenic, manganese, vanadium and other metal concentrations that may present an unacceptable risk of elevated exposures to arsenic and other toxic metals through leaching and dust released from slag and waste rock piles for human and ecological receptors. Remedial measures may be required to mitigate this risk. Further assessment of the potential risk to human health and ecological health is warranted
5. Impacted Soil Area: The Phase II Environmental Site Assessment has identified impacted soil in many areas of the Site, as delineation has not been achieved, AECOM is unable to accurately assess the volume of contaminated soil requiring remedial action. Based on the limited data and aerial imagery, AECOM is estimating that approximately 1,000 m^3 of soil containing elevated arsenic, lead and other metals concentrations that may present a human health risk exists on the Site. Remedial measures may be required to mitigate this risk. Further assessment of the potential risk to human health and ecological health is warranted
6. Debris: Remnants of historical mining and steel plant operations remain at site, including machine parts, wood and metal were identified as part of the Phase II Environmental Site Assessment. An estimated volume of 16 m^3 of debris may require management.
7. Impacted Surface Water: The Phase II Environmental Site Assessment (AECOM, 2022) has identified surface water impacted by metals, specifically aluminum, arsenic, boron, cobalt, iron, lead, manganese, and zinc based on limited sampling and analyses. Remedial measures may be required to mitigate any adverse effects in aquatic organisms. Further assessment of the potential risk to human health and ecological health is warranted. Human health and ecological risks may also be mitigated by taking remedial actions at the source of the impacts (waste rock, soils, etc.)

The following sections describe each of the above components in more detail, a presentation of remedial options and the recommended option for consideration in remedial action planning.

6.2 Evaluation Criteria

The remedial options were evaluated using a simplified Multiple Accounts Analysis (MAA) (**Appendix D**). This is a scoring method that considers multiple factors when evaluating remedial options. It provides a transparent method for remedial options evaluation that also largely removes personal bias, numerically scoring remedial options relative to one another according to set criteria.

The system is comprised of tiered evaluation, set up as a matrix. The first tier is comprised of categories, with each category then broken out into a second tier of individual criteria selected to be appropriate to the specific area/element being evaluated.

Four (4) categories were considered:

1. **Socio-Economic:** This category evaluates such items as community/stakeholder preferences or perceptions and socio-economic benefits to the local communities.

2. **Technical:** This category considers various technical issues related to remedial design, constructability, effectiveness, and considers health and safety to workers (or the public) during construction.
3. **Environment and Sustainability:** This category is intended to evaluate potential environmental impacts of each proposed remedial option relative to existing and post-remediation conditions. It considers the effect the option has on the greater environment and how protective the technologies applied to the option are when considering climate change, and regulatory considerations.
4. **Costs:** This category evaluates relative costs of the remedial options and considers this across multiple stages of the work, as applicable. It also considers operating maintenance and surveillance (OMS) costs.

Each category is then assigned a weighting to represent its relative importance for the project objectives. For this evaluation, the project team gave each the following:

- 20% Socio-Economic
- 25% Technical
- 30% Environment and Sustainability
- 20% Costs

Under each category, the project team proposed weighting criteria based on our knowledge of the site, its technical issues, the cost components to consider, and expected social/stakeholder concerns. **Table 7** below lists the MAA matrix with selected criteria for each category, and their rationale for evaluation purposes. Each criterion has also been assigned a weighting, based on the teams' experience of project element importance for contaminated sites, and in consideration of the variability of impact remedial options may have on that criterion. For example, using an example of impacted soils remediation under the Environment category, if none of the proposed remedial options will significantly improve the soil, then the soil criterion would be assigned a lower weighting. Similarly, if impacted soils were already generally acceptable and not a main driver in selection of the remedial option, then this would also prompt selection of a low weighting.

Based on the methodology used for MAA at other projects (Giant Mine, Great Bear Lake Sites, Stark Lake, Rayrock) AECOM assigned the following weighting for criteria:

- Low priority – assigned a value of 0.5,
- Required – assigned a value of 1.0, or
- High priority – assigned a value of 2.0.

A category weighting percentage value was then applied to reflect the relative importance of each of the four (4) categories (totalling 100%).

Table 7: Evaluation Criteria

Category Weight	Category	Criterion	Criterion Weight	Definition and/or Rationale
20%	Socio-Economic	Community Acceptance	2	• Considers the remediation alternative that aligns with existing community expectations and addresses the local communities' concerns.
		Use of Local Labour Force	1	• Considers whether the remedial alternative requires specialized training or experience that would prevent locals from assisting in the work.
25%	Technical	Constructability	2	• Considers ability to obtain required equipment and workers and transport to site and difficultly in implementing the remedial action (community ability to support).

Category Weight	Category	Criterion	Criterion Weight	Definition and/or Rationale
		Access/ Transportation to Site and within site	1	• Ability/ease to mobilize equipment to site and within site
		Worker Health & Safety	1	• Considers the potential health & safety risks to workers to implement the remedial measure.
		Effectiveness	2	• Considers the success of implementation and the life expectancy of the remedial measure and if it's acceptable to the regulatory agencies.
30%	Environment & Sustainability	Meets Remedial Objectives	2	• Considers the ability of an alternative to meet the intent of the Remedial Objectives
		Climate Change Considerations	1	• Includes all climate change considerations, including long-term stability in changing climate. • A high level of hydrocarbon consumption (diesel) has an impact on the carbon footprint (GHG) during hauling to site and during site work combustion, spill risks (transportation, storage, use). Consideration includes the level of effort (LOE) for truck transport mobilization for equipment and materials.
		Regulatory Acceptance	2	• Considers how acceptable the proposed remedial alternative will be to regulators, not including community engagement.
25%	Costs	Construction Costs (overall construction costs)	2	• Includes the costs for equipment, materials, and workers to be mobilized/demobilized to/from the site for construction season. Includes the costs to implement the remedial alternative, considering the remoteness of the area, length of time to complete the remedial measure and contingency.
		Ongoing Monitoring, Maintenance & Sampling Costs	1	• Includes costs related to maintenance & long-term monitoring, assuming all methods will require water, sediment and aquatic effect monitoring of all remaining water bodies.

Table D-1, in **Appendix D**, provides scoring rationale for each of the above criteria along with option scoring as discussed below. MAA scoring for the various options are provided in **Table D-2**, **Appendix D**.

6.3 Remediation Considerations

6.3.1 Site Access (Off-Site)

The former Ocean Street Steel Plant Site is located Sydney Mines, NS. The Site is easily accessed via vehicle and mobilization for contractor equipment will be via Ocean Street or Atlantic Street.

6.3.2 Site Access (On-Site)

As identified in **Section 2.4**, the parcel of land is almost entirely undeveloped, with the exception of remnants of foundations for the former steel plant exist on PIDs 15509235 (SCU 2) and 15505456 (SCU 4). Vegetation consists of a mixture of forest and shrubland, and several areas are found to have standing water and water-saturated soil.

The Site may require road maintenance for use during remediation. Borrow soil, if required, may need to be imported to Site or a suitable onsite borrow source may need to be identified.

Photograph 1: View of current roadway leading into Ocean Street Site (Google Earth, 2022)

6.3.3 Borrow Soil

Borrow soil, if required, may need to be imported to Site and sourced locally within Cape Breton Regional Municipality. Source location would be at contractor discretion, provided the material meets Site requirements. Alternatively, an on site borrow source may be identified.

6.3.4 Landfill Opportunities

There are no suitable locations on-site to store the debris and solid waste that was identified on-site. Debris and solid waste materials will be able to be disposed of at an approved landfill within Cape Breton Regional Municipality.

6.4 Waste Rock

The Phase II ESA identified both slag and waste rock on-Site. It is estimated that the amount of waste rock present on-Site to be in the order of 250 m^3. The approximate locations of the waste rock piles are shown on **Figure 3**, **Appendix A**. It should be noted that the quantity estimates are based on surrounding grade and the actual depth of waste rock was not measured during this ESA. Further investigation into the depth of the waste rock piles would be required to refine the estimated quantity of waste rock. Further assessment of the potential risk to human health and ecological health from exposure to toxic metals in waste rock released to the environment through leaching and dust generated by waste rock piles is warranted in the development and selection of preferred options for site remediation and site closure. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) should be required, as appropriate to the situationWaste rock remediation, if it is to occur on-Site, may or may not require full encapsulation of the waste rock. For example, the creation of a barrier between surface receptors (people, flora and fauna) and the material to protect against the soil direct contact pathway and against the potential for contact with leachate surface runoff and dust potentially containing toxic metals.

Photograph 2: View of graded waste rock (east corner of SCU 1)

Photograph 3: Waste Rockpresent in trails and grass

(central area of SCU 2 next to former foundations)

6.4.1 Option #1 – Excavation and Off-Site Disposal

The first remedial option presented for managing the waste rock is to remove the material for **off-site disposal**. This option would remove the waste from the Site and would not require any long-term monitoring or management.

Disadvantages associated with off-site disposal would be finding a waste disposal facility within reasonable proximity of the Site willing to accept this quantity of material and the cost of transportation and disposal. There is also more health and safety risks to the labour force associated with moving the large quantity of waste rock.

6.4.2 Option #2 – Soil Cap

The second remedial option presented for managing the waste rock is the consolidation of all site waste rock followed by covering through the placement of a **graded soil cap** atop the waste rock pile. The purpose of the cap would be

to create a physical barrier between persons occupying the site and the waste rock. The design intent would be to have a cap effective for a lifespan in the order of 100 years.

The waste rock could either be capped proximate to where it is currently located or consolidated at a new location. Given that remediation does not require full encapsulation of the waste rock, only the creation of a barrier between surface receptors and the material, provided sufficient sampling and testing of waste rock materials doesn't identify a high risk of leaching of potentially toxic levels of As and other metals. Consolidation and reshaping of the material proximate to its existing location may involve minimal material movement. An excavator and/or loader would be used to consolidate and shape the waste rock. Soil borrow is required to cover the material with this option.

Consolidation of the waste rock proximate to its existing location would require less material movement on site and limit the disturbance of a natural area for placement and remove the need to manage several locations of capped material. Soil capping should consider:

- Material placement must be undertaken in a manner that has long term stability and low risk of geotechnical failure. Steep slopes may present a risk to geotechnical stability.
- Material grading should be completed in a manner that allows for water drainage across the cover yet not be too steep and facilitate cover erosion.
- Engineering analysis should review the locations for material placement in detail paying close attention to grading requirements.
- The soil capping material must be constructed in a manner that fits aesthetically with the surrounding lands and is resilient to weather and erosion. Typical processes used for this included the use of coarse stone (rip rap sized greater than 10 cm) or soil with vegetation.
- Relocation of the waste rock requires significant material disturbance and appropriate measures (including material wetting), and worker protection will need to be undertaken to mitigate contaminant migration and personnel safety risks, including air quality monitoring and personal radiation exposure monitoring.
- The soil cap design would need to consider freeze/ thaw effects, cap longevity, potential climate change impacts, and radiation protection (if deemed necessary), amongst other items.

Additional considerations include:

- Site signage may need to be posted to identify the location of the covered waste rock to ensure that the area is not disturbed in the future.

Based on the above, Remediation Option 2 considers:

- Stripping and salvage of vegetation, surficial organics, and overburden soil.
- Placement and engineered grading of the waste rock within a topographic low.
- Provision of a 1 m thick soil cover. Assuming that 250 m^3 of waste rock is placed 3 m thick on average, the area requiring cover is approximately 450 m^2. Assuming 1 m thick of cover and some contingency/grading allowance (30%), the amount of borrow soil required is in the order of 600 m^3. Borrow soil would comprise stripped, graded, and compacted soil from an on site borrow source or imported fill.
- Borrow material may be sourced from the site, however a borrow study was not completed as part of the ESA, further borrow source investigation would be required to determine if suitable fill material existed on or near the site. Imported materials may be transported to Site from source locations within Cape Breton Regional Municipality and would be at the contractor discretion provided the material met the engineering specifications.
- Waste rock rock placement at a location of existing soil will require significant vegetation disturbance.
- There will be long term monitoring requirements related to the soil cap.

6.4.3 Option #3 – Soil/Synthetic Cap

The third remedial option presented for managing the waste rock is the design and placement of an **engineered cap** atop the waste rock piles either in place or as a consolidated and graded stockpile. The soil cap would generally be constructed as per Option 2; however, use a synthetic liner system (e.g., high density polyethylene (HDPE), bituminous geomembrane (BGM), etc.) to reduce the soil cap thickness and therefore reduce the amount of borrow soil required. Additional geosynthetics may need to be incorporated to reduce long term erosion and enhance cap stability. Climate change may increase the extreme weather occurrences and precipitation, which is also mitigated by the additional liner and geosynthetics. The less soil that is required for borrow the less natural disturbance is needed and accordingly the less amount of site reclamation is needed.

Design considerations are similar to Option 2. Synthetic liner design will be required (BGM is being used in several remediation projects in cold climates as of late due to its ease of application and long-life span). Some consideration will be required to identify a soil thickness that will have the longevity to stay atop the liner and not erode, also considering erosional effects due to climate change. General soil thickness will be engineered for the site conditions during detailed design and will require less thickness than a soil cap that does not use synthetics. Coarse blast rock could be effective in this regard. A synthetic liner has the added benefit of reducing the amount of rain and surface water that could come into contact with the waste rock and limit the transport of fine-grained material outside of the main waste rock pile.

The cost to construct an engineered cap may be greater than a graded soil cap; however, the benefits of a reduced borrow soil requirement (less area of borrow disturbance and/or less imported borrow requirements with less reclamation) may outweigh these higher costs.

Long term monitoring of the soil/synthetic cap would be required following remediation.

6.4.4 Option #4 – Risk Management

The fifth remedial option presented for managing the waste rock is **risk management**. Given the high levels of metals in waste rock, risk management by fencing off locations of waste rock (either as a consolidated stockpile or as individual stockpiles) to prevent human contact with the waste rock, and/or placing signage to identify hazardous areas should be required, as appropriate to the situation. While capital construction costs are lower than containment ongoing monitoring of the fences would be required. AECOM's understanding is that there is typically poor community acceptance of chain link fences as they may present harm to animals (in particular horned animals that may become entangled in the fences).

Risk management would be a cost-effective remedial option in the short term; however, is unlikely to meet with acceptance by the project team or the community. The option does not meet the remedial objectives well.

6.4.5 Option #5 – Leave in Place – No Remedial Action

A "Leave in Place – No Remedial Action" approach is considered to not be acceptable for this component of the project since it does not meet the project objectives.

6.4.6 Remedial Options Analysis/Recommendation

The remedial option scoring for waste rock management is provided in **Table D-2**, **Appendix D** with the summary results as follows:

Table 8: ROA for Waste Rock

Option	Score	Comments
Option 1: Excavation and Off-Site Disposal	16.9	Feasible option. Addresses the site issues over the long term and minimizes long-term monitoring requirements.
Option 2: Soil Cap	14.4	Feasible option
Option 3: Soil/Synthetic Cap	15.2	Feasible option, as Option 2; however, requires less site disturbance for borrow soils. Synthetics may result in greater cap stability.
Option 4: On-Site Risk Management	14.3	Anticipated low community acceptance. Does not address issue over the long term.
Option 5: Leave in Place – No Remedial Action	11.6	Anticipated low community/regulatory acceptance.

Based on a review of the remedial options, the recommended approach for waste rock management is through **excavation and off-site disposal**. This approach addresses the site issues over the long term and minimizes long-term monitoring requirements, while avoiding potential challenges with managing the waste rock on-site. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) prescribing proper conditions for handling and reuse of waste rock should be developed based on the potential for the release of toxic metals from waste rock through leaching and dissolution of metals from the rock and generation of rock dust, as appropriate to the situation.

Further risk assessment including taking into account the results of leachability testing is warranted to inform the preferred remedial and risk management option based on the level of concern and threat of release of toxic metals to the environment through leaching dissolution and dust and the potential for direct human contact with waste rock materials.

6.5 Impacted Soils

Impacted soils exist outside the horizontal and vertical limits of the waste rock piles on site. During the ESA, no delineation of impacted soils was achieved due to the limited data collected and the large area of impacted materials. All soil samples collected in attempt to delineate the impacted soil exceeded the applicable guidelines. As such, at this time, the impacted soil quantity can only be roughly estimated and the actual impacted soil quantity is unknown.

It is possible that a Human Health and Ecological Risk Assessment of the Site may aid in delineating the impacts requiring remediation with the data already collected. At this time, based on the available data and for the purpose of a preliminary ROAy, a preliminary estimate of approximately 1,000 m^3 of impacted soil exists on the site, this estimated is based on very preliminary data and excavation boundaries were assumed to be 5m by 5m around impacted soil samples and excavated to a depth of 1 m. Further soil sampling would be required to refine this estimate. Further assessment of the potential risk to human health and ecological health from exposure to toxic metals in impacted soils and the threat to groundwater and surface water, including potential threats to terrestrial and aquatic organisms is warranted. The outcome of the HHERA would better inform the development and selection of preferred options for site remediation and site closure based on the location and potential for complete exposure pathways to human and ecological receptors, as well as the distribution of metal impacts, the magnitude, and the frequency of potential exposures across the site. The HHRA would also inform the development of a Health and Safety Plan (HASP) and Risk Management Plan (RMP) which should be required, as appropriate to the situation.

6.5.1 Option #1 – Excavation and Off-Site Disposal

The first remedial option presented for the Site is **excavation and off-site disposal**. Impacted soils would be excavated using an excavator and shipped to a facility licensed to accept these soils. As the majority of the impacted soil is primarily impacted with metals exceedances, some samples do contain PAH and PHC impacts. These soils

will need to be based on their contaminants. As such all soil should be consolidated for shipment to an approved disposal facility which can accept soil with metals, PAH and PHC contamination.

The general steps for excavation and off-site disposal include the following:

- Excavate impacted soils from specified areas and packaged for transport according to TDG regulations.
- Impacted soil would then be transported to a licensed disposal facility.
- Backfilling of excavations, then re-contouring and re-vegetation would be completed as required in areas of excavation, once backfilling is complete.

This remedial option has the benefit of removing the impacted soil from the Site, and therefore prohibiting the need for future Site visits and long-term management of this soil.

6.5.2 Option #2 – Soil Cap

The second remedial option presented for managing the contaminated soil is the consolidation of all site contaminated soils followed by covering through the placement of a **graded soil cap** atop the soil pile. The purpose of the cap would be to create a physical barrier between persons occupying the site and the contaminated soil. The design intent would be to have a cap effective for a lifespan in the order of 100 years.

Contaminated soil could either be capped proximate to where it is currently located or consolidated at a new location. Given that remediation may not require full encapsulation of the contaminated soil, depending on the leachability of toxic metals and depth of soil impacts, only the creation of a barrier between surface receptors and the material, may be required to reduce exposure risk primarily related to the direct soil and dust contact pathway. Consolidation and reshaping of the material proximate to its existing location would require minimal material movement. An excavator and/or loader would be used to consolidate and shape the soil. Soil borrow is required to cover the material with this option.

Consolidation of the contaminated soil proximate to its existing location would require less material movement on site and limit the disturbance of a natural area for placement and remove the need to manage several locations of capped material. Soil capping should consider:

- Material placement atop soil areas must be undertaken in a manner that has long term stability and low risk of geotechnical failure. Steep slopes and or wet conditions may present a risk to geotechnical stability.
- Material grading should be completed in a manner that allows for water drainage across the cover yet not be too steep and facilitate cover erosion.
- Engineering analysis should review the locations for material placement in detail paying close attention to grading requirements.
- The soil capping material must be constructed in a manner that fits aesthetically with the surrounding lands and is resilient to weather and erosion. Typical processes used for this included the use of coarse stone (rip rap sized greater than 10 cm) or vegetation.
- Relocation of the contaminated soil may require significant material disturbance and appropriate measures (including potential material wetting), and worker protection will need to be undertaken to mitigate contaminant migration and personnel safety risks, including air quality monitoring and personal exposure monitoring.
- The soil cap design would need to consider freeze/ thaw effects, cap longevity, potential climate change impacts amongst other items.

Additional considerations include:

- Site signage may need to be posted to identify the location of the covered contaminated soil, to ensure that the area is not disturbed in the future.

Based on the above, Remediation Option 2 considers:

- Stripping and salvage of vegetation, surficial organics, and overburden soil.
- Placement and engineered grading of the tailings within this topographic low.
- Provision of a 1 m thick soil cover. Assuming that the 1000 m^2 of impacted soil areas are left in place, the area requiring cover is approximately 450 m^2. Assuming 1.0 m thick of cover and some contingency/grading allowance (30%), the amount of borrow soil required is in the order of 600 m^3. Borrow soil would comprise stripped, graded, and compacted soil from an on site borrow source or imported fill.
- Borrow material may be sourced from the site, however a borrow study was not completed as part of the ESA, further borrow source investigation would be required to determine if suitable fill material existed on or near the site. Imported materials may be transported to Site from source locations within Cape Breton Regional Municipality and would be at the contractor discretion provided the material met the engineering specifications.
- Contaminated soil placement at a location of existing soil will require significant vegetation disturbance.
- There will be long term monitoring requirements related to the soil cap.

6.5.3 Option #3 – Soil/Synthetic Cap

The third remedial option presented for managing the impacted soils is the design and placement of an **engineered cap** atop the impacted soils piles either in place or as a consolidated and graded stockpile. The soil cap would generally be constructed as per Option 2; however, use a synthetic liner system (e.g., high density polyethylene (HDPE), bituminous geomembrane (BGM), etc.) to reduce the soil cap thickness and therefore reduce the amount of borrow soil required. Additional geosynthetics may need to be incorporated to reduce long term erosion and enhance cap stability. Climate change may increase the extreme weather occurrences and precipitation, which is also mitigated by the additional liner and geosynthetics. The less soil that is required for borrow the less natural disturbance is needed and accordingly the less amount of site reclamation is needed.

Design considerations are similar to Option 2. Synthetic liner design will be required (BGM is being used in several northern remediation projects as of late due to its ease of application and long-life span). Some consideration will be required to identify a soil thickness that will have the longevity to stay atop the liner and not erode, also considering erosional effects due to climate change. General soil thickness will be engineered for the site conditions during detailed design and will require less thickness than a soil cap that does not use synthetics. Coarse blast rock could be effective in this regard. A synthetic liner has the added benefit of reducing the amount of rain and surface water that could come into contact with the waste rock and limit the transport of fine-grained material outside of the main soils pile.

The cost to construct an engineered cap may be greater than a graded soil cap; however, the benefits of a reduced borrow soil requirement (less area of borrow disturbance and/or less imported borrow requirements with less reclamation) may outweigh these higher costs.

Long term monitoring of the soil/synthetic cap would be required following remediation.

6.5.4 Option #4 – Risk Management

The fourth remedial option presented for managing the impacted soils is **risk management**. Given the high concentrations of arsenic and other toxic metals in impacted soil, risk management by fencing off locations of soils (either as a consolidated stockpile or as individual stockpiles) should be required to prevent human contact with the impacted soil, and or placing signage to identify hazardous areas. While capital construction costs are lower than containment, on-going monitoring of the fences would be required. AECOM's understanding is that there is typically poor community acceptance of chain link fences as they may present harm to animals (in particular horned animals that may become entangled in the fences).

6.5.5 Option #5 – Leave in Place – No Remedial Action

A "Leave in Place – No Remedial Action" approach is deemed to not be acceptable for this component of the project since it does not meet the remedial objectives.

6.5.6 Remedial Options Analysis/Recommendation

The remedial option scoring for impacted soil management is provided in **Table D-2**, **Appendix D** with the summary results as follows:

Table 9: ROA for Impacted Soil

Option	Score	Comments
Option 1: Excavation and Off-Site Disposal	16.0	Feasible option. Addresses the site issues over the long term and minimizes long-term monitoring requirements.
Option 2: Soil Cap	14.8	Feasible option
Option 3: Soil/Synesthetic Cap	14.9	Feasible option
Option 4: Risk Management	14.8	Anticipated low community acceptance and high long-term monitoring requirements
Option 5: Leave in Place – No Remedial Action	13.9	Anticipated low community/regulatory acceptance

Based on a review of the remedial options, the recommended approach for impacted soil management is through **Excavation and Off-Site Disposal**. This approach addresses the site issues over the long term. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) should be developed based on the potential for exposure to toxic metals in soil through direct contact with soil and soil runoff, and inhalation of respirable particles, as appropriate to the situation.

Further human health and ecological risk assessment (HHERA) taking into account the distribution, depth, magnitude and frequency of exposure of selected human and ecological receptors based on the location and accessibility is warranted to inform the preferred remedial and risk management option based on the level of concern and risk of adverse effects due to toxic metals in the environment through leaching to groundwater, releases to surface and potential for direct human contact with impacted soil and dusts and also possible exposure to toxic and bioaccumulative metals in soils through fishing hunting and wild edibles.

6.6 Surface Debris (Non-Wood Materials)

At the time of the site visit, various debris and waste (consisting of garbage, wood, tires, metal, etc.) were littered intermittently throughout the Site.

Table 10 below presents the audit results for discovered waste items.

Table 10: Waste Inventory

Location	Description	Approximate Coordinates		Estimated Quantity
		North	West	
Western side of the causeway (SCU 2)	Chunks of concrete	46°15'45.53"N	60°14'26.38"W	5 m^3
Property boundary of SCU 2	Metal debris	46°15'31.95"N	60°13'58.08"W	1 m^3
Property boundary of SCU 2	Waste/garbage	46°15'27.22"N	60°13'54.68"W	1 m^3

SCU 2 near parking lot	Waste/garbage	46°15'17.20"N	60°13'47.31"W	1 m^3
SCU 2 along the border with the Eastern private properties	Drainage ditch filled with litter and garbage	46°15'13.39"N	60°13'45.78"W	1 m^3
SCU 4 – possible encroachment from adjacent private property	Waste debris mound	46°15'1.91"N	60°13'36.74"W	5 m^3
SCU 1 undeveloped land	Waste/garbage	46°15'39.95"N	60°13'41.58"W	1 m^3
SCU 5 - encroachment at north end of property	Domestic debris	46°15'1.60"N	60°13'54.42"W	1 m^3

Remedial actions for the debris can be managed with the wastes identified in **Table 10** above as Non-Combustible Waste. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) including permits to properly dispose of waste should be developed, as appropriate to the situation and in accordance with the relevant Acts and Regulations for mining closure and NSE guidance.

6.6.1 Wood Waste Management

Wood waste should be managed on-Site due to the unnecessary need to dispose of off-Site. Wood can either be burnt or chipped for use as an organic supplement during reclamation activities. Ash would be containerized and disposed of off-Site with other disposal items. No further options are examined for wood waste management.

6.6.2 Option #1 – Construction of On-Site Landfill (Non-Combustible Waste)

The first remedial option presented for the disposal of non-hazardous waste is the **construction of an on-site landfill** or placement of the material with the waste rock. Typically, the landfill would be constructed using local borrow, lined, and constructed to have containment berms surrounding the footprint. Waste would be placed within the landfill and compacted with intermediate fill. As previously identified, construction of an on-Site landfill is likely not feasible.

6.6.3 Option #2 – Off-Site Disposal (Non-Combustible Waste)

The second option for the disposal of non-hazardous waste is **off-site disposal**. Non-combustible waste, including metal, barrels, empty drums, and small debris, can be crushed, containerized, and disposed of in an off-site landfill or recycled. Debris with non-hazardous paint can be sent to an off-site landfill.

No hazardous materials were identified on-site, however any unknown and potentially hazardous materials should be analyzed prior to disposal and if deemed to be hazardous sent to an off-site licensed disposal facility for hazardous waste.

Current practice is to generally recycle metals where possible and this is a preferred option as compared to on-Site disposal.

6.6.4 Option #3 – Leave in Place – No Remedial Action

A “Leave in Place – No Remedial Action” approach is considered to not be acceptable for this component of the project since it does not meet the remedial objectives.

6.6.5 Remedial Options Analysis/Recommendation

The ROA identifies that wood waste should be burnt or chipped and disposed of on-Site. No other remedial options are considered for these items. The remedial option scoring for metal debris is provided in **Table D-2**, **Appendix D** with the summary results as follows:

Table 11: ROA for Metal Debris Management

Option	Score	Comments
Option 1: On-Site Disposal	15.8	Feasible option
Option 2: Off-Site Disposal	19.5	Feasible option, better meets project objectives.
Option 3: Leave in Place – No Remedial Action	11.6	Anticipated low community/regulatory acceptance.

Based on a review of the remedial options, the recommended approach for metal debris management is through **off-Site disposal/recycling**. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) including permits to properly dispose of waste should be developed, as appropriate to the situation and in accordance with the relevant Acts and Regulations for mining closure and NSE guidance.

6.7 Impacted Surface Water

Impacted surface waste was identified in the ponded surface water bodies on-Site as part of the ESA. During the ESA, no delineation of impacted surface water was achieved due to the limited data collected. As such, at this time, the impacted surface water quantity cannot be estimated. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) including permits to contain and for proper disposal and or treatment and release of discharge water should be developed based on a risk evaluation of the potential for exposure to toxic metals in ponded water through direct contact, as appropriate to the situation and in accordance with the relevant Acts and Regulations for mining closure and NSE guidance.

6.7.1 Option #1 – Environmental Monitoring and Risk Assessment - No Remedial Action

At this time, based on the limited data collected, doing nothing with the impacted surface water in the surface water bodies on-Site may be a viable option as it is possible that by removing the source of the impacts on the subject site (waste rock, contaminated soil) the environmental quality of the surface water would improve.

6.7.2 Remedial Options Analysis/Recommendation

The remedial option scoring for impacted surface water is provided in **Table D-2**, **Appendix D** with the summary results as follows. The remedial options for the impacted surface water in the shaft and pond were scored separately.

Table 12: ROA for Impacted Surface Water – On-Site

Option	Score	Comments
Option 1: Environmental monitoring and risk assessment- no remedial action at this time	16.2	Based on limited data this is the only feasible option

Based on a review of the remedial options, the recommended approach for impacted surface water and sediment associated with the water course is to take no remedial action at this time (i.e., **do nothing**) other than monitoring changes in environmental loadings and the natural recovery and undertaking a human health and ecological risk assessment**.**

7. Recommended Remedial Options

Table 13 below provides a summary of the recommended remedial options for the Site. The detailed MAA scoring is presented in **Table D-2**, **Appendix D** to show how the recommended remedial approach was developed using the MAA process described in **Section 6.2** and as described herein.

Table 13: Summary of Recommended Remedial Approach

Environmental Concern	Recommended Remedial Approach
Waste Rock	▪ Excavate and dispose of at approved off-site facility
Impacted Soils	▪ Excavate and dispose of at approved off-site facility
Surface Debris (Non-Wood Materials)	▪ Off-site disposal and recycling
Impacted Surface Water	▪ No action required other than monitoring and risk assessment

7.1 Additional Site Considerations

In addition to the environmental issues and associated recommended remedial options above, there are additional site features, that may present physical hazards to the public, that should be considered, as described below.

7.1.1 Former Steel Plant Operations Areas

Building foundations remain present on the Site (SCU 2 and 4). **Table 14** below summarizes the remains that were identified on-site during the time of the site visit.

Table 14: Former Building Foundations

Location	Description
SCU 2 – north of former blast furnace	Building foundations
SCU 2	Former blast furnace
SCU 2 – south of blast furnace	Building foundations
SCU 2	Building foundation
SCU 2	Building foundation
SCU 2	Building foundation
SCU 2 - area known to be former “Coke Ovens”	Building foundation
SCU 4	Building foundation
SCU 4	Hearth’s foundation
SCU 4 - area formerly known as “open hearths” and “mixer”	Potential building rubble
SCU 4	General foundation remnants in the central property area

AECOM recommends the following:

Physical Hazards:

- Structures such as concrete foundations and exposed reinforcing steel pose physical hazards to members of the public who visit the Site. A survey of manmade structures should be conducted to identify those that require remedial actions to address physical hazards such as excessive drops, open pits, protruding steel and confined spaces. Required remedial actions should be conducted expeditiously.

7.1.2 Former Coal Mining Areas

The Princess / Queen Pit (Nova Scotia Steel & Coal Co. No. 5) Mine Workings are located beneath the majority of the Site. Mine working depths in the area appear to range from 73 m to 110 m (240 feet to 360 feet). Workings located at these depths do not typically represent a significant risk of subsidence, as noted in SLR (2009) (originally mentioned in Conestoga-Rovers & Associates 2007). A methane vent has been installed on the Princess Nature Trail, located immediately south of the subject site (per. comm., B. Campbell, PWGSC). Methane was reportedly accumulating in mine workings beneath the Site.

The Hub Seam outcrops across the centre of SCU 1, most of which is heavily wooded and so was not observed. However, the western boundary was accessible where evidence of at least one potential bootleg mine was also noted to be present in SCU 1.

Mine Workings:

- A detailed review of mining workings could be conducted to assess the potential for methane accumulation in the subsurface due to the presence of Princess/Queen Pit mine workings beneath the Site.

8. Recommendations

The overall regulatory goal for the site is to manage contamination to reduce related risks to acceptable levels in the environment, considering both humans and ecology and that these can be met by a variety of means acceptable to the Minister under the Regulation. To achieve this goal further environmental investigation and assessment is needed for supporting the development of a preferred remediation approach and Remedial Action Plan tailored to the site conditions and land use for the protection of human health and the environment.

Due to SAR, a full intrusive study of the subject Site(s) was not completed during the summer program as recommended by Department of Natural Resources and Renewables. Intrusive work is planned for the fall of 2022 which will help to further understand the subject site, including further delineation of impacts.

To further define the environmental impacts at the Site, the following additional information should be understood:

- Geophysics investigation to better define fill areas and potential groundwater plume areas.
- Full delineation of the impacted waste rock, and contaminated soil.
- Further assessment of the environmental availability and estimation of loadings of toxic metals in waste rock and impacted soils to groundwater and surface water, including wetlands, ponded water, Big Pond, and Spanish Bay.
- Test pitting within the waste rock piles areas to identify the depths.
- Survey of the waste rock piles to identify quantities on-Site.
- Further definition of the waste materials on-site including a hazardous materials assessment.
- Further assessment of the background quality of the soil.
- Further monitoring and assessment of metal uptake and bioaccumulation in terrestrial and aquatic organisms for evaluating the level of concern for ecological impacts and implications for exposure from ingestion of food and prey, including top predators and humans.
- Further groundwater investigations (borehole advancement and well installation) once Species at Risk (SAR) are not occupying the study area.

Several metals were identified as contaminants of concern (COCs) in soil and surface water. No exemptions to notification of contamination were identified based on the available information for the site (e.g., the estimated area and volume of impacted soil and the association of the COCs with releases with past mining activities, including tailings, groundwater and ponded water at the Site; the notification form of contamination should be completed and submitted within 90 days.

The following metals were identified as COCs, meaning one or more sample of one or more environmental media were in exceedance of the selected risk evaluation criteria (i.e., the applicable NSE Tier 1 EQSs or NS Geochemical Background levels in soil for select metals parameters (aluminum, iron, manganese and vanadium))

applied in the Phase II ESA specifically, aluminum, arsenic, boron, cobalt, iron, lead, manganese, vanadium and zinc. Of these metals, all are Substances Potentially Considered as Background Occurrences (listed in Table 5).

As the intended future land use for this Site was not known at the time of this ESA work, as such given the purpose of this ESA, ROA, and Cost Estimate, we have compared all analytical data to the NSE Tier 1 EQS for a residential/ parkland land use. Overall, the intended future land use should be identified prior to finalizing the remedial actions for the Site.

The above COCs should be retained for further study and risk assessment. The proposed next steps involve the following:

1. Determination of appropriate local/regional background levels and screening evaluation to refine the list of COCs and for the development of monitoring/remedial action levels for inclusion in the risk management plan (this will require additional study/data analyses/sampling and analysis),
2. Completing a Tier 2 risk evaluation against the applicable PSS for each location and media to refine the list of COCs.
3. A Human Health and Ecological Risk Assessment for the Site, including a problem formulation report that identifies areas of concern based on level of risk including the evaluation of potential release mechanisms of toxic metals in media such as through leaching and transport in ground water, surface water and dispersion of dust/ airborne particulates, and outlines additional studies to assess the environmental availability of select toxic metals to reduce uncertainties related to exposure risks for human and ecological receptors.
4. The development of acceptable remediation levels (RLs or SSTLs) based on the risk assessment for use in Risk Management and remedial action plan for determining remediation completion and inclusion in the confirmation report for the site as per the Contaminated Sites Regulation and other applicable protocols.
5. The identification of the preferred option(s) of alternate but acceptable long-term exposure management measures (EMMs), including requirements for long-term monitoring of selected exposure pathways, or Controls (such as engineering, physical, and administrative). Some alternate Control options have been presented in this report. Additionally, Administrative Controls restricting access to contamination. Administrative Controls may be applied to select areas at the Site. Administrative restricted access controls (e.g., building restriction for land use bylaws, zoning; contingency plans) should be for further consideration going forward.
6. Development and documentation of the Risk Management Plan to be completed in discussion with NSLI and key stakeholders, as per the PRO-600 Remedial Action Plan Protocol and applicable Regulations. This includes establishing monitoring action target levels for exposure pathways of concern that need to be monitored, developing a monitoring sampling plan and outlining actions to be taken if results exceed monitoring action levels. The requirements for engineering controls should also include details of the design, demonstration of effectiveness, ongoing monitoring and inspection of proper control function, and rationale for selection and requirements for long-term exposure management. The requirements for administrative controls should also include contingency plans, demonstration of effectiveness, and monitoring and inspection to ensure administrative controls remain effective overtime.

The purpose of risk assessment is to inform the selection of the preferred risk management options, including development of HASPs and RMPs as appropriate to the situation, based on the available information on the distribution and environmental availability of contaminants and the magnitude and frequency of environmental exposures due to known impacts and loadings from identified sources and the desired land use protection.

The proposed further risk evaluation through an assessment of applicable local/regional background, screening against the applicable Tier 2 PSS in the HHERA will help determine which COCs are the drivers of risk for each media and source, corresponding to the critical human and ecological receptors and critical exposure pathways for various areas of concern on the Site. Risk-based site-specific target levels for selected COCs could be used to guide and confirm effectiveness of the remedial action plan. By focusing efforts on risk drivers for specified areas of concern, the benefits of a risk-based approach may decrease the quantity of material requiring remedial action subsequently lowering the liability of the Site but will also underpin the risk management communication among stakeholders, including members of the community, with the goal of improving consensus-building on the remedial action plan going forward.

At the time of writing this report, no information on the future land use was available. Further discussions with NSLI regarding the overall desired endpoint for the future land use of the site in terms of Site Closure (i.e., undeveloped natural forest restoration, residential, commercial, industrial development) will be necessary to work towards a sustainable closure scenario under the relevant Acts and Regulations and applicable guidance. It is anticipated that future discussions will focus on additional work for understanding the site and implications for risk to human health and adverse environmental effects, as well as working towards the development of a risk management plan/remedial

action plan for the Site, considering a Conditional closure following a Limited Remediation pathway, involving a possible combination of Exposure Management Monitoring or Controls (engineering, physical, administrative) and risk-based corrective actions.

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Appendix A. Figures

REFERENCE
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0 250 500 750 1,000 m

AECOM

GENERAL SITE LOCATION MAP

CLIENT NAME: NOVA SCOTIA LANDS INC.	PROJECT LOCATION: OCEAN STREET FORMER STEEL PLANT

DRAWN BY: PC	SCALE: 1:30,000	FIGURE No. 1
CHECKED BY: JS	DATE: 2022-04-07	PROJECT NO: 60680173

Legend

PRIVATELY OWNED PARCEL THAT IS NOT INCLUDED IN THE STUDY AREA

PROPERTY BOUNDARY AS SHOWN ON NOVA SCOTIA PROPERTY ONLINE

REFERENCE
NS Property Record Database, Esri World Imagery

0 100 200 300 400 m

AECOM

SITE PLAN – PROPERTY BOUNDARY

CLIENT NAME:	PROJECT LOCATION:			
NOVA SCOTIA LANDS INC.	OCEAN STREET FORMER STEEL PLANT			
		DRAWN BY: PC	SCALE: 1:10,000	FIGURE No. **2**
		CHECKED BY: JS	DATE: 2022-04-01	PROJECT NO: 60680173

REFERENCE
NS Property Record Database, Esri World Imagery

0 100 200 300 400 m

AECOM

SITE PLAN – DETAILS

CLIENT NAME: NOVA SCOTIA LANDS INC.	PROJECT LOCATION: OCEAN STREET FORMER STEEL PLANT

DRAWN BY: PC	SCALE: 1:10,000	FIGURE No. **3**
CHECKED BY: JS	DATE: 2022-09-14	PROJECT NO: 60680173

LEGEND

- ▲ HAND AUGER SAMPLES
- SAMPLE EXCEEDS GUIDELINES FOR ONE OR MORE OF THE FOLLOWING PARAMETERS: METALS, PAHs AND/OR PHCs
- SAMPLE DOES NOT EXCEED GUIDELINES
- SAMPLES 5456-H10 AND 5456-H13 WERE ONLY ANALYZED FOR MODIFIED SOBEK

DRAWING NOTES

1. COORDINATE SYSTEM: NAD83 (CSRS.2010) NOVA SCOTIA ZONE 4. ELEVATIONS ARE IN METRES AND REFERENCED TO MEAN SEA LEVEL.
2. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID.

Issue Status: DRAFT

Last saved by: DOBRER(2022-09-26) Last Plotted: 2022-09-26
Filename: C:\01 AECOM\100 PROJECTE\2 OCEAN STREET_UPDATE_SOIL_SAMPLES\CAD SUPORT - OECAN STREET\MAIL TRIMIS 1\FIGURE 2 - OCEAN STREET - SOIL SAMPLE LOCATION PLAN.DWG

PHASE II ENVIRONMENTAL SITE ASSESSMENT

SOIL SAMPLE LOCATION PLAN

Nova Scotia Lands Inc., Ocean Street Former Steel Plant
Project No.: 60680173 Date: 2022-09-26

AECOM

Figure: 4

LEGEND

- SURFACE WATER SAMPLES
- SAMPLE EXCEEDS GUIDELINES FOR ONE OR MORE OF THE FOLLOWING PARAMETERS: METALS
- SAMPLE DOES NOT EXCEED GUIDELINES

DRAWING NOTES

1. COORDINATE SYSTEM: NAD83 (CSRS.2010) NOVA SCOTIA ZONE 4. ELEVATIONS ARE IN METRES AND REFERENCED TO MEAN SEA LEVEL.
2. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID.

Issue Status: DRAFT

Last saved by: DOBRER(2022-09-26) Last Plotted: 2022-09-26
Filename: C:\01.AECOM\00.PROJECTE\2.OCEAN STREET_UPDATE_SOIL_SAMPLES\CAD SUPORT - OECAN STREET\MAIL TRIMIS 1\FIGURE 3 - OCEAN STREET - SURFACE WATER LOCATION PLAN.DWG

PHASE II ENVIRONMENTAL SITE ASSESSMENT

SURFACE WATER LOCATION PLAN

Nova Scotia Lands Inc., Ocean Street Former Steel Plant
Project No.: 60680173 Date: 2022-09-26

AECOM

Figure: 5

Appendix B. Analytical Results

Ocean Street Former Steel Plant - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

			Sample Location	9235-H1	9235-H2	9235-H3	9235-H4	9235-H5	9235-H6	9235-H7	9235-H10	9235-H11
			Sample Date	6/21/2022	6/21/2022	6/21/2022	6/21/2022	6/21/2022	6/21/2022	6/21/2022	6/22/2022	6/22/2022
			Sample Depth (m bgs)	0.00 - 0.13	0.00 - 0.18	0.05-0.30	0.01-0.36	0.00-0.30	0 - 0.33	0.00 - 0.17	0.01 - 0.28	0.00 - 0.33
			Type [0]	N	N	N	N	N	N	N	N	N
Parameter	NS-EQS (T1B)/SO/RES/NON-POT/COARSE [1]	NS Background [2]	Units									
Aluminum	**15400**	**21340**	mg/kg	**51000**	14000	**47000**	2800	3500	3300	5100	11000	**17000**
Antimony	7.5	-	mg/kg	<2.0	<2.0	2.2	<2.0	2.2	<2.0	<2.0	<2.0	<2.0
Arsenic	**31**	**14.2**	mg/kg	10	**32**	**120**	**25**	**33**	7.4	8	**29**	**28**
Barium	6800	**91**	mg/kg	**330**	**200**	**200**	**230**	71	34	46	**140**	**170**
Beryllium	75	**1**	mg/kg	**14**	**1.3**	**2.7**	<1.0	<1.0	<1.0	1	**1.5**	**4.7**
Bismuth	-	-	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.2	4.5
Boron	4300	7	mg/kg	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**
Cadmium	14	**0.47**	mg/kg	<0.30	**0.48**	<0.30	<0.30	<0.30	<0.30	<0.30	**2.2**	**3.1**
Chromium	220	**57**	mg/kg	7.4	50	41	4	4.1	6.5	4.6	18	13
Cobalt	**22**	**11.2**	mg/kg	1.9	10	**17**	1.1	2.5	2.6	3.6	11	10
Copper	1100	**14.19**	mg/kg	6.7	**29**	**93**	**28**	**39**	3.8	**16**	**58**	**180**
Iron	**11000**	**38196**	mg/kg	**12000**	**41000**	**60000**	**12000**	**20000**	**13000**	**12000**	**49000**	**71000**
Lead	**140**	**54**	mg/kg	25	**92**	49	**64**	**69**	7	27	**820**	**3400**
Lithium	-	-	mg/kg	21	20	46	3	4.4	6.4	7	18	11
Manganese	**360**	**875**	mg/kg	**1600**	**4100**	180	46	170	260	250	**750**	**1700**
Mercury	6.6	**0.278**	mg/kg	<0.10	0.1	<0.10	**0.3**	0.13	<0.10	0.1	0.15	0.1
Molybdenum	110	**0.91**	mg/kg	**<2.0**	**<2.0**	**12**	**4.1**	**2.3**	**<2.0**	**<2.0**	**2**	**<2.0**
Nickel	200	**14.3**	mg/kg	3.1	**19**	**37**	3	5.3	3.7	8.8	**20**	14
Rubidium	NS	-	mg/kg	2.1	11	44	6.6	2.1	2	2.4	11	6.4
Selenium	80	**1.8**	mg/kg	1.8	0.77	**4.1**	1.4	1.4	<0.50	<0.50	0.88	1.3
Silver	77	**0.315**	mg/kg	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**1.1**
Strontium	9400	**29.2**	mg/kg	**350**	**55**	**340**	**40**	**30**	18	29	**40**	**100**
Thallium	1	**0.18**	mg/kg	<0.10	**0.31**	**0.85**	**0.97**	**0.32**	<0.10	<0.10	**0.38**	**0.25**
Tin	9400	**3.3**	mg/kg	<1.0	2.1	2.2	<1.0	**4.5**	<1.0	1.6	**11**	**20**
Uranium	23	**0.9**	mg/kg	**8.1**	**1.2**	0.9	0.4	0.82	0.53	0.81	0.84	**3.1**
Vanadium	**39**	**98**	mg/kg	**64**	**430**	**61**	8.2	11	14	14	32	**120**
Zinc	10000	**70.9**	mg/kg	34	**200**	31	29	27	19	69	**700**	**1600**

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

[1] NS-EQS (T1B)/SO/RES/NON-POT/COARSE: NSE non-potable residential.

[2] Estimates of geochemical background levels in soil for select metals parameters (aluminum, iron, manganese and vanadium) have been incorporated into this report. Nova Scotian geochemical background levels were based on soil geochemical data generated as part of the North American Soil Geochemical Landscapes Project (NASGLP) (67 sites) and the Environment Canada background soil database (63 sites). Nova Scotia soil (<2mm fraction) data (excluding outliers) collected from the Public Health interval (0-5cm) reveal the following 98th percentile geochemical background levels: aluminum: 21,340 mg/kg, iron: 38,196 mg/kg, manganese: 875 mg/kg, vanadium: 98 mg/kg.

yyyy/mm/dd: year/month/day
mbgs: meters below ground surface
mg/kg: milligrams per kilogram
< :Denotes concentration less than indicated detection limit
- :Not analyzed or not applicable

NS: No Standard

BOLD AND UNDERLINED Reportable Detection Limit (RDL) exceeds the regulatory standard

EXCEEDS CRITERIA OR BACKGROUND (highest of the two parameter values)

Ocean Street Former Steel Plant - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

			Sample Location	9235-H12	9235-H12	9235-H13	9235-H14	9235-H15	9235-H16	9235-H17	9235-H18	9235-H19
			Sample Date	6/22/2022	6/22/2022	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/23/2022
			Sample Depth (m bgs)	0.00 - 0.38	0.00 - 0.38	0.00 - 0.13	0.00 - 0.18	0.01 - 0.21	0.00 - 0.18	0.01 - 0.26	0.00 - 0.30	0.00 - 0.23
			Type [0]	N	FD	N	N	N	N	N	N	N
Parameter	NS-EQS (T1B)/SO/RES/NON-POT/COARSE [1]	NS Background [2]	Units									
Aluminum	**15400**	**21340**	mg/kg	6200	8300	**17000**	8400	6200	**18000**	9300	1700	9700
Antimony	7.5	-	mg/kg	2.6	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	**31**	**14.2**	mg/kg	**89**	**79**	**57**	**28**	**27**	**140**	**47**	**17**	**21**
Barium	6800	**91**	mg/kg	**200**	**240**	**210**	**290**	**160**	55	**250**	**280**	**210**
Beryllium	75	**1**	mg/kg	**1.2**	**1.5**	**4.3**	<1.0	<1.0	<1.0	<1.0	<1.0	**1.1**
Bismuth	-	-	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	3
Boron	4300	7	mg/kg	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**
Cadmium	14	**0.47**	mg/kg	**0.49**	0.45	**0.72**	0.45	0.39	<0.30	**1.3**	<0.30	**2.3**
Chromium	220	**57**	mg/kg	12	9.8	60	**110**	17	28	27	3.1	12
Cobalt	**22**	**11.2**	mg/kg	**14**	**14**	5.4	6.4	6.6	**21**	**14**	<1.0	9.6
Copper	1100	**14.19**	mg/kg	**71**	**55**	**18**	**22**	**64**	**37**	**69**	8.7	**34**
Iron	**11000**	**38196**	mg/kg	**60000**	**55000**	**58000**	**67000**	**38000**	**39000**	**85000**	**9400**	**40000**
Lead	**140**	**54**	mg/kg	**80**	**71**	**150**	**110**	**240**	**65**	**150**	16	**920**
Lithium	-	-	mg/kg	8.2	11	8.1	10	9.1	40	25	2.1	16
Manganese	**360**	**875**	mg/kg	**480**	**790**	**6500**	**12000**	**900**	**650**	**2500**	34	**580**
Mercury	6.6	**0.278**	mg/kg	**0.28**	**0.28**	<0.10	<0.10	0.17	<0.10	0.11	<0.10	0.12
Molybdenum	110	**0.91**	mg/kg	**20**	**13**	**<2.0**	**<2.0**	**2.4**	**<2.0**	**2.1**	**2**	**<2.0**
Nickel	200	**14.3**	mg/kg	**28**	**28**	7.7	10	14	**34**	**34**	2.7	**19**
Rubidium	NS	-	mg/kg	4.5	4	3.8	6.2	4.6	8.3	6	2.5	12
Selenium	80	**1.8**	mg/kg	**3.1**	**2.3**	1	<0.50	0.72	<0.50	0.61	**3.4**	0.7
Silver	77	**0.315**	mg/kg	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**
Strontium	9400	**29.2**	mg/kg	**62**	**62**	**130**	**80**	27	**87**	**56**	11	**48**
Thallium	1	**0.18**	mg/kg	**0.99**	**0.71**	<0.10	0.1	**0.64**	0.16	0.18	<0.10	**0.38**
Tin	9400	**3.3**	mg/kg	1.8	1.7	1.7	**5**	**7.3**	<1.0	**19**	<1.0	**5.2**
Uranium	23	**0.9**	mg/kg	**1**	0.81	**3**	0.63	0.37	0.58	0.41	0.43	0.61
Vanadium	**39**	**98**	mg/kg	23	22	**710**	**1100**	**94**	25	**61**	5.9	29
Zinc	10000	**70.9**	mg/kg	**110**	**91**	**98**	**85**	**120**	**180**	**470**	15	**780**

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

[1] NS-EQS (T1B)/SO/RES/NON-POT/COARSE: NSE non-potable residential.

[2] Estimates of geochemical background levels in soil for select metals parameters (aluminum, iron, manganese and vanadium) have been incorporated into this report. Nova Scotian geochemical background levels were based on soil geochemical data generated as part of the North American Soil Geochemical Landscapes Project (NASGLP) (67 sites) and the Environment Canada background soil database (63 sites). Nova Scotia soil (<2mm fraction) data (excluding outliers) collected from the Public Health interval (0-5cm) reveal the following 98th percentile geochemical background levels: aluminum: 21,340 mg/kg, iron: 38,196 mg/kg, manganese: 875 mg/kg, vanadium: 98 mg/kg.

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EXCEEDS CRITERIA OR BACKGROUND (highest of the two parameter values)

Ocean Street Former Steel Plant - Phase II ESA
Table 1: Soil Analytical Results
Metals

			Sample Location	**9235-H20**	**9235-H20**	**1636-H1**	**1636-H2**	**1636-H3**	**5456-H1**	**5456-H2**	**5456-H2**	**5456-H3**
			Sample Date	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022
			Sample Depth (m bgs)	0.01 - 0.31	0.01 - 0.31	0.01 - 0.31	0.01 - 0.31	0.05 - 0.30	0.00 -0.25	0.00 -0.25	0.00 -0.25	0.00 - 0.13
			Type [0]	N	FD	N	N	N	N	N	FD	N
Parameter	NS-EQS (T1B)/SO/RES/NON-POT/COARSE [1]	NS Background [2]	Units									
Aluminum	**15400**	**21340**	mg/kg	13000	15000	3100	2300	1900	14000	9300	8200	5600
Antimony	7.5	-	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	**31**	**14.2**	mg/kg	12	**15**	5.6	8.8	6.6	9.2	**31**	**35**	**64**
Barium	6800	**91**	mg/kg	**120**	**150**	12	7.4	7.9	**130**	**180**	**210**	**110**
Beryllium	75	**1**	mg/kg	**2.7**	**3.2**	<1.0	<1.0	<1.0	**1.6**	<1.0	<1.0	<1.0
Bismuth	-	-	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	7	mg/kg	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**
Cadmium	14	**0.47**	mg/kg	**0.58**	**0.76**	<0.30	<0.30	<0.30	<0.30	**0.53**	**0.68**	**0.64**
Chromium	220	**57**	mg/kg	8.5	9.9	3.2	2.4	2.8	21	9.1	9.9	8.8
Cobalt	**22**	**11.2**	mg/kg	5.6	6	1.7	1.2	<1.0	**21**	**25**	**23**	7.2
Copper	1100	**14.19**	mg/kg	**95**	**74**	6.6	11	7.6	**29**	**28**	**29**	**25**
Iron	**11000**	**38196**	mg/kg	**30000**	**34000**	5800	6800	3600	**29000**	**27000**	**25000**	**52000**
Lead	**140**	**54**	mg/kg	**130**	**150**	9.7	23	20	25	**110**	**110**	**380**
Lithium	-	-	mg/kg	16	20	5.7	3.4	3.3	23	13	12	7.6
Manganese	**360**	**875**	mg/kg	**570**	**680**	60	57	31	**3100**	**3100**	**3300**	**440**
Mercury	6.6	**0.278**	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	0.17	0.22
Molybdenum	110	**0.91**	mg/kg	**<2.0**	**<2.0**	**<2.0**	**<2.0**	**<2.0**	**<2.0**	**2.1**	**2.3**	**3.5**
Nickel	200	**14.3**	mg/kg	9.4	9.3	4.4	3.1	2.2	**34**	**31**	**31**	12
Rubidium	NS	-	mg/kg	5	6.1	<2.0	<2.0	<2.0	12	5.6	5.9	7.5
Selenium	80	**1.8**	mg/kg	0.64	1	<0.50	<0.50	<0.50	<0.50	1.7	1.8	**2.4**
Silver	77	**0.315**	mg/kg	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**
Strontium	9400	**29.2**	mg/kg	**63**	**72**	12	7.3	11	**33**	19	21	**35**
Thallium	1	**0.18**	mg/kg	<0.10	0.15	<0.10	<0.10	<0.10	0.12	**0.25**	**0.28**	**0.64**
Tin	9400	**3.3**	mg/kg	**12**	**5.8**	<1.0	<1.0	<1.0	<1.0	1.3	2.5	2.3
Uranium	23	**0.9**	mg/kg	**1.8**	**2**	0.6	0.29	0.49	**1.3**	0.45	0.45	0.8
Vanadium	**39**	**98**	mg/kg	32	35	7.2	5.5	7	**54**	19	24	**42**
Zinc	10000	**70.9**	mg/kg	**260**	**280**	24	24	9	**84**	**97**	**90**	**130**

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

[1] NS-EQS (T1B)/SO/RES/NON-POT/COARSE: NSE non-potable residential.

[2] Estimates of geochemical background levels in soil for select metals parameters (aluminum, iron, manganese and vanadium) have been incorporated into this report. Nova Scotian geochemical background levels were based on soil geochemical data generated as part of the North American Soil Geochemical Landscapes Project (NASGLP) (67 sites) and the Environment Canada background soil database (63 sites). Nova Scotia soil (<2mm fraction) data (excluding outliers) collected from the Public Health interval (0-5cm) reveal the following 98th percentile geochemical background levels: aluminum: 21,340 mg/kg, iron: 38,196 mg/kg, manganese: 875 mg/kg, vanadium: 98 mg/kg.

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EXCEEDS CRITERIA OR BACKGROUND (highest of the two parameter values)

Ocean Street Former Steel Plant - Phase II ESA
Table 1: Soil Analytical Results
Metals

			Sample Location	**5456-H4**	**5456-H5**	**5456-H6**	**5456-H7**	**5456-H8**	**5456-H9**	**5456-H11**	**DUP 5**
			Sample Date	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022
			Sample Depth (m bgs)	0.01 -0.26	0.01 - 0.26	0.01 - 0.20	0.00 - 0.30	0.00 - 0.13	0.01 - 0.30	0.01 - 0.30	0.00 - 0.30
			Type [0]	N	N	N	N	N	N	N	N
Parameter	NS-EQS (T1B)/SO/RES/NON-POT/COARSE [1]	NS Background [2]	Units								
Aluminum	**15400**	**21340**	mg/kg	8100	4900	9900	6100	6200	**16000**	6000	1200
Antimony	7.5	-	mg/kg	<2.0	<2.0	<2.0	<2.0	6.9	<2.0	4.6	<2.0
Arsenic	**31**	**14.2**	mg/kg	**24**	**20**	**80**	**30**	**22**	**18**	**92**	**60**
Barium	6800	**91**	mg/kg	**150**	**140**	**160**	43	**1400**	**100**	**290**	**240**
Beryllium	75	**1**	mg/kg	<1.0	<1.0	<1.0	<1.0	1	<1.0	<1.0	<1.0
Bismuth	-	-	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	7	mg/kg	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**
Cadmium	14	**0.47**	mg/kg	<0.30	<0.30	**1.8**	<0.30	**2.2**	<0.30	0.42	<0.30
Chromium	220	**57**	mg/kg	15	5.1	24	11	**180**	23	33	3.4
Cobalt	**22**	**11.2**	mg/kg	7.4	3.7	11	3.6	6.6	**29**	**16**	<1.0
Copper	1100	**14.19**	mg/kg	**22**	**18**	**57**	**19**	**79**	**29**	**89**	7.6
Iron	**11000**	**38196**	mg/kg	**29000**	**16000**	**64000**	**24000**	**150000**	**37000**	**110000**	**22000**
Lead	**140**	**54**	mg/kg	26	**140**	**270**	44	**2600**	**62**	**380**	33
Lithium	-	-	mg/kg	10	5.8	14	10	6.2	24	6.5	<2.0
Manganese	**360**	**875**	mg/kg	330	**410**	**740**	220	**5900**	**6400**	**1400**	44
Mercury	6.6	**0.278**	mg/kg	0.1	<0.10	0.17	0.11	<0.10	0.15	0.2	**0.31**
Molybdenum	110	**0.91**	mg/kg	**<2.0**	**<2.0**	**4.3**	**<2.0**	**3**	**2.6**	**5.7**	**4.5**
Nickel	200	**14.3**	mg/kg	**17**	9.2	**28**	9.9	13	14	**28**	<2.0
Rubidium	NS	-	mg/kg	7.4	4	9	8.4	<2.0	10	3.4	3.9
Selenium	80	**1.8**	mg/kg	1.3	0.66	0.97	1.2	<0.50	1.4	**1.9**	**4.4**
Silver	77	**0.315**	mg/kg	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**2.9**	**<0.50**	**<0.50**	**<0.50**
Strontium	9400	**29.2**	mg/kg	13	10	19	20	**240**	12	29	11
Thallium	1	**0.18**	mg/kg	0.15	0.12	**0.35**	**0.28**	0.16	**0.27**	**0.37**	**0.36**
Tin	9400	**3.3**	mg/kg	<1.0	<1.0	**73**	<1.0	**20**	<1.0	**9.7**	<1.0
Uranium	23	**0.9**	mg/kg	0.43	0.32	0.68	0.23	**3.2**	0.86	0.69	0.11
Vanadium	**39**	**98**	mg/kg	28	15	27	12	**440**	**42**	**110**	15
Zinc	10000	**70.9**	mg/kg	44	56	**110**	56	**210**	**78**	**130**	6

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

[1] NS-EQS (T1B)/SO/RES/NON-POT/COARSE: NSE non-potable residential.

[2] Estimates of geochemical background levels in soil for select metals parameters (aluminum, iron, manganese and vanadium) have been incorporated into this report. Nova Scotian geochemical background levels were based on soil geochemical data generated as part of the North American Soil Geochemical Landscapes Project (NASGLP) (67 sites) and the Environment Canada background soil database (63 sites). Nova Scotia soil (<2mm fraction) data (excluding outliers) collected from the Public Health interval (0-5cm) reveal the following 98th percentile geochemical background levels: aluminum: 21,340 mg/kg, iron: 38,196 mg/kg, manganese: 875 mg/kg, vanadium: 98 mg/kg.

yyyy/mm/dd: year/month/day
mbgs: meters below ground surface
mg/kg: milligrams per kilogram
< :Denotes concentration less than indicated detection limit
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BOLD AND UNDERLINED Reportable Detection Limit (RDL) exceeds the regulatory standard

EXCEEDS CRITERIA OR BACKGROUND (highest of the two parameter values)

Ocean Street Former Steel Plant - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

			Sample Location	**4780-H1**	**4913-H1**	**4913-H2**	**4913-H3**
			Sample Date	6/22/2022	6/22/2022	6/22/2022	6/22/2022
			Sample Depth (m bgs)	0.00 - 0.20	0.01 - 0.23	0.00 - 0.15	0.00 -0.20
			Type [0]	N	N	N	N
Parameter	NS-EQS (T1B)/SO/RES/NON-POT/COARSE [1]	NS Background [2]	Units				
Aluminum	**15400**	**21340**	mg/kg	7700	15000	12000	12000
Antimony	7.5	-	mg/kg	4.1	<2.0	<2.0	<2.0
Arsenic	**31**	**14.2**	mg/kg	**35**	**17**	**32**	**20**
Barium	6800	**91**	mg/kg	91	90	57	77
Beryllium	75	**1**	mg/kg	**1.6**	**1.3**	<1.0	<1.0
Bismuth	-	-	mg/kg	<2.0	<2.0	<2.0	<2.0
Boron	4300	7	mg/kg	**<50**	**<50**	**<50**	**<50**
Cadmium	14	**0.47**	mg/kg	**0.55**	<0.30	<0.30	**0.51**
Chromium	220	**57**	mg/kg	11	23	9.6	14
Cobalt	**22**	**11.2**	mg/kg	6.6	**14**	3.4	5.8
Copper	1100	**14.19**	mg/kg	**140**	**27**	14	**67**
Iron	**11000**	**38196**	mg/kg	**39000**	**31000**	**24000**	**21000**
Lead	**140**	**54**	mg/kg	**130**	50	**160**	**250**
Lithium	-	-	mg/kg	8.8	24	8.2	6.7
Manganese	**360**	**875**	mg/kg	270	**1000**	320	**760**
Mercury	6.6	**0.278**	mg/kg	0.22	0.11	0.14	0.3
Molybdenum	110	**0.91**	mg/kg	**4.4**	**<2.0**	**2.2**	**<2.0**
Nickel	200	**14.3**	mg/kg	**25**	**23**	5.8	**15**
Rubidium	NS	-	mg/kg	3.8	9.2	8.8	5.5
Selenium	80	**1.8**	mg/kg	**2.6**	0.72	1.1	**2.2**
Silver	77	**0.315**	mg/kg	**<0.50**	**<0.50**	**<0.50**	**<0.50**
Strontium	9400	**29.2**	mg/kg	**44**	24	10	**38**
Thallium	1	**0.18**	mg/kg	**0.34**	0.14	**0.38**	**0.27**
Tin	9400	**3.3**	mg/kg	**8.4**	<1.0	1.9	1.8
Uranium	23	**0.9**	mg/kg	**1.6**	**1.2**	0.41	**1.2**
Vanadium	**39**	**98**	mg/kg	17	38	**44**	28
Zinc	10000	**70.9**	mg/kg	**140**	**97**	36	55

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

[1] NS-EQS (T1B)/SO/RES/NON-POT/COARSE: NSE non-potable residential.

[2] Estimates of geochemical background levels in soil for select metals parameters (aluminum, iron, manganese and vanadium) have been incorporated into this report. Nova Scotian geochemical background levels were based on soil geochemical data generated as part of the North American Soil Geochemical Landscapes Project (NASGLP) (67 sites) and the Environment Canada background soil database (63 sites). Nova Scotia soil (<2mm fraction) data (excluding outliers) collected from the Public Health interval (0-5cm) reveal the following 98th percentile geochemical background levels: aluminum: 21,340 mg/kg, iron: 38,196 mg/kg, manganese: 875 mg/kg, vanadium: 98 mg/kg.

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EXCEEDS CRITERIA OR BACKGROUND (highest of the two parameter values)

Ocean Street Former Steel Plant - Phase II ESA
Table 1: Soil Analytical Results
PAHs

AECOM

		Sample Location	**9235-H1**	**9235-H2**	**9235-H3**	**9235-H4**	**9235-H5**	**9235-H6**	**9235-H7**	**9235-H10**	**9235-H11**	**9235-H12**	**9235-H12**	**9235-H13**
		Sample Date	6/21/2022	6/21/2022	6/21/2022	6/21/2022	6/21/2022	6/21/2022	6/21/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/23/2022
		Sample Depth (m bgs)	0.00 - 0.13	0.00 - 0.18	0.05 - 0.30	0.01 - 0.36	0.00 - 0.30	0.00 - 0.33	0.00 - 0.17	0.01 - 0.28	0.01 - 0.34	0.00 - 0.38	0.00 - 0.38	0.00 - 0.13
		Type [0]	N	N	N	N	N	N	N	N	N	N	FD	N
Parameter	NS-EQS (T1B)/SO/RES/NON-POT/COARSE [1]	Units												
Acenaphthene	3900	mg/kg	<0.010	<0.030 (1)	<0.010	<0.10 (1)	<0.22 (1)	<0.010	<0.040 (1)	0.05	<0.050 (1)	<0.40 (1)	<0.11 (1)	<0.010
Acenaphthylene	4.5	mg/kg	<0.010	<0.030 (1)	<0.010	<0.010	<0.020 (1)	<0.010	<0.010	0.046	<0.030 (1)	<0.080 (1)	<0.070 (1)	<0.010
Anthracene	24000	mg/kg	<0.010	0.038	<0.010	0.037	0.081	<0.010	0.02	0.19	0.043	0.27	0.22	<0.010
Benzo(A)Anthracene	NS	mg/kg	<0.010	0.14	<0.010	0.14	<0.22 (1)	<0.010	0.05	0.59	0.13	0.71	0.49	<0.010
Benzo(A)Pyrene	NS	mg/kg	<0.010	0.12	<0.010	0.048	0.078	<0.010	0.031	0.52	0.094	0.34	0.22	<0.010
Benzo(b)Fluoranthene	NS	mg/kg	<0.010	0.095	<0.010	0.061	0.1	<0.010	0.034	0.49	0.1	0.34	0.23	<0.010
Benzo(b+j)fluoranthene	NS	mg/kg	<0.020	0.16	<0.020	0.099	0.16	<0.020	0.053	0.78	0.16	0.56	0.36	<0.020
Benzo(e)pyrene	NS	mg/kg	<0.010	0.071	<0.010	0.052	0.072	<0.010	0.03	0.32	0.068	0.16	0.11	<0.010
Benzo(G,H,I)Perylene	NS	mg/kg	<0.010	0.064	<0.010	0.038	0.061	<0.010	0.019	0.28	0.059	0.22	0.14	<0.010
Benzo(k)Fluoranthene	NS	mg/kg	<0.010	0.062	<0.010	0.023	0.044	<0.010	0.016	0.28	0.053	0.18	0.11	<0.010
Chrysene	NS	mg/kg	0.017	0.14	<0.010	0.21	0.25	<0.010	0.074	0.66	0.18	0.71	0.51	<0.010
Dibenzo(A,H)Anthracene	NS	mg/kg	<0.010	0.016	<0.010	<0.010	0.016	<0.010	<0.010	0.072	0.014	0.049	0.037	<0.010
Fluoranthene	3500	mg/kg	0.025	0.22	<0.010	0.18	0.26	<0.010	0.07	1.2	0.27	1.1	0.81	0.02
Fluorene	2700	mg/kg	<0.010	<0.030 (1)	<0.010	<0.050 (1)	<0.070 (1)	<0.010	<0.030 (1)	0.06	<0.030 (1)	<0.20 (1)	0.11	<0.010
Indeno(1,2,3-cd)pyrene	NS	mg/kg	<0.010	0.055	<0.010	0.017	0.034	<0.010	0.015	0.27	0.051	0.12	0.08	<0.010
Methylnaphthalene, 1-	72	mg/kg	0.05	0.17	<0.010	3.8	2	<0.010	0.63	0.33	0.31	3.9	3.4	0.029
Methylnaphthalene, 2-	72	mg/kg	0.066	0.21	<0.010	5.6	2.3	<0.010	0.79	0.42	0.41	4	3.6	0.038
Naphthalene	**2.2**	mg/kg	0.045	0.14	<0.010	**5.7**	1.6	<0.010	0.58	0.33	0.35	**2.7**	**2.3**	0.024
Perylene	NS	mg/kg	<0.010	0.025	<0.010	<0.010	<0.010	<0.010	<0.010	0.12	0.019	0.057	0.039	<0.010
Phenanthrene	NS	mg/kg	0.07	0.26	<0.010	1.5	1.2	<0.010	0.3	0.78	0.39	2.6	2.2	0.022
Pyrene	2100	mg/kg	0.023	0.19	<0.010	0.22	0.31	<0.010	0.078	1	0.23	1	0.76	0.017
Benzo[a]pyrene TPE	**5.3**	mg/kg	<0.03	0.18	<0.03	0.08	0.12	<0.03	0.05	0.79	0.15	0.55	0.36	<0.03

Notes:

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EXCEEDS CRITERIA

Ocean Street Former Steel Plant - Phase II ESA
Table 1: Soil Analytical Results
PAHs

AECOM

		Sample Location	**9235-H14**	**9235-H15**	**9235-H16**	**9235-H17**	**9235-H18**	**9235-H19**	**9235-H20**	**9235-H20**	**1636-H1**	**1636-H2**	**1636-H3**	**5456-H1**	**5456-H2**
		Sample Date	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/23/2022	6/22/2022	6/22/2022
		Sample Depth (m bgs)	0.00 - 0.18	0.01 - 0.23	0.00 - 0.18	0.01 - 0.2	0.00 - 0.30	0.00 -0.23	0.01 - 0.30	0.01 - 0.30	0.01 - 0.31	0.01 - 0.31	0.05 - 0.30	0.00 -0.25	0.00 -0.25
		Type [0]	N	N	N	N	N	N	N	FD	N	N	N	N	N
Parameter	NS-EQS (T1B)/SO/RES/NON-POT/COARSE [1]	Units													
Acenaphthene	3900	mg/kg	<0.010	0.16	<0.010	0.24	<0.48 (1)	0.052	<0.010	<0.010	<0.060 (1)	<0.050 (1)	<0.070 (1)	<0.020 (1)	<0.11 (1)
Acenaphthylene	4.5	mg/kg	0.018	0.49	<0.010	2.2	<0.050 (1)	0.18	0.032	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Anthracene	24000	mg/kg	0.043	0.89	<0.010	2.8	<0.040 (1)	0.23	0.054	0.035	<0.030 (1)	<0.040 (1)	<0.040 (1)	<0.030 (1)	<0.030 (1)
Benzo(A)Anthracene	NS	mg/kg	0.089	2.6	0.021	9.8	0.35	0.66	0.18	0.11	0.077	0.079	0.1	0.064	0.15
Benzo(A)Pyrene	NS	mg/kg	0.077	1.9	<0.020 (1)	9	0.095	0.59	0.15	0.099	0.042	0.047	0.049	0.048	0.051
Benzo(b)Fluoranthene	NS	mg/kg	0.077	1.6	0.016	7	0.15	0.52	0.15	0.099	0.046	0.052	0.054	0.053	0.074
Benzo(b+j)fluoranthene	NS	mg/kg	0.12	2.7	<0.020	11	0.15	0.83	0.24	0.16	0.071	0.081	0.086	0.082	0.12
Benzo(e)pyrene	NS	mg/kg	0.071	0.93	0.013	5.2	0.072	0.37	0.11	0.075	0.03	0.034	0.035	0.035	0.042
Benzo(G,H,I)Perylene	NS	mg/kg	0.046	1.1	<0.010	4.4	<0.080 (1)	0.31	0.088	0.057	0.025	0.029	0.032	0.029	0.041
Benzo(k)Fluoranthene	NS	mg/kg	0.043	1.1	<0.010	4.3	0.049	0.32	0.082	0.055	0.019	0.024	0.028	0.025	0.028
Chrysene	NS	mg/kg	0.094	2.6	0.02	9.8	0.67	0.77	0.21	0.14	0.14	0.12	0.17	0.11	0.26
Dibenzo(A,H)Anthracene	NS	mg/kg	<0.010	0.26	<0.010	1.2	<0.030 (1)	0.069	0.023	0.018	<0.010	<0.010	<0.010	<0.010	<0.010
Fluoranthene	3500	mg/kg	0.16	5.4	0.043	18	0.4	1.7	0.34	0.26	0.089	0.14	0.13	0.13	0.2
Fluorene	2700	mg/kg	<0.010	0.2	<0.010	0.7	<0.32 (1)	0.087	0.013	<0.010	<0.050 (1)	<0.040 (1)	<0.060 (1)	<0.020 (1)	<0.080 (1)
Indeno(1,2,3-cd)pyrene	NS	mg/kg	0.052	0.89	0.012	4.7	<0.030 (1)	0.31	0.096	0.058	<0.010	0.02	0.018	0.023	0.018
Methylnaphthalene, 1-	72	mg/kg	0.13	0.73	<0.010	0.36	10	0.25	0.065	0.066	1	0.86	1.3	0.32	1.8
Methylnaphthalene, 2-	72	mg/kg	0.17	0.82	<0.010	0.37	13	0.3	0.079	0.082	1.2	1.1	1.7	0.4	2.3
Naphthalene	**2.2**	mg/kg	0.13	0.51	<0.010	0.37	**7.6**	0.22	0.06	0.062	0.66	0.69	1.1	0.23	1.3
Perylene	NS	mg/kg	0.018	0.39	<0.010	2	<0.010	0.13	0.035	0.027	<0.010	<0.010	<0.010	<0.010	<0.010
Phenanthrene	NS	mg/kg	0.13	2.9	0.032	9.3	3.7	1.2	0.21	0.17	0.49	0.44	0.58	0.24	1
Pyrene	2100	mg/kg	0.13	4.3	0.034	15	0.52	1.3	0.27	0.2	0.1	0.12	0.15	0.12	0.22
Benzo[a]pyrene TPE	**5.3**	mg/kg	0.11	2.9	<0.04	**13**	0.16	0.88	0.24	0.16	0.06	0.07	0.07	0.07	0.09

Notes:

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NS-EQS (T1B)/SO/RES/NON-POT/COARSE: NSE non-postable reside

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EXCEEDS CRITERIA

Ocean Street Former Steel Plant - Phase II ESA
Table 1: Soil Analytical Results
PAHs

		Sample Location	**5456-H2**	**5456-H3**	**5456-H4**	**5456-H5**	**5456-H6**	**5456-H7**	**5456-H8**	**5456-H9**	**5456-H11**	**DUP 5**
		Sample Date	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022
		Sample Depth (m bgs)	0.00 -0.25	0.00 - 0.13	0.01 -0.26	0.01 - 0.26	0.01 - 0.20	0.00 - 0.30	0.00 - 0.13	0.01 - 0.30	0.01 - 0.30	0.00 - 0.30
		Type [0]	FD	N	N	N	N	N	N	N	N	N
Parameter	NS-EQS (T1B)/SO/RES/NON-POT/COARSE [1]	Units										
Acenaphthene	3900	mg/kg	<0.060 (1)	<0.23 (1)	<0.080 (1)	<0.090 (1)	0.15	<0.040 (1)	0.17	<0.020 (1)	0.064	<0.070 (1)
Acenaphthylene	4.5	mg/kg	<0.040 (1)	<0.030 (1)	<0.010	<0.030 (1)	<0.030 (1)	<0.010	0.52	<0.010	0.25	<0.050 (1)
Anthracene	24000	mg/kg	<0.050 (1)	<0.10 (1)	<0.030 (1)	<0.070 (1)	0.54	<0.030 (1)	1.1	0.018	0.38	<0.050 (1)
Benzo(A)Anthracene	NS	mg/kg	0.11	0.27	0.1	0.21	1.2	0.081	3.2	0.044	1.3	0.15
Benzo(A)Pyrene	NS	mg/kg	0.047	0.11	0.04	0.095	0.87	0.046	2.9	0.031	0.99	0.032
Benzo(b)Fluoranthene	NS	mg/kg	0.066	0.097	0.043	0.1	0.8	0.075	2.2	0.038	1.1	0.07
Benzo(b+j)fluoranthene	NS	mg/kg	0.066	0.17	0.071	0.17	1.3	0.11	3.6	0.056	1.8	0.071
Benzo(e)pyrene	NS	mg/kg	0.039	0.075	0.031	0.051	0.44	0.049	2.3	0.023	0.62	0.026
Benzo(G,H,I)Perylene	NS	mg/kg	<0.040 (1)	0.069	0.029	0.065	0.47	0.034	1.5	0.018	0.68	<0.040 (1)
Benzo(k)Fluoranthene	NS	mg/kg	0.025	0.04	0.016	0.055	0.48	0.029	1.4	0.018	0.66	0.023
Chrysene	NS	mg/kg	0.23	0.31	0.15	0.26	1.3	0.17	3.2	0.07	1.7	0.32
Dibenzo(A,H)Anthracene	NS	mg/kg	<0.010	0.017	<0.010	0.016	0.14	<0.010	0.45	<0.010	0.15	<0.010
Fluoranthene	3500	mg/kg	0.17	0.33	0.12	0.37	3.1	0.16	6.9	0.1	3.3	0.23
Fluorene	2700	mg/kg	0.067	<0.12 (1)	<0.050 (1)	<0.050 (1)	0.21	<0.030 (1)	0.3	<0.010	0.092	<0.060 (1)
Indeno(1,2,3-cd)pyrene	NS	mg/kg	0.017	0.028	0.013	0.036	0.39	0.024	2	0.015	0.59	<0.010
Methylnaphthalene, 1-	72	mg/kg	1.8	1.7	0.61	0.68	0.43	1.1	0.096	0.28	0.4	2.6
Methylnaphthalene, 2-	72	mg/kg	2.4	2.1	0.78	0.8	0.52	1.5	0.085	0.35	0.49	3.4
Naphthalene	**2.2**	mg/kg	1.3	1.4	0.49	0.5	0.38	1.2	0.075	0.24	0.37	**2.3**
Perylene	NS	mg/kg	<0.010	0.049	<0.010	0.014	0.18	<0.010	0.61	<0.010	0.2	<0.010
Phenanthrene	NS	mg/kg	0.98	1.3	0.5	0.65	2.8	0.64	4.3	0.21	1.7	1.7
Pyrene	2100	mg/kg	0.22	0.35	0.14	0.31	2.4	0.16	5.3	0.083	2.6	0.29
Benzo[a]pyrene TPE	**5.3**	mg/kg	0.07	0.18	0.06	0.16	1.4	0.07	4.4	0.04	1.6	0.06

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

NS-EQS (T1B)/SO/RES/NON-POT/COARSE: NSE non-postable reside

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EXCEEDS CRITERIA

Ocean Street Former Steel Plant - Phase II ESA
Table 1: Soil Analytical Results
PAHs

AECOM

		Sample Location	**4780-H1**	**4913-H1**	**4913-H2**	**4913-H3**
		Sample Date	6/22/2022	6/22/2022	6/22/2022	6/22/2022
		Sample Depth (m bgs)	0.00 - 0.20	0.01 - 0.23	0.00 - 0.15	0.00 -0.20
		Type [0]	N	N	N	N
Parameter	NS-EQS (T1B)/SO/RES/NON-POT/COARSE [1]	Units				
Acenaphthene	3900	mg/kg	<0.060 (1)	<0.010	<0.010	<0.010
Acenaphthylene	4.5	mg/kg	0.13	<0.010	<0.010	<0.010
Anthracene	24000	mg/kg	0.21	<0.010	<0.010	<0.010
Benzo(A)Anthracene	NS	mg/kg	0.48	0.052	<0.010	0.073
Benzo(A)Pyrene	NS	mg/kg	0.38	0.049	<0.010	0.065
Benzo(b)Fluoranthene	NS	mg/kg	0.4	0.058	<0.010	0.094
Benzo(b+j)fluoranthene	NS	mg/kg	0.64	0.088	<0.020	0.094
Benzo(e)pyrene	NS	mg/kg	0.23	0.037	<0.010	<0.010
Benzo(G,H,I)Perylene	NS	mg/kg	0.24	0.03	<0.010	<0.010
Benzo(k)Fluoranthene	NS	mg/kg	0.23	0.031	<0.010	<0.010
Chrysene	NS	mg/kg	0.54	0.088	0.027	0.14
Dibenzo(A,H)Anthracene	NS	mg/kg	0.06	<0.010	<0.010	<0.010
Fluoranthene	3500	mg/kg	0.89	0.13	0.033	0.21
Fluorene	2700	mg/kg	<0.050 (1)	<0.010	<0.010	<0.010
Indeno(1,2,3-cd)pyrene	NS	mg/kg	0.22	0.027	<0.010	<0.010
Methylnaphthalene, 1-	72	mg/kg	0.47	0.029	0.075	0.45
Methylnaphthalene, 2-	72	mg/kg	0.55	0.035	0.1	0.58
Naphthalene	**2.2**	mg/kg	0.39	0.021	0.072	0.36
Perylene	NS	mg/kg	0.081	0.013	<0.010	<0.010
Phenanthrene	NS	mg/kg	0.63	0.073	0.061	0.36
Pyrene	2100	mg/kg	0.73	0.12	<0.010	0.16
Benzo[a]pyrene TPE	**5.3**	mg/kg	0.6	0.07	<0.03	0.08

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

NS-EQS (T1B)/SO/RES/NON-POT/COARSE: NSE non-postable reside

yyyy/mm/dd: year/month/day
mbgs: meters below ground surface
mg/kg: milligrams per kilogram
< :Denotes concentration less than indicated detection limit
- :Not analyzed or not applicable
NS: No Standard
BOLD AND UNDERLINED Reportable Detection Limit (RDL) exceeds the regulatory standard

EXCEEDS CRITERIA

Ocean Street Former Steel Plant - Phase II ESA
Table 1: Soil Analytical Results
PHCs

		Sample Location	**1636-H1**	**1636-H2**	**1636-H3**	**5456-H12**	**5456-H12**
		Sample Date	6/23/2022	6/23/2022	6/23/2022	6/22/2022	6/22/2022
		Screen Interval (m bgs)	0.01 -0.31	0.01 - 0.31	0.05 -0.30	0.00 - 0.30	0.00 - 0.30
		Type [0]	N	N	N	N	FD
Parameter	NS-EQS (T1B)/SO/RES/NON-POT/COARSE	Units					
Benzene	**0.021**	mg/kg	**0.35**	**0.94**	**0.31**	**5.2**	**5.1**
Toluene	47	mg/kg	1.1	2.7	0.83	11	11
Ethylbenzene	60	mg/kg	0.16	0.36	0.11	1.4	1.4
Xylenes, Total	**4.9**	mg/kg	1.4	3.1	0.86	**11**	**11**
PHC F1 (C6-C10 range) minus BTEX (calc)	NS	mg/kg	10	17	<2.5	76	77
PHC F2 (>C10-C16 range)	NS	mg/kg	35	31	41	120	120
PHC (>C16-C21)	NS	mg/kg	38	32	42	160	150
PHC (>C21-C32)	NS	mg/kg	97	89	120	270	230
Modified TPH (Tier1)	**75 (Gas) 340 (Fuel) 1,800 (Lube)**	mg/kg	**180**	**170**	200	**630**	**580**
Reached Baseline at C32	NS	none	Yes	Yes	Yes	Yes	Yes
Hydrocarbon Resemblance	NS	none	COMMENT (1)	COMMENT (1)	COMMENT (2)	COMMENT (3)	COMMENT (1)

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.
yyyy/mm/dd: year/month/day
mbgs: meters below ground surface
mg/kg: milligrams per kilogram
< :Denotes concentration less than indicated detection limit
- :Not analyzed or not applicable
NS: No Standard

(1) One product in the gasoline range. One product in fuel / lube range. Possible lube oil fraction.

(2) One product in fuel / lube range. Possible lube oil fraction.

(3) One product in the gasoline range. Unidentified compound(s) in fuel / lube range. One product in fuel / lube range.

BOLD AND UNDERLINED Reportable Detection Limit (RDL) exceeds the regulatory standard

EXCEEDS CRITERIA

Ocean Street Former Steel Plant - Phase II ESA
Table 2: Surface Water Analytical Results
Metals

Parameter	NS-EQS[1] (Freshwater)	NS-EQS[2] (Marine)	Unit	Sample Location Sample Date Type[0]	**1636-SW1** 6/22/2022 N	**1636-SW2** 6/22/2022 N	**4780-SW1** 6/22/2022 N	**4913-SW1** 6/22/2022 N	**4913-SW2** 6/22/2022 N	**5456-SW1** 6/22/2022 N	**5456-SW1** 6/22/2022 FD
Total Aluminum (Al)	**5**	NS	ug/L		**<50**	**<50**	**8.2**	**140**	**460**	**17**	**14**
Total Antimony (Sb)	9	250	ug/L		**<10**	**<10**	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	**5**	12.5	ug/L		**<10**	**<10**	<1.0	3.7	**6.3**	<1.0	<1.0
Total Barium (Ba)	1000	500	ug/L		18	17	21	13	23	16	15
Total Beryllium (Be)	0.15	100	ug/L		**<1.0**	**<1.0**	<0.10	<0.10	<0.10	<0.10	<0.10
Total Bismuth (Bi)	NS	NS	ug/L		<20	<20	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	**1500**	***1200***	ug/L		***1800***	***1800***	<50	<50	<50	<50	<50
Total Cadmium (Cd)	0.09	0.12	ug/L		**<0.10**	**<0.10**	0.018	0.014	0.042	0.01	<0.010
Total Calcium (Ca)	NS	NS	ug/L		160000	160000	75000	21000	12000	120000	120000
Total Chromium (Cr)	8.9	56	ug/L		**<10**	**<10**	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	**1**	4	ug/L		**<4.0**	**<4.0**	<0.40	0.54	**1.3**	<0.40	<0.40
Total Copper (Cu)	2	2	ug/L		**<5.0**	**<5.0**	1.7	1	1.7	0.52	<0.50
Total Iron (Fe)	**300**	NS	ug/L		**<500**	**<500**	74	**2800**	**3800**	**410**	**390**
Total Lead (Pb)	**1**	2	ug/L		**<5.0**	**<5.0**	<0.50	**1.2**	**4.4**	0.58	<0.50
Total Magnesium (Mg)	NS	NS	ug/L		530000	460000	7000	2900	2200	10000	10000
Total Manganese (Mn)	**430**	NS	ug/L		260	150	47	**630**	430	170	170
Total Molybdenum (Mo)	73	1000	ug/L		**<20**	**<20**	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	25	8.3	ug/L		**<20**	**<20**	3.7	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	NS	NS	ug/L		<1000	<1000	<100	<100	300	<100	<100
Total Potassium (K)	NS	NS	ug/L		160000	140000	1200	1600	1700	3800	3700
Total Selenium (Se)	1	2	ug/L		**<5.0**	**<5.0**	<0.50	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	0.25	1.5	ug/L		**<1.0**	**<1.0**	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	NS	NS	ug/L		4400000	3800000	110000	9800	8100	33000	31000
Total Strontium (Sr)	21000	NS	ug/L		2800	2700	180	54	38	210	200
Total Thallium (Tl)	0.8	0.3	ug/L		**<1.0**	**<1.0**	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	NS	NS	ug/L		<20	<20	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	NS	NS	ug/L		<20	<20	<2.0	2.6	8.4	<2.0	<2.0
Total Uranium (U)	15	8.5	ug/L		<1.0	<1.0	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	120	5	ug/L		**<20**	**<20**	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	**7**	10	ug/L		**<50**	**<50**	**8**	<5.0	**15**	<5.0	<5.0

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

[1] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Freshwater)

[2] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Marine)

- :Not analyzed or not applicable

NS: No Standard

BOLD *le Detection Limit (RDL) exceeds the regulatory standard*

EXCEEDS CRITERIA

Surface water samples 1636-SW1 and 1636-SW2 are compared to both marine and freshwater guidelines as this body of water is tidal influenced. The remainder of the surface water samples are compared to fresh water guidelines.

Ocean Street Former Steel Plant - Phase II ESA
Table 2: Surface Water Analytical Results
PAHs

AECOM

			Sample Location	**1636-SW1**	**1636-SW2**	**4780-SW1**	**4913-SW1**	**4913-SW2**	**5456-SW1**	**5456-SW1**
			Sample Date	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022
			Type[0]	N	N	N	N	N	N	FD
Parameter	NS-EQS[1] (Freshwater)	NS-EQS[2] (Marine)	Unit							
Acenaphthene	5.8	6	ug/L	<0.050	<0.060	<0.050	<0.050	<0.050	<0.050	<0.010
Acenaphthylene	-	-	ug/L	<0.050	<0.060	<0.050	<0.050	<0.050	<0.050	<0.010
Anthracene	0.012	0.1	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)anthracene	0.018	-	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)pyrene	0.015	0.01	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(b)fluoranthene	-	-	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(b/j)fluoranthene	-	-	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.020
Benzo(g,h,i)perylene	-	-	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(j)fluoranthene	-	-	ug/L	<0.020	<0.040	<0.020	<0.020	<0.020	<0.020	<0.010
Benzo(k)fluoranthene	-	-	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Chrysene	0.1	0.1	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Dibenzo(a,h)anthracene	-	-	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Fluoranthene	0.04	0.2	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Fluorene	3	12	ug/L	<0.010	<0.020	0.014	<0.010	<0.010	<0.010	<0.010
Indeno(1,2,3-cd)pyrene	-	-	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
1-Methylnaphthalene	2	1	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.050
2-Methylnaphthalene	2	1	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.050
Naphthalene	1.1	1.4	ug/L	<0.20	<0.22	<0.20	<0.20	<0.20	<0.20	<0.20
Perylene	-	-	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Phenanthrene	0.4	0.3	ug/L	<0.010	<0.020	0.013	0.011	0.016	<0.010	<0.010
Pyrene	0.025	0.02	ug/L	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010

[0] Type: N=Normal Sample; FD=Field Duplicate

[1] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Freshwater)

[2] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Marine)

- :Not analyzed or not applicable

NS: No Standard

BOLD *Reportable Detection Limit (RDL) exceeds the regulatory standard*

EXCEEDS CRITERIA

Surface water samples 1636-SW1 and 1636-SW2 are compared to both marine and freshwater guidelines as this body of water is tidal influenced. The remainder of the surface water samples are compared to fresh water guidelines.

			Sample Location	**4780-SW1**	**4913-SW1**	**4913-SW2**	**5456-SW1**	**5456-SW1**
			Sample Date	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022
			Type[0]	N	N	N	N	FD
Parameter	NS-EQS[2] (Freshwater)	NS-EQS[1] (Marine)	Unit					
Anion Sum	-	-	me/L	8.82	1.72	1.21	8.4	8.45
Bicarb. Alkalinity (calc. as CaCO3)	-	-	mg/L	92	57	34	75	74
Calculated TDS	-	-	mg/L	530	100	74	540	530
Carb. Alkalinity (calc. as CaCO3)	-	-	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	-	-	me/L	9.17	1.87	1.33	8.44	8.02
Hardness (CaCO3)	-	-	mg/L	220	65	40	350	330
Ion Balance (% Difference)	-	-	%	1.95	4.18	4.72	0.24	2.61
Langelier Index (@ 20C)	-	-	N/A	0.003	-0.877	-1.5	0.208	0.253
Langelier Index (@ 4C)	-	-	N/A	-0.245	-1.13	-1.75	-0.04	0.006
Nitrate (N)	13	200	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Saturation pH (@ 20C)	-	-	N/A	7.64	8.27	8.7	7.52	7.55
Saturation pH (@ 4C)	-	-	N/A	7.89	8.52	8.95	7.77	7.79
Total Alkalinity (Total as CaCO3)	-	-	mg/L	92	57	34	75	74
Dissolved Chloride (Cl-)	**120**	*	mg/L	**190**	11	9.4	62	62
Colour	-	-	TCU	12	160	120	7.7	5.1
Nitrate + Nitrite (N)	-	-	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Nitrite (N)	0.06	-	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	****	***	mg/L	<0.050	0.068	<0.050	<0.050	<0.050
Total Organic Carbon (C)	-	-	mg/L	4.6	17	19	2.5	2.6
Orthophosphate (P)	-	-	mg/L	<0.010	0.022	0.017	<0.010	<0.010
pH	6.5 - 9.0	7.0 - 8.7	pH	7.64	7.39	7.2	7.73	7.8
Reactive Silica (SiO2)	-	-	mg/L	13	4.4	2.9	15	14
Dissolved Sulphate (SO4)	**128**	-	mg/L	78	14	12	**250**	**250**
Turbidity	**	**	mg/L	30	21	13	1.6	1.3
Conductivity	-	-	NTU	1000	190	140	900	900

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

[1] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Freshwater)

[2] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Marine)

- :Not analyzed or not applicable

NS: No Standard

BOLD *Reportable Detection Limit (RDL) exceeds the regulatory standard*

EXCEEDS CRITERIA

*

No more than a 10% change in ambient sea water salinity (as NaCl).

**

Clear flow
Maximum increase of 25 mg/L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase of 5 mg/L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30 d).

High flow
Maximum increase of 25 mg/L from background levels at any time when background levels are between 25 and 250 mg/L. Should not increase more than 10% of background levels when background is ≥ 250 mg/L.

***

pH and temperature dependent; consult CCME fact sheet.

****

pH, salinity and temperature dependent; consult BCMOE schedule.

Surface water samples 1636-SW1 and 1636-SW2 are compared to both marine and freshwater guidelines as this body of water is tidal influenced. The remainder of the surface water samples are compared to fresh water guidelines.

Appendix C. Laboratory Certificates of Analysis

Your Project #: 60680173
Site Location: CB

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/09/21
Report #: R7306211
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C2H4082
Received: 2022/06/23, 11:35

Sample Matrix: Soil
Samples Received: 40

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Benzo(b/j)fluoranthene Sum (soil) (1)	13	N/A	2022/06/29	N/A	Auto Calc.
Benzo(b/j)fluoranthene Sum (soil) (1)	20	N/A	2022/06/30	N/A	Auto Calc.
Benzo(b/j)fluoranthene Sum (soil) (1)	4	N/A	2022/07/04	N/A	Auto Calc.
B[a]P Total Potency Equivalent (1)	37	N/A	2022/09/21	N/A	CCME CSQG
TEH in Soil (PIRI) (1, 3)	3	2022/06/28	2022/06/28	ATL SOP 00111	Atl. RBCA v3.1 m
TEH in Soil (PIRI) (1, 3)	1	2022/06/28	2022/06/29	ATL SOP 00111	Atl. RBCA v3.1 m
Metals Solids Acid Extr. ICPMS (1)	5	2022/06/28	2022/06/29	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS (1)	1	2022/06/29	2022/06/29	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS (1)	4	2022/06/29	2022/06/30	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS (1)	19	2022/07/04	2022/07/04	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS (1)	8	2022/07/04	2022/07/05	ATL SOP 00058	EPA 6020B R2 m
Moisture (1)	18	N/A	2022/06/28	ATL SOP 00001	OMOE Handbook 1983 m
Moisture (1)	20	N/A	2022/06/29	ATL SOP 00001	OMOE Handbook 1983 m
PAH Compounds by GCMS (SIM) (1, 3)	6	2022/06/28	2022/06/28	ATL SOP 00102	EPA 8270E R6 m
PAH Compounds by GCMS (SIM) (1, 3)	24	2022/06/28	2022/06/29	ATL SOP 00102	EPA 8270E R6 m
PAH Compounds by GCMS (SIM) (1, 3)	3	2022/06/28	2022/06/30	ATL SOP 00102	EPA 8270E R6 m
PAH Compounds by GCMS (SIM) (1, 3)	4	2022/06/29	2022/07/01	ATL SOP 00102	EPA 8270E R6 m
pH (5:1 DI Water Extract) (1)	1	2022/06/29	2022/06/30	ATL SOP 00003	SM 23 4500-H+ B m
Acid Rock Drain. in S (Sub from Bedford) (2)	3	2022/07/06	2022/07/13		
ModTPH (T1) Calc. for Soil (1)	4	N/A	2022/06/30	N/A	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (1, 4)	4	N/A	2022/06/29	ATL SOP 00119	Atl. RBCA v3.1 m

Remarks:

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

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

Your Project #: 60680173
Site Location: CB

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/09/21
Report #: R7306211
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C2H4082

Received: 2022/06/23, 11:35

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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

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

(1) This test was performed by Bureau Veritas Bedford, 200 Bluewater Rd Suite 105, Bedford, NS, B4B 1G9
(2) This test was performed by Research and Productivity Council,
(3) Soils are reported on a dry weight basis unless otherwise specified.
(4) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Encryption Key

Natalie MacAskill
Key Account Specialist
21 Sep 2022 13:57:10

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Natalie MacAskill, Key Account Specialist
Email: Natalie.MacAskill@bureauveritas.com
Phone# (902)567-1255 Ext:17

==========

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Bureau Veritas ID		SZG069			SZG069			SZG070		
Sampling Date		2022/06/23			2022/06/23			2022/06/23		
	UNITS	1636-H1	RDL	QC Batch	1636-H1 Lab-Dup	RDL	QC Batch	1636-H2	RDL	QC Batch
Inorganics										
Moisture	%	30	1.0	8078421				27	1.0	8078421
Petroleum Hydrocarbons										
Benzene	mg/kg	0.35	0.0050	8081461	0.37	0.0050	8081461	0.94	0.0050	8081461
Toluene	mg/kg	1.1	0.050	8081461	1.1	0.050	8081461	2.7	0.050	8081461
Ethylbenzene	mg/kg	0.16	0.010	8081461	0.16	0.010	8081461	0.36	0.010	8081461
Total Xylenes	mg/kg	1.4	0.050	8081461	1.5	0.050	8081461	3.1	0.050	8081461
C6 - C10 (less BTEX)	mg/kg	10	2.5	8081461	10	2.5	8081461	17	2.5	8081461
>C10-C16 Hydrocarbons	mg/kg	35	10	8078672				31	10	8078672
>C16-C21 Hydrocarbons	mg/kg	38	10	8078672				32	10	8078672
>C21-<C32 Hydrocarbons	mg/kg	97	15	8078672				89	15	8078672
Modified TPH (Tier1)	mg/kg	180	15	8069743				170	15	8069743
Reached Baseline at C32	mg/kg	Yes	N/A	8078672				Yes	N/A	8078672
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	8078672				COMMENT (1)	N/A	8078672
Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%	99		8078672				99		8078672
n-Dotriacontane - Extractable	%	110		8078672				113		8078672
Isobutylbenzene - Volatile	%	92		8081461	96		8081461	92		8081461

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) One product in the gasoline range. One product in fuel / lube range. Possible lube oil fraction.

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Bureau Veritas ID		SZG071		SZG089		
Sampling Date		2022/06/23		2022/06/22		
	UNITS	1636-H3	QC Batch	5456-H12	RDL	QC Batch
Inorganics						
Moisture	%	45	8078421	17	1.0	8078421
Petroleum Hydrocarbons						
Benzene	mg/kg	0.31	8081461	5.2	0.0050	8081461
Toluene	mg/kg	0.83	8081461	11	0.050	8081461
Ethylbenzene	mg/kg	0.11	8081461	1.4	0.010	8081461
Total Xylenes	mg/kg	0.86	8081461	11	0.050	8081461
C6 - C10 (less BTEX)	mg/kg	<2.5	8081461	76	2.5	8081461
>C10-C16 Hydrocarbons	mg/kg	41	8078672	120	10	8079129
>C16-C21 Hydrocarbons	mg/kg	42	8078672	160	10	8079129
>C21-<C32 Hydrocarbons	mg/kg	120	8078672	270	15	8079129
Modified TPH (Tier1)	mg/kg	200	8069743	630	15	8069743
Reached Baseline at C32	mg/kg	Yes	8078672	Yes	N/A	8079129
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	8078672	COMMENT (2)	N/A	8079129
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	99	8078672	115		8079129
n-Dotriacontane - Extractable	%	110	8078672	121		8079129
Isobutylbenzene - Volatile	%	92	8081461	92		8081461

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) One product in fuel / lube range. Possible lube oil fraction.
(2) One product in the gasoline range. Unidentified compound(s) in fuel / lube range. One product in fuel / lube range.

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RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		SZG019	SZG019	SZG047	SZG048	SZG049	SZG052	SZG053		
Sampling Date		2022/06/21	2022/06/21	2022/06/21	2022/06/21	2022/06/21	2022/06/21	2022/06/21		
	UNITS	9235-H1	9235-H1 Lab-Dup	9235-H2	9235-H3	9235-H4	9235-H5	9235-H6	RDL	QC Batch
Inorganics										
Moisture	%	28	28	23	18	15	14	3.8	1.0	8076536

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas ID		SZG054	SZG055	SZG056	SZG057	SZG058	SZG059	SZG060		
Sampling Date		2022/06/21	2022/06/21	2022/06/22	2022/06/22	2022/06/22	2022/06/22	2022/06/23		
	UNITS	9235-H7	9235-H8	9235-H9	9235-H10	9235-H11	9235-H12	9235-H13	RDL	QC Batch
Inorganics										
Moisture	%	16	21	12	23	21	21	10	1.0	8076536

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		SZG061	SZG062	SZG064	SZG065		SZG066		
Sampling Date		2022/06/23	2022/06/23	2022/06/23	2022/06/23		2022/06/23		
	UNITS	9235-H14	9235-H15	9235-H16	9235-H17	QC Batch	9235-H18	RDL	QC Batch
Inorganics									
Moisture	%	17	34	16	33	8076536	35	1.0	8076680

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		SZG067	SZG067	SZG068	SZG072	SZG073	SZG074	SZG075		
Sampling Date		2022/06/23	2022/06/23	2022/06/23	2022/06/22	2022/06/22	2022/06/22	2022/06/22		
	UNITS	9235-H19	9235-H19 Lab-Dup	9235-H20	5456-H1	5456-H2	5456-H3	5456-H4	RDL	QC Batch
Inorganics										
Moisture	%	27	27	21	16	32	34	17	1.0	8078421

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		SZG076	SZG077	SZG078	SZG079	SZG080			SZG081	
Sampling Date		2022/06/22	2022/06/22	2022/06/22	2022/06/22	2022/06/22			2022/06/22	
	UNITS	5456-H5	5456-H6	5456-H7	5456-H8	5456-H9	RDL	QC Batch	5456-H10	QC Batch
Inorganics										
Moisture	%	26	42	24	17	34	1.0	8078421		
Subcontracted Analysis										
Subcontract Parameter	N/A								ATTACHED	8093232

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		SZG086			SZG089		SZG090		SZG091		
Sampling Date		2022/06/22			2022/06/22		2022/06/22		2022/06/22		
	UNITS	5456-H11	RDL	QC Batch	5456-H12	QC Batch	5456-H13	QC Batch	4780-H1	RDL	QC Batch
Inorganics											
Moisture	%	21	1.0	8078421					55	1.0	8078421
Soluble (5:1) pH	pH				4.01	8084076					
Subcontracted Analysis											
Subcontract Parameter	N/A				ATTACHED	8093232	ATTACHED	8093232			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		SZG092	SZG093	SZG094		
Sampling Date		2022/06/22	2022/06/22	2022/06/22		
	UNITS	4913-H1	4913-H2	4913-H3	RDL	QC Batch
Inorganics						
Moisture	%	18	55	84	1.0	8078421

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZG019	SZG047		SZG048		SZG049		
Sampling Date		2022/06/21	2022/06/21		2022/06/21		2022/06/21		
	UNITS	9235-H1	9235-H2	QC Batch	9235-H3	QC Batch	9235-H4	RDL	QC Batch
Metals									
Acid Extractable Aluminum (Al)	mg/kg	51000	14000	8080983	47000	8078716	2800	10	8087473
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	8080983	2.2	8078716	<2.0	2.0	8087473
Acid Extractable Arsenic (As)	mg/kg	10	32	8080983	120	8078716	25	2.0	8087473
Acid Extractable Barium (Ba)	mg/kg	330	200	8080983	200	8078716	230	5.0	8087473
Acid Extractable Beryllium (Be)	mg/kg	14	1.3	8080983	2.7	8078716	<1.0	1.0	8087473
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	8080983	<2.0	8078716	<2.0	2.0	8087473
Acid Extractable Boron (B)	mg/kg	<50	<50	8080983	<50	8078716	<50	50	8087473
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.48	8080983	<0.30	8078716	<0.30	0.30	8087473
Acid Extractable Chromium (Cr)	mg/kg	7.4	50	8080983	41	8078716	4.0	2.0	8087473
Acid Extractable Cobalt (Co)	mg/kg	1.9	10	8080983	17	8078716	1.1	1.0	8087473
Acid Extractable Copper (Cu)	mg/kg	6.7	29	8080983	93	8078716	28	2.0	8087473
Acid Extractable Iron (Fe)	mg/kg	12000	41000	8080983	60000	8078716	12000	50	8087473
Acid Extractable Lead (Pb)	mg/kg	25	92	8080983	49	8078716	64	0.50	8087473
Acid Extractable Lithium (Li)	mg/kg	21	20	8080983	46	8078716	3.0	2.0	8087473
Acid Extractable Manganese (Mn)	mg/kg	1600	4100	8080983	180	8078716	46	2.0	8087473
Acid Extractable Mercury (Hg)	mg/kg	<0.10	0.10	8080983	<0.10	8078716	0.30	0.10	8087473
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	8080983	12	8078716	4.1	2.0	8087473
Acid Extractable Nickel (Ni)	mg/kg	3.1	19	8080983	37	8078716	3.0	2.0	8087473
Acid Extractable Rubidium (Rb)	mg/kg	2.1	11	8080983	44	8078716	6.6	2.0	8087473
Acid Extractable Selenium (Se)	mg/kg	1.8	0.77	8080983	4.1	8078716	1.4	0.50	8087473
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	8080983	<0.50	8078716	<0.50	0.50	8087473
Acid Extractable Strontium (Sr)	mg/kg	350	55	8080983	340	8078716	40	5.0	8087473
Acid Extractable Thallium (Tl)	mg/kg	<0.10	0.31	8080983	0.85	8078716	0.97	0.10	8087473
Acid Extractable Tin (Sn)	mg/kg	<1.0	2.1	8080983	2.2	8078716	<1.0	1.0	8087473
Acid Extractable Uranium (U)	mg/kg	8.1	1.2	8080983	0.90	8078716	0.40	0.10	8087473
Acid Extractable Vanadium (V)	mg/kg	64	430	8080983	61	8078716	8.2	2.0	8087473
Acid Extractable Zinc (Zn)	mg/kg	34	200	8080983	31	8078716	29	5.0	8087473

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZG052		SZG053	SZG054		SZG055		
Sampling Date		2022/06/21		2022/06/21	2022/06/21		2022/06/21		
	UNITS	9235-H5	QC Batch	9235-H6	9235-H7	QC Batch	9235-H8	RDL	QC Batch
Metals									
Acid Extractable Aluminum (Al)	mg/kg	3500	8080983	3300	5100	8078716	21000	10	8080983
Acid Extractable Antimony (Sb)	mg/kg	2.2	8080983	<2.0	<2.0	8078716	<2.0	2.0	8080983
Acid Extractable Arsenic (As)	mg/kg	33	8080983	7.4	8.0	8078716	110	2.0	8080983
Acid Extractable Barium (Ba)	mg/kg	71	8080983	34	46	8078716	400	5.0	8080983
Acid Extractable Beryllium (Be)	mg/kg	<1.0	8080983	<1.0	1.0	8078716	4.3	1.0	8080983
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	8080983	<2.0	<2.0	8078716	<2.0	2.0	8080983
Acid Extractable Boron (B)	mg/kg	<50	8080983	<50	<50	8078716	<50	50	8080983
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	8080983	<0.30	<0.30	8078716	0.65	0.30	8080983
Acid Extractable Chromium (Cr)	mg/kg	4.1	8080983	6.5	4.6	8078716	21	2.0	8080983
Acid Extractable Cobalt (Co)	mg/kg	2.5	8080983	2.6	3.6	8078716	8.6	1.0	8080983
Acid Extractable Copper (Cu)	mg/kg	39	8080983	3.8	16	8078716	54	2.0	8080983
Acid Extractable Iron (Fe)	mg/kg	20000	8080983	13000	12000	8078716	60000	50	8080983
Acid Extractable Lead (Pb)	mg/kg	69	8080983	7.0	27	8078716	430	0.50	8080983
Acid Extractable Lithium (Li)	mg/kg	4.4	8080983	6.4	7.0	8078716	21	2.0	8080983
Acid Extractable Manganese (Mn)	mg/kg	170	8080983	260	250	8078716	1200	2.0	8080983
Acid Extractable Mercury (Hg)	mg/kg	0.13	8080983	<0.10	0.10	8078716	<0.10	0.10	8080983
Acid Extractable Molybdenum (Mo)	mg/kg	2.3	8080983	<2.0	<2.0	8078716	28	2.0	8080983
Acid Extractable Nickel (Ni)	mg/kg	5.3	8080983	3.7	8.8	8078716	18	2.0	8080983
Acid Extractable Rubidium (Rb)	mg/kg	2.1	8080983	2.0	2.4	8078716	12	2.0	8080983
Acid Extractable Selenium (Se)	mg/kg	1.4	8080983	<0.50	<0.50	8078716	3.0	0.50	8080983
Acid Extractable Silver (Ag)	mg/kg	<0.50	8080983	<0.50	<0.50	8078716	<0.50	0.50	8080983
Acid Extractable Strontium (Sr)	mg/kg	30	8080983	18	29	8078716	250	5.0	8080983
Acid Extractable Thallium (Tl)	mg/kg	0.32	8080983	<0.10	<0.10	8078716	1.6	0.10	8080983
Acid Extractable Tin (Sn)	mg/kg	4.5	8080983	<1.0	1.6	8078716	4.6	1.0	8080983
Acid Extractable Uranium (U)	mg/kg	0.82	8080983	0.53	0.81	8078716	2.4	0.10	8080983
Acid Extractable Vanadium (V)	mg/kg	11	8080983	14	14	8078716	120	2.0	8080983
Acid Extractable Zinc (Zn)	mg/kg	27	8080983	19	69	8078716	260	5.0	8080983

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZG056		SZG057		SZG058		SZG059		
Sampling Date		2022/06/22		2022/06/22		2022/06/22		2022/06/22		
	UNITS	9235-H9	QC Batch	9235-H10	QC Batch	9235-H11	QC Batch	9235-H12	RDL	QC Batch
Metals										
Acid Extractable Aluminum (Al)	mg/kg	20000	8078716	11000	8080983	17000	8087473	6200	10	8078716
Acid Extractable Antimony (Sb)	mg/kg	<2.0	8078716	<2.0	8080983	<2.0	8087473	2.6	2.0	8078716
Acid Extractable Arsenic (As)	mg/kg	21	8078716	29	8080983	28	8087473	89	2.0	8078716
Acid Extractable Barium (Ba)	mg/kg	480	8078716	140	8080983	170	8087473	200	5.0	8078716
Acid Extractable Beryllium (Be)	mg/kg	5.5	8078716	1.5	8080983	4.7	8087473	1.2	1.0	8078716
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	8078716	2.2	8080983	4.5	8087473	<2.0	2.0	8078716
Acid Extractable Boron (B)	mg/kg	<50	8078716	<50	8080983	<50	8087473	<50	50	8078716
Acid Extractable Cadmium (Cd)	mg/kg	0.41	8078716	2.2	8080983	3.1	8087473	0.49	0.30	8078716
Acid Extractable Chromium (Cr)	mg/kg	59	8078716	18	8080983	13	8087473	12	2.0	8078716
Acid Extractable Cobalt (Co)	mg/kg	8.2	8078716	11	8080983	10	8087473	14	1.0	8078716
Acid Extractable Copper (Cu)	mg/kg	24	8078716	58	8080983	180	8087473	71	2.0	8078716
Acid Extractable Iron (Fe)	mg/kg	62000	8078716	49000	8080983	71000	8087473	60000	50	8078716
Acid Extractable Lead (Pb)	mg/kg	160	8078716	820	8080983	3400	8087473	80	0.50	8078716
Acid Extractable Lithium (Li)	mg/kg	15	8078716	18	8080983	11	8087473	8.2	2.0	8078716
Acid Extractable Manganese (Mn)	mg/kg	4100	8078716	750	8080983	1700	8087473	480	2.0	8078716
Acid Extractable Mercury (Hg)	mg/kg	<0.10	8078716	0.15	8080983	0.10	8087473	0.28	0.10	8078716
Acid Extractable Molybdenum (Mo)	mg/kg	2.6	8078716	2.0	8080983	<2.0	8087473	20	2.0	8078716
Acid Extractable Nickel (Ni)	mg/kg	12	8078716	20	8080983	14	8087473	28	2.0	8078716
Acid Extractable Rubidium (Rb)	mg/kg	4.7	8078716	11	8080983	6.4	8087473	4.5	2.0	8078716
Acid Extractable Selenium (Se)	mg/kg	1.3	8078716	0.88	8080983	1.3	8087473	3.1	0.50	8078716
Acid Extractable Silver (Ag)	mg/kg	<0.50	8078716	<0.50	8080983	1.1	8087473	<0.50	0.50	8078716
Acid Extractable Strontium (Sr)	mg/kg	170	8078716	40	8080983	100	8087473	62	5.0	8078716
Acid Extractable Thallium (Tl)	mg/kg	0.11	8078716	0.38	8080983	0.25	8087473	0.99	0.10	8078716
Acid Extractable Tin (Sn)	mg/kg	5.3	8078716	11	8080983	20	8087473	1.8	1.0	8078716
Acid Extractable Uranium (U)	mg/kg	3.4	8078716	0.84	8080983	3.1	8087473	1.0	0.10	8078716
Acid Extractable Vanadium (V)	mg/kg	280	8078716	32	8080983	120	8087473	23	2.0	8078716
Acid Extractable Zinc (Zn)	mg/kg	140	8078716	700	8080983	1600	8087473	110	5.0	8078716

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZG060	SZG061	SZG062		SZG064		SZG065		
Sampling Date		2022/06/23	2022/06/23	2022/06/23		2022/06/23		2022/06/23		
	UNITS	9235-H13	9235-H14	9235-H15	QC Batch	9235-H16	QC Batch	9235-H17	RDL	QC Batch
Metals										
Acid Extractable Aluminum (Al)	mg/kg	17000	8400	6200	8087473	18000	8087503	9300	10	8087473
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	8087473	<2.0	8087503	<2.0	2.0	8087473
Acid Extractable Arsenic (As)	mg/kg	57	28	27	8087473	140	8087503	47	2.0	8087473
Acid Extractable Barium (Ba)	mg/kg	210	290	160	8087473	55	8087503	250	5.0	8087473
Acid Extractable Beryllium (Be)	mg/kg	4.3	<1.0	<1.0	8087473	<1.0	8087503	<1.0	1.0	8087473
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	8087473	<2.0	8087503	<2.0	2.0	8087473
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	8087473	<50	8087503	<50	50	8087473
Acid Extractable Cadmium (Cd)	mg/kg	0.72	0.45	0.39	8087473	<0.30	8087503	1.3	0.30	8087473
Acid Extractable Chromium (Cr)	mg/kg	60	110	17	8087473	28	8087503	27	2.0	8087473
Acid Extractable Cobalt (Co)	mg/kg	5.4	6.4	6.6	8087473	21	8087503	14	1.0	8087473
Acid Extractable Copper (Cu)	mg/kg	18	22	64	8087473	37	8087503	69	2.0	8087473
Acid Extractable Iron (Fe)	mg/kg	58000	67000	38000	8087473	39000	8087503	85000	50	8087473
Acid Extractable Lead (Pb)	mg/kg	150	110	240	8087473	65	8087503	150	0.50	8087473
Acid Extractable Lithium (Li)	mg/kg	8.1	10	9.1	8087473	40	8087503	25	2.0	8087473
Acid Extractable Manganese (Mn)	mg/kg	6500	12000	900	8087473	650	8087503	2500	2.0	8087473
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	0.17	8087473	<0.10	8087503	0.11	0.10	8087473
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	2.4	8087473	<2.0	8087503	2.1	2.0	8087473
Acid Extractable Nickel (Ni)	mg/kg	7.7	10	14	8087473	34	8087503	34	2.0	8087473
Acid Extractable Rubidium (Rb)	mg/kg	3.8	6.2	4.6	8087473	8.3	8087503	6.0	2.0	8087473
Acid Extractable Selenium (Se)	mg/kg	1.0	<0.50	0.72	8087473	<0.50	8087503	0.61	0.50	8087473
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	8087473	<0.50	8087503	<0.50	0.50	8087473
Acid Extractable Strontium (Sr)	mg/kg	130	80	27	8087473	87	8087503	56	5.0	8087473
Acid Extractable Thallium (Tl)	mg/kg	<0.10	0.10	0.64	8087473	0.16	8087503	0.18	0.10	8087473
Acid Extractable Tin (Sn)	mg/kg	1.7	5.0	7.3	8087473	<1.0	8087503	19	1.0	8087473
Acid Extractable Uranium (U)	mg/kg	3.0	0.63	0.37	8087473	0.58	8087503	0.41	0.10	8087473
Acid Extractable Vanadium (V)	mg/kg	710	1100	94	8087473	25	8087503	61	2.0	8087473
Acid Extractable Zinc (Zn)	mg/kg	98	85	120	8087473	180	8087503	470	5.0	8087473

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZG066	SZG067	SZG068	SZG069	SZG070	SZG071		
Sampling Date		2022/06/23	2022/06/23	2022/06/23	2022/06/23	2022/06/23	2022/06/23		
	UNITS	9235-H18	9235-H19	9235-H20	1636-H1	1636-H2	1636-H3	RDL	QC Batch
Metals									
Acid Extractable Aluminum (Al)	mg/kg	1700	9700	13000	3100	2300	1900	10	8087607
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8087607
Acid Extractable Arsenic (As)	mg/kg	17	21	12	5.6	8.8	6.6	2.0	8087607
Acid Extractable Barium (Ba)	mg/kg	280	210	120	12	7.4	7.9	5.0	8087607
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.1	2.7	<1.0	<1.0	<1.0	1.0	8087607
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	3.0	<2.0	<2.0	<2.0	<2.0	2.0	8087607
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	<50	<50	50	8087607
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	2.3	0.58	<0.30	<0.30	<0.30	0.30	8087607
Acid Extractable Chromium (Cr)	mg/kg	3.1	12	8.5	3.2	2.4	2.8	2.0	8087607
Acid Extractable Cobalt (Co)	mg/kg	<1.0	9.6	5.6	1.7	1.2	<1.0	1.0	8087607
Acid Extractable Copper (Cu)	mg/kg	8.7	34	95	6.6	11	7.6	2.0	8087607
Acid Extractable Iron (Fe)	mg/kg	9400	40000	30000	5800	6800	3600	50	8087607
Acid Extractable Lead (Pb)	mg/kg	16	920	130	9.7	23	20	0.50	8087607
Acid Extractable Lithium (Li)	mg/kg	2.1	16	16	5.7	3.4	3.3	2.0	8087607
Acid Extractable Manganese (Mn)	mg/kg	34	580	570	60	57	31	2.0	8087607
Acid Extractable Mercury (Hg)	mg/kg	<0.10	0.12	<0.10	<0.10	<0.10	<0.10	0.10	8087607
Acid Extractable Molybdenum (Mo)	mg/kg	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8087607
Acid Extractable Nickel (Ni)	mg/kg	2.7	19	9.4	4.4	3.1	2.2	2.0	8087607
Acid Extractable Rubidium (Rb)	mg/kg	2.5	12	5.0	<2.0	<2.0	<2.0	2.0	8087607
Acid Extractable Selenium (Se)	mg/kg	3.4	0.70	0.64	<0.50	<0.50	<0.50	0.50	8087607
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8087607
Acid Extractable Strontium (Sr)	mg/kg	11	48	63	12	7.3	11	5.0	8087607
Acid Extractable Thallium (Tl)	mg/kg	<0.10	0.38	<0.10	<0.10	<0.10	<0.10	0.10	8087607
Acid Extractable Tin (Sn)	mg/kg	<1.0	5.2	12	<1.0	<1.0	<1.0	1.0	8087607
Acid Extractable Uranium (U)	mg/kg	0.43	0.61	1.8	0.60	0.29	0.49	0.10	8087607
Acid Extractable Vanadium (V)	mg/kg	5.9	29	32	7.2	5.5	7.0	2.0	8087607
Acid Extractable Zinc (Zn)	mg/kg	15	780	260	24	24	9.0	5.0	8087607

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZG071	SZG072		SZG073	SZG074	SZG075	SZG076		
Sampling Date		2022/06/23	2022/06/22		2022/06/22	2022/06/22	2022/06/22	2022/06/22		
	UNITS	1636-H3 Lab-Dup	5456-H1	QC Batch	5456-H2	5456-H3	5456-H4	5456-H5	RDL	QC Batch
Metals										
Acid Extractable Aluminum (Al)	mg/kg	2000	14000	8087607	9300	5600	8100	4900	10	8087473
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	8087607	<2.0	<2.0	<2.0	<2.0	2.0	8087473
Acid Extractable Arsenic (As)	mg/kg	7.5	9.2	8087607	31	64	24	20	2.0	8087473
Acid Extractable Barium (Ba)	mg/kg	8.0	130	8087607	180	110	150	140	5.0	8087473
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.6	8087607	<1.0	<1.0	<1.0	<1.0	1.0	8087473
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	8087607	<2.0	<2.0	<2.0	<2.0	2.0	8087473
Acid Extractable Boron (B)	mg/kg	<50	<50	8087607	<50	<50	<50	<50	50	8087473
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	8087607	0.53	0.64	<0.30	<0.30	0.30	8087473
Acid Extractable Chromium (Cr)	mg/kg	3.1	21	8087607	9.1	8.8	15	5.1	2.0	8087473
Acid Extractable Cobalt (Co)	mg/kg	<1.0	21	8087607	25	7.2	7.4	3.7	1.0	8087473
Acid Extractable Copper (Cu)	mg/kg	7.8	29	8087607	28	25	22	18	2.0	8087473
Acid Extractable Iron (Fe)	mg/kg	3700	29000	8087607	27000	52000	29000	16000	50	8087473
Acid Extractable Lead (Pb)	mg/kg	21	25	8087607	110	380	26	140	0.50	8087473
Acid Extractable Lithium (Li)	mg/kg	4.5	23	8087607	13	7.6	10	5.8	2.0	8087473
Acid Extractable Manganese (Mn)	mg/kg	33	3100	8087607	3100	440	330	410	2.0	8087473
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	8087607	0.12	0.22	0.10	<0.10	0.10	8087473
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	8087607	2.1	3.5	<2.0	<2.0	2.0	8087473
Acid Extractable Nickel (Ni)	mg/kg	2.5	34	8087607	31	12	17	9.2	2.0	8087473
Acid Extractable Rubidium (Rb)	mg/kg	2.2	12	8087607	5.6	7.5	7.4	4.0	2.0	8087473
Acid Extractable Selenium (Se)	mg/kg	<0.50	<0.50	8087607	1.7	2.4	1.3	0.66	0.50	8087473
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	8087607	<0.50	<0.50	<0.50	<0.50	0.50	8087473
Acid Extractable Strontium (Sr)	mg/kg	12	33	8087607	19	35	13	10	5.0	8087473
Acid Extractable Thallium (Tl)	mg/kg	<0.10	0.12	8087607	0.25	0.64	0.15	0.12	0.10	8087473
Acid Extractable Tin (Sn)	mg/kg	<1.0	<1.0	8087607	1.3	2.3	<1.0	<1.0	1.0	8087473
Acid Extractable Uranium (U)	mg/kg	0.52	1.3	8087607	0.45	0.80	0.43	0.32	0.10	8087473
Acid Extractable Vanadium (V)	mg/kg	6.9	54	8087607	19	42	28	15	2.0	8087473
Acid Extractable Zinc (Zn)	mg/kg	11	84	8087607	97	130	44	56	5.0	8087473

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZG077	SZG078			SZG079		SZG080		
Sampling Date		2022/06/22	2022/06/22			2022/06/22		2022/06/22		
	UNITS	5456-H6	5456-H7	RDL	QC Batch	5456-H8	RDL	5456-H9	RDL	QC Batch
Metals										
Acid Extractable Aluminum (Al)	mg/kg	9900	6100	10	8087503	6200	10	16000	10	8087607
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	2.0	8087503	6.9	2.0	<2.0	2.0	8087607
Acid Extractable Arsenic (As)	mg/kg	80	30	2.0	8087503	22	2.0	18	2.0	8087607
Acid Extractable Barium (Ba)	mg/kg	160	43	5.0	8087503	1400	5.0	100	5.0	8087607
Acid Extractable Beryllium (Be)	mg/kg	<1.0	<1.0	1.0	8087503	1.0	1.0	<1.0	1.0	8087607
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	2.0	8087503	<2.0	2.0	<2.0	2.0	8087607
Acid Extractable Boron (B)	mg/kg	<50	<50	50	8087503	<50	50	<50	50	8087607
Acid Extractable Cadmium (Cd)	mg/kg	1.8	<0.30	0.30	8087503	2.2	0.30	<0.30	0.30	8087607
Acid Extractable Chromium (Cr)	mg/kg	24	11	2.0	8087503	180	2.0	23	2.0	8087607
Acid Extractable Cobalt (Co)	mg/kg	11	3.6	1.0	8087503	6.6	1.0	29	1.0	8087607
Acid Extractable Copper (Cu)	mg/kg	57	19	2.0	8087503	79	2.0	29	2.0	8087607
Acid Extractable Iron (Fe)	mg/kg	64000	24000	50	8087503	150000	500	37000	50	8087607
Acid Extractable Lead (Pb)	mg/kg	270	44	0.50	8087503	2600	0.50	62	0.50	8087607
Acid Extractable Lithium (Li)	mg/kg	14	10	2.0	8087503	6.2	2.0	24	2.0	8087607
Acid Extractable Manganese (Mn)	mg/kg	740	220	2.0	8087503	5900	2.0	6400	2.0	8087607
Acid Extractable Mercury (Hg)	mg/kg	0.17	0.11	0.10	8087503	<0.10	0.10	0.15	0.10	8087607
Acid Extractable Molybdenum (Mo)	mg/kg	4.3	<2.0	2.0	8087503	3.0	2.0	2.6	2.0	8087607
Acid Extractable Nickel (Ni)	mg/kg	28	9.9	2.0	8087503	13	2.0	14	2.0	8087607
Acid Extractable Rubidium (Rb)	mg/kg	9.0	8.4	2.0	8087503	<2.0	2.0	10	2.0	8087607
Acid Extractable Selenium (Se)	mg/kg	0.97	1.2	0.50	8087503	<0.50	0.50	1.4	0.50	8087607
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	0.50	8087503	2.9	0.50	<0.50	0.50	8087607
Acid Extractable Strontium (Sr)	mg/kg	19	20	5.0	8087503	240	5.0	12	5.0	8087607
Acid Extractable Thallium (Tl)	mg/kg	0.35	0.28	0.10	8087503	0.16	0.10	0.27	0.10	8087607
Acid Extractable Tin (Sn)	mg/kg	73	<1.0	1.0	8087503	20	1.0	<1.0	1.0	8087607
Acid Extractable Uranium (U)	mg/kg	0.68	0.23	0.10	8087503	3.2	0.10	0.86	0.10	8087607
Acid Extractable Vanadium (V)	mg/kg	27	12	2.0	8087503	440	2.0	42	2.0	8087607
Acid Extractable Zinc (Zn)	mg/kg	110	56	5.0	8087503	210	5.0	78	5.0	8087607

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZG086		SZG091	SZG092	SZG093	SZG094		
Sampling Date		2022/06/22		2022/06/22	2022/06/22	2022/06/22	2022/06/22		
	UNITS	5456-H11	RDL	4780-H1	4913-H1	4913-H2	4913-H3	RDL	QC Batch
Metals									
Acid Extractable Aluminum (Al)	mg/kg	6000	10	7700	15000	12000	12000	10	8087551
Acid Extractable Antimony (Sb)	mg/kg	4.6	2.0	4.1	<2.0	<2.0	<2.0	2.0	8087551
Acid Extractable Arsenic (As)	mg/kg	92	2.0	35	17	32	20	2.0	8087551
Acid Extractable Barium (Ba)	mg/kg	290	5.0	91	90	57	77	5.0	8087551
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	1.6	1.3	<1.0	<1.0	1.0	8087551
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	<2.0	<2.0	<2.0	2.0	8087551
Acid Extractable Boron (B)	mg/kg	<50	50	<50	<50	<50	<50	50	8087551
Acid Extractable Cadmium (Cd)	mg/kg	0.42	0.30	0.55	<0.30	<0.30	0.51	0.30	8087551
Acid Extractable Chromium (Cr)	mg/kg	33	2.0	11	23	9.6	14	2.0	8087551
Acid Extractable Cobalt (Co)	mg/kg	16	1.0	6.6	14	3.4	5.8	1.0	8087551
Acid Extractable Copper (Cu)	mg/kg	89	2.0	140	27	14	67	2.0	8087551
Acid Extractable Iron (Fe)	mg/kg	110000	500	39000	31000	24000	21000	50	8087551
Acid Extractable Lead (Pb)	mg/kg	380	0.50	130	50	160	250	0.50	8087551
Acid Extractable Lithium (Li)	mg/kg	6.5	2.0	8.8	24	8.2	6.7	2.0	8087551
Acid Extractable Manganese (Mn)	mg/kg	1400	2.0	270	1000	320	760	2.0	8087551
Acid Extractable Mercury (Hg)	mg/kg	0.20	0.10	0.22	0.11	0.14	0.30	0.10	8087551
Acid Extractable Molybdenum (Mo)	mg/kg	5.7	2.0	4.4	<2.0	2.2	<2.0	2.0	8087551
Acid Extractable Nickel (Ni)	mg/kg	28	2.0	25	23	5.8	15	2.0	8087551
Acid Extractable Rubidium (Rb)	mg/kg	3.4	2.0	3.8	9.2	8.8	5.5	2.0	8087551
Acid Extractable Selenium (Se)	mg/kg	1.9	0.50	2.6	0.72	1.1	2.2	0.50	8087551
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	0.50	8087551
Acid Extractable Strontium (Sr)	mg/kg	29	5.0	44	24	10	38	5.0	8087551
Acid Extractable Thallium (Tl)	mg/kg	0.37	0.10	0.34	0.14	0.38	0.27	0.10	8087551
Acid Extractable Tin (Sn)	mg/kg	9.7	1.0	8.4	<1.0	1.9	1.8	1.0	8087551
Acid Extractable Uranium (U)	mg/kg	0.69	0.10	1.6	1.2	0.41	1.2	0.10	8087551
Acid Extractable Vanadium (V)	mg/kg	110	2.0	17	38	44	28	2.0	8087551
Acid Extractable Zinc (Zn)	mg/kg	130	5.0	140	97	36	55	5.0	8087551

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG019		SZG047			SZG048		SZG049		
Sampling Date		2022/06/21		2022/06/21			2022/06/21		2022/06/21		
	UNITS	9235-H1	RDL	9235-H2	RDL	QC Batch	9235-H3	RDL	9235-H4	RDL	QC Batch
Polyaromatic Hydrocarbons											
1-Methylnaphthalene	mg/kg	0.050	0.010	0.17	0.010	8078602	<0.010	0.010	3.8	0.010	8078602
2-Methylnaphthalene	mg/kg	0.066	0.010	0.21	0.010	8078602	<0.010	0.010	5.6	0.010	8078602
Acenaphthene	mg/kg	<0.010	0.010	<0.030 (1)	0.030	8078602	<0.010	0.010	<0.10 (1)	0.10	8078602
Acenaphthylene	mg/kg	<0.010	0.010	<0.030 (1)	0.030	8078602	<0.010	0.010	<0.010	0.010	8078602
Anthracene	mg/kg	<0.010	0.010	0.038	0.010	8078602	<0.010	0.010	0.037	0.010	8078602
Benzo(a)anthracene	mg/kg	<0.010	0.010	0.14	0.010	8078602	<0.010	0.010	0.14	0.010	8078602
Benzo(a)pyrene	mg/kg	<0.010	0.010	0.12	0.010	8078602	<0.010	0.010	0.048	0.010	8078602
Benzo(b)fluoranthene	mg/kg	<0.010	0.010	0.095	0.010	8078602	<0.010	0.010	0.061	0.010	8078602
Benzo(b/j)fluoranthene	mg/kg	<0.020	0.020	0.16	0.020	8071326	<0.020	0.020	0.099	0.020	8071326
Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	0.071	0.010	8078602	<0.010	0.010	0.052	0.010	8078602
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	0.064	0.010	8078602	<0.010	0.010	0.038	0.010	8078602
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	0.062	0.010	8078602	<0.010	0.010	0.023	0.010	8078602
Chrysene	mg/kg	0.017	0.010	0.14	0.010	8078602	<0.010	0.010	0.21	0.010	8078602
Dibenzo(a,h)anthracene	mg/kg	<0.010	0.010	0.016	0.010	8078602	<0.010	0.010	<0.010	0.010	8078602
Fluoranthene	mg/kg	0.025	0.010	0.22	0.010	8078602	<0.010	0.010	0.18	0.010	8078602
Fluorene	mg/kg	<0.010	0.010	<0.030 (1)	0.030	8078602	<0.010	0.010	<0.050 (1)	0.050	8078602
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	0.055	0.010	8078602	<0.010	0.010	0.017	0.010	8078602
Naphthalene	mg/kg	0.045	0.010	0.14	0.010	8078602	<0.010	0.010	5.7	0.010	8078602
Perylene	mg/kg	<0.010	0.010	0.025	0.010	8078602	<0.010	0.010	<0.010	0.010	8078602
Phenanthrene	mg/kg	0.070	0.010	0.26	0.010	8078602	<0.010	0.010	1.5	0.010	8078602
Pyrene	mg/kg	0.023	0.010	0.19	0.010	8078602	<0.010	0.010	0.22	0.010	8078602
Benzo(a)pyrene Total Potency Equiv.	mg/kg	<0.03	0.03	0.18	0.03	8237441	<0.03	0.03	0.08	0.03	8237715
Surrogate Recovery (%)											
D10-Anthracene	%	99		96		8078602	90		89		8078602
D14-Terphenyl (FS)	%	99		100		8078602	94		94		8078602
D8-Acenaphthylene	%	92		95		8078602	89		90		8078602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG052		SZG053		SZG054		SZG055		
Sampling Date		2022/06/21		2022/06/21		2022/06/21		2022/06/21		
	UNITS	9235-H5	RDL	9235-H6	RDL	9235-H7	RDL	9235-H8	RDL	QC Batch
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	mg/kg	2.0	0.010	<0.010	0.010	0.63	0.010	0.46	0.010	8078602
2-Methylnaphthalene	mg/kg	2.3	0.010	<0.010	0.010	0.79	0.010	0.59	0.010	8078602
Acenaphthene	mg/kg	<0.22 (1)	0.22	<0.010	0.010	<0.040 (1)	0.040	<0.030 (1)	0.030	8078602
Acenaphthylene	mg/kg	<0.020 (1)	0.020	<0.010	0.010	<0.010	0.010	<0.020 (1)	0.020	8078602
Anthracene	mg/kg	0.081	0.010	<0.010	0.010	0.020	0.010	0.081	0.010	8078602
Benzo(a)anthracene	mg/kg	<0.22 (1)	0.22	<0.010	0.010	0.050	0.010	0.067	0.010	8078602
Benzo(a)pyrene	mg/kg	0.078	0.010	<0.010	0.010	0.031	0.010	0.080	0.010	8078602
Benzo(b)fluoranthene	mg/kg	0.10	0.010	<0.010	0.010	0.034	0.010	0.092	0.010	8078602
Benzo(b/j)fluoranthene	mg/kg	0.16	0.020	<0.020	0.020	0.053	0.020	0.14	0.020	8071326
Benzo(g,h,i)perylene	mg/kg	0.072	0.010	<0.010	0.010	0.030	0.010	0.16	0.010	8078602
Benzo(j)fluoranthene	mg/kg	0.061	0.010	<0.010	0.010	0.019	0.010	0.043	0.010	8078602
Benzo(k)fluoranthene	mg/kg	0.044	0.010	<0.010	0.010	0.016	0.010	0.041	0.010	8078602
Chrysene	mg/kg	0.25	0.010	<0.010	0.010	0.074	0.010	0.092	0.010	8078602
Dibenzo(a,h)anthracene	mg/kg	0.016	0.010	<0.010	0.010	<0.010	0.010	0.017	0.010	8078602
Fluoranthene	mg/kg	0.26	0.010	<0.010	0.010	0.070	0.010	0.13	0.010	8078602
Fluorene	mg/kg	<0.070 (1)	0.070	<0.010	0.010	<0.030 (1)	0.030	<0.020 (1)	0.020	8078602
Indeno(1,2,3-cd)pyrene	mg/kg	0.034	0.010	<0.010	0.010	0.015	0.010	0.097	0.010	8078602
Naphthalene	mg/kg	1.6	0.010	<0.010	0.010	0.58	0.010	0.51	0.010	8078602
Perylene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	0.024	0.010	8078602
Phenanthrene	mg/kg	1.2	0.010	<0.010	0.010	0.30	0.010	0.34	0.010	8078602
Pyrene	mg/kg	0.31	0.010	<0.010	0.010	0.078	0.010	0.12	0.010	8078602
Benzo(a)pyrene Total Potency Equiv.	mg/kg	0.12	0.05	<0.03	0.03	0.05	0.03	0.13	0.03	8237441
Surrogate Recovery (%)										
D10-Anthracene	%	81		96		89		89		8078602
D14-Terphenyl (FS)	%	90		96		94		94		8078602
D8-Acenaphthylene	%	83		93		92		91		8078602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG056			SZG056			SZG057		
Sampling Date		2022/06/22			2022/06/22			2022/06/22		
	UNITS	9235-H9	RDL	QC Batch	9235-H9 Lab-Dup	RDL	QC Batch	9235-H10	RDL	QC Batch
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	mg/kg	0.75	0.010	8078602	0.71	0.010	8078602	0.33	0.010	8078602
2-Methylnaphthalene	mg/kg	0.99	0.010	8078602	0.96	0.010	8078602	0.42	0.010	8078602
Acenaphthene	mg/kg	<0.050 (1)	0.050	8078602	<0.040 (1)	0.040	8078602	0.050	0.010	8078602
Acenaphthylene	mg/kg	<0.020 (1)	0.020	8078602	<0.010	0.010	8078602	0.046	0.010	8078602
Anthracene	mg/kg	0.029	0.010	8078602	0.023	0.010	8078602	0.19	0.010	8078602
Benzo(a)anthracene	mg/kg	0.073	0.010	8078602	0.067	0.010	8078602	0.59	0.010	8078602
Benzo(a)pyrene	mg/kg	0.055	0.010	8078602	0.048	0.010	8078602	0.52	0.010	8078602
Benzo(b)fluoranthene	mg/kg	0.053	0.010	8078602	0.048	0.010	8078602	0.49	0.010	8078602
Benzo(b/j)fluoranthene	mg/kg	0.086	0.020	8071326				0.78	0.020	8070446
Benzo(g,h,i)perylene	mg/kg	0.040	0.010	8078602	0.037	0.010	8078602	0.32	0.010	8078602
Benzo(j)fluoranthene	mg/kg	0.033	0.010	8078602	0.029	0.010	8078602	0.28	0.010	8078602
Benzo(k)fluoranthene	mg/kg	0.027	0.010	8078602	0.022	0.010	8078602	0.28	0.010	8078602
Chrysene	mg/kg	0.097	0.010	8078602	0.089	0.010	8078602	0.66	0.010	8078602
Dibenzo(a,h)anthracene	mg/kg	<0.010	0.010	8078602	<0.010	0.010	8078602	0.072	0.010	8078602
Fluoranthene	mg/kg	0.096	0.010	8078602	0.089	0.010	8078602	1.2	0.010	8078602
Fluorene	mg/kg	<0.030 (1)	0.030	8078602	<0.030 (1)	0.030	8078602	0.060	0.010	8078602
Indeno(1,2,3-cd)pyrene	mg/kg	0.025	0.010	8078602	0.020	0.010	8078602	0.27	0.010	8078602
Naphthalene	mg/kg	0.71	0.010	8078602	0.68	0.010	8078602	0.33	0.010	8078602
Perylene	mg/kg	<0.010	0.010	8078602	<0.010	0.010	8078602	0.12	0.010	8078602
Phenanthrene	mg/kg	0.32	0.010	8078602	0.31	0.010	8078602	0.78	0.010	8078602
Pyrene	mg/kg	0.10	0.010	8078602	0.095	0.010	8078602	1.0	0.010	8078602
Benzo(a)pyrene Total Potency Equiv.	mg/kg	0.08	0.03	8237441				0.79	0.03	8237441
Surrogate Recovery (%)										
D10-Anthracene	%	90		8078602	92		8078602	100		8078602
D14-Terphenyl (FS)	%	95		8078602	96		8078602	98		8078602
D8-Acenaphthylene	%	92		8078602	93		8078602	95		8078602

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG058			SZG059		SZG060		SZG061		
Sampling Date		2022/06/22			2022/06/22		2022/06/23		2022/06/23		
	UNITS	9235-H11	RDL	QC Batch	9235-H12	RDL	9235-H13	QC Batch	9235-H14	RDL	QC Batch
Polyaromatic Hydrocarbons											
1-Methylnaphthalene	mg/kg	0.31	0.010	8078602	3.9	0.010	0.029	8078602	0.13	0.010	8079162
2-Methylnaphthalene	mg/kg	0.41	0.010	8078602	4.0	0.010	0.038	8078602	0.17	0.010	8079162
Acenaphthene	mg/kg	<0.050 (1)	0.050	8078602	<0.40 (1)	0.40	<0.010	8078602	<0.010	0.010	8079162
Acenaphthylene	mg/kg	<0.030 (1)	0.030	8078602	<0.080 (1)	0.080	<0.010	8078602	0.018	0.010	8079162
Anthracene	mg/kg	0.043	0.010	8078602	0.27	0.010	<0.010	8078602	0.043	0.010	8079162
Benzo(a)anthracene	mg/kg	0.13	0.010	8078602	0.71	0.010	<0.010	8078602	0.089	0.010	8079162
Benzo(a)pyrene	mg/kg	0.094	0.010	8078602	0.34	0.010	<0.010	8078602	0.077	0.010	8079162
Benzo(b)fluoranthene	mg/kg	0.10	0.010	8078602	0.34	0.010	<0.010	8078602	0.077	0.010	8079162
Benzo(b/j)fluoranthene	mg/kg	0.16	0.020	8071326	0.56	0.020	<0.020	8070446	0.12	0.020	8070446
Benzo(g,h,i)perylene	mg/kg	0.068	0.010	8078602	0.16	0.010	<0.010	8078602	0.071	0.010	8079162
Benzo(j)fluoranthene	mg/kg	0.059	0.010	8078602	0.22	0.010	<0.010	8078602	0.046	0.010	8079162
Benzo(k)fluoranthene	mg/kg	0.053	0.010	8078602	0.18	0.010	<0.010	8078602	0.043	0.010	8079162
Chrysene	mg/kg	0.18	0.010	8078602	0.71	0.010	<0.010	8078602	0.094	0.010	8079162
Dibenzo(a,h)anthracene	mg/kg	0.014	0.010	8078602	0.049	0.010	<0.010	8078602	<0.010	0.010	8079162
Fluoranthene	mg/kg	0.27	0.010	8078602	1.1	0.010	0.020	8078602	0.16	0.010	8079162
Fluorene	mg/kg	<0.030 (1)	0.030	8078602	<0.20 (1)	0.20	<0.010	8078602	<0.010	0.010	8079162
Indeno(1,2,3-cd)pyrene	mg/kg	0.051	0.010	8078602	0.12	0.010	<0.010	8078602	0.052	0.010	8079162
Naphthalene	mg/kg	0.35	0.010	8078602	2.7	0.010	0.024	8078602	0.13	0.010	8079162
Perylene	mg/kg	0.019	0.010	8078602	0.057	0.010	<0.010	8078602	0.018	0.010	8079162
Phenanthrene	mg/kg	0.39	0.010	8078602	2.6	0.010	0.022	8078602	0.13	0.010	8079162
Pyrene	mg/kg	0.23	0.010	8078602	1.0	0.010	0.017	8078602	0.13	0.010	8079162
Benzo(a)pyrene Total Potency Equiv.	mg/kg	0.15	0.03	8237441	0.55	0.03	<0.03	8237441	0.11	0.03	8237441
Surrogate Recovery (%)											
D10-Anthracene	%	95		8078602	85		107	8078602	102		8079162
D14-Terphenyl (FS)	%	98		8078602	92		103	8078602	101		8079162
D8-Acenaphthylene	%	96		8078602	83		99	8078602	96		8079162

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG062		SZG064		SZG065		SZG066		
Sampling Date		2022/06/23		2022/06/23		2022/06/23		2022/06/23		
	UNITS	9235-H15	RDL	9235-H16	RDL	9235-H17	RDL	9235-H18	RDL	QC Batch
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	mg/kg	0.73	0.010	<0.010	0.010	0.36	0.010	10	0.010	8079162
2-Methylnaphthalene	mg/kg	0.82	0.010	<0.010	0.010	0.37	0.010	13	0.010	8079162
Acenaphthene	mg/kg	0.16	0.010	<0.010	0.010	0.24	0.010	<0.48 (1)	0.48	8079162
Acenaphthylene	mg/kg	0.49	0.010	<0.010	0.010	2.2	0.010	<0.050 (1)	0.050	8079162
Anthracene	mg/kg	0.89	0.010	<0.010	0.010	2.8	0.010	<0.040 (1)	0.040	8079162
Benzo(a)anthracene	mg/kg	2.6	0.010	0.021	0.010	9.8	0.010	0.35	0.010	8079162
Benzo(a)pyrene	mg/kg	1.9	0.010	<0.020 (1)	0.020	9.0	0.010	0.095	0.010	8079162
Benzo(b)fluoranthene	mg/kg	1.6	0.010	0.016	0.010	7.0	0.010	0.15	0.010	8079162
Benzo(b/j)fluoranthene	mg/kg	2.7	0.020	<0.020	0.020	11	0.020	0.15	0.090	8070446
Benzo(g,h,i)perylene	mg/kg	0.93	0.010	0.013	0.010	5.2	0.010	0.072	0.010	8079162
Benzo(j)fluoranthene	mg/kg	1.1	0.010	<0.010	0.010	4.4	0.010	<0.080 (1)	0.080	8079162
Benzo(k)fluoranthene	mg/kg	1.1	0.010	<0.010	0.010	4.3	0.010	0.049	0.010	8079162
Chrysene	mg/kg	2.6	0.010	0.020	0.010	9.8	0.010	0.67	0.010	8079162
Dibenzo(a,h)anthracene	mg/kg	0.26	0.010	<0.010	0.010	1.2	0.010	<0.030 (1)	0.030	8079162
Fluoranthene	mg/kg	5.4	0.010	0.043	0.010	18	0.010	0.40	0.010	8079162
Fluorene	mg/kg	0.20	0.010	<0.010	0.010	0.70	0.010	<0.32 (1)	0.32	8079162
Indeno(1,2,3-cd)pyrene	mg/kg	0.89	0.010	0.012	0.010	4.7	0.010	<0.030 (1)	0.030	8079162
Naphthalene	mg/kg	0.51	0.010	<0.010	0.010	0.37	0.010	7.6	0.010	8079162
Perylene	mg/kg	0.39	0.010	<0.010	0.010	2.0	0.010	<0.010	0.010	8079162
Phenanthrene	mg/kg	2.9	0.010	0.032	0.010	9.3	0.010	3.7	0.010	8079162
Pyrene	mg/kg	4.3	0.010	0.034	0.010	15	0.010	0.52	0.010	8079162
Benzo(a)pyrene Total Potency Equiv.	mg/kg	2.9	0.03	<0.04	0.04	13	0.03	0.16	0.05	8237441
Surrogate Recovery (%)										
D10-Anthracene	%	95		102		102		78		8079162
D14-Terphenyl (FS)	%	96		99		98		87		8079162
D8-Acenaphthylene	%	95		96		101		79		8079162

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG067			SZG067			SZG068		
Sampling Date		2022/06/23			2022/06/23			2022/06/23		
	UNITS	9235-H19	RDL	QC Batch	9235-H19 Lab-Dup	RDL	QC Batch	9235-H20	RDL	QC Batch
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	mg/kg	0.25	0.010	8079162	0.21	0.010	8079162	0.065	0.010	8079162
2-Methylnaphthalene	mg/kg	0.30	0.010	8079162	0.27	0.010	8079162	0.079	0.010	8079162
Acenaphthene	mg/kg	0.052	0.010	8079162	0.045	0.010	8079162	<0.010	0.010	8079162
Acenaphthylene	mg/kg	0.18	0.010	8079162	0.15	0.010	8079162	0.032	0.010	8079162
Anthracene	mg/kg	0.23	0.010	8079162	0.21	0.010	8079162	0.054	0.010	8079162
Benzo(a)anthracene	mg/kg	0.66	0.010	8079162	0.62	0.010	8079162	0.18	0.010	8079162
Benzo(a)pyrene	mg/kg	0.59	0.010	8079162	0.60	0.010	8079162	0.15	0.010	8079162
Benzo(b)fluoranthene	mg/kg	0.52	0.010	8079162	0.50	0.010	8079162	0.15	0.010	8079162
Benzo(b/j)fluoranthene	mg/kg	0.83	0.020	8070446				0.24	0.020	8070446
Benzo(g,h,i)perylene	mg/kg	0.37	0.010	8079162	0.38	0.010	8079162	0.11	0.010	8079162
Benzo(j)fluoranthene	mg/kg	0.31	0.010	8079162	0.30	0.010	8079162	0.088	0.010	8079162
Benzo(k)fluoranthene	mg/kg	0.32	0.010	8079162	0.30	0.010	8079162	0.082	0.010	8079162
Chrysene	mg/kg	0.77	0.010	8079162	0.67	0.010	8079162	0.21	0.010	8079162
Dibenzo(a,h)anthracene	mg/kg	0.069	0.010	8079162	0.077	0.010	8079162	0.023	0.010	8079162
Fluoranthene	mg/kg	1.7	0.010	8079162	1.5	0.010	8079162	0.34	0.010	8079162
Fluorene	mg/kg	0.087	0.010	8079162	0.061	0.010	8079162	0.013	0.010	8079162
Indeno(1,2,3-cd)pyrene	mg/kg	0.31	0.010	8079162	0.32	0.010	8079162	0.096	0.010	8079162
Naphthalene	mg/kg	0.22	0.010	8079162	0.19	0.010	8079162	0.060	0.010	8079162
Perylene	mg/kg	0.13	0.010	8079162	0.14	0.010	8079162	0.035	0.010	8079162
Phenanthrene	mg/kg	1.2	0.010	8079162	0.91	0.010	8079162	0.21	0.010	8079162
Pyrene	mg/kg	1.3	0.010	8079162	1.2	0.010	8079162	0.27	0.010	8079162
Benzo(a)pyrene Total Potency Equiv.	mg/kg	0.88	0.03	8237441				0.24	0.03	8237441
Surrogate Recovery (%)										
D10-Anthracene	%	101		8079162	87		8079162	101		8079162
D14-Terphenyl (FS)	%	100		8079162	88		8079162	98		8079162
D8-Acenaphthylene	%	95		8079162	92		8079162	95		8079162

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG069		SZG070		SZG071		SZG072		
Sampling Date		2022/06/23		2022/06/23		2022/06/23		2022/06/22		
	UNITS	1636-H1	RDL	1636-H2	RDL	1636-H3	RDL	5456-H1	RDL	QC Batch
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	mg/kg	1.0	0.010	0.86	0.010	1.3	0.010	0.32	0.010	8079162
2-Methylnaphthalene	mg/kg	1.2	0.010	1.1	0.010	1.7	0.010	0.40	0.010	8079162
Acenaphthene	mg/kg	<0.060 (1)	0.060	<0.050 (1)	0.050	<0.070 (1)	0.070	<0.020 (1)	0.020	8079162
Acenaphthylene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	<0.010	0.010	8079162
Anthracene	mg/kg	<0.030 (1)	0.030	<0.040 (1)	0.040	<0.040 (1)	0.040	<0.030 (1)	0.030	8079162
Benzo(a)anthracene	mg/kg	0.077	0.010	0.079	0.010	0.10	0.010	0.064	0.010	8079162
Benzo(a)pyrene	mg/kg	0.042	0.010	0.047	0.010	0.049	0.010	0.048	0.010	8079162
Benzo(b)fluoranthene	mg/kg	0.046	0.010	0.052	0.010	0.054	0.010	0.053	0.010	8079162
Benzo(b/j)fluoranthene	mg/kg	0.071	0.020	0.081	0.020	0.086	0.020	0.082	0.020	8070446
Benzo(g,h,i)perylene	mg/kg	0.030	0.010	0.034	0.010	0.035	0.010	0.035	0.010	8079162
Benzo(j)fluoranthene	mg/kg	0.025	0.010	0.029	0.010	0.032	0.010	0.029	0.010	8079162
Benzo(k)fluoranthene	mg/kg	0.019	0.010	0.024	0.010	0.028	0.010	0.025	0.010	8079162
Chrysene	mg/kg	0.14	0.010	0.12	0.010	0.17	0.010	0.11	0.010	8079162
Dibenzo(a,h)anthracene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	<0.010	0.010	8079162
Fluoranthene	mg/kg	0.089	0.010	0.14	0.010	0.13	0.010	0.13	0.010	8079162
Fluorene	mg/kg	<0.050 (1)	0.050	<0.040 (1)	0.040	<0.060 (1)	0.060	<0.020 (1)	0.020	8079162
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	0.020	0.010	0.018	0.010	0.023	0.010	8079162
Naphthalene	mg/kg	0.66	0.010	0.69	0.010	1.1	0.010	0.23	0.010	8079162
Perylene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	0.010	<0.010	0.010	8079162
Phenanthrene	mg/kg	0.49	0.010	0.44	0.010	0.58	0.010	0.24	0.010	8079162
Pyrene	mg/kg	0.10	0.010	0.12	0.010	0.15	0.010	0.12	0.010	8079162
Benzo(a)pyrene Total Potency Equiv.	mg/kg	0.06	0.03	0.07	0.03	0.07	0.03	0.07	0.03	8237441
Surrogate Recovery (%)										
D10-Anthracene	%	96		94		95		98		8079162
D14-Terphenyl (FS)	%	97		93		95		96		8079162
D8-Acenaphthylene	%	93		92		91		92		8079162

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG073		SZG074		SZG075		SZG076		
Sampling Date		2022/06/22		2022/06/22		2022/06/22		2022/06/22		
	UNITS	5456-H2	RDL	5456-H3	RDL	5456-H4	RDL	5456-H5	RDL	QC Batch
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	mg/kg	1.8	0.010	1.7	0.010	0.61	0.010	0.68	0.010	8079162
2-Methylnaphthalene	mg/kg	2.3	0.010	2.1	0.010	0.78	0.010	0.80	0.010	8079162
Acenaphthene	mg/kg	<0.11 (1)	0.11	<0.23 (1)	0.23	<0.080 (1)	0.080	<0.090 (1)	0.090	8079162
Acenaphthylene	mg/kg	<0.010	0.010	<0.030 (1)	0.030	<0.010	0.010	<0.030 (1)	0.030	8079162
Anthracene	mg/kg	<0.030 (1)	0.030	<0.10 (1)	0.10	<0.030 (1)	0.030	<0.070 (1)	0.070	8079162
Benzo(a)anthracene	mg/kg	0.15	0.010	0.27	0.010	0.10	0.010	0.21	0.010	8079162
Benzo(a)pyrene	mg/kg	0.051	0.010	0.11	0.010	0.040	0.010	0.095	0.010	8079162
Benzo(b)fluoranthene	mg/kg	0.074	0.010	0.097	0.010	0.043	0.010	0.10	0.010	8079162
Benzo(b/j)fluoranthene	mg/kg	0.12	0.020	0.17	0.020	0.071	0.020	0.17	0.020	8070446
Benzo(g,h,i)perylene	mg/kg	0.042	0.010	0.075	0.010	0.031	0.010	0.051	0.010	8079162
Benzo(j)fluoranthene	mg/kg	0.041	0.010	0.069	0.010	0.029	0.010	0.065	0.010	8079162
Benzo(k)fluoranthene	mg/kg	0.028	0.010	0.040	0.010	0.016	0.010	0.055	0.010	8079162
Chrysene	mg/kg	0.26	0.010	0.31	0.010	0.15	0.010	0.26	0.010	8079162
Dibenzo(a,h)anthracene	mg/kg	<0.010	0.010	0.017	0.010	<0.010	0.010	0.016	0.010	8079162
Fluoranthene	mg/kg	0.20	0.010	0.33	0.010	0.12	0.010	0.37	0.010	8079162
Fluorene	mg/kg	<0.080 (1)	0.080	<0.12 (1)	0.12	<0.050 (1)	0.050	<0.050 (1)	0.050	8079162
Indeno(1,2,3-cd)pyrene	mg/kg	0.018	0.010	0.028	0.010	0.013	0.010	0.036	0.010	8079162
Naphthalene	mg/kg	1.3	0.010	1.4	0.010	0.49	0.010	0.50	0.010	8079162
Perylene	mg/kg	<0.010	0.010	0.049	0.010	<0.010	0.010	0.014	0.010	8079162
Phenanthrene	mg/kg	1.0	0.010	1.3	0.010	0.50	0.010	0.65	0.010	8079162
Pyrene	mg/kg	0.22	0.010	0.35	0.010	0.14	0.010	0.31	0.010	8079162
Benzo(a)pyrene Total Potency Equiv.	mg/kg	0.09	0.03	0.18	0.03	0.06	0.03	0.16	0.03	8237441
Surrogate Recovery (%)										
D10-Anthracene	%	95		84		98		94		8079162
D14-Terphenyl (FS)	%	100		91		99		97		8079162
D8-Acenaphthylene	%	95		84		97		91		8079162

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG077			SZG078		SZG079		SZG080		
Sampling Date		2022/06/22			2022/06/22		2022/06/22		2022/06/22		
	UNITS	5456-H6	RDL	QC Batch	5456-H7	RDL	5456-H8	RDL	5456-H9	RDL	QC Batch
Polyaromatic Hydrocarbons											
1-Methylnaphthalene	mg/kg	0.43	0.010	8081964	1.1	0.010	0.096	0.010	0.28	0.010	8079162
2-Methylnaphthalene	mg/kg	0.52	0.010	8081964	1.5	0.010	0.085	0.010	0.35	0.010	8079162
Acenaphthene	mg/kg	0.15	0.010	8081964	<0.040 (1)	0.040	0.17	0.010	<0.020 (1)	0.020	8079162
Acenaphthylene	mg/kg	<0.030 (1)	0.030	8081964	<0.010	0.010	0.52	0.010	<0.010	0.010	8079162
Anthracene	mg/kg	0.54	0.010	8081964	<0.030 (1)	0.030	1.1	0.010	0.018	0.010	8079162
Benzo(a)anthracene	mg/kg	1.2	0.010	8081964	0.081	0.010	3.2	0.010	0.044	0.010	8079162
Benzo(a)pyrene	mg/kg	0.87	0.010	8081964	0.046	0.010	2.9	0.010	0.031	0.010	8079162
Benzo(b)fluoranthene	mg/kg	0.80	0.010	8081964	0.075	0.010	2.2	0.010	0.038	0.010	8079162
Benzo(b/j)fluoranthene	mg/kg	1.3	0.020	8070446	0.11	0.020	3.6	0.020	0.056	0.020	8070446
Benzo(g,h,i)perylene	mg/kg	0.44	0.010	8081964	0.049	0.010	2.3	0.010	0.023	0.010	8079162
Benzo(j)fluoranthene	mg/kg	0.47	0.010	8081964	0.034	0.010	1.5	0.010	0.018	0.010	8079162
Benzo(k)fluoranthene	mg/kg	0.48	0.010	8081964	0.029	0.010	1.4	0.010	0.018	0.010	8079162
Chrysene	mg/kg	1.3	0.010	8081964	0.17	0.010	3.2	0.010	0.070	0.010	8079162
Dibenzo(a,h)anthracene	mg/kg	0.14	0.010	8081964	<0.010	0.010	0.45	0.010	<0.010	0.010	8079162
Fluoranthene	mg/kg	3.1	0.010	8081964	0.16	0.010	6.9	0.010	0.10	0.010	8079162
Fluorene	mg/kg	0.21	0.010	8081964	<0.030 (1)	0.030	0.30	0.010	<0.010	0.010	8079162
Indeno(1,2,3-cd)pyrene	mg/kg	0.39	0.010	8081964	0.024	0.010	2.0	0.010	0.015	0.010	8079162
Naphthalene	mg/kg	0.38	0.010	8081964	1.2	0.010	0.075	0.010	0.24	0.010	8079162
Perylene	mg/kg	0.18	0.010	8081964	<0.010	0.010	0.61	0.010	<0.010	0.010	8079162
Phenanthrene	mg/kg	2.8	0.010	8081964	0.64	0.010	4.3	0.010	0.21	0.010	8079162
Pyrene	mg/kg	2.4	0.010	8081964	0.16	0.010	5.3	0.010	0.083	0.010	8079162
Benzo(a)pyrene Total Potency Equiv.	mg/kg	1.4	0.03	8237441	0.07	0.03	4.4	0.03	0.04	0.03	8237441
Surrogate Recovery (%)											
D10-Anthracene	%	79		8081964	98		104		96		8079162
D14-Terphenyl (FS)	%	88		8081964	96		100		96		8079162
D8-Acenaphthylene	%	87		8081964	94		97		92		8079162

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG086		SZG091			SZG092	SZG093		
Sampling Date		2022/06/22		2022/06/22			2022/06/22	2022/06/22		
	UNITS	5456-H11	RDL	4780-H1	RDL	QC Batch	4913-H1	4913-H2	RDL	QC Batch
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	mg/kg	0.40	0.010	0.47	0.010	8079162	0.029	0.075	0.010	8081964
2-Methylnaphthalene	mg/kg	0.49	0.010	0.55	0.010	8079162	0.035	0.10	0.010	8081964
Acenaphthene	mg/kg	0.064	0.010	<0.060 (1)	0.060	8079162	<0.010	<0.010	0.010	8081964
Acenaphthylene	mg/kg	0.25	0.010	0.13	0.010	8079162	<0.010	<0.010	0.010	8081964
Anthracene	mg/kg	0.38	0.010	0.21	0.010	8079162	<0.010	<0.010	0.010	8081964
Benzo(a)anthracene	mg/kg	1.3	0.010	0.48	0.010	8079162	0.052	<0.010	0.010	8081964
Benzo(a)pyrene	mg/kg	0.99	0.010	0.38	0.010	8079162	0.049	<0.010	0.010	8081964
Benzo(b)fluoranthene	mg/kg	1.1	0.010	0.40	0.010	8079162	0.058	<0.010	0.010	8081964
Benzo(b/j)fluoranthene	mg/kg	1.8	0.020	0.64	0.020	8070446	0.088	<0.020	0.020	8070446
Benzo(g,h,i)perylene	mg/kg	0.62	0.010	0.23	0.010	8079162	0.037	<0.010	0.010	8081964
Benzo(j)fluoranthene	mg/kg	0.68	0.010	0.24	0.010	8079162	0.030	<0.010	0.010	8081964
Benzo(k)fluoranthene	mg/kg	0.66	0.010	0.23	0.010	8079162	0.031	<0.010	0.010	8081964
Chrysene	mg/kg	1.7	0.010	0.54	0.010	8079162	0.088	0.027	0.010	8081964
Dibenzo(a,h)anthracene	mg/kg	0.15	0.010	0.060	0.010	8079162	<0.010	<0.010	0.010	8081964
Fluoranthene	mg/kg	3.3	0.010	0.89	0.010	8079162	0.13	0.033	0.010	8081964
Fluorene	mg/kg	0.092	0.010	<0.050 (1)	0.050	8079162	<0.010	<0.010	0.010	8081964
Indeno(1,2,3-cd)pyrene	mg/kg	0.59	0.010	0.22	0.010	8079162	0.027	<0.010	0.010	8081964
Naphthalene	mg/kg	0.37	0.010	0.39	0.010	8079162	0.021	0.072	0.010	8081964
Perylene	mg/kg	0.20	0.010	0.081	0.010	8079162	0.013	<0.010	0.010	8081964
Phenanthrene	mg/kg	1.7	0.010	0.63	0.010	8079162	0.073	0.061	0.010	8081964
Pyrene	mg/kg	2.6	0.010	0.73	0.010	8079162	0.12	<0.010	0.010	8081964
Benzo(a)pyrene Total Potency Equiv.	mg/kg	1.6	0.03	0.60	0.03	8237441	0.07	<0.03	0.03	8237441
Surrogate Recovery (%)										
D10-Anthracene	%	99		95		8079162	90	82		8081964
D14-Terphenyl (FS)	%	96		94		8079162	92	90		8081964
D8-Acenaphthylene	%	97		93		8079162	94	85		8081964

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG094		
Sampling Date		2022/06/22		
	UNITS	4913-H3	RDL	QC Batch
Polyaromatic Hydrocarbons				
1-Methylnaphthalene	mg/kg	0.45	0.010	8081964
2-Methylnaphthalene	mg/kg	0.58	0.010	8081964
Acenaphthene	mg/kg	<0.010	0.010	8081964
Acenaphthylene	mg/kg	<0.010	0.010	8081964
Anthracene	mg/kg	<0.010	0.010	8081964
Benzo(a)anthracene	mg/kg	0.073	0.010	8081964
Benzo(a)pyrene	mg/kg	0.065	0.010	8081964
Benzo(b)fluoranthene	mg/kg	0.094	0.010	8081964
Benzo(b/j)fluoranthene	mg/kg	0.094	0.020	8070446
Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	8081964
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	8081964
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	8081964
Chrysene	mg/kg	0.14	0.010	8081964
Dibenzo(a,h)anthracene	mg/kg	<0.010	0.010	8081964
Fluoranthene	mg/kg	0.21	0.010	8081964
Fluorene	mg/kg	<0.010	0.010	8081964
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	8081964
Naphthalene	mg/kg	0.36	0.010	8081964
Perylene	mg/kg	<0.010	0.010	8081964
Phenanthrene	mg/kg	0.36	0.010	8081964
Pyrene	mg/kg	0.16	0.010	8081964
Benzo(a)pyrene Total Potency Equiv.	mg/kg	0.08	0.03	8237441
Surrogate Recovery (%)				
D10-Anthracene	%	87		8081964
D14-Terphenyl (FS)	%	91		8081964
D8-Acenaphthylene	%	87		8081964

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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GENERAL COMMENTS

REISSUED REPORT to include BAP-TPE calculations on soil samples as requested by J Shea. 09/21/2022 NBU

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8076536	NLI	RPD [SZG019-01]	Moisture	2022/06/28	1.4		%	25
8076680	KCS	RPD	Moisture	2022/06/28	4.1		%	25
8078421	NLI	RPD [SZG067-01]	Moisture	2022/06/29	0.75		%	25
8078602	LGE	Matrix Spike [SZG056-01]	D10-Anthracene	2022/06/28		89	%	50 - 130
			D14-Terphenyl (FS)	2022/06/28		92	%	50 - 130
			D8-Acenaphthylene	2022/06/28		90	%	50 - 130
			1-Methylnaphthalene	2022/06/28		90	%	50 - 130
			2-Methylnaphthalene	2022/06/28		83	%	50 - 130
			Acenaphthene	2022/06/28		94	%	50 - 130
			Acenaphthylene	2022/06/28		97	%	50 - 130
			Anthracene	2022/06/28		97	%	50 - 130
			Benzo(a)anthracene	2022/06/28		95	%	50 - 130
			Benzo(a)pyrene	2022/06/28		79	%	50 - 130
			Benzo(b)fluoranthene	2022/06/28		86	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/28		81	%	50 - 130
			Benzo(j)fluoranthene	2022/06/28		85	%	50 - 130
			Benzo(k)fluoranthene	2022/06/28		91	%	50 - 130
			Chrysene	2022/06/28		83	%	50 - 130
			Dibenzo(a,h)anthracene	2022/06/28		83	%	50 - 130
			Fluoranthene	2022/06/28		94	%	50 - 130
			Fluorene	2022/06/28		94	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/28		82	%	50 - 130
			Naphthalene	2022/06/28		88	%	50 - 130
			Perylene	2022/06/28		87	%	50 - 130
			Phenanthrene	2022/06/28		87	%	50 - 130
			Pyrene	2022/06/28		91	%	50 - 130
8078602	LGE	Spiked Blank	D10-Anthracene	2022/06/28		101	%	50 - 130
			D14-Terphenyl (FS)	2022/06/28		100	%	50 - 130
			D8-Acenaphthylene	2022/06/28		99	%	50 - 130
			1-Methylnaphthalene	2022/06/28		108	%	50 - 130
			2-Methylnaphthalene	2022/06/28		105	%	50 - 130
			Acenaphthene	2022/06/28		105	%	50 - 130
			Acenaphthylene	2022/06/28		111	%	50 - 130
			Anthracene	2022/06/28		109	%	50 - 130
			Benzo(a)anthracene	2022/06/28		104	%	50 - 130
			Benzo(a)pyrene	2022/06/28		95	%	50 - 130
			Benzo(b)fluoranthene	2022/06/28		99	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/28		99	%	50 - 130
			Benzo(j)fluoranthene	2022/06/28		98	%	50 - 130
			Benzo(k)fluoranthene	2022/06/28		103	%	50 - 130
			Chrysene	2022/06/28		95	%	50 - 130
			Dibenzo(a,h)anthracene	2022/06/28		92	%	50 - 130
			Fluoranthene	2022/06/28		104	%	50 - 130
			Fluorene	2022/06/28		104	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/28		95	%	50 - 130
			Naphthalene	2022/06/28		106	%	50 - 130
			Perylene	2022/06/28		103	%	50 - 130
			Phenanthrene	2022/06/28		103	%	50 - 130
			Pyrene	2022/06/28		104	%	50 - 130
8078602	LGE	Method Blank	D10-Anthracene	2022/06/28		105	%	50 - 130
			D14-Terphenyl (FS)	2022/06/28		103	%	50 - 130
			D8-Acenaphthylene	2022/06/28		102	%	50 - 130
			1-Methylnaphthalene	2022/06/28	<0.010		mg/kg	
			2-Methylnaphthalene	2022/06/28	<0.010		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acenaphthene	2022/06/28	<0.010		mg/kg	
			Acenaphthylene	2022/06/28	<0.010		mg/kg	
			Anthracene	2022/06/28	<0.010		mg/kg	
			Benzo(a)anthracene	2022/06/28	<0.010		mg/kg	
			Benzo(a)pyrene	2022/06/28	<0.010		mg/kg	
			Benzo(b)fluoranthene	2022/06/28	<0.010		mg/kg	
			Benzo(g,h,i)perylene	2022/06/28	<0.010		mg/kg	
			Benzo(j)fluoranthene	2022/06/28	<0.010		mg/kg	
			Benzo(k)fluoranthene	2022/06/28	<0.010		mg/kg	
			Chrysene	2022/06/28	<0.010		mg/kg	
			Dibenzo(a,h)anthracene	2022/06/28	<0.010		mg/kg	
			Fluoranthene	2022/06/28	<0.010		mg/kg	
			Fluorene	2022/06/28	<0.010		mg/kg	
			Indeno(1,2,3-cd)pyrene	2022/06/28	<0.010		mg/kg	
			Naphthalene	2022/06/28	<0.010		mg/kg	
			Perylene	2022/06/28	<0.010		mg/kg	
			Phenanthrene	2022/06/28	<0.010		mg/kg	
			Pyrene	2022/06/28	<0.010		mg/kg	
8078602	LGE	RPD [SZG056-01]	1-Methylnaphthalene	2022/06/28	6.0		%	50
			2-Methylnaphthalene	2022/06/28	3.9		%	50
			Acenaphthene	2022/06/28	NC (1)		%	50
			Acenaphthylene	2022/06/28	NC		%	50
			Anthracene	2022/06/28	24		%	50
			Benzo(a)anthracene	2022/06/28	9.1		%	50
			Benzo(a)pyrene	2022/06/28	13		%	50
			Benzo(b)fluoranthene	2022/06/28	9.4		%	50
			Benzo(g,h,i)perylene	2022/06/28	9.4		%	50
			Benzo(j)fluoranthene	2022/06/28	11		%	50
			Benzo(k)fluoranthene	2022/06/28	20		%	50
			Chrysene	2022/06/28	9.0		%	50
			Dibenzo(a,h)anthracene	2022/06/28	NC		%	50
			Fluoranthene	2022/06/28	7.7		%	50
			Fluorene	2022/06/28	NC (1)		%	50
			Indeno(1,2,3-cd)pyrene	2022/06/28	20		%	50
			Naphthalene	2022/06/28	3.9		%	50
			Perylene	2022/06/28	NC		%	50
			Phenanthrene	2022/06/28	3.4		%	50
			Pyrene	2022/06/28	7.0		%	50
8078672	MSK	Matrix Spike	Isobutylbenzene - Extractable	2022/06/28		84	%	60 - 130
			n-Dotriacontane - Extractable	2022/06/28		103	%	60 - 130
			>C10-C16 Hydrocarbons	2022/06/28		NC	%	30 - 130
			>C16-C21 Hydrocarbons	2022/06/28		97	%	30 - 130
			>C21-<C32 Hydrocarbons	2022/06/28		103	%	30 - 130
8078672	MSK	Spiked Blank	Isobutylbenzene - Extractable	2022/06/28		98	%	60 - 130
			n-Dotriacontane - Extractable	2022/06/28		98	%	60 - 130
			>C10-C16 Hydrocarbons	2022/06/28		91	%	60 - 130
			>C16-C21 Hydrocarbons	2022/06/28		95	%	60 - 130
			>C21-<C32 Hydrocarbons	2022/06/28		102	%	60 - 130
8078672	MSK	Method Blank	Isobutylbenzene - Extractable	2022/06/28		97	%	60 - 130
			n-Dotriacontane - Extractable	2022/06/28		104	%	60 - 130
			>C10-C16 Hydrocarbons	2022/06/28	<10		mg/kg	
			>C16-C21 Hydrocarbons	2022/06/28	<10		mg/kg	
			>C21-<C32 Hydrocarbons	2022/06/28	<15		mg/kg	
8078672	MSK	RPD	>C10-C16 Hydrocarbons	2022/06/28	10		%	50

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			>C16-C21 Hydrocarbons	2022/06/28	NC		%	50
			>C21-<C32 Hydrocarbons	2022/06/28	NC		%	50
8078716	BAN	Matrix Spike	Acid Extractable Antimony (Sb)	2022/06/29		103	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		89	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		95	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		94	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		88	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		94	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		88	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		86	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		87	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		NC	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		96	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		92	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		89	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		87	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		94	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		95	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		92	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		87	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		92	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		435 (2)	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		93	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		89	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		NC	%	75 - 125
8078716	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/06/29		99	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		98	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		95	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		98	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		96	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		94	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		94	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		95	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		95	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		100	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		95	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		98	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		98	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		96	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		97	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		97	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		96	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		96	%	75 - 125
8078716	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/06/29	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/06/29	<2.0		mg/kg	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Arsenic (As)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/06/29	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/06/29	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/06/29	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/06/29	<5.0		mg/kg	
8078716	BAN	RPD	Acid Extractable Aluminum (Al)	2022/06/29	11		%	35
			Acid Extractable Antimony (Sb)	2022/06/29	12		%	35
			Acid Extractable Arsenic (As)	2022/06/29	13		%	35
			Acid Extractable Barium (Ba)	2022/06/29	5.1		%	35
			Acid Extractable Beryllium (Be)	2022/06/29	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/06/29	NC		%	35
			Acid Extractable Boron (B)	2022/06/29	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/06/29	NC		%	35
			Acid Extractable Chromium (Cr)	2022/06/29	11		%	35
			Acid Extractable Cobalt (Co)	2022/06/29	4.0		%	35
			Acid Extractable Copper (Cu)	2022/06/29	32		%	35
			Acid Extractable Iron (Fe)	2022/06/29	12		%	35
			Acid Extractable Lead (Pb)	2022/06/29	14		%	35
			Acid Extractable Lithium (Li)	2022/06/29	8.8		%	35
			Acid Extractable Manganese (Mn)	2022/06/29	50 (3)		%	35
			Acid Extractable Mercury (Hg)	2022/06/29	12		%	35
			Acid Extractable Molybdenum (Mo)	2022/06/29	7.5		%	35
			Acid Extractable Nickel (Ni)	2022/06/29	23		%	35
			Acid Extractable Rubidium (Rb)	2022/06/29	15		%	35
			Acid Extractable Selenium (Se)	2022/06/29	6.9		%	35
			Acid Extractable Silver (Ag)	2022/06/29	NC		%	35
			Acid Extractable Strontium (Sr)	2022/06/29	29		%	35
			Acid Extractable Thallium (Tl)	2022/06/29	NC		%	35
			Acid Extractable Tin (Sn)	2022/06/29	NC		%	35
			Acid Extractable Uranium (U)	2022/06/29	5.0		%	35
			Acid Extractable Vanadium (V)	2022/06/29	15		%	35
			Acid Extractable Zinc (Zn)	2022/06/29	9.2		%	35
8079129	MGN	Matrix Spike	Isobutylbenzene - Extractable	2022/06/29		103	%	60 - 130
			n-Dotriacontane - Extractable	2022/06/29		97	%	60 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			>C10-C16 Hydrocarbons	2022/06/29		108	%	30 - 130
			>C16-C21 Hydrocarbons	2022/06/29		106	%	30 - 130
			>C21-<C32 Hydrocarbons	2022/06/29		110	%	30 - 130
8079129	MGN	Spiked Blank	Isobutylbenzene - Extractable	2022/06/28		101	%	60 - 130
			n-Dotriacontane - Extractable	2022/06/28		92	%	60 - 130
			>C10-C16 Hydrocarbons	2022/06/28		104	%	60 - 130
			>C16-C21 Hydrocarbons	2022/06/28		101	%	60 - 130
			>C21-<C32 Hydrocarbons	2022/06/28		107	%	60 - 130
8079129	MGN	Method Blank	Isobutylbenzene - Extractable	2022/06/28		98	%	60 - 130
			n-Dotriacontane - Extractable	2022/06/28		88	%	60 - 130
			>C10-C16 Hydrocarbons	2022/06/28	<10		mg/kg	
			>C16-C21 Hydrocarbons	2022/06/28	<10		mg/kg	
			>C21-<C32 Hydrocarbons	2022/06/28	<15		mg/kg	
8079129	MGN	RPD	>C10-C16 Hydrocarbons	2022/06/28	NC		%	50
			>C16-C21 Hydrocarbons	2022/06/28	NC		%	50
			>C21-<C32 Hydrocarbons	2022/06/28	NC		%	50
8079162	LGE	Matrix Spike [SZG067-01]	D10-Anthracene	2022/06/29		101	%	50 - 130
			D14-Terphenyl (FS)	2022/06/29		100	%	50 - 130
			D8-Acenaphthylene	2022/06/29		96	%	50 - 130
			1-Methylnaphthalene	2022/06/29		100	%	50 - 130
			2-Methylnaphthalene	2022/06/29		96	%	50 - 130
			Acenaphthene	2022/06/29		98	%	50 - 130
			Acenaphthylene	2022/06/29		102	%	50 - 130
			Anthracene	2022/06/29		105	%	50 - 130
			Benzo(a)anthracene	2022/06/29		106	%	50 - 130
			Benzo(a)pyrene	2022/06/29		85	%	50 - 130
			Benzo(b)fluoranthene	2022/06/29		93	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/29		90	%	50 - 130
			Benzo(j)fluoranthene	2022/06/29		90	%	50 - 130
			Benzo(k)fluoranthene	2022/06/29		94	%	50 - 130
			Chrysene	2022/06/29		93	%	50 - 130
			Dibenzo(a,h)anthracene	2022/06/29		88	%	50 - 130
			Fluoranthene	2022/06/29		102	%	50 - 130
			Fluorene	2022/06/29		97	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/29		90	%	50 - 130
			Naphthalene	2022/06/29		98	%	50 - 130
			Perylene	2022/06/29		93	%	50 - 130
			Phenanthrene	2022/06/29		95	%	50 - 130
			Pyrene	2022/06/29		102	%	50 - 130
8079162	LGE	Spiked Blank	D10-Anthracene	2022/06/29		102	%	50 - 130
			D14-Terphenyl (FS)	2022/06/29		99	%	50 - 130
			D8-Acenaphthylene	2022/06/29		96	%	50 - 130
			1-Methylnaphthalene	2022/06/29		104	%	50 - 130
			2-Methylnaphthalene	2022/06/29		98	%	50 - 130
			Acenaphthene	2022/06/29		101	%	50 - 130
			Acenaphthylene	2022/06/29		104	%	50 - 130
			Anthracene	2022/06/29		108	%	50 - 130
			Benzo(a)anthracene	2022/06/29		105	%	50 - 130
			Benzo(a)pyrene	2022/06/29		97	%	50 - 130
			Benzo(b)fluoranthene	2022/06/29		98	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/29		100	%	50 - 130
			Benzo(j)fluoranthene	2022/06/29		99	%	50 - 130
			Benzo(k)fluoranthene	2022/06/29		103	%	50 - 130
			Chrysene	2022/06/29		97	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dibenzo(a,h)anthracene	2022/06/29		90	%	50 - 130
			Fluoranthene	2022/06/29		106	%	50 - 130
			Fluorene	2022/06/29		96	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/29		95	%	50 - 130
			Naphthalene	2022/06/29		101	%	50 - 130
			Perylene	2022/06/29		104	%	50 - 130
			Phenanthrene	2022/06/29		104	%	50 - 130
			Pyrene	2022/06/29		105	%	50 - 130
8079162	LGE	Method Blank	D10-Anthracene	2022/06/29		104	%	50 - 130
			D14-Terphenyl (FS)	2022/06/29		104	%	50 - 130
			D8-Acenaphthylene	2022/06/29		101	%	50 - 130
			1-Methylnaphthalene	2022/06/29	<0.010		mg/kg	
			2-Methylnaphthalene	2022/06/29	<0.010		mg/kg	
			Acenaphthene	2022/06/29	<0.010		mg/kg	
			Acenaphthylene	2022/06/29	<0.010		mg/kg	
			Anthracene	2022/06/29	<0.010		mg/kg	
			Benzo(a)anthracene	2022/06/29	<0.010		mg/kg	
			Benzo(a)pyrene	2022/06/29	<0.010		mg/kg	
			Benzo(b)fluoranthene	2022/06/29	<0.010		mg/kg	
			Benzo(g,h,i)perylene	2022/06/29	<0.010		mg/kg	
			Benzo(j)fluoranthene	2022/06/29	<0.010		mg/kg	
			Benzo(k)fluoranthene	2022/06/29	<0.010		mg/kg	
			Chrysene	2022/06/29	<0.010		mg/kg	
			Dibenzo(a,h)anthracene	2022/06/29	<0.010		mg/kg	
			Fluoranthene	2022/06/29	<0.010		mg/kg	
			Fluorene	2022/06/29	<0.010		mg/kg	
			Indeno(1,2,3-cd)pyrene	2022/06/29	<0.010		mg/kg	
			Naphthalene	2022/06/29	<0.010		mg/kg	
			Perylene	2022/06/29	<0.010		mg/kg	
			Phenanthrene	2022/06/29	<0.010		mg/kg	
			Pyrene	2022/06/29	<0.010		mg/kg	
8079162	LGE	RPD [SZG067-01]	1-Methylnaphthalene	2022/06/30	18		%	50
			2-Methylnaphthalene	2022/06/30	12		%	50
			Acenaphthene	2022/06/30	14		%	50
			Acenaphthylene	2022/06/30	19		%	50
			Anthracene	2022/06/30	11		%	50
			Benzo(a)anthracene	2022/06/30	5.5		%	50
			Benzo(a)pyrene	2022/06/30	1.4		%	50
			Benzo(b)fluoranthene	2022/06/30	3.4		%	50
			Benzo(g,h,i)perylene	2022/06/30	3.6		%	50
			Benzo(j)fluoranthene	2022/06/30	6.0		%	50
			Benzo(k)fluoranthene	2022/06/30	6.2		%	50
			Chrysene	2022/06/30	13		%	50
			Dibenzo(a,h)anthracene	2022/06/30	11		%	50
			Fluoranthene	2022/06/30	12		%	50
			Fluorene	2022/06/30	35		%	50
			Indeno(1,2,3-cd)pyrene	2022/06/30	5.8		%	50
			Naphthalene	2022/06/30	15		%	50
			Perylene	2022/06/30	7.3		%	50
			Phenanthrene	2022/06/30	29		%	50
			Pyrene	2022/06/30	9.9		%	50
8080983	BAN	Matrix Spike	Acid Extractable Antimony (Sb)	2022/06/29		104	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		108	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Beryllium (Be)	2022/06/29		104	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		103	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		95	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		100	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		101	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		102	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		105	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		104	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		109	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		103	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		104	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		106	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		100	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		100	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		104	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		102	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		100	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		102	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		108	%	75 - 125
8080983	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/06/29		103	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		100	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		100	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		101	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		99	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		100	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		100	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		99	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		99	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		103	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		102	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		100	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		102	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		101	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		102	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		101	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		97	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		100	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		102	%	75 - 125
8080983	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/06/29	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/06/29	<50		mg/kg	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Cadmium (Cd)	2022/06/29	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/06/29	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/06/29	<5.0		mg/kg	
8080983	BAN	RPD	Acid Extractable Aluminum (Al)	2022/06/29	8.2		%	35
			Acid Extractable Antimony (Sb)	2022/06/29	NC		%	35
			Acid Extractable Arsenic (As)	2022/06/29	4.4		%	35
			Acid Extractable Barium (Ba)	2022/06/29	15		%	35
			Acid Extractable Beryllium (Be)	2022/06/29	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/06/29	NC		%	35
			Acid Extractable Boron (B)	2022/06/29	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/06/29	NC		%	35
			Acid Extractable Chromium (Cr)	2022/06/29	12		%	35
			Acid Extractable Cobalt (Co)	2022/06/29	11		%	35
			Acid Extractable Copper (Cu)	2022/06/29	3.9		%	35
			Acid Extractable Iron (Fe)	2022/06/29	9.9		%	35
			Acid Extractable Lead (Pb)	2022/06/29	5.7		%	35
			Acid Extractable Lithium (Li)	2022/06/29	15		%	35
			Acid Extractable Manganese (Mn)	2022/06/29	13		%	35
			Acid Extractable Mercury (Hg)	2022/06/29	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/06/29	NC		%	35
			Acid Extractable Nickel (Ni)	2022/06/29	14		%	35
			Acid Extractable Rubidium (Rb)	2022/06/29	11		%	35
			Acid Extractable Selenium (Se)	2022/06/29	2.5		%	35
			Acid Extractable Silver (Ag)	2022/06/29	NC		%	35
			Acid Extractable Strontium (Sr)	2022/06/29	22		%	35
			Acid Extractable Thallium (Tl)	2022/06/29	11		%	35
			Acid Extractable Tin (Sn)	2022/06/29	NC		%	35
			Acid Extractable Uranium (U)	2022/06/29	0.23		%	35
			Acid Extractable Vanadium (V)	2022/06/29	6.7		%	35
			Acid Extractable Zinc (Zn)	2022/06/29	9.1		%	35
8081461	DBF	Matrix Spike [SZG069-03]	Isobutylbenzene - Volatile	2022/06/29		96	%	60 - 130
			Benzene	2022/06/29		82	%	60 - 130
			Toluene	2022/06/29		86	%	60 - 130
			Ethylbenzene	2022/06/29		95	%	60 - 130
			Total Xylenes	2022/06/29		96	%	60 - 130
8081461	DBF	Spiked Blank	Isobutylbenzene - Volatile	2022/06/29		93	%	60 - 130
			Benzene	2022/06/29		88	%	60 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Toluene	2022/06/29		91	%	60 - 140
			Ethylbenzene	2022/06/29		93	%	60 - 140
			Total Xylenes	2022/06/29		95	%	60 - 140
8081461	DBF	Method Blank	Isobutylbenzene - Volatile	2022/06/29		97	%	60 - 130
			Benzene	2022/06/29	<0.0050		mg/kg	
			Toluene	2022/06/29	<0.050		mg/kg	
			Ethylbenzene	2022/06/29	<0.010		mg/kg	
			Total Xylenes	2022/06/29	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2022/06/29	<2.5		mg/kg	
8081461	DBF	RPD [SZG069-03]	Benzene	2022/06/29	3.7		%	50
			Toluene	2022/06/29	3.9		%	50
			Ethylbenzene	2022/06/29	3.7		%	50
			Total Xylenes	2022/06/29	4.5		%	50
			C6 - C10 (less BTEX)	2022/06/29	0.73		%	50
8081964	LGE	Matrix Spike	D10-Anthracene	2022/07/01		90	%	50 - 130
			D14-Terphenyl (FS)	2022/07/01		89	%	50 - 130
			D8-Acenaphthylene	2022/07/01		93	%	50 - 130
			1-Methylnaphthalene	2022/07/01		107	%	50 - 130
			2-Methylnaphthalene	2022/07/01		104	%	50 - 130
			Acenaphthene	2022/07/01		100	%	50 - 130
			Acenaphthylene	2022/07/01		98	%	50 - 130
			Anthracene	2022/07/01		96	%	50 - 130
			Benzo(a)anthracene	2022/07/01		91	%	50 - 130
			Benzo(a)pyrene	2022/07/01		80	%	50 - 130
			Benzo(b)fluoranthene	2022/07/01		94	%	50 - 130
			Benzo(g,h,i)perylene	2022/07/01		90	%	50 - 130
			Benzo(j)fluoranthene	2022/07/01		82	%	50 - 130
			Benzo(k)fluoranthene	2022/07/01		79	%	50 - 130
			Chrysene	2022/07/01		83	%	50 - 130
			Dibenzo(a,h)anthracene	2022/07/01		80	%	50 - 130
			Fluoranthene	2022/07/01		96	%	50 - 130
			Fluorene	2022/07/01		101	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/07/01		81	%	50 - 130
			Naphthalene	2022/07/01		98	%	50 - 130
			Perylene	2022/07/01		84	%	50 - 130
			Phenanthrene	2022/07/01		94	%	50 - 130
			Pyrene	2022/07/01		92	%	50 - 130
8081964	LGE	Spiked Blank	D10-Anthracene	2022/07/01		96	%	50 - 130
			D14-Terphenyl (FS)	2022/07/01		97	%	50 - 130
			D8-Acenaphthylene	2022/07/01		99	%	50 - 130
			1-Methylnaphthalene	2022/07/01		109	%	50 - 130
			2-Methylnaphthalene	2022/07/01		107	%	50 - 130
			Acenaphthene	2022/07/01		103	%	50 - 130
			Acenaphthylene	2022/07/01		105	%	50 - 130
			Anthracene	2022/07/01		101	%	50 - 130
			Benzo(a)anthracene	2022/07/01		93	%	50 - 130
			Benzo(a)pyrene	2022/07/01		86	%	50 - 130
			Benzo(b)fluoranthene	2022/07/01		91	%	50 - 130
			Benzo(g,h,i)perylene	2022/07/01		93	%	50 - 130
			Benzo(j)fluoranthene	2022/07/01		85	%	50 - 130
			Benzo(k)fluoranthene	2022/07/01		92	%	50 - 130
			Chrysene	2022/07/01		87	%	50 - 130
			Dibenzo(a,h)anthracene	2022/07/01		84	%	50 - 130
			Fluoranthene	2022/07/01		101	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Fluorene	2022/07/01		103	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/07/01		88	%	50 - 130
			Naphthalene	2022/07/01		103	%	50 - 130
			Perylene	2022/07/01		89	%	50 - 130
			Phenanthrene	2022/07/01		105	%	50 - 130
			Pyrene	2022/07/01		99	%	50 - 130
8081964	LGE	Method Blank	D10-Anthracene	2022/07/01		100	%	50 - 130
			D14-Terphenyl (FS)	2022/07/01		100	%	50 - 130
			D8-Acenaphthylene	2022/07/01		98	%	50 - 130
			1-Methylnaphthalene	2022/07/01	<0.010		mg/kg	
			2-Methylnaphthalene	2022/07/01	<0.010		mg/kg	
			Acenaphthene	2022/07/01	<0.010		mg/kg	
			Acenaphthylene	2022/07/01	<0.010		mg/kg	
			Anthracene	2022/07/01	<0.010		mg/kg	
			Benzo(a)anthracene	2022/07/01	<0.010		mg/kg	
			Benzo(a)pyrene	2022/07/01	<0.010		mg/kg	
			Benzo(b)fluoranthene	2022/07/01	<0.010		mg/kg	
			Benzo(g,h,i)perylene	2022/07/01	<0.010		mg/kg	
			Benzo(j)fluoranthene	2022/07/01	<0.010		mg/kg	
			Benzo(k)fluoranthene	2022/07/01	<0.010		mg/kg	
			Chrysene	2022/07/01	<0.010		mg/kg	
			Dibenzo(a,h)anthracene	2022/07/01	<0.010		mg/kg	
			Fluoranthene	2022/07/01	<0.010		mg/kg	
			Fluorene	2022/07/01	<0.010		mg/kg	
			Indeno(1,2,3-cd)pyrene	2022/07/01	<0.010		mg/kg	
			Naphthalene	2022/07/01	<0.010		mg/kg	
			Perylene	2022/07/01	<0.010		mg/kg	
			Phenanthrene	2022/07/01	<0.010		mg/kg	
			Pyrene	2022/07/01	<0.010		mg/kg	
8081964	LGE	RPD	1-Methylnaphthalene	2022/07/01	0		%	50
			2-Methylnaphthalene	2022/07/01	11		%	50
			Acenaphthene	2022/07/01	4.2		%	50
			Acenaphthylene	2022/07/01	NC		%	50
			Anthracene	2022/07/01	19		%	50
			Benzo(a)anthracene	2022/07/01	44		%	50
			Benzo(a)pyrene	2022/07/01	8.8		%	50
			Benzo(b)fluoranthene	2022/07/01	12		%	50
			Benzo(g,h,i)perylene	2022/07/01	8.8		%	50
			Benzo(j)fluoranthene	2022/07/01	15		%	50
			Benzo(k)fluoranthene	2022/07/01	24		%	50
			Chrysene	2022/07/01	66 (4)		%	50
			Dibenzo(a,h)anthracene	2022/07/01	9.4		%	50
			Fluoranthene	2022/07/01	3.8		%	50
			Fluorene	2022/07/01	0.095		%	50
			Indeno(1,2,3-cd)pyrene	2022/07/01	13		%	50
			Naphthalene	2022/07/01	12		%	50
			Perylene	2022/07/01	10		%	50
			Phenanthrene	2022/07/01	1.0		%	50
			Pyrene	2022/07/01	3.6		%	50
8084076	SSI	RPD	Soluble (5:1) pH	2022/06/30	0.14		%	N/A
8087473	JHY	Matrix Spike	Acid Extractable Antimony (Sb)	2022/07/05		65 (5)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/05		92	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/05		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/05		97	%	75 - 125

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Bismuth (Bi)	2022/07/05		95	%	75 - 125
			Acid Extractable Boron (B)	2022/07/05		93	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/05		94	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/05		95	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/05		100	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/05		98	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/05		96	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/05		101	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/05		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/05		95	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/05		89	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/05		101	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/05		93	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/05		89	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/05		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/05		95	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/05		98	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/05		94	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/05		95	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/05		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/05		103	%	75 - 125
8087473	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/04		95	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/04		97	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/04		92	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/04		93	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/04		93	%	75 - 125
			Acid Extractable Boron (B)	2022/07/04		96	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/04		93	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/04		95	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/04		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/04		97	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/04		94	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/04		93	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/04		98	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/04		94	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/04		100	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/04		99	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/04		96	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/04		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/04		97	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/04		91	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/04		96	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/04		91	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/04		94	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/04		96	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/04		99	%	75 - 125
8087473	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/07/04	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/04	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/04	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/07/04	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/04	<0.30		mg/kg	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Chromium (Cr)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/04	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/04	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/04	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/04	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/04	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/04	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/04	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/04	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/04	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/07/04	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/04	<5.0		mg/kg	
8087473	JHY	RPD	Acid Extractable Aluminum (Al)	2022/07/04	12		%	35
			Acid Extractable Antimony (Sb)	2022/07/04	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/04	0.048		%	35
			Acid Extractable Barium (Ba)	2022/07/04	11		%	35
			Acid Extractable Beryllium (Be)	2022/07/04	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/07/04	NC		%	35
			Acid Extractable Boron (B)	2022/07/04	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/04	NC		%	35
			Acid Extractable Chromium (Cr)	2022/07/04	4.3		%	35
			Acid Extractable Cobalt (Co)	2022/07/04	24		%	35
			Acid Extractable Copper (Cu)	2022/07/04	7.6		%	35
			Acid Extractable Iron (Fe)	2022/07/04	7.6		%	35
			Acid Extractable Lead (Pb)	2022/07/04	13		%	35
			Acid Extractable Lithium (Li)	2022/07/04	12		%	35
			Acid Extractable Manganese (Mn)	2022/07/04	17		%	35
			Acid Extractable Mercury (Hg)	2022/07/04	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/04	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/04	7.0		%	35
			Acid Extractable Rubidium (Rb)	2022/07/04	15		%	35
			Acid Extractable Selenium (Se)	2022/07/04	NC		%	35
			Acid Extractable Silver (Ag)	2022/07/04	NC		%	35
			Acid Extractable Strontium (Sr)	2022/07/04	NC		%	35
			Acid Extractable Thallium (Tl)	2022/07/04	NC		%	35
			Acid Extractable Tin (Sn)	2022/07/04	NC		%	35
			Acid Extractable Uranium (U)	2022/07/04	13		%	35
			Acid Extractable Vanadium (V)	2022/07/04	11		%	35
			Acid Extractable Zinc (Zn)	2022/07/04	14		%	35
8087503	JHY	Matrix Spike	Acid Extractable Antimony (Sb)	2022/07/04		46 (6)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/04		93	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/04		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/04		94	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/04		94	%	75 - 125
			Acid Extractable Boron (B)	2022/07/04		NC	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/04		92	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/04		94	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Cobalt (Co)	2022/07/04		97	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/04		95	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/04		94	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/04		97	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/04		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/04		96	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/04		89	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/04		99	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/04		91	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/04		91	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/04		96	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/04		NC	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/04		97	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/04		94	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/04		93	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/04		94	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/04		NC	%	75 - 125
8087503	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/04		98	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/04		98	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/04		93	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/04		98	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/04		95	%	75 - 125
			Acid Extractable Boron (B)	2022/07/04		101	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/04		95	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/04		97	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/04		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/04		98	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/04		95	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/04		99	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/04		99	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/04		97	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/04		97	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/04		101	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/04		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/04		100	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/04		97	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/04		95	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/04		98	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/04		95	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/04		94	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/04		100	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/04		98	%	75 - 125
8087503	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/07/04	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/04	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/04	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/07/04	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/04	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/04	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/04	<50		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Lead (Pb)	2022/07/04	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/04	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/04	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/04	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/04	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/04	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/04	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/07/04	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/04	<5.0		mg/kg	
8087503	JHY	RPD	Acid Extractable Aluminum (Al)	2022/07/04	3.8		%	35
			Acid Extractable Antimony (Sb)	2022/07/04	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/04	4.3		%	35
			Acid Extractable Barium (Ba)	2022/07/04	2.8		%	35
			Acid Extractable Beryllium (Be)	2022/07/04	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/07/04	NC		%	35
			Acid Extractable Boron (B)	2022/07/04	2.2		%	35
			Acid Extractable Cadmium (Cd)	2022/07/04	0.94		%	35
			Acid Extractable Chromium (Cr)	2022/07/04	5.8		%	35
			Acid Extractable Cobalt (Co)	2022/07/04	3.3		%	35
			Acid Extractable Copper (Cu)	2022/07/04	7.4		%	35
			Acid Extractable Iron (Fe)	2022/07/04	1.7		%	35
			Acid Extractable Lead (Pb)	2022/07/04	18		%	35
			Acid Extractable Lithium (Li)	2022/07/04	1.5		%	35
			Acid Extractable Manganese (Mn)	2022/07/04	1.2		%	35
			Acid Extractable Mercury (Hg)	2022/07/04	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/04	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/04	4.6		%	35
			Acid Extractable Rubidium (Rb)	2022/07/04	3.6		%	35
			Acid Extractable Selenium (Se)	2022/07/04	NC		%	35
			Acid Extractable Silver (Ag)	2022/07/04	NC		%	35
			Acid Extractable Strontium (Sr)	2022/07/04	4.1		%	35
			Acid Extractable Thallium (Tl)	2022/07/04	5.7		%	35
			Acid Extractable Tin (Sn)	2022/07/04	NC		%	35
			Acid Extractable Uranium (U)	2022/07/04	5.6		%	35
			Acid Extractable Vanadium (V)	2022/07/04	1.8		%	35
			Acid Extractable Zinc (Zn)	2022/07/04	4.0		%	35
8087551	BAN	Matrix Spike	Acid Extractable Antimony (Sb)	2022/07/05		72 (5)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/05		96	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/05		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/05		101	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/05		98	%	75 - 125
			Acid Extractable Boron (B)	2022/07/05		91	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/05		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/05		98	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/05		100	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/05		117	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/05		97	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/05		103	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Manganese (Mn)	2022/07/05		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/05		98	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/05		93	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/05		105	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/05		96	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/05		94	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/05		121	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/05		102	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/05		101	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/05		101	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/05		98	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/05		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/05		98	%	75 - 125
8087551	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/05		105	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/05		99	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/05		97	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/05		97	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/05		98	%	75 - 125
			Acid Extractable Boron (B)	2022/07/05		95	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/05		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/05		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/05		99	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/05		100	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/05		98	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/05		99	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/05		99	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/05		100	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/05		100	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/05		99	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/05		97	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/05		100	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/05		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/05		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/05		99	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/05		100	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/05		97	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/05		98	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/05		96	%	75 - 125
8087551	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/07/05	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/05	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/05	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/07/05	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/05	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/05	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/05	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/05	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/05	<0.10		mg/kg	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Molybdenum (Mo)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/05	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/05	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/05	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/05	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/05	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/07/05	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/05	<5.0		mg/kg	
8087551	BAN	RPD	Acid Extractable Aluminum (Al)	2022/07/05	1.9		%	35
			Acid Extractable Antimony (Sb)	2022/07/05	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/05	3.9		%	35
			Acid Extractable Barium (Ba)	2022/07/05	23		%	35
			Acid Extractable Beryllium (Be)	2022/07/05	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/07/05	NC		%	35
			Acid Extractable Boron (B)	2022/07/05	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/05	NC		%	35
			Acid Extractable Chromium (Cr)	2022/07/05	0.13		%	35
			Acid Extractable Cobalt (Co)	2022/07/05	6.2		%	35
			Acid Extractable Copper (Cu)	2022/07/05	69 (3)		%	35
			Acid Extractable Iron (Fe)	2022/07/05	7.7		%	35
			Acid Extractable Lead (Pb)	2022/07/05	0.59		%	35
			Acid Extractable Lithium (Li)	2022/07/05	0.81		%	35
			Acid Extractable Manganese (Mn)	2022/07/05	2.8		%	35
			Acid Extractable Mercury (Hg)	2022/07/05	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/05	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/05	3.5		%	35
			Acid Extractable Rubidium (Rb)	2022/07/05	16		%	35
			Acid Extractable Selenium (Se)	2022/07/05	NC		%	35
			Acid Extractable Silver (Ag)	2022/07/05	17		%	35
			Acid Extractable Strontium (Sr)	2022/07/05	NC		%	35
			Acid Extractable Thallium (Tl)	2022/07/05	NC		%	35
			Acid Extractable Tin (Sn)	2022/07/05	NC		%	35
			Acid Extractable Uranium (U)	2022/07/05	3.9		%	35
			Acid Extractable Vanadium (V)	2022/07/05	16		%	35
			Acid Extractable Zinc (Zn)	2022/07/05	4.7		%	35
8087607	JHY	Matrix Spike [SZG071-01]	Acid Extractable Antimony (Sb)	2022/07/05		90	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/05		103	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/05		103	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/05		100	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/05		99	%	75 - 125
			Acid Extractable Boron (B)	2022/07/05		91	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/05		101	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/05		97	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/05		97	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/05		99	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/05		105	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/05		107	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/05		101	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/05		96	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/05		102	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/05		99	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Rubidium (Rb)	2022/07/05		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/05		99	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/05		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/05		108	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/05		85	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/05		101	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/05		102	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/05		98	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/05		111	%	75 - 125
8087607	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/04		98	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/04		98	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/04		93	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/04		95	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/04		94	%	75 - 125
			Acid Extractable Boron (B)	2022/07/04		97	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/04		95	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/04		97	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/04		99	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/04		99	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/04		95	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/04		95	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/04		99	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/04		98	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/04		96	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/04		101	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/04		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/04		102	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/04		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/04		93	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/04		97	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/04		96	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/04		95	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/04		99	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/04		101	%	75 - 125
8087607	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/07/04	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/04	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/04	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/07/04	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/04	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/04	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/04	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/04	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/04	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/04	<0.50		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Silver (Ag)	2022/07/04	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/04	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/04	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/04	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/07/04	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/04	<5.0		mg/kg	
8087607	JHY	RPD [SZG071-01]	Acid Extractable Aluminum (Al)	2022/07/05	3.5		%	35
			Acid Extractable Antimony (Sb)	2022/07/05	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/05	12		%	35
			Acid Extractable Barium (Ba)	2022/07/05	2.2		%	35
			Acid Extractable Beryllium (Be)	2022/07/05	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/07/05	NC		%	35
			Acid Extractable Boron (B)	2022/07/05	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/05	NC		%	35
			Acid Extractable Chromium (Cr)	2022/07/05	13		%	35
			Acid Extractable Cobalt (Co)	2022/07/05	NC		%	35
			Acid Extractable Copper (Cu)	2022/07/05	2.2		%	35
			Acid Extractable Iron (Fe)	2022/07/05	2.6		%	35
			Acid Extractable Lead (Pb)	2022/07/05	5.0		%	35
			Acid Extractable Lithium (Li)	2022/07/05	32		%	35
			Acid Extractable Manganese (Mn)	2022/07/05	4.5		%	35
			Acid Extractable Mercury (Hg)	2022/07/05	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/05	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/05	9.2		%	35
			Acid Extractable Rubidium (Rb)	2022/07/05	8.8		%	35
			Acid Extractable Selenium (Se)	2022/07/05	NC		%	35
			Acid Extractable Silver (Ag)	2022/07/05	NC		%	35
			Acid Extractable Strontium (Sr)	2022/07/05	13		%	35
			Acid Extractable Thallium (Tl)	2022/07/05	NC		%	35
			Acid Extractable Tin (Sn)	2022/07/05	NC		%	35
			Acid Extractable Uranium (U)	2022/07/05	5.4		%	35
			Acid Extractable Vanadium (V)	2022/07/05	1.3		%	35

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Zinc (Zn)	2022/07/05	23		%	35

N/A = Not Applicable

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

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

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

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

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

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

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

(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

(2) Matrix Spike exceeds acceptance limits, sample inhomogeneity suspected.

(3) Poor RPD due to sample inhomogeneity. Verified by repeat digestion and analysis.

(4) Duplicate: results are outside acceptance limit. Analysis was repeated with similar results.

(5) Recovery is within QC acceptance limits. < 10 % of compounds in multi-component analysis in violation.

(6) Matrix Spike exceeds acceptance limits, probable matrix interference.

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VALIDATION SIGNATURE PAGE

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

Alan Stewart, Organics Manager, Bedford

Colleen Acker, B.Sc, Scientific Service Specialist

Janah Rhyno, Metals Supervisor-Bedford

Phil Deveau, Scientific Specialist (Organics)

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Logiciel Propriétaire de Bureau Veritas

Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Report ID: 446847-IAS-AUD
Report Date: 13-Jul-22
Date Received: 28-Jun-22

CERTIFICATE OF ANALYSIS
for
Bureau Veritas Canada Inc
200 Bluewater Road, Suite 105
Bedford, NS B4B 1G9

rpc
921 College Hill Rd
Fredericton NB
Canada E3B 6Z9
Tel: 506.452.1212
Fax: 506.452.0594
www.rpc.ca

Attention: Natalie Macaskill
Project #: C2H4082

Modified Acid-Base Accounting
Results based upon Sulfide

RPC ID	Client ID	Paste pH	Total Sulfur	Sulfate† (as S)	Sulfide	Acid Production Potential	Neutralizing Potential pH 8.3	Net NP pH 8.3	NP/AP
			%	%	%	Kg $CaCO_3$/tonne			
446847-1	SZG081-01R\ 5456-H10	5.1	0.359	0.054	0.305	9.5	-1.2	-10.8	-0.1
446847-2	SZG089-01R\ 5456-H12	3.6	0.499	0.141	0.358	11.2	-3.9	-15.1	-0.3
446847-3	SZG090-01R\ 5456-H13	5.1	0.523	0.043	0.480	15.0	-3.7	-18.7	-0.2

The modified acid/base accounting was determined by the Sobek method.
A negative value for Net Neutralizing Potential indicates that the material is a net acid producer.

Total Sulfur was determined using a combustion/infrared method.
† Acid soluble, non-volatile sulfur species (sulfate (as S)).
Sulfide was determined as the difference between Total Sulfur and Sulfate (as S).

Peter Crowhurst, B.Sc., C.Chem.
Director
Inorganic Analytical Chemistry

Brannen Burhoe
Supervisor
Inorganic Analytical Chemistry

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465 George Street ,Unit G, Sydney, NS B1P 1K5 | Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770

CHAIN OF CUSTODY RECORD

ENV COC - 00016v3

Invoice Information		Report Information (if differs from invoice)		Project Information	
Invoice to (requires report) ☐					
Company :	Aecom Canada Ltd.	Company:	Aecom	Quotation #:	B91344
Contact Name:	Accounts Payable	Contact Name:	David Bugden / Rory McNeil	P.O. #/ AFE#:	
Street Address:		Street Address:		Project #:	60680173
City:	Prov: Postal Code:	City:	Prov: Postal Code:	Site #:	
Phone:		Phone:		Site Location:	CB
Email:	CANSSC_E.Billing@Aecom.com	Email:	David.Bugden@Aecom.com	Site Location Province:	NS
Copies:		Copies:	Rory.McNeil@Aecom.com	Sampled By:	DB

LAB USE ONLY - PLACE STICKER HERE

Rush Confirmation #:

Regulatory Criteria

**Specify matrix for each regulation: surface water (SW)/groundwater (GW)/tap water/sewage/effluent/seawater/potable water/non-potable water/tissue/soil/sludge/metal	Regulation	**Matrix

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 RCAp-MS (total metals) well / surface water	5 RCAp-MS (dissolved metals) - GW	6 Total metals (default)-well/SW	7 Dissolved metals for ground water	8 Total mercury - water	9 Dissolved mercury - water	10 Metals/mercury default (acid ext.)	11 HWS boron (CCME agri/ landfill)	12 RBCA HC (BTEX, C6-C32)	13 CCME HC (F1/BTEX, F2-F4)	14 PAHs (default for water/soil)	15 PCBs - default	16 PCBs - CCME sediment	17 VOCs	18 Total coliform/E.coli (presence/absence)	19 Total coliform/E.coli (count)	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE
1	9235 - H1	22	06	21	PM		Soil										X				X							1	
2	9235 - H2																											1	
3	9235 - H3																											1	
4	9235 - H4																											1	
5	9235 - H5																											1	
6	9235 - H6																											1	
7	9235 - H7																											1	
8	9235 - H8																											1	
9	9235 - H9	22	06	22	AM																							1	
10	9235 - H10																											1	
11	9235 - H11																											1	
12	9235 - H12																											1	

Regular Turnaround Time (TAT)

☐ 5 to 7 Day ☐ 10 Day

Rush Turnaround Time (TAT) Surcharges apply

☐ Same Day ☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 4 Day

Date Required: YY MM DD

Comments

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY	Yes	No	°C				LAB USE ONLY	Yes	No	°C				LAB USE ONLY	Yes	No	°C				Temperature reading by:
Seal present							Seal present							Seal present							
Seal intact							Seal intact							Seal intact							
Cooling media present				1 5	2 10	3 8	Cooling media present				1 4	2 5	3 5	Cooling media present				1	2	3	

Relinquished by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Received by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Special instructions
1	22	06	23	11	28	1	22	06	23	11	35	C2H ~~4085~~ 4082
2						2						

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CHAIN OF CUSTODY RECORD

ENV COC - 00016v3

Modified Stantec (Field Book Accounts)

CONTINUED

[PAGE 1 REFERENCE]

Company:	0
Contact Name:	0
Project #:	0

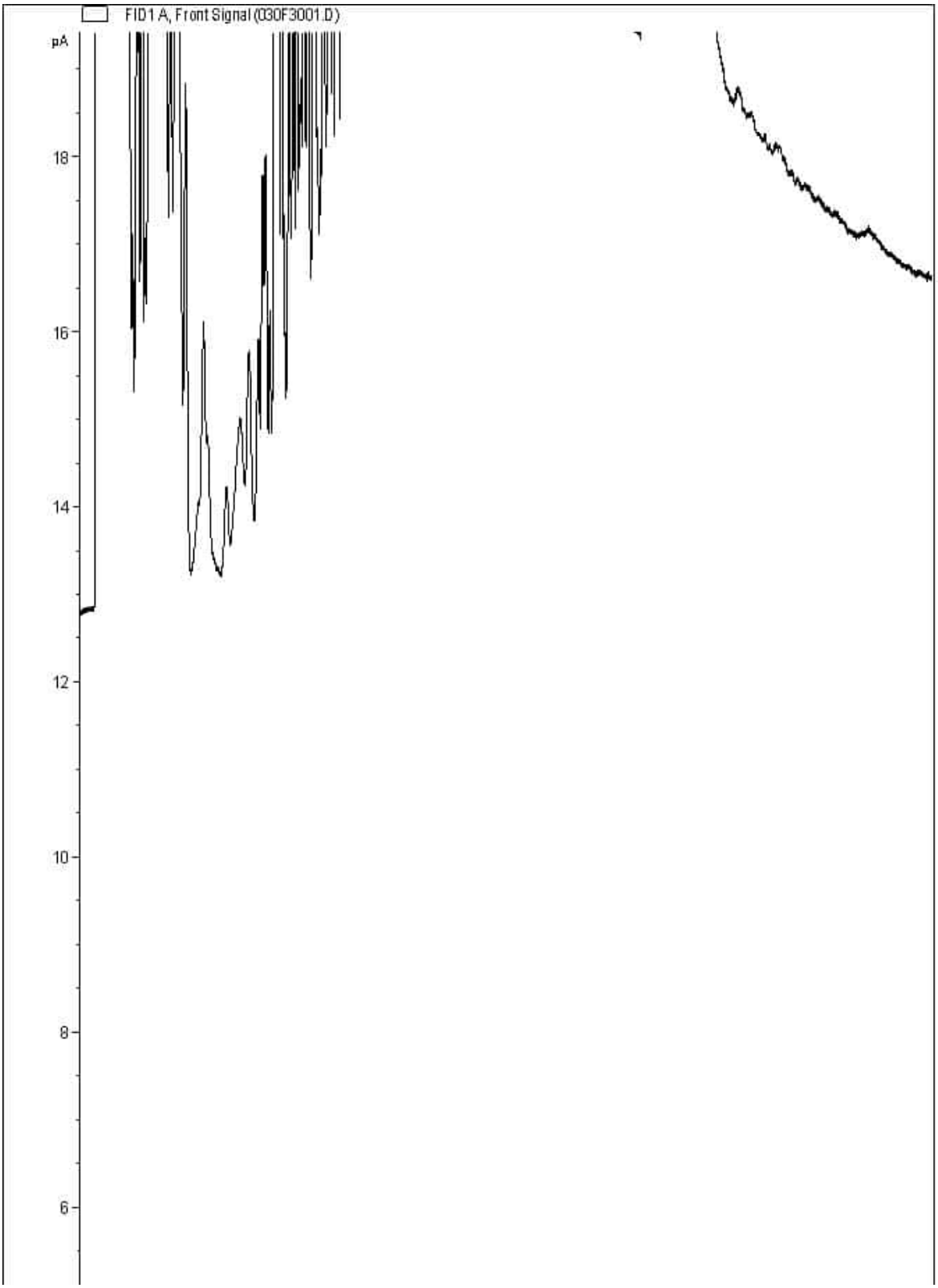
SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 RCAp-MS (total metals) well /SW	5 RCAp-MS (dissolved metals) - GW	6 Total metals (default)- well/SW	7 Dissolved metals for ground water	8 Total mercury - water	9 Dissolved mercury - water	10 Metals/mercury default (acid ext.)	11 HWS boron (CCME agri/ landfill)	12 RBCA HC (BTEX, C6-C32)	13 CCME HC (F1/BTEX, F2-F4)	14 PAHs (default for water/soil)	15 PCBs - default	16 PCBs - CCME sediment	17 VOCs	18 Total coliform/E.coli (P/A)	19 Total coliform/E.coli (count)	20 Modified Stantec K/PH	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE	Same as above / Comments
13	9235 - H13	22	06	23	AM		Soil										X				X							1		
14	9235 - H14																											1		
15	9235 - H15																											1		
16	9235 - H16																											1		
17	9235 - H17																											1		
18	9235 - H18																											1		
19	9235 - H19																											1		
20	9235 - H20																											1		
21	1636 - H1																X		X		X							3		
22	1636 - H2																											3		
23	1636 - H3																											3		
24	5456 - H1	22	06	22													X				X							1		
25	5456 - H2																											1		
26	5456 - H3																											1		
27	5456 - H4																											1		
28	5456 - H5																											1		
29	5456 - H6																											1		
30	5456 - H7																											1		
31	5456 - H8																											1		
32	5456 - H9																											1		
33	5456 - H10																							X		X		1		(1x250)
34	5456 - H11																											1		
35	5456 - H12																		X					X		X		3		(1x250, 1x60, 1x40 amber) (1x250mL clear)
36	5456 - H13																									X		1		
37	4780 - H1	22	06	22													X				X							1		
38	4913 - H1	22	06	22	PM																							1		
39	4913 - H2																											1		
40	4913 - H3																											1		

Bureau Veritas Job #: C2H4082
Report Date: 2022/09/21
Bureau Veritas Sample: SZG069

AECOM Canada Ltd
Client Project #: 60680173
Project name: CB
Client ID: 1636-H1

TEH in Soil (PIRI) Chromatogram

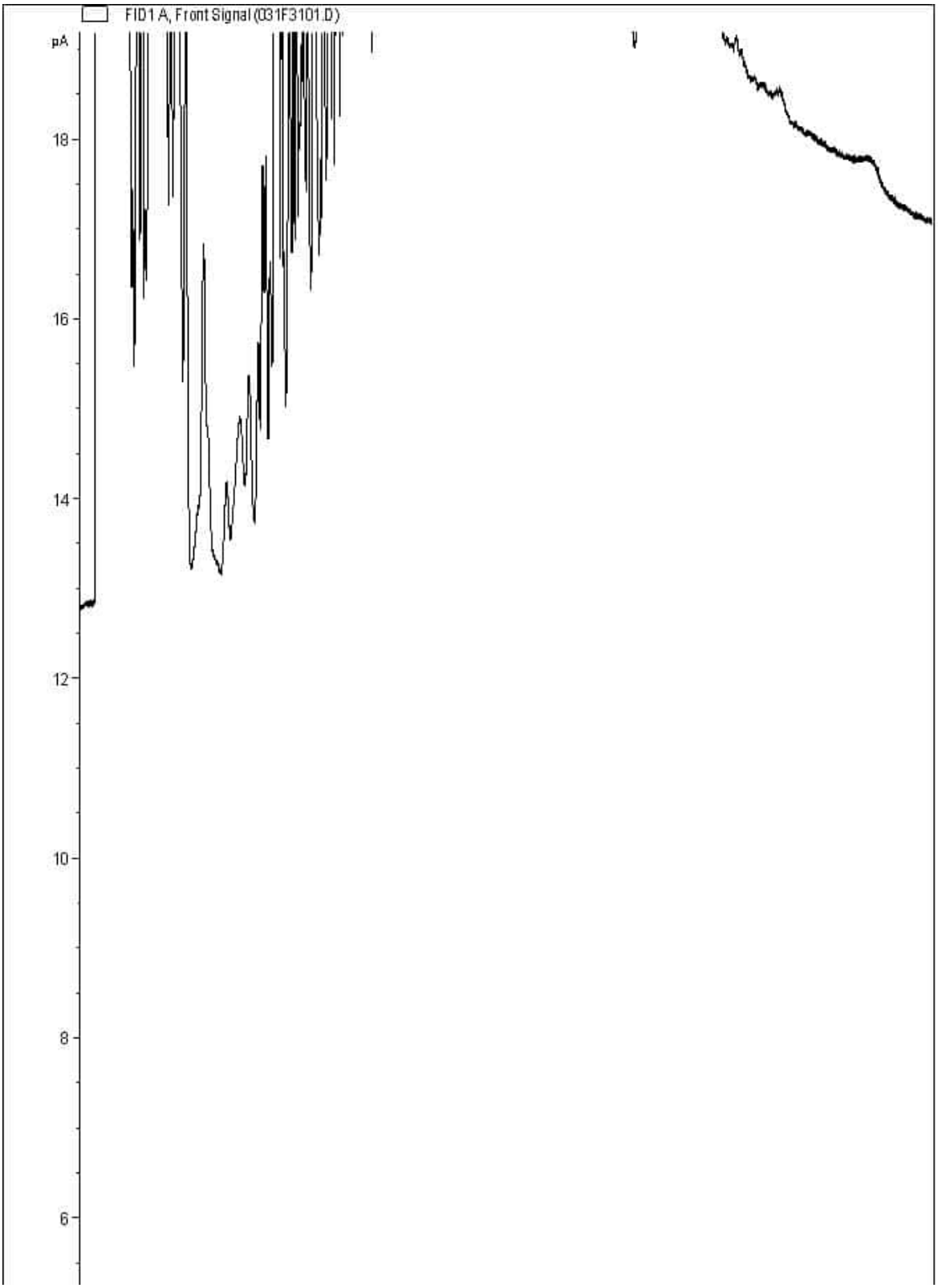


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C2H4082
Report Date: 2022/09/21
Bureau Veritas Sample: SZG070

AECOM Canada Ltd
Client Project #: 60680173
Project name: CB
Client ID: 1636-H2

TEH in Soil (PIRI) Chromatogram

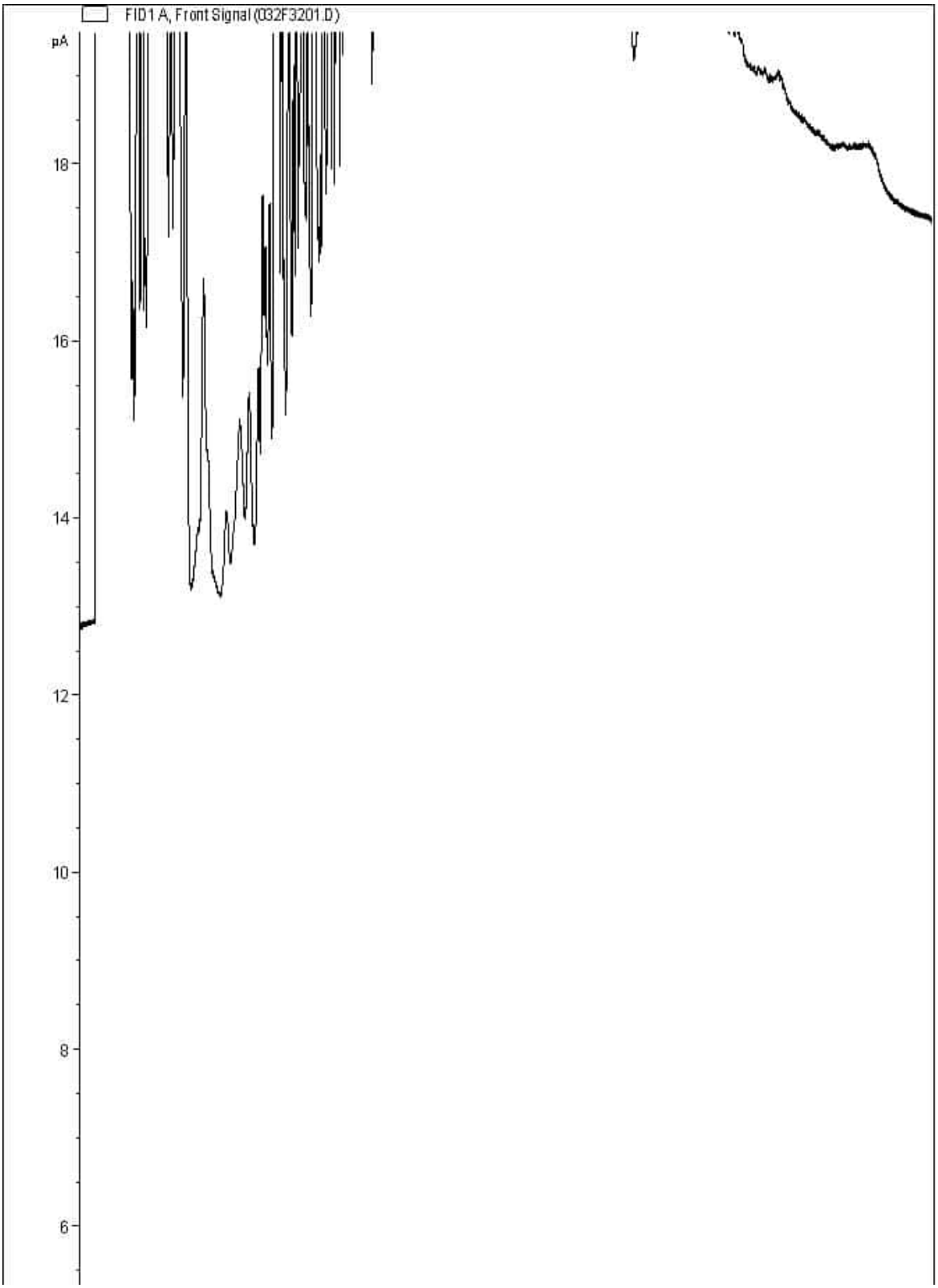


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C2H4082
Report Date: 2022/09/21
Bureau Veritas Sample: SZG071

AECOM Canada Ltd
Client Project #: 60680173
Project name: CB
Client ID: 1636-H3

TEH in Soil (PIRI) Chromatogram



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

Your Project #: 60680173
Site Location: CB

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/09/21
Report #: R7306085
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C2H4225
Received: 2022/06/23, 11:35

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Benzo(b/j)fluoranthene Sum (soil) (1)	5	N/A	2022/07/04	N/A	Auto Calc.
B[a]P Total Potency Equivalent (1)	5	N/A	2022/09/21	N/A	CCME CSQG
TEH in Soil (PIRI) (1, 2)	1	2022/06/28	2022/06/29	ATL SOP 00111	Atl. RBCA v3.1 m
Metals Solids Acid Extr. ICPMS (1)	5	2022/07/04	2022/07/05	ATL SOP 00058	EPA 6020B R2 m
Moisture (1)	5	N/A	2022/06/29	ATL SOP 00001	OMOE Handbook 1983 m
PAH Compounds by GCMS (SIM) (1, 2)	5	2022/06/29	2022/07/01	ATL SOP 00102	EPA 8270E R6 m
ModTPH (T1) Calc. for Soil (1)	1	N/A	2022/06/30	N/A	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (1, 3)	1	N/A	2022/06/29	ATL SOP 00119	Atl. RBCA v3.1 m

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide (1)	1	N/A	2022/06/30	N/A	SM 23 4500-CO2 D
Alkalinity (1)	1	N/A	2022/06/29	ATL SOP 00142	SM 23 2320 B
Benzo(b/j)fluoranthene Sum (water) (1)	1	N/A	2022/06/28	N/A	Auto Calc.
Chloride (1)	1	N/A	2022/06/30	ATL SOP 00014	SM 23 4500-Cl- E m
Colour (1)	1	N/A	2022/06/30	ATL SOP 00020	SM 23 2120C m
Conductance - water (1)	1	N/A	2022/06/29	ATL SOP 00004	SM 23 2510B m
Hardness (calculated as CaCO3) (1)	1	N/A	2022/07/04	ATL SOP 00048	Auto Calc
Metals Water Total MS (1)	1	2022/06/30	2022/06/30	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference) (1)	1	N/A	2022/07/04	N/A	Auto Calc.
Anion and Cation Sum (1)	1	N/A	2022/07/04	N/A	Auto Calc.
Nitrogen Ammonia - water (1)	1	N/A	2022/07/03	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite (1)	1	N/A	2022/06/30	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite (1)	1	N/A	2022/06/30	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N) (1)	1	N/A	2022/06/30	ATL SOP 00018	ASTM D3867-16
PAH in Water by GC/MS (SIM) (1)	1	2022/06/27	2022/06/28	ATL SOP 00103	EPA 8270E R6 m
pH (1, 4)	1	N/A	2022/06/29	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho (1)	1	N/A	2022/06/30	ATL SOP 00021	SM 23 4500-P E m
Sat. pH and Langelier Index (@ 20C) (1)	1	N/A	2022/07/04	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C) (1)	1	N/A	2022/07/04	ATL SOP 00049	Auto Calc.

Your Project #: 60680173
Site Location: CB

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/09/21
Report #: R7306085
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C2H4225
Received: 2022/06/23, 11:35

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Reactive Silica (1)	1	N/A	2022/06/30	ATL SOP 00022	EPA 366.0 m
Sulphate (1)	1	N/A	2022/06/30	ATL SOP 00023	ASTM D516-16 m
Total Dissolved Solids (TDS calc) (1)	1	N/A	2022/07/04	N/A	Auto Calc.
Organic carbon - Total (TOC) (1, 5)	1	N/A	2022/07/10	ATL SOP 00203	SM 23 5310B m
Turbidity (1)	1	N/A	2022/07/03	ATL SOP 00011	EPA 180.1 R2 m

Remarks:

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

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

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Bedford, 200 Bluewater Rd Suite 105, Bedford, NS, B4B 1G9
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.
(4) The APHA Standard Method requires pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.
(5) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.

Your Project #: 60680173
Site Location: CB

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/09/21
Report #: R7306085
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C2H4225
Received: 2022/06/23, 11:35

Encryption Key

Natalie MacAskill
Key Account Specialist
21 Sep 2022 12:14:15

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Natalie MacAskill, Key Account Specialist
Email: Natalie.MacAskill@bureauveritas.com
Phone# (902)567-1255 Ext:17

==========

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

AECOM Canada Ltd
Client Project #: 60680173
Site Location: CB
Sampler Initials: DB

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Bureau Veritas ID		SZG900		
Sampling Date		2022/06/22		
	UNITS	DUP5	RDL	QC Batch
Petroleum Hydrocarbons				
Benzene	mg/kg	5.1	0.0050	8081461
Toluene	mg/kg	11	0.050	8081461
Ethylbenzene	mg/kg	1.4	0.010	8081461
Total Xylenes	mg/kg	11	0.050	8081461
C6 - C10 (less BTEX)	mg/kg	77	2.5	8081461
>C10-C16 Hydrocarbons	mg/kg	120	10	8079237
>C16-C21 Hydrocarbons	mg/kg	150	10	8079237
>C21-<C32 Hydrocarbons	mg/kg	230	15	8079237
Modified TPH (Tier1)	mg/kg	580	15	8069743
Reached Baseline at C32	mg/kg	Yes	N/A	8079237
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	8079237
Surrogate Recovery (%)				
Isobutylbenzene - Extractable	%	106		8079237
n-Dotriacontane - Extractable	%	108		8079237
Isobutylbenzene - Volatile	%	93		8081461

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) One product in the gasoline range. One product in fuel / lube range. Unidentified compound(s) in fuel / lube range.

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		SZG899		
Sampling Date		2022/06/22		
	UNITS	DUP4	RDL	QC Batch
Calculated Parameters				
Anion Sum	me/L	8.45	N/A	8071154
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	74	1.0	8071147
Calculated TDS	mg/L	530	1.0	8071160
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	8071147
Cation Sum	me/L	8.02	N/A	8071154
Hardness (CaCO3)	mg/L	330	1.0	8070817
Ion Balance (% Difference)	%	2.61	N/A	8071152
Langelier Index (@ 20C)	N/A	0.253		8071157
Langelier Index (@ 4C)	N/A	0.00600		8071158
Nitrate (N)	mg/L	<0.050	0.050	8070818
Saturation pH (@ 20C)	N/A	7.55		8071157
Saturation pH (@ 4C)	N/A	7.79		8071158
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L	74	2.0	8081430
Dissolved Chloride (Cl-)	mg/L	62	1.0	8081493
Colour	TCU	5.1	5.0	8081507
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	8081511
Nitrite (N)	mg/L	<0.010	0.010	8081513
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	8083623
Total Organic Carbon (C)	mg/L	2.6	0.50	8100636
Orthophosphate (P)	mg/L	<0.010	0.010	8081509
pH	pH	7.80		8081427
Reactive Silica (SiO2)	mg/L	14	0.50	8081498
Dissolved Sulphate (SO4)	mg/L	250	10	8081497
Turbidity	NTU	1.3	0.10	8084903
Conductivity	uS/cm	900	1.0	8081422
Metals				
Total Aluminum (Al)	ug/L	14	5.0	8083847
Total Antimony (Sb)	ug/L	<1.0	1.0	8083847
Total Arsenic (As)	ug/L	<1.0	1.0	8083847
Total Barium (Ba)	ug/L	15	1.0	8083847
Total Beryllium (Be)	ug/L	<0.10	0.10	8083847
Total Bismuth (Bi)	ug/L	<2.0	2.0	8083847
Total Boron (B)	ug/L	<50	50	8083847
Total Cadmium (Cd)	ug/L	<0.010	0.010	8083847

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		SZG899		
Sampling Date		2022/06/22		
	UNITS	DUP4	RDL	QC Batch
Total Calcium (Ca)	ug/L	120000	100	8083847
Total Chromium (Cr)	ug/L	<1.0	1.0	8083847
Total Cobalt (Co)	ug/L	<0.40	0.40	8083847
Total Copper (Cu)	ug/L	<0.50	0.50	8083847
Total Iron (Fe)	ug/L	390	50	8083847
Total Lead (Pb)	ug/L	<0.50	0.50	8083847
Total Magnesium (Mg)	ug/L	10000	100	8083847
Total Manganese (Mn)	ug/L	170	2.0	8083847
Total Molybdenum (Mo)	ug/L	<2.0	2.0	8083847
Total Nickel (Ni)	ug/L	<2.0	2.0	8083847
Total Phosphorus (P)	ug/L	<100	100	8083847
Total Potassium (K)	ug/L	3700	100	8083847
Total Selenium (Se)	ug/L	<0.50	0.50	8083847
Total Silver (Ag)	ug/L	<0.10	0.10	8083847
Total Sodium (Na)	ug/L	31000	100	8083847
Total Strontium (Sr)	ug/L	200	2.0	8083847
Total Thallium (Tl)	ug/L	<0.10	0.10	8083847
Total Tin (Sn)	ug/L	<2.0	2.0	8083847
Total Titanium (Ti)	ug/L	<2.0	2.0	8083847
Total Uranium (U)	ug/L	<0.10	0.10	8083847
Total Vanadium (V)	ug/L	<2.0	2.0	8083847
Total Zinc (Zn)	ug/L	<5.0	5.0	8083847

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2H4225
Report Date: 2022/09/21

AECOM Canada Ltd
Client Project #: 60680173
Site Location: CB
Sampler Initials: DB

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		SZG810	SZG897	SZG898	SZG900	SZG901		
Sampling Date		2022/06/22	2022/06/22	2022/06/22	2022/06/22	2022/06/23		
	UNITS	DUP1	DUP2	DUP3	DUP5	DUP6	RDL	QC Batch
Inorganics								
Moisture	%	20	22	35	20	33	1.0	8079087

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZG810	SZG897	SZG898	SZG900	SZG901		
Sampling Date		2022/06/22	2022/06/22	2022/06/22	2022/06/22	2022/06/23		
	UNITS	DUP1	DUP2	DUP3	DUP5	DUP6	RDL	QC Batch
Metals								
Acid Extractable Aluminum (Al)	mg/kg	19000	8300	8200	1200	15000	10	8087551
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8087551
Acid Extractable Arsenic (As)	mg/kg	23	79	35	60	15	2.0	8087551
Acid Extractable Barium (Ba)	mg/kg	430	240	210	240	150	5.0	8087551
Acid Extractable Beryllium (Be)	mg/kg	4.9	1.5	<1.0	<1.0	3.2	1.0	8087551
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8087551
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	<50	50	8087551
Acid Extractable Cadmium (Cd)	mg/kg	0.41	0.45	0.68	<0.30	0.76	0.30	8087551
Acid Extractable Chromium (Cr)	mg/kg	120	9.8	9.9	3.4	9.9	2.0	8087551
Acid Extractable Cobalt (Co)	mg/kg	8.4	14	23	<1.0	6.0	1.0	8087551
Acid Extractable Copper (Cu)	mg/kg	30	55	29	7.6	74	2.0	8087551
Acid Extractable Iron (Fe)	mg/kg	67000	55000	25000	22000	34000	50	8087551
Acid Extractable Lead (Pb)	mg/kg	210	71	110	33	150	0.50	8087551
Acid Extractable Lithium (Li)	mg/kg	14	11	12	<2.0	20	2.0	8087551
Acid Extractable Manganese (Mn)	mg/kg	5300	790	3300	44	680	2.0	8087551
Acid Extractable Mercury (Hg)	mg/kg	<0.10	0.28	0.17	0.31	<0.10	0.10	8087551
Acid Extractable Molybdenum (Mo)	mg/kg	2.8	13	2.3	4.5	<2.0	2.0	8087551
Acid Extractable Nickel (Ni)	mg/kg	14	28	31	<2.0	9.3	2.0	8087551
Acid Extractable Rubidium (Rb)	mg/kg	4.6	4.0	5.9	3.9	6.1	2.0	8087551
Acid Extractable Selenium (Se)	mg/kg	1.1	2.3	1.8	4.4	1.0	0.50	8087551
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8087551
Acid Extractable Strontium (Sr)	mg/kg	150	62	21	11	72	5.0	8087551
Acid Extractable Thallium (Tl)	mg/kg	<0.10	0.71	0.28	0.36	0.15	0.10	8087551
Acid Extractable Tin (Sn)	mg/kg	7.1	1.7	2.5	<1.0	5.8	1.0	8087551
Acid Extractable Uranium (U)	mg/kg	3.2	0.81	0.45	0.11	2.0	0.10	8087551
Acid Extractable Vanadium (V)	mg/kg	260	22	24	15	35	2.0	8087551
Acid Extractable Zinc (Zn)	mg/kg	160	91	90	6.0	280	5.0	8087551

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG810		SZG897		SZG898		SZG900		
Sampling Date		2022/06/22		2022/06/22		2022/06/22		2022/06/22		
	UNITS	DUP1	RDL	DUP2	RDL	DUP3	RDL	DUP5	RDL	QC Batch
Polyaromatic Hydrocarbons										
1-Methylnaphthalene	mg/kg	0.99	0.010	3.4	0.010	1.8	0.010	2.6	0.010	8081964
2-Methylnaphthalene	mg/kg	1.3	0.010	3.6	0.010	2.4	0.010	3.4	0.010	8081964
Acenaphthene	mg/kg	<0.020 (1)	0.020	<0.11 (1)	0.11	<0.060 (1)	0.060	<0.070 (1)	0.070	8081964
Acenaphthylene	mg/kg	<0.020 (1)	0.020	<0.070 (1)	0.070	<0.040 (1)	0.040	<0.050 (1)	0.050	8081964
Anthracene	mg/kg	0.039	0.010	0.22	0.010	<0.050 (1)	0.050	<0.050 (1)	0.050	8081964
Benzo(a)anthracene	mg/kg	0.094	0.010	0.49	0.010	0.11	0.010	0.15	0.010	8081964
Benzo(a)pyrene	mg/kg	0.063	0.010	0.22	0.010	0.047	0.010	0.032	0.010	8081964
Benzo(b)fluoranthene	mg/kg	0.064	0.010	0.23	0.010	0.066	0.010	0.070	0.010	8081964
Benzo(b/j)fluoranthene	mg/kg	0.10	0.020	0.36	0.020	0.066	0.050	0.071	0.050	8070446
Benzo(g,h,i)perylene	mg/kg	0.049	0.010	0.11	0.010	0.039	0.010	0.026	0.010	8081964
Benzo(j)fluoranthene	mg/kg	0.038	0.010	0.14	0.010	<0.040 (1)	0.040	<0.040 (1)	0.040	8081964
Benzo(k)fluoranthene	mg/kg	0.030	0.010	0.11	0.010	0.025	0.010	0.023	0.010	8081964
Chrysene	mg/kg	0.12	0.010	0.51	0.010	0.23	0.010	0.32	0.010	8081964
Dibenzo(a,h)anthracene	mg/kg	<0.010	0.010	0.037	0.010	<0.010	0.010	<0.010	0.010	8081964
Fluoranthene	mg/kg	0.13	0.010	0.81	0.010	0.17	0.010	0.23	0.010	8081964
Fluorene	mg/kg	<0.030 (1)	0.030	0.11	0.010	0.067	0.010	<0.060 (1)	0.060	8081964
Indeno(1,2,3-cd)pyrene	mg/kg	0.026	0.010	0.080	0.010	0.017	0.010	<0.010	0.010	8081964
Naphthalene	mg/kg	0.83	0.010	2.3	0.010	1.3	0.010	2.3	0.010	8081964
Perylene	mg/kg	0.014	0.010	0.039	0.010	<0.010	0.010	<0.010	0.010	8081964
Phenanthrene	mg/kg	0.43	0.010	2.2	0.010	0.98	0.010	1.7	0.010	8081964
Pyrene	mg/kg	0.14	0.010	0.76	0.010	0.22	0.010	0.29	0.010	8081964
Benzo(a)pyrene Total Potency Equiv.	mg/kg	0.09	0.03	0.36	0.03	0.07	0.03	0.06	0.03	8237441
Surrogate Recovery (%)										
D10-Anthracene	%	82		72		73		73		8081964
D14-Terphenyl (FS)	%	89		84		80		87		8081964
D8-Acenaphthylene	%	88		80		76		77		8081964

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG901		
Sampling Date		2022/06/23		
	UNITS	DUP6	RDL	QC Batch
Polyaromatic Hydrocarbons				
1-Methylnaphthalene	mg/kg	0.066	0.010	8081964
2-Methylnaphthalene	mg/kg	0.082	0.010	8081964
Acenaphthene	mg/kg	<0.010	0.010	8081964
Acenaphthylene	mg/kg	<0.010	0.010	8081964
Anthracene	mg/kg	0.035	0.010	8081964
Benzo(a)anthracene	mg/kg	0.11	0.010	8081964
Benzo(a)pyrene	mg/kg	0.099	0.010	8081964
Benzo(b)fluoranthene	mg/kg	0.099	0.010	8081964
Benzo(b/j)fluoranthene	mg/kg	0.16	0.020	8070446
Benzo(g,h,i)perylene	mg/kg	0.075	0.010	8081964
Benzo(j)fluoranthene	mg/kg	0.057	0.010	8081964
Benzo(k)fluoranthene	mg/kg	0.055	0.010	8081964
Chrysene	mg/kg	0.14	0.010	8081964
Dibenzo(a,h)anthracene	mg/kg	0.018	0.010	8081964
Fluoranthene	mg/kg	0.26	0.010	8081964
Fluorene	mg/kg	<0.010	0.010	8081964
Indeno(1,2,3-cd)pyrene	mg/kg	0.058	0.010	8081964
Naphthalene	mg/kg	0.062	0.010	8081964
Perylene	mg/kg	0.027	0.010	8081964
Phenanthrene	mg/kg	0.17	0.010	8081964
Pyrene	mg/kg	0.20	0.010	8081964
Benzo(a)pyrene Total Potency Equiv.	mg/kg	0.16	0.03	8237441
Surrogate Recovery (%)				
D10-Anthracene	%	90		8081964
D14-Terphenyl (FS)	%	94		8081964
D8-Acenaphthylene	%	93		8081964

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		SZG899		
Sampling Date		2022/06/22		
	UNITS	DUP4	RDL	QC Batch
Polyaromatic Hydrocarbons				
1-Methylnaphthalene	ug/L	<0.050	0.050	8076410
2-Methylnaphthalene	ug/L	<0.050	0.050	8076410
Acenaphthene	ug/L	<0.010	0.010	8076410
Acenaphthylene	ug/L	<0.010	0.010	8076410
Anthracene	ug/L	<0.010	0.010	8076410
Benzo(a)anthracene	ug/L	<0.010	0.010	8076410
Benzo(a)pyrene	ug/L	<0.010	0.010	8076410
Benzo(b)fluoranthene	ug/L	<0.010	0.010	8076410
Benzo(b/j)fluoranthene	ug/L	<0.020	0.020	8069848
Benzo(g,h,i)perylene	ug/L	<0.010	0.010	8076410
Benzo(j)fluoranthene	ug/L	<0.010	0.010	8076410
Benzo(k)fluoranthene	ug/L	<0.010	0.010	8076410
Chrysene	ug/L	<0.010	0.010	8076410
Dibenzo(a,h)anthracene	ug/L	<0.010	0.010	8076410
Fluoranthene	ug/L	<0.010	0.010	8076410
Fluorene	ug/L	<0.010	0.010	8076410
Indeno(1,2,3-cd)pyrene	ug/L	<0.010	0.010	8076410
Naphthalene	ug/L	<0.20	0.20	8076410
Perylene	ug/L	<0.010	0.010	8076410
Phenanthrene	ug/L	<0.010	0.010	8076410
Pyrene	ug/L	<0.010	0.010	8076410
Surrogate Recovery (%)				
D10-Anthracene	%	99		8076410
D14-Terphenyl	%	103		8076410
D8-Acenaphthylene	%	101		8076410

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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GENERAL COMMENTS

REISSUED REPORT to include BAP-TPE calculations on soil samples as requested by J Shea. 09/21/2022 NBU

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8076410	LGE	Matrix Spike	D10-Anthracene	2022/06/27		94	%	50 - 130
			D14-Terphenyl	2022/06/27		76	%	50 - 130
			D8-Acenaphthylene	2022/06/27		104	%	50 - 130
			1-Methylnaphthalene	2022/06/27		103	%	50 - 130
			2-Methylnaphthalene	2022/06/27		99	%	50 - 130
			Acenaphthene	2022/06/27		95	%	50 - 130
			Acenaphthylene	2022/06/27		101	%	50 - 130
			Anthracene	2022/06/27		102	%	50 - 130
			Benzo(a)anthracene	2022/06/27		95	%	50 - 130
			Benzo(a)pyrene	2022/06/27		82	%	50 - 130
			Benzo(b)fluoranthene	2022/06/27		88	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/27		82	%	50 - 130
			Benzo(j)fluoranthene	2022/06/27		79	%	50 - 130
			Benzo(k)fluoranthene	2022/06/27		80	%	50 - 130
			Chrysene	2022/06/27		89	%	50 - 130
			Dibenzo(a,h)anthracene	2022/06/27		74	%	50 - 130
			Fluoranthene	2022/06/27		100	%	50 - 130
			Fluorene	2022/06/27		99	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/27		78	%	50 - 130
			Naphthalene	2022/06/27		93	%	50 - 130
			Perylene	2022/06/27		84	%	50 - 130
			Phenanthrene	2022/06/27		94	%	50 - 130
			Pyrene	2022/06/27		95	%	50 - 130
8076410	LGE	Spiked Blank	D10-Anthracene	2022/06/27		110	%	50 - 130
			D14-Terphenyl	2022/06/27		110	%	50 - 130
			D8-Acenaphthylene	2022/06/27		113	%	50 - 130
			1-Methylnaphthalene	2022/06/27		112	%	50 - 130
			2-Methylnaphthalene	2022/06/27		108	%	50 - 130
			Acenaphthene	2022/06/27		106	%	50 - 130
			Acenaphthylene	2022/06/27		108	%	50 - 130
			Anthracene	2022/06/27		102	%	50 - 130
			Benzo(a)anthracene	2022/06/27		99	%	50 - 130
			Benzo(a)pyrene	2022/06/27		89	%	50 - 130
			Benzo(b)fluoranthene	2022/06/27		96	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/27		96	%	50 - 130
			Benzo(j)fluoranthene	2022/06/27		91	%	50 - 130
			Benzo(k)fluoranthene	2022/06/27		97	%	50 - 130
			Chrysene	2022/06/27		97	%	50 - 130
			Dibenzo(a,h)anthracene	2022/06/27		73	%	50 - 130
			Fluoranthene	2022/06/27		106	%	50 - 130
			Fluorene	2022/06/27		107	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/27		91	%	50 - 130
			Naphthalene	2022/06/27		101	%	50 - 130
			Perylene	2022/06/27		94	%	50 - 130
			Phenanthrene	2022/06/27		109	%	50 - 130
			Pyrene	2022/06/27		105	%	50 - 130
8076410	LGE	Method Blank	D10-Anthracene	2022/06/27		85	%	50 - 130
			D14-Terphenyl	2022/06/27		95	%	50 - 130
			D8-Acenaphthylene	2022/06/27		101	%	50 - 130
			1-Methylnaphthalene	2022/06/27	<0.050		ug/L	
			2-Methylnaphthalene	2022/06/27	<0.050		ug/L	
			Acenaphthene	2022/06/27	<0.010		ug/L	
			Acenaphthylene	2022/06/27	<0.010		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Anthracene	2022/06/27	<0.010		ug/L	
			Benzo(a)anthracene	2022/06/27	<0.010		ug/L	
			Benzo(a)pyrene	2022/06/27	<0.010		ug/L	
			Benzo(b)fluoranthene	2022/06/27	<0.010		ug/L	
			Benzo(g,h,i)perylene	2022/06/27	<0.010		ug/L	
			Benzo(j)fluoranthene	2022/06/27	<0.010		ug/L	
			Benzo(k)fluoranthene	2022/06/27	<0.010		ug/L	
			Chrysene	2022/06/27	<0.010		ug/L	
			Dibenzo(a,h)anthracene	2022/06/27	<0.010		ug/L	
			Fluoranthene	2022/06/27	<0.010		ug/L	
			Fluorene	2022/06/27	<0.010		ug/L	
			Indeno(1,2,3-cd)pyrene	2022/06/27	<0.010		ug/L	
			Naphthalene	2022/06/27	<0.20		ug/L	
			Perylene	2022/06/27	<0.010		ug/L	
			Phenanthrene	2022/06/27	<0.010		ug/L	
			Pyrene	2022/06/27	<0.010		ug/L	
8076410	LGE	RPD	Benzo(a)pyrene	2022/06/27	NC		%	40
8079087	KCS	RPD	Moisture	2022/06/29	6.1		%	25
8079237	MSK	Matrix Spike	Isobutylbenzene - Extractable	2022/06/29		105	%	60 - 130
			n-Dotriacontane - Extractable	2022/06/29		110	%	60 - 130
			>C10-C16 Hydrocarbons	2022/06/29		110	%	30 - 130
			>C16-C21 Hydrocarbons	2022/06/29		110	%	30 - 130
			>C21-<C32 Hydrocarbons	2022/06/29		108	%	30 - 130
8079237	MSK	Spiked Blank	Isobutylbenzene - Extractable	2022/06/28		101	%	60 - 130
			n-Dotriacontane - Extractable	2022/06/28		107	%	60 - 130
			>C10-C16 Hydrocarbons	2022/06/28		110	%	60 - 130
			>C16-C21 Hydrocarbons	2022/06/28		106	%	60 - 130
			>C21-<C32 Hydrocarbons	2022/06/28		108	%	60 - 130
8079237	MSK	Method Blank	Isobutylbenzene - Extractable	2022/06/28		103	%	60 - 130
			n-Dotriacontane - Extractable	2022/06/28		107	%	60 - 130
			>C10-C16 Hydrocarbons	2022/06/28	<10		mg/kg	
			>C16-C21 Hydrocarbons	2022/06/28	<10		mg/kg	
			>C21-<C32 Hydrocarbons	2022/06/28	<15		mg/kg	
8079237	MSK	RPD	>C10-C16 Hydrocarbons	2022/06/29	NC		%	50
			>C16-C21 Hydrocarbons	2022/06/29	NC		%	50
			>C21-<C32 Hydrocarbons	2022/06/29	NC		%	50
8081422	NGI	Spiked Blank	Conductivity	2022/06/29		96	%	80 - 120
8081422	NGI	Method Blank	Conductivity	2022/06/29	<1.0		uS/cm	
8081422	NGI	RPD	Conductivity	2022/06/29	1.4		%	10
8081427	NGI	Spiked Blank	pH	2022/06/29		100	%	97 - 103
8081427	NGI	RPD	pH	2022/06/29	0.11		%	N/A
8081430	NGI	Spiked Blank	Total Alkalinity (Total as CaCO3)	2022/06/29		92	%	80 - 120
8081430	NGI	Method Blank	Total Alkalinity (Total as CaCO3)	2022/06/29	<2.0		mg/L	
8081430	NGI	RPD	Total Alkalinity (Total as CaCO3)	2022/06/29	1.6		%	20
8081461	DBF	Matrix Spike	Isobutylbenzene - Volatile	2022/06/29		96	%	60 - 130
			Benzene	2022/06/29		82	%	60 - 130
			Toluene	2022/06/29		86	%	60 - 130
			Ethylbenzene	2022/06/29		95	%	60 - 130
			Total Xylenes	2022/06/29		96	%	60 - 130
8081461	DBF	Spiked Blank	Isobutylbenzene - Volatile	2022/06/29		93	%	60 - 130
			Benzene	2022/06/29		88	%	60 - 140
			Toluene	2022/06/29		91	%	60 - 140
			Ethylbenzene	2022/06/29		93	%	60 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Xylenes	2022/06/29		95	%	60 - 140
8081461	DBF	Method Blank	Isobutylbenzene - Volatile	2022/06/29		97	%	60 - 130
			Benzene	2022/06/29	<0.0050		mg/kg	
			Toluene	2022/06/29	<0.050		mg/kg	
			Ethylbenzene	2022/06/29	<0.010		mg/kg	
			Total Xylenes	2022/06/29	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2022/06/29	<2.5		mg/kg	
8081461	DBF	RPD	Benzene	2022/06/29	3.7		%	50
			Toluene	2022/06/29	3.9		%	50
			Ethylbenzene	2022/06/29	3.7		%	50
			Total Xylenes	2022/06/29	4.5		%	50
			C6 - C10 (less BTEX)	2022/06/29	0.73		%	50
8081493	MCN	Matrix Spike	Dissolved Chloride (Cl-)	2022/06/30		94	%	80 - 120
8081493	MCN	Spiked Blank	Dissolved Chloride (Cl-)	2022/06/30		94	%	80 - 120
8081493	MCN	Method Blank	Dissolved Chloride (Cl-)	2022/06/30	<1.0		mg/L	
8081493	MCN	RPD	Dissolved Chloride (Cl-)	2022/06/30	0.28		%	20
8081497	MCN	Matrix Spike	Dissolved Sulphate (SO4)	2022/06/30		95	%	80 - 120
8081497	MCN	Spiked Blank	Dissolved Sulphate (SO4)	2022/06/30		96	%	80 - 120
8081497	MCN	Method Blank	Dissolved Sulphate (SO4)	2022/06/30	<2.0		mg/L	
8081497	MCN	RPD	Dissolved Sulphate (SO4)	2022/06/30	7.6		%	20
8081498	MCN	Matrix Spike	Reactive Silica (SiO2)	2022/06/30		93	%	80 - 120
8081498	MCN	Spiked Blank	Reactive Silica (SiO2)	2022/06/30		94	%	80 - 120
8081498	MCN	Method Blank	Reactive Silica (SiO2)	2022/06/30	<0.50		mg/L	
8081498	MCN	RPD	Reactive Silica (SiO2)	2022/06/30	0.71		%	20
8081507	MCN	Spiked Blank	Colour	2022/06/30		97	%	80 - 120
8081507	MCN	Method Blank	Colour	2022/06/30	<5.0		TCU	
8081507	MCN	RPD	Colour	2022/06/30	NC		%	20
8081509	MCN	Matrix Spike	Orthophosphate (P)	2022/06/30		90	%	80 - 120
8081509	MCN	Spiked Blank	Orthophosphate (P)	2022/06/30		91	%	80 - 120
8081509	MCN	Method Blank	Orthophosphate (P)	2022/06/30	<0.010		mg/L	
8081509	MCN	RPD	Orthophosphate (P)	2022/06/30	1.0		%	20
8081511	MCN	Matrix Spike	Nitrate + Nitrite (N)	2022/06/30		NC	%	80 - 120
8081511	MCN	Spiked Blank	Nitrate + Nitrite (N)	2022/06/30		99	%	80 - 120
8081511	MCN	Method Blank	Nitrate + Nitrite (N)	2022/06/30	<0.050		mg/L	
8081511	MCN	RPD	Nitrate + Nitrite (N)	2022/06/30	1.6		%	20
8081513	MCN	Matrix Spike	Nitrite (N)	2022/06/30		106	%	80 - 120
8081513	MCN	Spiked Blank	Nitrite (N)	2022/06/30		107	%	80 - 120
8081513	MCN	Method Blank	Nitrite (N)	2022/06/30	<0.010		mg/L	
8081513	MCN	RPD	Nitrite (N)	2022/06/30	NC		%	20
8081964	LGE	Matrix Spike	D10-Anthracene	2022/07/01		90	%	50 - 130
			D14-Terphenyl (FS)	2022/07/01		89	%	50 - 130
			D8-Acenaphthylene	2022/07/01		93	%	50 - 130
			1-Methylnaphthalene	2022/07/01		107	%	50 - 130
			2-Methylnaphthalene	2022/07/01		104	%	50 - 130
			Acenaphthene	2022/07/01		100	%	50 - 130
			Acenaphthylene	2022/07/01		98	%	50 - 130
			Anthracene	2022/07/01		96	%	50 - 130
			Benzo(a)anthracene	2022/07/01		91	%	50 - 130
			Benzo(a)pyrene	2022/07/01		80	%	50 - 130
			Benzo(b)fluoranthene	2022/07/01		94	%	50 - 130
			Benzo(g,h,i)perylene	2022/07/01		90	%	50 - 130
			Benzo(j)fluoranthene	2022/07/01		82	%	50 - 130
			Benzo(k)fluoranthene	2022/07/01		79	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chrysene	2022/07/01		83	%	50 - 130
			Dibenzo(a,h)anthracene	2022/07/01		80	%	50 - 130
			Fluoranthene	2022/07/01		96	%	50 - 130
			Fluorene	2022/07/01		101	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/07/01		81	%	50 - 130
			Naphthalene	2022/07/01		98	%	50 - 130
			Perylene	2022/07/01		84	%	50 - 130
			Phenanthrene	2022/07/01		94	%	50 - 130
			Pyrene	2022/07/01		92	%	50 - 130
8081964	LGE	Spiked Blank	D10-Anthracene	2022/07/01		96	%	50 - 130
			D14-Terphenyl (FS)	2022/07/01		97	%	50 - 130
			D8-Acenaphthylene	2022/07/01		99	%	50 - 130
			1-Methylnaphthalene	2022/07/01		109	%	50 - 130
			2-Methylnaphthalene	2022/07/01		107	%	50 - 130
			Acenaphthene	2022/07/01		103	%	50 - 130
			Acenaphthylene	2022/07/01		105	%	50 - 130
			Anthracene	2022/07/01		101	%	50 - 130
			Benzo(a)anthracene	2022/07/01		93	%	50 - 130
			Benzo(a)pyrene	2022/07/01		86	%	50 - 130
			Benzo(b)fluoranthene	2022/07/01		91	%	50 - 130
			Benzo(g,h,i)perylene	2022/07/01		93	%	50 - 130
			Benzo(j)fluoranthene	2022/07/01		85	%	50 - 130
			Benzo(k)fluoranthene	2022/07/01		92	%	50 - 130
			Chrysene	2022/07/01		87	%	50 - 130
			Dibenzo(a,h)anthracene	2022/07/01		84	%	50 - 130
			Fluoranthene	2022/07/01		101	%	50 - 130
			Fluorene	2022/07/01		103	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/07/01		88	%	50 - 130
			Naphthalene	2022/07/01		103	%	50 - 130
			Perylene	2022/07/01		89	%	50 - 130
			Phenanthrene	2022/07/01		105	%	50 - 130
			Pyrene	2022/07/01		99	%	50 - 130
8081964	LGE	Method Blank	D10-Anthracene	2022/07/01		100	%	50 - 130
			D14-Terphenyl (FS)	2022/07/01		100	%	50 - 130
			D8-Acenaphthylene	2022/07/01		98	%	50 - 130
			1-Methylnaphthalene	2022/07/01	<0.010		mg/kg	
			2-Methylnaphthalene	2022/07/01	<0.010		mg/kg	
			Acenaphthene	2022/07/01	<0.010		mg/kg	
			Acenaphthylene	2022/07/01	<0.010		mg/kg	
			Anthracene	2022/07/01	<0.010		mg/kg	
			Benzo(a)anthracene	2022/07/01	<0.010		mg/kg	
			Benzo(a)pyrene	2022/07/01	<0.010		mg/kg	
			Benzo(b)fluoranthene	2022/07/01	<0.010		mg/kg	
			Benzo(g,h,i)perylene	2022/07/01	<0.010		mg/kg	
			Benzo(j)fluoranthene	2022/07/01	<0.010		mg/kg	
			Benzo(k)fluoranthene	2022/07/01	<0.010		mg/kg	
			Chrysene	2022/07/01	<0.010		mg/kg	
			Dibenzo(a,h)anthracene	2022/07/01	<0.010		mg/kg	
			Fluoranthene	2022/07/01	<0.010		mg/kg	
			Fluorene	2022/07/01	<0.010		mg/kg	
			Indeno(1,2,3-cd)pyrene	2022/07/01	<0.010		mg/kg	
			Naphthalene	2022/07/01	<0.010		mg/kg	
			Perylene	2022/07/01	<0.010		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Phenanthrene	2022/07/01	<0.010		mg/kg	
			Pyrene	2022/07/01	<0.010		mg/kg	
8081964	LGE	RPD	1-Methylnaphthalene	2022/07/01	0		%	50
			2-Methylnaphthalene	2022/07/01	11		%	50
			Acenaphthene	2022/07/01	4.2		%	50
			Acenaphthylene	2022/07/01	NC		%	50
			Anthracene	2022/07/01	19		%	50
			Benzo(a)anthracene	2022/07/01	44		%	50
			Benzo(a)pyrene	2022/07/01	8.8		%	50
			Benzo(b)fluoranthene	2022/07/01	12		%	50
			Benzo(g,h,i)perylene	2022/07/01	8.8		%	50
			Benzo(j)fluoranthene	2022/07/01	15		%	50
			Benzo(k)fluoranthene	2022/07/01	24		%	50
			Chrysene	2022/07/01	66 (1)		%	50
			Dibenzo(a,h)anthracene	2022/07/01	9.4		%	50
			Fluoranthene	2022/07/01	3.8		%	50
			Fluorene	2022/07/01	0.095		%	50
			Indeno(1,2,3-cd)pyrene	2022/07/01	13		%	50
			Naphthalene	2022/07/01	12		%	50
			Perylene	2022/07/01	10		%	50
			Phenanthrene	2022/07/01	1.0		%	50
			Pyrene	2022/07/01	3.6		%	50
8083623	EMT	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2022/07/03		93	%	80 - 120
8083623	EMT	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2022/07/03		88	%	80 - 120
8083623	EMT	Method Blank	Nitrogen (Ammonia Nitrogen)	2022/07/03	<0.050		mg/L	
8083623	EMT	RPD	Nitrogen (Ammonia Nitrogen)	2022/07/03	NC		%	20
8083847	JHY	Matrix Spike	Total Aluminum (Al)	2022/07/04		97	%	80 - 120
			Total Antimony (Sb)	2022/07/04		103	%	80 - 120
			Total Arsenic (As)	2022/07/04		93	%	80 - 120
			Total Barium (Ba)	2022/07/04		94	%	80 - 120
			Total Beryllium (Be)	2022/07/04		93	%	80 - 120
			Total Bismuth (Bi)	2022/07/04		95	%	80 - 120
			Total Boron (B)	2022/07/04		100	%	80 - 120
			Total Cadmium (Cd)	2022/07/04		95	%	80 - 120
			Total Calcium (Ca)	2022/07/04		NC	%	80 - 120
			Total Chromium (Cr)	2022/07/04		93	%	80 - 120
			Total Cobalt (Co)	2022/07/04		93	%	80 - 120
			Total Copper (Cu)	2022/07/04		92	%	80 - 120
			Total Iron (Fe)	2022/07/04		97	%	80 - 120
			Total Lead (Pb)	2022/07/04		96	%	80 - 120
			Total Magnesium (Mg)	2022/07/04		NC	%	80 - 120
			Total Manganese (Mn)	2022/07/04		NC	%	80 - 120
			Total Molybdenum (Mo)	2022/07/04		102	%	80 - 120
			Total Nickel (Ni)	2022/07/04		93	%	80 - 120
			Total Phosphorus (P)	2022/07/04		101	%	80 - 120
			Total Potassium (K)	2022/07/04		100	%	80 - 120
			Total Selenium (Se)	2022/07/04		95	%	80 - 120
			Total Silver (Ag)	2022/07/04		94	%	80 - 120
			Total Sodium (Na)	2022/07/04		NC	%	80 - 120
			Total Strontium (Sr)	2022/07/04		NC	%	80 - 120
			Total Thallium (Tl)	2022/07/04		95	%	80 - 120
			Total Tin (Sn)	2022/07/04		99	%	80 - 120
			Total Titanium (Ti)	2022/07/04		96	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Uranium (U)	2022/07/04		104	%	80 - 120
			Total Vanadium (V)	2022/07/04		95	%	80 - 120
			Total Zinc (Zn)	2022/07/04		92	%	80 - 120
8083847	JHY	Spiked Blank	Total Aluminum (Al)	2022/06/30		97	%	80 - 120
			Total Antimony (Sb)	2022/06/30		100	%	80 - 120
			Total Arsenic (As)	2022/06/30		92	%	80 - 120
			Total Barium (Ba)	2022/06/30		92	%	80 - 120
			Total Beryllium (Be)	2022/06/30		93	%	80 - 120
			Total Bismuth (Bi)	2022/06/30		97	%	80 - 120
			Total Boron (B)	2022/06/30		93	%	80 - 120
			Total Cadmium (Cd)	2022/06/30		96	%	80 - 120
			Total Calcium (Ca)	2022/06/30		98	%	80 - 120
			Total Chromium (Cr)	2022/06/30		94	%	80 - 120
			Total Cobalt (Co)	2022/06/30		95	%	80 - 120
			Total Copper (Cu)	2022/06/30		95	%	80 - 120
			Total Iron (Fe)	2022/06/30		98	%	80 - 120
			Total Lead (Pb)	2022/06/30		97	%	80 - 120
			Total Magnesium (Mg)	2022/06/30		98	%	80 - 120
			Total Manganese (Mn)	2022/06/30		96	%	80 - 120
			Total Molybdenum (Mo)	2022/06/30		100	%	80 - 120
			Total Nickel (Ni)	2022/06/30		96	%	80 - 120
			Total Phosphorus (P)	2022/06/30		101	%	80 - 120
			Total Potassium (K)	2022/06/30		99	%	80 - 120
			Total Selenium (Se)	2022/06/30		96	%	80 - 120
			Total Silver (Ag)	2022/06/30		95	%	80 - 120
			Total Sodium (Na)	2022/06/30		96	%	80 - 120
			Total Strontium (Sr)	2022/06/30		94	%	80 - 120
			Total Thallium (Tl)	2022/06/30		95	%	80 - 120
			Total Tin (Sn)	2022/06/30		99	%	80 - 120
			Total Titanium (Ti)	2022/06/30		97	%	80 - 120
			Total Uranium (U)	2022/06/30		102	%	80 - 120
			Total Vanadium (V)	2022/06/30		96	%	80 - 120
			Total Zinc (Zn)	2022/06/30		95	%	80 - 120
8083847	JHY	Method Blank	Total Aluminum (Al)	2022/06/30	<5.0		ug/L	
			Total Antimony (Sb)	2022/06/30	<1.0		ug/L	
			Total Arsenic (As)	2022/06/30	<1.0		ug/L	
			Total Barium (Ba)	2022/06/30	<1.0		ug/L	
			Total Beryllium (Be)	2022/06/30	<0.10		ug/L	
			Total Bismuth (Bi)	2022/06/30	<2.0		ug/L	
			Total Boron (B)	2022/06/30	<50		ug/L	
			Total Cadmium (Cd)	2022/06/30	<0.010		ug/L	
			Total Calcium (Ca)	2022/06/30	<100		ug/L	
			Total Chromium (Cr)	2022/06/30	<1.0		ug/L	
			Total Cobalt (Co)	2022/06/30	<0.40		ug/L	
			Total Copper (Cu)	2022/06/30	<0.50		ug/L	
			Total Iron (Fe)	2022/06/30	<50		ug/L	
			Total Lead (Pb)	2022/06/30	<0.50		ug/L	
			Total Magnesium (Mg)	2022/06/30	<100		ug/L	
			Total Manganese (Mn)	2022/06/30	<2.0		ug/L	
			Total Molybdenum (Mo)	2022/06/30	<2.0		ug/L	
			Total Nickel (Ni)	2022/06/30	<2.0		ug/L	
			Total Phosphorus (P)	2022/06/30	<100		ug/L	
			Total Potassium (K)	2022/06/30	<100		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Selenium (Se)	2022/06/30	<0.50		ug/L	
			Total Silver (Ag)	2022/06/30	<0.10		ug/L	
			Total Sodium (Na)	2022/06/30	<100		ug/L	
			Total Strontium (Sr)	2022/06/30	<2.0		ug/L	
			Total Thallium (Tl)	2022/06/30	<0.10		ug/L	
			Total Tin (Sn)	2022/06/30	<2.0		ug/L	
			Total Titanium (Ti)	2022/06/30	<2.0		ug/L	
			Total Uranium (U)	2022/06/30	<0.10		ug/L	
			Total Vanadium (V)	2022/06/30	<2.0		ug/L	
			Total Zinc (Zn)	2022/06/30	<5.0		ug/L	
8083847	JHY	RPD	Total Aluminum (Al)	2022/07/04	NC		%	20
			Total Antimony (Sb)	2022/07/04	NC		%	20
			Total Arsenic (As)	2022/07/04	NC		%	20
			Total Barium (Ba)	2022/07/04	3.7		%	20
			Total Beryllium (Be)	2022/07/04	NC		%	20
			Total Bismuth (Bi)	2022/07/04	NC		%	20
			Total Boron (B)	2022/07/04	3.1		%	20
			Total Cadmium (Cd)	2022/07/04	NC		%	20
			Total Calcium (Ca)	2022/07/04	3.8		%	20
			Total Chromium (Cr)	2022/07/04	NC		%	20
			Total Cobalt (Co)	2022/07/04	NC		%	20
			Total Copper (Cu)	2022/07/04	NC		%	20
			Total Iron (Fe)	2022/07/04	NC		%	20
			Total Lead (Pb)	2022/07/04	NC		%	20
			Total Magnesium (Mg)	2022/07/04	5.2		%	20
			Total Manganese (Mn)	2022/07/04	3.6		%	20
			Total Molybdenum (Mo)	2022/07/04	NC		%	20
			Total Nickel (Ni)	2022/07/04	NC		%	20
			Total Phosphorus (P)	2022/07/04	NC		%	20
			Total Potassium (K)	2022/07/04	2.4		%	20
			Total Selenium (Se)	2022/07/04	NC		%	20
			Total Silver (Ag)	2022/07/04	NC		%	20
			Total Sodium (Na)	2022/07/04	3.7		%	20
			Total Strontium (Sr)	2022/07/04	3.5		%	20
			Total Thallium (Tl)	2022/07/04	NC		%	20
			Total Tin (Sn)	2022/07/04	NC		%	20
			Total Titanium (Ti)	2022/07/04	NC		%	20
			Total Uranium (U)	2022/07/04	NC		%	20
			Total Vanadium (V)	2022/07/04	NC		%	20
			Total Zinc (Zn)	2022/07/04	NC		%	20
8084903	KMC	QC Standard	Turbidity	2022/07/03		104	%	80 - 120
8084903	KMC	Spiked Blank	Turbidity	2022/07/03		99	%	80 - 120
8084903	KMC	Method Blank	Turbidity	2022/07/03	<0.10		NTU	
8084903	KMC	RPD	Turbidity	2022/07/03	15		%	20
8087551	BAN	Matrix Spike	Acid Extractable Antimony (Sb)	2022/07/05		72 (2)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/05		96	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/05		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/05		101	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/05		98	%	75 - 125
			Acid Extractable Boron (B)	2022/07/05		91	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/05		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/05		98	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/05		100	%	75 - 125

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Copper (Cu)	2022/07/05		117	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/05		97	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/05		103	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/05		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/05		98	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/05		93	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/05		105	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/05		96	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/05		94	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/05		121	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/05		102	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/05		101	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/05		101	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/05		98	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/05		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/05		98	%	75 - 125
8087551	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/05		105	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/05		99	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/05		97	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/05		97	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/05		98	%	75 - 125
			Acid Extractable Boron (B)	2022/07/05		95	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/05		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/05		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/05		99	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/05		100	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/05		98	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/05		99	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/05		99	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/05		100	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/05		100	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/05		99	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/05		97	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/05		100	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/05		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/05		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/05		99	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/05		100	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/05		97	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/05		98	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/05		96	%	75 - 125
8087551	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/07/05	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/05	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/05	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/07/05	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/05	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/05	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/05	<50		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Lead (Pb)	2022/07/05	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/05	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/05	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/05	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/05	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/05	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/05	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/07/05	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/05	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/05	<5.0		mg/kg	
8087551	BAN	RPD	Acid Extractable Aluminum (Al)	2022/07/05	1.9		%	35
			Acid Extractable Antimony (Sb)	2022/07/05	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/05	3.9		%	35
			Acid Extractable Barium (Ba)	2022/07/05	23		%	35
			Acid Extractable Beryllium (Be)	2022/07/05	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/07/05	NC		%	35
			Acid Extractable Boron (B)	2022/07/05	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/05	NC		%	35
			Acid Extractable Chromium (Cr)	2022/07/05	0.13		%	35
			Acid Extractable Cobalt (Co)	2022/07/05	6.2		%	35
			Acid Extractable Copper (Cu)	2022/07/05	69 (3)		%	35
			Acid Extractable Iron (Fe)	2022/07/05	7.7		%	35
			Acid Extractable Lead (Pb)	2022/07/05	0.59		%	35
			Acid Extractable Lithium (Li)	2022/07/05	0.81		%	35
			Acid Extractable Manganese (Mn)	2022/07/05	2.8		%	35
			Acid Extractable Mercury (Hg)	2022/07/05	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/05	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/05	3.5		%	35
			Acid Extractable Rubidium (Rb)	2022/07/05	16		%	35
			Acid Extractable Selenium (Se)	2022/07/05	NC		%	35
			Acid Extractable Silver (Ag)	2022/07/05	17		%	35
			Acid Extractable Strontium (Sr)	2022/07/05	NC		%	35
			Acid Extractable Thallium (Tl)	2022/07/05	NC		%	35
			Acid Extractable Tin (Sn)	2022/07/05	NC		%	35
			Acid Extractable Uranium (U)	2022/07/05	3.9		%	35
			Acid Extractable Vanadium (V)	2022/07/05	16		%	35
			Acid Extractable Zinc (Zn)	2022/07/05	4.7		%	35
8100636	KMC	Matrix Spike	Total Organic Carbon (C)	2022/07/10		95	%	85 - 115
8100636	KMC	Spiked Blank	Total Organic Carbon (C)	2022/07/10		101	%	80 - 120
8100636	KMC	Method Blank	Total Organic Carbon (C)	2022/07/10	<0.50		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8100636	KMC	RPD	Total Organic Carbon (C)	2022/07/10	3.6		%	15

N/A = Not Applicable

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

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

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

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

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

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

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

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

(1) Duplicate: results are outside acceptance limit. Analysis was repeated with similar results.

(2) Recovery is within QC acceptance limits. < 10 % of compounds in multi-component analysis in violation.

(3) Poor RPD due to sample inhomogeneity. Verified by repeat digestion and analysis.

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VALIDATION SIGNATURE PAGE

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

Alan Stewart, Organics Manager, Bedford

Colleen Acker, B.Sc, Scientific Service Specialist

Janah Rhyno, Metals Supervisor-Bedford

Phil Deveau, Scientific Specialist (Organics)

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CHAIN OF CUSTODY RECORD

ENV COC - 00016v3

Invoice Information		Report Information (if differs from invoice)		Project Information	
Invoice to (requires report) ☐					LAB USE ONLY - PLACE STICKER HERE
Company :	Aecom Canada Ltd	Company:	Aecom	Quotation #:	B91344
Contact Name:	Accounts Payable.	Contact Name:	David Buzzler / Rory McNeil.	P.O. #/ AFE#:	
Street Address:		Street Address:		Project #:	60680173
City: / Prov: / Postal Code:		City: / Prov: / Postal Code:		Site #:	
Phone:		Phone:		Site Location:	CB
Email:	CANSSC_E.Billing@Aecom.com	Email:	David.Buzzler@Aecom.com	Site Location Province:	NS
Copies:		Copies:	Rory.McNeil@Aecom.com	Sampled By:	DB

Regulatory Criteria		
**Specify matrix for each regulation: surface water (SW)/groundwater (GW)/tap water/sewage/effluent/seawater/potable water/non-potable water/tissue/soil/sludge/metal	Regulation	**Matrix

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 RCAp-MS (total metals) well / surface water	5 RCAp-MS (dissolved metals) - GW	6 Total metals (default)-well/SW	7 Dissolved metals for ground water	8 Total mercury - water	9 Dissolved mercury - water	10 Metals/mercury default (acid ext.)	11 HWS boron (CCME agri/ landfill)	12 RBCA HC (BTEX, C6-C32)	13 CCME HC (F1/BTEX, F2-F4)	14 PAHs (default for water/soil)	15 PCBs - default	16 PCBs - CCME sediment	17 VOCs	18 Total coliform/E.coli (presence/absence)	19 Total coliform/E.coli (count)	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE	Comments
1	Dup 1	22	06	22			Soil										X				X							1		
2	Dup 2	22	06	22			Soil										|				|						1		
3	Dup 3	22	06	22			Soil										|				|						1		
4	Dup 4	〃	〃	〃			Water		X		X		X								X							5		
5	Dup 5	22	06	22			Soil										X		X		X							3		
6	Dup 6	22	06	23			Soil										X				X							1		
7																														
8																														
9																														
10																														
11																														
12																														

Regular Turnaround Time (TAT)
☐ 5 to 7 Day ☐ 10 Day

Rush Turnaround Time (TAT) Surcharges apply
☐ Same Day ☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 4 Day

Date Required: YY / MM / DD

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present						
				5	10	8

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present						
				4	5	5

LAB USE ONLY	Yes	No	°C	1	2	3	Temperature reading by:
Seal present							
Seal intact							
Cooling media present							

	Relinquished by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Received by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Special instructions
1		22	06	23	11	28	1	22	06	23	11	35	C2H4225
2							2						

Your Project #: 60680173
Site Location: CB

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/13
Report #: R7208234
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2H4189
Received: 2022/06/23, 11:35

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide (1)	4	N/A	2022/06/30	N/A	SM 23 4500-CO2 D
Alkalinity (1)	4	N/A	2022/06/29	ATL SOP 00142	SM 23 2320 B
Benzo(b/j)fluoranthene Sum (water) (1)	6	N/A	2022/06/28	N/A	Auto Calc.
Chloride (1)	2	N/A	2022/06/30	ATL SOP 00014	SM 23 4500-Cl- E m
Chloride (1)	2	N/A	2022/07/04	ATL SOP 00014	SM 23 4500-Cl- E m
Colour (1)	2	N/A	2022/06/30	ATL SOP 00020	SM 23 2120C m
Colour (1)	2	N/A	2022/07/04	ATL SOP 00020	SM 23 2120C m
Conductance - water (1)	4	N/A	2022/06/29	ATL SOP 00004	SM 23 2510B m
Hardness (calculated as CaCO3) (1)	2	N/A	2022/06/29	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3) (1)	1	N/A	2022/06/30	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3) (1)	1	N/A	2022/07/04	ATL SOP 00048	Auto Calc
Metals Water Total MS (1)	4	2022/06/28	2022/06/29	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS (1)	2	2022/06/30	2022/07/04	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference) (1)	4	N/A	2022/07/04	N/A	Auto Calc.
Anion and Cation Sum (1)	4	N/A	2022/07/04	N/A	Auto Calc.
Nitrogen Ammonia - water (1)	4	N/A	2022/07/03	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite (1)	2	N/A	2022/06/30	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrate + Nitrite (1)	2	N/A	2022/07/04	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite (1)	2	N/A	2022/06/30	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrite (1)	2	N/A	2022/07/04	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N) (1)	2	N/A	2022/06/30	ATL SOP 00018	ASTM D3867-16
Nitrogen - Nitrate (as N) (1)	2	N/A	2022/07/04	ATL SOP 00018	ASTM D3867-16
PAH in Water by GC/MS (SIM) (1)	6	2022/06/27	2022/06/28	ATL SOP 00103	EPA 8270E R6 m
pH (1, 2)	4	N/A	2022/06/29	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho (1)	2	N/A	2022/06/30	ATL SOP 00021	SM 23 4500-P E m
Phosphorus - ortho (1)	2	N/A	2022/07/04	ATL SOP 00021	SM 23 4500-P E m
Sat. pH and Langelier Index (@ 20C) (1)	4	N/A	2022/07/04	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C) (1)	4	N/A	2022/07/04	ATL SOP 00049	Auto Calc.
Reactive Silica (1)	2	N/A	2022/06/30	ATL SOP 00022	EPA 366.0 m
Reactive Silica (1)	2	N/A	2022/07/03	ATL SOP 00022	EPA 366.0 m
Sulphate (1)	2	N/A	2022/06/30	ATL SOP 00023	ASTM D516-16 m

Your Project #: 60680173
Site Location: CB

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AECOM Canada Ltd
1701 Hollis St
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Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/13
Report #: R7208234
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2H4189
Received: 2022/06/23, 11:35

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Sulphate (1)	2	N/A	2022/07/04	ATL SOP 00023	ASTM D516-16 m
Total Dissolved Solids (TDS calc) (1)	4	N/A	2022/07/04	N/A	Auto Calc.
Organic carbon - Total (TOC) (1, 3)	1	N/A	2022/07/12	ATL SOP 00203	SM 23 5310B m
Organic carbon - Total (TOC) (1, 3)	3	N/A	2022/07/09	ATL SOP 00203	SM 23 5310B m
Turbidity (1)	2	N/A	2022/06/30	ATL SOP 00011	EPA 180.1 R2 m
Turbidity (1)	2	N/A	2022/07/03	ATL SOP 00011	EPA 180.1 R2 m

Remarks:

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

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

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Bedford, 200 Bluewater Rd Suite 105, Bedford, NS, B4B 1G9
(2) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.
(3) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.

Your Project #: 60680173
Site Location: CB

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Halifax , NS
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Report #: R7208234
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2H4189
Received: 2022/06/23, 11:35

Encryption Key

Bureau Veritas
13 Jul 2022 11:03:27

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Natalie MacAskill, Key Account Specialist
Email: Natalie.MacAskill@bureauveritas.com
Phone# (902)567-1255 Ext:17

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This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		SZG710			SZG729			SZG729		
Sampling Date		2022/06/22			2022/06/22			2022/06/22		
	UNITS	4780-SW1	RDL	QC Batch	4913-SW1	RDL	QC Batch	4913-SW1 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L	8.82	N/A	8071154	1.72	N/A	8071154			
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	92	1.0	8071147	57	1.0	8071147			
Calculated TDS	mg/L	530	1.0	8071160	100	1.0	8071160			
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	8071147	<1.0	1.0	8071147			
Cation Sum	me/L	9.17	N/A	8071154	1.87	N/A	8071154			
Hardness (CaCO3)	mg/L	220	1.0	8070817	65	1.0	8070817			
Ion Balance (% Difference)	%	1.95	N/A	8071152	4.18	N/A	8071152			
Langelier Index (@ 20C)	N/A	0.00300		8071157	-0.877		8071157			
Langelier Index (@ 4C)	N/A	-0.245		8071158	-1.13		8071158			
Nitrate (N)	mg/L	<0.050	0.050	8070818	<0.050	0.050	8070818			
Saturation pH (@ 20C)	N/A	7.64		8071157	8.27		8071157			
Saturation pH (@ 4C)	N/A	7.89		8071158	8.52		8071158			
Inorganics										
Total Alkalinity (Total as CaCO3)	mg/L	92	2.0	8081430	57	2.0	8081430	58	2.0	8081430
Dissolved Chloride (Cl-)	mg/L	190	5.0	8083937	11	1.0	8081493			
Colour	TCU	12	5.0	8083947	160	25	8081507			
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	8083955	<0.050	0.050	8081511			
Nitrite (N)	mg/L	<0.010	0.010	8083956	<0.010	0.010	8081513			
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	8083623	0.068	0.050	8083623			
Total Organic Carbon (C)	mg/L	4.6	0.50	8097901	17	0.50	8097905			
Orthophosphate (P)	mg/L	<0.010	0.010	8083950	0.022	0.010	8081509			
pH	pH	7.64		8081427	7.39		8081427	7.40		8081427
Reactive Silica (SiO2)	mg/L	13	0.50	8083945	4.4	0.50	8081498			
Dissolved Sulphate (SO4)	mg/L	78	2.0	8083944	14	2.0	8081497			
Turbidity	NTU	30	0.10	8084903	21	0.10	8083744			
Conductivity	uS/cm	1000	1.0	8081422	190	1.0	8081422	190	1.0	8081422
Metals										
Total Aluminum (Al)	ug/L	8.2	5.0	8078780	140	5.0	8078780			
Total Antimony (Sb)	ug/L	<1.0	1.0	8078780	<1.0	1.0	8078780			
Total Arsenic (As)	ug/L	<1.0	1.0	8078780	3.7	1.0	8078780			
Total Barium (Ba)	ug/L	21	1.0	8078780	13	1.0	8078780			
Total Beryllium (Be)	ug/L	<0.10	0.10	8078780	<0.10	0.10	8078780			
Total Bismuth (Bi)	ug/L	<2.0	2.0	8078780	<2.0	2.0	8078780			
Total Boron (B)	ug/L	<50	50	8078780	<50	50	8078780			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Bureau Veritas 465 George St., Unit G, Sydney, NS, B1P 1K5 Tel:902 567 1255 Toll Free: 888 535 7770 Fax: 902 539 6504 www.bvlabs.com

Bureau Veritas Job #: C2H4189
Report Date: 2022/07/13

AECOM Canada Ltd
Client Project #: 60680173
Site Location: CB
Sampler Initials: DB

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		SZG710			SZG729			SZG729		
Sampling Date		2022/06/22			2022/06/22			2022/06/22		
	UNITS	4780-SW1	RDL	QC Batch	4913-SW1	RDL	QC Batch	4913-SW1 Lab-Dup	RDL	QC Batch
Total Cadmium (Cd)	ug/L	0.018	0.010	8078780	0.014	0.010	8078780			
Total Calcium (Ca)	ug/L	75000	100	8078780	21000	100	8078780			
Total Chromium (Cr)	ug/L	<1.0	1.0	8078780	<1.0	1.0	8078780			
Total Cobalt (Co)	ug/L	<0.40	0.40	8078780	0.54	0.40	8078780			
Total Copper (Cu)	ug/L	1.7	0.50	8078780	1.0	0.50	8078780			
Total Iron (Fe)	ug/L	74	50	8078780	2800	50	8078780			
Total Lead (Pb)	ug/L	<0.50	0.50	8078780	1.2	0.50	8078780			
Total Magnesium (Mg)	ug/L	7000	100	8078780	2900	100	8078780			
Total Manganese (Mn)	ug/L	47	2.0	8078780	630	2.0	8078780			
Total Molybdenum (Mo)	ug/L	<2.0	2.0	8078780	<2.0	2.0	8078780			
Total Nickel (Ni)	ug/L	3.7	2.0	8078780	<2.0	2.0	8078780			
Total Phosphorus (P)	ug/L	<100	100	8078780	<100	100	8078780			
Total Potassium (K)	ug/L	1200	100	8078780	1600	100	8078780			
Total Selenium (Se)	ug/L	<0.50	0.50	8078780	<0.50	0.50	8078780			
Total Silver (Ag)	ug/L	<0.10	0.10	8078780	<0.10	0.10	8078780			
Total Sodium (Na)	ug/L	110000	100	8078780	9800	100	8078780			
Total Strontium (Sr)	ug/L	180	2.0	8078780	54	2.0	8078780			
Total Thallium (Tl)	ug/L	<0.10	0.10	8078780	<0.10	0.10	8078780			
Total Tin (Sn)	ug/L	<2.0	2.0	8078780	<2.0	2.0	8078780			
Total Titanium (Ti)	ug/L	<2.0	2.0	8078780	2.6	2.0	8078780			
Total Uranium (U)	ug/L	<0.10	0.10	8078780	<0.10	0.10	8078780			
Total Vanadium (V)	ug/L	<2.0	2.0	8078780	<2.0	2.0	8078780			
Total Zinc (Zn)	ug/L	8.0	5.0	8078780	<5.0	5.0	8078780			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C2H4189
Report Date: 2022/07/13

AECOM Canada Ltd
Client Project #: 60680173
Site Location: CB
Sampler Initials: DB

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		SZG730			SZG730			SZG731		
Sampling Date		2022/06/22			2022/06/22			2022/06/22		
	UNITS	4913-SW2	RDL	QC Batch	4913-SW2 Lab-Dup	RDL	QC Batch	5456-SW1	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L	1.21	N/A	8071154				8.40	N/A	8071154
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	34	1.0	8071147				75	1.0	8071147
Calculated TDS	mg/L	74	1.0	8071160				540	1.0	8071160
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	8071147				<1.0	1.0	8071147
Cation Sum	me/L	1.33	N/A	8071154				8.44	N/A	8071154
Hardness (CaCO3)	mg/L	40	1.0	8070817				350	1.0	8070817
Ion Balance (% Difference)	%	4.72	N/A	8071152				0.240	N/A	8071152
Langelier Index (@ 20C)	N/A	-1.50		8071157				0.208		8071157
Langelier Index (@ 4C)	N/A	-1.75		8071158				-0.0400		8071158
Nitrate (N)	mg/L	<0.050	0.050	8070818				<0.050	0.050	8070818
Saturation pH (@ 20C)	N/A	8.70		8071157				7.52		8071157
Saturation pH (@ 4C)	N/A	8.95		8071158				7.77		8071158
Inorganics										
Total Alkalinity (Total as CaCO3)	mg/L	34	2.0	8081448	34	2.0	8081448	75	2.0	8081430
Dissolved Chloride (Cl-)	mg/L	9.4	1.0	8083937				62	1.0	8081493
Colour	TCU	120	25	8083947				7.7	5.0	8081507
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	8083955				<0.050	0.050	8081511
Nitrite (N)	mg/L	<0.010	0.010	8083956				<0.010	0.010	8081513
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	8083623				<0.050	0.050	8083623
Total Organic Carbon (C)	mg/L	19	0.50	8097901				2.5	0.50	8103512
Orthophosphate (P)	mg/L	0.017	0.010	8083950				<0.010	0.010	8081509
pH	pH	7.20		8081443	7.21		8081443	7.73		8081427
Reactive Silica (SiO2)	mg/L	2.9	0.50	8083945				15	0.50	8081498
Dissolved Sulphate (SO4)	mg/L	12	2.0	8083944				250	10	8081497
Turbidity	NTU	13	0.10	8083744				1.6	0.10	8084903
Conductivity	uS/cm	140	1.0	8081437	140	1.0	8081437	900	1.0	8081422
Metals										
Total Aluminum (Al)	ug/L	460	5.0	8078780				17	5.0	8083847
Total Antimony (Sb)	ug/L	<1.0	1.0	8078780				<1.0	1.0	8083847
Total Arsenic (As)	ug/L	6.3	1.0	8078780				<1.0	1.0	8083847
Total Barium (Ba)	ug/L	23	1.0	8078780				16	1.0	8083847
Total Beryllium (Be)	ug/L	<0.10	0.10	8078780				<0.10	0.10	8083847
Total Bismuth (Bi)	ug/L	<2.0	2.0	8078780				<2.0	2.0	8083847
Total Boron (B)	ug/L	<50	50	8078780				<50	50	8083847

RDL = Reportable Detection Limit
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Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		SZG730			SZG730			SZG731		
Sampling Date		2022/06/22			2022/06/22			2022/06/22		
	UNITS	4913-SW2	RDL	QC Batch	4913-SW2 Lab-Dup	RDL	QC Batch	5456-SW1	RDL	QC Batch
Total Cadmium (Cd)	ug/L	0.042	0.010	8078780				0.010	0.010	8083847
Total Calcium (Ca)	ug/L	12000	100	8078780				120000	100	8083847
Total Chromium (Cr)	ug/L	<1.0	1.0	8078780				<1.0	1.0	8083847
Total Cobalt (Co)	ug/L	1.3	0.40	8078780				<0.40	0.40	8083847
Total Copper (Cu)	ug/L	1.7	0.50	8078780				0.52	0.50	8083847
Total Iron (Fe)	ug/L	3800	50	8078780				410	50	8083847
Total Lead (Pb)	ug/L	4.4	0.50	8078780				0.58	0.50	8083847
Total Magnesium (Mg)	ug/L	2200	100	8078780				10000	100	8083847
Total Manganese (Mn)	ug/L	430	2.0	8078780				170	2.0	8083847
Total Molybdenum (Mo)	ug/L	<2.0	2.0	8078780				<2.0	2.0	8083847
Total Nickel (Ni)	ug/L	<2.0	2.0	8078780				<2.0	2.0	8083847
Total Phosphorus (P)	ug/L	300	100	8078780				<100	100	8083847
Total Potassium (K)	ug/L	1700	100	8078780				3800	100	8083847
Total Selenium (Se)	ug/L	<0.50	0.50	8078780				<0.50	0.50	8083847
Total Silver (Ag)	ug/L	<0.10	0.10	8078780				<0.10	0.10	8083847
Total Sodium (Na)	ug/L	8100	100	8078780				33000	100	8083847
Total Strontium (Sr)	ug/L	38	2.0	8078780				210	2.0	8083847
Total Thallium (Tl)	ug/L	<0.10	0.10	8078780				<0.10	0.10	8083847
Total Tin (Sn)	ug/L	<2.0	2.0	8078780				<2.0	2.0	8083847
Total Titanium (Ti)	ug/L	8.4	2.0	8078780				<2.0	2.0	8083847
Total Uranium (U)	ug/L	<0.10	0.10	8078780				<0.10	0.10	8083847
Total Vanadium (V)	ug/L	<2.0	2.0	8078780				<2.0	2.0	8083847
Total Zinc (Zn)	ug/L	15	5.0	8078780				<5.0	5.0	8083847

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		SZG692		SZG709	SZG709		
Sampling Date		2022/06/22		2022/06/22	2022/06/22		
	UNITS	1636-SW1	QC Batch	1636-SW2	1636-SW2 Lab-Dup	RDL	QC Batch
Metals							
Total Aluminum (Al)	ug/L	<50	8078780	<50	<50	50	8083847
Total Antimony (Sb)	ug/L	<10	8078780	<10	<10	10	8083847
Total Arsenic (As)	ug/L	<10	8078780	<10	<10	10	8083847
Total Barium (Ba)	ug/L	18	8078780	17	17	10	8083847
Total Beryllium (Be)	ug/L	<1.0	8078780	<1.0	<1.0	1.0	8083847
Total Bismuth (Bi)	ug/L	<20	8078780	<20	<20	20	8083847
Total Boron (B)	ug/L	1800	8078780	1800	1700	500	8083847
Total Cadmium (Cd)	ug/L	<0.10	8078780	<0.10	<0.10	0.10	8083847
Total Calcium (Ca)	ug/L	160000	8078780	160000	150000	1000	8083847
Total Chromium (Cr)	ug/L	<10	8078780	<10	<10	10	8083847
Total Cobalt (Co)	ug/L	<4.0	8078780	<4.0	<4.0	4.0	8083847
Total Copper (Cu)	ug/L	<5.0	8078780	<5.0	<5.0	5.0	8083847
Total Iron (Fe)	ug/L	<500	8078780	<500	<500	500	8083847
Total Lead (Pb)	ug/L	<5.0	8078780	<5.0	<5.0	5.0	8083847
Total Magnesium (Mg)	ug/L	530000	8078780	460000	430000	1000	8083847
Total Manganese (Mn)	ug/L	260	8078780	150	150	20	8083847
Total Molybdenum (Mo)	ug/L	<20	8078780	<20	<20	20	8083847
Total Nickel (Ni)	ug/L	<20	8078780	<20	<20	20	8083847
Total Phosphorus (P)	ug/L	<1000	8078780	<1000	<1000	1000	8083847
Total Potassium (K)	ug/L	160000	8078780	140000	140000	1000	8083847
Total Selenium (Se)	ug/L	<5.0	8078780	<5.0	<5.0	5.0	8083847
Total Silver (Ag)	ug/L	<1.0	8078780	<1.0	<1.0	1.0	8083847
Total Sodium (Na)	ug/L	4400000	8078780	3800000	3600000	1000	8083847
Total Strontium (Sr)	ug/L	2800	8078780	2700	2600	20	8083847
Total Thallium (Tl)	ug/L	<1.0	8078780	<1.0	<1.0	1.0	8083847
Total Tin (Sn)	ug/L	<20	8078780	<20	<20	20	8083847
Total Titanium (Ti)	ug/L	<20	8078780	<20	<20	20	8083847
Total Uranium (U)	ug/L	<1.0	8078780	<1.0	<1.0	1.0	8083847
Total Vanadium (V)	ug/L	<20	8078780	<20	<20	20	8083847
Total Zinc (Zn)	ug/L	<50	8078780	<50	<50	50	8083847

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		SZG692		SZG709		SZG710	SZG729	SZG730	SZG731		
Sampling Date		2022/06/22		2022/06/22		2022/06/22	2022/06/22	2022/06/22	2022/06/22		
	UNITS	1636-SW1	RDL	1636-SW2	RDL	4780-SW1	4913-SW1	4913-SW2	5456-SW1	RDL	QC Batch
Polyaromatic Hydrocarbons											
1-Methylnaphthalene	ug/L	<0.050	0.050	<0.060	0.060	<0.050	<0.050	<0.050	<0.050	0.050	8076410
2-Methylnaphthalene	ug/L	<0.050	0.050	<0.060	0.060	<0.050	<0.050	<0.050	<0.050	0.050	8076410
Acenaphthene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Acenaphthylene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Anthracene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Benzo(a)anthracene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Benzo(a)pyrene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Benzo(b)fluoranthene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Benzo(b/j)fluoranthene	ug/L	<0.020	0.020	<0.040	0.040	<0.020	<0.020	<0.020	<0.020	0.020	8069848
Benzo(g,h,i)perylene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Benzo(j)fluoranthene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Benzo(k)fluoranthene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Chrysene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Dibenzo(a,h)anthracene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Fluoranthene	ug/L	<0.010	0.010	<0.020	0.020	0.014	<0.010	<0.010	<0.010	0.010	8076410
Fluorene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Indeno(1,2,3-cd)pyrene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Naphthalene	ug/L	<0.20	0.20	<0.22	0.22	<0.20	<0.20	<0.20	<0.20	0.20	8076410
Perylene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Phenanthrene	ug/L	<0.010	0.010	<0.020	0.020	0.013	0.011	0.016	<0.010	0.010	8076410
Pyrene	ug/L	<0.010	0.010	<0.020	0.020	<0.010	<0.010	<0.010	<0.010	0.010	8076410
Surrogate Recovery (%)											
D10-Anthracene	%	101		100		98	98	97	105		8076410
D14-Terphenyl	%	104		98 (1)		97	101	108	107		8076410
D8-Acenaphthylene	%	96		96		98	93	99	99		8076410

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated PAH RDL(s) due to limited sample.

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GENERAL COMMENTS

Sample SZG692 [1636-SW1] : Elevated reporting limits for trace metals due to sample matrix.

Sample SZG709 [1636-SW2] : Elevated reporting limits for trace metals due to sample matrix.

Sample SZG729 [4913-SW1] : ortho-Phosphate > Phosphorus: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8076410	LGE	Matrix Spike	D10-Anthracene	2022/06/27		94	%	50 - 130
			D14-Terphenyl	2022/06/27		76	%	50 - 130
			D8-Acenaphthylene	2022/06/27		104	%	50 - 130
			1-Methylnaphthalene	2022/06/27		103	%	50 - 130
			2-Methylnaphthalene	2022/06/27		99	%	50 - 130
			Acenaphthene	2022/06/27		95	%	50 - 130
			Acenaphthylene	2022/06/27		101	%	50 - 130
			Anthracene	2022/06/27		102	%	50 - 130
			Benzo(a)anthracene	2022/06/27		95	%	50 - 130
			Benzo(a)pyrene	2022/06/27		82	%	50 - 130
			Benzo(b)fluoranthene	2022/06/27		88	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/27		82	%	50 - 130
			Benzo(j)fluoranthene	2022/06/27		79	%	50 - 130
			Benzo(k)fluoranthene	2022/06/27		80	%	50 - 130
			Chrysene	2022/06/27		89	%	50 - 130
			Dibenzo(a,h)anthracene	2022/06/27		74	%	50 - 130
			Fluoranthene	2022/06/27		100	%	50 - 130
			Fluorene	2022/06/27		99	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/27		78	%	50 - 130
			Naphthalene	2022/06/27		93	%	50 - 130
			Perylene	2022/06/27		84	%	50 - 130
			Phenanthrene	2022/06/27		94	%	50 - 130
			Pyrene	2022/06/27		95	%	50 - 130
8076410	LGE	Spiked Blank	D10-Anthracene	2022/06/27		110	%	50 - 130
			D14-Terphenyl	2022/06/27		110	%	50 - 130
			D8-Acenaphthylene	2022/06/27		113	%	50 - 130
			1-Methylnaphthalene	2022/06/27		112	%	50 - 130
			2-Methylnaphthalene	2022/06/27		108	%	50 - 130
			Acenaphthene	2022/06/27		106	%	50 - 130
			Acenaphthylene	2022/06/27		108	%	50 - 130
			Anthracene	2022/06/27		102	%	50 - 130
			Benzo(a)anthracene	2022/06/27		99	%	50 - 130
			Benzo(a)pyrene	2022/06/27		89	%	50 - 130
			Benzo(b)fluoranthene	2022/06/27		96	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/27		96	%	50 - 130
			Benzo(j)fluoranthene	2022/06/27		91	%	50 - 130
			Benzo(k)fluoranthene	2022/06/27		97	%	50 - 130
			Chrysene	2022/06/27		97	%	50 - 130
			Dibenzo(a,h)anthracene	2022/06/27		73	%	50 - 130
			Fluoranthene	2022/06/27		106	%	50 - 130
			Fluorene	2022/06/27		107	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/27		91	%	50 - 130
			Naphthalene	2022/06/27		101	%	50 - 130
			Perylene	2022/06/27		94	%	50 - 130
			Phenanthrene	2022/06/27		109	%	50 - 130
			Pyrene	2022/06/27		105	%	50 - 130
8076410	LGE	Method Blank	D10-Anthracene	2022/06/27		85	%	50 - 130
			D14-Terphenyl	2022/06/27		95	%	50 - 130
			D8-Acenaphthylene	2022/06/27		101	%	50 - 130
			1-Methylnaphthalene	2022/06/27	<0.050		ug/L	
			2-Methylnaphthalene	2022/06/27	<0.050		ug/L	
			Acenaphthene	2022/06/27	<0.010		ug/L	
			Acenaphthylene	2022/06/27	<0.010		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Anthracene	2022/06/27	<0.010		ug/L	
			Benzo(a)anthracene	2022/06/27	<0.010		ug/L	
			Benzo(a)pyrene	2022/06/27	<0.010		ug/L	
			Benzo(b)fluoranthene	2022/06/27	<0.010		ug/L	
			Benzo(g,h,i)perylene	2022/06/27	<0.010		ug/L	
			Benzo(j)fluoranthene	2022/06/27	<0.010		ug/L	
			Benzo(k)fluoranthene	2022/06/27	<0.010		ug/L	
			Chrysene	2022/06/27	<0.010		ug/L	
			Dibenzo(a,h)anthracene	2022/06/27	<0.010		ug/L	
			Fluoranthene	2022/06/27	<0.010		ug/L	
			Fluorene	2022/06/27	<0.010		ug/L	
			Indeno(1,2,3-cd)pyrene	2022/06/27	<0.010		ug/L	
			Naphthalene	2022/06/27	<0.20		ug/L	
			Perylene	2022/06/27	<0.010		ug/L	
			Phenanthrene	2022/06/27	<0.010		ug/L	
			Pyrene	2022/06/27	<0.010		ug/L	
8076410	LGE	RPD	Benzo(a)pyrene	2022/06/27	NC		%	40
8078780	BAN	Matrix Spike	Total Aluminum (Al)	2022/06/29		95	%	80 - 120
			Total Antimony (Sb)	2022/06/29		101	%	80 - 120
			Total Arsenic (As)	2022/06/29		92	%	80 - 120
			Total Barium (Ba)	2022/06/29		93	%	80 - 120
			Total Beryllium (Be)	2022/06/29		95	%	80 - 120
			Total Bismuth (Bi)	2022/06/29		95	%	80 - 120
			Total Boron (B)	2022/06/29		98	%	80 - 120
			Total Cadmium (Cd)	2022/06/29		96	%	80 - 120
			Total Calcium (Ca)	2022/06/29		102	%	80 - 120
			Total Chromium (Cr)	2022/06/29		92	%	80 - 120
			Total Cobalt (Co)	2022/06/29		94	%	80 - 120
			Total Copper (Cu)	2022/06/29		95	%	80 - 120
			Total Iron (Fe)	2022/06/29		97	%	80 - 120
			Total Lead (Pb)	2022/06/29		95	%	80 - 120
			Total Magnesium (Mg)	2022/06/29		94	%	80 - 120
			Total Manganese (Mn)	2022/06/29		94	%	80 - 120
			Total Molybdenum (Mo)	2022/06/29		99	%	80 - 120
			Total Nickel (Ni)	2022/06/29		95	%	80 - 120
			Total Phosphorus (P)	2022/06/29		101	%	80 - 120
			Total Potassium (K)	2022/06/29		101	%	80 - 120
			Total Selenium (Se)	2022/06/29		96	%	80 - 120
			Total Silver (Ag)	2022/06/29		95	%	80 - 120
			Total Sodium (Na)	2022/06/29		92	%	80 - 120
			Total Strontium (Sr)	2022/06/29		95	%	80 - 120
			Total Thallium (Tl)	2022/06/29		97	%	80 - 120
			Total Tin (Sn)	2022/06/29		98	%	80 - 120
			Total Titanium (Ti)	2022/06/29		94	%	80 - 120
			Total Uranium (U)	2022/06/29		100	%	80 - 120
			Total Vanadium (V)	2022/06/29		95	%	80 - 120
			Total Zinc (Zn)	2022/06/29		NC	%	80 - 120
8078780	BAN	Spiked Blank	Total Aluminum (Al)	2022/06/29		94	%	80 - 120
			Total Antimony (Sb)	2022/06/29		99	%	80 - 120
			Total Arsenic (As)	2022/06/29		89	%	80 - 120
			Total Barium (Ba)	2022/06/29		91	%	80 - 120
			Total Beryllium (Be)	2022/06/29		96	%	80 - 120
			Total Bismuth (Bi)	2022/06/29		93	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Boron (B)	2022/06/29		98	%	80 - 120
			Total Cadmium (Cd)	2022/06/29		97	%	80 - 120
			Total Calcium (Ca)	2022/06/29		97	%	80 - 120
			Total Chromium (Cr)	2022/06/29		90	%	80 - 120
			Total Cobalt (Co)	2022/06/29		91	%	80 - 120
			Total Copper (Cu)	2022/06/29		92	%	80 - 120
			Total Iron (Fe)	2022/06/29		95	%	80 - 120
			Total Lead (Pb)	2022/06/29		93	%	80 - 120
			Total Magnesium (Mg)	2022/06/29		91	%	80 - 120
			Total Manganese (Mn)	2022/06/29		92	%	80 - 120
			Total Molybdenum (Mo)	2022/06/29		97	%	80 - 120
			Total Nickel (Ni)	2022/06/29		92	%	80 - 120
			Total Phosphorus (P)	2022/06/29		97	%	80 - 120
			Total Potassium (K)	2022/06/29		98	%	80 - 120
			Total Selenium (Se)	2022/06/29		94	%	80 - 120
			Total Silver (Ag)	2022/06/29		94	%	80 - 120
			Total Sodium (Na)	2022/06/29		89	%	80 - 120
			Total Strontium (Sr)	2022/06/29		94	%	80 - 120
			Total Thallium (Tl)	2022/06/29		95	%	80 - 120
			Total Tin (Sn)	2022/06/29		99	%	80 - 120
			Total Titanium (Ti)	2022/06/29		89	%	80 - 120
			Total Uranium (U)	2022/06/29		99	%	80 - 120
			Total Vanadium (V)	2022/06/29		92	%	80 - 120
			Total Zinc (Zn)	2022/06/29		94	%	80 - 120
8078780	BAN	Method Blank	Total Aluminum (Al)	2022/06/29	<5.0		ug/L	
			Total Antimony (Sb)	2022/06/29	<1.0		ug/L	
			Total Arsenic (As)	2022/06/29	<1.0		ug/L	
			Total Barium (Ba)	2022/06/29	<1.0		ug/L	
			Total Beryllium (Be)	2022/06/29	<0.10		ug/L	
			Total Bismuth (Bi)	2022/06/29	<2.0		ug/L	
			Total Boron (B)	2022/06/29	<50		ug/L	
			Total Cadmium (Cd)	2022/06/29	<0.010		ug/L	
			Total Calcium (Ca)	2022/06/29	<100		ug/L	
			Total Chromium (Cr)	2022/06/29	<1.0		ug/L	
			Total Cobalt (Co)	2022/06/29	<0.40		ug/L	
			Total Copper (Cu)	2022/06/29	<0.50		ug/L	
			Total Iron (Fe)	2022/06/29	<50		ug/L	
			Total Lead (Pb)	2022/06/29	<0.50		ug/L	
			Total Magnesium (Mg)	2022/06/29	<100		ug/L	
			Total Manganese (Mn)	2022/06/29	<2.0		ug/L	
			Total Molybdenum (Mo)	2022/06/29	<2.0		ug/L	
			Total Nickel (Ni)	2022/06/29	<2.0		ug/L	
			Total Phosphorus (P)	2022/06/29	<100		ug/L	
			Total Potassium (K)	2022/06/29	<100		ug/L	
			Total Selenium (Se)	2022/06/29	<0.50		ug/L	
			Total Silver (Ag)	2022/06/29	<0.10		ug/L	
			Total Sodium (Na)	2022/06/29	<100		ug/L	
			Total Strontium (Sr)	2022/06/29	<2.0		ug/L	
			Total Thallium (Tl)	2022/06/29	<0.10		ug/L	
			Total Tin (Sn)	2022/06/29	<2.0		ug/L	
			Total Titanium (Ti)	2022/06/29	<2.0		ug/L	
			Total Uranium (U)	2022/06/29	<0.10		ug/L	
			Total Vanadium (V)	2022/06/29	<2.0		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Zinc (Zn)	2022/06/29	<5.0		ug/L	
8078780	BAN	RPD	Total Aluminum (Al)	2022/06/29	1.1		%	20
			Total Antimony (Sb)	2022/06/29	NC		%	20
			Total Arsenic (As)	2022/06/29	3.3		%	20
			Total Barium (Ba)	2022/06/29	0.73		%	20
			Total Boron (B)	2022/06/29	3.6		%	20
			Total Cadmium (Cd)	2022/06/29	NC		%	20
			Total Calcium (Ca)	2022/06/29	0.97		%	20
			Total Chromium (Cr)	2022/06/29	NC		%	20
			Total Copper (Cu)	2022/06/29	2.8		%	20
			Total Iron (Fe)	2022/06/29	NC		%	20
			Total Lead (Pb)	2022/06/29	NC		%	20
			Total Magnesium (Mg)	2022/06/29	3.4		%	20
			Total Manganese (Mn)	2022/06/29	3.0		%	20
			Total Potassium (K)	2022/06/29	2.1		%	20
			Total Selenium (Se)	2022/06/29	NC		%	20
			Total Sodium (Na)	2022/06/29	4.1		%	20
			Total Strontium (Sr)	2022/06/29	4.9		%	20
			Total Uranium (U)	2022/06/29	3.0		%	20
			Total Zinc (Zn)	2022/06/29	1.7		%	20
8081422	NGI	Spiked Blank	Conductivity	2022/06/29		96	%	80 - 120
8081422	NGI	Method Blank	Conductivity	2022/06/29	<1.0		uS/cm	
8081422	NGI	RPD [SZG729-01]	Conductivity	2022/06/29	1.4		%	10
8081427	NGI	Spiked Blank	pH	2022/06/29		100	%	97 - 103
8081427	NGI	RPD [SZG729-01]	pH	2022/06/29	0.11		%	N/A
8081430	NGI	Spiked Blank	Total Alkalinity (Total as CaCO3)	2022/06/29		92	%	80 - 120
8081430	NGI	Method Blank	Total Alkalinity (Total as CaCO3)	2022/06/29	<2.0		mg/L	
8081430	NGI	RPD [SZG729-01]	Total Alkalinity (Total as CaCO3)	2022/06/29	1.6		%	20
8081437	NGI	Spiked Blank	Conductivity	2022/06/29		98	%	80 - 120
8081437	NGI	Method Blank	Conductivity	2022/06/29	<1.0		uS/cm	
8081437	NGI	RPD [SZG730-01]	Conductivity	2022/06/29	0.59		%	10
8081443	NGI	Spiked Blank	pH	2022/06/29		100	%	97 - 103
8081443	NGI	RPD [SZG730-01]	pH	2022/06/29	0.085		%	N/A
8081448	NGI	Spiked Blank	Total Alkalinity (Total as CaCO3)	2022/06/29		93	%	80 - 120
8081448	NGI	Method Blank	Total Alkalinity (Total as CaCO3)	2022/06/29	<2.0		mg/L	
8081448	NGI	RPD [SZG730-01]	Total Alkalinity (Total as CaCO3)	2022/06/29	0.024		%	20
8081493	MCN	Matrix Spike	Dissolved Chloride (Cl-)	2022/06/30		94	%	80 - 120
8081493	MCN	Spiked Blank	Dissolved Chloride (Cl-)	2022/06/30		94	%	80 - 120
8081493	MCN	Method Blank	Dissolved Chloride (Cl-)	2022/06/30	<1.0		mg/L	
8081493	MCN	RPD	Dissolved Chloride (Cl-)	2022/06/30	0.28		%	20
8081497	MCN	Matrix Spike	Dissolved Sulphate (SO4)	2022/06/30		95	%	80 - 120
8081497	MCN	Spiked Blank	Dissolved Sulphate (SO4)	2022/06/30		96	%	80 - 120
8081497	MCN	Method Blank	Dissolved Sulphate (SO4)	2022/06/30	<2.0		mg/L	
8081497	MCN	RPD	Dissolved Sulphate (SO4)	2022/06/30	7.6		%	20
8081498	MCN	Matrix Spike	Reactive Silica (SiO2)	2022/06/30		93	%	80 - 120
8081498	MCN	Spiked Blank	Reactive Silica (SiO2)	2022/06/30		94	%	80 - 120
8081498	MCN	Method Blank	Reactive Silica (SiO2)	2022/06/30	<0.50		mg/L	
8081498	MCN	RPD	Reactive Silica (SiO2)	2022/06/30	0.71		%	20
8081507	MCN	Spiked Blank	Colour	2022/06/30		97	%	80 - 120
8081507	MCN	Method Blank	Colour	2022/06/30	<5.0		TCU	
8081507	MCN	RPD	Colour	2022/06/30	NC		%	20
8081509	MCN	Matrix Spike	Orthophosphate (P)	2022/06/30		90	%	80 - 120
8081509	MCN	Spiked Blank	Orthophosphate (P)	2022/06/30		91	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8081509	MCN	Method Blank	Orthophosphate (P)	2022/06/30	<0.010		mg/L	
8081509	MCN	RPD	Orthophosphate (P)	2022/06/30	1.0		%	20
8081511	MCN	Matrix Spike	Nitrate + Nitrite (N)	2022/06/30		NC	%	80 - 120
8081511	MCN	Spiked Blank	Nitrate + Nitrite (N)	2022/06/30		99	%	80 - 120
8081511	MCN	Method Blank	Nitrate + Nitrite (N)	2022/06/30	<0.050		mg/L	
8081511	MCN	RPD	Nitrate + Nitrite (N)	2022/06/30	1.6		%	20
8081513	MCN	Matrix Spike	Nitrite (N)	2022/06/30		106	%	80 - 120
8081513	MCN	Spiked Blank	Nitrite (N)	2022/06/30		107	%	80 - 120
8081513	MCN	Method Blank	Nitrite (N)	2022/06/30	<0.010		mg/L	
8081513	MCN	RPD	Nitrite (N)	2022/06/30	NC		%	20
8083623	EMT	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2022/07/03		93	%	80 - 120
8083623	EMT	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2022/07/03		88	%	80 - 120
8083623	EMT	Method Blank	Nitrogen (Ammonia Nitrogen)	2022/07/03	<0.050		mg/L	
8083623	EMT	RPD	Nitrogen (Ammonia Nitrogen)	2022/07/03	NC		%	20
8083744	NGI	QC Standard	Turbidity	2022/06/30		106	%	80 - 120
8083744	NGI	Spiked Blank	Turbidity	2022/06/30		100	%	80 - 120
8083744	NGI	Method Blank	Turbidity	2022/06/30	<0.10		NTU	
8083744	NGI	RPD	Turbidity	2022/06/30	1.0		%	20
8083847	JHY	Matrix Spike [SZG731-02]	Total Aluminum (Al)	2022/07/04		97	%	80 - 120
			Total Antimony (Sb)	2022/07/04		103	%	80 - 120
			Total Arsenic (As)	2022/07/04		93	%	80 - 120
			Total Barium (Ba)	2022/07/04		94	%	80 - 120
			Total Beryllium (Be)	2022/07/04		93	%	80 - 120
			Total Bismuth (Bi)	2022/07/04		95	%	80 - 120
			Total Boron (B)	2022/07/04		100	%	80 - 120
			Total Cadmium (Cd)	2022/07/04		95	%	80 - 120
			Total Calcium (Ca)	2022/07/04		NC	%	80 - 120
			Total Chromium (Cr)	2022/07/04		93	%	80 - 120
			Total Cobalt (Co)	2022/07/04		93	%	80 - 120
			Total Copper (Cu)	2022/07/04		92	%	80 - 120
			Total Iron (Fe)	2022/07/04		97	%	80 - 120
			Total Lead (Pb)	2022/07/04		96	%	80 - 120
			Total Magnesium (Mg)	2022/07/04		NC	%	80 - 120
			Total Manganese (Mn)	2022/07/04		NC	%	80 - 120
			Total Molybdenum (Mo)	2022/07/04		102	%	80 - 120
			Total Nickel (Ni)	2022/07/04		93	%	80 - 120
			Total Phosphorus (P)	2022/07/04		101	%	80 - 120
			Total Potassium (K)	2022/07/04		100	%	80 - 120
			Total Selenium (Se)	2022/07/04		95	%	80 - 120
			Total Silver (Ag)	2022/07/04		94	%	80 - 120
			Total Sodium (Na)	2022/07/04		NC	%	80 - 120
			Total Strontium (Sr)	2022/07/04		NC	%	80 - 120
			Total Thallium (Tl)	2022/07/04		95	%	80 - 120
			Total Tin (Sn)	2022/07/04		99	%	80 - 120
			Total Titanium (Ti)	2022/07/04		96	%	80 - 120
			Total Uranium (U)	2022/07/04		104	%	80 - 120
			Total Vanadium (V)	2022/07/04		95	%	80 - 120
			Total Zinc (Zn)	2022/07/04		92	%	80 - 120
8083847	JHY	Spiked Blank	Total Aluminum (Al)	2022/06/30		97	%	80 - 120
			Total Antimony (Sb)	2022/06/30		100	%	80 - 120
			Total Arsenic (As)	2022/06/30		92	%	80 - 120
			Total Barium (Ba)	2022/06/30		92	%	80 - 120
			Total Beryllium (Be)	2022/06/30		93	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Bismuth (Bi)	2022/06/30		97	%	80 - 120
			Total Boron (B)	2022/06/30		93	%	80 - 120
			Total Cadmium (Cd)	2022/06/30		96	%	80 - 120
			Total Calcium (Ca)	2022/06/30		98	%	80 - 120
			Total Chromium (Cr)	2022/06/30		94	%	80 - 120
			Total Cobalt (Co)	2022/06/30		95	%	80 - 120
			Total Copper (Cu)	2022/06/30		95	%	80 - 120
			Total Iron (Fe)	2022/06/30		98	%	80 - 120
			Total Lead (Pb)	2022/06/30		97	%	80 - 120
			Total Magnesium (Mg)	2022/06/30		98	%	80 - 120
			Total Manganese (Mn)	2022/06/30		96	%	80 - 120
			Total Molybdenum (Mo)	2022/06/30		100	%	80 - 120
			Total Nickel (Ni)	2022/06/30		96	%	80 - 120
			Total Phosphorus (P)	2022/06/30		101	%	80 - 120
			Total Potassium (K)	2022/06/30		99	%	80 - 120
			Total Selenium (Se)	2022/06/30		96	%	80 - 120
			Total Silver (Ag)	2022/06/30		95	%	80 - 120
			Total Sodium (Na)	2022/06/30		96	%	80 - 120
			Total Strontium (Sr)	2022/06/30		94	%	80 - 120
			Total Thallium (Tl)	2022/06/30		95	%	80 - 120
			Total Tin (Sn)	2022/06/30		99	%	80 - 120
			Total Titanium (Ti)	2022/06/30		97	%	80 - 120
			Total Uranium (U)	2022/06/30		102	%	80 - 120
			Total Vanadium (V)	2022/06/30		96	%	80 - 120
			Total Zinc (Zn)	2022/06/30		95	%	80 - 120
8083847	JHY	Method Blank	Total Aluminum (Al)	2022/06/30	<5.0		ug/L	
			Total Antimony (Sb)	2022/06/30	<1.0		ug/L	
			Total Arsenic (As)	2022/06/30	<1.0		ug/L	
			Total Barium (Ba)	2022/06/30	<1.0		ug/L	
			Total Beryllium (Be)	2022/06/30	<0.10		ug/L	
			Total Bismuth (Bi)	2022/06/30	<2.0		ug/L	
			Total Boron (B)	2022/06/30	<50		ug/L	
			Total Cadmium (Cd)	2022/06/30	<0.010		ug/L	
			Total Calcium (Ca)	2022/06/30	<100		ug/L	
			Total Chromium (Cr)	2022/06/30	<1.0		ug/L	
			Total Cobalt (Co)	2022/06/30	<0.40		ug/L	
			Total Copper (Cu)	2022/06/30	<0.50		ug/L	
			Total Iron (Fe)	2022/06/30	<50		ug/L	
			Total Lead (Pb)	2022/06/30	<0.50		ug/L	
			Total Magnesium (Mg)	2022/06/30	<100		ug/L	
			Total Manganese (Mn)	2022/06/30	<2.0		ug/L	
			Total Molybdenum (Mo)	2022/06/30	<2.0		ug/L	
			Total Nickel (Ni)	2022/06/30	<2.0		ug/L	
			Total Phosphorus (P)	2022/06/30	<100		ug/L	
			Total Potassium (K)	2022/06/30	<100		ug/L	
			Total Selenium (Se)	2022/06/30	<0.50		ug/L	
			Total Silver (Ag)	2022/06/30	<0.10		ug/L	
			Total Sodium (Na)	2022/06/30	<100		ug/L	
			Total Strontium (Sr)	2022/06/30	<2.0		ug/L	
			Total Thallium (Tl)	2022/06/30	<0.10		ug/L	
			Total Tin (Sn)	2022/06/30	<2.0		ug/L	
			Total Titanium (Ti)	2022/06/30	<2.0		ug/L	
			Total Uranium (U)	2022/06/30	<0.10		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Vanadium (V)	2022/06/30	<2.0		ug/L	
			Total Zinc (Zn)	2022/06/30	<5.0		ug/L	
8083847	JHY	RPD [SZG709-01]	Total Aluminum (Al)	2022/07/04	NC		%	20
			Total Antimony (Sb)	2022/07/04	NC		%	20
			Total Arsenic (As)	2022/07/04	NC		%	20
			Total Barium (Ba)	2022/07/04	3.7		%	20
			Total Beryllium (Be)	2022/07/04	NC		%	20
			Total Bismuth (Bi)	2022/07/04	NC		%	20
			Total Boron (B)	2022/07/04	3.1		%	20
			Total Cadmium (Cd)	2022/07/04	NC		%	20
			Total Calcium (Ca)	2022/07/04	3.8		%	20
			Total Chromium (Cr)	2022/07/04	NC		%	20
			Total Cobalt (Co)	2022/07/04	NC		%	20
			Total Copper (Cu)	2022/07/04	NC		%	20
			Total Iron (Fe)	2022/07/04	NC		%	20
			Total Lead (Pb)	2022/07/04	NC		%	20
			Total Magnesium (Mg)	2022/07/04	5.2		%	20
			Total Manganese (Mn)	2022/07/04	3.6		%	20
			Total Molybdenum (Mo)	2022/07/04	NC		%	20
			Total Nickel (Ni)	2022/07/04	NC		%	20
			Total Phosphorus (P)	2022/07/04	NC		%	20
			Total Potassium (K)	2022/07/04	2.4		%	20
			Total Selenium (Se)	2022/07/04	NC		%	20
			Total Silver (Ag)	2022/07/04	NC		%	20
			Total Sodium (Na)	2022/07/04	3.7		%	20
			Total Strontium (Sr)	2022/07/04	3.5		%	20
			Total Thallium (Tl)	2022/07/04	NC		%	20
			Total Tin (Sn)	2022/07/04	NC		%	20
			Total Titanium (Ti)	2022/07/04	NC		%	20
			Total Uranium (U)	2022/07/04	NC		%	20
			Total Vanadium (V)	2022/07/04	NC		%	20
			Total Zinc (Zn)	2022/07/04	NC		%	20
8083937	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2022/07/04		94	%	80 - 120
8083937	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2022/07/04		95	%	80 - 120
8083937	EMT	Method Blank	Dissolved Chloride (Cl-)	2022/07/04	<1.0		mg/L	
8083937	EMT	RPD	Dissolved Chloride (Cl-)	2022/07/04	3.8		%	20
8083944	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2022/07/04		NC	%	80 - 120
8083944	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2022/07/04		100	%	80 - 120
8083944	EMT	Method Blank	Dissolved Sulphate (SO4)	2022/07/04	<2.0		mg/L	
8083944	EMT	RPD	Dissolved Sulphate (SO4)	2022/07/04	0.30		%	20
8083945	EMT	Matrix Spike	Reactive Silica (SiO2)	2022/07/03		92	%	80 - 120
8083945	EMT	Spiked Blank	Reactive Silica (SiO2)	2022/07/03		96	%	80 - 120
8083945	EMT	Method Blank	Reactive Silica (SiO2)	2022/07/03	<0.50		mg/L	
8083945	EMT	RPD	Reactive Silica (SiO2)	2022/07/03	0.97		%	20
8083947	EMT	Spiked Blank	Colour	2022/07/04		103	%	80 - 120
8083947	EMT	Method Blank	Colour	2022/07/04	<5.0		TCU	
8083947	EMT	RPD	Colour	2022/07/04	13		%	20
8083950	EMT	Matrix Spike	Orthophosphate (P)	2022/07/04		89	%	80 - 120
8083950	EMT	Spiked Blank	Orthophosphate (P)	2022/07/04		95	%	80 - 120
8083950	EMT	Method Blank	Orthophosphate (P)	2022/07/04	<0.010		mg/L	
8083950	EMT	RPD	Orthophosphate (P)	2022/07/04	NC		%	20
8083955	EMT	Matrix Spike	Nitrate + Nitrite (N)	2022/07/04		105	%	80 - 120
8083955	EMT	Spiked Blank	Nitrate + Nitrite (N)	2022/07/04		108	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8083955	EMT	Method Blank	Nitrate + Nitrite (N)	2022/07/04	<0.050		mg/L	
8083955	EMT	RPD	Nitrate + Nitrite (N)	2022/07/04	NC		%	20
8083956	EMT	Matrix Spike	Nitrite (N)	2022/07/04		101	%	80 - 120
8083956	EMT	Spiked Blank	Nitrite (N)	2022/07/04		105	%	80 - 120
8083956	EMT	Method Blank	Nitrite (N)	2022/07/04	<0.010		mg/L	
8083956	EMT	RPD	Nitrite (N)	2022/07/04	NC		%	20
8084903	KMC	QC Standard	Turbidity	2022/07/03		104	%	80 - 120
8084903	KMC	Spiked Blank	Turbidity	2022/07/03		99	%	80 - 120
8084903	KMC	Method Blank	Turbidity	2022/07/03	<0.10		NTU	
8084903	KMC	RPD	Turbidity	2022/07/03	15		%	20
8097901	SSI	Matrix Spike	Total Organic Carbon (C)	2022/07/09		97	%	85 - 115
8097901	SSI	Spiked Blank	Total Organic Carbon (C)	2022/07/09		102	%	80 - 120
8097901	SSI	Method Blank	Total Organic Carbon (C)	2022/07/09	<0.50		mg/L	
8097901	SSI	RPD	Total Organic Carbon (C)	2022/07/09	3.4		%	15
8097905	SSI	Matrix Spike	Total Organic Carbon (C)	2022/07/09		95	%	85 - 115
8097905	SSI	Spiked Blank	Total Organic Carbon (C)	2022/07/09		98	%	80 - 120
8097905	SSI	Method Blank	Total Organic Carbon (C)	2022/07/09	<0.50		mg/L	
8097905	SSI	RPD	Total Organic Carbon (C)	2022/07/09	1.7		%	15
8103512	JHH	Matrix Spike	Total Organic Carbon (C)	2022/07/12		101	%	85 - 115
8103512	JHH	Spiked Blank	Total Organic Carbon (C)	2022/07/12		102	%	80 - 120
8103512	JHH	Method Blank	Total Organic Carbon (C)	2022/07/12	<0.50		mg/L	
8103512	JHH	RPD	Total Organic Carbon (C)	2022/07/12	4.4		%	15

N/A = Not Applicable

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

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

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

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

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

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

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

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

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Bureau Veritas Job #: C2H4189
Report Date: 2022/07/13

AECOM Canada Ltd
Client Project #: 60680173
Site Location: CB
Sampler Initials: DB

VALIDATION SIGNATURE PAGE

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

Colleen Acker, B.Sc, Scientific Service Specialist

Phil Deveau, Scientific Specialist (Organics)

Bureau Veritas Proprietary Software
Logiciel Propriétaire de Bureau Veritas

Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

ENV COC - 00016v3

Invoice Information		Report Information (if differs from invoice)		Project Information	
Invoice to (requires report) ☐					
Company :	Aecom Canada Ltd	Company:	Aecom	Quotation #:	B91374
Contact Name:	Accounts Payable	Contact Name:	David Bugden / Rory McNeil	P.O. #/ AFE#:	
Street Address:		Street Address:		Project #:	60680173
City: / Prov: / Postal Code:		City: / Prov: / Postal Code:		Site #:	
Phone:		Phone:		Site Location:	CB
Email:	CANSSC_E.Billing@Aecom.com	Email:	David.Bugden@Aecom.com	Site Location Province:	NS
Copies:		Copies:	Rory.McNeil@Aecom.com	Sampled By:	DB

LAB USE ONLY - PLACE STICKER HERE

Rush Confirmation #:

Regulatory Criteria

**Specify matrix for each regulation: surface water (SW)/groundwater (GW)/tap water/sewage/effluent/seawater/potable water/non-potable water/tissue/soil/sludge/metal	Regulation	**Matrix

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 RCAp-MS (total metals) well / surface water	5 RCAp-MS (dissolved metals) - GW	6 Total metals (default)-well/SW	7 Dissolved metals for ground water	8 Total mercury - water	9 Dissolved mercury - water	10 Metals/mercury default (acid ext.)	11 HWS boron (CCME agri/ landfill)	12 RBCA HC (BTEX, C6-C32)	13 CCME HC (F1/BTEX, F2-F4)	14 PAHs (default for water/soil)	15 PCBs - default	16 PCBs - CCME sediment	17 VOCs	18 Total coliform/E.coli (presence/absence)	19 Total coliform/E.coli (count)	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE	Comments
1	1636 - SW1	22	06	22			SW		X				X								X							2		
2	1636 - SW2	〃	〃	〃			〃		X				X								X							2		
3	4780 - SW1								X		X		X								X							5		
4	4913 - SW 1								X		X		X								X							5		
5	4913 - SW 2								X		X		X								X							5		
6	5456 - SW1								X		X		X								X							5		
7																														
8																														
9																														
10																														
11																														
12																														

Regular Turnaround Time (TAT)
☐ 5 to 7 Day ☐ 10 Day

Rush Turnaround Time (TAT) Surcharges apply
☐ Same Day ☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 4 Day

Date Required: YY / MM / DD

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY	Yes	No	°C				LAB USE ONLY	Yes	No	°C				LAB USE ONLY	Yes	No	°C				Temperature reading by:
Seal present							Seal present							Seal present							
Seal intact							Seal intact							Seal intact							
Cooling media present				5	10	8	Cooling media present				4	5	5	Cooling media present							
				1	2	3					1	2	3					1	2	3	

Relinquished by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Received by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Special instructions
1	22	06	23	11	29	1	22	06	23	11	35	C2H4189
2						2						

Appendix D. Multiple Accounts Analysis

Table D-1: Remedial Options Assessment Scoring Rationale

Factors		Description	Scoring Rationale		
			Low Score (1-2)	Mid Score (3)	High Score (4-5)
Socio-Economic	**Community Acceptance**	Considers the remediation alternative that aligns with existing community expectations and addresses the local communities' concerns.	Community will not accept option	Reasonably likely that community will accept option	Highly likely community will accept option
	Use of Local Labour Force	Considers whether the remedial alternative requires specialized training or experience that would prevent locals from assisting in the work.	Will not use local labour/technical solution too complex and requires specialists	Will use a combination of local labour and technical specialists	Will use local labour and have local personnel assisting in technical tasks with training
Technical	**Constructability**	Considers ability to obtain required equipment and workers and transport to site and difficultly in implementing the remedial action (community ability to support).	Complex constructability concerns	Reasonably little constructability concerns, may include some complex aspects	No constructability concerns, straightforward solution
	Access/ Transportation	Ability/ease to mobilize equipment to site and within site	Difficult to mobilize to site and/or difficult to move equipment on-site	Some mobilization and/or on-site movement challenges, may be mitigations	No difficulty mobilizing to site, and no difficulty moving around site
	Worker Health and Safety	Considers the potential health & safety risks to workers to implement the remedial measure.	High risk activities required to undertake remediation, mitigation is a high relative challenge	Some medium to high risk activities required, mitigations available	No medium to high risk activities that do not have risk mitigations
	Effectiveness	Considers the success of implementation and the life expectancy of the remedial measures and if it's acceptable to the regulatory agencies.	Short life expectancy of remedial design (<25 years)	Mid life expectancy of remedial design (>25,<100 years)	Long term remedial design (>100 years)
Environment & Sustainability	**Meets Remedial Objectives**	Considers the ability of an alternative to meet the intent of the Remedial Objectives	Does not meet current intent of remedial objectives	May meet intent of remedial objective and/or remedial objective may be adjusted	Meets current intent of remedial objective
	Climate Change Considerations	Includes all Climate Change Considerations. A high level of hydrocarbon consumption (diesel) has an impact on the carbon footprint (GHG) during hauling to site and during site work combustion, spill risks (transportation, storage, use). Consideration includes the level of effort (LOE) for truck transport mobilization for equipment and materials.	Remedial approach has high LOE related to fuel usage	Remedial approach may have high fuel needs for limited aspects	Remedial approach has minimized fuel usage
	Regulatory Acceptance	Considers how acceptable the proposed remedial alternative will be to regulators, not including community engagement.	Not likely accepted by the regulator	May be accepted by the regulator, may require further amendments to design	Accepted by the regulator
Costs	**Construction Costs (Overall Construction Costs)**	Construction Cost (incl. Mobilization and Demobilization, exc. Engineering, Owners and Long-Term) Includes the costs for equipment, materials and workers for all construction activities to be mobilized/ demobilized to/from the site for each construction season. Includes the costs to implement the remedial alternative, considering the remoteness of the area, length of time to complete the remedial measures and contingency. Includes Construction Risks to this category.	High Cost >$500,000	Medium Cost >$100,000 <$500,00	Low cost >$100,000
	Ongoing Monitoring, Maintenance & Sampling	Includes costs related to maintenance & long-term monitoring, assuming all methods will require water, sediment and aquatic effect monitoring of all remaining water bodies.	Extensive long term monitoring over 25 years for multiple items	Long term monitoring for limited items, or short monitoring period	Walk away solution with limited long term monitoring required

Table D-2: Remedial Options Assessment Scoring

Project Element	Socio-Economic		Technical				Environment & Sustainability			Costs		Total
	Community Acceptance	Use of Local Labour Force	Constructability	Access/ Transportation	Worker Health and Safety	Effetiveness	Meets Remedial Objectives	Climate Change Considerations	Regulatory Acceptance	Overall Construction Costs	Ongoing Monitoring, Maintenance & Sampling	
Category Weighting	20%		25%				30%			25%		
Criterion Weighting	2.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	
Slag and Waste Rock												
Excavation and Off-Site Disposal	4	4	4	2	3	5	4	2	5	3	5	16.9
Soil Cap	3	4	4	3	4	4	4	3	3	2	2	14.4
Soil/Synthetic Cap	4	4	3	4	4	4	4	4	4	1	3	15.2
Risk Management	2	1	5	5	5	3	3	5	2	4	1	14.3
Leave in Place - No Remedial Action	1	1	5	5	5	1	1	5	1	5	1	11.6
Impacted Soils												
Excavation and Off-Site Disposal	4	4	4	3	3	4	4	2	3	4	5	16.0
Soil Cap	4	4	3	3	4	4	4	3	3	3	2	14.8
Soil/Synthetic Cap	4	4	2	3	4	4	4	4	4	2	3	14.9
Risk Management	2	1	5	5	5	4	3	5	2	4	1	14.8
Leave in Place - No Remedial Action	1	1	5	5	5	2	2	5	3	5	1	13.9
Surface Debris (Non-Wood Materials)												
On-Site Disposal	3	4	3	5	4	4	4	4	4	3	2	15.8
Off-Site Disposal	5	4	5	3	3	5	5	3	5	4	5	19.5
Leave in Place - No Remedial Action	1	1	5	5	5	1	1	5	1	5	1	11.6
Impacted Surface Water												
Environmental monitoring and risk assessment- no remedial action at this time	4	1	5	5	5	2	3	5	3	5	3	16.2

Appendix E. NSE Forms

Environmental Site Assessment for Limited Remediation Checklist

This checklist is for all sites undergoing L1, L2 or L3 Limited Remediation

NOVA SCOTIA

☑ New submission ☐ Updated checklist NSE file number (mandatory) **33000-**_____

Instructions for completing this checklist

- All relevant sections of this checklist must be completed and must accompany the Environmental Site Assessment for Limited Remediation Report.
- The signature required on this checklist is from the managing site professional.
- All regulatory protocols must be followed, and all forms/checklists must be completed separately for each property. This means that a source property and an impacted third-party property must have all documents filed separately. Once the source property or impacted third-party property is identified by the check box below, all subsequent reference on this form/checklist are to that site owner.
- Each checklist item corresponds to a requirement in the Regulations or Protocols. It is not acceptable to check a field and refer to justification of why a minimum requirement was not completed.
- Forms/checklists must be complete prior to filing with the Minister.

1 - Site Location and Contact Information

Details provided on this form are applicable to ☑ Source Property **or** ☐ Impacted Third-Party Property

Site Location
Mandatory must be completed.

Site Address: Ocean Street, Sydney Mines, NS (PID: &15504780 below) City: Sydney Mines
Parcel Identification Number (PID): 115504913,15509235,15601636,1550545 Postal Code: B0J 3H0
GPS (NAD83 UTM coordinates, source central point) Easting: _____ Northing: _____
Zone (select one) ☐ 19 ☑ 20 ☐ 21
Description (optional): _____

Property Owner
Mandatory must be completed.

Name: Karen Gatien, Deputy Minister, Dept. of Natural Resources and Re Phone: (902) 424-4450
Email: Karen.Gatien@novascotia.ca Fax: _____
Recognized Agent (if applicable): Donnie Burke, Executive Director (donnie.burke@novascotia.ca)
Company Name (if applicable): Nova Scotia Lands City: Sydney
Mailing Address: 45 Wabana Court, P.O. Box 430, Station A Postal Code: B1P 6H2
Preferred method of correspondence (select one) ☐ Letter **or** ☑ Email

Contact for Correspondence
If different than above.

Name: Peter Geddes, Executive Director Phone: (902) 428-4988
Email: Peter.Geddes@novascotia.ca Fax: _____
Recognized Agent (if applicable): _____
Company Name (if applicable): Dept. of Natural Resources and Renewables City: Halifax
Mailing Address: 1701 Hollis Street, P.O. BAOX 698 Postal Code: B3J 2T9
Preferred method of correspondence (select one) ☐ Letter **or** ☑ Email

Site Professional
Mandatory must be completed.

Name: Derek Heath Phone: (902) 334-2752
Email: derek.heath@aecom.com Fax: _____
Company Name: AECOM Canada Ltd. City: Halifax
Mailing Address: 1701 Hollis Street, SH400 Postal Code: B3J 3M8
Professional Registration Number: 0029
Preferred method of correspondence (select one) ☐ Letter **or** ☑ Email

2 - Environmental Site Assessment (ESA) Requirements for Limited Remediation

Type of Environmental Site Assessment conducted under Limited Remediation

Check type of ESA completed and complete corresponding section below.

❑ L1 ESA ☑ L2 ESA ❑ L3 ESA

2a - L1 Environmental Site Assessment Requirements Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.	**Supporting Information provided**	**Reference Document**		
	Yes	Report	Section	Page Number
Restrictions for use of L1				
1 Contamination has not extended below the water table. All potential pathways in the subsurface have been fully investigated to ensure contamination has not come into contact with groundwater	❑			
2 Contaminants listed in Section 4.1 b) of PRO-200, Environmental Site Assessment for Limited Remediation Protocol exceeding Tier 1 EQS are not present at a depth greater than 0.3 m from surface	❑			
3 Contamination has not directly impacted a watercourse, wetland or potable water	❑			
4 Contamination has not come in contact with bedrock on a potable site	❑			
5 Measures greater than short-term emergency action and/or temporary excavation are not required to address vapours within a building	❑			
Intrusive Investigation				
6 All contamination has been delineated to appropriate Tier 1 EQS criteria specified in the PRO-100, Notification of Contamination Protocol	❑			
7 With the exception of the evaluation process for inaccessible soils below building structures outlined in PRO-200, Environmental Site Assessment for Limited Remediation Protocol, including the use of Tier 2 PSS tables where applicable, all contamination has been remediated to appropriate Tier 1 EQS criteria	❑			
8 Air sampling requirements not applicable to the site	❑			
or				
where applicable soil vapour, sub-slab and/or indoor air sampling work followed the latest version of the Atlantic RBCA Guidance for Soil Vapour and Indoor Air Monitoring Assessments available from the Atlantic RBCA website atlanticrbca.com	❑			
9 Confirmatory soil samples have been collected from the side walls and floor of the excavation in accordance with Table 1 (Confirmatory Sampling Requirements) of PRO-700, Confirmation of Remediation Protocol	❑			

2a - L1 Environmental Site Assessment Requirements continued Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.	**Supporting Information provided**	**Reference Document**		
	Yes	Report	Section	Page Number
10 Contamination does not remain below any part of a building footprint;	❑			
or				
where contaminated soil below any part of a building footprint has been left in place, full delineation of contamination and verification through soil vapour, sub-slab or indoor air sampling that the indoor air quality is not affected above an acceptable level has been completed	❑			
11 Contamination has not extended to bedrock;	❑			
or				
where contaminated soil has extended to bedrock on non-potable sites and no evidence of free product is present, the site professional has used their professional judgement to determine whether a groundwater assessment is required. In cases where it is determined that a groundwater assessment is not required, and contaminated soil contained gasoline or volatile organic compounds an evaluation of soil vapour, sub-slab or indoor air has been accomplished through the collection and interpretation of empirical site data and the indoor air quality is not affected above an acceptable level	❑			
12 Composite soil sampling procedures for volatile organic compounds have not been used	❑			
13 Site does not rely on a potable well or spring supply water source;	❑			
or				
on sites where there is a potable well or spring supplied water source, the well or spring has been analyzed for the contaminant being addressed in the soil	❑			
14 All sampling and analysis have conformed to the laboratory requirements identified in Section 4.2.4 of PRO-200, Environmental Site Assessment for Limited Remediation Protocol	❑			
Reporting The environmental site assessment, remedial action plan and confirmation report requirements of the Contaminated Sites Regulations may be compiled and documented in a single report for an L1 limited remediation. The time requirements specified in the Contaminated Sites Regulations must be followed.				
15 A cover page title that identifies the site location, and report title	❑			
16 Project background description	❑			
17 Basic site information, including physical address, PID and/or GPS coordinates	❑			
18 Summary of the results and findings of the L1 ESA	❑			
19 Site plan(s) showing the site location, location of sample points. All spatial information represented on a scaled diagram	❑			
20 Results of all analyses conducted displayed in a table and compared to relevant environmental quality standards, with exceedance values/data highlighted	❑			

2a - L1 Environmental Site Assessment Requirements continued Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.	**Supporting Information provided**	**Reference Document**		
	Yes	Report	Section	Page Number
21 Interpretation and evaluation of the findings from the site investigation, which identify and describe any contaminants found at the site including concentrations, locations, possible sources, potential pathways and receptors of concern	❑			
22 Clear and concise conclusions of the L1 ESA, including a summary of risks posed by contaminants remaining on site and potential risk to receptor(s) both on and off the property	❑			
23 Recommendations regarding risks posed by any contaminants remaining on site, and recommended action(s)	❑			
24 Excavation practices	❑			
25 Soil sampling procedures used for each contaminant	❑			
26 QA/QC procedures	❑			
27 Copies of laboratory analytical data sheets	❑			
28 Site professional sign-off, with original or electronic signatures, and a stamp/seal confirming the findings and conclusions contained in the report	❑			

2b - L2 Environmental Site Assessment Requirements Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.	**Supporting Information provided**	**Reference Document**		
	Yes	Report	Section	Page Number
Intrusive Investigation				
1 Soil sampling conducted at source area(s)	☑	1	3.0	13
2 Groundwater flow direction, velocity, hydraulic gradient, and elevation has been evaluated by the placement of at least 3 drilled boreholes and the installation of monitoring wells within the boreholes	❑	1	2.4.3	9
3 Determination has been made whether free product in soil or groundwater exist at the site	❑	1	3.2	17
4 The horizontal extent of soil contamination on and off the property, for each contaminant has been determined and described in text and on a graphical site plan	❑	1	4.0	23
5 The vertical extent of soil contamination on and off the property has been determined, including the maximum depth at which contamination was identified, and confirmation that the vertical depth of contamination has been determined, using site profiles as appropriate	❑	1	4.0	23

2b - L2 Environmental Site Assessment Requirements continued Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.		**Supporting Information provided**	**Reference Document**		
		Yes	Report	Section	Page Number
6	The estimated area of soil contamination exceeding applicable environmental quality standards on and off the property have been calculated for each contaminant	❑	1	4.0	23
7	The horizontal and vertical extent of groundwater contamination, exceeding applicable environmental quality standards has been determined, on and off the property for each contaminant, and is described in text and on a graphical site plan	❑	1	4.0	23
8	Sediment and surface water have not been impacted; **or** where Sediment or surface water contamination, exceeding applicable environmental quality standards has been determined, contamination is described on a graphical site plan	❑ ☑	 1	 App.A	 -
9	Laboratories that have performed analysis are accredited to ISO/IEC 17025 standards (and subsequent revisions) by the Standards Council of Canada (SCC) or the Canadian Association of Laboratory Accreditation Inc. (CALA)	☑	1	App. C	-
10	All sampling and analysis has been conducted in accordance with laboratory-approved recommendations concerning sample containers, storage and preservation	☑	1	3.0	13
11	Appropriate laboratory analytical methods have been used to ensure adequate conformance to data quality objectives, assessment endpoints (ecological or human health) and method/reportable detection limits	☑	1	App. C	-
Reporting					
12	A cover page title that identifies the site location and report title	☑	1	Title Pag	-
13	Project background description	☑	1	2.0	7
14	Basic site information, including physical address, PID and/or GPS coordinates if available	☑	1	2.0	7
15	Summary of all preliminary work and field activities conducted at the site as part of the Limited Phase 2 ESA program	☑	1	2.6, 3.0	10, 13
16	Conceptual site model which represent an understanding of the site characteristics, including expected locations of contaminants, likely contaminant transport mechanisms, and the existence of potentially preferential pathways for contaminant transport to receptors	☑	1	5.0	26
17	A description of geological, hydrogeological and hydrological information as required by PRO-200, Environmental Site Assessment for Limited Remediation Protocol	☑	1	2.4	8
18	Site plans showing the site location, location of sample points, groundwater elevation maps, and location(s) of samples exceeding the applicable regulatory criteria. Locations where contaminant concentrations exceed background values should also be identified. All spatial information must be represented on a scaled diagram	☑	1	2.6, 3.1	10
19	Results of all analyses conducted are displayed in a table and compared to relevant environmental quality standards, with exceedance values/data highlighted	☑	1	App. B	-

2b - L2 Environmental Site Assessment Requirements continued Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.	**Supporting Information provided**	**Reference Document**		
	Yes	Report	Section	Page Number
20 Interpretation and evaluation of the findings from the site investigation, which identify and describe any contaminants found at the site including concentrations, locations, source, potential pathways and receptors of concern	☑	1	3.3, 4.0	17, 23
21 Clear and concise conclusions of the Limited Phase 2 ESA, including a summary of risks posed by contaminants remaining on site and potential risk to receptor(s) both on and off the property	☑	1	4.0, 7.0	23, 45
22 Recommendations regarding risks posed by any contaminants remaining on site, and recommended action(s)	☑	1	4.0, 7.0	45
23 A list of any references and supporting documentation used in the preparation of the Limited Phase 2 ESA report	☑	1	10.0	52
24 Complete test pit, borehole stratigraphic, and monitoring well installation logs	❑	N/A	-	-
25 Borehole drilling practices	❑	N/A	-	-
26 Excavation Practices ☑ Not Applicable	❑			
27 Soil sampling procedures used for each contaminant	☑	1	3.1.2	
28 Monitoring well installation, development and groundwater sampling procedures	☑	1	3.1.2	
29 QA/QC procedures	☑	1	3.1.4	
30 Copies of laboratory analytical data sheets	☑	1	App. C	
31 Site professional sign-off, with original or electronic signatures, and a stamp/seal confirming the findings and conclusions contained in the report	☑	1	Below	-

2c - L3 Environmental Site Assessment Requirements Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.	**Supporting Information provided**	**Reference Document**		
	Yes	Report	Section	Page Number
Investigation				
1 Phase 1 ESA conducted in accordance with PRO-300, Phase 1 ESA Protocol	❑			
2 Phase 2 ESA conducted in accordance with PRO-400, Phase 2 ESA Protocol	❑			
Reporting				
3 Phase 1 ESA reporting requirements completed in accordance with PRO-300, Phase 1 ESA Protocol	❑			

2c - L3 Environmental Site Assessment Requirements continued Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.	**Supporting Information provided**	**Reference Document**		
	Yes	Report	Section	Page Number
4 CHK-300, Phase 1 ESA checklist has been completed and appended to this checklist	❑			
5 Phase 2 ESA reporting requirements conducted in accordance with PRO-400, Phase 2 ESA Protocol	❑			
6 CHK-400, Phase 2 ESA checklist has been completed and appended to this checklist	❑			

3 - Declaration

Site Professional Declaration

I acknowledge it is an offence under Section 158 of the Environment Act to provide false or misleading information and confirm to the best of my knowledge and belief the information provided in this form and supporting documentation is true and accurate and complies with the relevant provisions of the Environment Act and Contaminated Sites Regulations. By signing below, I confirm my qualifications and liability insurance as a site professional as prescribed within the regulations.

☑ Reports and checklist/s have been provided to affected property owner.

Name (print) Derek Heath

Professional Registration Number/Stamp 0029

Signature Heath, Derek Digitally signed by Heath, Derek DN: cn=Heath, Derek, ou=CAHFX2, email=Derek.Heath@aecom.com Date: 2022.10.06 16:41:41 -03'00'

Site Professional

Date 2022/10/06

YYYY/MM/DD

Reports Applicable to Checklist

Report Title	3 Digit Report ID
Phase II Environmental Site Assessment Ocean Street Former Steel Plant (AECOM, October 2022)	1

Return completed form and associated documents to your local Nova Scotia Environment office.

Find office locations online novascotia.ca/nse/dept/regional-office-locations.asp or call 1-877-936-8476.

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