AECOM

Phase II Environmental Site Assessment

Gold Brook Lake and Seal Harbour Mine Site

Nova Scotia Lands Inc.

60680068

October 2022

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October 7, 2022

Project #
60680068

Subject: Phase II Environmental Site Assessment – Gold Brook Lake and Seal Harbour Mine Site

Dear Mr. MacPhee:

AECOM Canada Ltd. (AECOM) is pleased to present this Phase II Environmental Site Assessment (ESA) Report associated with the Gold Brook Lake and Seal Harbour Mine Sites, located in Goldboro, 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.

Rory McNeil
P.Eng. Project Manager
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Encl.

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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 Gold Brook Lake and Seal Harbour Mine Sites located in Goldboro, Nova Scotia (associated Parcel Identifier Number (PID): 35094366). As requested by NSLI, the area of focus for the Phase I ESA is limited to the historic mining Crown land area within the PID 35094366 (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 (APECs) that were identified during the Phase I ESA completed by AECOM in May 2022 (AECOM, 2022).

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 July 5-14, 2022.

The Phase II ESA scope of work included test pitting done via shovel and hand augering along with soil, tailings, groundwater, surface water, porewater and sediment sampling, chemical analysis of selected samples, and evaluation of the analytical data. Groundwater flow direction was also determined for the Site.

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, tailings, groundwater, surface water, porewater and sediment 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 potentially 37,050 m3 of waste rock that is likely to contain elevated Arsenic and other metal concentrations that may present an unacceptable risk of elevated exposures to As and other toxic metals through leaching and dust released from waste rock piles for human and ecological receptors. Remedial measures may be required to mitigate these risks. Further assessment of the potential risk to human health and ecological health is warranted
2. Impacted Tailings Areas: As identified in the Phase I ESA previous environmental reports estimated 795,321 tonnes of tailings on the Gold Brook Lake and Seal Harbour Sites. The Phase II Environmental Site Assessment has identified that tailings contain elevated Arsenic and Mercury concentrations that may present a human health risk and adverse ecological effects. Remedial measures are required to mitigate this risk. Due to the limited data collected, AECOM cannot confirm the quantity of tailings and has therefore used the previous volume estimates for the purpose of the ROA and cost estimating. Further assessment of the potential risk to human health and ecological health is warranted. It should also be noted that an unknown portion of the tailings identified above are not part of the subject Site associated with this study; however, they have been contemplated in this ROA and subsequent cost estimate. Further investigation into the tailings off the subject Site would be required to refine the ROA and cost estimate. The tailings areas were divided into "dry" on land tailings deposits, and "wet" tailings deposits in fresh water and marine environments.
3. Impacted Soil Area: The Phase II Environmental Site Assessment has identified soil impacts in many areas of the Site. As impacts in soil delineation has not been achieved, AECOM is unable to accurately assess the volume of contaminated soil requiring remedial action. Given the large area of which impacted soil exists, it is unlikely that remedial action will be feasible to address the entirety of the contaminated soil area. Therefore, AECOM is anticipating that a combination of Human Health and Ecological Risk Assessment and risk management will be required to manage the impacted soil area. Some areas with significantly elevated concentrations of contaminants of concern may still require remediation; however, given the limited amount of data, remedial options analysis or cost estimation has not been completed for the contaminated soil on the

Site. Soil containing elevated Arsenic and Mercury concentrations, along with other metals, may present a human health risk at 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 for the Site.

4. Impacted Surface Water & Sediments: The Phase II Environmental Site Assessment has identified surface water and sediment impacted by metals in the water course that links Gold Brook Lake to the marine environment. Surface water and sediment concentrations of arsenic and mercury in one or more samples were greater than the applicable criteria indicating possible ecological adverse effects in aquatic organisms and possibly a risk to people and wildlife through eating fish and aquatic prey from surface waters in sediment impacted areas. Further environmental study and risk assessment is warranted for impacted surface water and sediment areas. Remedial measures may be required to mitigate this risk.
5. Debris: Remnants of historical mining activities remain at Site, including machine parts, wood and metal were identified as part of the Phase II Environmental Site Assessment. At the time of this Remedial Options Analysis, the quantity of debris is not known; however, it is expected to be a relatively minor cost item in relation to the remediation of the tailings and waste rock on Site. For cost estimating purposes, AECOM has assumed 200 cubic meters of debris, which will require remedial action. It should be noted that this may not be an accurate estimate and is based on the relative size of the property when compared with similar abandoned mine sites in the province.
6. Impacted Groundwater: The Phase II Environmental Site Assessment has identified impacted groundwater by metals, specifically As, Co, Mn, Al, and Fe, based on limited sampling and analyses. Further environmental study and remedial measures may be required to mitigate any adverse effects on potable ground water quality and 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, tailings, 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 in conjunction with other remedial activities ▪ Consolidate Impacted Soils with Tailings ▪ Grade to promote positive drainage but to not encourage excessive erosion ▪ Cover with synthetic liner and soil ▪ Conduct reclamation activities as required.
Impacted Tailings Area “Dry”	▪ Excavate ▪ Consolidate Tailings with Waste Rock ▪ Grade to promote positive drainage but to not encourage excessive erosion ▪ Cover with synthetic liner and soil ▪ Conduct reclamation activities as required.
Impacted Tailings Area “Wet”	▪ Leave in Place ▪ Construct an engineered wet land near first and second pond to passively capture tailings as they move through the water course and before they discharge to the Atlantic Ocean ▪ Continue to monitor surface water quality.
Impacted Soils	▪ Due to the large quantity of impacted soil, further study into the potential human health and ecological risk associated with the soil is required. ▪ The soil risk may be able to be managed through a Risk Management Plan which may include, signage, engineered controls (fencing, barricades, etc.) to reduce human contact with the impacted tailings.
Surface Debris (Non-Wood Materials)	▪ Hazardous Materials: If hazardous materials are identified on site - Remove and dispose of off-site at facility authorized to accept

	▪ Wood: Incinerate or chip on-Site, dispose ash off-Site ▪ Metal and other debris: Haul Off-Site for recycling
Impacted Surface Water and Sediments – Fresh Water	▪ No action required at this time other than monitoring and risk assessment ▪ Further study should be conducted to determine if remedial action is needed
Impacted Surface and Sediments Water – Marine	▪ No action required at this time other than monitoring and risk assessment ▪ Further study should be conducted to determine if remedial action is needed ▪ Dredging of impacted sediments in the marine environment may be an option if furth study indicates it is warranted
Impacted Groundwater	▪ No action required other than monitoring at this time

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.

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

- Full delineation of the impacted tailings, contaminated soil, and waste rock. Further delineation could be complete through additional sampling and visual identification.
- Further assessment of the environmental availability and estimation of loadings of toxic metals in tailings, waste rock and impacted soils to groundwater and surface water, including wetlands, ponded water, watercourses and the Atlantic Ocean through risk assessment and geochemical study.
- Test pitting within the waste rock piles and tailings areas to identify the depths.
- Further definition of the waste materials on-site including a hazardous materials assessment.
- Further assessment of the background quality of the soil to provide a greater confidence in the true concentrations of parameters of concern in the surrounding area.
- 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.

Several metals were identified as contaminants of concern (COCs) in soil, tailings, groundwater, surface water and sediment . 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) applied in the Phase II ESA specifically, aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, uranium, vanadium, zinc, and pH. Of these metal parameters, 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 . However, in accordance with Nova Scotia's Contaminated Sites Regulation and the PRO-100 guidance (Sept 2021) for contamination evaluation of undeveloped wild and natural land, the environmental data could potentially compared against Tier 1 EQS for agricultural land use since the majority of the Gold Brook Lake and Seal Harbour Mine Sites is undeveloped resource forest, wetlands and natural surface waters and the agricultural land use Tier 1 EQSs are the only criteria that include ecological direct contact pathway protection. However, the Site also has the potential to be used as a mining site in the future and thereby the land use could fall under industrial land use given the required engineering controls are established for the Site via provincial approvals. 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 NS Lands Inc. 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 Gold Brook Lake and Seal Harbour Mine Sites located in Goldboro, Nova Scotia (associated Parcel Identifier Number (PID): 35094366). The general location of the property is shown on **Figure 1A (Gold Brook Lake)** and **1B (Seal Harbour)**, **Appendix A**. As requested by NSLI, the area of focus for the Phase I ESA is limited to the historic mining Crown land area within the PID 35094366 (hereafter referred to as the "Site"). The approximate property boundary associated with Property Online for PID 35094366, as well as the Phase II ESA area of focus is presented on **Figure 2A (Gold book Lake)** and **2B (Seal Harbour)**, **Appendix A**. Site features, including waste rock, tailings, and former mining infrastructure, is presented on **Figure 3A (Gold Brook Lake)** and **3B (Seal Harbour)**, **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 (APECs) that were identified during the Phase I ESA completed by AECOM in May 2022 (AECOM, 2022).

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 two historic gold mine sites, Gold Brook Lake and Seal Harbour, are located in the southern portion of a 38172.8-hectare (94327.0-acre) property (PID#: 35094366) owned by Nova Scotia Department of Natural Resources and Renewables (NSDNRR). This property is located in Guysborough County, Nova Scotia.

Gold Brook Lake:

The Gold Brook Lake portion of the Site is part of the Upper Seal Harbour Gold district and is approximately 3 km northeast of Goldboro on the eastern shore of Nova Scotia. The historical mine workings and tailings can be accessed via Goldbrook Road off Highway 316. The historic mine site is mostly forested land and wetlands, to the south of Gold Brook Lake.

At the time of the site visit, remnants of historic infrastructure, waste rock piles, and tailings, associated with historic mining activity, were located generally south of Gold Brook Lake, and north of Gold Brook. To the south of the main building owned by Signal Gold Inc., formally known as Anaconda Mining Inc. directly across Goldbrook Road, is a waste rock area. Adjacent to the northwest portion of this is a waste rock area is a ponded area showing evidence of tailings present. Approximately 120 m southeast of the southern most tip of Gold Brook Lake is another area with waste rock, including a rock core dump area. Adjacent to the southern portion of this rock core dump area is a swamp area showing evidence of tailings present. The concrete foundations of what could potentially be the historic stamp mill are present beside the shore of the lake, on the west side of the southern tip of the lake. Along the shoreline of Gold Brook Lake was tailings, waste rock, black sand, and metal debris observed along the shoreline). Although, historically, there was once a second stamp mill on the east side of the southern tip of the lake, there was no evidence found of any remaining materials associated with its infrastructure.

Seal Harbour:

The Seal Harbour portion of the Site is part of the Lower Seal Harbour Gold District and is approximately 4.5 km southeast of Goldboro, Nova Scotia. The area is mostly forested land and wetlands, to the southeast of Seal Harbour Lake.

- At the time of the site visit, tailings associated with historic mining activity were located on-Site in a ponded area located northeast of Seal Harbour. Well oxidized sandy tailings were noted leading into Seal Harbour from the discharge at West Brook and under the bridge located at Highway 316 in Seal Harbour.
- Seal Harbour Lake is located approximately 1.7 km northwest of the Site. AECOM personnel walked the area surrounding Seal Harbour Lake and West Brook. This area is where the historical mine workings and tailings deposits are located and can be accessed via Sable Road off Highway 316.

The historic Seal Harbour mine site has concrete foundations of historic infrastructure, waste rock piles, and tailings, which are located in an area approximately 500-600 m southwest of the eastern most reaches of the Seal Harbour Lake. At the end of Sable Rd, when following the road northwest to southeast, there is a junction where the road forks at a gravel clearing. In the north area of this clearing is a hollowed-out, cube-shaped concrete structure. Various wood, glass, and metal debris was found on the floor of this concrete structure. Approximately 50 m south of this structure is concrete foundation belonging to an old stamp mill. Beside this foundation is an historic mine shaft, now saturated with water. Approximately 50 m west of this mine shaft are concrete foundations from an old cyanide plant. Approximately 50 m southeast of the cyanide plant concrete foundations are waste rock piles, which span a 130 m stretch of land from northwest to southeast, at the southeast end of which, is evidence of tailings in a wetland area.

Historically, near the western shore of Seal Harbour Lake, a stamp mill was present. However, during the field visit, no evidence of this stamp mill was observed.

2.2 Historical Land Use

The Gold Brook Lake and Seal Harbour mines operated in the late 1800s to the early 1900s and have been reportedly inactive since the 1950s.

Gold Brook Lake:

The former Gold Brook Lake portion of the Site was reportedly mined (intermittently) between 1893 and 1958. Ore was transported via trestle on-Site and milled using a variety of stamp mills with mercury amalgamation. The 60-stamp Richardson Mill was considered to be one of the largest mills in Nova Scotia, located on the west side of Gold Brook Lake. Remnants of the stamps and structures for the mercury amalgamation process remain today. This historical mining operation generated the second-largest volume of tailings of all the gold districts in Nova Scotia. During operation large quantities of mine tailings were slurried directly into the upper reaches of Gold Brook. These tailings may be seen on the floodplain for at least 4 km downstream of the Richardson Mill site. Across from the Richardson Mill on the east side of Gold Brook Lake, the East Goldboro mine operated during the same period, leaving behind the foundation of a smaller stamp mill and associated tailings clearly visible south of Goldbrook Road where Gold Brook Lake meets Gold Brook.

Seal Harbour:

The Seal Harbour Lake portion of the Site was reportedly mined between 1905 and 1915 by two mining companies, employing small stamp mills and mercury amalgamation. Sulphide concentrates produced at this site were sent to the Richardson Mill (Upper Seal Harbour) cyanide plant for treatment. Similar mining operations briefly resumed in between 1926 to 1928 (Parsons et al. 2012). In 1934, larger-scale mining operations resumed with a newly constructed 200-ton-per-day cyanide plant used to treat the ore until 1942. During operation, tailings from the stamp mills and cyanide plant were discharged into a small tributary to West Brook, which eventually flows to Seal Harbour. These tailings have been and continue to be eroded by local streams; visible tailings exist along the floodplain 2km from the mine site to the ocean at Seal Harbour.

2.3 Site Buildings and Structures

Gold Brook Lake:

The Gold Brook Lake portion of the Site is currently vacant and no buildings are located on the property. At the time of the site visit, remnants of historic infrastructure, waste rock piles, and tailings, associated with historic mining activity were located on-Site. The concrete foundations of what could potentially be the historic stamp mill were present beside the shore of the lake, on the west side of the southern tip of the lake. Although, historically, there was once a second stamp mill on the east side of the southern tip of the lake, no evidence was found of any remaining materials associated with its infrastructure.

Signal Gold Inc., formally known as Anaconda Mining Inc., is currently located west and adjacent to the Site who are actively completing exploration activities on the land.

Seal Harbour:

- The Seal Harbour portion of the Site is currently vacant and no buildings are located on the property. At the time of the site visit, tailings associated with historic mining activity were located on-Site.

2.4 Physical Setting

2.4.1 Regional Topography

The terrain between the southern tip of Gold Brook Lake and Gold Brook (the approximate location of the activities associated with the Gold Brook Lake mine site) is gradually sloping downward in the north (Gold Brook Lake) to south direction (Gold Brook). The elevation ranges between approximately 35 to 65 meters above sea level (masl). In the west-to-east direction the terrain is relatively flat.

The elevation in the approximate area where the Lower Seal Harbour mining activities took place ranges between approximately 12 to 40 masl. Generally, the terrain tends to slope downwards from northwest to southeast.

Topography for the Site and surrounding area is presented in **Figure 1A and 1B**, **Appendix A**.

2.4.2 Regional Geology

Bedrock in the area is of Cambro-Ordovician age, belonging to the Meguma group, which comprises the southern half of Nova Scotia's land mass (Patterson 1993). The Meguma group is subdivided into two primary formations: the Goldenville and Halifax formation (Patterson 1993). The basal part is the Goldenville formation, which is overlain by the Halifax formation (Prime and White 2007), except in some areas where it is exposed at the surface.

In the Upper and Lower Seal Harbour area, the Goldenville Formation is exposed at the surface (Malcolm 1929). The Goldenville formation is folded into a series of anticlines and synclines, formed by a north-to-south lateral pressure (Welles 1906). The Goldenville formation is primarily composed of metasandstone, with some interbedded metasiltstone and slate, and in some cases, layering of sheets of rock is clearly visible (Prime and White 2007). The colour of the rock varies from medium grey to green-grey (Prime and White 2007). Low levels of sulphides (typically <1%) are common, usually in the form of isolated pyrite crystals (Prime and White 2007).

In the Upper Seal Harbour area where Gold Brook Lake is situated, the Goldenville Group is at an anticline (Malcolm 1929). In this area, bedrock is composed of metagreywacke, metasiltstone, and slate metamorphosed to biotite-cordierite grade (Percival et al. 2014). The metagreywacke is composed of abundant quartz (65-80%), with some feldspar (10-20%), biotite (5-10%), and minor amounts of other minerals (e.g., sericite, chlorite, carbonates, tourmaline, apatite, sulphides, etc.) (Percival et al. 2014). The soil and till with grain size of < 2mm in the B horizon is predominantly quartz (68-80%), with some Plagioclase Feldspar (15-22%), Muscovite (2-5%), and Chlorite (2-5%) (Percival et al. 2014).

In the Lower Seal Harbour area, gold deposits typically occurred in grey sulphide-rich slate and smoky grey quartz veins (Percival et al. 2014). The soil and till with grain size of < 2mm in the B horizon is predominantly quartz (67-77%), with some Plagioclase Feldspar (15-23%), Muscovite (3-8%), and Chlorite (3-7%) (Percival et al. 2014).

At the Goldboro Mine Site, the glacial till deposits are on average approximately 6.5 meters thick and range from 0.5 m to over 18 m (GHD, 2022).

2.4.3 Regional Hydrogeology / Hydrology

Site-specific hydrologic information was not identified during the course of this assessment. Surface and groundwater flow is expected to follow the regional topography to the south towards Seal Harbour. However, the current groundwater flow direction and depth in the vicinity of the Site cannot be confirmed without site-specific groundwater monitoring well data.

Site-specific hydrology information includes the following water bodies, wetlands, etc. that are either present On-Site or in the vicinity of the Site. Hydrologic features are presented on **Figure 1A and 1B**, **Appendix A**.

Gold Brook Lake:

- Gold Brook Lake is located adjacent (north) to the Site.
- Gold Brook is located on-Site, which flows off-site to the southeast and eventually into Seal Harbour Lake.
- Wetland areas are present on-Site and along Gold Brook.
- Seal Harbour Marshes and Rocky Lakes are located approximately 1.3 km east of the Site

Seal Harbour:

- Seal Harbour Lake is also located approximately 1.7 km northwest of the Site.
- West Brook flows south from Seal Harbour Lake and eventually discharges into Seal Harbour. There are a number of ponds and wetland areas located along West Brook.
- East Brook flows southeast from Seal Harbour Lake (and further up steam Gold Brook Lake) and eventually discharges into Seal Harbour.
- The community of Seal Harbour is located south of the Site. Immediately to the west of Seal Harbour, approximately 2.0 km from the Site, is the municipality of Drumhead, NS, which is a fishing community.

A search of 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 are 5 water wells present within 250 m radius of the Site.

2.5 Adjacent Land Use

Gold Brook Lake:

North: Gold Brook Lake is located adjacent and north of the Gold Brook Lake portion of the Site. The property beyond Gold Brook Lake largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area.

West: Signal Gold Inc. is currently located west and adjacent to the Site and are actively completing exploration activities on the land. *Further discussion on Signal Gold Inc. is provided below**. Further west largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area. The town of Goldboro, NS, situated on Isaac's Harbour is located approximately 2.15 km west of the Site.

South: The property largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area. Gold Brook flows to the southeast and eventually into Seal Harbour Lake. Further south is the former gas plant referred to as the "Sable Gas Plant" or "Goldboro Gas Plant"), which is approximately 3.2 km south of the Site. Immediately northwest of this industrial plant are two smaller lots (they are approximately 5000 and 4000 m^2, respectively) that are paved with buildings, and are potentially affiliated with the former gas plant. The town of Goldboro, NS, situated on Isaac's Harbour is located approximately 2.5 km northwest of this gas plant.

East: The property largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area. Rocky Lakes are located approximately further east approximately 1.3 km from the Site.

**Additionally, two buildings are adjacent to the Site and being used for current operations by Signal Gold Inc. south of Gold Brook Lake. One of the buildings is located approximately 100 m west of the southern most tip of the Gold Brook Lake. Various equipment/debris from current activities is present in this area including, but not limited to, fuel tanks on metal sleds, wooden pallets, gas tank cannisters, and various piping and hoses. This building includes a fenced area, and within the fenced area is access to the historic underground mine workings. Approximately 60 m*

south of this building there is evidence of tailings in a swampy area. The second, smaller building (approximately 12 m x 11 m) is approximately 200 m further west (along Goldbrook Rd) of the other building. It is joined to two shipping containers on either side, which are housed by the same roof.

Seal Harbour:

North: The property largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area. Northeast of the Site is the former gas plant referred to as the "Sable Gas Plant" or "Goldboro Gas Plant"), which is located approximately 2.3 km northwest of the Site. Sea Harbour Lake is also located approximately 1.7 km northwest of the Site. AECOM personnel walked the area surrounding Seal Harbour Lake and West Brook – *further discussion on this is provided below**. The town of Goldboro, NS, situated on Isaac's Harbour is located approximately 5 km northwest of the Site.

West: The areas immediately to the west of the Site largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area.

East: Property adjacent to the north of the Site largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area.

South: The community of Seal Harbour is located south of the Site. Immediately to the west of Seal Harbour, approximately 2.0 km from the Site, is the municipality of Drumhead, NS, which is a fishing community. Recreational/commercial boating/fishing may take place in the waters along the coastline of Seal Harbour and Drumhead. Additionally, Highway 316 runs south of the Site and runs through the southern reaches of the Site.

**Concrete foundations of historic infrastructure, waste rock piles, and tailings, were located in an area approximately 500-600 m southwest of the eastern most reaches of the Seal Harbour Lake. At the end of Sable Rd, when following the road northwest to southeast, there is a junction where the road forks at a gravel clearing. In the north area of this clearing is a hollowed-out, cube-shaped concrete structure. Various wood, glass, and metal debris was found on the floor of this concrete structure. Approximately 50 m south of this structure is concrete foundation belonging to an old stamp mill. Beside this is an historic mine shaft, now saturated with water. Approximately 50 m west of this mine shaft are concrete foundations from an old cyanide plant. Approximately 50 m southeast of the cyanide plant concrete foundations are waste rock piles, which span a 130 m stretch of land from northwest to southeast, at the southeast end of which is evidence of tailings in wetlands. Historically, near the western shore of Seal Harbour Lake, a stamp mill was present. However, during the field visit, no evidence of this stamp mill was observed.*

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. The two historic gold mine sites, Gold Brook Lake and Seal Harbour, are located in the southern portion of a 38172.8-hectare (94327.0-acre) property (PID#: 35094366) owned by Nova Scotia Department of Natural Resources and Renewables (NSDNRR). This property is located in Guysborough County, Nova Scotia. The Gold Brook Lake site is part of the Upper Seal Harbour Gold district and is approximately 3 km northeast of Goldboro on the eastern shore of Nova Scotia. The historical mine workings and tailings can be accessed via Goldbrook

Road off Highway 316. The historic mine site is mostly forested land and wetlands, to the south of Gold Brook Lake. The Seal Harbour site is part of the Lower Seal Harbour Gold District and is approximately 4.5 km southeast of Goldboro, Nova Scotia. The historical mine workings and tailings deposits can be accessed via Sable Road off Highway 316. The historic mine site is mostly forested land and wetlands, to the southeast of Seal Harbour Lake.

2. The properties/features adjacent to the Site are as follows:

Gold Brook Lake:

North: Gold Brook Lake is located adjacent and north of the Gold Brook Lake portion of the Site. The property beyond Gold Brook Lake largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area.

West: Signal Gold Inc. is currently located west and adjacent to the Site who are actively completing exploration activities on the land. *Further discussion on Signal Gold Inc. is provided below in Section 2.5*. Further west largely consists of forested land and wetlands as a popular hunting and fishing area. The town of Goldboro, NS, situated on Isaac's Harbour is located approximately 2.15 km west of the Site.

South: The property largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area. Gold Brook flows to the southeast and eventually into Seal Harbour Lake. Further south is the former gas plant referred to as the "Sable Gas Plant" or "Goldboro Gas Plant"), which is approximately 3.2 km south of the Site. Immediately northwest of this industrial plant are two smaller lots (they are approximately 5000 and 4000 m^2, respectively) that are paved with buildings, and are potentially affiliated with the former gas plant. The town of Goldboro, NS, situated on Isaac's Harbour is located approximately 2.5 km northwest of this gas plant.

East: The property largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area. Rocky Lakes are located approximately further east approximately 1.3 km from the Site.

Seal Harbour:

North: The property largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area. Northeast of the Site is the former gas plant referred to as the "Sable Gas Plant" or "Goldboro Gas Plant"), which is located approximately 2.3 km northeast of the Site. Seal Harbour Lake is also located approximately 1.7 km northeast of the Site. AECOM personnel walked the area surrounding Seal Harbour Lake and West Brook. The town of Goldboro, NS, situated on Isaac's Harbour, is located approximately 5 km northwest of the Site.

West: The areas immediately to the west of the Site largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area.

East: Property adjacent to the north of the Site largely consists of forested land and wetlands and is currently used as a popular hunting and fishing area.

South: The community of Seal Harbour is located south of the Site. Immediately to the west of Seal Harbour, approximately 2.0 km from the Site, is the municipality of Drumhead, NS, which is a fishing community. recreational/commercial boating/fishing may take place in the waters along the coastline of Seal Harbour and Drumhead. Additionally, Highway 316 runs south of the Site and runs through the southern reaches of the Site.

1. The Gold Brook Lake portion of the Site is currently vacant and no buildings are located on the property. At the time of the site visit, remnants of historic infrastructure, waste rock piles, and tailings, associated with historic mining activity were located on-Site. The concrete foundations of what could potentially be the historic stamp mill

are still present beside the shore of the lake, on the west side of the southern tip of the lake. Although, historically, there was once a second stamp mill on the east side of the southern tip of the lake, no evidence was found of any remaining materials associated with its infrastructure.

2. The Seal Harbour portion of the Site is currently vacant and no buildings are located on the property. The area is mostly forested land and wetlands, to the southeast of Seal Harbour Lake. Tailings associated with historic mining activity were located on-Site.
   - At the time of the site visit, tailings associated with historic mining activity were located on-Site in a ponded area located northeast of Seal Harbour. Well oxidized sandy tailings were noted leading into Seal Harbour from the discharge at West Brook. Additional tailings were found at the bridge located at Highway 316 in Seal Harbour.
   - Tailings were noted during the time of the site visit. Oxidized tailings were located along the southern shoreline and into Gold Brook Lake, as well as in the cleared area southeast of Gold Brook Lake. In Seal Harbour, tailings were located on-Site in a ponded area located northeast of Seal Harbour. Well oxidized sandy tailings were noted leading into Seal Harbour from the discharge at West Brook and under the bridge located at Highway 316 in Seal Harbour.
3. Waste rock was located along the southern shoreline and into Gold Brook Lake, as well as along Goldbrook Road where Signal Mining Inc. is currently set up. No waste rock was noted in Seal Harbour.
4. At the time of the site visit, various debris and waste (consisting of former concrete foundations, wood, metal, drill cores, tires etc.) were littered along the southern shoreline and perimeter of Gold Brook Lake, as well as in the cleared area southeast of Gold Brook Lake.
5. Historical soil samples collected at the Site (by others) show elevated concentrations of arsenic and mercury present in the tailings on-Site.

Additional noteworthy items were identified during the Phase I ESA:

1. Based on previous environmental reports and results from the ERIS database report, it is noted that former mine shafts are located on-Site in various areas, mainly in the area directly south of Gold Brook Lake, areas east and southeast of Gold Brook Lake. Former mine shafts were also present in an area southwest of Seal Harbour Lake. It was noted at the time of the site visit by, at the time, Anaconda Mining (now Signal Gold) personal that there was a collapse of a former mine shaft in 2018 in the area of the former stamp mill at Gold Brook Lake. These pose a significant physical hazard.

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

Solid Waste Management:

1. All debris and other solid wastes should be consolidated prior to disposal.
2. All debris and other solid wastes 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 concurrently 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 gold mining operations and the waste generated during that time. The Phase ll ESA should focus on known areas of concern such as known tailings areas, waste storage areas, former stamp mill areas, pond/ former shaft areas and any known waste discharge locations. It is expected that the primary Contaminants of Concern (COC) will be heavy metals (arsenic and mercury).

Additional items to be considered include the following:

Physical Hazards:

1. In addition to debris and solid waste, structures such as concrete foundations pose physical hazards to members of the public who may visit the Site. A survey of humanmade structures should be conducted to identify those that require remedial actions to address physical hazards.
2. A survey of former mine shafts should be conducted to identify those that require remedial actions to address physical hazards such as excessive drops and/or falls.

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, potable water supply, coarse-grained soils.**

Soil and Tailings Guidelines:

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

Groundwater Guidelines:

- Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Groundwater – residential, potable water, coarse grained soils (Table 4A)
- Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Groundwater Discharging to Surface Water (>10 m from Surface Water Body - Freshwater) (Table 3)

Surface Water Guidelines:

- Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water (Marine) (for select samples: SW-9, SW-11, SW-12, SW-13, SW-14, PW-4, PW-5)
- Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water (Freshwater) (for all remaining surface water and porewater samples)

Surface water NSE-EQS was applied to porewater samples to assess potential exposures of benthic organisms in the sediments (bivalves, crustaceans, worms etc.) and also assess potential exposures to bottom feeding pelagic aquatic organisms.in the absence of specific criteria for porewater.

Sediment Guidelines:

- Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (marine); Table 2 (for select samples: SED-9, SED-11, SED-12, SED-13, SED-14)
- Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (Freshwater) (Table 3) (for all remaining sediment samples)

Further discussion on the land-use associated with the Site is provided in the **Section 9.0** (Recommendations) below.

Background samples were collected for soil, surface water and sediment, as described below:

- Soil – five (5) background soil samples (BG1-BG5) were collected from areas which are considered to not be impacted by historic mining activities. These samples were submitted for metals (including mercury) analysis.
- Surface Water – one (1) surface water sample (BG-1) was collected from the Gold Brook Lake, upgradient from the stamp mill location, and submitted for metals analysis. A second background sample (SW11) was collected from a background location in the Atlantic Ocean. This surface water sample was submitted for total metals and general chemistry analyses including pH, hardness, and alkalinity, and organic carbon.
- Sediment – one (1) sediment sample (SED11) was collected from a background location the Atlantic Ocean. This sediment sample was submitted for total metals.

The location of these samples is shown on the figures presented in **Appendix A**, and the analytical results for these samples, are shown in the tables presented in **Appendix B**.

However, it was decided to not directly compare these above noted background sample concentrations to applicable analytical data as a more in-depth background sample program will need to be completed in the future. As such, the background samples collected were compared to the NSE Environmental Quality Standard (EQS) guidelines for a residential property with potable water and coarse-grained soil.

3. Phase II ESA

3.1 Methodology

The Phase II ESA scope of work included test pitting done via shovel and hand augering along with soil, tailings, groundwater, surface water, porewater and sediment sampling, chemical analysis of selected samples, and evaluation of the analytical data. Groundwater flow direction was also determined and is discussed in the sections to follow.

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

Soil, Tailings, Waste Rock – Assessment and Delineation:

- Completion of a hand auger and test pit (via shovel by AECOM personnel) soil sampling program in the tailings areas in the vicinity of each stamp mill formerly located on the subject PID. AECOM advanced fifty-two (52) sample locations, strategically chosen to investigate the areas of environmental concern, to visually delineate the historic tailings plumes, and to provide an indication of the spread of As and metal concentration ranges across the study area to inform risk assessment and risk management planning. Soil samples were analyzed for total metals (including mercury) analysis.
- One (1) soil sample was collected from each waste rock pile noted to be located southeast of Gold Brook Lake. Soil samples were analyzed for available metals (including mercury) concentrations.
- Three (3) soil samples for cyanide testing were collected at selected locations where use of the cyanide extraction process was documented by others.
- In addition to available metals analysis for soil, AECOM submitted two (2) tailings samples for geochemical analyses including consideration of the following as appropriate to the sample type and contaminants, in consultation with the client and laboratory:
  - Acid Generation Potential (AP),
    - Mod. ABA Neutralization Potential,
    - Net Neutralization Potential,
    - Neutralization Potential Ratio
    - Modified Acid-Base Accounting with Bulk NP, Paste pH, Fizz Rating
    - Total Sulphur + Total Carbon by Leco
    - Sulphate-Sulphur by HCl Leach
    - Sulphide-Sulphur by 1:7 Nitric Acid Leach
    - Non-Extractable Sulphur (by diff.) Total Inorganic Carbon by Coulometry
    - Metals by Aqua Regia Digestion with ICP-MS Finish, include Hg
    - (3:1) MEND Shake Flask Extraction (MEND-SFE) Test with General Parameters, ICP-MS
    - Rietveld XRD Mineralogy
    - General parameters (sample weight, volume used, pH, EC)
    - Anions (sulphate, fluoride, dissolved chloride, nitrate, nitrite), acidity to pH 4.5, acidity to pH 8.3, total alkalinity, bicarbonate, carbonate, hydroxide, dissolved organic carbon, total organic carbon, dissolved phosphorus, total ammonia, total dissolved solids, hardness
    - Dissolved metals (include Hg)
- These samples will be used in the determination of the current and future human health and environmental risk associated with the Site.
- Collection of three (3) tailings samples and submitted for Invitro Bio-Accessibility Assessment (arsenic and lead) and methylmercury analyses. These samples will be used in the determination of the current and future human health and environmental risk associated with the Site.

- One (1) tailings sample was collected and submitted for grain size analysis.
- Five (5) waste rock samples were collected. Samples were analyzed for available metals (including mercury) concentrations and geochemical analysis.

Soil – Background Assessment:

- Collection of five (5) soil samples were collected from areas suspected to be non-anthropogenic in nature.
- Soil samples were analyzed for available metals concentration (including mercury) analysis.

Groundwater Sampling Program:

- Groundwater monitoring and sampling was conducted at existing well on-Site.
- Groundwater samples were submitted for dissolved metals (including mercury) analysis. One sample was also submitted for general chemistry analysis.

Surface Water Sampling Program:

- Collection of surface water samples from four (4) locations (SW3, SW4, SW7, SW19) between the former Stamp Mills near Gold Brook Lake and the former Stamp Mill located near Seal Harbour Lake. All sample locations were on Crown land. Collected surface water samples were analyzed for total metals concentration (including mercury).
- Collection of one (1) surface water sample (SW20) from a location at the outlet of Seal Harbour Lake to the east. This sample was collected on Crown land and nearby the outlet from Seal Harbour Lake. This sample was used to determine if impacts migrate eastwards towards Three Corners Lake. The surface water sample was analyzed for total metals (including mercury) analysis.
- Collection of one (1) (SW10) surface water sample from First Pond and one (1) (SW18) surface water sample from Second Pond (SW18). Surface water samples were submitted for total metals (including mercury) and cyanide analysis.
- Collection of one (1) surface water sample (SW9) from the outlet to the Atlantic Ocean, near First Pond in Long Cove. The surface water sample was analyzed for total metals (including mercury), cyanide and general chemistry analysis.
- Collection of three (3) surface water samples (SW5, SW6, SW8) in the three areas of ponded water south of the waste rock pile southwest of Gold Brook Lake. These samples were submitted for total metals (including mercury) analysis.
- Collection of two (2) surface water samples (SW1, SW2) near the tailings plumes southeast of Gold Brook lake. These samples were submitted for total metals analysis (including mercury) and SW1 was also submitted for general chemistry analysis.
- Collection of three (3) surface water samples from Long Cove (SW12, SW13, SW14). These surface water samples were submitted for total metals (including mercury) analysis.
- In situ water quality data including pH, dissolve oxygen, temperature, oxidization reduction potential, specific conductivity, and total dissolved solid, were measured and recorded in the field at each surface water location and at different depths, as these field parameters can influence the fate and effects of metals including availability, transport, uptake and toxicity by biological organisms.

Surface water – Background Assessment:

- Collection of one (1) surface water sample (BG-1) from the Gold Brook Lake, upgradient from the stamp mill location, and submitted for metals analysis. A second background sample (SW11) was collected from a background location in the Atlantic Ocean. Surface water sample SW11 was submitted for total metals and general chemistry analyses including pH, hardness, and alkalinity, and organic carbon.

Sediment Sampling Program:

- Collection of sediment samples from four (4) locations (SED3, SED4, SED7, SED19) locations between the former Stamp Mills near Gold Brook Lake and the former Stamp Mill located near Seal Harbour Lake. All sample locations were on Crown land. Sediment samples were analyzed for total metals (including mercury) concentration.
- Collection of one (1) sediment sample (SED20) from one location at the outlet of Seal Harbour Lake to the east. This sample was collected on Crown land as nearby the outlet from Seal Harbour Lake. This sample was used to determine if impacts migrate eastwards towards Three Corners Lake. The sediment sample was analyzed for total metals (including mercury).
- Collection of one (1) sediment sample (SED10) from First Pond and one (1) sediment sample (SED18) from Second Pond. Sediment samples were submitted for total metals (including mercury).
- Collection of one (1) sediment sample (SED9) from the outlet to the Atlantic Ocean, near First Pond in Long Cove. The sediment sample was analyzed for total metals (including mercury), Bio-availability and geochemical analysis.
- Collection of three (3) sediment samples (SED5, SED6, SED8) in the three areas of ponded water south of the waste rock pile southwest of Gold Brook lake. These samples were submitted for total metals analysis (including mercury).
- Collection of two (2) sediment samples (SED1, SED2) near the tailings plumes southeast of Gold Brook lake. These samples were submitted for total metals analysis (including mercury).
- Collection of three (3) marine sediment samples (SED12, SED13, SED14). in Long Cove. These sediment samples were completed across the cove at the tailings edge as determined by proposed drone survey and visual inspections. Marine sediment samples were submitted for total metals (including mercury).
- In situ sediment analyses for oxidation reduction potential, specific conductivity and temperature were measured and recorded in the field at select sampling locations.

Sediment – Background Assessment:

- AECOM collected one (1) sediment sample (SED11) from a background location the Atlantic Ocean. This sediment sample was submitted for total metals (including merurcury) and general chemistry analyses.

Porewater Sampling Program:

- AECOM collected five (5) porewater samples (PW-1 to PW-5). PW-1 was collected near the tailings plumes southeast of Gold Brook Lake, PW-2 was collected between the former Stamp Mills near Gold Brook Lake and the former Stamp Mill located near Seal Harbour Lake, PW-3 was collected in the area of ponded water south of the waste rock pile southwest of Gold Brook Lake, PW-4 was collected from the outlet to the Atlantic Ocean, and PW-5 was collected from the Atlantic Ocean. Porewater samples were submitted for total metals (including mercury) and select samples were also analyzed for general chemistry (PW-1, PW-4, PW-5).

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 - Assessment and Delineation					
1.	Fifty-two (52) hand auger and test pit locations:	These samples were strategically chosen to: investigate the areas of environmental concern; to visually delineate the historic tailings plumes; and to provide an indication of the range of As and metal concentrations across the study area to inform risk assessment and risk management planning	Available Metals Concentration (incl. mercury), cyanide analysis (select samples)	Soil	Human Health and Environment
2.	Two (2) tailings samples:	These samples were used in the determination of the current and future human health and environmental risk associated with the Site.	Geochemical analysis (Analytical Results: PENDING*)	Tailings	
3.	Three (3) tailings samples:	These samples were used in the determination of the current and future human health and environmental risk associated with the Site.	Invitro Bio-Accessibility Assessment (arsenic and lead) and methylmercury analysis. (Analytical Results: PENDING*)	Tailings	
Soil – Background Assessment					
4.	Five (5) soil samples: BG 1 to BG 5	These samples were collected from background areas, which are considered to not be impacted by historic mining activities.	Available Metals Concentration (incl mercury)	Soil	N/A
Waste Rock – Assessment and Delineation					
5.	Five (5) waste rock samples: WR-1 to WR-5	These samples will be collected from the waste rock areas which are known to be impacted.	Total Metals (incl mercury) and Geochemical Analysis (Analytical Results: PENDING*)	Waste Rock	Human Health and Environment
Groundwater					
6.	Sampling of the four (4) pre-existing wells on-Site: MW17-2, MW22A, MW23A, MW27A	The wells were sampled assess the areas of environmental concern.	Dissolved Metals (incl. mercury) and general chemistry for MW23A	Groundwater	Human Health and Environment
Surface Water and Sediment – Assessment					
7.	Four (4) SW and sediment samples: SW3/SED3, SW4/SED4,	Collection of surface water and sediment samples from four (4) locations between the former Stamp Mills near Gold Brook Lake and the former Stamp Mill	Total Metals (incl. mercury)	Surface Water and Sediment	Human Health and Environment

Phase II ESA Activities		Sampling Rationale	Analyses	Media	Potential Receptor Type
	SW7/SED7, SW19/SED19	located near Seal Harbour Lake. Collected surface water samples were analyzed for total metals concentration, pH, and hardness. One surface water sample from this area was also be submitted for general chemistry.			
8.	One (1) SW and sediment sample: SW20/SED20	Collection of one (1) surface water and sediment sample from a location at the outlet of Seal Harbour Lake to the east. This sample was collected on Crown land as nearby the outlet from Seal Harbour Lake. This sample was used to determine if impacts migrate eastwards towards Three Corners Lake.	Total Metals (incl. mercury)	Surface Water and Sediment	
9.	Two (2) SW and sediment samples: SW10/SED10, SW18/SED18	Collection of one (1) surface water and sediment sample from First Pond and one (1) surface water and sediment sample from Second Pond.	Total Metals (incl. mercury) for all samples and cyanide for select samples (SW10, SW18)	Surface Water and Sediment	
10.	One (1) SW and sediment sample: SW9/SED9	Collection of one (1) surface water and sediment sample from the outlet to the Atlantic Ocean.	Total Metals (incl. mercury) for all samples, and general chemistry and cyanide for SW9	Surface Water and Sediment	
11.	Three (3) SW and sediment samples: SW5/SED5, SW6/SED6, SW8/SED8	Collection of three (3) surface water and sediment samples in the three areas of ponded water south of the waste rock pile southwest of Gold Brook Lake.	Total Metals (incl. mercury)	Surface Water and Sediment	
12.	Two (2) SW and sediment samples: SW1/SED1, SW2/SED2	Collection of two (2) surface water and sediment samples near the tailings plumes southeast of Gold Brook Lake.	Total Metals (incl. mercury) for all samples and general chemistry for SW1	Surface Water and Sediment	
13.	Three (3) SW and sediment samples: SW12/SED12, SW13/SED13, SW14/SED14	Collection of three (3) surface water and sediment samples from Long Cove. These surface water samples were completed across the cove at the tailings edge as determined by proposed drone survey and visual inspections.	Total Metals (incl. mercury)	Surface Water and Sediment	

Phase II ESA Activities		Sampling Rationale	Analyses	Media	Potential Receptor Type
Surface Water and Sediment – Background Assessment					
14.	Two (2) SW samples: BG-1, SW11 One (1) sediment sample: SED11	These samples were collected from background areas, which are considered to not be impacted by historic mining activities.	Total Metals (incl. mercury) for all samples and General Chemistry for select surface water samples (SW11/SED11)	Surface Water and Sediment	N/A
Porewater – Assessment					
15.	Collection of five (5) porewater samples: PW-1 to PW-5	These samples were collected to assess the risk to the ecological receptors that live in the porewater of the sediments.	Total Metals (incl. mercury) for all samples and General Chemistry for select samples (PW-1, PW-4, PW-5)	Porewater	Environment

Notes:
*: Pending analytical results will be addressed as a separate memo to this report.

3.1.2 Sampling Procedures

3.1.2.1 Hand Auger and Test Pit Sampling Procedures

The hand auger sampling program was conducted between July 6-7, 2022. Hand auger samples were collected following AECOM's standard operating procedures (SOPs). Test pits were dug via shovel by AECOM field staff following AECOM's SOPs. A total of fifty-nine (59) soil samples (including field duplicates) were collected in the vicinity of the historic tailings area and stamp mill areas and were submitted for metals analysis. A total of five (5) background soil samples (BG1-BG5) were also collected from background areas, which are considered to not within historic mining activity areas. These samples were submitted for metals analysis.

All hand auger and test pit soil samples were collected with laboratory supplied jars for laboratory analysis. Soil sample locations are shown on **Figure 4**, **Appendix A**. Background soil sample locations are shown on **Figure 4**, **Appendix A**.

3.1.2.2 Tailings Sampling Procedures

The tailings sampling program was conducted on July 7, 2022. Tailings samples were collected following AECOM's standard operating procedures (SOPs). A total of two (2) tailings samples (including one (1) field duplicate) (SS22-T1, SS22-T1B) and eight (8) tailings delineation samples (SS22-TD1, SS22-TD2, SS22-TD3, SS22-TD3B, SS22-TD4, SS22-TD5, SS22-TD6, SS22-TD6B) were collected and submitted for one or more of the following analyses: metals, geochemical analysis, bio-availability, and/or methylmercury analyses. Tailings sample locations are shown on **Figure 4**, **Appendix A**.

3.1.2.3 Waste Rock Sampling Procedures

The waste rock sampling program was conducted on July 5, 2022. Waste rock sampling was completed by collecting grab samples and placing the samples in laboratory supplied jars. A total of five (5) waste rock samples (WR1 to WR5) were collected from the waste rock piles on-site and were submitted for metals and geochemical analysis. Waste rock sampling locations are shown on **Figure 4**, **Appendix A**.

3.1.2.4 Groundwater Sampling Procedures

Groundwater sampling took place on July 6-7, 2022. Prior to groundwater sampling at monitoring well locations, static groundwater level measurements were collected. An oil-water interface probe was used to measure the depth to groundwater and assess for the presence of non-aqueous phase liquid (NAPL) inside the well.

Groundwater monitoring wells were developed by removing groundwater from the monitoring well until the water returns sediment free. Before monitoring wells are sampled, the well is purged by removing a minimum of three (3) well volumes of water from the well. The removal of groundwater was completed by hand purging with WaterraTM dedicated tubing.

Samples were collected upon purging three (3) well volumes of groundwater to remove standing water and to draw a representative sample from the formation. If monitoring wells went dry during purging, they were allowed to recharge sufficiently before immediately collecting a groundwater sample. Groundwater removed from the wells during development and purging activities was discharged on land.

All groundwater 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. Metals samples were collected in laboratory preserved vials and filtered in the field using a 0.45 micron filter media.

A total of four (4) groundwater samples were collected from the pre-existing wells on-Site (MW17-2, MW22A, MW23A, MW27A) and submitted for metals analysis.

3.1.2.5 Surface Water Sampling Procedures

Surface water sampling took place on July 13-14, 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 nineteen (19) surface water samples (including two (2) field duplicates and two (2) background sample (BG-1, SW11)) were collected during this field program and submitted for metals (including mercury) analysis.

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

3.1.2.6 Porewater Sampling Procedures

Porewater sampling took place on July 13-14, 2022. Porewater samples were collected following AECOM's SOPs. A tube was placed into the pore of the surface water body and then suction (via syringes) was used to purge three (3) tube volumes before the samples were collected. 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) porewater samples (PW-1 to PW-5) (including one (1) field duplicate) were collected during this field program and submitted for metals (including mercury) analysis.

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

3.1.2.7 Sediment Sampling Procedures

Sediment sampling took place at the same time as the surface water sampling program on July 13-14, 2022. Sediment samples were collected following AECOM's SOPs. An Ekman dredge sampler was used to collect the sediment samples by lowering it into the water until the grab hits the bottom of the waterbody. Samples were collected in pre-cleaned laboratory supplied containers.

A total of nineteen (19) sediment samples (including two (2) field duplicates and one (1) background sample (SED-11)) were collected during this field program and submitted for metals (including mercury) analysis. The sediment samples were collected in the same location as the surface water samples.

Sediment 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 inc. dups)	Sample IDs	QAQC Samples	
				Field Duplicates	Analysis
Soil and Tailings - Impact Assessment and Delineation					
Soil	Metals incl. mercury	50	SS22-1 to SS-22-20, SM22-1, SM22-2, SM22-2B, SM22-3, SM22-4, SM22-5, SM22-5B, SS22-B06, SS22-B38, SS22-B38B, SS22-B40, SS22-B47, SS22-C, SS22-C01, SS22-D1, SS22-D21B, SS22-E31, SS22-E315, SS22-E45	DUP1, DUP2, DUP4, DUP5, DUP6, DUP7, DUP8	Metals incl. mercury
Tailings	Metals incl. mercury	10	SS22-T1, SS22-T1B, SS22-TD1, SS22-TD2, SS22-TD3, SS22-TD3B, SS22-TD4, SS22-TD5, SS22-TD6, SS22-TD6B	DUP3	Metals incl. mercury
Soil – Background Assessment					
Soil	Metals incl. mercury	5	BG1 to BG5	N/A	N/A
Waste Rock – Assessment and Delineation					
Waste Rock	Metals incl. mercury	5	WR-1 to WR-5	N/A	N/A
Groundwater					
Groundwater	Dissolved metals incl. mercury	4	MW17-2, MW22A, MW23A, MW27A	N/A	N/A
Surface Water and Sediment – Assessment					
Surface Water	Metals incl. mercury, General Chemistry (SW-1,	14	SW-1 to SW-10 SW-12 to SW-14 SW-18 to SW-20	SW-DUP1 SW-DUP2	Metals incl. mercury

Media	Analysis	Samples Submitted (not inc. dups)	Sample IDs	QAQC Samples	
				Field Duplicates	Analysis
	SW-9), Cyanide (SW-9, SW-10, SW-18)				
Sediment	Metals incl. mercury	14	SED-1 to SED-10, SED12 to SED14 SED-18 to SED-20	SED-DUP1 SED-DUP2	Metals incl. mercury
Surface Water and Sediment – Background Assessment					
Surface Water	Metals incl. mercury, General Chemistry (SW-11)	2	BG-1, SW-11	N/A	N/A
Sediment	Metals incl. mercury	1	SED-11	N/A	N/A
Porewater – Assessment					
Pore Water	Metals incl. mercury, General Chemistry (PW-1, PW-4, PW-5)	5	PW-1 to PW-5	PW-DUP1	Metals incl. mercury

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°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		
DUP1	SM22-5 0-5 CM	Metals incl. mercury
DUP2	SS22-C01	
DUP4	SS22-15	

Field Duplicate Sample ID	Corresponding Sample ID	Laboratory Analyses
DUP5	SS22-E31	
DUP6	SS22-E35	
DUP7	S22-16	
DUP8	S22-17	
Tailings		
DUP3	T1	Metals incl. mercury
Waste Rock		
N/A	N/A	N/A
Groundwater		
N/A	N/A	N/A
Surface Water		
SW-DUP1	SW-9	Metals incl. mercury
SW-DUP2	SW-20	
Porewater		
PW-DUP1	PW-4	Metals incl. mercury
Sediment		
SED-DUP1	SED-5	Metals incl. mercury
SED-DUP2	SED-20	

BV Labs also undertakes 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 drilling. Samples were collected from ground surface to a maximum depth of 0.5 m, subject to refusal (rock). The majority of soils encountered in the program consisted of light to dark brown silty sand, with upper layers consisting of peak and organics. Tailings and waste rock was also noted to be present in some of the sample locations.

3.2.2 Tailings and Waste Rock

Tailings were noted in several places during the site assessment, including along the southern shoreline and into Gold Brook Lake, in the cleared areas off Goldbrook Road (southeast and southwest of Gold Brook Lake), as well as the discharge areas from West Brook into Seal Harbour, and the ponded area northeast of Seal Harbour.

Waste rock was also noted in several places including along the southern shoreline and into Gold Brook Lake, as well as in the cleared areas off Goldbrook Road (southeast and southwest of Gold Brook Lake).

Orange staining was noted leading into Gold Brook Lake, as well as the cleared area off Goldbrook Road (southeast of Gold Brook Lake). Stressed vegetation was also noted alongside the orange staining, as well around the ponded area northeast of Seal Harbour.

3.2.3 Groundwater

Free product was not encountered in any of the groundwater samples collected. No odours were noted on-Site while completing groundwater sampling. Light brown tinge and grey tinge, and silt/sand were noted while purging the wells.

In general, the groundwater flow direction is to the south toward the Atlantic Ocean as shown on **Figure 7**, **Appendix A**. The hydraulic conductivity values derived from the packer tests, completed by previous consultants, ranged from 5.70E-07 centimetres per second (cm/s) to 2.82E-04 cm/s (GHD, 2022).

3.2.4 Surface Water

Surface water samples were noted to have a slightly yellow tinge, clear (where collected from the ocean), or an almost orange tinge (SW2) location. A manganese film was noted for select locations (SW1, SW2, SW8). Stagnant water was noted for select locations (SW1, SW2, SW5, SW6, SW8). No odour or hydrocarbon sheen were noted in the surface water samples.

3.2.5 Porewater

Pore water samples were noted to have a brownish tinge with traces of silt / sand at select locations. No odour or hydrocarbon sheen were noted in the surface water samples.

3.2.6 Sediment

Sediment samples were noted to be dark brown or grey in color with some rock, silt and organics. No staining or odour were noted in the sediment samples.

3.3 Laboratory Analytical Results

Sampling locations are shown on figures presented in **Appendix A**, analytical results are presented in **Appendix B**, and Laboratory Certificates of Analysis (COAs) are presented in **Appendix C**. Results are described in the sections to follow.

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)
BG 4	0.1-0.35	7/5/2022	▪ Selenium: 1.8 mg/kg	▪ Selenium: 1 mg/kg
SS22-1	0-0.2	7/5/2022	▪ Arsenic: 2,700 mg/kg ▪ Iron: 21,000 mg/kg ▪ Mercury: 7.9 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg
SS22-2	0.05-0.35	7/5/2022	▪ Aluminum: 20,000 mg/kg ▪ Arsenic: 6,200 mg/kg ▪ Iron: 39,000 mg/kg ▪ Manganese: 520 mg/kg	▪ Aluminum: 15400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg
SS22-2B 30-37CM	0.35-0.45	7/5/2022	▪ Arsenic: 680 mg/kg	▪ Arsenic: 10 mg/kg
SS22-3	0.08-0.28	7/5/2022	▪ Arsenic: 25 mg/kg	▪ Arsenic: 10 mg/kg
SS22-4	0.08-0.23	7/5/2022	▪ Arsenic: 95 mg/kg ▪ Iron: 20,000 mg/kg ▪ Selenium: 1.1 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Selenium: 1 mg/kg
SS22-5	0.09-0.21	7/5/2022	▪ Arsenic: 96 mg/kg	▪ Arsenic: 10 mg/kg

Sample ID	Sample Depth (m)	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)
SS22-6	0.01 - 0.23	7/5/2022	▪ Arsenic: 5,400 mg/kg ▪ Iron: 32,000 mg/kg ▪ Mercury: 8.5 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg
SS22-6	0.03-0.4	7/5/2022	▪ Arsenic: 20 mg/kg ▪ Selenium: 1.2 mg/kg	▪ Arsenic: 10 mg/kg ▪ Selenium: 1 mg/kg
SS22-7	0 - 0.30	7/5/2022	▪ Arsenic: 5,100 mg/kg ▪ Iron: 46,000 mg/kg ▪ Manganese: 2,000 mg/kg ▪ Selenium: 1.4 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg ▪ Selenium: 1 mg/kg
SS22-8	0.06 - 0.15	7/5/2022	▪ Arsenic: 20 mg/kg ▪ Iron: 12,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
SS22-10	0.09 - 0.14	7/5/2022	▪ Arsenic: 29 mg/kg ▪ Iron: 21,000 mg/kg ▪ Vanadium: 41 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Vanadium: 39 mg/kg
SS22-11	0.06 - 0.30	7/7/2022	▪ Arsenic: 840 mg/kg ▪ Iron: 13,000 mg/kg ▪ Selenium: 1.4 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Selenium: 1 mg/kg
SS22-12	0.0 -0.17	7/7/2022	▪ Arsenic: 78 mg/kg ▪ Iron: 16,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
SS22-13	0.10 - 0.27	7/7/2022	▪ Arsenic: 3,600 mg/kg ▪ Beryllium: 1.2 mg/kg ▪ Cadmium: 1.7 mg/kg ▪ Iron: 31,000 mg/kg ▪ Lead: 240 mg/kg ▪ Manganese: 560 mg/kg ▪ Zinc: 850 mg/kg	▪ Arsenic: 10 mg/kg ▪ Beryllium: 1 mg/kg ▪ Cadmium: 1 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg ▪ Manganese: 360 mg/kg ▪ Zinc: 300 mg/kg
SS22-14	0.12 -0.24	7/7/2022	▪ Arsenic: 48 mg/kg	▪ Arsenic: 10 mg/kg
SS22-15	0.10-0.17	7/7/2022	▪ Arsenic: 1,700 mg/kg ▪ Iron: 38,000 mg/kg ▪ Lead: 310 mg/kg ▪ Manganese: 620 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg ▪ Manganese: 360 mg/kg
SS22-15 (FD)	0.10-0.17	7/7/2022	▪ Arsenic: 1,800 mg/kg ▪ Iron: 41,000 mg/kg ▪ Lead: 300 mg/kg ▪ Manganese: 650 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg ▪ Manganese: 360 mg/kg
SS22-16	0.03 - 0.15	7/7/2022	▪ Arsenic: 170 mg/kg ▪ Iron: 15,000 mg/kg ▪ Selenium: 1.2 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Selenium: 1 mg/kg
SS22-17	0.01 -0.17	7/7/2022	▪ Arsenic: 14,000 mg/kg ▪ Iron: 32,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
SS22-18	0.02 - 0.13	7/7/2022	▪ Antimony: 8.9 mg/kg ▪ Arsenic: 5,900 mg/kg ▪ Iron: 25,000 mg/kg ▪ Mercury: 7.8 mg/kg	▪ Antimony: 7.5 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg
SS22-19	0.05 - 0.16	7/7/2022	▪ Arsenic: 140 mg/kg	▪ Arsenic: 10 mg/kg

Sample ID	Sample Depth (m)	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)
			▪ Iron: 28,000 mg/kg ▪ Selenium: 1.5 mg/kg	▪ Iron: 11,000 mg/kg ▪ Selenium: 1 mg/kg
SM22-1	0-0.2	7/5/2022	▪ Antimony: 40 mg/kg ▪ Arsenic: 50,000 mg/kg ▪ Iron: 70,000 mg/kg ▪ Lead: 320 mg/kg ▪ Selenium: 1.1 mg/kg	▪ Antimony: 7.5 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg ▪ Selenium: 1 mg/kg
SM22-2 5-35 CM	0.05-0.35	7/5/2022	▪ Arsenic: 6,700 mg/kg ▪ Beryllium: 1.5 mg/kg ▪ Cadmium: 1.9 mg/kg ▪ Iron: 24,000 mg/kg ▪ Manganese: 500 mg/kg ▪ Selenium: 1.2 mg/kg ▪ Thallium: 1.6 mg/kg	▪ Arsenic: 10 mg/kg ▪ Beryllium: 1 mg/kg ▪ Cadmium: 1 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg ▪ Selenium: 1 mg/kg ▪ Thallium: 1 mg/kg
SM22-2B 35-45 CM	0.35 - 0.45	7/5/2022	▪ Arsenic: 8,700 mg/kg ▪ Cadmium: 1.1 mg/kg ▪ Iron: 39,000 mg/kg ▪ Lead: 180 mg/kg ▪ Manganese: 380 mg/kg ▪ Selenium: 2.5 mg/kg ▪ Thallium: 2.9 mg/kg	▪ Arsenic: 10 mg/kg ▪ Cadmium: 1 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg ▪ Manganese: 360 mg/kg ▪ Selenium: 1.8 mg/kg ▪ Thallium: 1 mg/kg
SM22-3	0.08 - 0.28	7/5/2022	▪ Antimony: 17 mg/kg ▪ Arsenic: 46,000 mg/kg ▪ Iron: 63,000 mg/kg ▪ Lead: 230 mg/kg ▪ Mercury: 43 mg/kg	▪ Antimony: 7.5 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg ▪ Mercury: 6.6 mg/kg
SM22-4	0.08 - 0.23	7/5/2022	▪ Arsenic: 4,900 mg/kg ▪ Iron: 30,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
SM22-5 0-5 CM	0.0 - 0.05	7/5/2022	▪ Antimony: 10 mg/kg ▪ Arsenic: 26,000 mg/kg ▪ Iron: 37,000 mg/kg ▪ Mercury: 9.2 mg/kg	▪ Antimony: 7.5 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg
SM22-5 0-5 CM (FD)	0.0 - 0.05	7/5/2022	▪ Antimony: 23 mg/kg ▪ Arsenic: 46,000 mg/kg ▪ Iron: 60,000 mg/kg ▪ Lead: 250 mg/kg ▪ Mercury: 12 mg/kg	▪ Antimony: 7.5 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg ▪ Mercury: 6.6 mg/kg
SM22-5B 5-25 CM	0.05 - 0.25	7/5/2022	▪ Arsenic: 20,000 mg/kg ▪ Iron: 39,000 mg/kg ▪ Mercury: 25 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg
SS22-B06	0.0 - 0.23	7/7/2022	▪ Arsenic: 40 mg/kg	▪ Arsenic: 10 mg/kg
SS22-B38	0.28 - 0.50	7/7/2022	▪ Arsenic: 4,000 mg/kg ▪ Beryllium: 1.2 mg/kg ▪ Iron: 18,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Beryllium: 1 mg/kg ▪ Iron: 11,000 mg/kg

Sample ID	Sample Depth (m)	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)
SS22-B38B 26-50 CM	0.26 - 0.50	7/7/2022	▪ Arsenic: 4,000 mg/kg ▪ Iron: 15,000 mg/kg ▪ Selenium: 2.4 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Selenium: 1.8 mg/kg
SS22-B40	0.02 - 0.30	7/6/2022	▪ Arsenic: 5,600 mg/kg ▪ Iron: 22,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
SS22-B47	0.01 - 0.12	7/6/2022	▪ Arsenic: 66 mg/kg ▪ Iron: 15,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
SS22-C01	0.02 -0.19	7/6/2022	▪ Arsenic: 410 mg/kg ▪ Selenium: 1.4 mg/kg	▪ Arsenic: 10 mg/kg ▪ Selenium: 1 mg/kg
SS22-C01 (FD)	0.02 -0.19	7/6/2022	▪ Arsenic: 100 mg/kg ▪ Selenium: 1.6 mg/kg	▪ Arsenic: 10 mg/kg ▪ Selenium: 1 mg/kg
SS22-C22	0.0 - 0.35	7/6/2022	▪ Arsenic: 21,000 mg/kg ▪ Iron: 37,000 mg/kg ▪ Mercury: 52 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg
SS22-D21	0.0 - 0.30	7/7/2022	▪ Antimony: 10 mg/kg ▪ Arsenic: 18,000 mg/kg ▪ Iron: 36,000 mg/kg ▪ Mercury: 7.3 mg/kg	▪ Antimony: 7.5 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg
SS22-D21B 50-60 CM	0.5-0.6	7/7/2022	▪ Arsenic: 11,000 mg/kg ▪ Iron: 16,000 mg/kg ▪ Selenium: 1.4 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Selenium: 1.8 mg/kg
SS22-E31	0.01 - 0.23	7/7/2022	▪ Aluminum: 17,000 mg/kg ▪ Arsenic: 3,900 mg/kg ▪ Iron: 32,000 mg/kg ▪ Manganese: 460 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg
SS22-E31 (FD)	0.01 - 0.23	7/7/2022	▪ Aluminum: 17,000 mg/kg ▪ Arsenic: 3,800 mg/kg ▪ Iron: 31,000 mg/kg ▪ Manganese: 450 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg
SS22-E35	0.0 - 0.15	7/7/2022	▪ Antimony: 11 mg/kg ▪ Arsenic: 31,000 mg/kg ▪ Iron: 43,000 mg/kg ▪ Mercury: 7.7 mg/kg	▪ Antimony: 7.5 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg
SS22-E35 (FD)	0.0 - 0.15	7/7/2022	▪ Antimony: 13 mg/kg ▪ Arsenic: 33,000 mg/kg ▪ Iron: 46,000 mg/kg ▪ Mercury: 9.7 mg/kg	▪ Antimony: 7.5 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg
SS22-E45	0.02 - 0.26	7/6/2022	▪ Arsenic: 2,100 mg/kg ▪ Cadmium: 1.4 mg/kg ▪ Iron: 36,000 mg/kg ▪ Lead: 210 mg/kg ▪ Manganese: 950 mg/kg ▪ Zinc: 380 mg/kg	▪ Arsenic: 10 mg/kg ▪ Cadmium: 1 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg ▪ Manganese: 360 mg/kg ▪ Zinc: 300 mg/kg

Notes:
[1]: Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Soil – residential, potable water, coarse grained soils (Table 1A)

3.3.2 Tailings Summary

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

Table 5: Tailings Sample Exceedances

Sample ID	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)
SS22-T1	7/7/2022	▪ Arsenic: 16,000 mg/kg ▪ Iron: 31,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
SS22-T1 (FD)	7/7/2022	▪ Arsenic: 8,400 mg/kg ▪ Iron: 28,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
SS22-T1B 46-60 CM	7/7/2022	▪ Antimony: 19 mg/kg ▪ Arsenic: 29,000 mg/kg ▪ Iron: 35,000 mg/kg ▪ Lead: 200 mg/kg ▪ Mercury: 73 mg/kg	▪ Antimony: 7.5 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg ▪ Mercury: 6.6 mg/kg
SS22-TD1	7/7/2022	▪ Arsenic: 600 mg/kg ▪ Iron: 13,000 mg/kg ▪ Mercury: 7.4 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg
SS22-TD2	7/7/2022	▪ Arsenic: 2,700 mg/kg ▪ Iron: 24,000 mg/kg ▪ Lead: 130 mg/kg ▪ Mercury: 11 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg ▪ Mercury: 6.6 mg/kg
SS22-TD3 0-45 CM	7/7/2022	▪ Arsenic: 5,500 mg/kg ▪ Iron: 22,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
SS22-TD3B 55-60 CM	7/7/2022	▪ Arsenic: 6,000 mg/kg ▪ Iron: 21,000 mg/kg ▪ Mercury: 6.8 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg
SS22-TD4	7/7/2022	▪ Arsenic: 51 mg/kg	▪ Arsenic: 10 mg/kg
SS22-TD5	7/7/2022	▪ Arsenic: 1,000 mg/kg ▪ Iron: 22,000 mg/kg ▪ Selenium: 1.4 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Selenium: 1 mg/kg
SS22-TD6 0-35 CM	7/7/2022	▪ Arsenic: 2,400 mg/kg ▪ Iron: 20,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
SS22-TD6B 50-63 CM	7/7/2022	▪ Antimony: 9.4 mg/kg ▪ Arsenic: 5,000 mg/kg ▪ Iron: 30,000 mg/kg ▪ Mercury: 8.9 mg/kg	▪ Antimony: 7.5 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg

Notes:
[1]: Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Soil – residential, potable water, coarse grained soils (Table 1A)

3.3.3 Waste Rock Summary

Detectable concentrations of aluminum, arsenic, barium, chromium, iron, lead and manganese, nickel, vanadium and zinc are present in waste rock samples collected from the site.

3.3.4 Groundwater Summary

Table 6 below shows the exceedances that were found during the groundwater sampling program.

Table 6: Groundwater Sample Exceedances

Sample ID	Sample Date	Parameter / Concentration (ug/L)	NSE-EQS [1] Guideline Concentration (ug/l)	NSE-EQS [2] (Freshwater) Guideline Concentration (ug/l)
MW17-2	2022-07-07	▪ Aluminum: 180 µg/L	N/A	▪ Aluminum: 50 µg/L
MW22A	2022-07-06	▪ Arsenic: 150 µg/L ▪ Iron: 7,700 µg/L ▪ Manganese: 330 µg/L	▪ Arsenic: 10 µg/L ▪ Manganese: 120 µg/L	▪ Arsenic: 50 µg/L ▪ Iron: 3,000 µg/L
MW23A	2022-07-06	▪ Aluminum: 270 µg/L ▪ Iron: 8,800 ug/L ▪ Manganese: 350 µg/L	▪ Manganese: 120 µg/L	▪ Aluminum: 50 µg/L ▪ Iron: 3,000 µg/L
MW27A	2022-07-06	▪ Aluminum: 94 µg/L ▪ Manganese: 260 µg/L	▪ Manganese: 120 µg/L	▪ Aluminum: 50 µg/L

Notes:
[1]: Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Groundwater – residential, potable water, coarse grained soils (Table 4A)
[2]: Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Groundwater Discharging to Surface Water (>10 m from Surface Water Body - Freshwater) (Table 3)

3.3.5 Surface Water Summary

Table 7 below shows the exceedances that were found during the surface water sampling program.

Table 7: Surface Water Sample Exceedances

Sample ID	Sample Date	Parameter / Concentration (µg/L)	NSE-EQS [1] (Marine) Guideline Concentration (ug/l)	NSE-EQS [2] (Freshwater) Guideline Concentration (ug/l)
BG-1	2022-07-14	▪ Aluminum: 300 µg/L ▪ Iron: 390 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Iron: 300 µg/L
SW 1	2022-07-13	▪ Aluminum: 680 µg/L ▪ Arsenic: 6,000 µg/L ▪ Iron: 4,100 µg/L ▪ Lead: 1.4 µg/L ▪ Mercury: 0.05 µg/L ▪ Zinc: 7.2 µg/L ▪ pH: 5.22	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L ▪ Iron: 300 µg/L ▪ Lead: 1 µg/L ▪ Mercury: 0.026 µg/L ▪ Zinc: 7 µg/L ▪ pH: 6.5-9.0
SW 2	2022-07-13	▪ Aluminum: 2,100 µg/L ▪ Arsenic: 7,800 µg/L ▪ Cobalt: 1.7 µg/L ▪ Copper: 2.2 µg/L ▪ Iron: 18,000 µg/L ▪ Lead: 9.4 µg/L ▪ Mercury: 0.09 µg/L ▪ Zinc: 14 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L ▪ Cobalt: 1 µg/L ▪ Copper: 2 µg/L ▪ Iron: 300 µg/L ▪ Lead: 1 µg/L ▪ Mercury: 0.026 µg/L ▪ Zinc: 7 µg/L
SW 3	2022-07-13	▪ Aluminum: 300 µg/L ▪ Arsenic: 41 µg/L ▪ Iron: 450 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L ▪ Iron: 300 µg/L
SW 4	2022-07-13	▪ Aluminum: 290 µg/L ▪ Arsenic: 15 µg/L ▪ Iron: 400 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L ▪ Iron: 300 µg/L
SW 5	2022-07-13	▪ Aluminum: 140 µg/L ▪ Arsenic: 150 µg/L ▪ Iron: 1,500 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L ▪ Iron: 300 µg/L
SW 6	2022-07-13	▪ Aluminum: 99 µg/L ▪ Arsenic: 110 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L

Sample ID	Sample Date	Parameter / Concentration (µg/L)	NSE-EQS [1] (Marine) Guideline Concentration (ug/l)	NSE-EQS [2] (Freshwater) Guideline Concentration (ug/l)
		▪ Iron: 1,500 µg/L		▪ Iron: 300 µg/L
SW 7	2022-07-13	▪ Aluminum: 290 µg/L ▪ Arsenic: 130 µg/L ▪ Iron: 490 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L ▪ Iron: 300 µg/L
SW 8	2022-07-13	▪ Aluminum: 56 µg/L ▪ Arsenic: 1,100 µg/L ▪ Cobalt: 2.4 µg/L ▪ Iron: 3,700 µg/L ▪ Zinc: 9.1 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L ▪ Cobalt: 1 µg/L ▪ Iron: 300 µg/L ▪ Zinc: 7 µg/L
SW 9	2022-07-13	▪ Arsenic: 270 µg/L ▪ Mercury: 0.02 µg/L ▪ pH: 4.24	▪ Arsenic: 12.5 µg/L ▪ Mercury: 0.016 µg/L ▪ pH: 7.0-8.7	N/A
SW 9 (FD)	2022-07-13	▪ Arsenic: 260 µg/L ▪ Mercury: 0.02 µg/L	▪ Arsenic: 12.5 µg/L ▪ Mercury: 0.016 µg/L	N/A
SW 10	2022-07-13	▪ Aluminum: 360 µg/L ▪ Arsenic: 280 µg/L ▪ Iron: 1,500 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L ▪ Iron: 300 µg/L
SW 11	2022-07-14	▪ Boron: 3,600 µg/L	▪ Boron: 1,200 µg/L	N/A
SW 12	2022-07-14	▪ Arsenic: 240 µg/L ▪ Mercury: 0.018 µg/L	▪ Arsenic: 12.5 µg/L ▪ Mercury: 0.016 ug/L	N/A
SW 13	2022-07-14	▪ Arsenic: 150 µg/L ▪ Boron: 1,400 ug/L	▪ Arsenic: 12.5 µg/L ▪ Boron: 1,200 µg/L	N/A
SW 14	2022-07-14	▪ Arsenic: 86 µg/L ▪ Boron: 2,200 µg/L	▪ Arsenic: 12.5 µg/L ▪ Boron: 1,200 µg/L	N/A
SW 18	2022-07-14	▪ Aluminum: 330 µg/L ▪ Arsenic: 280 µg/L ▪ Iron: 1,500 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L ▪ Iron: 300 µg/L
SW 19	2022-07-14	▪ Aluminum: 250 µg/L ▪ Arsenic: 480 µg/L ▪ Iron: 1.700 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L ▪ Iron: 300 µg/L
SW 20	2022-07-14	▪ Aluminum: 340 µg/L ▪ Arsenic: 330 µg/L ▪ Iron: 1,600 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L ▪ Iron: 300 µg/L
SW 20 (FD)	2022-07-14	▪ Aluminum: 330 ug/L ▪ Arsenic: 330 µg/L ▪ Iron: 1,600 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 u/L ▪ Iron: 300 µg/L

Notes:
[1]: Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (Marine) (Table 3) (for the following samples: SW-9, SW-11, SW-12, SW-13, SW-14)
[2]: Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (Freshwater) (Table 3)

3.3.6 Porewater Summary

Table 8 below shows the exceedances that were found during the porewater sampling program.

Table 8: Porewater Sample Exceedances

Sample ID	Sample Date	Parameter / Concentration (ug/L)	NSE-EQS [1] (Marine) Guideline Concentration (ug/l)	NSE-EQS [2] (Freshwater) Guideline Concentration (ug/l)
PW 1	2022-07-13	▪ Aluminum: 64,000 µg/L ▪ Antimony: 16 ug/L ▪ Arsenic: 65,000 µg/L ▪ Barium: 1,700 µg/L ▪ Beryllium: 14 µg/L ▪ Cadmium: 2.5 µg/L ▪ Chromium: 160 µg/L ▪ Cobalt: 270 µg/L ▪ Copper: 38 µg/L ▪ Iron: 1,100,000 µg/L ▪ Lead: 760 µg/L ▪ Manganese: 14,000 ug/L ▪ Mercury: 14 µg/L ▪ Nickel: 730 µg/L ▪ Thallium: 1.1 µg/L ▪ Zinc: 10,000 µg/L ▪ pH: 6.32	N/A	▪ Aluminum: 5 µg/L ▪ Antimony: 9 ug/L ▪ Arsenic: 5 µg/L ▪ Barium: 1,000 µg/L ▪ Beryllium: 0.15 µg/L ▪ Cadmium: 0.09 µg/L ▪ Chromium: 8.9 µg/L ▪ Cobalt: 1 µg/L ▪ Copper: 2 µg/L ▪ Iron: 300 µg/L ▪ Lead: 1 µg/L ▪ Manganese: 430 ug/L ▪ Mercury: 0.026 µg/L ▪ Nickel: 25 µg/L ▪ Thallium: 0.8 µg/L ▪ Zinc: 7 µg/L ▪ pH: 6.5-9.0
PW 2	2022-07-13	▪ Aluminum: 170,000 µg/L ▪ Antimony: 24 ug/L ▪ Arsenic: 19,000 µg/L ▪ Barium: 1,100 µg/L ▪ Beryllium: 11 µg/L ▪ Cadmium: 5.7 µg/L ▪ Chromium: 230 µg/L ▪ Cobalt: 140 µg/L ▪ Copper: 360 µg/L ▪ Iron: 240,000 ug/L ▪ Lead: 1,700 µg/L ▪ Manganese: 3,500 µg/L ▪ Mercury: 0.16 µg/L ▪ Nickel: 350 µg/L ▪ Silver: 1.9 µg/L ▪ Thallium: 3.1 µg/L ▪ Vanadium: 220 µg/L ▪ Zinc: 1,100 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Antimony: 9 ug/L ▪ Arsenic: 5 µg/L ▪ Barium: 1,000 µg/L ▪ Beryllium: 0.15 µg/L ▪ Cadmium: 0.09 µg/L ▪ Chromium: 8.9 µg/L ▪ Cobalt: 1 µg/L ▪ Copper: 2 µg/L ▪ Iron: 300 µg/L ▪ Lead: 1 µg/L ▪ Manganese: 430 ug/L ▪ Mercury: 0.026 µg/L ▪ Nickel: 25 µg/L ▪ Silver: 0.25 µg/L ▪ Thallium: 0.8 µg/L ▪ Vanadium: 120 µg/L ▪ Zinc: 7 µg/L
PW 3	2022-07-13	▪ Aluminum: 31,000 µg/L ▪ Arsenic: 13,000 µg/L ▪ Beryllium: 3.1 µg/L ▪ Cadmium: 1 µg/L ▪ Chromium: 90 µg/L ▪ Cobalt: 30 µg/L ▪ Copper: 78 µg/L ▪ Iron: 55,000 ug/L ▪ Lead: 150 µg/L ▪ Manganese: 2,100 ug/L ▪ Mercury: 0.15 µg/L ▪ Nickel: 91 µg/L ▪ Vanadium: 54 µg/L ▪ Zinc: 290 µg/L	N/A	▪ Aluminum: 5 µg/L ▪ Arsenic: 5 µg/L ▪ Beryllium: 0.15 µg/L ▪ Cadmium: 0.09 µg/L ▪ Chromium: 8.9 µg/L ▪ Cobalt: 1 µg/L ▪ Copper: 2 µg/L ▪ Iron: 300 µg/L ▪ Lead: 1 µg/L ▪ Manganese: 430 ug/L ▪ Mercury: 0.026 µg/L ▪ Nickel: 25 µg/L ▪ Vanadium: 120 µg/L ▪ Zinc: 7 µg/L
PW 4	2022-07-13	▪ Arsenic: 6,300 µg/L ▪ Boron: 3,000 µg/L ▪ Cadmium: 1.1 µg/L ▪ Cobalt: 63 µg/L ▪ Copper: 56 µg/L	▪ Arsenic: 12.5 µg/L ▪ Boron: 1,200 µg/L ▪ Cadmium: 0.12 µg/L ▪ Cobalt: 4 µg/L ▪ Copper: 2 µg/L	N/A

Sample ID	Sample Date	Parameter / Concentration (ug/L)	NSE-EQS [1] (Marine) Guideline Concentration (ug/l)	NSE-EQS [2] (Freshwater) Guideline Concentration (ug/l)
		▪ Lead: 200 µg/L ▪ Mercury: 0.63 µg/L ▪ Nickel: 61 µg/L ▪ Thallium: 1.6 µg/L ▪ Uranium: 11 µg/L ▪ Vanadium: 43 µg/L ▪ Zinc: 230 µg/L	▪ Lead: 2 µg/L ▪ Mercury: 0.016 µg/L ▪ Nickel: 8.3 µg/L ▪ Thallium: 0.3 µg/L ▪ Uranium: 8.5 µg/L ▪ Vanadium: 5 µg/L ▪ Zinc: 10 µg/L	
PW 4 (FD)	2022-07-13	▪ Arsenic: 6,400 µg/L ▪ Boron: 3,100 µg/L ▪ Cadmium: 1.1 µg/L ▪ Cobalt: 64 µg/L ▪ Copper: 61 µg/L ▪ Lead: 200 µg/L ▪ Mercury: 0.36 µg/L ▪ Nickel: 63 µg/L ▪ Thallium: 1.8 µg/L ▪ Uranium: 11 µg/L ▪ Vanadium: 46 µg/L ▪ Zinc: 210 µg/L	▪ Arsenic: 12.5 µg/L ▪ Boron: 1,200 µg/L ▪ Cadmium: 0.12 µg/L ▪ Cobalt: 4 µg/L ▪ Copper: 2 µg/L ▪ Lead: 2 µg/L ▪ Mercury: 0.016 µg/L ▪ Nickel: 8.3 µg/L ▪ Thallium: 0.3 µg/L ▪ Uranium: 8.5 µg/L ▪ Vanadium: 5 µg/L ▪ Zinc: 10 µg/L	N/A
PW 5	2022-07-14	▪ Arsenic: 49 µg/L ▪ Cadmium: 0.19 µg/L ▪ Chromium: 59 µg/L ▪ Cobalt: 17 µg/L ▪ Copper: 61 µg/L ▪ Lead: 53 µg/L ▪ Mercury: 0.048 µg/L ▪ Nickel: 56 µg/L ▪ Vanadium: 46 µg/L ▪ Zinc: 120 µg/L ▪ pH: 5.1	▪ Arsenic: 12.5 µg/L ▪ Cadmium: 0.12 µg/L ▪ Chromium: 56 µg/L ▪ Cobalt: 4 µg/L ▪ Copper: 2 µg/L ▪ Lead: 2 µg/L ▪ Mercury: 0.016 µg/L ▪ Nickel: 8.3 µg/L ▪ Vanadium: 5 µg/L ▪ Zinc: 10 µg/L ▪ pH: 7.0-8.7	N/A

Notes:
[1]: Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (Marine) (Table 3) (for the following samples: PW-4, PW-5)
[2]: Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (Freshwater) (Table 3) (for the following samples: PW-1, PW-2, PW-3)

3.3.7 Sediment Summary

Table 9 below shows the exceedances that were found during the surface water sampling program.

Table 9: Sediment Sample Exceedances

Sample ID	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] (Marine) Guideline Concentration (mg/kg)	NSE-EQS [2] (Freshwater) Guideline Concentration (mg/kg)
SED 1	2022-07-13	▪ Arsenic: 40,000 mg/kg ▪ Iron: 87,000 mg/kg ▪ Mercury: 2.8 mg/kg	N/A	▪ Arsenic: 17 mg/kg ▪ Iron: 43,766 mg/kg ▪ Mercury: 0.486 mg/kg
SED 2	2022-07-13	▪ Arsenic: 5,000 mg/kg ▪ Iron: 45,000 mg/kg ▪ Mercury: 6.7 mg/kg ▪ Silver: 1.4 mg/kg	N/A	▪ Arsenic: 17 mg/kg ▪ Iron: 43,766 mg/kg ▪ Mercury: 0.486 mg/kg ▪ Silver: 0.5 mg/kg
SED 3	2022-07-13	▪ Antimony: 34 mg/kg ▪ Arsenic: 57,000 mg/kg ▪ Iron: 62,000 mg/kg	N/A	▪ Antimony: 25 mg/kg ▪ Arsenic: 17 mg/kg ▪ Iron: 43,766 mg/kg

Sample ID	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] (Marine) Guideline Concentration (mg/kg)	NSE-EQS [2] (Freshwater) Guideline Concentration (mg/kg)
		▪ Mercury: 68 mg/kg ▪ Nickel: 91 mg/kg ▪ Silver: 4 mg/kg		▪ Mercury: 0.486 mg/kg ▪ Nickel: 75 mg/kg ▪ Silver: 0.5 mg/kg
SED 4	2022-07-13	▪ Arsenic: 32,000 mg/kg ▪ Lead: 110 mg/kg ▪ Mercury: 7.4 mg/kg ▪ Silver: 0.67 mg/kg	N/A	▪ Arsenic: 17 mg/kg ▪ Lead: 91.3 mg/kg ▪ Mercury: 0.486 mg/kg ▪ Silver: 0.5 mg/kg
SED 5	2022-07-13	▪ Arsenic: 1,600 mg/kg	N/A	▪ Arsenic: 17 mg/kg
SED 5 (FD)	2022-07-13	▪ Arsenic: 1,800 mg/kg	N/A	▪ Arsenic: 17 mg/kg
SED 6	2022-07-13	▪ Arsenic: 1,200 mg/kg	N/A	▪ Arsenic: 17 mg/kg
SED 7	2022-07-13	▪ Arsenic: 40,000 mg/kg ▪ Iron: 100,000 mg/kg ▪ Silver: 0.56 mg/kg	N/A	▪ Arsenic: 17 mg/kg ▪ Iron: 43,766 mg/kg ▪ Silver: 0.5 mg/kg
SED 8	2022-07-13	▪ Arsenic: 16,000 mg/kg ▪ Iron: 110,000 mg/kg ▪ Silver: 2.7 mg/kg	N/A	▪ Arsenic: 17 mg/kg ▪ Iron: 43,766 mg/kg ▪ Silver: 0.5 mg/kg
SED 9	2022-07-13	▪ Arsenic: 440 mg/kg	▪ Arsenic: 41.6 mg/kg	N/A
SED 10	2022-07-13	▪ Arsenic: 210 mg/kg	N/A	▪ Arsenic: 17 mg/kg
SED 11	2022-07-14	No exceedances	No exceedances	N/A
SED 12	2022-07-14	▪ Arsenic: 100 mg/kg	▪ Arsenic: 41.6 mg/kg	N/A
SED 13	2022-07-14	▪ Arsenic: 270 mg/kg	▪ Arsenic: 41.6 mg/kg	N/A
SED 14	2022-07-14	▪ Arsenic: 280 mg/kg	▪ Arsenic: 41.6 mg/kg	N/A
SED 18	2022-07-14	▪ Arsenic: 520 mg/kg	N/A	▪ Arsenic: 17 mg/kg
SED 19	2022-07-14	▪ Arsenic: 520 mg/kg ▪ Mercury: 2.7 mg/kg	N/A	▪ Arsenic: 17 mg/kg ▪ Mercury: 0.486 mg/kg
SED 20	2022-07-14	▪ Arsenic: 410 mg/kg	N/A	▪ Arsenic: 17 mg/kg
SED 20 (FD)	2022-07-14	▪ Arsenic: 500 mg/kg	N/A	▪ Arsenic: 17 mg/kg

Notes:
[1]: Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (marine); Table 2 (for the following samples: SED-9, SED-11, SED-12, SED-13, SED-14)
[2]: Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (freshwater); Table 2

4. Summary and Findings

The findings and conclusions presented in this report apply only to the recognized environmental conditions assessed at the Site. **Table 10** below summarizes the findings related to soil, tailings, waste rock, groundwater, surface water, porewater, 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 10: Phase II ESA Summary of Findings

Phase II ESA Activities		Phase II ESA Findings
Soil and Tailings - Impact Assessment and Delineation		
1.	Collected fifty-two (52) soil samples	▪ Noteworthy impacts in arsenic and mercury, which are two parameters associated with the gold mining process (arsenic concentrated through refinement of host rock and mercury used as a gold extraction agent), were identified in soil samples, suspected to be due to previous mining activities that took place at Site. ▪ The following impacts were noted in soil: - Aluminum (Max. Concentration: 20,000 mg/kg) - Antimony (Max. Concentration: 40 mg/kg) - Arsenic (Max. Concentration: 50,000 mg/kg) - Beryllium (Max. Concentration: 1.5 mg/kg) - Cadmium (Max. Concentration: 1.9 mg/kg) - Iron (Max. Concentration: 70,000 mg/kg) - Lead (Max. Concentration: 320 mg/kg) - Manganese (Max. Concentration: 2000 mg/kg) - Mercury (Max. Concentration: 73 mg/kg) - Selenium (Max. Concentration: 2.5 mg/kg) - Thallium (Max. Concentration: 2.9 mg/kg) - Vanadium (Max. Concentration: 41 mg/kg) - Zinc (Max. Concentration: 850 mg/kg)
2.	Collected two (2) tailings samples and eight (8) tailings delineation samples	<u>Tailings:</u> ▪ Arsenic (Max. Concentration: 29,000 mg/kg) and Iron (Max. Concentration: 35,000 mg/kg) impacts were identified in all tailings samples. ▪ Antimony (Max. Concentration: 19 mg/kg), Lead (Max Concentration: 200 mg/kg) and Mercury (Max Concentration: 73 mg/kg) impacts were identified in one (1) of the tailings samples (S22-T1B). <u>Tailings Delineation:</u> ▪ Arsenic (Max. Concentration: 6,000 mg/kg) impacts identified in all tailings delineation samples. ▪ The following impacts were noted in tailings delineation samples: - Antimony (Max. Concentration: 9.4 mg/kg), - Iron (Max. Concentration: 30,000 mg/kg), - Lead (Max. Concentration: 130 mg/kg), - Mercury (Max. Concentration: 11 mg/kg), - Selenium (Max. Concentration: 1.4 mg/kg)
Soil – Background Assessment		
3.	Collected five (5) background soil samples: BG 1 to BG 5	▪ Selenium (Max. Concentration: 1.8 mg/kg) impacts were identified at one (1) background location: BG 4
Waste Rock – Assessment and Delineation		
4.	Collected five (5) waste rock samples: WR-1 to WR-5	▪ Detectable concentrations of aluminum, arsenic, barium, chromium, iron, lead and manganese, nickel, vanadium and zinc are present in waste rock samples collected from the site.
Groundwater		

Phase II ESA Activities		Phase II ESA Findings
5.	Sampling of the four (4) pre-existing wells on-Site: MW17-2, MW22A, MW23A, MW27A	▪ Arsenic impacts were identified at one (1) of the four (4) wells (MW22A) ▪ The following impacts were identified at select wells: - Aluminum (Max. Concentration: 270 µg/L) - Arsenic (Max. Concentration: 150 ug/L) - Iron (Max. Concentration: 8,800 µg/L) - Manganese (Max. Concentration: 350 ug/L)
Surface Water and Sediment – Assessment		
6.	Collected four (4) SW and sediment samples: SW3/SED3, SW4/SED4, SW7/SED7, SW19/SED19 Four (4) locations between the former Stamp Mills near Gold Brook Lake and the former Stamp Mill located near Seal Harbour Lake	**Surface Water:** ▪ Arsenic, aluminum and iron impacts were identified at all four (4) SW locations: - Aluminum (Max. Concentration: 300 µg/L) - Arsenic (Max. Concentration: 480 ug/L) - Iron (Max. Concentration: 1,700 µg/L) **Sediment:** ▪ Arsenic impacts were identified at all four (4) SED locations. ▪ The following impacts were identified at select sediment locations: - Antimony (Max. Concentration: 34 mg/kg) - Arsenic (Max. Concentration: 57,000 mg/kg) - Iron (Max. Concentration: 100,000 mg/kg) - Lead (Max. Concentration: 110 mg/kg) - Mercury (Max. Concentration: 68 mg/kg) - Nickel (Max. Concentration: 91 mg/kg) - Silver (Max. Concentration: 4 mg/kg)
7.	Collected one (1) SW and sediment sample: SW20/SED20 Outlet of Seal Harbour Lake to the east.	**Surface Water:** ▪ Arsenic (330 ug/L), aluminum (330 µg/L) and iron (1,600 µg/L) impacts were identified at this SW location **Sediment:** ▪ Arsenic (500 mg/kg) impacts were identified at this SED location
8.	Collected two (2) SW and sediment samples: SW10/SED10, SW18/SED18 First Pond and Second Pond	**Surface Water:** First Pond (SW10) ▪ Arsenic (280 ug/L), aluminum (360 µg/L) and iron (1,500 µg/L) impacts were identified at this SW location Second Pond (SW18) ▪ Arsenic (280 ug/L), aluminum (330 µg/L) and iron (1,500 µg/L) impacts were identified at this SW location **Sediment:** First Pond (SED10) ▪ Arsenic (210 mg/kg) impacts were identified at this SED location Second Pond (SED18) ▪ Arsenic (520 mg/kg) impacts were identified at this SED location
9.	Collected one (1) SW and sediment sample: SW9/SED9 Outlet to the Atlantic Ocean.	**Surface Water:** ▪ Arsenic (270 ug/L) and mercury (0.02 µg/L) impacts were identified at this SW location **Sediment:** ▪ Arsenic (440 mg/kg) impacts were identified at this SED location
10.	Collected three (3) SW and sediment samples: SW5/SED5, SW6/SED6, SW8/SED8	**Surface Water:** ▪ Arsenic, aluminum and iron impacts were identified at all three (3) SW locations. ▪ The following impacts were identified at select SW locations: - Aluminum (Max. Concentration: 140 µg/L)

	Phase II ESA Activities	Phase II ESA Findings
	Areas of ponded water south of the waste rock pile southwest of Gold Brook Lake.	- Arsenic (Max. Concentration: 1,100 ug/L) - Iron (Max. Concentration: 3,700 µg/L) - Cobalt (Max. Concentration: 2.4 µg/L) - Zinc (Max. Concentration: 9.1 µg/L) **Sediment:** ▪ Arsenic impacts were identified at all three (3) SED locations. ▪ The following impacts were identified at select SED locations: - Arsenic (Max. Concentration: 16,000 mg/kg) - Iron (Max. Concentration: 110,000 mg/kg) - Silver (Max. Concentration: 2.7 mg/kg)
11.	Two (2) SW and sediment samples: SW1/SED1, SW2/SED2 Near the tailings plumes southeast of Gold Brook Lake.	**Surface Water:** ▪ Arsenic, aluminum, iron, lead, mercury and zinc impacts were identified at both SW locations. ▪ The following impacts were identified at select SW locations: - Aluminum (Max. Concentration: 2,100 µg/L) - Arsenic (Max. Concentration: 7,800 ug/L) - Iron (Max. Concentration: 18,000 µg/L) - Lead (Max. Concentration: 9.4 µg/L) - Mercury (Max. Concentration: 0.09 µg/L) - Zinc (Max. Concentration: 14 µg/L) - Cobalt (Max. Concentration: 1.7 µg/L) - Copper (Max. Concentration: 2.2 µg/L) **Sediment:** ▪ Arsenic, iron and mercury impacts were identified at both SED locations: - Arsenic (Max. Concentration: 40,000 mg/kg) - Iron (Max. Concentration: 87,000 mg/kg) - Mercury (Max. Concentration: 6.7 mg/kg) - Silver (Max. Concentration: 1.4 mg/kg)
12.	Three (3) SW and sediment samples: SW12/SED12, SW13/SED13, SW14/SED14 Long Cove - across the cove at the tailings edge	**Surface Water:** ▪ Arsenic impacts were identified at all three (3) SW locations. ▪ The following impacts were identified at select SW locations: - Arsenic (Max. Concentration: 240 ug/L) - Boron (Max. Concentration: 2,200 µg/L) - Mercury (Max. Concentration: 0.018 µg/L) **Sediment:** ▪ Arsenic impacts were identified at all three (3) SED locations: - Arsenic (Max. Concentration: 280 mg/kg)
Surface Water and Sediment – Background Assessment		
13.	Two (2) SW samples: BG-1, SW11 One (1) sediment sample: SED11	**Surface Water:** ▪ Aluminum (300 µg/L) and Iron (390 µg/L) impacts were identified at BG-1 location (freshwater body) ▪ Boron (3,600 µg/L) impacts were identified at SW11 location (marine water body) **Sediment:** ▪ No impacts were identified at this background sediment location
Porewater – Assessment		
14.	Five (5) porewater samples: (PW-1 to PW-5)	▪ The following impacts were identified from the porewater samples collected in freshwater bodies: PW-1, PW-2, PW-3: - Aluminum (Max. Concentration: 170,000 µg/L) - Antimony (Max. Concentration: 24 µg/L) - Arsenic (Max. Concentration: 65,000 ug/L) - Barium (Max. Concentration: 1,700 µg/L) - Beryilium (Max. Concentration: 14 µg/L) - Cadmium (Max. Concentration: 5.7 µg/L) - Chromium (Max. Concentration: 230 µg/L)

Phase II ESA Activities		Phase II ESA Findings
		- Cobalt (Max. Concentration: 270 μg/L) - Copper (Max. Concentration: 360 μg/L) - Iron (Max. Concentration: 1,100,000 μg/L) - Lead (Max. Concentration: 1,700 μg/L) - Manganese (Max. Concentration: 14,000 μg/L) - Mercury (Max. Concentration: 14 μg/L) - Nickel (Max. Concentration: 730 μg/L) - Silver (Max. Concentration: 1.9 μg/L) - Thallium (Max. Concentration: 3.1 μg/L) - Vanadium (Max. Concentration: 220 μg/L) - Zinc (Max. Concentration: 10,000 μg/L) ▪ The following impacts were identified from the porewater samples collected in marine water bodies: PW-4, PW-5: - Arsenic (Max. Concentration: 6,400 ug/L) - Boron (Max. Concentration: 3,100 μg/L) - Cadmium (Max. Concentration: 1.1 μg/L) - Chromium (Max. Concentration: 59 μg/L) - Cobalt (Max. Concentration: 64 μg/L) - Copper (Max. Concentration: 61 μg/L) - Lead (Max. Concentration: 200 μg/L) - Mercury (Max. Concentration: 0.63 μg/L) - Nickel (Max. Concentration: 63 μg/L) - Thallium (Max. Concentration: 1.8 μg/L) - Uranium (Max. Concentration: 11 μg/L) - Vanadium (Max. Concentration: 46 μg/L) - Zinc (Max. Concentration: 230 μg/L)

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 Gold Brook Lake and Seal Harbour Mine Site, the tailings and waste rock associated with the historic mining activities are the original sources of the PCOCs. The COCs that are the focus of this investigation include arsenic and mercury as they are associated with wastes released to the environment from the mineral processing and gold extraction, including waste rock and tailings. However, additional COCs identified in environmental samples collected from areas impacted by historic mining activities at the Gold Brook Lake and Seal Harbour Mine Site and surrounding area would also be retained for further human health and ecological risk assessment.

Arsenic is a naturally occurring chemical constituent within the residual rock material that was milled and then released as a non-economic by-product of the gold extraction process. The original arsenic in the tailings solids was likely in the form of arsenopyrite (FeAsS). Arsenic can be released from this primary mineral form during oxidation processes, resulting in the formation of oxidation products that include dissolved iron, arsenic and sulphate as well as the solid phase ferric oxyhydroxide, simplified as Fe(OH)3.

Mercury was used as an amalgam in the gold extraction process. Although the mercury is typically collected to recover the gold, some release of mercury typically occurs during the process. Mercury would have originated in the liquid form of the element which has a very low solubility in water. Dissolved mercury typically has a very limited mobility in water because of its tendency to sorb onto many types of solids, particularly organic material. This has important implications in the potential pathways for mercury in the environment.

From the original tailings and waste rock source areas, 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

Tailings 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

Based on the results of the Phase I ESA (AECOM, 2022), it was determined that water wells are present within 250 m of the Site. Therefore, the leaching to potable water pathway is 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 on the Site.

5.4 Inhalation of Outdoor Air

The tailings 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

Tailings deposits and associated surface water runoff have been observed on-Site to be leading into Gold Brook Lake, as well as West Brook which leads into Seal Harbour. Impacts are 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 potentially 37,050 m^3 of waste rock that is likely to contain elevated Arsenic and other metal concentrations that may present an unacceptable risk of elevated exposures to As and other toxic metals through leaching and dust released from waste rock piles for human and ecological receptors. Remedial measures may be required to mitigate these risks. Further assessment of the potential risk to human health and ecological health is warranted
2. **Impacted Tailings Areas:** As identified in the Phase I ESA previous environmental reports estimated 795,321 tonnes of tailings on the Gold Brook Lake and Seal Harbour Sites. The Phase II Environmental Site Assessment has identified that tailings contain elevated Arsenic and Mercury concentrations that may present a human health risk and adverse ecological effects. Remedial measures are required to mitigate this risk. Due to the limited data collected, AECOM cannot confirm the quantity of tailings and has therefore used the previous volume estimates for the purpose of the ROA and cost estimating. Further assessment of the potential risk to human health and ecological health is warranted. It should also be noted that an unknown portion of the tailings identified above are not part of the subject Site associated with this study; however, they have been contemplated in this ROA and subsequent cost estimate. Further investigation into the tailings off the subject Site would be required to refine the ROA and cost estimate. The tailings areas were divided into “dry” on land tailings deposits, and “wet” tailings deposits in fresh water and marine environments.
3. **Impacted Soil Area:** The Phase II Environmental Site Assessment has identified soil impacts in many areas of the Site. As impacts in soil delineation has not been achieved, AECOM is unable to accurately assess the volume of contaminated soil requiring remedial action. Given the large area of which impacted soil exists, it is unlikely that remedial action will be feasible to address the entirety of the contaminated soil area. Therefore, AECOM is anticipating that a combination of Human Health and Ecological Risk Assessment and risk management will be required to manage the impacted soil area. Some areas with significantly elevated concentrations of contaminants of concern may still require remediation; however, given the limited amount of data, remedial options analysis or cost estimation has not been completed for the contaminated soil on the Site. Soil containing elevated Arsenic and Mercury concentrations, along with other metals, may present a human health risk at 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 for the Site.
4. **Impacted Surface Water & Sediments:** The Phase II Environmental Site Assessment has identified surface water and sediment impacted by metals in the water course that links Gold Brook Lake to the marine environment. Surface water and sediment concentrations of arsenic and mercury in one or more samples were greater than the applicable criteria indicating possible ecological adverse effects in aquatic organisms and possibly a risk to people and wildlife through eating fish and aquatic prey from surface waters in sediment impacted areas. Further environmental study and risk assessment is warranted for impacted surface water and sediment areas. Remedial measures may be required to mitigate this risk.
5. **Debris:** Remnants of historical mining activities remain at Site, including machine parts, wood and metal were identified as part of the Phase II Environmental Site Assessment. At the time of this Remedial Options Analysis, the quantity of debris is not known; however, it is expected to be a relatively minor cost item in relation to the remediation of the tailings and waste rock on Site. For cost estimating purposes, AECOM has assumed 200 cubic meters of debris, which will require remedial action. It should be noted that this may not be an accurate estimate and is based on the relative size of the property when compared with similar abandoned mine sites in the province.

6. **Impacted Groundwater**: The Phase II Environmental Site Assessment has identified impacted groundwater by metals, specifically As, Co, Mn, Al, and Fe, based on limited sampling and analyses. Further environmental study and remedial measures may be required to mitigate any adverse effects on potable ground water quality and 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, tailings, 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
- 25% 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 11** 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 11: 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).
		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 two historic gold mine sites, Gold Brook Lake and Seal Harbour, are located in the southern portion of a 38172.8 hectare (94327.0-acre) property (PID#: 35094366) owned by Nova Scotia Department of Natural Resources and Renewables (NSDNRR). This property is located in Guysborough County, Nova Scotia. The Gold Brook Lake site is part of the Upper Seal Harbour Gold district and is approximately 3 km northeast of Goldboro on the eastern shore of Nova Scotia.

6.3.2 Site Access (On-Site)

As identified in **Section 2.4**, the parcel of land is almost entirely undeveloped, except for a roadway (Goldbrook Road) running through it (west to east), and sparse historical mining-related infrastructure (where the Site is situated). Vegetation consists of a mixture of forest and shrubland.

There is one main road entering the Gold Brook Lake Site, however it does not continue down to the tailings area(s). The Site may require road maintenance for use during remediation. HWY 316 runs through the Seal Harbour Site, however there are no access roads to First Pond and Second Pond. 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 former Gold Brook Lake Mine Site (Google Earth, 2022)

Photograph 2: View of current roadway surrounding Seal Harbour Mine Site (Google Earth, 2022)

6.3.3 Borrow Soil

Borrow soil, if required, may need to be imported to Site and sourced locally. 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 facility within Guysborough County.

6.4 Waste Rock

The Phase II ESA included a third party survey of the waste rock pile located on-site. The survey estimates the amount of waste rock present on-site to be in the order of 37,050 m^3. Waste rock was primarily identified in the cleared areas off Gold Brook Road (southeast and southwest of Gold Brook Lake). It was also found scattered along the southern shoreline into Gold Brook Lake. The approximate locations of the waste rock piles are shown on **Figure 4**, **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 the Phase II 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 developed, as appropriate to the situation. Waste 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 (pending additional data on leachability and dustiness of waste rock).

Photograph 3: View of waste rock stockpiles located to the south of Goldbrook Road (cleared area located southwest of Gold Brook Lake)

Photograph 4: View of waste rock pile. Photo taken of cleared area off Goldbrook Road - southeast of Gold Brook Lake

Photograph 5: View of Waste rock located on shore of Gold Brook Lake

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.

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 arsenic 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.
- Borrow material may be sourced from the site; however, a borrow study was not completed as part of this ESA; therefore, 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 Guysborough County and would be at the contractor discretion provided the material met the engineering specifications.
- Waste 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 a requirement (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. . 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 fourth remedial option presented for managing the waste rock is **risk management**. Given the high levels of arsenic and other toxic 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 a requirement. 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, it is unlikely to meet with acceptance by the project team or the community. This 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 12: ROA for Waste Rock

Option	Score	Comments
Option 1: Excavation and Off-Site Disposal	15.9	Higher cost with off-Site transportation. Potential challenges with finding a facility to accept material. Environmental and cost risks associated with transport.
Option 2: Soil Cap	14.9	Feasible option
Option 3: Soil/Synthetic Cap	16.2	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 **capping using soil and synthetics**. This approach addresses the site issues over the long term and minimizes site disturbance while doing so, while avoiding potential challenges with facility acceptance and risk associated with transport. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) should be developed based on the potential for exposure to toxic metals in tailings through direct contact with tailings, tailings slurries and water and inhalation of respirable particles, as appropriate to the situation.

Further risk assessment including considering 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 surface runoff and dust and potential for direct human contact with tailings materials.

6.5 Impacted Tailings Area

The Phase I ESA identified tailings in several places on-Site. These locations include along the southern shoreline and into Gold Brook Lake, in the cleared area off of Goldbrook Road (southwest of Gold Brook Lake), in the ponded area northeast of Seal Harbour, and well oxidized tailings leading from the discharge of West Brook into Seal Harbour. The approximate locations of the tailings are shown on **Figure 4**, **Appendix A**. Based on preliminary results from the current ESA studies, it is difficult to delineate the full extent of the tailings impacts. However, based on historic documentation, it can be estimated that area total of 795,321 tonnes of tailings exists on the site or nearby properties, with estimated average thickness ranging from 0.5 m to 1.0 m. Further efforts could be completed to fully delineate the tailings quantity on site. Further assessment of the potential risk to human health and ecological health from exposure to toxic metals in tailings materials released to the environment through leaching, erosion, weathering and dust is warranted to inform 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 developed, as appropriate to the situation.

Tailings remediation, if it is to occur on-Site, may or may not require full encapsulation of the tailings depending on the leachability of toxic metals from the tailings and the dispersion along with the generation of dust through wind erosion and weathering., If arsenic, mercury and other toxic metals are not leachable from tailings materials the creation of a barrier between surface receptors and the material would be required to protect against the soil and dust direct contact pathway and air borne dust.

Photograph 6: View of tailings identified within the water at the shore of Gold Brook Lake (orange staining present)

Photograph 7: View of vegetated tailings (stressed vegetation and orange staining). Photo taken in cleared area off of Goldbrook Road - southeast of Gold Brook Lake

Photograph 8: View of well oxidized tailings observed under the bridge; located in the discharge from West Brook (Seal Harbour)

6.5.1 Impacted Tailings Areas – "Dry"

For the purposed of discussing remedial options, the tailings areas will be generally discussed as either "dry" tailings on land or "wet" tailings, which exist in the watercourse around site. Given the different media in which the tailings exist, it is reasonable to assume that separate remedial options may be required for the "dry" vs "wet" tailings.

Based on visual observations, historical reports, and aerial imagery, it is estimated that approximately 50,000 tonnes of the tailings is “dry” while the remaining tailings are located within the watercourse on and around the Site.

6.5.2 Option #1 – Excavation and Off-Site Disposal

The first remedial option presented for managing the tailings 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 tailings.

6.5.3 Option #2 – Soil Cap

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

Tailings 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 tailings, only the creation of a barrier between surface receptors and the material may be required depending on the leachability of toxic metals from the tailings materials, to mitigate 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 tailings. Soil borrow is required to cover the material with this option.

Consolidation of the tailings 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 tailings 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 soil and vegetation.
- Relocation of the tailings requires 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 tailings 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. 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 this 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 Guysborough County and would be at the contractor discretion provided the material met the engineering specifications.
- Tailings placement at a location of existing soil will require significant vegetation disturbance.
- There will be long term monitoring requirements related to the soil cap.

6.5.4 Option #3 – Soil/Synthetic Cap

The third remedial option presented for managing the tailings is the design and placement of an **engineered cap** atop the tailings 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 a requirement (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. A synthetic liner has the added benefit of reducing the amount of rain and surface water that could come into contact with the tailings and limit the transport of fine-grained material outside of the main tailings 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.

6.5.5 Option #4 – Risk Management

The fourth remedial option presented for managing the tailings is **risk management**. Given the high concentrations of arsenic and other toxic metals in the tailings material risk management by fencing off locations of tailings (either as a consolidated stockpile or as individual stockpiles) to prevent human contact with the tailings, and 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, it is unlikely to meet with acceptance by the project team or the community. This option does not meet the remedial objectives well.

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

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

6.5.7 Remedial Options Analysis/Recommendation

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

Table 13: ROA for Tailings "dry"

Option	Score	Comments
Option 1: Excavation and Off-Site Disposal	13.3	Higher cost with off-Site transportation. Potential challenges with finding a facility to accept material. Environmental and cost risks associated with transport.
Option 2: Soil Cap	15.3	Feasible option
Option 3: Soil/Synthetic Cap	15.4	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 tailings management is through **capping using soil and synthetics**. This approach addresses the site issues over the long term and minimizes site disturbance while doing so, while avoiding potential challenges with facility acceptance and risk associated with transport. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) should be developed based on the potential for exposure to toxic metals in tailings through direct contact with tailings, tailings slurries and water and inhalation of respirable particles, as appropriate to the situation.

Further risk assessment including considering 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 surface runoff and dust and potential for direct human contact with tailings materials.

6.5.8 Impacted Tailings Areas – "Wet"

For the purposed of discussing remedial options, the tailings areas will be generally discussed as either "dry" tailings on land or "wet" tailings which exist in the watercourse around site. Given the different media in which the tailings exist, it is reasonable to assume that separate remedial options may be required for the "dry" vs "wet" tailings.

Based on visual observations, historical reports, and aerial imagery, it is estimated that approximately 750,000 tonnes of the tailings is "wet" and are located within the watercourse on and around the Site.

6.5.9 Option #1 – Excavation and Off-Site Disposal

The first remedial option presented for managing the tailings 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 tailings. In addition the adverse

environmental effects of completing excavation in the watercourse may be of more concern than leaving the tailings in place.

6.5.10 Option #2 – Soil Cap

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

Tailings would need to be excavated from where they are currently located and consolidated at a new location. Given that remediation may not require full encapsulation of the tailings, only the creation of a barrier between surface receptors and the material may be required depending on the leachability of toxic metals from the tailings materials, to mitigate exposure risk primarily related to the direct soil and dust contact pathway. An excavator and/or loader would be used to consolidate and shape the tailings. Soil borrow is required to cover the material with this option.

Relocation of the tailings requires significant material disturbance and appropriate measures and worker protection will need to be undertaken to mitigate contaminant migration and personnel safety risks, including air quality monitoring and personal exposure monitoring. In addition, the adverse environmental effects of completing excavation in the watercourse may be of more concern than leaving the tailings in place.

6.5.11 Option #3 – Soil/Synthetic Cap

The third remedial option presented for managing the tailings is the design and placement of an **engineered cap** atop the tailings 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. A synthetic liner has the added benefit of reducing the amount of rain and surface water that could come into contact with the tailings and limit the transport of fine-grained material outside of the main tailings 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.

Relocation of the tailings requires significant material disturbance and appropriate measures and worker protection will need to be undertaken to mitigate contaminant migration and personnel safety risks, including air quality monitoring and personal exposure monitoring. In addition, the adverse environmental effects of completing excavation in the watercourse may be of more concern than leaving the tailings in place.

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

6.5.12 Option #4 – Risk Management

The fourth remedial option presented for managing the tailings is **risk management**. Given the high concentrations of contaminants of concern in the tailings material, risk management by placing signage to identify hazardous areas may be required as appropriate to the situation. Human contact with the tailings material within the watercourse is presumed to be low and could be lowered through signage and warning to avoid recreation such as swimming, boating, and fishing in the water course on the Site.

6.5.13 Option #5 – Leave in Place and Construct Engineered Wetland Down-Gradient

Do to the adverse effects of excavating the large amount of tailings from the existing watercourse, the fifth remedial option being presented is to **Leave the Tailings in Place and Construct an Engineered Wetland Down-gradient**, near first pond and second pond. This option would allow for minimal disturbance of the "wet" tailings while capturing contaminants of concern prior to their release to the Atlantic Ocean.

6.5.14 Remedial Options Analysis/Recommendation

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

Table 14: ROA for Tailings

Option	Score	Comments
Option 1: Excavation and Off-Site Disposal	13.3	Higher cost with off-Site transportation. Potential challenges with finding a facility to accept material. Environmental and cost risks associated with excavation transport.
Option 2: Soil Cap	15.3	Feasible option. Environmental and cost risks associated with excavation transport.
Option 3: Soil/Synthetic Cap	15.4	Feasible option, as Option 2; however, requires less site disturbance for borrow soils. Synthetics may result in greater cap stability. Environmental and cost risks associated with excavation transport.
Option 4: On-Site Risk Management	14.3	Feasible as part of the solution.
Option 5: Leave in Place	15.8	Feasible Option

Based on a review of the remedial options, the recommended approach for tailings management is to **leave the tailings in place** and construct an engineered wetland down gradient near first and second pond. This approach addresses the site issues over the long term and minimizes site disturbance during the process, while avoiding potential challenges and risk associated with excavation within watercourses.

Further risk assessment including considering 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 and potential for direct human contact with tailings materials.

6.6 Impacted Soils

Impacted soils exist outside the horizontal and vertical limits of the tailings and waste rock piles on site. During the Phase II 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 not be 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 collected to date. At this time, based on the available data and for the purpose of a preliminary ROA and subsequent cost estimate only, we are assuming impacted soils can largely be left in place and managed with a combination of risk assessment and risk management. 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 water used for drinking water and potential threats to terrestrial and aquatic organisms, is warranted for the Site. The outcome of the HHERA would better inform the development and selection of preferred site remediation options along with 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.

6.6.1 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, the soils do not need to be separated based on their contaminants. As such all soil should be consolidated for shipment to an approved disposal facility which can accept soil with metals 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 surface contouring and reestablishing vegetation would be completed as required in excavation areas once backfilling is complete.

This remedial option has the benefit of removing the impacted soil from the Site; and therefore, prohibit the need for future Site visits and long-term management of this soil. However, given the large quantity of soil anticipated to exceed applicable NSE Tier 1 EQS, it is unlikely that off-site disposal of all impacted soils would be an economically viable solution.

6.6.2 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.
- 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.

6.6.3 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 a requirment (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.

6.6.4 Option #4 – Risk Management

The fourth remedial option presented for managing the tailings is **risk management**. Given the quantity of impacted soil, risk management by limiting access to locations of impacted soils may be required to prevent human contact with the impacted soil and/or placing signage to identify hazardous areas.

6.6.5 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.

6.6.6 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 15: ROA for Impacted Soil

Option	Score	Comments
Option 1: Excavation and Off-Site Disposal	12.8	Cost prohibitive
Option 2: Soil Cap	14.8	Feasible option
Option 3: Soil/Synesthetic Cap	14.9	Feasible option
Option 4: Risk Management	15.2	Feasible
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 **Risk Management**. This approach avoids potential challenges with facility acceptance, high costs, and risk associated with transport of a large quantity of impacted soil. 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.

Another possible option would be to cap portions of the impacted soil where the concentrations are the highest and use risk management methods to address impacted soil with relatively lower concentrations. Further delineation of the impacts would be required to understand if this option is feasible.

6.7 Surface Debris (Non-Wood Materials)

At the time of the site visit, various debris and waste (consisting of garbage, wood, tubing, metal, drill rods, tires etc.) were littered intermittently throughout the Site;however, the total quantity is unknown at this time.

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.

6.7.1 Wood Waste Management

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

6.7.2 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; however, placement of metal waste with the waste rock is an option and is the approach considered as Option 1. Large metal components would need to be cut and made smaller to facilitate more uniform placement within the waste rock and tailings.

6.7.3 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 at an off-site landfill or recycling facility. Debris with non-hazardous paint can be sent to an off-site landfill facility.

No hazardous materials were identified on-site, however any unknown and potentially hazardous materials should be assessed/ analyzed prior to disposal and if deemed to be hazardous then 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.

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

A do-nothing approach is considered to not be acceptable for this component of the project since it does not meet the remedial objectives.

6.7.5 Remedial Options Analysis/Recommendation

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

Table 16: 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	Score	Comments
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.

6.8 Impacted Surface Water and Sediments – Fresh Water

Impacted surface water and sediment was identified in multiple water courses as part of the Phase II ESA. During the ESA, delineation of impacted surface water or sediment was not achieved in the water courses due to the limited data collected and the large area of impacted materials. The majority of surface water and sediment samples collected in attempt to delineate the impacts exceeded the applicable guidelines. As such, at this time, the impacted surface water and sediment quantity cannot be estimatedas part of this study.

Based on the preliminary data, further study of water course impacts should be completed prior to discussing or contemplating remedial action, as it is possible that remedial work in the river would have a greater environmental effect than doing nothing. It is also possible that by removing the source of the impacts on the subject site (waste rock, tailings, contaminated soil) would improve the environmental quality of the surface water and sediment in the water courses.

It is possible that a Human Health and Ecological Risk Assessment of the Site may aid in delineating the impacts requiring remediation based on the current analytical data set.

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

Based on the limited data collected at this time, the anticipated remedial option would be to do nothing with the identified impacted surface water and sediment other than monitor the effect of downgradient environmental quality of the water courses upon the removal of upgradient land-based impact sources at the Site. Additional environmental monitoring studies and a human health and ecological risk assessment of environmentally available and bioaccumulative toxic metals in surface water and sediments in the downstream water courses is proposed for the Site. Specifically, additional studies to assess the uptake of metals in benthic and pelagic aquatic organisms, including sportfish and shellfish, in areas known as fishing locations and along the riverbanks receiving tailings runoff and infiltration of tailings impacted groundwater is proposed. The purpose of an HHERA would be to better inform whether any risk management and remedial action planning is warranted based on selected valued ecological components (VECs) for monitoring and the corresponding monitoring data of sediment quality and surface water quality following implementation of remedial actions to limit environmental loadings upgradient associated with releases of metals from impacted soil, groundwater, surface water, tailings and waste rock. The HHERA may involve a knowledge and data gaps assessment for evaluation of the natural recovery of the area of concern within the aquatic environment. Additionally, the proposed engineered wetland solution for managing the “wet” tailings in the water course will act as a buffer between the impacted water course on the Site and the Atlantic Ocean.

6.8.2 Remedial Options Analysis/Recommendation

The remedial option scoring for impacted surface water and sediments in fresh water is provided in **Table D-2**, **Appendix D** with the summary results as follows:

Table 17: ROA for Impacted Surface Water and Sediment– Water Courses

Option	Score	Comments
Option 1: Environmental monitoring and risk assessment- no remedial action at this time.	18.4	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**.**

6.9 Impacted Surface Water and Sediments – Marine

Impacted surface water and sediments were identified in the Atlantic Ocean near Long Cove as part of the Phase ESA investigations. During the ESA, delineation of impacted surface water and sediment impacts was not achieved due to the limited data collected and the large area of impacted materials. All surface water and sediment samples collected in attempt to delineate the impacts exceeded the applicable guidelines. As such, at this time, the impacted surface water and sediment 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 the surface water and sediments through direct contact, as appropriate to the situation and in accordance with the relevant Acts and Regulations for mining closure and NSE guidance.

Although the impacts have not been delineated through the use of analytical testing, visual observations indicate that the tailings impacting the surface water and sediment does not extend outside of Long Cove.

6.9.1 Option #1 – Dredging of Impacted Sediments

Based on the potentially isolated area of tailings impacted sediments, the first remedial option to be discussed is **Dredging** of the Impacted Sediments. This would involve hydraulic isolation of the tailings Impacted sediment area using methods such as silt curtains or sheet piles to allow for work to be done in the marine environment without impacting the surrounding area. This would be a high complexity remedial option; however, given the concentration of some contaminants of concern it may be warranted to protect aquatic life in the marine environment and reduce the risk to human health through the consumption bivalves or other marine species. Further study into the human health and ecological risk associated with the impacted surface water and sediment would be required to ensure this remedial option is warranted due to the high complexity and cost associated with removing the impacted sediments.

6.9.2 Option #2 – Environmental Monitoring and Risk Assessment - No Remedial Action

Based on the limited data collected at this time, the anticipated remedial option would be to do nothing with the identified impacted surface water and sediment other than monitor the effect on the downgradient environmental quality of the water courses upon removal of upgradient land-based impact sources at the Site. Additional environmental monitoring studies and a human health and ecological risk assessment of environmentally available and bioaccumulative toxic metals in surface water and sediments in the downstream water courses is proposed for the Site. Specifically, additional studies to assess the uptake of metals in benthic and pelagic aquatic organisms, including sportfish and shellfish, in areas known as fishing locations in the marine environment receiving tailings runoff and infiltration of tailings impacted groundwater is proposed. The purpose of an HHERA would be to better inform whether any risk management and remedial action planning is warranted based on selected valued ecological components (VECs) for monitoring and the corresponding monitoring data of sediment quality and surface water

quality following implementation of remedial actions to limit environmental loadings upgradient associated with releases of metals from impacted soil, groundwater, surface water, tailings and waste rock. The HHERA may involve a knowledge and data gaps assessment for evaluation of the natural recovery of the area of concern within the aquatic environment. Additionally, the proposed engineered wetland solution for managing the "wet" tailings in the water course will act as a buffer between the impacted water course on the site and the Atlantic Ocean.

6.9.3 Remedial Options Analysis/Recommendation

The remedial option scoring for impacted surface water and sediment - marine is provided in **Table D-2**, **Appendix D** with the summary results as follows.

Table 18: ROA for Impacted Surface and Sediment Water – Marine

Option	Score	Comments
Option 1: Dredge	15.8	High Complexity but feasible. Additional study required to determine if this remedial option is warranted
Option 2: Environmental monitoring and risk assessment- no remedial action at this time.	16.2	Based on limited data this is the only feasible option without further study

Based on a review of the remedial options, the recommended approach for impacted surface water and sediments - marine is through **Environmental Monitoring and Risk Assessment**.

6.10 Impacted Groundwater

Impacted groundwater was identified on Site as part of the Phase II ESA investigations. During the ESA, delineation of impacted groundwater was not achieved due to the limited data collected and the large area of impacted materials. All groundwater samples collected in attempt to delineate the impacted groundwater exceeded the applicable guidelines. As such, at this time, the impacted groundwater quantity cannot be estimated.

Based on the preliminary data, further study into the impacts in groundwater should be completed prior to discussing or contemplating remedial action, as it is possible that remedial work in the groundwater is not necessary. It is also possible that by removing the source of the impacts on the subject site (waste rock, tailings, contaminated soil) the environmental quality of the groundwater could improve. Further monitoring and assessment of the release and loading of metals from tailings, waste rock and impacted soils and migration to groundwater is warranted to assess the potential risks to human health and ecological health from exposure to toxic metals through the soil to groundwater to human and ecological receptor pathways. This would include the potential for impacts to groundwater quality and surface water quality for use for drinking water and potential threats to terrestrial and aquatic organisms.

It is possible that a Human Health and Ecological Risk Assessment of the Site may aid in delineating the impacts requiring remediation with the current analytical data set.

6.10.1 Option #1 – Environmental Monitoring and Risk Assessment - No Remedial Action (i.e., Do Nothing)

At this time, based on the limited data collected, the anticipated remedial option would be to do nothing to treat or eliminate the identified impacted groundwater other than monitoring the effect on groundwater quality by removing the source of metal loadings associated with waste rock, tailings, and impacted soils and risk assessment of the implications of reduced loadings for human health and ecological effects.

6.10.2 Remedial Options Analysis/Recommendation

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

Table 19: ROA for Impacted Groundwater

Option	Score	Comments
Option 1: Environmental monitoring and risk assessment- no remedial action at this time.	13.0	Based on limited data this is the only feasible option

Based on a review of the remedial options, the recommended approach for impacted groundwater is to **do-nothing** other than monitoring the effect on groundwater quality by removing the source of metal loadings associated with waste rock piles, tailings, and impacted soils and risk assessment of the implications of reduced loadings for human health and ecological effects.

7. Recommended Remedial Options

Table 20 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 20: Summary of Recommended Remedial Approach

Environmental Concern	Recommended Remedial Approach
Waste Rock	▪ Excavate in conjunction with other remedial activities ▪ Consolidate Impacted Soils with Tailings ▪ Grade to promote positive drainage but to not encourage excessive erosion ▪ Cover with synthetic liner and soil ▪ Conduct reclamation activities as required.
Impacted Tailings Area "Dry"	▪ Excavate ▪ Consolidate Tailings with Waste Rock ▪ Grade to promote positive drainage but to not encourage excessive erosion ▪ Cover with synthetic liner and soil ▪ Conduct reclamation activities as required.
Impacted Tailings Area "Wet"	▪ Leave in Place ▪ Construct an engineered wet land near first and second pond to passively capture tailings as they move through the water course and before they discharge to the Atlantic Ocean ▪ Continue to monitor surface water quality.
Impacted Soils	▪ Due to the large quantity of impacted soil, further study into the potential human health and ecological risk associated with the soil is required. ▪ The soil risk may be able to be managed through a Risk Management Plan which may include, signage, engineered controls (fencing, barricades, etc.) to reduce human contact with the impacted tailings.
Surface Debris (Non-Wood Materials)	▪ Hazardous Materials: If hazardous materials are identified on site - Remove and dispose of off-site at facility authorized to accept ▪ Wood: Incinerate or chip on-Site, dispose ash off-Site ▪ Metal and other debris: Haul Off-Site for recycling
Impacted Surface Water and Sediments – Fresh Water	▪ No action required at this time other than monitoring and risk assessment ▪ Further study should be conducted to determine if remedial action is needed
Impacted Surface and Sediments Water – Marine	▪ No action required at this time other than monitoring and risk assessment ▪ Further study should be conducted to determine if remedial action is needed ▪ Dredging of impacted sediments in the marine environment may be an option if furth study indicates it is warranted
Impacted Groundwater	▪ No action required other than monitoring at this time

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.

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

- Full delineation of the impacted tailings, contaminated soil, and waste rock. Further delineation could be complete through additional sampling and visual identification.
- Further assessment of the environmental availability and estimation of loadings of toxic metals in tailings, waste rock and impacted soils to groundwater and surface water, including wetlands, ponded water, watercourses and the Atlantic Ocean through risk assessment and geochemical study.
- Test pitting within the waste rock piles and tailings areas to identify the depths.
- Further definition of the waste materials on-site including a hazardous materials assessment.
- Further assessment of the background quality of the soil to provide a greater confidence in the true concentrations of parameters of concern in the surrounding area.
- 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.

Several metals were identified as contaminants of concern (COCs) in soil, tailings, groundwater, surface water and sediment . 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) applied in the Phase II ESA specifically, aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, uranium, vanadium, zinc, and pH. Of these metal parameters, 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 . However, in accordance with Nova Scotia's Contaminated Sites Regulation and the PRO-100 guidance (Sept 2021) for contamination evaluation of undeveloped wild and natural land, the environmental data could potentially compared against Tier 1 EQS for agricultural land use since the majority of the Gold Brook Lake and Seal Harbour Mine Sites is undeveloped resource forest, wetlands and natural surface waters and the agricultural land use Tier 1 EQSs are the only criteria that include ecological direct contact pathway protection. However, the Site also has the potential to be used as a mining site in the future and thereby the land use could fall under industrial land use given the required engineering controls are established for the Site via provincial approvals. 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 NS Lands Inc. 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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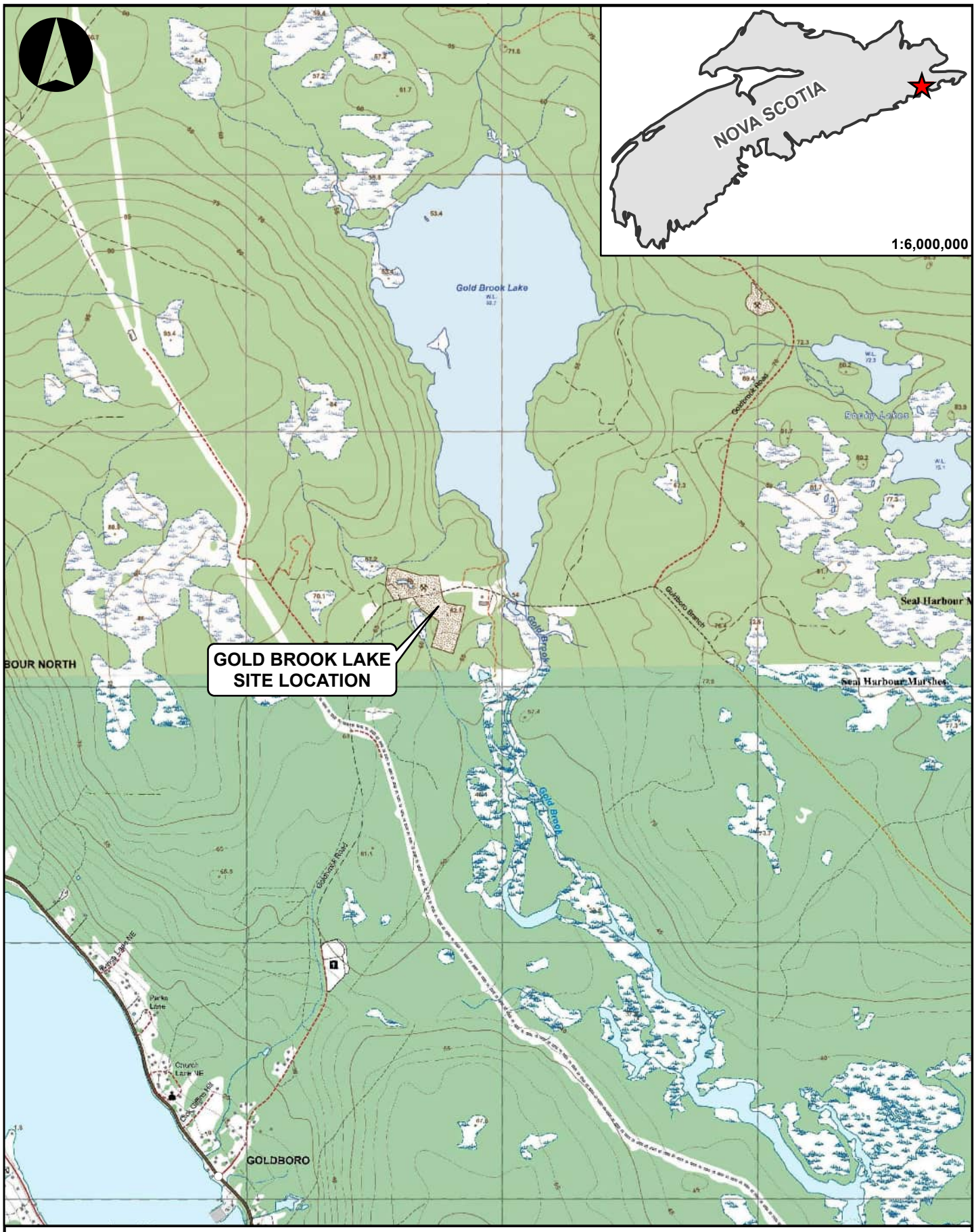
Appendix A. Figures



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GENERAL SITE LOCATION MAP

CLIENT NAME: NOVA SCOTIA LANDS INC.	PROJECT LOCATION: GOLD BROOK LAKE AND SEAL HARBOUR MINE SITES	
DRAWN BY: PC	SCALE: 1:20,000	FIGURE No. **1A**
CHECKED BY: JS	DATE: 2022-09-13	PROJECT NO: 60680068

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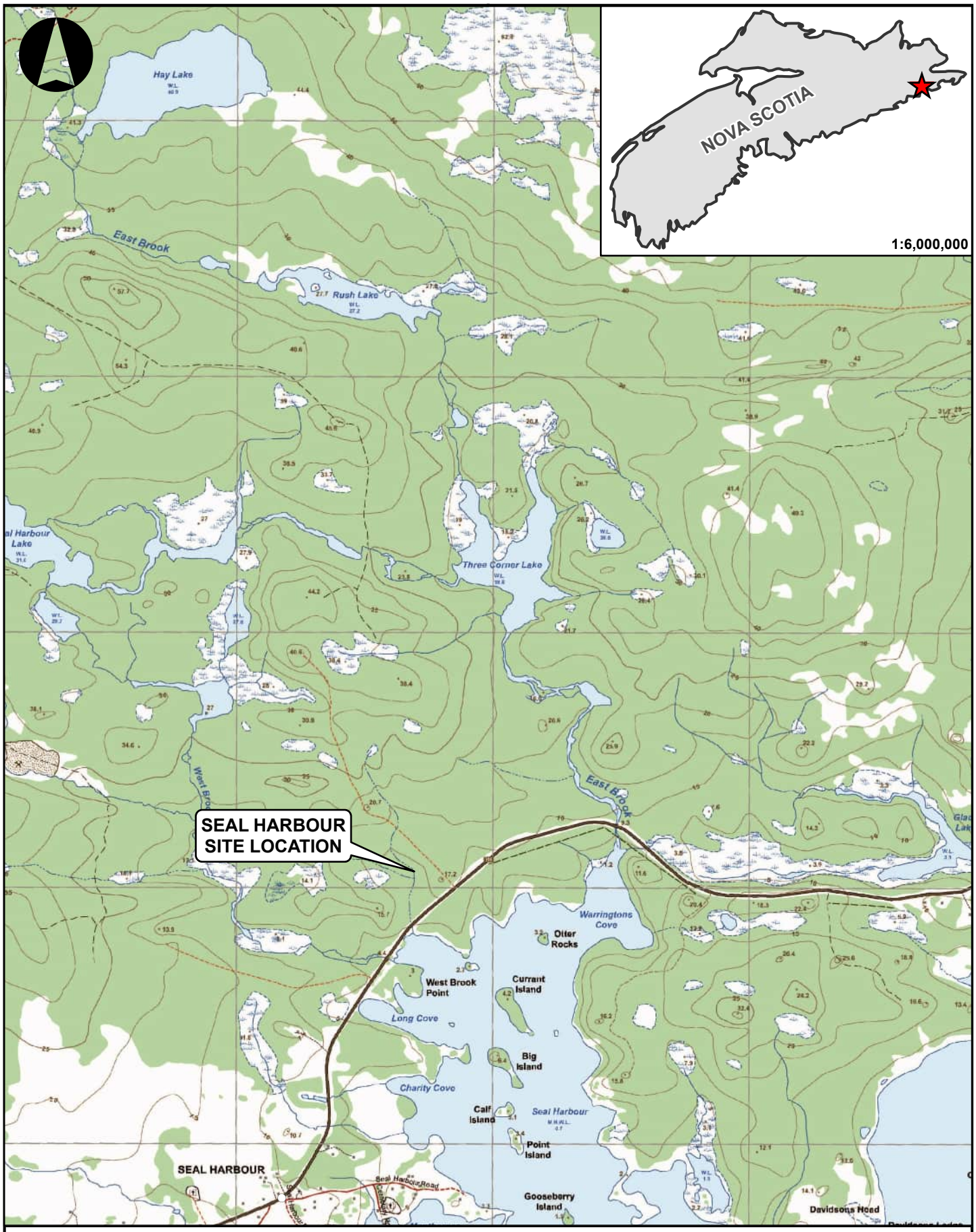

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GENERAL SITE LOCATION MAP

CLIENT NAME: NOVA SCOTIA LANDS INC.	PROJECT LOCATION: GOLD BROOK LAKE AND SEAL HARBOUR MINE SITES

DRAWN BY: PC	SCALE: 1:20,000	FIGURE No. **1B**
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APPROXIMATE PROPERTY BOUNDARY AS SHOWN ON NOVA SCOTIA PROPERTY ONLINE

PHASE II ESA - STUDY AREA

REFERENCE
NS Property Record Database, Esri World Imagery

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CLIENT NAME: NOVA SCOTIA LANDS INC.	PROJECT LOCATION: GOLD BROOK LAKE AND SEAL HARBOUR MINE SITES		
	DRAWN BY: PC	SCALE: 1:220,000	FIGURE No. **2A**
	CHECKED BY: JS	DATE: 2022-09-13	PROJECT NO: 60680068

SITE PLAN – PROPERTY BOUNDARY
GOLD BROOK LAKE

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APPROXIMATE PROPERTY BOUNDARY AS SHOWN ON NOVA SCOTIA PROPERTY ONLINE

PHASE II ESA - STUDY AREA

REFERENCE
NS Property Record Database, Esri World Imagery

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SITE PLAN – PROPERTY BOUNDARY SEAL HARBOUR

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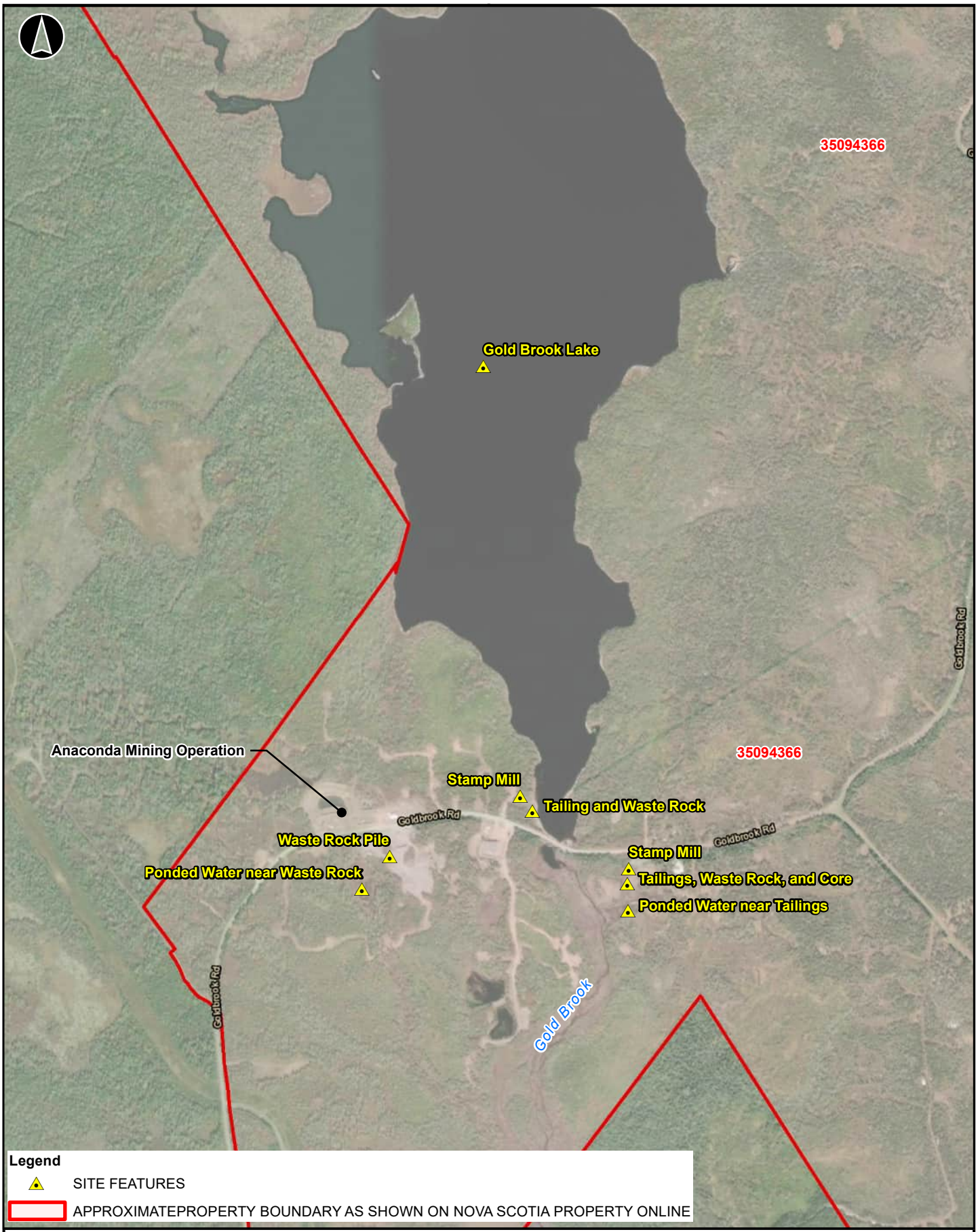

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	CHECKED BY: JS	DATE: 2022-09-13	PROJECT NO: 60680068

GOLD BROOK LAKE SITE PLAN - DETAILS

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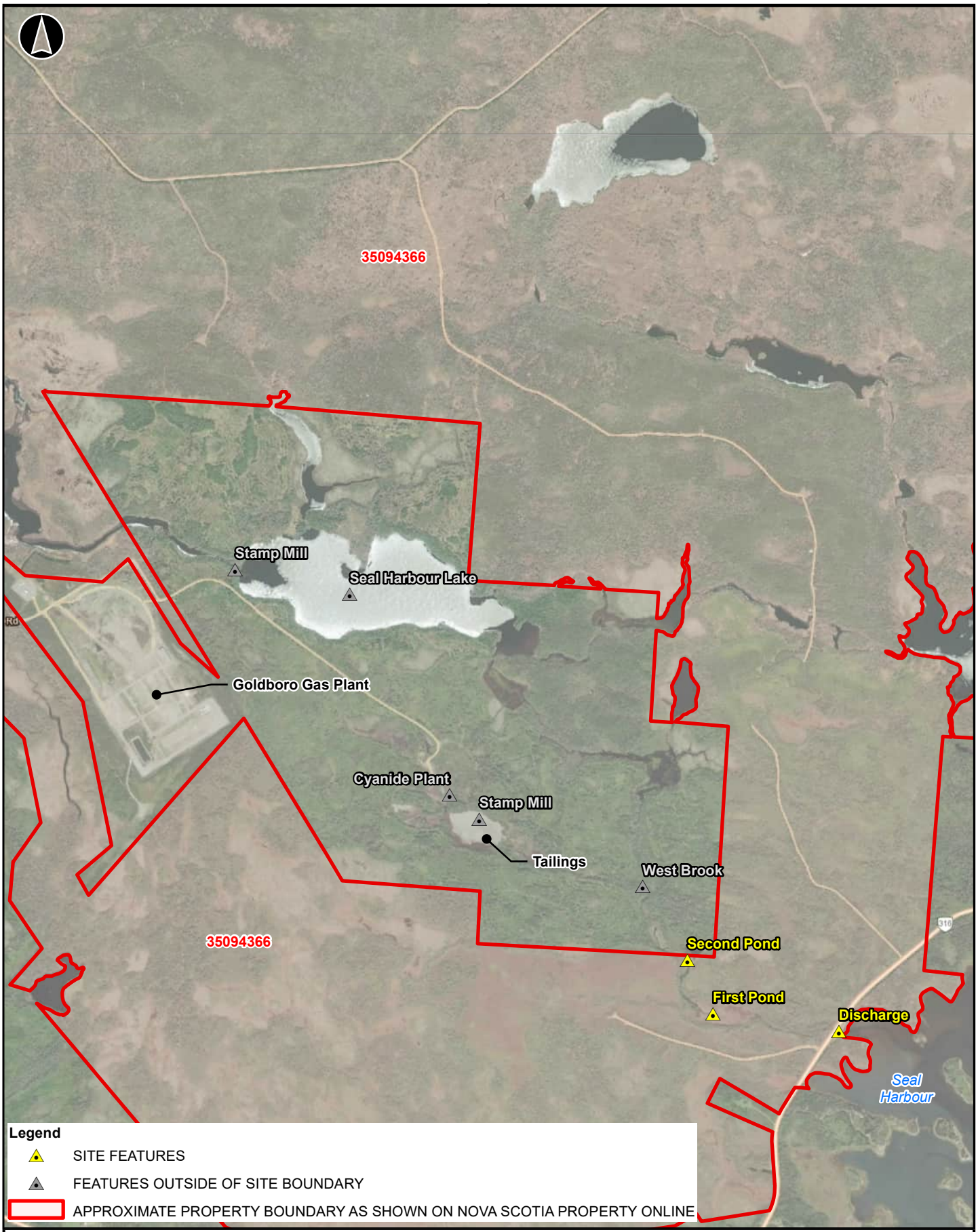

REFERENCE
NS Property Record Database, Esri World Imagery

0 200 400 600 m

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AECOM

CLIENT NAME:
NOVA SCOTIA LANDS INC.

PROJECT LOCATION:
GOLD BROOK LAKE AND
SEAL HARBOUR MINE SITES

SEAL HARBOUR SITE PLAN - DETAILS

DRAWN BY: PC	SCALE: 1:20,000	FIGURE No. **3B**
CHECKED BY: JS	DATE: 2022-09-13	PROJECT NO: 60680068

Last saved by: PAIGE.CROSSMAN (2022-09-13)
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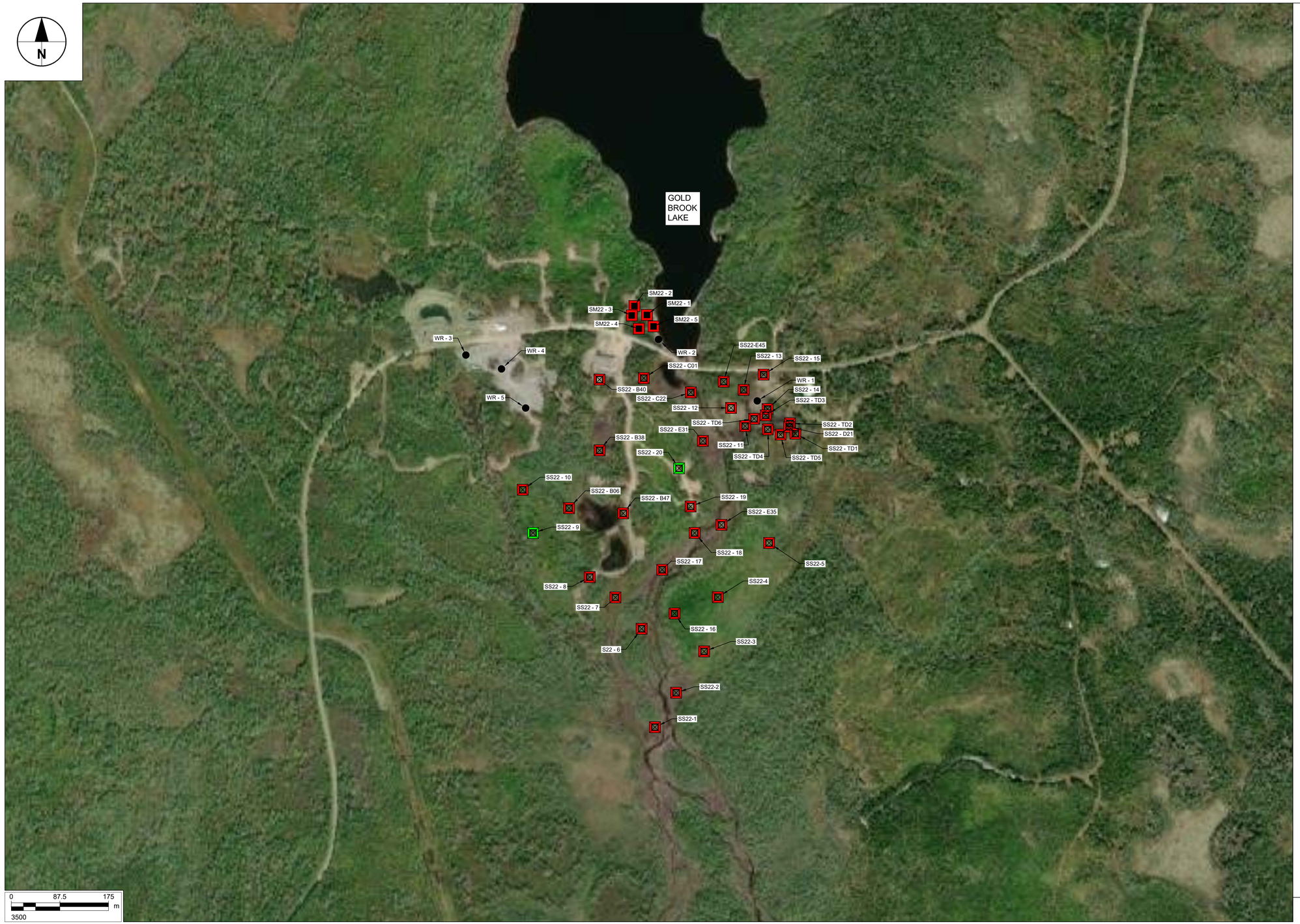


LEGEND

- SOIL SAMPLES
- STAMP MILL SOIL SAMPLES
- WASTE ROCK 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.
2. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID.

Issue Status: DRAFT

Last saved by: DOBRER(2022-10-07) Last Plotted: 2022-10-07
Filename: C:\01.AECOM\00.PROJECTE\3.SEAL HARBOUR UPDATED_SOIL_SAMPLES\09-29-2022\10-07-2022\FIGURE 4 - GOLDBROOK LAKE + SEAL HARBOUR - SOIL SAMPLE AND WASTE ROCK LOCATION PLAN.DWG

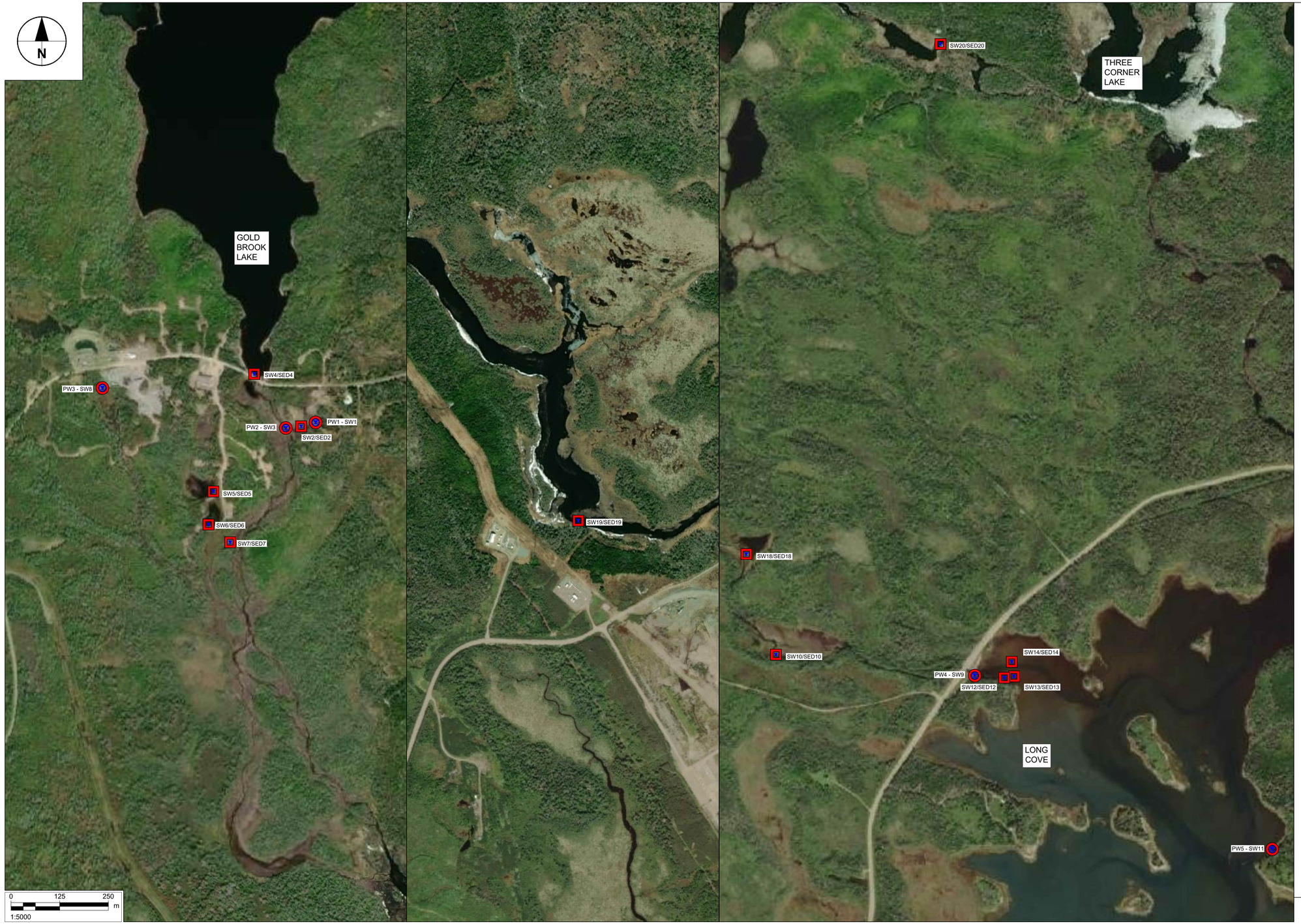
PHASE II ENVIRONMENTAL SITE ASSESSMENT

Nova Scotia Lands Inc., Gold Brook Lake and Seal Harbour Mine Site
Project No.: 60680068 Date: 2022-10-07

SOIL SAMPLE AND WASTE ROCK LOCATION PLAN

AECOM

Figure: 4



LEGEND

- SURFACE WATER SAMPLES / SEDIMENT SAMPLES
- POREWATER SAMPLES / SURAFCE 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.
2. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID.

Issue Status: DRAFT

Last saved by: SARBUR(2022-09-14) Last Plotted: 2022-09-14
Filename: C:\USERS\SARBUR\1. AECOM\GOLDBROOK LAKE + SEAL HARBOUR\FIGURE 5 - GOLDBROOK LAKE + SEAL HARBOUR - SURFACE WATER AND SEDIMENT SAMPLE LOCATION PLAN.DWG

PHASE II ENVIRONMENTAL SITE ASSESSMENT

SURFACE WATER AND SEDIMENT SAMPLE LOCATION PLAN

Nova Scotia Lands Inc., Gold Brook Lake and Seal Harbour Mine Site
Project No.: 60680068 Date: 2022-09-14

AECOM

Figure: 5

LEGEND

- BACKGROUND SOIL SAMPLES
- SAMPLE EXCEEDS GUIDELINES FOR ONE OR MORE OF THE FOLLOWING PARAMETERS: METALS - SELENIUM
- SAMPLE DOES NOT EXCEED GUIDELINES

DRAWING NOTES

1. COORDINATE SYSTEM: NAD83 (CSRS.2010) NOVA SCOTIA ZONE 4.
2. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID.

Issue Status: DRAFT

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Filename: C:\USERS\SARBUR\1. AECOM\GOLDBROOK LAKE + SEAL HARBOUR\FIGURE 6 - GOLDBROOK LAKE + SEAL HARBOUR - BACKGROUND SOIL SAMPLE LOCATION PLAN.DWG

PHASE II ENVIRONMENTAL SITE ASSESSMENT

Nova Scotia Lands Inc., Gold Brook Lake and Seal Harbour Mine Site
Project No.: 60680068 Date: 2022-09-14

BACKGROUND SOIL SAMPLE LOCATION PLAN

AECOM

Figure: 6

LEGEND

- MONITORING WELL
- GROUNDWATER FLOW DIRECTION
- 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.
2. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID.

Issue Status: DRAFT

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PHASE II ENVIRONMENTAL SITE ASSESSMENT

Nova Scotia Lands Inc., Gold Brook Lake and Seal Harbour Mine Site
Project No.: 60680068 Date: 2022-09-14

GROUND WATER SAMPLE LOCATION PLAN

AECOM

Figure: 7

Appendix B. Analytical Results

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 1: Soil Analytical Results
Background Samples - Metals

AECOM

		Sample Location	**BG 1**	**BG 2**	**BG 3**	**BG 4**	**BG 5**
		Sample Date	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022
		Sample Depth (m bgs)	0.2 - 0.3	0 - 0.25	0.03 - 0.28	0.1 - 0.35	0 - 0.03
		Type [0]	N	N	N	N	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units					
Aluminum	15400	mg/kg	5600	1400	2900	8200	1000
Antimony	7.5	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	10	mg/kg	2.1	2.1	4.7	4	2
Barium	350	mg/kg	23	46	5.3	29	5.1
Beryllium	1	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50	<50
Cadmium	1	mg/kg	<0.30	0.4	<0.30	<0.30	<0.30
Chromium	220	mg/kg	7.2	<2.0	4.1	4.5	<2.0
Cobalt	22	mg/kg	1.6	1	<1.0	1.5	<1.0
Copper	250	mg/kg	5.5	4.2	<2.0	4.7	<2.0
Iron	11000	mg/kg	4200	2900	4300	2600	630
Lead	120	mg/kg	16	17	3.4	22	9.5
Lithium	NS	mg/kg	3.2	<2.0	2.6	2	<2.0
Manganese	360	mg/kg	41	170	31	80	16
Mercury	6.6	mg/kg	0.16	0.3	<0.10	0.24	<0.10
Molybdenum	15	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	70	mg/kg	5.5	4.2	4.3	4.9	<2.0
Rubidium	NS	mg/kg	4.1	<2.0	2.8	<2.0	<2.0
Selenium	**1**	mg/kg	0.5	0.92	<0.50	**1.8**	<0.50
Silver	77	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium	9400	mg/kg	6.9	61	<5.0	22	<5.0
Thallium	1	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Tin	9400	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium	23	mg/kg	0.32	<0.10	0.15	0.41	0.14
Vanadium	39	mg/kg	7.8	3.3	7.5	5.8	2
Zinc	300	mg/kg	15	56	7.6	76	<5.0

Notes:

[0] Type: N=normal, FD=field duplicate

[1] 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

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

EXCEEDS CRITERIA

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

		Sample Location	SS22-1	SS22-2	SS22-2B 30-37 CM	SS22-3	SS22-4	SS22-5	SS22-6	SS22-6
		Sample Date	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022
		Sample Depth (m bgs)	0.0 - 0.2	0.05 - 0.35	0.35 - 0.45	0.08 - 0.28	0.08 - 0.23	0.09 - 0.21	0.01 - 0.23	0.03 - 0.40
		Type [0]	N	N	N	N	N	N	N	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units								
Aluminum	**15400**	mg/kg	12000	**20000**	8200	2900	7500	3800	15000	2300
Antimony	**7.5**	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	5.3	<2.0
Arsenic	**10**	mg/kg	**2700**	**6200**	**680**	**25**	**95**	**96**	**5400**	**20**
Barium	350	mg/kg	61	120	38	5.6	15	7.9	60	28
Beryllium	**1**	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	**1**	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0.3
Chromium	220	mg/kg	17	28	8.8	4.2	9.2	7.1	21	2.7
Cobalt	22	mg/kg	<1.0	3.4	2.9	<1.0	<1.0	<1.0	2.5	<1.0
Copper	250	mg/kg	7.7	43	21	2.4	3.4	<2.0	31	5.7
Cyanide	6.5	mg/kg	-	-	-	-	-	-	-	-
Iron	**11000**	mg/kg	**21000**	**39000**	10000	5900	**20000**	10000	**32000**	2400
Lead	**120**	mg/kg	36	44	26	3.5	17	8.3	79	14
Lithium	NS	mg/kg	25	44	11	2.2	5.3	2.2	24	2.1
Manganese	**360**	mg/kg	290	**520**	150	20	30	31	300	37
Mercury	**6.6**	mg/kg	**7.9**	4.1	2.5	<0.10	0.24	<0.10	**8.5**	0.29
Molybdenum	15	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	70	mg/kg	8.2	19	19	<2.0	5	4.5	12	4.7
Rubidium	NS	mg/kg	38	72	19	2.5	3.1	2.7	34	2.3
Selenium	**1**	mg/kg	<0.50	<0.50	0.86	<0.50	**1.1**	<0.50	<0.50	**1.2**
Silver	77	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.61	0.75
Strontium	9400	mg/kg	9.5	16	7.3	<5.0	6.5	<5.0	12	29
Thallium	**1**	mg/kg	0.28	0.52	0.14	<0.10	<0.10	<0.10	0.27	<0.10
Tin	9400	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	<1.0
Uranium	23	mg/kg	0.21	0.37	0.61	0.34	0.26	0.16	0.42	0.12
Vanadium	**39**	mg/kg	20	33	9.8	20	28	33	24	3.6
Zinc	**300**	mg/kg	37	78	41	8.1	18	7.7	41	17

Notes:

[0] Type: N=normal, FD=field duplicate

[1] 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

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

EXCEEDS CRITERIA

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

		Sample Location	SS22-7	SS22-8	SS22-9	SS22-10	SS22-11	SS22-12	SS22-13	SS22-14
		Sample Date	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022
		Sample Depth (m bgs)	0 - 0.30	0.06 - 0.15	0.08 - 0.16	0.09 - 0.14	0.06 - 0.30	0.00 -0.17	0.10 - 0.27	0.12 -0.24
		Type [0]	N	N	N	N	N	N	N	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units								
Aluminum	**15400**	mg/kg	10000	4200	1300	6900	9300	15000	14000	1100
Antimony	**7.5**	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	**10**	mg/kg	**5100**	**20**	9.3	**29**	**840**	**78**	**3600**	**48**
Barium	350	mg/kg	61	<5.0	11	<5.0	37	28	71	<5.0
Beryllium	**1**	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**1.2**	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	**1**	mg/kg	0.77	<0.30	<0.30	<0.30	0.37	<0.30	**1.7**	<0.30
Chromium	220	mg/kg	15	5.3	<2.0	7.2	9.6	19	21	<2.0
Cobalt	22	mg/kg	15	<1.0	<1.0	<1.0	1.7	4.1	21	<1.0
Copper	250	mg/kg	17	<2.0	<2.0	<2.0	12	10	51	<2.0
Cyanide	6.5	mg/kg	-	-	-	-	-	-	<5.0	-
Iron	**11000**	mg/kg	**46000**	**12000**	3500	**21000**	**13000**	**16000**	**31000**	1200
Lead	**120**	mg/kg	43	3.8	4.4	7.3	32	10	**240**	0.96
Lithium	NS	mg/kg	11	2.2	<2.0	<2.0	3.7	13	32	<2.0
Manganese	**360**	mg/kg	**2000**	19	10	19	64	170	**560**	5.3
Mercury	**6.6**	mg/kg	2.4	<0.10	<0.10	0.14	2	0.13	1.5	<0.10
Molybdenum	15	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	70	mg/kg	22	<2.0	<2.0	<2.0	8.3	12	54	<2.0
Rubidium	NS	mg/kg	11	<2.0	<2.0	<2.0	7.4	12	26	<2.0
Selenium	**1**	mg/kg	**1.4**	0.53	<0.50	0.96	**1.4**	0.74	0.65	<0.50
Silver	77	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50
Strontium	9400	mg/kg	29	<5.0	<5.0	<5.0	12	7.9	29	<5.0
Thallium	**1**	mg/kg	0.22	<0.10	<0.10	<0.10	<0.10	<0.10	0.33	<0.10
Tin	9400	mg/kg	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	<1.0
Uranium	23	mg/kg	3	0.25	0.15	0.26	0.29	0.39	0.99	<0.10
Vanadium	**39**	mg/kg	21	21	11	**41**	8.4	23	25	4.9
Zinc	**300**	mg/kg	150	5	5.2	5.7	16	28	**850**	<5.0

Notes:

[0] Type: N=normal, FD=field duplicate

[1] 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

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

EXCEEDS CRITERIA

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

		Sample Location	SS22-15	SS22-15	SS22-16	SS22-17	SS22-18	SS22-19	SS22-20
		Sample Date	7/7/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022
		Sample Depth (m bgs)	0.10-0.17	0.10-0.17	0.03 - 0.15	0.01 -0.17	0.02 - 0.13	0.05 - 0.16	0.05 - 0.10
		Type [0]	N	FD	N	N	N	N	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units							
Aluminum	**15400**	mg/kg	14000	11000	6700	11000	11000	6500	1600
Antimony	**7.5**	mg/kg	4.7	4.8	<2.0	6	**8.9**	<2.0	<2.0
Arsenic	**10**	mg/kg	**1700**	**1800**	**170**	**14000**	**5900**	**140**	8.4
Barium	350	mg/kg	67	68	14	56	65	8.5	<5.0
Beryllium	**1**	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50	<50	<50	<50
Cadmium	**1**	mg/kg	0.35	0.35	<0.30	<0.30	0.3	<0.30	<0.30
Chromium	220	mg/kg	33	33	12	17	17	13	2.2
Cobalt	22	mg/kg	10	9.8	1.7	6	4.3	1.2	<1.0
Copper	250	mg/kg	51	130	3.8	17	21	2.2	2.2
Cyanide	6.5	mg/kg	-	-	-	-	-	-	-
Iron	**11000**	mg/kg	**38000**	**41000**	**15000**	**32000**	**25000**	**28000**	1000
Lead	**120**	mg/kg	**310**	**300**	20	72	110	9	6.1
Lithium	NS	mg/kg	16	14	7.6	19	17	3.2	<2.0
Manganese	**360**	mg/kg	**620**	**650**	65	230	210	48	4.9
Mercury	**6.6**	mg/kg	4.1	3.4	0.26	5.9	**7.8**	0.19	0.13
Molybdenum	15	mg/kg	<2.0	2.5	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	70	mg/kg	18	20	7.8	15	14	5.3	2.1
Rubidium	NS	mg/kg	14	14	4.4	30	22	2.9	<2.0
Selenium	**1**	mg/kg	0.94	0.92	**1.2**	<0.50	0.69	**1.5**	<0.50
Silver	77	mg/kg	0.56	0.54	<0.50	0.59	1.2	<0.50	<0.50
Strontium	9400	mg/kg	11	13	<5.0	11	12	<5.0	<5.0
Thallium	**1**	mg/kg	0.3	0.31	<0.10	0.29	0.3	<0.10	<0.10
Tin	9400	mg/kg	21	25	1	<1.0	<1.0	<1.0	<1.0
Uranium	23	mg/kg	0.45	0.51	0.33	0.32	0.34	0.38	0.18
Vanadium	**39**	mg/kg	27	23	21	19	20	33	2.2
Zinc	**300**	mg/kg	190	210	15	41	32	13	<5.0

Notes:

[0] Type: N=normal, FD=field duplicate

[1] 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

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

EXCEEDS CRITERIA

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

		Sample Location	SM22-1	SM22-2 5-35 CM	SM22-2B 35-45 CM	SM22-3	SM22-4	SM22-5 0-5 CM	SM22-5 0-5 CM	SM22-5B 5-25 CM
		Sample Date	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022
		Sample Depth (m bgs)	0.0 - 0.2	0.05 - 0.35	0.35 - 0.45	0.08 - 0.28	0.08 - 0.23	0.0 - 0.05	0.0 - 0.05	0.05 - 0.25
		Type [0]	N	N	N	N	N	N	FD	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units								
Aluminum	**15400**	mg/kg	6200	7900	7100	7200	8400	5000	5400	8100
Antimony	**7.5**	mg/kg	**40**	4.7	5.3	**17**	2.6	**10**	**23**	5
Arsenic	**10**	mg/kg	**50000**	**6700**	**8700**	**46000**	**4900**	**26000**	**46000**	**20000**
Barium	350	mg/kg	53	110	110	290	35	53	110	66
Beryllium	**1**	mg/kg	<1.0	**1.5**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	2.9	<2.0	<2.0	2.2	<2.0	<2.0	2.1	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	**1**	mg/kg	<0.30	**1.9**	**1.1**	<0.30	<0.30	<0.30	0.37	<0.30
Chromium	220	mg/kg	12	9	11	16	13	5	7.4	15
Cobalt	22	mg/kg	3.5	15	18	1.4	4.2	3.4	6.5	3.7
Copper	250	mg/kg	25	40	33	13	21	17	28	14
Cyanide	6.5	mg/kg	-	-	-	-	-	-	-	-
Iron	**11000**	mg/kg	**70000**	**24000**	**39000**	**63000**	**30000**	**37000**	**60000**	**39000**
Lead	**120**	mg/kg	**320**	120	**180**	**230**	56	87	**250**	100
Lithium	NS	mg/kg	11	12	14	10	8.5	4.4	4.7	15
Manganese	**360**	mg/kg	200	**500**	**380**	170	140	78	160	190
Mercury	**6.6**	mg/kg	5.1	1.1	2.4	**43**	3.7	**9.2**	**12**	**25**
Molybdenum	15	mg/kg	7.3	12	8.6	2.8	3.1	2.4	5.9	<2.0
Nickel	70	mg/kg	12	31	35	6.8	10	5.5	12	12
Rubidium	NS	mg/kg	17	8.3	12	25	7.5	5.5	7.5	24
Selenium	**1**	mg/kg	**1.1**	**1.2**	**2.5**	0.97	0.88	0.53	0.82	<0.50
Silver	77	mg/kg	0.98	<0.50	<0.50	1.7	<0.50	<0.50	0.78	0.91
Strontium	9400	mg/kg	7.7	150	81	8.5	7.7	31	37	19
Thallium	**1**	mg/kg	0.28	**1.6**	**2.9**	0.34	0.11	0.18	0.2	0.22
Tin	9400	mg/kg	9.6	2.9	2.3	12	2	<1.0	<1.0	2.5
Uranium	23	mg/kg	0.36	0.43	0.37	0.25	0.46	0.26	0.26	0.24
Vanadium	**39**	mg/kg	19	20	22	21	20	7.6	11	17
Zinc	**300**	mg/kg	27	110	150	25	25	35	88	44

Notes:

[0] Type: N=normal, FD=field duplicate

[1] 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

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

EXCEEDS CRITERIA

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

		Sample Location	SS22-B06	SS22-B38	SS22-B38B 26-50 CM	SS22-B40	SS22-B47	SS22-C01	SS22-C01	SS22-C22
		Sample Date	7/7/2022	7/7/2022	7/7/2022	7/6/2022	7/6/2022	7/6/2022	7/6/2022	7/6/2022
		Sample Depth (m bgs)	0.00 - 0.23	0.28 - 0.50	0.26 - 0.50	0.02 - 0.30	0.01 - 0.12	0.02 -0.19	0.02 - 0.19	0.0 - 0.35
		Type [0]	N	N	N	N	N	N	FD	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units								
Aluminum	**15400**	mg/kg	1800	12000	10000	10000	9100	12000	5300	10000
Antimony	**7.5**	mg/kg	<2.0	<2.0	<2.0	2.4	<2.0	<2.0	<2.0	7
Arsenic	**10**	mg/kg	**40**	**4000**	**4000**	**5600**	**66**	**410**	**100**	**21000**
Barium	350	mg/kg	14	81	81	56	38	38	21	56
Beryllium	**1**	mg/kg	<1.0	**1.2**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.3
Boron	4300	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	**1**	mg/kg	0.55	0.48	0.38	<0.30	<0.30	<0.30	<0.30	<0.30
Chromium	220	mg/kg	<2.0	17	13	15	17	13	3.8	17
Cobalt	22	mg/kg	<1.0	5.5	6	6.5	5	1.2	<1.0	3
Copper	250	mg/kg	4.1	21	17	42	11	15	8.6	12
Cyanide	6.5	mg/kg	-	3.7	-	-	-	-	-	-
Iron	**11000**	mg/kg	2800	**18000**	**15000**	**22000**	**15000**	11000	4200	**37000**
Lead	**120**	mg/kg	17	39	25	110	6.9	38	25	69
Lithium	NS	mg/kg	<2.0	20	14	18	22	7.2	<2.0	17
Manganese	**360**	mg/kg	16	360	310	250	220	120	53	220
Mercury	**6.6**	mg/kg	0.22	5.6	3.8	4.4	<0.10	5.7	1.9	**52**
Molybdenum	15	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	70	mg/kg	<2.0	19	18	9.2	14	6.9	3.8	9.8
Rubidium	NS	mg/kg	4.2	29	21	26	19	13	3.7	32
Selenium	**1**	mg/kg	0.63	0.7	**2.4**	<0.50	<0.50	**1.4**	**1.6**	<0.50
Silver	77	mg/kg	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	<0.50	0.77
Strontium	9400	mg/kg	13	34	46	8.8	<5.0	13	14	7
Thallium	**1**	mg/kg	<0.10	0.25	0.19	0.2	0.14	0.1	<0.10	0.26
Tin	9400	mg/kg	<1.0	<1.0	<1.0	6.6	<1.0	1.1	<1.0	<1.0
Uranium	23	mg/kg	0.14	1.1	1.2	0.33	0.39	0.74	0.29	0.32
Vanadium	**39**	mg/kg	2.7	19	14	19	19	12	3.8	19
Zinc	**300**	mg/kg	10	150	140	54	31	22	14	31

Notes:

[0] Type: N=normal, FD=field duplicate

[1] 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

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- :Not analyzed or not applicable

NS: No Standard

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

EXCEEDS CRITERIA

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

		Sample Location	SS22-D21	SS22-D21B 50-60 CM	SS22-E31	SS22-E31
		Sample Date	7/7/2022	7/7/2022	7/7/2022	7/7/2022
		Sample Depth (m bgs)	0.00 - 0.30	0.-50-0.60	0.01 - 0.23	0.01 - 0.23
		Type [0]	N	N	N	FD
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units				
Aluminum	**15400**	mg/kg	9000	9200	**17000**	**17000**
Antimony	**7.5**	mg/kg	**10**	7	<2.0	<2.0
Arsenic	**10**	mg/kg	**18000**	**11000**	**3900**	**3800**
Barium	350	mg/kg	56	30	95	92
Beryllium	**1**	mg/kg	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50
Cadmium	**1**	mg/kg	<0.30	0.35	<0.30	0.41
Chromium	220	mg/kg	16	9.9	25	24
Cobalt	22	mg/kg	5	4.3	4.4	7.6
Copper	250	mg/kg	27	19	35	33
Cyanide	6.5	mg/kg	5.7	-	-	-
Iron	**11000**	mg/kg	**36000**	**16000**	**32000**	**31000**
Lead	**120**	mg/kg	94	68	26	32
Lithium	NS	mg/kg	16	7.2	40	40
Manganese	**360**	mg/kg	190	91	**460**	**450**
Mercury	**6.6**	mg/kg	**7.3**	4.9	1.4	1.3
Molybdenum	15	mg/kg	<2.0	<2.0	<2.0	<2.0
Nickel	70	mg/kg	14	11	17	23
Rubidium	NS	mg/kg	27	11	63	60
Selenium	**1**	mg/kg	<0.50	**1.4**	<0.50	<0.50
Silver	77	mg/kg	<0.50	<0.50	<0.50	<0.50
Strontium	9400	mg/kg	11	10	13	12
Thallium	**1**	mg/kg	0.28	0.14	0.46	0.45
Tin	9400	mg/kg	1.2	3.5	<1.0	<1.0
Uranium	23	mg/kg	0.27	0.54	0.35	0.36
Vanadium	**39**	mg/kg	17	11	29	28
Zinc	**300**	mg/kg	51	35	73	110

Notes:

[0] Type: N=normal, FD=field duplicate

[1] 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

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

EXCEEDS CRITERIA

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

		Sample Location	SS22-E35	SS22-E35	SS22-E45
		Sample Date	7/7/2022	7/7/2022	7/6/2022
		Sample Depth (m bgs)	0.00 - 0.15	0.00 - 0.15	0.02 - 0.26
		Type [0]	N	FD	N
Parameter	NS-EQS (T1A)/SO/RES/POT/COARSE [1]	Units			
Aluminum	**15400**	mg/kg	7400	7400	6900
Antimony	**7.5**	mg/kg	**11**	**13**	<2.0
Arsenic	**10**	mg/kg	**31000**	**33000**	**2100**
Barium	350	mg/kg	45	46	74
Beryllium	**1**	mg/kg	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	2.1	<2.0
Boron	4300	mg/kg	<50	<50	<50
Cadmium	**1**	mg/kg	<0.30	<0.30	**1.4**
Chromium	220	mg/kg	14	14	9.4
Cobalt	22	mg/kg	<1.0	1.1	22
Copper	250	mg/kg	4.1	4	50
Cyanide	6.5	mg/kg	-	-	-
Iron	**11000**	mg/kg	**43000**	**46000**	**36000**
Lead	**120**	mg/kg	86	93	**210**
Lithium	NS	mg/kg	11	12	8.8
Manganese	**360**	mg/kg	180	190	**950**
Mercury	**6.6**	mg/kg	**7.7**	**9.7**	0.87
Molybdenum	15	mg/kg	<2.0	<2.0	<2.0
Nickel	70	mg/kg	5.2	5.5	61
Rubidium	NS	mg/kg	21	21	7.5
Selenium	**1**	mg/kg	0.63	0.7	0.75
Silver	77	mg/kg	0.53	0.75	<0.50
Strontium	9400	mg/kg	6.2	6.4	64
Thallium	**1**	mg/kg	0.22	0.26	0.17
Tin	9400	mg/kg	<1.0	<1.0	<1.0
Uranium	23	mg/kg	0.25	0.24	0.84
Vanadium	**39**	mg/kg	15	15	13
Zinc	**300**	mg/kg	18	18	**380**

Notes:

[0] Type: N=normal, FD=field duplicate

[1] 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

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

EXCEEDS CRITERIA

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 2: Tailings Analytical Results
Metals

AECOM

		Sample Location	SS22-T1	SS22-T1	SS22-T1B 46-60 CM
		Sample Date	7/7/2022	7/7/2022	7/7/2022
		Type [0]	N	FD	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units			
Aluminum	15400	mg/kg	12000	12000	10000
Antimony	**7.5**	mg/kg	5.8	3.5	**19**
Arsenic	**10**	mg/kg	**16000**	**8400**	**29000**
Barium	350	mg/kg	70	67	79
Beryllium	1	mg/kg	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	2.9
Boron	4300	mg/kg	<50	<50	<50
Cadmium	1	mg/kg	0.34	0.31	0.35
Chromium	220	mg/kg	18	19	22
Cobalt	22	mg/kg	2.6	3.9	11
Copper	250	mg/kg	70	52	44
Iron	**11000**	mg/kg	**31000**	**28000**	**35000**
Lead	**120**	mg/kg	60	55	**200**
Lithium	NS	mg/kg	22	22	19
Manganese	360	mg/kg	270	290	250
Mercury	**6.6**	mg/kg	2.6	3	**73**
Molybdenum	15	mg/kg	<2.0	<2.0	<2.0
Nickel	70	mg/kg	11	13	26
Rubidium	NS	mg/kg	38	40	32
Selenium	**1**	mg/kg	<0.50	<0.50	0.98
Silver	77	mg/kg	<0.50	<0.50	1.5
Strontium	9400	mg/kg	10	11	11
Thallium	1	mg/kg	0.33	0.32	0.34
Tin	9400	mg/kg	<1.0	<1.0	3.8
Uranium	23	mg/kg	0.26	0.29	0.55
Vanadium	39	mg/kg	19	20	21
Zinc	300	mg/kg	46	60	79

Notes:

[0] Type: N=normal, FD=field duplicate

[1] 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

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

EXCEEDS CRITERIA

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 2: Tailings Analytical Results
Metals

AECOM

		Sample Location	SS22-TD1	SS22-TD2	SS22-TD3 0-45 CM	SS22-TD3B 55-60 CM	SS22-TD4	SS22-TD5	SS22-TD6 0-35 CM	SS22-TD6B 50-63 CM
		Sample Date	7/7/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022
		Type [0]	N	N	N	N	N	N	N	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units								
Aluminum	15400	mg/kg	11000	12000	9700	11000	4000	13000	11000	15000
Antimony	**7.5**	mg/kg	<2.0	5.5	<2.0	6.7	<2.0	<2.0	<2.0	**9.4**
Arsenic	**10**	mg/kg	**600**	**2700**	**5500**	**6000**	**51**	**1000**	**2400**	**5000**
Barium	350	mg/kg	57	64	53	69	25	38	60	83
Beryllium	1	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	1	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0.38
Chromium	220	mg/kg	23	21	15	20	5.3	17	17	22
Cobalt	22	mg/kg	2.3	1.3	<1.0	4.4	<1.0	1.6	1.1	4.4
Copper	250	mg/kg	22	19	3.6	21	9.4	8.8	6.3	41
Iron	**11000**	mg/kg	**13000**	**24000**	**22000**	**21000**	3100	**22000**	**20000**	**30000**
Lead	**120**	mg/kg	18	**130**	19	52	26	26	17	79
Lithium	NS	mg/kg	12	19	20	22	<2.0	6.9	24	28
Manganese	360	mg/kg	150	250	240	290	46	88	290	330
Mercury	**6.6**	mg/kg	**7.4**	**11**	1.8	**6.8**	0.67	2.8	2.3	**8.9**
Molybdenum	15	mg/kg	3.1	<2.0	<2.0	<2.0	2.5	<2.0	<2.0	<2.0
Nickel	70	mg/kg	11	8.5	7.8	18	3	5.7	7.5	16
Rubidium	NS	mg/kg	18	29	32	40	<2.0	9.5	37	47
Selenium	**1**	mg/kg	0.54	<0.50	<0.50	<0.50	0.7	**1.4**	<0.50	<0.50
Silver	77	mg/kg	8.8	0.68	<0.50	<0.50	2	0.99	<0.50	0.56
Strontium	9400	mg/kg	13	13	11	11	24	20	12	8.9
Thallium	1	mg/kg	0.12	0.28	0.23	0.33	<0.10	0.11	0.25	0.4
Tin	9400	mg/kg	1.4	3.3	<1.0	<1.0	<1.0	1.6	<1.0	<1.0
Uranium	23	mg/kg	0.47	0.35	0.22	0.34	0.15	0.41	0.32	0.29
Vanadium	39	mg/kg	16	20	17	21	4.9	24	18	25
Zinc	300	mg/kg	32	37	31	78	16	23	35	69

Notes:

[0] Type: N=normal, FD=field duplicate

[1] NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.

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mbgs: meters below ground surface

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

EXCEEDS CRITERIA

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 3: Waste Rock Analytical Results
Metals

AECOM

	Sample Location	WR-1	WR-2	WR-3	WR-4	WR-5
	Sample Date	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022
	Type [0]	N	N	N	N	N
Parameter	Units					
Acid Extractable Aluminum (Al)	mg/kg	*6500*	*16000*	*9400*	*6700*	*5900*
Acid Extractable Antimony (Sb)	mg/kg	<20	<20	<20	<20	<20
Acid Extractable Arsenic (As)	mg/kg	*17*	*130*	*20*	*1300*	*190*
Acid Extractable Barium (Ba)	mg/kg	<50	*120*	*64*	<50	<50
Acid Extractable Beryllium (Be)	mg/kg	<20	<20	<20	<20	<20
Acid Extractable Boron (B)	mg/kg	<500	<500	<500	<500	<500
Acid Extractable Cadmium (Cd)	mg/kg	<3.0	<3.0	<3.0	<3.0	<3.0
Acid Extractable Chromium (Cr)	mg/kg	<20	*24*	<20	<20	<20
Acid Extractable Cobalt (Co)	mg/kg	<10	<10	<10	<10	<10
Acid Extractable Copper (Cu)	mg/kg	<20	<20	<20	<20	<20
Acid Extractable Iron (Fe)	mg/kg	*12000*	*27000*	*16000*	*10000*	*11000*
Acid Extractable Lead (Pb)	mg/kg	<5.0	*7.8*	<5.0	<5.0	<5.0
Acid Extractable Manganese (Mn)	mg/kg	*160*	*410*	*280*	*370*	*210*
Acid Extractable Mercury (Hg)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Acid Extractable Molybdenum (Mo)	mg/kg	<20	<20	<20	<20	<20
Acid Extractable Nickel (Ni)	mg/kg	<20	*26*	<20	<20	<20
Acid Extractable Selenium (Se)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Acid Extractable Silver (Ag)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Acid Extractable Strontium (Sr)	mg/kg	<50	<50	<50	<50	<50
Acid Extractable Thallium (Tl)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Acid Extractable Tin (Sn)	mg/kg	<20	<20	<20	<20	<20
Acid Extractable Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Acid Extractable Vanadium (V)	mg/kg	<20	*26*	*20*	<20	<20
Acid Extractable Zinc (Zn)	mg/kg	<50	*52*	<50	<50	<50

Notes:

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

yyyy/mm/dd: year/month/day

mg/kg: milligrams per kilogram

Elevated concentrations of aluminum, arsenic, barium, chromium, iron, lead and manganese, nickel, vanadium and zinc are present in waste rock samples collected from the site.

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 4: Groundwater Analytical Results
Metals

AECOM

			Sample Location	**MW17-2**	**MW22A**	**MW23A**	**MW27A**
			Sample Date	7/7/2022	7/6/2022	7/6/2022	7/6/2022
			Type[0]	N	N	N	N
Parameter	NS-EQS[1]	NS-EQS[2] (freshwater)	Units				
Aluminum	NS	***50***	ug/l	***180***	12	***270***	***94***
Antimony	6	90	ug/l	<1.0	<1.0	<1.0	<1.0
Arsenic	**10**	***50***	ug/l	<1.0	***150***	1.5	1.2
Barium	1000	10000	ug/l	13	16	13	7.5
Beryllium	4	1.5	ug/l	<0.10	<0.10	<0.10	<0.10
Bismuth	NS	NS	ug/l	<2.0	<2.0	<2.0	<2.0
Boron	5000	15000	ug/l	<50	<50	<50	<50
Cadmium	5	0.9	ug/l	0.021	<0.010	<0.010	0.024
Calcium	NS	NS	ug/l	3300	12000	1100	6100
Chromium	50	89	ug/l	<1.0	<1.0	2.2	<1.0
Cobalt	3.8	10	ug/l	<0.40	0.69	2.6	1.7
Copper	2000	20	ug/l	2.6	1.7	8.8	5.7
Iron	NS	***3000***	ug/l	<50	***7700***	***8800***	110
Lead	5	10	ug/l	<0.50	<0.50	0.65	<0.50
Magnesium	NS	NS	ug/l	490	3200	660	1800
Manganese	**120**	4300	ug/l	10	**330**	**350**	**260**
Mercury	1	0.26	ug/l	<0.013	<0.013	<0.013	<0.013
Molybdenum	70	730	ug/l	<2.0	<2.0	<2.0	2.8
Nickel	100	250	ug/l	<2.0	<2.0	11	6.2
Phosphorus	NS	NS	ug/l	<100	<100	<100	<100
Potassium	NS	NS	ug/l	820	2400	960	2400
Selenium	50	10	ug/l	<0.50	<0.50	<0.50	<0.50
Silver	NS	2.5	ug/l	0.17	<0.10	<0.10	<0.10
Sodium	NS	NS	ug/l	4900	25000	4600	14000
Strontium	NS	210000	ug/l	32	100	9.8	41
Thallium	2	8	ug/l	<0.10	<0.10	<0.10	<0.10
Tin	2400	NS	ug/l	<2.0	<2.0	<2.0	<2.0
Titanium	NS	NS	ug/l	<2.0	<2.0	9.1	6
Uranium	20	150	ug/l	<0.10	<0.10	<0.10	<0.10
Vanadium	6.2	1200	ug/l	<2.0	<2.0	<2.0	<2.0
Zinc	NS	70	ug/l	<5.0	6.7	23	9.5

Notes:

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

[1] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for an residential property with coarse textured soil and potable groundwater; Table 4A

[2] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Groundwater Discharging to Surface Water (>10 m from Surface Water Body - Freshwater); Table 3

- :Not analyzed or not applicable

NS: No Standard

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

EXCEEDS CRITERIA

AECOM

			Sample Location Sample Date Type[0]	**MW23A** 7/6/2022 N
Parameter	NS-EQS[1]	NS-EQS[2] (Freshwater)	Unit	
Anion Sum	-	-	me/L	0.31
Bicarb. Alkalinity (calc. as CaCO3)	-	-	mg/L	3.9
Calculated TDS	-	-	mg/L	31
Carb. Alkalinity (calc. as CaCO3)	-	-	mg/L	<1.0
Cation Sum	-	-	me/L	0.65
Hardness (CaCO3)	-	-	mg/L	5.4
Ion Balance (% Difference)	-	-	%	35.4
Langelier Index (@ 20C)	-	-	N/A	-4.54
Langelier Index (@ 4C)	-	-	N/A	-4.8
Nitrate (N)	-	130	mg/L	<0.050
Saturation pH (@ 20C)	-	-	N/A	10.7
Saturation pH (@ 4C)	-	-	N/A	10.9
Total Alkalinity (Total as CaCO3)	-	-	mg/L	3.9
Dissolved Chloride (Cl-)	-	1,200	mg/L	8.2
Colour	-	-	TCU	<5.0
Nitrate + Nitrite (N)	-	-	mg/L	<0.050
Nitrite (N)	-	0.6	mg/L	<0.010
Nitrogen (Ammonia Nitrogen)	-	*	mg/L	<0.50
Total Organic Carbon (C)	-	-	mg/L	7.1
Orthophosphate (P)	-	-	mg/L	<0.010
pH	-	-	pH	6.13
Reactive Silica (SiO2)	-	-	mg/L	4
Dissolved Sulphate (SO4)	-	1,280	mg/L	<2.0
Turbidity	-	-	NTU	970
Conductivity	-	-	uS/cm	46

Notes:

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

[1] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for an residential property with coarse textured soil and potable groundwater; Table 4A

[2] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Groundwater Discharging to Surface Water (>10 m from Surface Water Body - Freshwater); Table 3

- :Not analyzed or not applicable

NS: No Standard

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

EXCEEDS CRITERIA

*

pH and temperature dependent; consult CCME fact sheet.

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 5: Surface Water and Porewater Analytical Results
Metals

AECOM

			Sample Location	BG-1	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8	SW-9	SW-9	SW-10	SW-11
			Sample Date	2022/07/14	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/14
			Type[0]	N	N	N	N	N	N	N	N	N	N	FD	N	N
Parameter	NS-EQS[1] (Marine)	NS-EQS[2] (Freshwater)	Unit	**Background Sample**												**Background Sample**
Aluminum	NS	***5***	ug/l	***300***	***680***	***2100***	***300***	***290***	***140***	***99***	***290***	***56***	330	320	***360***	<50
Antimony	250	***9***	ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Arsenic	**12.5**	***5***	ug/l	3.7	***6000***	***7800***	***41***	***15***	***150***	***110***	***130***	***1100***	**270**	**260**	***280***	<10
Barium	500	***1000***	ug/l	2.1	3	23	2.2	2.3	2.5	2.5	2.1	9	3.2	2.6	2.9	<10
Beryllium	100	***0.15***	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0
Bismuth	NS	NS	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<20
Boron	**1200**	***1500***	ug/l	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	**3600**
Cadmium	**0.12**	***0.09***	ug/l	0.011	0.024	0.046	0.011	0.012	<0.010	<0.010	0.012	0.046	0.015	0.013	0.014	<0.10
Calcium	NS	NS	ug/l	550	1200	2000	610	590	4100	3500	610	17000	2400	2400	1500	320000
Chromium	**56**	***8.9***	ug/l	<1.0	1.3	3.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Cobalt	**4**	***1***	ug/l	<0.40	0.67	***1.7***	<0.40	<0.40	<0.40	<0.40	<0.40	***2.4***	<0.40	<0.40	0.45	<4.0
Copper	**2**	***2***	ug/l	<0.50	1.1	***2.2***	<0.50	<0.50	<0.50	<0.50	<0.50	0.55	0.72	0.74	0.76	**<5.0**
Iron	NS	***300***	ug/l	***390***	***4100***	***18000***	***450***	***400***	***1500***	***1500***	***490***	***3700***	1400	1400	***1500***	<500
Lead	**2**	***1***	ug/l	<0.50	***1.4***	***9.4***	<0.50	<0.50	<0.50	<0.50	<0.50	0.55	0.93	0.91	0.94	**<5.0**
Magnesium	NS	NS	ug/l	360	760	1100	360	360	870	840	360	1700	3500	3400	510	980000
Manganese	NS	***430***	ug/l	14	32	150	15	16	57	53	18	750	60	57	61	<20
Mercury	**0.016**	***0.026***	ug/l	<0.013	***0.05***	***0.09***	<0.013	<0.013	<0.013	<0.013	0.013	<0.013	**0.02**	**0.02**	0.02	<0.013
Molybdenum	1000	73	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<20
Nickel	**8.3**	***25***	ug/l	<2.0	<2.0	3	<2.0	<2.0	<2.0	<2.0	<2.0	2.6	<2.0	<2.0	<2.0	**<20**
Phosphorus	NS	NS	ug/l	<100	<100	180	<100	<100	<100	<100	<100	<100	<100	<100	<100	<1000
Potassium	NS	NS	ug/l	240	420	820	230	230	230	180	230	1500	1200	1100	280	300000
Selenium	2	1	ug/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**<5.0**
Silver	1.5	***0.25***	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0
Sodium	NS	NS	ug/l	3500	5700	5800	3700	3700	5100	4600	3600	6300	28000	27000	4200	8200000
Strontium	NS	21000	ug/l	5.1	11	22	5.5	5.4	18	19	5.5	120	27	26	11	6100
Thallium	**0.3**	***0.8***	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	**<1.0**
Tin	NS	NS	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<20
Titanium	NS	NS	ug/l	3.6	15	92	3.8	3	2.1	<2.0	3.1	<2.0	4.3	4.9	5	<20
Uranium	**8.5**	15	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	2.6
Vanadium	**5**	***120***	ug/l	<2.0	<2.0	5.4	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**<20**
Zinc	**10**	***7***	ug/l	5.5	***7.2***	***14***	<5.0	<5.0	5.2	5.7	<5.0	***9.1***	<5.0	<5.0	<5.0	**<50**

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 (Marine)

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

- :Not analyzed or not applicable
NS: No Standard

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

EXCEEDS CRITERIA

EXCEEDS CRITERIA

The following samples are compared to marine guidelines: SW-9, SW-11, SW-12, SW-13, SW-14, PW-4, PW-5. The remaining samples are compared to freshwater guidelines.

AECOM

			Sample Location	SW-12	SW-13	SW-14	SW-18	SW-19	SW 20	SW 20
			Sample Date	2022/07/14	2022/07/14	2022/07/14	2022/07/14	2022/07/14	2022/07/14	2022/07/14
			Type[0]	N	N	N	N	N	N	FD
Parameter	NS-EQS[1] (Marine)	NS-EQS[2] (Freshwater)	Unit							
Aluminum	NS	***5***	ug/l	330	200	130	***330***	***250***	***340***	***330***
Antimony	250	***9***	ug/l	<1.0	<10	<10	<1.0	<1.0	<1.0	<1.0
Arsenic	**12.5**	***5***	ug/l	**240**	**150**	**86**	***280***	***480***	***330***	***330***
Barium	500	***1000***	ug/l	4.3	<10	<10	2.9	2.4	2.9	2.8
Beryllium	100	***0.15***	ug/l	<0.10	<1.0	<1.0	<0.10	<0.10	<0.10	<0.10
Bismuth	NS	NS	ug/l	<2.0	<20	<20	<2.0	<2.0	<2.0	<2.0
Boron	**1200**	***1500***	ug/l	410	**1400**	**2200**	<50	<50	<50	<50
Cadmium	**0.12**	***0.09***	ug/l	0.019	<0.10	<0.10	0.013	0.011	0.017	0.016
Calcium	NS	NS	ug/l	37000	120000	200000	1400	760	930	920
Chromium	**56**	***8.9***	ug/l	<1.0	<10	<10	<1.0	<1.0	<1.0	<1.0
Cobalt	**4**	***1***	ug/l	<0.40	<4.0	<4.0	0.47	<0.40	0.41	0.41
Copper	**2**	***2***	ug/l	0.7	**<5.0**	**<5.0**	0.81	<0.50	0.54	0.51
Iron	NS	***300***	ug/l	1400	720	<500	***1500***	***1700***	***1600***	***1600***
Lead	**2**	***1***	ug/l	0.98	**<5.0**	**<5.0**	0.92	0.67	0.71	0.69
Magnesium	NS	NS	ug/l	110000	380000	600000	520	380	470	440
Manganese	NS	***430***	ug/l	54	38	35	59	27	51	49
Mercury	**0.016**	***0.026***	ug/l	**0.018**	<0.013	<0.013	0.022	0.017	0.017	0.015
Molybdenum	1000	73	ug/l	<2.0	<20	<20	<2.0	<2.0	<2.0	<2.0
Nickel	**8.3**	***25***	ug/l	<2.0	**<20**	**<20**	<2.0	<2.0	<2.0	<2.0
Phosphorus	NS	NS	ug/l	<100	<1000	<1000	<100	<100	<100	<100
Potassium	NS	NS	ug/l	35000	120000	190000	270	270	390	350
Selenium	2	1	ug/l	<0.50	**<5.0**	**<5.0**	<0.50	<0.50	<0.50	<0.50
Silver	1.5	***0.25***	ug/l	<0.10	<1.0	<1.0	<0.10	<0.10	<0.10	<0.10
Sodium	NS	NS	ug/l	910000	3100000	5200000	4200	4000	4200	4100
Strontium	NS	21000	ug/l	660	2200	3600	11	6.8	7.8	7.6
Thallium	**0.3**	***0.8***	ug/l	<0.10	**<1.0**	**<1.0**	<0.10	<0.10	<0.10	<0.10
Tin	NS	NS	ug/l	<2.0	<20	<20	<2.0	<2.0	<2.0	<2.0
Titanium	NS	NS	ug/l	5.7	<20	<20	5.9	4.2	5.1	4.7
Uranium	**8.5**	15	ug/l	0.28	<1.0	1.6	<0.10	<0.10	<0.10	<0.10
Vanadium	**5**	***120***	ug/l	<2.0	**<20**	**<20**	<2.0	<2.0	<2.0	<2.0
Zinc	**10**	***7***	ug/l	5.2	**<50**	**<50**	<5.0	<5.0	6.6	<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 (Marine)

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

- :Not analyzed or not applicable
NS: No Standard

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

EXCEEDS CRITERIA

EXCEEDS CRITERIA

The following samples are compared to marine guidelines: SW-9, SW-11, SW-12, SW-13, SW-14, PW-4, PW-5. The remaining samples are compared to freshwater guidelines.

AECOM

			Sample Location	PW-1	PW-2	PW-3	PW-4	PW-4	PW-5
			Sample Date	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/14
			Type[0]	N	N	N	N	FD	N
Parameter	NS-EQS[1] (Marine)	NS-EQS[2] (Freshwater)	Unit						
Aluminum	NS	***5***	ug/l	***64000***	***170000***	***31000***	21000	22000	40000
Antimony	250	***9***	ug/l	***16***	***24***	**<10**	<10	<10	<10
Arsenic	**12.5**	***5***	ug/l	***65000***	***19000***	***13000***	**6300**	**6400**	**49**
Barium	500	***1000***	ug/l	***1700***	***1100***	170	110	110	120
Beryllium	100	***0.15***	ug/l	***14***	***11***	***3.1***	1.1	1.3	1.7
Bismuth	NS	NS	ug/l	<20	<20	<20	<20	<20	<20
Boron	**1200**	***1500***	ug/l	<500	<500	<500	**3000**	**3100**	<500
Cadmium	**0.12**	***0.09***	ug/l	***5.7***	***5.7***	***1***	**1.1**	**1.1**	**0.19**
Calcium	NS	NS	ug/l	86000	96000	37000	270000	280000	27000
Chromium	**56**	***8.9***	ug/l	***160***	***230***	***90***	41	42	**59**
Cobalt	**4**	***1***	ug/l	***270***	***140***	***30***	**63**	**64**	**17**
Copper	**2**	***2***	ug/l	***38***	***360***	***78***	**56**	**61**	**61**
Iron	NS	***300***	ug/l	***1100000***	***240000***	***55000***	71000	74000	42000
Lead	**2**	***1***	ug/l	***760***	***1700***	***150***	**200**	**200**	**53**
Magnesium	NS	NS	ug/l	20000	69000	10000	800000	820000	79000
Manganese	NS	***430***	ug/l	***14000***	***3500***	***2100***	5000	5000	720
Mercury	**0.016**	***0.026***	ug/l	***14***	***0.16***	***0.15***	**0.63**	**0.36**	**0.048**
Molybdenum	1000	73	ug/l	<20	<20	<20	<20	<20	21
Nickel	**8.3**	***25***	ug/l	***730***	***350***	***91***	**61**	**63**	**56**
Phosphorus	NS	NS	ug/l	14000	40000	1900	2400	2500	2300
Potassium	NS	NS	ug/l	27000	32000	5900	260000	260000	25000
Selenium	2	1	ug/l	**<5.0**	**<5.0**	**<5.0**	**<5.0**	**<5.0**	**<5.0**
Silver	1.5	***0.25***	ug/l	**<1.0**	***1.9***	**<1.0**	<1.0	<1.0	<1.0
Sodium	NS	NS	ug/l	15000	12000	5500	6700000	6800000	580000
Strontium	NS	21000	ug/l	560	890	260	5100	5200	450
Thallium	**0.3**	***0.8***	ug/l	***1.1***	***3.1***	**<1.0**	**1.6**	**1.8**	**<1.0**
Tin	NS	NS	ug/l	40	<20	<20	<20	<20	<20
Titanium	NS	NS	ug/l	1200	4300	1600	550	540	1600
Uranium	**8.5**	15	ug/l	1.9	3	3.2	**11**	**11**	3.3
Vanadium	**5**	***120***	ug/l	110	***220***	***54***	**43**	**46**	**46**
Zinc	**10**	***7***	ug/l	***10000***	***1100***	***290***	**230**	**210**	**120**

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 (Marine)

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

- :Not analyzed or not applicable
NS: No Standard

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

EXCEEDS CRITERIA

EXCEEDS CRITERIA

The following samples are compared to marine guidelines: SW-9, SW-11, SW-12, SW-13, SW-14, PW-4, PW-5. The remaining samples are compared to freshwater guidelines.

AECOM

			Sample Location	SW-1	SW-9	SW-10	SW-11	SW-18	PW-1	PW-4	PW-5
			Sample Date	2022/07/13	2022/07/13	2022/07/13	2022/07/14	2022/07/14	2022/07/13	2022/07/13	2022/07/14
			Type[0]	N	N	N	N	N	N	N	N
Parameter	NS-EQS[1] (Marine)	NS-EQS[2] (Freshwater)	Unit								
Anion Sum	-	-	me/L	0.21	5.9	-	456	-	0.99	373	8.6
Bicarb. Alkalinity (calc. as CaCO3)	-	-	mg/L	<1.0	<1.0	-	97	-	33	72	<1.0
Calculated TDS	-	-	mg/L	27	260	-	26000	-	1300	22000	1100
Carb. Alkalinity (calc. as CaCO3)	-	-	mg/L	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	<1.0
Cation Sum	-	-	me/L	0.53	1.79	-	459	-	46	381	35.3
Hardness (CaCO3)	-	-	mg/L	6.1	20	-	4800	-	300	4000	400
Ion Balance (% Difference)	-	-	%	43.2	53.5	-	0.39	-	95.8	1.08	60.8
Langelier Index (@ 20C)	-	-	N/A	NC	NC	-	0.262	-	-1.81	-0.116	NC
Langelier Index (@ 4C)	-	-	N/A	NC	NC	-	0.024	-	-2.05	-0.353	NC
Nitrate (N)	200	13	mg/L	<0.050	<0.050	-	<0.050	-	<0.050	<0.050	<0.050
Saturation pH (@ 20C)	-	-	N/A	NC	NC	-	7.37	-	8.13	7.6	NC
Saturation pH (@ 4C)	-	-	N/A	NC	NC	-	7.6	-	8.37	7.84	NC
Total Alkalinity (Total as CaCO3)	-	-	mg/L	<2.0	<2.0	-	98	-	33	72	<2.0
Dissolved Chloride (Cl-)	*	120	mg/L	7.5	180	-	15000	-	8	12000	280
Colour	-	-	TCU	160	130	-	7.6	-	200	12	<5.0
Nitrate + Nitrite (N)	-	-	mg/L	<0.050	<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	<0.010
Nitrogen (Ammonia Nitrogen)	***	****	mg/L	<0.050	0.16	-	<0.050	-	<0.50	0.064	<0.050
Total Organic Carbon (C)	-	-	mg/L	25	15	-	3.1	-	170	18	16
Orthophosphate (P)	-	-	mg/L	<2.0	0.059	-	<0.010	-	0.48	0.02	<0.010
pH	***7.0 - 8.7***	***6.5 - 9.0***	pH	***5.22***	***4.24***	-	7.63	-	***6.32***	7.48	***5.1***
Reactive Silica (SiO2)	-	-	mg/L	7.6	1.1	-	<0.50	-	30	2.4	3.5
Dissolved Sulphate (SO4)	-	128	mg/L	<2.0	34	-	2100	-	3	1700	33
Total Cyanide (CN)	0.001	0.005	mg/L	-	<0.0050	<0.0050	-	<0.0050	-	-	-
Turbidity	**	**	NTU	16	1.5	-	0.93	-	>1000	250	960
Conductivity	-	-	uS/cm	64	750	-	45000	-	110	37000	1100

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 (Marine)

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

- :Not analyzed or not applicable

NS: No Standard

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

EXCEEDS CRITERIA

EXCEEDS CRITERIA

The following samples are compared to marine guidelines: SW-9, SW-11, PW-4,PW-5. The remaining samples are compared to freshwater guidelines.

*

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.

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 6: Sediment Analytical Results
Metals

AECOM

			Sample Location	SED-1	SED-2	SED-3	SED-4	SED-5	SED-5	SED-6	SED-7
			Sample Date	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13
			Type [0]	N	N	N	N	N	FD	N	N
Parameter	NS-EQS (T2)/SED [1] (Marine)	NS-EQS (T2)/SED [2] (Freshwater)	Units								
Aluminum	NS	NS	mg/kg	14000	15000	6900	5000	7600	7700	5500	8400
Antimony	25	***25***	mg/kg	2.2	2.3	**34**	15	<2.0	2	<2.0	3.4
Arsenic	**41.6**	***17***	mg/kg	***40000***	***5000***	***57000***	***32000***	***1600***	***1800***	***1200***	***40000***
Barium	130	NS	mg/kg	120	100	54	40	44	48	41	98
Beryllium	NS	NS	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	NS	mg/kg	<2.0	<2.0	2.8	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	NS	NS	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	4.2	3.5	mg/kg	<0.30	<0.30	0.58	<0.30	0.44	0.42	0.34	<0.30
Chromium	160	90	mg/kg	23	23	12	12	11	11	8	10
Cobalt	NS	NS	mg/kg	5.8	3.7	55	1.2	7.7	8.5	11	6.4
Copper	108	197	mg/kg	23	25	52	9.6	22	21	16	7.1
Iron	NS	***43766***	mg/kg	***87000***	***45000***	***62000***	42000	17000	17000	12000	***100000***
Lead	112	***91.3***	mg/kg	37	73	86	***110***	24	22	20	73
Lithium	NS	NS	mg/kg	26	23	13	7.9	12	12	6.6	6.8
Manganese	NS	1100	mg/kg	350	280	170	110	600	730	450	1000
Mercury	0.7	***0.486***	mg/kg	***2.8***	***6.7***	***68***	***7.4***	<1.0	0.26	<10	<10
Molybdenum	NS	NS	mg/kg	<2.0	<2.0	2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	50	***75***	mg/kg	18	14	***91***	4.6	19	21	19	8
Rubidium	NS	NS	mg/kg	45	28	21	16	12	13	5.5	10
Selenium	2	2	mg/kg	<0.50	0.71	0.9	<0.50	0.74	0.66	0.55	1.5
Silver	2.2	***0.5***	mg/kg	<0.50	***1.4***	***4***	***0.67***	<0.50	<0.50	<0.50	***0.56***
Strontium	NS	NS	mg/kg	20	16	11	5.1	40	38	42	12
Thallium	NS	NS	mg/kg	0.37	0.29	0.26	0.22	0.2	0.18	0.14	0.19
Tin	48	NS	mg/kg	<1.0	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	1.3
Uranium	NS	NS	mg/kg	0.26	0.47	0.26	0.2	0.66	0.7	0.64	0.37
Vanadium	NS	NS	mg/kg	24	26	12	12	16	17	13	21
Zinc	271	315	mg/kg	65	62	51	17	91	85	130	21

Notes:

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

[1] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (marine water); Table 2

[2] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (freshwater); Table 2

yyyy/mm/dd: year/month/day

mg/kg: milligrams per kilogram

< :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

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

EXCEEDS CRITERIA

EXCEEDS CRITERIA

The following samples are compared to marine guidelines: SED-9, SED-11, SED-12, SED-13, SED-14. The remaining samples are compared to freshwater guidelines.

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA
Table 6: Sediment Analytical Results
Metals

AECOM

			Sample Location	SED-8	SED-9	SED-10	SED-11	SED-12	SED-13	SED-14	SED 18
			Sample Date	2022/07/13	2022/07/13	2022/07/13	2022/07/14	2022/07/14	2022/07/14	2022/07/14	2022/07/14
			Type [0]	N	N	N	N	N	N	N	N
Parameter	NS-EQS (T2)/SED [1] (Marine)	NS-EQS (T2)/SED [2] (Freshwater)	Units				**Background Sample**				
Aluminum	NS	NS	mg/kg	9900	8900	8000	7900	7800	7900	8700	8700
Antimony	25	***25***	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	**41.6**	***17***	mg/kg	***16000***	**440**	***210***	11	**100**	**270**	**280**	***520***
Barium	130	NS	mg/kg	85	18	9.5	12	19	12	15	9.6
Beryllium	NS	NS	mg/kg	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	NS	NS	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	4.2	3.5	mg/kg	0.44	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Chromium	160	90	mg/kg	19	15	12	12	13	13	15	13
Cobalt	NS	NS	mg/kg	15	9.5	3.4	4.4	5	4.9	5.1	5.2
Copper	108	197	mg/kg	31	12	8.6	4.6	6.5	14	14	25
Iron	NS	***43766***	mg/kg	***110000***	23000	16000	16000	13000	17000	18000	17000
Lead	112	***91.3***	mg/kg	56	13	16	6.2	8.9	15	18	37
Lithium	NS	NS	mg/kg	14	19	15	18	20	19	20	16
Manganese	NS	1100	mg/kg	1000	860	290	200	190	180	190	190
Mercury	0.7	***0.486***	mg/kg	<10	<0.10	0.27	0.1	0.12	0.19	0.18	0.23
Molybdenum	NS	NS	mg/kg	<2.0	<2.0	<2.0	2.2	<2.0	<2.0	<2.0	<2.0
Nickel	50	***75***	mg/kg	22	15	11	13	12	14	15	15
Rubidium	NS	NS	mg/kg	17	12	6.1	6	10	9.4	10	7.8
Selenium	2	2	mg/kg	0.58	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	2.2	***0.5***	mg/kg	***2.7***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium	NS	NS	mg/kg	47	9.5	8.6	13	6.5	16	21	10
Thallium	NS	NS	mg/kg	0.24	0.1	<0.10	<0.10	<0.10	<0.10	0.1	<0.10
Tin	48	NS	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium	NS	NS	mg/kg	2.5	0.58	0.38	0.42	0.67	0.57	0.63	0.91
Vanadium	NS	NS	mg/kg	28	13	8.8	14	15	13	15	9.8
Zinc	271	315	mg/kg	140	48	40	29	28	55	59	70

Notes:

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

[1] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (marine water); Table 2

[2] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (freshwater); Table 2

yyyy/mm/dd: year/month/day

mg/kg: milligrams per kilogram

< :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

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

EXCEEDS CRITERIA

EXCEEDS CRITERIA

The following samples are compared to marine guidelines: SED-9, SED-11, SED-12, SED-13, SED-14. The remaining samples are compared to freshwater guidelines.

Table 6: Sediment Analytical Results
Metals

AECOM

			Sample Location	SED 19	SED-20	SED-20
			Sample Date	2022/07/14	2022/07/14	2022/07/14
			Type [0]	N	N	FD
Parameter	NS-EQS (T2)/SED [1] (Marine)	NS-EQS (T2)/SED [2] (Freshwater)	Units			
Aluminum	NS	NS	mg/kg	20000	8100	8500
Antimony	25	***25***	mg/kg	<2.0	<2.0	<2.0
Arsenic	**41.6**	***17***	mg/kg	***520***	***410***	***500***
Barium	130	NS	mg/kg	83	20	22
Beryllium	NS	NS	mg/kg	<1.0	<1.0	<1.0
Bismuth	NS	NS	mg/kg	<2.0	<2.0	<2.0
Boron	NS	NS	mg/kg	<50	<50	<50
Cadmium	4.2	3.5	mg/kg	<0.30	<0.30	<0.30
Chromium	160	90	mg/kg	27	12	13
Cobalt	NS	NS	mg/kg	2.1	4.4	4.8
Copper	108	197	mg/kg	14	13	13
Iron	NS	***43766***	mg/kg	31000	16000	18000
Lead	112	***91.3***	mg/kg	25	11	12
Lithium	NS	NS	mg/kg	36	15	15
Manganese	NS	1100	mg/kg	450	230	280
Mercury	0.7	***0.486***	mg/kg	***2.7***	0.15	0.17
Molybdenum	NS	NS	mg/kg	<2.0	<2.0	<2.0
Nickel	50	***75***	mg/kg	14	12	12
Rubidium	NS	NS	mg/kg	44	10	11
Selenium	2	2	mg/kg	<0.50	<0.50	<0.50
Silver	2.2	***0.5***	mg/kg	<0.50	<0.50	<0.50
Strontium	NS	NS	mg/kg	16	5.3	5.2
Thallium	NS	NS	mg/kg	0.3	<0.10	<0.10
Tin	48	NS	mg/kg	<1.0	<1.0	<1.0
Uranium	NS	NS	mg/kg	0.63	0.41	0.39
Vanadium	NS	NS	mg/kg	31	14	15
Zinc	271	315	mg/kg	71	28	27

Notes:

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

[1] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (marine water); Table 2

[2] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (freshwater); Table 2

yyyy/mm/dd: year/month/day

mg/kg: milligrams per kilogram

< :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

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

EXCEEDS CRITERIA

EXCEEDS CRITERIA

The following samples are compared to marine guidelines: SED-9, SED-11, SED-12, SED-13, SED-14. The remaining samples are compared to freshwater guidelines.

Appendix C. Laboratory Certificates of Analysis

Your Project #: 60680068
Site Location: SEAL HARBOUR, NS
Your C.O.C. #: 885378-02-01

Attention: Rory McNeil

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

Report Date: 2022/07/20
Report #: R7218514
Version: 1 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2J3195
Received: 2022/07/08, 09:26

Sample Matrix: Soil
Samples Received: 62

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals Solids Acid Extr. ICPMS	9	2022/07/15	2022/07/15	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	38	2022/07/15	2022/07/18	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	10	2022/07/15	2022/07/19	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	1	2022/07/18	2022/07/18	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	4	2022/07/18	2022/07/19	ATL SOP 00058	EPA 6020B R2 m
Moisture	1	N/A	2022/07/14	ATL SOP 00001	OMOE Handbook 1983 m
Grain Size - Calculated	1	N/A	2022/07/14		
Particle Size (Sieve), Sieve/pan 75um	1	N/A	2022/07/14	ATL SOP 00053	ASTM D1140-17 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.
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.

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas - Partial/Rush Results

Your Project #: 60680068
Site Location: SEAL HARBOUR, NS
Your C.O.C. #: 885378-02-01

Attention: Rory McNeil

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

Report Date: 2022/07/20
Report #: R7218514
Version: 1 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2J3195
Received: 2022/07/08, 09:26

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas
20 Jul 2022 14:45:50

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253
==========
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.

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		TDI565		
Sampling Date		2022/07/07		
COC Number		885378-02-01		
Sample #		SS22-D21		
	UNITS	**SS22-D21**	**RDL**	**QC Batch**
Calculated Parameters				
Grain Size	N/A	COARSE	N/A	8105871
Inorganics				
Moisture	%	29	1.0	8105801
Sieve - #200 (>0.075mm)	%	90	1	8108292
Sieve - Pan	%	10	1	8108292

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

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI503	TDI504	TDI505	TDI506	TDI507		
Sampling Date		2022/07/05	2022/07/05	2022/07/05	2022/07/05	2022/07/05		
COC Number		885378-02-01	885378-02-01	885378-02-01	885378-02-01	885378-02-01		
Sample #		BG 1	BG 2	BG 3	BG 4	BG 5		
	UNITS	**BG 1**	**BG 2**	**BG 3**	**BG 4**	**BG 5**	**RDL**	**QC Batch**
Metals								
Acid Extractable Aluminum (Al)	mg/kg	5600	1400	2900	8200	1000	10	8110958
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8110958
Acid Extractable Arsenic (As)	mg/kg	2.1	2.1	4.7	4.0	2.0	2.0	8110958
Acid Extractable Barium (Ba)	mg/kg	23	46	5.3	29	5.1	5.0	8110958
Acid Extractable Beryllium (Be)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8110958
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8110958
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	<50	50	8110958
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.40	<0.30	<0.30	<0.30	0.30	8110958
Acid Extractable Chromium (Cr)	mg/kg	7.2	<2.0	4.1	4.5	<2.0	2.0	8110958
Acid Extractable Cobalt (Co)	mg/kg	1.6	1.0	<1.0	1.5	<1.0	1.0	8110958
Acid Extractable Copper (Cu)	mg/kg	5.5	4.2	<2.0	4.7	<2.0	2.0	8110958
Acid Extractable Iron (Fe)	mg/kg	4200	2900	4300	2600	630	50	8110958
Acid Extractable Lead (Pb)	mg/kg	16	17	3.4	22	9.5	0.50	8110958
Acid Extractable Lithium (Li)	mg/kg	3.2	<2.0	2.6	2.0	<2.0	2.0	8110958
Acid Extractable Manganese (Mn)	mg/kg	41	170	31	80	16	2.0	8110958
Acid Extractable Mercury (Hg)	mg/kg	0.16	0.30	<0.10	0.24	<0.10	0.10	8110958
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8110958
Acid Extractable Nickel (Ni)	mg/kg	5.5	4.2	4.3	4.9	<2.0	2.0	8110958
Acid Extractable Rubidium (Rb)	mg/kg	4.1	<2.0	2.8	<2.0	<2.0	2.0	8110958
Acid Extractable Selenium (Se)	mg/kg	0.50	0.92	<0.50	1.8	<0.50	0.50	8110958
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8110958
Acid Extractable Strontium (Sr)	mg/kg	6.9	61	<5.0	22	<5.0	5.0	8110958
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8110958
Acid Extractable Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8110958
Acid Extractable Uranium (U)	mg/kg	0.32	<0.10	0.15	0.41	0.14	0.10	8110958
Acid Extractable Vanadium (V)	mg/kg	7.8	3.3	7.5	5.8	2.0	2.0	8110958
Acid Extractable Zinc (Zn)	mg/kg	15	56	7.6	76	<5.0	5.0	8110958

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI508		TDI509		TDI510		TDI511		
Sampling Date		2022/07/05		2022/07/05		2022/07/05		2022/07/05		
COC Number		885378-02-01		885378-02-01		885378-02-01		885378-02-01		
Sample #		SS22-1		SS22-2		SS22-2B 30-37 CM		SS22-3		
	UNITS	**SS22-1**	**RDL**	**SS22-2**	**RDL**	**SS22-2B 30-37 CM**	**RDL**	**SS22-3**	**RDL**	**QC Batch**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	12000	10	20000	10	8200	10	2900	10	8110958
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8110958
Acid Extractable Arsenic (As)	mg/kg	2700	20	6200	200	680	20	25	2.0	8110958
Acid Extractable Barium (Ba)	mg/kg	61	5.0	120	5.0	38	5.0	5.6	5.0	8110958
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8110958
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8110958
Acid Extractable Boron (B)	mg/kg	<50	50	<50	50	<50	50	<50	50	8110958
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	<0.30	0.30	<0.30	0.30	<0.30	0.30	8110958
Acid Extractable Chromium (Cr)	mg/kg	17	2.0	28	2.0	8.8	2.0	4.2	2.0	8110958
Acid Extractable Cobalt (Co)	mg/kg	<1.0	1.0	3.4	1.0	2.9	1.0	<1.0	1.0	8110958
Acid Extractable Copper (Cu)	mg/kg	7.7	2.0	43	2.0	21	2.0	2.4	2.0	8110958
Acid Extractable Iron (Fe)	mg/kg	21000	50	39000	50	10000	50	5900	50	8110958
Acid Extractable Lead (Pb)	mg/kg	36	0.50	44	0.50	26	0.50	3.5	0.50	8110958
Acid Extractable Lithium (Li)	mg/kg	25	2.0	44	2.0	11	2.0	2.2	2.0	8110958
Acid Extractable Manganese (Mn)	mg/kg	290	2.0	520	2.0	150	2.0	20	2.0	8110958
Acid Extractable Mercury (Hg)	mg/kg	7.9	0.10	4.1	0.10	2.5	0.10	<0.10	0.10	8110958
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8110958
Acid Extractable Nickel (Ni)	mg/kg	8.2	2.0	19	2.0	19	2.0	<2.0	2.0	8110958
Acid Extractable Rubidium (Rb)	mg/kg	38	2.0	72	2.0	19	2.0	2.5	2.0	8110958
Acid Extractable Selenium (Se)	mg/kg	<0.50	0.50	<0.50	0.50	0.86	0.50	<0.50	0.50	8110958
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8110958
Acid Extractable Strontium (Sr)	mg/kg	9.5	5.0	16	5.0	7.3	5.0	<5.0	5.0	8110958
Acid Extractable Thallium (Tl)	mg/kg	0.28	0.10	0.52	0.10	0.14	0.10	<0.10	0.10	8110958
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8110958
Acid Extractable Uranium (U)	mg/kg	0.21	0.10	0.37	0.10	0.61	0.10	0.34	0.10	8110958
Acid Extractable Vanadium (V)	mg/kg	20	2.0	33	2.0	9.8	2.0	20	2.0	8110958
Acid Extractable Zinc (Zn)	mg/kg	37	5.0	78	5.0	41	5.0	8.1	5.0	8110958

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI512	TDI513	TDI514		TDI515		TDI516		
Sampling Date		2022/07/05	2022/07/05	2022/07/05		2022/07/05		2022/07/05		
COC Number		885378-02-01	885378-02-01	885378-02-01		885378-02-01		885378-02-01		
Sample #		SS22-4	SS22-5	SS22-062		DUP 1		SM22-1		
	UNITS	**SS22-4**	**SS22-5**	**SS22-062**	**RDL**	**DUP 1**	**RDL**	**SM22-1**	**RDL**	**QC Batch**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	7500	3800	2300	10	5400	10	6200	10	8110958
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	2.0	23	2.0	40	2.0	8110958
Acid Extractable Arsenic (As)	mg/kg	95	96	20	2.0	46000	200	50000	2000	8110958
Acid Extractable Barium (Ba)	mg/kg	15	7.9	28	5.0	110	5.0	53	5.0	8110958
Acid Extractable Beryllium (Be)	mg/kg	<1.0	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8110958
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	2.0	2.1	2.0	2.9	2.0	8110958
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	50	<50	50	<50	50	8110958
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	0.30	0.30	0.37	0.30	<0.30	0.30	8110958
Acid Extractable Chromium (Cr)	mg/kg	9.2	7.1	2.7	2.0	7.4	2.0	12	2.0	8110958
Acid Extractable Cobalt (Co)	mg/kg	<1.0	<1.0	<1.0	1.0	6.5	1.0	3.5	1.0	8110958
Acid Extractable Copper (Cu)	mg/kg	3.4	<2.0	5.7	2.0	28	2.0	25	2.0	8110958
Acid Extractable Iron (Fe)	mg/kg	20000	10000	2400	50	60000	50	70000	50	8110958
Acid Extractable Lead (Pb)	mg/kg	17	8.3	14	0.50	250	0.50	320	0.50	8110958
Acid Extractable Lithium (Li)	mg/kg	5.3	2.2	2.1	2.0	4.7	2.0	11	2.0	8110958
Acid Extractable Manganese (Mn)	mg/kg	30	31	37	2.0	160	2.0	200	2.0	8110958
Acid Extractable Mercury (Hg)	mg/kg	0.24	<0.10	0.29	0.10	12	0.10	5.1	0.10	8110958
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	2.0	5.9	2.0	7.3	2.0	8110958
Acid Extractable Nickel (Ni)	mg/kg	5.0	4.5	4.7	2.0	12	2.0	12	2.0	8110958
Acid Extractable Rubidium (Rb)	mg/kg	3.1	2.7	2.3	2.0	7.5	2.0	17	2.0	8110958
Acid Extractable Selenium (Se)	mg/kg	1.1	<0.50	1.2	0.50	0.82	0.50	1.1	0.50	8110958
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	0.75	0.50	0.78	0.50	0.98	0.50	8110958
Acid Extractable Strontium (Sr)	mg/kg	6.5	<5.0	29	5.0	37	5.0	7.7	5.0	8110958
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	<0.10	0.10	0.20	0.10	0.28	0.10	8110958
Acid Extractable Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	1.0	<1.0	1.0	9.6	1.0	8110958
Acid Extractable Uranium (U)	mg/kg	0.26	0.16	0.12	0.10	0.26	0.10	0.36	0.10	8110958
Acid Extractable Vanadium (V)	mg/kg	28	33	3.6	2.0	11	2.0	19	2.0	8110958
Acid Extractable Zinc (Zn)	mg/kg	18	7.7	17	5.0	88	5.0	27	5.0	8110958

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI517		TDI518		TDI519		
Sampling Date		2022/07/05		2022/07/05		2022/07/05		
COC Number		885378-02-01		885378-02-01		885378-02-01		
Sample #		SM22-2 5-35 CM		SM22-2B 35-45 CM		SM22-3		
	UNITS	**SM22-2 5-35 CM**	**QC Batch**	**SM22-2B 35-45 CM**	**QC Batch**	**SM22-3**	**RDL**	**QC Batch**
Metals								
Acid Extractable Aluminum (Al)	mg/kg	7900	8110958	7100	8110950	7200	10	8111052
Acid Extractable Antimony (Sb)	mg/kg	4.7	8110958	5.3	8110950	17	2.0	8111052
Acid Extractable Arsenic (As)	mg/kg	6700	8110958	8700	8110950	46000	200	8111052
Acid Extractable Barium (Ba)	mg/kg	110	8110958	110	8110950	290	5.0	8111052
Acid Extractable Beryllium (Be)	mg/kg	1.5	8110958	<1.0	8110950	<1.0	1.0	8111052
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	8110958	<2.0	8110950	2.2	2.0	8111052
Acid Extractable Boron (B)	mg/kg	<50	8110958	<50	8110950	<50	50	8111052
Acid Extractable Cadmium (Cd)	mg/kg	1.9	8110958	1.1	8110950	<0.30	0.30	8111052
Acid Extractable Chromium (Cr)	mg/kg	9.0	8110958	11	8110950	16	2.0	8111052
Acid Extractable Cobalt (Co)	mg/kg	15	8110958	18	8110950	1.4	1.0	8111052
Acid Extractable Copper (Cu)	mg/kg	40	8110958	33	8110950	13	2.0	8111052
Acid Extractable Iron (Fe)	mg/kg	24000	8110958	39000	8110950	63000	50	8111052
Acid Extractable Lead (Pb)	mg/kg	120	8110958	180	8110950	230	0.50	8111052
Acid Extractable Lithium (Li)	mg/kg	12	8110958	14	8110950	10	2.0	8111052
Acid Extractable Manganese (Mn)	mg/kg	500	8110958	380	8110950	170	2.0	8111052
Acid Extractable Mercury (Hg)	mg/kg	1.1	8110958	2.4	8110950	43	0.10	8111052
Acid Extractable Molybdenum (Mo)	mg/kg	12	8110958	8.6	8110950	2.8	2.0	8111052
Acid Extractable Nickel (Ni)	mg/kg	31	8110958	35	8110950	6.8	2.0	8111052
Acid Extractable Rubidium (Rb)	mg/kg	8.3	8110958	12	8110950	25	2.0	8111052
Acid Extractable Selenium (Se)	mg/kg	1.2	8110958	2.5	8110950	0.97	0.50	8111052
Acid Extractable Silver (Ag)	mg/kg	<0.50	8110958	<0.50	8110950	1.7	0.50	8111052
Acid Extractable Strontium (Sr)	mg/kg	150	8110958	81	8110950	8.5	5.0	8111052
Acid Extractable Thallium (Tl)	mg/kg	1.6	8110958	2.9	8110950	0.34	0.10	8111052
Acid Extractable Tin (Sn)	mg/kg	2.9	8110958	2.3	8110950	12	1.0	8111052
Acid Extractable Uranium (U)	mg/kg	0.43	8110958	0.37	8110950	0.25	0.10	8111052
Acid Extractable Vanadium (V)	mg/kg	20	8110958	22	8110950	21	2.0	8111052
Acid Extractable Zinc (Zn)	mg/kg	110	8110958	150	8110950	25	5.0	8111052

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI520		TDI521		TDI522		
Sampling Date		2022/07/05		2022/07/05		2022/07/05		
COC Number		885378-02-01		885378-02-01		885378-02-01		
Sample #		SM22-4		SM22-5 0-5 CM		SM22-5B 5-25 CM		
	UNITS	**SM22-4**	**QC Batch**	**SM22-5 0-5 CM**	**QC Batch**	**SM22-5B 5-25CM**	**RDL**	**QC Batch**
Metals								
Acid Extractable Aluminum (Al)	mg/kg	8400	8114318	5000	8110950	8100	10	8110958
Acid Extractable Antimony (Sb)	mg/kg	2.6	8114318	10	8110950	5.0	2.0	8110958
Acid Extractable Arsenic (As)	mg/kg	4900	8114318	26000	8110950	20000	200	8110958
Acid Extractable Barium (Ba)	mg/kg	35	8114318	53	8110950	66	5.0	8110958
Acid Extractable Beryllium (Be)	mg/kg	<1.0	8114318	<1.0	8110950	<1.0	1.0	8110958
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	8114318	<2.0	8110950	<2.0	2.0	8110958
Acid Extractable Boron (B)	mg/kg	<50	8114318	<50	8110950	<50	50	8110958
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	8114318	<0.30	8110950	<0.30	0.30	8110958
Acid Extractable Chromium (Cr)	mg/kg	13	8114318	5.0	8110950	15	2.0	8110958
Acid Extractable Cobalt (Co)	mg/kg	4.2	8114318	3.4	8110950	3.7	1.0	8110958
Acid Extractable Copper (Cu)	mg/kg	21	8114318	17	8110950	14	2.0	8110958
Acid Extractable Iron (Fe)	mg/kg	30000	8114318	37000	8110950	39000	50	8110958
Acid Extractable Lead (Pb)	mg/kg	56	8114318	87	8110950	100	0.50	8110958
Acid Extractable Lithium (Li)	mg/kg	8.5	8114318	4.4	8110950	15	2.0	8110958
Acid Extractable Manganese (Mn)	mg/kg	140	8114318	78	8110950	190	2.0	8110958
Acid Extractable Mercury (Hg)	mg/kg	3.7	8114318	9.2	8110950	25	0.10	8110958
Acid Extractable Molybdenum (Mo)	mg/kg	3.1	8114318	2.4	8110950	<2.0	2.0	8110958
Acid Extractable Nickel (Ni)	mg/kg	10	8114318	5.5	8110950	12	2.0	8110958
Acid Extractable Rubidium (Rb)	mg/kg	7.5	8114318	5.5	8110950	24	2.0	8110958
Acid Extractable Selenium (Se)	mg/kg	0.88	8114318	0.53	8110950	<0.50	0.50	8110958
Acid Extractable Silver (Ag)	mg/kg	<0.50	8114318	<0.50	8110950	0.91	0.50	8110958
Acid Extractable Strontium (Sr)	mg/kg	7.7	8114318	31	8110950	19	5.0	8110958
Acid Extractable Thallium (Tl)	mg/kg	0.11	8114318	0.18	8110950	0.22	0.10	8110958
Acid Extractable Tin (Sn)	mg/kg	2.0	8114318	<1.0	8110950	2.5	1.0	8110958
Acid Extractable Uranium (U)	mg/kg	0.46	8114318	0.26	8110950	0.24	0.10	8110958
Acid Extractable Vanadium (V)	mg/kg	20	8114318	7.6	8110950	17	2.0	8110958
Acid Extractable Zinc (Zn)	mg/kg	25	8114318	35	8110950	44	5.0	8110958

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI523		TDI524			TDI525		
Sampling Date		2022/07/05		2022/07/05			2022/07/05		
COC Number		885378-02-01		885378-02-01			885378-02-01		
Sample #		SS22-6		SS22-7			SS22-8		
	UNITS	**SS22-6**	**QC Batch**	**SS22-7**	**RDL**	**QC Batch**	**SS22-8**	**RDL**	**QC Batch**
Metals									
Acid Extractable Aluminum (Al)	mg/kg	15000	8114318	10000	10	8111052	4200	10	8110950
Acid Extractable Antimony (Sb)	mg/kg	5.3	8114318	<2.0	2.0	8111052	<2.0	2.0	8110950
Acid Extractable Arsenic (As)	mg/kg	5400	8114318	5100	200	8111052	20	2.0	8110950
Acid Extractable Barium (Ba)	mg/kg	60	8114318	61	5.0	8111052	<5.0	5.0	8110950
Acid Extractable Beryllium (Be)	mg/kg	<1.0	8114318	<1.0	1.0	8111052	<1.0	1.0	8110950
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	8114318	<2.0	2.0	8111052	<2.0	2.0	8110950
Acid Extractable Boron (B)	mg/kg	<50	8114318	<50	50	8111052	<50	50	8110950
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	8114318	0.77	0.30	8111052	<0.30	0.30	8110950
Acid Extractable Chromium (Cr)	mg/kg	21	8114318	15	2.0	8111052	5.3	2.0	8110950
Acid Extractable Cobalt (Co)	mg/kg	2.5	8114318	15	1.0	8111052	<1.0	1.0	8110950
Acid Extractable Copper (Cu)	mg/kg	31	8114318	17	2.0	8111052	<2.0	2.0	8110950
Acid Extractable Iron (Fe)	mg/kg	32000	8114318	46000	50	8111052	12000	50	8110950
Acid Extractable Lead (Pb)	mg/kg	79	8114318	43	0.50	8111052	3.8	0.50	8110950
Acid Extractable Lithium (Li)	mg/kg	24	8114318	11	2.0	8111052	2.2	2.0	8110950
Acid Extractable Manganese (Mn)	mg/kg	300	8114318	2000	2.0	8111052	19	2.0	8110950
Acid Extractable Mercury (Hg)	mg/kg	8.5	8114318	2.4	0.10	8111052	<0.10	0.10	8110950
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	8114318	<2.0	2.0	8111052	<2.0	2.0	8110950
Acid Extractable Nickel (Ni)	mg/kg	12	8114318	22	2.0	8111052	<2.0	2.0	8110950
Acid Extractable Rubidium (Rb)	mg/kg	34	8114318	11	2.0	8111052	<2.0	2.0	8110950
Acid Extractable Selenium (Se)	mg/kg	<0.50	8114318	1.4	0.50	8111052	0.53	0.50	8110950
Acid Extractable Silver (Ag)	mg/kg	0.61	8114318	<0.50	0.50	8111052	<0.50	0.50	8110950
Acid Extractable Strontium (Sr)	mg/kg	12	8114318	29	5.0	8111052	<5.0	5.0	8110950
Acid Extractable Thallium (Tl)	mg/kg	0.27	8114318	0.22	0.10	8111052	<0.10	0.10	8110950
Acid Extractable Tin (Sn)	mg/kg	1.6	8114318	1.7	1.0	8111052	<1.0	1.0	8110950
Acid Extractable Uranium (U)	mg/kg	0.42	8114318	3.0	0.10	8111052	0.25	0.10	8110950
Acid Extractable Vanadium (V)	mg/kg	24	8114318	21	2.0	8111052	21	2.0	8110950
Acid Extractable Zinc (Zn)	mg/kg	41	8114318	150	5.0	8111052	5.0	5.0	8110950

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI526		TDI527			TDI528		
Sampling Date		2022/07/05		2022/07/05			2022/07/06		
COC Number		885378-02-01		885378-02-01			885378-02-01		
Sample #		SS22-9		SS22-10			SS22-E45		
	UNITS	**SS22-9**	**QC Batch**	**SS22-10**	**RDL**	**QC Batch**	**SS22-E45**	**RDL**	**QC Batch**
Metals									
Acid Extractable Aluminum (Al)	mg/kg	1300	8110958	6900	10	8111052	6900	10	8110950
Acid Extractable Antimony (Sb)	mg/kg	<2.0	8110958	<2.0	2.0	8111052	<2.0	2.0	8110950
Acid Extractable Arsenic (As)	mg/kg	9.3	8110958	29	2.0	8111052	2100	20	8110950
Acid Extractable Barium (Ba)	mg/kg	11	8110958	<5.0	5.0	8111052	74	5.0	8110950
Acid Extractable Beryllium (Be)	mg/kg	<1.0	8110958	<1.0	1.0	8111052	<1.0	1.0	8110950
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	8110958	<2.0	2.0	8111052	<2.0	2.0	8110950
Acid Extractable Boron (B)	mg/kg	<50	8110958	<50	50	8111052	<50	50	8110950
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	8110958	<0.30	0.30	8111052	1.4	0.30	8110950
Acid Extractable Chromium (Cr)	mg/kg	<2.0	8110958	7.2	2.0	8111052	9.4	2.0	8110950
Acid Extractable Cobalt (Co)	mg/kg	<1.0	8110958	<1.0	1.0	8111052	22	1.0	8110950
Acid Extractable Copper (Cu)	mg/kg	<2.0	8110958	<2.0	2.0	8111052	50	2.0	8110950
Acid Extractable Iron (Fe)	mg/kg	3500	8110958	21000	50	8111052	36000	50	8110950
Acid Extractable Lead (Pb)	mg/kg	4.4	8110958	7.3	0.50	8111052	210	0.50	8110950
Acid Extractable Lithium (Li)	mg/kg	<2.0	8110958	<2.0	2.0	8111052	8.8	2.0	8110950
Acid Extractable Manganese (Mn)	mg/kg	10	8110958	19	2.0	8111052	950	2.0	8110950
Acid Extractable Mercury (Hg)	mg/kg	<0.10	8110958	0.14	0.10	8111052	0.87	0.10	8110950
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	8110958	<2.0	2.0	8111052	<2.0	2.0	8110950
Acid Extractable Nickel (Ni)	mg/kg	<2.0	8110958	<2.0	2.0	8111052	61	2.0	8110950
Acid Extractable Rubidium (Rb)	mg/kg	<2.0	8110958	<2.0	2.0	8111052	7.5	2.0	8110950
Acid Extractable Selenium (Se)	mg/kg	<0.50	8110958	0.96	0.50	8111052	0.75	0.50	8110950
Acid Extractable Silver (Ag)	mg/kg	<0.50	8110958	<0.50	0.50	8111052	<0.50	0.50	8110950
Acid Extractable Strontium (Sr)	mg/kg	<5.0	8110958	<5.0	5.0	8111052	64	5.0	8110950
Acid Extractable Thallium (Tl)	mg/kg	<0.10	8110958	<0.10	0.10	8111052	0.17	0.10	8110950
Acid Extractable Tin (Sn)	mg/kg	<1.0	8110958	<1.0	1.0	8111052	<1.0	1.0	8110950
Acid Extractable Uranium (U)	mg/kg	0.15	8110958	0.26	0.10	8111052	0.84	0.10	8110950
Acid Extractable Vanadium (V)	mg/kg	11	8110958	41	2.0	8111052	13	2.0	8110950
Acid Extractable Zinc (Zn)	mg/kg	5.2	8110958	5.7	5.0	8111052	380	5.0	8110950

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI529			TDI530			TDI531		
Sampling Date		2022/07/06			2022/07/06			2022/07/06		
COC Number		885378-02-01			885378-02-01			885378-02-01		
Sample #		SS22-C22			SS22-C01			SS22-B40		
	UNITS	**SS22-C22**	**RDL**	**QC Batch**	**SS22-C01**	**RDL**	**QC Batch**	**SS22-B40**	**RDL**	**QC Batch**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	10000	10	8110950	12000	10	8111052	10000	10	8110950
Acid Extractable Antimony (Sb)	mg/kg	7.0	2.0	8110950	<2.0	2.0	8111052	2.4	2.0	8110950
Acid Extractable Arsenic (As)	mg/kg	21000	200	8110950	410	2.0	8111052	5600	200	8110950
Acid Extractable Barium (Ba)	mg/kg	56	5.0	8110950	38	5.0	8111052	56	5.0	8110950
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	8110950	<1.0	1.0	8111052	<1.0	1.0	8110950
Acid Extractable Bismuth (Bi)	mg/kg	2.3	2.0	8110950	<2.0	2.0	8111052	<2.0	2.0	8110950
Acid Extractable Boron (B)	mg/kg	<50	50	8110950	<50	50	8111052	<50	50	8110950
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	8110950	<0.30	0.30	8111052	<0.30	0.30	8110950
Acid Extractable Chromium (Cr)	mg/kg	17	2.0	8110950	13	2.0	8111052	15	2.0	8110950
Acid Extractable Cobalt (Co)	mg/kg	3.0	1.0	8110950	1.2	1.0	8111052	6.5	1.0	8110950
Acid Extractable Copper (Cu)	mg/kg	12	2.0	8110950	15	2.0	8111052	42	2.0	8110950
Acid Extractable Iron (Fe)	mg/kg	37000	50	8110950	11000	50	8111052	22000	50	8110950
Acid Extractable Lead (Pb)	mg/kg	69	0.50	8110950	38	0.50	8111052	110	0.50	8110950
Acid Extractable Lithium (Li)	mg/kg	17	2.0	8110950	7.2	2.0	8111052	18	2.0	8110950
Acid Extractable Manganese (Mn)	mg/kg	220	2.0	8110950	120	2.0	8111052	250	2.0	8110950
Acid Extractable Mercury (Hg)	mg/kg	52	1.0	8110950	5.7	0.10	8111052	4.4	0.10	8110950
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	8110950	<2.0	2.0	8111052	<2.0	2.0	8110950
Acid Extractable Nickel (Ni)	mg/kg	9.8	2.0	8110950	6.9	2.0	8111052	9.2	2.0	8110950
Acid Extractable Rubidium (Rb)	mg/kg	32	2.0	8110950	13	2.0	8111052	26	2.0	8110950
Acid Extractable Selenium (Se)	mg/kg	<0.50	0.50	8110950	1.4	0.50	8111052	<0.50	0.50	8110950
Acid Extractable Silver (Ag)	mg/kg	0.77	0.50	8110950	<0.50	0.50	8111052	0.52	0.50	8110950
Acid Extractable Strontium (Sr)	mg/kg	7.0	5.0	8110950	13	5.0	8111052	8.8	5.0	8110950
Acid Extractable Thallium (Tl)	mg/kg	0.26	0.10	8110950	0.10	0.10	8111052	0.20	0.10	8110950
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	8110950	1.1	1.0	8111052	6.6	1.0	8110950
Acid Extractable Uranium (U)	mg/kg	0.32	0.10	8110950	0.74	0.10	8111052	0.33	0.10	8110950
Acid Extractable Vanadium (V)	mg/kg	19	2.0	8110950	12	2.0	8111052	19	2.0	8110950
Acid Extractable Zinc (Zn)	mg/kg	31	5.0	8110950	22	5.0	8111052	54	5.0	8110950

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI532	TDI533		TDI534		
Sampling Date		2022/07/06	2022/07/06		2022/07/07		
COC Number		885378-02-01	885378-02-01		885378-02-01		
Sample #		SS22-B47	DUP 2		SS22-B06		
	UNITS	**SS22-B47**	**DUP 2**	**QC Batch**	**SS22-B06**	**RDL**	**QC Batch**
Metals							
Acid Extractable Aluminum (Al)	mg/kg	9100	5300	8111052	1800	10	8114318
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	8111052	<2.0	2.0	8114318
Acid Extractable Arsenic (As)	mg/kg	66	100	8111052	40	2.0	8114318
Acid Extractable Barium (Ba)	mg/kg	38	21	8111052	14	5.0	8114318
Acid Extractable Beryllium (Be)	mg/kg	<1.0	<1.0	8111052	<1.0	1.0	8114318
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	8111052	<2.0	2.0	8114318
Acid Extractable Boron (B)	mg/kg	<50	<50	8111052	<50	50	8114318
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	8111052	0.55	0.30	8114318
Acid Extractable Chromium (Cr)	mg/kg	17	3.8	8111052	<2.0	2.0	8114318
Acid Extractable Cobalt (Co)	mg/kg	5.0	<1.0	8111052	<1.0	1.0	8114318
Acid Extractable Copper (Cu)	mg/kg	11	8.6	8111052	4.1	2.0	8114318
Acid Extractable Iron (Fe)	mg/kg	15000	4200	8111052	2800	50	8114318
Acid Extractable Lead (Pb)	mg/kg	6.9	25	8111052	17	0.50	8114318
Acid Extractable Lithium (Li)	mg/kg	22	<2.0	8111052	<2.0	2.0	8114318
Acid Extractable Manganese (Mn)	mg/kg	220	53	8111052	16	2.0	8114318
Acid Extractable Mercury (Hg)	mg/kg	<0.10	1.9	8111052	0.22	0.10	8114318
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	8111052	<2.0	2.0	8114318
Acid Extractable Nickel (Ni)	mg/kg	14	3.8	8111052	<2.0	2.0	8114318
Acid Extractable Rubidium (Rb)	mg/kg	19	3.7	8111052	4.2	2.0	8114318
Acid Extractable Selenium (Se)	mg/kg	<0.50	1.6	8111052	0.63	0.50	8114318
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	8111052	<0.50	0.50	8114318
Acid Extractable Strontium (Sr)	mg/kg	<5.0	14	8111052	13	5.0	8114318
Acid Extractable Thallium (Tl)	mg/kg	0.14	<0.10	8111052	<0.10	0.10	8114318
Acid Extractable Tin (Sn)	mg/kg	<1.0	<1.0	8111052	<1.0	1.0	8114318
Acid Extractable Uranium (U)	mg/kg	0.39	0.29	8111052	0.14	0.10	8114318
Acid Extractable Vanadium (V)	mg/kg	19	3.8	8111052	2.7	2.0	8114318
Acid Extractable Zinc (Zn)	mg/kg	31	14	8111052	10	5.0	8114318

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI535	TDI536			TDI537		
Sampling Date		2022/07/07	2022/07/07			2022/07/07		
COC Number		885378-02-01	885378-02-01			885378-02-01		
Sample #		SS22-B38B 26-50 CM	SS22-11			SS22-12		
	UNITS	**SS22-B38B 26-50 CM**	**SS22-11**	**RDL**	**QC Batch**	**SS22-12**	**RDL**	**QC Batch**
Metals								
Acid Extractable Aluminum (Al)	mg/kg	10000	9300	10	8111052	15000	10	8114318
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	2.0	8111052	<2.0	2.0	8114318
Acid Extractable Arsenic (As)	mg/kg	4000	840	20	8111052	78	2.0	8114318
Acid Extractable Barium (Ba)	mg/kg	81	37	5.0	8111052	28	5.0	8114318
Acid Extractable Beryllium (Be)	mg/kg	<1.0	<1.0	1.0	8111052	<1.0	1.0	8114318
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	2.0	8111052	<2.0	2.0	8114318
Acid Extractable Boron (B)	mg/kg	<50	<50	50	8111052	<50	50	8114318
Acid Extractable Cadmium (Cd)	mg/kg	0.38	0.37	0.30	8111052	<0.30	0.30	8114318
Acid Extractable Chromium (Cr)	mg/kg	13	9.6	2.0	8111052	19	2.0	8114318
Acid Extractable Cobalt (Co)	mg/kg	6.0	1.7	1.0	8111052	4.1	1.0	8114318
Acid Extractable Copper (Cu)	mg/kg	17	12	2.0	8111052	10	2.0	8114318
Acid Extractable Iron (Fe)	mg/kg	15000	13000	50	8111052	16000	50	8114318
Acid Extractable Lead (Pb)	mg/kg	25	32	0.50	8111052	10	0.50	8114318
Acid Extractable Lithium (Li)	mg/kg	14	3.7	2.0	8111052	13	2.0	8114318
Acid Extractable Manganese (Mn)	mg/kg	310	64	2.0	8111052	170	2.0	8114318
Acid Extractable Mercury (Hg)	mg/kg	3.8	2.0	0.10	8111052	0.13	0.10	8114318
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	2.0	8111052	<2.0	2.0	8114318
Acid Extractable Nickel (Ni)	mg/kg	18	8.3	2.0	8111052	12	2.0	8114318
Acid Extractable Rubidium (Rb)	mg/kg	21	7.4	2.0	8111052	12	2.0	8114318
Acid Extractable Selenium (Se)	mg/kg	2.4	1.4	0.50	8111052	0.74	0.50	8114318
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	0.50	8111052	1.0	0.50	8114318
Acid Extractable Strontium (Sr)	mg/kg	46	12	5.0	8111052	7.9	5.0	8114318
Acid Extractable Thallium (Tl)	mg/kg	0.19	<0.10	0.10	8111052	<0.10	0.10	8114318
Acid Extractable Tin (Sn)	mg/kg	<1.0	<1.0	1.0	8111052	<1.0	1.0	8114318
Acid Extractable Uranium (U)	mg/kg	1.2	0.29	0.10	8111052	0.39	0.10	8114318
Acid Extractable Vanadium (V)	mg/kg	14	8.4	2.0	8111052	23	2.0	8114318
Acid Extractable Zinc (Zn)	mg/kg	140	16	5.0	8111052	28	5.0	8114318

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI538			TDI539		TDI540		
Sampling Date		2022/07/07			2022/07/07		2022/07/07		
COC Number		885378-02-01			885378-02-01		885378-02-01		
Sample #		SS22-14			SS22-15		DUP 4		
	UNITS	**SS22-14**	**RDL**	**QC Batch**	**SS22-15**	**QC Batch**	**DUP 4**	**RDL**	**QC Batch**
Metals									
Acid Extractable Aluminum (Al)	mg/kg	1100	10	8111052	14000	8110958	11000	10	8111052
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	8111052	4.7	8110958	4.8	2.0	8111052
Acid Extractable Arsenic (As)	mg/kg	48	2.0	8111052	1700	8110958	1800	20	8111052
Acid Extractable Barium (Ba)	mg/kg	<5.0	5.0	8111052	67	8110958	68	5.0	8111052
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	8111052	<1.0	8110958	<1.0	1.0	8111052
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	8111052	<2.0	8110958	<2.0	2.0	8111052
Acid Extractable Boron (B)	mg/kg	<50	50	8111052	<50	8110958	<50	50	8111052
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	8111052	0.35	8110958	0.35	0.30	8111052
Acid Extractable Chromium (Cr)	mg/kg	<2.0	2.0	8111052	33	8110958	33	2.0	8111052
Acid Extractable Cobalt (Co)	mg/kg	<1.0	1.0	8111052	10	8110958	9.8	1.0	8111052
Acid Extractable Copper (Cu)	mg/kg	<2.0	2.0	8111052	51	8110958	130	2.0	8111052
Acid Extractable Iron (Fe)	mg/kg	1200	50	8111052	38000	8110958	41000	50	8111052
Acid Extractable Lead (Pb)	mg/kg	0.96	0.50	8111052	310	8110958	300	0.50	8111052
Acid Extractable Lithium (Li)	mg/kg	<2.0	2.0	8111052	16	8110958	14	2.0	8111052
Acid Extractable Manganese (Mn)	mg/kg	5.3	2.0	8111052	620	8110958	650	2.0	8111052
Acid Extractable Mercury (Hg)	mg/kg	<0.10	0.10	8111052	4.1	8110958	3.4	0.10	8111052
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	8111052	<2.0	8110958	2.5	2.0	8111052
Acid Extractable Nickel (Ni)	mg/kg	<2.0	2.0	8111052	18	8110958	20	2.0	8111052
Acid Extractable Rubidium (Rb)	mg/kg	<2.0	2.0	8111052	14	8110958	14	2.0	8111052
Acid Extractable Selenium (Se)	mg/kg	<0.50	0.50	8111052	0.94	8110958	0.92	0.50	8111052
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	8111052	0.56	8110958	0.54	0.50	8111052
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5.0	8111052	11	8110958	13	5.0	8111052
Acid Extractable Thallium (Tl)	mg/kg	<0.10	0.10	8111052	0.30	8110958	0.31	0.10	8111052
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	8111052	21	8110958	25	1.0	8111052
Acid Extractable Uranium (U)	mg/kg	<0.10	0.10	8111052	0.45	8110958	0.51	0.10	8111052
Acid Extractable Vanadium (V)	mg/kg	4.9	2.0	8111052	27	8110958	23	2.0	8111052
Acid Extractable Zinc (Zn)	mg/kg	<5.0	5.0	8111052	190	8110958	210	5.0	8111052

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI541		TDI542			TDI543		
Sampling Date		2022/07/07		2022/07/07			2022/07/07		
COC Number		885378-02-01		885378-02-01			885378-02-01		
Sample #		SS22-T1		DUP 3			SS22-T1B 46-60 CM		
	UNITS	**SS22-T1**	**QC Batch**	**DUP 3**	**RDL**	**QC Batch**	**SS22-T1B 45-60 CM**	**RDL**	**QC Batch**
Metals									
Acid Extractable Aluminum (Al)	mg/kg	12000	8111052	12000	10	8114318	10000	10	8111052
Acid Extractable Antimony (Sb)	mg/kg	5.8	8111052	3.5	2.0	8114318	19	2.0	8111052
Acid Extractable Arsenic (As)	mg/kg	16000	8111052	8400	200	8114318	29000	200	8111052
Acid Extractable Barium (Ba)	mg/kg	70	8111052	67	5.0	8114318	79	5.0	8111052
Acid Extractable Beryllium (Be)	mg/kg	<1.0	8111052	<1.0	1.0	8114318	<1.0	1.0	8111052
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	8111052	<2.0	2.0	8114318	2.9	2.0	8111052
Acid Extractable Boron (B)	mg/kg	<50	8111052	<50	50	8114318	<50	50	8111052
Acid Extractable Cadmium (Cd)	mg/kg	0.34	8111052	0.31	0.30	8114318	0.35	0.30	8111052
Acid Extractable Chromium (Cr)	mg/kg	18	8111052	19	2.0	8114318	22	2.0	8111052
Acid Extractable Cobalt (Co)	mg/kg	2.6	8111052	3.9	1.0	8114318	11	1.0	8111052
Acid Extractable Copper (Cu)	mg/kg	70	8111052	52	2.0	8114318	44	2.0	8111052
Acid Extractable Iron (Fe)	mg/kg	31000	8111052	28000	50	8114318	35000	50	8111052
Acid Extractable Lead (Pb)	mg/kg	60	8111052	55	0.50	8114318	200	0.50	8111052
Acid Extractable Lithium (Li)	mg/kg	22	8111052	22	2.0	8114318	19	2.0	8111052
Acid Extractable Manganese (Mn)	mg/kg	270	8111052	290	2.0	8114318	250	2.0	8111052
Acid Extractable Mercury (Hg)	mg/kg	2.6	8111052	3.0	0.10	8114318	73	1.0	8111052
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	8111052	<2.0	2.0	8114318	<2.0	2.0	8111052
Acid Extractable Nickel (Ni)	mg/kg	11	8111052	13	2.0	8114318	26	2.0	8111052
Acid Extractable Rubidium (Rb)	mg/kg	38	8111052	40	2.0	8114318	32	2.0	8111052
Acid Extractable Selenium (Se)	mg/kg	<0.50	8111052	<0.50	0.50	8114318	0.98	0.50	8111052
Acid Extractable Silver (Ag)	mg/kg	<0.50	8111052	<0.50	0.50	8114318	1.5	0.50	8111052
Acid Extractable Strontium (Sr)	mg/kg	10	8111052	11	5.0	8114318	11	5.0	8111052
Acid Extractable Thallium (Tl)	mg/kg	0.33	8111052	0.32	0.10	8114318	0.34	0.10	8111052
Acid Extractable Tin (Sn)	mg/kg	<1.0	8111052	<1.0	1.0	8114318	3.8	1.0	8111052
Acid Extractable Uranium (U)	mg/kg	0.26	8111052	0.29	0.10	8114318	0.55	0.10	8111052
Acid Extractable Vanadium (V)	mg/kg	19	8111052	20	2.0	8114318	21	2.0	8111052
Acid Extractable Zinc (Zn)	mg/kg	46	8111052	60	5.0	8114318	79	5.0	8111052

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI544	TDI545			TDI546		
Sampling Date		2022/07/07	2022/07/07			2022/07/07		
COC Number		885378-02-01	885378-02-01			885378-02-01		
Sample #		SS22-TD1	SS22-TD2			SS22-TD3 0-45 CM		
	UNITS	**SS22-TD1**	**SS22-TD2**	**RDL**	**QC Batch**	**SS22-TD3 0-45 CM**	**RDL**	**QC Batch**
Metals								
Acid Extractable Aluminum (Al)	mg/kg	11000	12000	10	8111052	9700	10	8110958
Acid Extractable Antimony (Sb)	mg/kg	<2.0	5.5	2.0	8111052	<2.0	2.0	8110958
Acid Extractable Arsenic (As)	mg/kg	600	2700	20	8111052	5500	200	8110958
Acid Extractable Barium (Ba)	mg/kg	57	64	5.0	8111052	53	5.0	8110958
Acid Extractable Beryllium (Be)	mg/kg	<1.0	<1.0	1.0	8111052	<1.0	1.0	8110958
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	2.0	8111052	<2.0	2.0	8110958
Acid Extractable Boron (B)	mg/kg	<50	<50	50	8111052	<50	50	8110958
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	0.30	8111052	<0.30	0.30	8110958
Acid Extractable Chromium (Cr)	mg/kg	23	21	2.0	8111052	15	2.0	8110958
Acid Extractable Cobalt (Co)	mg/kg	2.3	1.3	1.0	8111052	<1.0	1.0	8110958
Acid Extractable Copper (Cu)	mg/kg	22	19	2.0	8111052	3.6	2.0	8110958
Acid Extractable Iron (Fe)	mg/kg	13000	24000	50	8111052	22000	50	8110958
Acid Extractable Lead (Pb)	mg/kg	18	130	0.50	8111052	19	0.50	8110958
Acid Extractable Lithium (Li)	mg/kg	12	19	2.0	8111052	20	2.0	8110958
Acid Extractable Manganese (Mn)	mg/kg	150	250	2.0	8111052	240	2.0	8110958
Acid Extractable Mercury (Hg)	mg/kg	7.4	11	0.10	8111052	1.8	0.10	8110958
Acid Extractable Molybdenum (Mo)	mg/kg	3.1	<2.0	2.0	8111052	<2.0	2.0	8110958
Acid Extractable Nickel (Ni)	mg/kg	11	8.5	2.0	8111052	7.8	2.0	8110958
Acid Extractable Rubidium (Rb)	mg/kg	18	29	2.0	8111052	32	2.0	8110958
Acid Extractable Selenium (Se)	mg/kg	0.54	<0.50	0.50	8111052	<0.50	0.50	8110958
Acid Extractable Silver (Ag)	mg/kg	8.8	0.68	0.50	8111052	<0.50	0.50	8110958
Acid Extractable Strontium (Sr)	mg/kg	13	13	5.0	8111052	11	5.0	8110958
Acid Extractable Thallium (Tl)	mg/kg	0.12	0.28	0.10	8111052	0.23	0.10	8110958
Acid Extractable Tin (Sn)	mg/kg	1.4	3.3	1.0	8111052	<1.0	1.0	8110958
Acid Extractable Uranium (U)	mg/kg	0.47	0.35	0.10	8111052	0.22	0.10	8110958
Acid Extractable Vanadium (V)	mg/kg	16	20	2.0	8111052	17	2.0	8110958
Acid Extractable Zinc (Zn)	mg/kg	32	37	5.0	8111052	31	5.0	8110958

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI547			TDI548		TDI549		
Sampling Date		2022/07/07			2022/07/07		2022/07/07		
COC Number		885378-02-01			885378-02-01		885378-02-01		
Sample #		SS22-TD3B 55-60 CM			SS22-TD4		SS22-TD5		
	UNITS	**SS22-TD3B 55-60 CM**	**RDL**	**QC Batch**	**SS22-TD4**	**RDL**	**SS22-TD5**	**RDL**	**QC Batch**
Metals									
Acid Extractable Aluminum (Al)	mg/kg	11000	10	8111052	4000	10	13000	10	8110950
Acid Extractable Antimony (Sb)	mg/kg	6.7	2.0	8111052	<2.0	2.0	<2.0	2.0	8110950
Acid Extractable Arsenic (As)	mg/kg	6000	200	8111052	51	2.0	1000	20	8110950
Acid Extractable Barium (Ba)	mg/kg	69	5.0	8111052	25	5.0	38	5.0	8110950
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	8111052	<1.0	1.0	<1.0	1.0	8110950
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	8111052	<2.0	2.0	<2.0	2.0	8110950
Acid Extractable Boron (B)	mg/kg	<50	50	8111052	<50	50	<50	50	8110950
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	8111052	<0.30	0.30	<0.30	0.30	8110950
Acid Extractable Chromium (Cr)	mg/kg	20	2.0	8111052	5.3	2.0	17	2.0	8110950
Acid Extractable Cobalt (Co)	mg/kg	4.4	1.0	8111052	<1.0	1.0	1.6	1.0	8110950
Acid Extractable Copper (Cu)	mg/kg	21	2.0	8111052	9.4	2.0	8.8	2.0	8110950
Acid Extractable Iron (Fe)	mg/kg	21000	50	8111052	3100	50	22000	50	8110950
Acid Extractable Lead (Pb)	mg/kg	52	0.50	8111052	26	0.50	26	0.50	8110950
Acid Extractable Lithium (Li)	mg/kg	22	2.0	8111052	<2.0	2.0	6.9	2.0	8110950
Acid Extractable Manganese (Mn)	mg/kg	290	2.0	8111052	46	2.0	88	2.0	8110950
Acid Extractable Mercury (Hg)	mg/kg	6.8	0.10	8111052	0.67	0.10	2.8	0.10	8110950
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	8111052	2.5	2.0	<2.0	2.0	8110950
Acid Extractable Nickel (Ni)	mg/kg	18	2.0	8111052	3.0	2.0	5.7	2.0	8110950
Acid Extractable Rubidium (Rb)	mg/kg	40	2.0	8111052	<2.0	2.0	9.5	2.0	8110950
Acid Extractable Selenium (Se)	mg/kg	<0.50	0.50	8111052	0.70	0.50	1.4	0.50	8110950
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	8111052	2.0	0.50	0.99	0.50	8110950
Acid Extractable Strontium (Sr)	mg/kg	11	5.0	8111052	24	5.0	20	5.0	8110950
Acid Extractable Thallium (Tl)	mg/kg	0.33	0.10	8111052	<0.10	0.10	0.11	0.10	8110950
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	8111052	<1.0	1.0	1.6	1.0	8110950
Acid Extractable Uranium (U)	mg/kg	0.34	0.10	8111052	0.15	0.10	0.41	0.10	8110950
Acid Extractable Vanadium (V)	mg/kg	21	2.0	8111052	4.9	2.0	24	2.0	8110950
Acid Extractable Zinc (Zn)	mg/kg	78	5.0	8111052	16	5.0	23	5.0	8110950

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI550		TDI551	TDI552		
Sampling Date		2022/07/07		2022/07/07	2022/07/07		
COC Number		885378-02-01		885378-02-01	885378-02-01		
Sample #		SS22-TD6 0-35 CM		SS22-TD6B 50-63 CM	SS22-D21B 50-60 CM		
	UNITS	**SS22-TD6 0-35 CM**	**RDL**	**SS22-TD6B 50-63 CM**	**SS22-D21B 50-60 CM**	**RDL**	**QC Batch**
Metals							
Acid Extractable Aluminum (Al)	mg/kg	11000	10	15000	9200	10	8110950
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	9.4	7.0	2.0	8110950
Acid Extractable Arsenic (As)	mg/kg	2400	20	5000	11000	200	8110950
Acid Extractable Barium (Ba)	mg/kg	60	5.0	83	30	5.0	8110950
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	<1.0	<1.0	1.0	8110950
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	<2.0	2.0	8110950
Acid Extractable Boron (B)	mg/kg	<50	50	<50	<50	50	8110950
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	0.38	0.35	0.30	8110950
Acid Extractable Chromium (Cr)	mg/kg	17	2.0	22	9.9	2.0	8110950
Acid Extractable Cobalt (Co)	mg/kg	1.1	1.0	4.4	4.3	1.0	8110950
Acid Extractable Copper (Cu)	mg/kg	6.3	2.0	41	19	2.0	8110950
Acid Extractable Iron (Fe)	mg/kg	20000	50	30000	16000	50	8110950
Acid Extractable Lead (Pb)	mg/kg	17	0.50	79	68	0.50	8110950
Acid Extractable Lithium (Li)	mg/kg	24	2.0	28	7.2	2.0	8110950
Acid Extractable Manganese (Mn)	mg/kg	290	2.0	330	91	2.0	8110950
Acid Extractable Mercury (Hg)	mg/kg	2.3	0.10	8.9	4.9	0.10	8110950
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	<2.0	<2.0	2.0	8110950
Acid Extractable Nickel (Ni)	mg/kg	7.5	2.0	16	11	2.0	8110950
Acid Extractable Rubidium (Rb)	mg/kg	37	2.0	47	11	2.0	8110950
Acid Extractable Selenium (Se)	mg/kg	<0.50	0.50	<0.50	1.4	0.50	8110950
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	0.56	<0.50	0.50	8110950
Acid Extractable Strontium (Sr)	mg/kg	12	5.0	8.9	10	5.0	8110950
Acid Extractable Thallium (Tl)	mg/kg	0.25	0.10	0.40	0.14	0.10	8110950
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	<1.0	3.5	1.0	8110950
Acid Extractable Uranium (U)	mg/kg	0.32	0.10	0.29	0.54	0.10	8110950
Acid Extractable Vanadium (V)	mg/kg	18	2.0	25	11	2.0	8110950
Acid Extractable Zinc (Zn)	mg/kg	35	5.0	69	35	5.0	8110950

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI553		TDI554	TDI555			TDI556		
Sampling Date		2022/07/07		2022/07/07	2022/07/07			2022/07/07		
COC Number		885378-02-01		885378-02-01	885378-02-01			885378-02-01		
Sample #		SS22-16		SS22-17	SS22-18			SS22-19		
	UNITS	**SS22-16**	**RDL**	**SS22-17**	**SS22-18**	**RDL**	**QC Batch**	**SS22-19**	**RDL**	**QC Batch**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	6700	10	11000	11000	10	8110950	6500	10	8111052
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	6.0	8.9	2.0	8110950	<2.0	2.0	8111052
Acid Extractable Arsenic (As)	mg/kg	170	2.0	14000	5900	200	8110950	140	2.0	8111052
Acid Extractable Barium (Ba)	mg/kg	14	5.0	56	65	5.0	8110950	8.5	5.0	8111052
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	<1.0	<1.0	1.0	8110950	<1.0	1.0	8111052
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	<2.0	2.0	8110950	<2.0	2.0	8111052
Acid Extractable Boron (B)	mg/kg	<50	50	<50	<50	50	8110950	<50	50	8111052
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	<0.30	0.30	0.30	8110950	<0.30	0.30	8111052
Acid Extractable Chromium (Cr)	mg/kg	12	2.0	17	17	2.0	8110950	13	2.0	8111052
Acid Extractable Cobalt (Co)	mg/kg	1.7	1.0	6.0	4.3	1.0	8110950	1.2	1.0	8111052
Acid Extractable Copper (Cu)	mg/kg	3.8	2.0	17	21	2.0	8110950	2.2	2.0	8111052
Acid Extractable Iron (Fe)	mg/kg	15000	50	32000	25000	50	8110950	28000	50	8111052
Acid Extractable Lead (Pb)	mg/kg	20	0.50	72	110	0.50	8110950	9.0	0.50	8111052
Acid Extractable Lithium (Li)	mg/kg	7.6	2.0	19	17	2.0	8110950	3.2	2.0	8111052
Acid Extractable Manganese (Mn)	mg/kg	65	2.0	230	210	2.0	8110950	48	2.0	8111052
Acid Extractable Mercury (Hg)	mg/kg	0.26	0.10	5.9	7.8	0.10	8110950	0.19	0.10	8111052
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	<2.0	<2.0	2.0	8110950	<2.0	2.0	8111052
Acid Extractable Nickel (Ni)	mg/kg	7.8	2.0	15	14	2.0	8110950	5.3	2.0	8111052
Acid Extractable Rubidium (Rb)	mg/kg	4.4	2.0	30	22	2.0	8110950	2.9	2.0	8111052
Acid Extractable Selenium (Se)	mg/kg	1.2	0.50	<0.50	0.69	0.50	8110950	1.5	0.50	8111052
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	0.59	1.2	0.50	8110950	<0.50	0.50	8111052
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5.0	11	12	5.0	8110950	<5.0	5.0	8111052
Acid Extractable Thallium (Tl)	mg/kg	<0.10	0.10	0.29	0.30	0.10	8110950	<0.10	0.10	8111052
Acid Extractable Tin (Sn)	mg/kg	1.0	1.0	<1.0	<1.0	1.0	8110950	<1.0	1.0	8111052
Acid Extractable Uranium (U)	mg/kg	0.33	0.10	0.32	0.34	0.10	8110950	0.38	0.10	8111052
Acid Extractable Vanadium (V)	mg/kg	21	2.0	19	20	2.0	8110950	33	2.0	8111052
Acid Extractable Zinc (Zn)	mg/kg	15	5.0	41	32	5.0	8110950	13	5.0	8111052

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI557		TDI558		TDI559		TDI560		
Sampling Date		2022/07/07		2022/07/07		2022/07/07		2022/07/07		
COC Number		885378-02-01		885378-02-01		885378-02-01		885378-02-01		
Sample #		SS22-E31		SS22-E35		DUP 5		DUP 6		
	UNITS	**SS22-E31**	**RDL**	**SS22-E35**	**RDL**	**DUP 5**	**RDL**	**DUP 6**	**RDL**	**QC Batch**
Metals										
Acid Extractable Aluminum (Al)	mg/kg	17000	10	7400	10	17000	10	7400	10	8110950
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	11	2.0	<2.0	2.0	13	2.0	8110950
Acid Extractable Arsenic (As)	mg/kg	3900	20	31000	200	3800	20	33000	200	8110950
Acid Extractable Barium (Ba)	mg/kg	95	5.0	45	5.0	92	5.0	46	5.0	8110950
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8110950
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	2.0	2.1	2.0	8110950
Acid Extractable Boron (B)	mg/kg	<50	50	<50	50	<50	50	<50	50	8110950
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	<0.30	0.30	0.41	0.30	<0.30	0.30	8110950
Acid Extractable Chromium (Cr)	mg/kg	25	2.0	14	2.0	24	2.0	14	2.0	8110950
Acid Extractable Cobalt (Co)	mg/kg	4.4	1.0	<1.0	1.0	7.6	1.0	1.1	1.0	8110950
Acid Extractable Copper (Cu)	mg/kg	35	2.0	4.1	2.0	33	2.0	4.0	2.0	8110950
Acid Extractable Iron (Fe)	mg/kg	32000	50	43000	50	31000	50	46000	50	8110950
Acid Extractable Lead (Pb)	mg/kg	26	0.50	86	0.50	32	0.50	93	0.50	8110950
Acid Extractable Lithium (Li)	mg/kg	40	2.0	11	2.0	40	2.0	12	2.0	8110950
Acid Extractable Manganese (Mn)	mg/kg	460	2.0	180	2.0	450	2.0	190	2.0	8110950
Acid Extractable Mercury (Hg)	mg/kg	1.4	0.10	7.7	0.10	1.3	0.10	9.7	0.10	8110950
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8110950
Acid Extractable Nickel (Ni)	mg/kg	17	2.0	5.2	2.0	23	2.0	5.5	2.0	8110950
Acid Extractable Rubidium (Rb)	mg/kg	63	2.0	21	2.0	60	2.0	21	2.0	8110950
Acid Extractable Selenium (Se)	mg/kg	<0.50	0.50	0.63	0.50	<0.50	0.50	0.70	0.50	8110950
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	0.53	0.50	<0.50	0.50	0.75	0.50	8110950
Acid Extractable Strontium (Sr)	mg/kg	13	5.0	6.2	5.0	12	5.0	6.4	5.0	8110950
Acid Extractable Thallium (Tl)	mg/kg	0.46	0.10	0.22	0.10	0.45	0.10	0.26	0.10	8110950
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8110950
Acid Extractable Uranium (U)	mg/kg	0.35	0.10	0.25	0.10	0.36	0.10	0.24	0.10	8110950
Acid Extractable Vanadium (V)	mg/kg	29	2.0	15	2.0	28	2.0	15	2.0	8110950
Acid Extractable Zinc (Zn)	mg/kg	73	5.0	18	5.0	110	5.0	18	5.0	8110950

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TDI564		TDI565			TDI566		TDI862		
Sampling Date		2022/07/07		2022/07/07			2022/07/07		2022/07/07		
COC Number		885378-02-01		885378-02-01			885378-02-01		885378-02-01		
Sample #		SS22-13		SS22-D21			SS22-B38		SS22-20		
	UNITS	**SS22-13**	**RDL**	**SS22-D21**	**RDL**	**QC Batch**	**SS22-B38**	**RDL**	**SS22-20**	**RDL**	**QC Batch**
Metals											
Acid Extractable Aluminum (Al)	mg/kg	14000	10	9000	10	8110950	12000	10	1600	10	8111052
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	10	2.0	8110950	<2.0	2.0	<2.0	2.0	8111052
Acid Extractable Arsenic (As)	mg/kg	3600	20	18000	200	8110950	4000	20	8.4	2.0	8111052
Acid Extractable Barium (Ba)	mg/kg	71	5.0	56	5.0	8110950	81	5.0	<5.0	5.0	8111052
Acid Extractable Beryllium (Be)	mg/kg	1.2	1.0	<1.0	1.0	8110950	1.2	1.0	<1.0	1.0	8111052
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	2.0	8110950	<2.0	2.0	<2.0	2.0	8111052
Acid Extractable Boron (B)	mg/kg	<50	50	<50	50	8110950	<50	50	<50	50	8111052
Acid Extractable Cadmium (Cd)	mg/kg	1.7	0.30	<0.30	0.30	8110950	0.48	0.30	<0.30	0.30	8111052
Acid Extractable Chromium (Cr)	mg/kg	21	2.0	16	2.0	8110950	17	2.0	2.2	2.0	8111052
Acid Extractable Cobalt (Co)	mg/kg	21	1.0	5.0	1.0	8110950	5.5	1.0	<1.0	1.0	8111052
Acid Extractable Copper (Cu)	mg/kg	51	2.0	27	2.0	8110950	21	2.0	2.2	2.0	8111052
Acid Extractable Iron (Fe)	mg/kg	31000	50	36000	50	8110950	18000	50	1000	50	8111052
Acid Extractable Lead (Pb)	mg/kg	240	0.50	94	0.50	8110950	39	0.50	6.1	0.50	8111052
Acid Extractable Lithium (Li)	mg/kg	32	2.0	16	2.0	8110950	20	2.0	<2.0	2.0	8111052
Acid Extractable Manganese (Mn)	mg/kg	560	2.0	190	2.0	8110950	360	2.0	4.9	2.0	8111052
Acid Extractable Mercury (Hg)	mg/kg	1.5	0.10	7.3	0.10	8110950	5.6	0.10	0.13	0.10	8111052
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	<2.0	2.0	8110950	<2.0	2.0	<2.0	2.0	8111052
Acid Extractable Nickel (Ni)	mg/kg	54	2.0	14	2.0	8110950	19	2.0	2.1	2.0	8111052
Acid Extractable Rubidium (Rb)	mg/kg	26	2.0	27	2.0	8110950	29	2.0	<2.0	2.0	8111052
Acid Extractable Selenium (Se)	mg/kg	0.65	0.50	<0.50	0.50	8110950	0.70	0.50	<0.50	0.50	8111052
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	<0.50	0.50	8110950	<0.50	0.50	<0.50	0.50	8111052
Acid Extractable Strontium (Sr)	mg/kg	29	5.0	11	5.0	8110950	34	5.0	<5.0	5.0	8111052
Acid Extractable Thallium (Tl)	mg/kg	0.33	0.10	0.28	0.10	8110950	0.25	0.10	<0.10	0.10	8111052
Acid Extractable Tin (Sn)	mg/kg	1.3	1.0	1.2	1.0	8110950	<1.0	1.0	<1.0	1.0	8111052
Acid Extractable Uranium (U)	mg/kg	0.99	0.10	0.27	0.10	8110950	1.1	0.10	0.18	0.10	8111052
Acid Extractable Vanadium (V)	mg/kg	25	2.0	17	2.0	8110950	19	2.0	2.2	2.0	8111052
Acid Extractable Zinc (Zn)	mg/kg	850	5.0	51	5.0	8110950	150	5.0	<5.0	5.0	8111052

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
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GENERAL COMMENTS

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

Package 1	7.0°C
Package 2	6.0°C
Package 3	11.0°C
Package 4	7.0°C

Results relate only to the items tested.

Bureau Veritas - Partial/Rush Results

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8105801	NLI	RPD	Moisture	2022/07/14	10		%	25
8108292	BBD	QC Standard	Sieve - #200 (>0.075mm)	2022/07/14		93	%	90 - 110
8108292	BBD	Method Blank	Sieve - #200 (>0.075mm)	2022/07/14	<1		%	
			Sieve - Pan	2022/07/14	99,RDL=1		%	
8108292	BBD	RPD [TDI565-04]	Sieve - #200 (>0.075mm)	2022/07/14	0.11		%	25
			Sieve - Pan	2022/07/14	1.0		%	25
8110950	JHY	Matrix Spike [TDI528-01]	Acid Extractable Antimony (Sb)	2022/07/18		74 (1)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/18		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/18		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/18		94	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/18		96	%	75 - 125
			Acid Extractable Boron (B)	2022/07/18		88	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/18		94	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/18		95	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/18		95	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/18		95	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/18		NC	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/18		101	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/18		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/18		94	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/18		96	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/18		NC	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/18		94	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/18		90	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/18		96	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/18		NC	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/18		94	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/18		94	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/18		98	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/18		97	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/18		NC	%	75 - 125
8110950	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/15		106	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/15		99	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/15		102	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/15		96	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/15		99	%	75 - 125
			Acid Extractable Boron (B)	2022/07/15		97	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/15		97	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/15		95	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/15		95	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/15		94	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/15		98	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/15		102	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/15		99	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/15		101	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/15		95	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/15		97	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/15		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/15		98	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/15		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/15		97	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/15		101	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/15		97	%	75 - 125

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Bureau Veritas - Partial/Rush Results

Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
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Sampler Initials: DB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Uranium (U)	2022/07/15		102	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/15		96	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/15		100	%	75 - 125
8110950	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/07/15	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/15	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/15	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/07/15	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/15	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/15	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/15	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/15	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/15	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/15	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/15	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/15	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/15	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/15	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/07/15	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/15	<5.0		mg/kg	
8110950	JHY	RPD [TDI528-01]	Acid Extractable Aluminum (Al)	2022/07/18	12		%	35
			Acid Extractable Antimony (Sb)	2022/07/18	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/18	4.4		%	35
			Acid Extractable Barium (Ba)	2022/07/18	5.7		%	35
			Acid Extractable Beryllium (Be)	2022/07/18	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/07/18	NC		%	35
			Acid Extractable Boron (B)	2022/07/18	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/18	18		%	35
			Acid Extractable Chromium (Cr)	2022/07/18	13		%	35
			Acid Extractable Cobalt (Co)	2022/07/18	6.7		%	35
			Acid Extractable Copper (Cu)	2022/07/18	6.0		%	35
			Acid Extractable Iron (Fe)	2022/07/18	0.092		%	35
			Acid Extractable Lead (Pb)	2022/07/18	2.9		%	35
			Acid Extractable Lithium (Li)	2022/07/18	22		%	35
			Acid Extractable Manganese (Mn)	2022/07/18	4.1		%	35
			Acid Extractable Mercury (Hg)	2022/07/18	20		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/18	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/18	7.9		%	35
			Acid Extractable Rubidium (Rb)	2022/07/18	20		%	35
			Acid Extractable Selenium (Se)	2022/07/18	1.6		%	35
			Acid Extractable Silver (Ag)	2022/07/18	NC		%	35
			Acid Extractable Strontium (Sr)	2022/07/18	12		%	35
			Acid Extractable Thallium (Tl)	2022/07/18	1.6		%	35

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Bureau Veritas - Partial/Rush Results

Bureau Veritas Job #: C2J3195
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AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
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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 Tin (Sn)	2022/07/18	NC		%	35
			Acid Extractable Uranium (U)	2022/07/18	2.4		%	35
			Acid Extractable Vanadium (V)	2022/07/18	13		%	35
			Acid Extractable Zinc (Zn)	2022/07/18	0.77		%	35
8110958	JHY	Matrix Spike [TDI516-01]	Acid Extractable Antimony (Sb)	2022/07/19		NC	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/19		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/19		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/19		97	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/19		102	%	75 - 125
			Acid Extractable Boron (B)	2022/07/19		93	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/19		96	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/19		92	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/19		94	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/19		88	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/19		NC	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/19		99	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/19		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/19		100	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/19		NC	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/19		94	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/19		96	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/19		89	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/19		101	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/19		97	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/19		90	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/19		NC	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/19		100	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/19		91	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/19		97	%	75 - 125
8110958	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/15		104	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/15		98	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/15		103	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/15		96	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/15		100	%	75 - 125
			Acid Extractable Boron (B)	2022/07/15		96	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/15		96	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/15		96	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/15		97	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/15		95	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/15		99	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/15		102	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/15		100	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/15		103	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/15		101	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/15		99	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/15		97	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/15		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/15		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/15		99	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/15		100	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/15		99	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/15		103	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/15		97	%	75 - 125

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Bureau Veritas - Partial/Rush Results

Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Zinc (Zn)	2022/07/15		103	%	75 - 125
8110958	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/07/15	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/15	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/15	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/07/15	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/15	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/15	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/15	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/15	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/15	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/15	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/15	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/15	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/15	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/15	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/07/15	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/15	<5.0		mg/kg	
8110958	JHY	RPD [TDI516-01]	Acid Extractable Aluminum (Al)	2022/07/19	5.8		%	35
			Acid Extractable Antimony (Sb)	2022/07/19	5.5		%	35
			Acid Extractable Arsenic (As)	2022/07/19	5.7		%	35
			Acid Extractable Barium (Ba)	2022/07/19	2.2		%	35
			Acid Extractable Beryllium (Be)	2022/07/19	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/07/19	16		%	35
			Acid Extractable Boron (B)	2022/07/19	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/19	NC		%	35
			Acid Extractable Chromium (Cr)	2022/07/19	1.1		%	35
			Acid Extractable Cobalt (Co)	2022/07/19	1.4		%	35
			Acid Extractable Copper (Cu)	2022/07/19	16		%	35
			Acid Extractable Iron (Fe)	2022/07/19	4.0		%	35
			Acid Extractable Lead (Pb)	2022/07/19	18		%	35
			Acid Extractable Lithium (Li)	2022/07/19	8.4		%	35
			Acid Extractable Manganese (Mn)	2022/07/19	3.6		%	35
			Acid Extractable Mercury (Hg)	2022/07/19	12		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/19	4.8		%	35
			Acid Extractable Nickel (Ni)	2022/07/19	1.2		%	35
			Acid Extractable Rubidium (Rb)	2022/07/19	9.0		%	35
			Acid Extractable Selenium (Se)	2022/07/19	0.14		%	35
			Acid Extractable Silver (Ag)	2022/07/19	4.3		%	35
			Acid Extractable Strontium (Sr)	2022/07/19	7.0		%	35
			Acid Extractable Thallium (Tl)	2022/07/19	1.4		%	35
			Acid Extractable Tin (Sn)	2022/07/19	6.1		%	35
			Acid Extractable Uranium (U)	2022/07/19	4.3		%	35

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Bureau Veritas - Partial/Rush Results

Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Vanadium (V)	2022/07/19	1.2		%	35
			Acid Extractable Zinc (Zn)	2022/07/19	1.9		%	35
8111052	BAN	Matrix Spike	Acid Extractable Antimony (Sb)	2022/07/15		56 (2)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/15		97	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/15		101	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/15		99	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/15		99	%	75 - 125
			Acid Extractable Boron (B)	2022/07/15		92	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/15		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/15		NC	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/15		97	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/15		NC	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/15		65 (1)	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/15		98	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/15		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/15		97	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/15		99	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/15		83	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/15		96	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/15		97	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/15		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/15		104	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/15		93	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/15		75	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/15		99	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/15		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/15		NC	%	75 - 125
8111052	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/15		101	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/15		98	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/15		96	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/15		96	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/15		95	%	75 - 125
			Acid Extractable Boron (B)	2022/07/15		97	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/15		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/15		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/15		96	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/15		99	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/15		96	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/15		95	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/15		99	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/15		97	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/15		100	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/15		100	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/15		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/15		100	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/15		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/15		95	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/15		98	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/15		100	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/15		96	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/15		99	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/15		105	%	75 - 125
8111052	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/07/15	<10		mg/kg	

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Bureau Veritas - Partial/Rush Results

Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Antimony (Sb)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/15	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/15	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/07/15	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/15	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/15	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/15	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/15	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/15	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/15	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/15	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/15	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/15	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/15	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/07/15	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/15	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/15	<5.0		mg/kg	
8111052	BAN	RPD	Acid Extractable Aluminum (Al)	2022/07/15	6.3		%	35
			Acid Extractable Antimony (Sb)	2022/07/15	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/15	20		%	35
			Acid Extractable Barium (Ba)	2022/07/15	6.4		%	35
			Acid Extractable Beryllium (Be)	2022/07/15	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/07/15	NC		%	35
			Acid Extractable Boron (B)	2022/07/15	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/15	NC		%	35
			Acid Extractable Chromium (Cr)	2022/07/15	17		%	35
			Acid Extractable Cobalt (Co)	2022/07/15	7.3		%	35
			Acid Extractable Copper (Cu)	2022/07/15	17		%	35
			Acid Extractable Iron (Fe)	2022/07/15	4.4		%	35
			Acid Extractable Lead (Pb)	2022/07/15	66 (3)		%	35
			Acid Extractable Lithium (Li)	2022/07/15	2.3		%	35
			Acid Extractable Manganese (Mn)	2022/07/15	15		%	35
			Acid Extractable Mercury (Hg)	2022/07/15	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/15	13		%	35
			Acid Extractable Nickel (Ni)	2022/07/15	43 (3)		%	35
			Acid Extractable Rubidium (Rb)	2022/07/15	5.2		%	35
			Acid Extractable Selenium (Se)	2022/07/15	NC		%	35
			Acid Extractable Silver (Ag)	2022/07/15	NC		%	35
			Acid Extractable Strontium (Sr)	2022/07/15	15		%	35
			Acid Extractable Thallium (Tl)	2022/07/15	NC		%	35
			Acid Extractable Tin (Sn)	2022/07/15	NC		%	35
			Acid Extractable Uranium (U)	2022/07/15	58 (3)		%	35
			Acid Extractable Vanadium (V)	2022/07/15	21		%	35
			Acid Extractable Zinc (Zn)	2022/07/15	39 (3)		%	35

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Bureau Veritas - Partial/Rush Results

Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8114318	JHY	Matrix Spike [TDI537-01]	Acid Extractable Antimony (Sb)	2022/07/18		64 (2)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/18		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/18		98	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/18		92	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/18		100	%	75 - 125
			Acid Extractable Boron (B)	2022/07/18		86	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/18		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/18		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/18		101	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/18		103	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/18		97	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/18		98	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/18		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/18		93	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/18		96	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/18		103	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/18		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/18		103	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/18		102	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/18		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/18		99	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/18		96	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/18		98	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/18		101	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/18		98	%	75 - 125
8114318	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/18		101	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/18		102	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/18		95	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/18		91	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/18		97	%	75 - 125
			Acid Extractable Boron (B)	2022/07/18		92	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/18		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/18		100	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/18		102	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/18		103	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/18		95	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/18		95	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/18		101	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/18		96	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/18		96	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/18		103	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/18		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/18		105	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/18		101	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/18		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/18		98	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/18		100	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/18		96	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/18		100	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/18		104	%	75 - 125
8114318	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/07/18	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/18	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/18	<2.0		mg/kg	

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Bureau Veritas - Partial/Rush Results

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Barium (Ba)	2022/07/18	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/18	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/07/18	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/07/18	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/18	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/18	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/18	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/07/18	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/18	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/18	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/07/18	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/18	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/18	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/18	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/18	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/07/18	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/18	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/18	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/18	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/18	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/18	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/07/18	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/18	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/18	<5.0		mg/kg	
8114318	JHY	RPD [TDI537-01]	Acid Extractable Aluminum (Al)	2022/07/18	4.3		%	35
			Acid Extractable Antimony (Sb)	2022/07/18	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/18	7.3		%	35
			Acid Extractable Barium (Ba)	2022/07/18	1.3		%	35
			Acid Extractable Beryllium (Be)	2022/07/18	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/07/18	NC		%	35
			Acid Extractable Boron (B)	2022/07/18	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/18	NC		%	35
			Acid Extractable Chromium (Cr)	2022/07/18	0.98		%	35
			Acid Extractable Cobalt (Co)	2022/07/18	11		%	35
			Acid Extractable Copper (Cu)	2022/07/18	2.9		%	35
			Acid Extractable Iron (Fe)	2022/07/18	0.35		%	35
			Acid Extractable Lead (Pb)	2022/07/18	0.99		%	35
			Acid Extractable Lithium (Li)	2022/07/18	2.7		%	35
			Acid Extractable Manganese (Mn)	2022/07/18	12		%	35
			Acid Extractable Mercury (Hg)	2022/07/18	1.7		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/18	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/18	7.6		%	35
			Acid Extractable Rubidium (Rb)	2022/07/18	3.9		%	35
			Acid Extractable Selenium (Se)	2022/07/18	4.2		%	35
			Acid Extractable Silver (Ag)	2022/07/18	22		%	35
			Acid Extractable Strontium (Sr)	2022/07/18	1.7		%	35
			Acid Extractable Thallium (Tl)	2022/07/18	NC		%	35
			Acid Extractable Tin (Sn)	2022/07/18	NC		%	35
			Acid Extractable Uranium (U)	2022/07/18	1.2		%	35
			Acid Extractable Vanadium (V)	2022/07/18	0.056		%	35

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Zinc (Zn)	2022/07/18	3.5		%	35

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.

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

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

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

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/07/20

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
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

Janah Rhyno, Metals Supervisor-Bedford

Phil Deveau, Scientific Specialist (Organics)

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Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Your Project #: 60680068
Site Location: SEAL HARBOUR, NS
Your C.O.C. #: 885378-02-01

Attention: Rory McNeil

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

Report Date: 2022/08/16
Report #: R7255383
Version: 4 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2J3195
Received: 2022/07/08, 09:26

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Cyanide (1)	1	2022/07/21	2022/07/25	STL SOP-00035	MA300-CN 1.2 R4 m
Total Cyanide (1)	2	2022/08/09	2022/08/10	STL SOP-00035	MA300-CN 1.2 R4 m
Water Content (Subcontracted) (1, 2)	1	N/A	2022/07/28	STL SOP-00021	MA.100-S.T. 1.1 R5 m
Water Content (Subcontracted) (1, 2)	2	N/A	2022/08/04	STL SOP-00021	MA.100-S.T. 1.1 R5 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.

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Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Montreal, 889 Montée De Liesse , Saint Laurent, QC, H4T 1P5
(2) Offsite analysis requires that subcontracted moisture be reported.

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Your Project #: 60680068
Site Location: SEAL HARBOUR, NS
Your C.O.C. #: 885378-02-01

Attention: Rory McNeil

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

Report Date: 2022/08/16
Report #: R7255383
Version: 4 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2J3195
Received: 2022/07/08, 09:26

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas
16 Aug 2022 11:58:29

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253
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Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J3195
Report Date: 2022/08/16

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		TDI564	TDI565	TDI566		
Sampling Date		2022/07/07	2022/07/07	2022/07/07		
COC Number		885378-02-01	885378-02-01	885378-02-01		
	UNITS	**SS22-13**	**SS22-D21**	**SS22-B38**	**RDL**	**QC Batch**
Physical Testing						
Moisture-Subcontracted	%w/w	82	27	39	0.50	8167142

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J3195
Report Date: 2022/08/16

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

CONVENTIONALS (SOIL)

Bureau Veritas ID		TDI564			TDI565		TDI566		
Sampling Date		2022/07/07			2022/07/07		2022/07/07		
COC Number		885378-02-01			885378-02-01		885378-02-01		
	UNITS	**SS22-13**	**RDL**	**QC Batch**	**SS22-D21**	**QC Batch**	**SS22-B38**	**RDL**	**QC Batch**
Inorganics									
Total Cyanide (CN)	mg/kg	<5.0	5.0	8167141	5.7	8135967	3.7	1.0	8167141

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J3195
Report Date: 2022/08/16

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

GENERAL COMMENTS

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

Package 1	7.0°C
Package 2	6.0°C
Package 3	11.0°C
Package 4	7.0°C

Results relate only to the items tested.

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J3195
Report Date: 2022/08/16

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8135967	DMI	Spiked Blank	Total Cyanide (CN)	2022/07/23		97	%	80 - 120
8135967	DMI	Method Blank	Total Cyanide (CN)	2022/07/23	<0.50		mg/kg	
8167141	DMI	Spiked Blank	Total Cyanide (CN)	2022/08/10		103	%	80 - 120
8167141	DMI	Method Blank	Total Cyanide (CN)	2022/08/10	<0.50		mg/kg	

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.

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J3195
Report Date: 2022/08/16

AECOM Canada Ltd
Client Project #: 60680068
Site Location: SEAL HARBOUR, NS
Sampler Initials: DB

VALIDATION SIGNATURE PAGE

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

Caroline Bougie, B.Sc. Chemist

Noureddine Chafiaai, B.Sc., Chemist

Shu Yang, Analyst 2

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Bureau Veritas - Partial/Rush Results

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Your Project #: 60680068
Site Location: Seal Harbour, NS
Your C.O.C. #: 885378-04-01

Attention: Rory McNeil

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

Report Date: 2022/07/15
Report #: R7212413
Version: 1 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2J2853
Received: 2022/07/08, 09:26

Sample Matrix: Solid
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals Bulk Acid Extr. ICPMS	5	2022/07/14	2022/07/14	ATL SOP 00058	EPA 6020B 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.

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Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
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Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Bureau Veritas - Partial/Rush Results

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Your Project #: 60680068
Site Location: Seal Harbour, NS
Your C.O.C. #: 885378-04-01

Attention: Rory McNeil

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

Report Date: 2022/07/15
Report #: R7212413
Version: 1 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2J2853
Received: 2022/07/08, 09:26

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Bureau Veritas
15 Jul 2022 17:11:55

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253
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Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J2853
Report Date: 2022/07/15

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Bureau Veritas ID		TDG758	TDG759	TDG760	TDG761	TDG762		
Sampling Date		2022/07/05	2022/07/05	2022/07/05	2022/07/05	2022/07/05		
COC Number		885378-04-01	885378-04-01	885378-04-01	885378-04-01	885378-04-01		
	UNITS	**WR-3**	**WR-4**	**WR-5**	**WR-1**	**WR-2**	**RDL**	**QC Batch**
Metals								
Acid Extractable Aluminum (Al)	mg/kg	9400	6700	5900	6500	16000	100	8108302
Acid Extractable Antimony (Sb)	mg/kg	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Arsenic (As)	mg/kg	20	1300	190	17	130	10	8108302
Acid Extractable Barium (Ba)	mg/kg	64	<50	<50	<50	120	50	8108302
Acid Extractable Beryllium (Be)	mg/kg	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Boron (B)	mg/kg	<500	<500	<500	<500	<500	500	8108302
Acid Extractable Cadmium (Cd)	mg/kg	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	8108302
Acid Extractable Chromium (Cr)	mg/kg	<20	<20	<20	<20	24	20	8108302
Acid Extractable Cobalt (Co)	mg/kg	<10	<10	<10	<10	<10	10	8108302
Acid Extractable Copper (Cu)	mg/kg	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Iron (Fe)	mg/kg	16000	10000	11000	12000	27000	500	8108302
Acid Extractable Lead (Pb)	mg/kg	<5.0	<5.0	<5.0	<5.0	7.8	5.0	8108302
Acid Extractable Manganese (Mn)	mg/kg	280	370	210	160	410	20	8108302
Acid Extractable Mercury (Hg)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8108302
Acid Extractable Molybdenum (Mo)	mg/kg	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Nickel (Ni)	mg/kg	<20	<20	<20	<20	26	20	8108302
Acid Extractable Selenium (Se)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8108302
Acid Extractable Silver (Ag)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8108302
Acid Extractable Strontium (Sr)	mg/kg	<50	<50	<50	<50	<50	50	8108302
Acid Extractable Thallium (Tl)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8108302
Acid Extractable Tin (Sn)	mg/kg	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8108302
Acid Extractable Vanadium (V)	mg/kg	20	<20	<20	<20	26	20	8108302
Acid Extractable Zinc (Zn)	mg/kg	<50	<50	<50	<50	52	50	8108302

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J2853
Report Date: 2022/07/15

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

GENERAL COMMENTS

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

Package 1	7.0°C
Package 2	6.0°C
Package 3	11.0°C
Package 4	7.0°C

Results relate only to the items tested.

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J2853
Report Date: 2022/07/15

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8108302	JHY	Matrix Spike [TDG762-01]	Acid Extractable Antimony (Sb)	2022/07/14		60 (1)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/14		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/14		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/14		102	%	75 - 125
			Acid Extractable Boron (B)	2022/07/14		88	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/14		97	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/14		96	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/14		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/14		101	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/14		98	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/14		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/14		96	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/14		110	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/14		100	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/14		100	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/14		97	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/14		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/14		95	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/14		94	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/14		98	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/14		96	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/14		NC	%	75 - 125
8108302	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/14		99	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/14		99	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/14		95	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/14		98	%	75 - 125
			Acid Extractable Boron (B)	2022/07/14		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/14		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/14		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/14		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/14		98	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/14		97	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/14		101	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/14		97	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/14		99	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/14		101	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/14		100	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/14		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/14		94	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/14		98	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/14		100	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/14		98	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/14		98	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/14		102	%	75 - 125
8108302	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/07/14	<100		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/14	<20		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/14	<10		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/14	<50		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/14	<20		mg/kg	
			Acid Extractable Boron (B)	2022/07/14	<500		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/14	<3.0		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/14	<20		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/14	<10		mg/kg	

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Bureau Veritas - Partial/Rush Results

Bureau Veritas Job #: C2J2853
Report Date: 2022/07/15

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Copper (Cu)	2022/07/14	<20		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/14	<500		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/14	<5.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/14	<20		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/14	<1.0		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/14	<20		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/14	<20		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/14	<5.0		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/14	<5.0		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/14	<50		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/14	<1.0		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/14	<20		mg/kg	
			Acid Extractable Uranium (U)	2022/07/14	<1.0		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/14	<20		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/14	<50		mg/kg	
8108302	JHY	RPD [TDG762-01]	Acid Extractable Aluminum (Al)	2022/07/14	10		%	35
			Acid Extractable Antimony (Sb)	2022/07/14	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/14	10		%	35
			Acid Extractable Barium (Ba)	2022/07/14	7.4		%	35
			Acid Extractable Beryllium (Be)	2022/07/14	NC		%	35
			Acid Extractable Boron (B)	2022/07/14	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/14	NC		%	35
			Acid Extractable Chromium (Cr)	2022/07/14	5.3		%	35
			Acid Extractable Cobalt (Co)	2022/07/14	NC		%	35
			Acid Extractable Copper (Cu)	2022/07/14	NC		%	35
			Acid Extractable Iron (Fe)	2022/07/14	6.0		%	35
			Acid Extractable Lead (Pb)	2022/07/14	6.4		%	35
			Acid Extractable Manganese (Mn)	2022/07/14	5.7		%	35
			Acid Extractable Mercury (Hg)	2022/07/14	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/14	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/14	7.7		%	35
			Acid Extractable Selenium (Se)	2022/07/14	NC		%	35
			Acid Extractable Silver (Ag)	2022/07/14	NC		%	35
			Acid Extractable Strontium (Sr)	2022/07/14	NC		%	35
			Acid Extractable Thallium (Tl)	2022/07/14	NC		%	35
			Acid Extractable Tin (Sn)	2022/07/14	NC		%	35
			Acid Extractable Uranium (U)	2022/07/14	NC		%	35
			Acid Extractable Vanadium (V)	2022/07/14	12		%	35
			Acid Extractable Zinc (Zn)	2022/07/14	8.1		%	35

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.

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) Matrix Spike exceeds acceptance limits, probable matrix interference.

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J2853
Report Date: 2022/07/15

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

VALIDATION SIGNATURE PAGE

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

Janah M Rhyno

Janah Rhyno, Metals Supervisor-Bedford

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.

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Your Project #: 60680068
Site Location: Seal Harbour, NS
Your C.O.C. #: 885378-04-01

Attention: Rory McNeil

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

Report Date: 2022/07/19
Report #: R7217217
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2J2853
Received: 2022/07/08, 09:26

Sample Matrix: Solid
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals Bulk Acid Extr. ICPMS	5	2022/07/14	2022/07/14	ATL SOP 00058	EPA 6020B R2 m
Sulfur (1)	5	N/A	2022/07/19	STL SOP-00028	MA. 310-CS 1.0 R3 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.
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 Montreal, 889 Montée De Liesse , Saint Laurent, QC, H4T 1P5

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Your Project #: 60680068
Site Location: Seal Harbour, NS
Your C.O.C. #: 885378-04-01

Attention: Rory McNeil

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

Report Date: 2022/07/19
Report #: R7217217
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2J2853
Received: 2022/07/08, 09:26

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas
19 Jul 2022 16:09:23

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253
==========
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Bureau Veritas Job #: C2J2853
Report Date: 2022/07/19

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

CONVENTIONALS (SOLID)

Bureau Veritas ID		TDG758	TDG758	TDG759	TDG760	TDG761	TDG762		
Sampling Date		2022/07/05	2022/07/05	2022/07/05	2022/07/05	2022/07/05	2022/07/05		
COC Number		885378-04-01	885378-04-01	885378-04-01	885378-04-01	885378-04-01	885378-04-01		
	UNITS	**WR-3**	**WR-3 Lab-Dup**	**WR-4**	**WR-5**	**WR-1**	**WR-2**	**RDL**	**QC Batch**
Inorganics									
Total Sulphur (S)	% g/g	0.028	0.033	1.3	1.1	0.19	0.024	0.010	8117629

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

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Bureau Veritas Job #: C2J2853
Report Date: 2022/07/19

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Bureau Veritas ID		TDG758	TDG759	TDG760	TDG761	TDG762	TDG762		
Sampling Date		2022/07/05	2022/07/05	2022/07/05	2022/07/05	2022/07/05	2022/07/05		
COC Number		885378-04-01	885378-04-01	885378-04-01	885378-04-01	885378-04-01	885378-04-01		
	UNITS	**WR-3**	**WR-4**	**WR-5**	**WR-1**	**WR-2**	**WR-2 Lab-Dup**	**RDL**	**QC Batch**
Metals									
Acid Extractable Aluminum (Al)	mg/kg	9400	6700	5900	6500	16000	17000	100	8108302
Acid Extractable Antimony (Sb)	mg/kg	<20	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Arsenic (As)	mg/kg	20	1300	190	17	130	110	10	8108302
Acid Extractable Barium (Ba)	mg/kg	64	<50	<50	<50	120	130	50	8108302
Acid Extractable Beryllium (Be)	mg/kg	<20	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Boron (B)	mg/kg	<500	<500	<500	<500	<500	<500	500	8108302
Acid Extractable Cadmium (Cd)	mg/kg	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	8108302
Acid Extractable Chromium (Cr)	mg/kg	<20	<20	<20	<20	24	25	20	8108302
Acid Extractable Cobalt (Co)	mg/kg	<10	<10	<10	<10	<10	<10	10	8108302
Acid Extractable Copper (Cu)	mg/kg	<20	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Iron (Fe)	mg/kg	16000	10000	11000	12000	27000	29000	500	8108302
Acid Extractable Lead (Pb)	mg/kg	<5.0	<5.0	<5.0	<5.0	7.8	8.3	5.0	8108302
Acid Extractable Manganese (Mn)	mg/kg	280	370	210	160	410	440	20	8108302
Acid Extractable Mercury (Hg)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8108302
Acid Extractable Molybdenum (Mo)	mg/kg	<20	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Nickel (Ni)	mg/kg	<20	<20	<20	<20	26	29	20	8108302
Acid Extractable Selenium (Se)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8108302
Acid Extractable Silver (Ag)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8108302
Acid Extractable Strontium (Sr)	mg/kg	<50	<50	<50	<50	<50	<50	50	8108302
Acid Extractable Thallium (Tl)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8108302
Acid Extractable Tin (Sn)	mg/kg	<20	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8108302
Acid Extractable Vanadium (V)	mg/kg	20	<20	<20	<20	26	30	20	8108302
Acid Extractable Zinc (Zn)	mg/kg	<50	<50	<50	<50	52	57	50	8108302

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

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Bureau Veritas Job #: C2J2853
Report Date: 2022/07/19

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

GENERAL COMMENTS

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

Package 1	7.0°C
Package 2	6.0°C
Package 3	11.0°C
Package 4	7.0°C

Results relate only to the items tested.

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Report Date: 2022/07/19

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8108302	JHY	Matrix Spike [TDG762-01]	Acid Extractable Antimony (Sb)	2022/07/14		60 (1)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/14		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/14		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/14		102	%	75 - 125
			Acid Extractable Boron (B)	2022/07/14		88	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/14		97	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/14		96	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/14		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/14		101	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/14		98	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/14		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/14		96	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/14		110	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/14		100	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/14		100	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/14		97	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/14		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/14		95	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/14		94	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/14		98	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/14		96	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/14		NC	%	75 - 125
8108302	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/14		99	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/14		99	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/14		95	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/14		98	%	75 - 125
			Acid Extractable Boron (B)	2022/07/14		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/14		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/14		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/14		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/14		98	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/14		97	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/14		101	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/14		97	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/14		99	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/14		101	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/14		100	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/14		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/14		94	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/14		98	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/14		100	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/14		98	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/14		98	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/14		102	%	75 - 125
8108302	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/07/14	<100		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/14	<20		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/14	<10		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/14	<50		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/14	<20		mg/kg	
			Acid Extractable Boron (B)	2022/07/14	<500		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/14	<3.0		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/14	<20		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/14	<10		mg/kg	

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Bureau Veritas Job #: C2J2853
Report Date: 2022/07/19

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Copper (Cu)	2022/07/14	<20		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/14	<500		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/14	<5.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/14	<20		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/14	<1.0		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/14	<20		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/14	<20		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/14	<5.0		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/14	<5.0		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/14	<50		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/14	<1.0		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/14	<20		mg/kg	
			Acid Extractable Uranium (U)	2022/07/14	<1.0		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/14	<20		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/14	<50		mg/kg	
8108302	JHY	RPD [TDG762-01]	Acid Extractable Aluminum (Al)	2022/07/14	10		%	35
			Acid Extractable Antimony (Sb)	2022/07/14	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/14	10		%	35
			Acid Extractable Barium (Ba)	2022/07/14	7.4		%	35
			Acid Extractable Beryllium (Be)	2022/07/14	NC		%	35
			Acid Extractable Boron (B)	2022/07/14	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/14	NC		%	35
			Acid Extractable Chromium (Cr)	2022/07/14	5.3		%	35
			Acid Extractable Cobalt (Co)	2022/07/14	NC		%	35
			Acid Extractable Copper (Cu)	2022/07/14	NC		%	35
			Acid Extractable Iron (Fe)	2022/07/14	6.0		%	35
			Acid Extractable Lead (Pb)	2022/07/14	6.4		%	35
			Acid Extractable Manganese (Mn)	2022/07/14	5.7		%	35
			Acid Extractable Mercury (Hg)	2022/07/14	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/14	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/14	7.7		%	35
			Acid Extractable Selenium (Se)	2022/07/14	NC		%	35
			Acid Extractable Silver (Ag)	2022/07/14	NC		%	35
			Acid Extractable Strontium (Sr)	2022/07/14	NC		%	35
			Acid Extractable Thallium (Tl)	2022/07/14	NC		%	35
			Acid Extractable Tin (Sn)	2022/07/14	NC		%	35
			Acid Extractable Uranium (U)	2022/07/14	NC		%	35
			Acid Extractable Vanadium (V)	2022/07/14	12		%	35
			Acid Extractable Zinc (Zn)	2022/07/14	8.1		%	35
8117629	BAG	QC Standard	Total Sulphur (S)	2022/07/19		102	%	77 - 128
8117629	BAG	Method Blank	Total Sulphur (S)	2022/07/19	<0.010		% g/g	

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Bureau Veritas Job #: C2J2853
Report Date: 2022/07/19

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8117629	BAG	RPD [TDG758-01]	Total Sulphur (S)	2022/07/19	15		%	30

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.

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) Matrix Spike exceeds acceptance limits, probable matrix interference.

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AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

VALIDATION SIGNATURE PAGE

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

Janah Rhyno, Metals Supervisor-Bedford

CHIMISTE
Shu Yang
2008-014
QUÉBEC

Shu Yang, Analyst 2

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Chain Of Custody Record

Laboratory 1 of 1

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#25656 AECOM Canada Ltd	Company Name		Quotation #		Bureau Veritas Job #	Bottle Order #:
Contact Name	Accounts Payable	Contact Name	Rory McNeil	P.O. #		C2J2853	885378
Address	1701 Hollis St SH400 Halifax NS B3J 3M8	Address		Project #	60680068	Chain Of Custody Record	Project Manager
Phone	(902) 428-2021 Fax: (902) 428-2031	Phone	Fax: (902) 428-2021	Project Name		C#885378-04-01	Marie Muise
Email	CANSSC.E-billing@aecom.com	Email	rory.mcneil@aecom.com	Site #			
				Sampled By	DB		

Regulatory Criteria:

Special Instructions

** Specify Matrix: Surface/Ground/Tapwater/Sewage/Effluent/Seawater Potable/Nonpotable/Tissue/Soil/Sludge/Metal

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: (will be applied if Rush TAT is not specified): ☒

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

Date Required: Time Required:

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

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered & Preserved	Lab Filtration Required	At. RCAp-MS Dissolved (FieldFilt) in W	Metals Water Diss. MS (as rec'd)	Mercury - Dissolved (CVAA,LL)	Metals Water Total MS	Atlantic RCAp-MS Total Metals in Water	Mercury - Total (CVAA,LL)	Metals Water Total ICPMS	Atlantic RCAp-MS Total Metals	Mercury - Total CVAA	Metals Bulk Acid Extr. ICPMS and Geochmical analysis -3 bags required for tests	# of Bottles	Comments / Hazards / Other Required Analysis
1	SID#585894	WR-3	July 5/22	Am	Waste Rock												X	3	
2	SID#585895	WR-4	↓	↓	↓												X	↓	
3	SID#585896	WR-5															X		
4	SID#585897	~~SED-1~~ WR-1															X		
5	SID#585898	~~SED-2~~ WR-2	↓	↓	↓												X	↓	
6	SID#585899	~~SED-3~~																	
7	SID#585900	~~SED-4~~																	
8	SID#585901	~~SED-5~~																	
9	SID#585902	~~SED-6~~																	
10	SID#585903	~~SED-7~~																	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
	July 8/22	9:00	HOLLY JESSONE				☐	ACTR	☐ Yes ☐ No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Bureau Veritas Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your Project #: 60680068
Site Location: Seal Harbour, NS
Your C.O.C. #: 885378-05-01

Attention: Rory McNeil

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

Report Date: 2022/07/22
Report #: R7222253
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2J2832
Received: 2022/07/08, 09:26

Sample Matrix: Ground Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	1	N/A	2022/07/19	N/A	SM 23 4500-CO2 D
Alkalinity	1	N/A	2022/07/18	ATL SOP 00142	SM 23 2320 B
Chloride	1	N/A	2022/07/18	ATL SOP 00014	SM 23 4500-Cl- E m
Colour	1	N/A	2022/07/18	ATL SOP 00020	SM 23 2120C m
Conductance - water	1	N/A	2022/07/18	ATL SOP 00004	SM 23 2510B m
Hardness (calculated as CaCO3)	1	N/A	2022/07/21	ATL SOP 00048	Auto Calc
Mercury - Dissolved (CVAA,LL)	4	2022/07/15	2022/07/15	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Diss. MS (as rec'd)	3	N/A	2022/07/19	ATL SOP 00058	EPA 6020B R2 m
Metals Water Diss. MS (as rec'd)	1	N/A	2022/07/20	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	1	N/A	2022/07/21	N/A	Auto Calc.
Anion and Cation Sum	1	N/A	2022/07/21	N/A	Auto Calc.
Nitrogen Ammonia - water	1	N/A	2022/07/18	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2022/07/19	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2022/07/18	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2022/07/19	ATL SOP 00018	ASTM D3867-16
pH (1)	1	N/A	2022/07/18	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho	1	N/A	2022/07/18	ATL SOP 00021	SM 23 4500-P E m
Sat. pH and Langelier Index (@ 20C)	1	N/A	2022/07/21	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	1	N/A	2022/07/21	ATL SOP 00049	Auto Calc.
Reactive Silica	1	N/A	2022/07/18	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2022/07/18	ATL SOP 00023	ASTM D516-16 m
Total Dissolved Solids (TDS calc)	1	N/A	2022/07/21	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	1	N/A	2022/07/18	ATL SOP 00203	SM 23 5310B m
Turbidity	1	N/A	2022/07/15	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

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Your Project #: 60680068
Site Location: Seal Harbour, NS
Your C.O.C. #: 885378-05-01

Attention: Rory McNeil

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

Report Date: 2022/07/22
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Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2J2832
Received: 2022/07/08, 09:26

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.
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) 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.
(2) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas
22 Jul 2022 14:54:24

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253
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Bureau Veritas Job #: C2J2832
Report Date: 2022/07/22

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		TDG691		
Sampling Date		2022/07/06		
COC Number		885378-05-01		
	UNITS	**MW23A**	**RDL**	**QC Batch**
Calculated Parameters				
Anion Sum	me/L	0.310	N/A	8103225
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	3.9	1.0	8103218
Calculated TDS	mg/L	31	1.0	8103230
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	8103218
Cation Sum	me/L	0.650	N/A	8103225
Hardness (CaCO3)	mg/L	5.4	1.0	8103223
Ion Balance (% Difference)	%	35.4	N/A	8103224
Langelier Index (@ 20C)	N/A	-4.54		8103228
Langelier Index (@ 4C)	N/A	-4.80		8103229
Nitrate (N)	mg/L	<0.050	0.050	8103226
Saturation pH (@ 20C)	N/A	10.7		8103228
Saturation pH (@ 4C)	N/A	10.9		8103229
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L	3.9	2.0	8114412
Dissolved Chloride (Cl-)	mg/L	8.2	1.0	8111919
Colour	TCU	<5.0	5.0	8111934
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	8111938
Nitrite (N)	mg/L	<0.010	0.010	8111946
Nitrogen (Ammonia Nitrogen)	mg/L	<0.50 (1)	0.50	8114367
Total Organic Carbon (C)	mg/L	7.1 (2)	5.0	8114845
Orthophosphate (P)	mg/L	<0.010	0.010	8111937
pH	pH	6.13		8114411
Reactive Silica (SiO2)	mg/L	4.0	0.50	8111933
Dissolved Sulphate (SO4)	mg/L	<2.0	2.0	8111932
Turbidity	NTU	970	1.0	8110963
Conductivity	uS/cm	46	1.0	8114410

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Elevated reporting limit due to sample matrix.
(2) Elevated reporting limit due to turbidity.

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Report Date: 2022/07/22

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

MERCURY BY COLD VAPOUR AA (GROUND WATER)

Bureau Veritas ID		TDG691	TDG692	TDG693	TDG694		
Sampling Date		2022/07/06	2022/07/06	2022/07/06	2022/07/07		
COC Number		885378-05-01	885378-05-01	885378-05-01	885378-05-01		
	UNITS	**MW23A**	**MW27A**	**MW22A**	**MW17-2**	**RDL**	**QC Batch**
Metals							
Dissolved Mercury (Hg)	ug/L	<0.013	<0.013	<0.013	<0.013	0.013	8106058

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (GROUND WATER)

Bureau Veritas ID		TDG691		TDG692	TDG693	TDG694		
Sampling Date		2022/07/06		2022/07/06	2022/07/06	2022/07/07		
COC Number		885378-05-01		885378-05-01	885378-05-01	885378-05-01		
	UNITS	**MW23A**	**QC Batch**	**MW27A**	**MW22A**	**MW17-2**	**RDL**	**QC Batch**
Metals								
Dissolved Aluminum (Al)	ug/L	270	8120122	94	12	180	5.0	8117498
Dissolved Antimony (Sb)	ug/L	<1.0	8120122	<1.0	<1.0	<1.0	1.0	8117498
Dissolved Arsenic (As)	ug/L	1.5	8120122	1.2	150	<1.0	1.0	8117498
Dissolved Barium (Ba)	ug/L	13	8120122	7.5	16	13	1.0	8117498
Dissolved Beryllium (Be)	ug/L	<0.10	8120122	<0.10	<0.10	<0.10	0.10	8117498
Dissolved Bismuth (Bi)	ug/L	<2.0	8120122	<2.0	<2.0	<2.0	2.0	8117498
Dissolved Boron (B)	ug/L	<50	8120122	<50	<50	<50	50	8117498
Dissolved Cadmium (Cd)	ug/L	<0.010	8120122	0.024	<0.010	0.021	0.010	8117498
Dissolved Calcium (Ca)	ug/L	1100	8120122	6100	12000	3300	100	8117498
Dissolved Chromium (Cr)	ug/L	2.2	8120122	<1.0	<1.0	<1.0	1.0	8117498
Dissolved Cobalt (Co)	ug/L	2.6	8120122	1.7	0.69	<0.40	0.40	8117498
Dissolved Copper (Cu)	ug/L	8.8	8120122	5.7	1.7	2.6	0.50	8117498
Dissolved Iron (Fe)	ug/L	8800	8120122	110	7700	<50	50	8117498
Dissolved Lead (Pb)	ug/L	0.65	8120122	<0.50	<0.50	<0.50	0.50	8117498
Dissolved Magnesium (Mg)	ug/L	660	8120122	1800	3200	490	100	8117498
Dissolved Manganese (Mn)	ug/L	350	8120122	260	330	10	2.0	8117498
Dissolved Molybdenum (Mo)	ug/L	<2.0	8120122	2.8	<2.0	<2.0	2.0	8117498
Dissolved Nickel (Ni)	ug/L	11	8120122	6.2	<2.0	<2.0	2.0	8117498
Dissolved Phosphorus (P)	ug/L	<100	8120122	<100	<100	<100	100	8117498
Dissolved Potassium (K)	ug/L	960	8120122	2400	2400	820	100	8117498
Dissolved Selenium (Se)	ug/L	<0.50	8120122	<0.50	<0.50	<0.50	0.50	8117498
Dissolved Silver (Ag)	ug/L	<0.10	8120122	<0.10	<0.10	0.17	0.10	8117498
Dissolved Sodium (Na)	ug/L	4600	8120122	14000	25000	4900	100	8117498
Dissolved Strontium (Sr)	ug/L	9.8	8120122	41	100	32	2.0	8117498
Dissolved Thallium (Tl)	ug/L	<0.10	8120122	<0.10	<0.10	<0.10	0.10	8117498
Dissolved Tin (Sn)	ug/L	<2.0	8120122	<2.0	<2.0	<2.0	2.0	8117498
Dissolved Titanium (Ti)	ug/L	9.1	8120122	6.0	<2.0	<2.0	2.0	8117498
Dissolved Uranium (U)	ug/L	<0.10	8120122	<0.10	<0.10	<0.10	0.10	8117498
Dissolved Vanadium (V)	ug/L	<2.0	8120122	<2.0	<2.0	<2.0	2.0	8117498
Dissolved Zinc (Zn)	ug/L	23	8120122	9.5	6.7	<5.0	5.0	8117498

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2J2832
Report Date: 2022/07/22

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

GENERAL COMMENTS

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

Package 1	7.0°C
Package 2	6.0°C
Package 3	11.0°C
Package 4	7.0°C

Sample TDG691 [MW23A] : RCAp Ion Balance acceptable. Low ionic strength sample.

Results relate only to the items tested.

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J2832
Report Date: 2022/07/22

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8106058	EPU	Matrix Spike	Dissolved Mercury (Hg)	2022/07/15		93	%	80 - 120
8106058	EPU	Spiked Blank	Dissolved Mercury (Hg)	2022/07/15		93	%	80 - 120
8106058	EPU	Method Blank	Dissolved Mercury (Hg)	2022/07/15	<0.013		ug/L	
8106058	EPU	RPD	Dissolved Mercury (Hg)	2022/07/15	NC		%	20
8110963	NGI	QC Standard	Turbidity	2022/07/15		110	%	80 - 120
8110963	NGI	Spiked Blank	Turbidity	2022/07/15		102	%	80 - 120
8110963	NGI	Method Blank	Turbidity	2022/07/15	<0.10		NTU	
8110963	NGI	RPD	Turbidity	2022/07/15	19		%	20
8111919	MCN	Matrix Spike	Dissolved Chloride (Cl-)	2022/07/18		94	%	80 - 120
8111919	MCN	Spiked Blank	Dissolved Chloride (Cl-)	2022/07/18		98	%	80 - 120
8111919	MCN	Method Blank	Dissolved Chloride (Cl-)	2022/07/18	<1.0		mg/L	
8111919	MCN	RPD	Dissolved Chloride (Cl-)	2022/07/18	1.5		%	20
8111932	MCN	Matrix Spike	Dissolved Sulphate (SO4)	2022/07/18		95	%	80 - 120
8111932	MCN	Spiked Blank	Dissolved Sulphate (SO4)	2022/07/18		99	%	80 - 120
8111932	MCN	Method Blank	Dissolved Sulphate (SO4)	2022/07/18	<2.0		mg/L	
8111932	MCN	RPD	Dissolved Sulphate (SO4)	2022/07/18	2.5		%	20
8111933	MCN	Matrix Spike	Reactive Silica (SiO2)	2022/07/19		NC	%	80 - 120
8111933	MCN	Spiked Blank	Reactive Silica (SiO2)	2022/07/18		94	%	80 - 120
8111933	MCN	Method Blank	Reactive Silica (SiO2)	2022/07/18	<0.50		mg/L	
8111933	MCN	RPD	Reactive Silica (SiO2)	2022/07/19	16		%	20
8111934	MCN	Spiked Blank	Colour	2022/07/18		92	%	80 - 120
8111934	MCN	Method Blank	Colour	2022/07/18	<5.0		TCU	
8111934	MCN	RPD	Colour	2022/07/18	NC		%	20
8111937	MCN	Matrix Spike	Orthophosphate (P)	2022/07/18		90	%	80 - 120
8111937	MCN	Spiked Blank	Orthophosphate (P)	2022/07/18		92	%	80 - 120
8111937	MCN	Method Blank	Orthophosphate (P)	2022/07/18	<0.010		mg/L	
8111937	MCN	RPD	Orthophosphate (P)	2022/07/18	1.9		%	20
8111938	MCN	Matrix Spike	Nitrate + Nitrite (N)	2022/07/19		100	%	80 - 120
8111938	MCN	Spiked Blank	Nitrate + Nitrite (N)	2022/07/19		103	%	80 - 120
8111938	MCN	Method Blank	Nitrate + Nitrite (N)	2022/07/19	<0.050		mg/L	
8111938	MCN	RPD	Nitrate + Nitrite (N)	2022/07/19	1.0		%	20
8111946	MCN	Matrix Spike	Nitrite (N)	2022/07/18		101	%	80 - 120
8111946	MCN	Spiked Blank	Nitrite (N)	2022/07/18		94	%	80 - 120
8111946	MCN	Method Blank	Nitrite (N)	2022/07/18	<0.010		mg/L	
8111946	MCN	RPD	Nitrite (N)	2022/07/18	NC		%	20
8114367	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2022/07/18		99	%	80 - 120
8114367	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2022/07/18		102	%	80 - 120
8114367	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2022/07/18	<0.050		mg/L	
8114367	MCN	RPD	Nitrogen (Ammonia Nitrogen)	2022/07/18	NC		%	20
8114410	NGI	Spiked Blank	Conductivity	2022/07/18		97	%	80 - 120
8114410	NGI	Method Blank	Conductivity	2022/07/18	1.3, RDL=1.0		uS/cm	
8114410	NGI	RPD	Conductivity	2022/07/18	0.34		%	10
8114411	NGI	Spiked Blank	pH	2022/07/18		100	%	97 - 103
8114411	NGI	RPD	pH	2022/07/18	0.37		%	N/A
8114412	NGI	Spiked Blank	Total Alkalinity (Total as CaCO3)	2022/07/18		93	%	80 - 120
8114412	NGI	Method Blank	Total Alkalinity (Total as CaCO3)	2022/07/18	<2.0		mg/L	
8114412	NGI	RPD	Total Alkalinity (Total as CaCO3)	2022/07/18	18		%	20
8114845	JHH	Matrix Spike	Total Organic Carbon (C)	2022/07/18		99	%	85 - 115
8114845	JHH	Spiked Blank	Total Organic Carbon (C)	2022/07/18		99	%	80 - 120
8114845	JHH	Method Blank	Total Organic Carbon (C)	2022/07/18	<0.50		mg/L	
8114845	JHH	RPD	Total Organic Carbon (C)	2022/07/18	2.6		%	15
8117498	JHY	Matrix Spike	Dissolved Aluminum (Al)	2022/07/21		100	%	80 - 120

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Report Date: 2022/07/22

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Antimony (Sb)	2022/07/21		107	%	80 - 120
			Dissolved Arsenic (As)	2022/07/21		100	%	80 - 120
			Dissolved Barium (Ba)	2022/07/21		102	%	80 - 120
			Dissolved Beryllium (Be)	2022/07/21		104	%	80 - 120
			Dissolved Bismuth (Bi)	2022/07/21		102	%	80 - 120
			Dissolved Boron (B)	2022/07/21		107	%	80 - 120
			Dissolved Cadmium (Cd)	2022/07/21		101	%	80 - 120
			Dissolved Calcium (Ca)	2022/07/21		101	%	80 - 120
			Dissolved Chromium (Cr)	2022/07/21		100	%	80 - 120
			Dissolved Cobalt (Co)	2022/07/21		99	%	80 - 120
			Dissolved Copper (Cu)	2022/07/21		99	%	80 - 120
			Dissolved Iron (Fe)	2022/07/21		102	%	80 - 120
			Dissolved Lead (Pb)	2022/07/21		102	%	80 - 120
			Dissolved Magnesium (Mg)	2022/07/21		105	%	80 - 120
			Dissolved Manganese (Mn)	2022/07/21		101	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/07/21		104	%	80 - 120
			Dissolved Nickel (Ni)	2022/07/21		101	%	80 - 120
			Dissolved Phosphorus (P)	2022/07/21		109	%	80 - 120
			Dissolved Potassium (K)	2022/07/21		109	%	80 - 120
			Dissolved Selenium (Se)	2022/07/21		102	%	80 - 120
			Dissolved Silver (Ag)	2022/07/21		94	%	80 - 120
			Dissolved Sodium (Na)	2022/07/21		NC	%	80 - 120
			Dissolved Strontium (Sr)	2022/07/21		102	%	80 - 120
			Dissolved Thallium (Tl)	2022/07/21		105	%	80 - 120
			Dissolved Tin (Sn)	2022/07/21		106	%	80 - 120
			Dissolved Titanium (Ti)	2022/07/21		107	%	80 - 120
			Dissolved Uranium (U)	2022/07/21		107	%	80 - 120
			Dissolved Vanadium (V)	2022/07/21		105	%	80 - 120
			Dissolved Zinc (Zn)	2022/07/21		101	%	80 - 120
8117498	JHY	Spiked Blank	Dissolved Aluminum (Al)	2022/07/20		102	%	80 - 120
			Dissolved Antimony (Sb)	2022/07/20		107	%	80 - 120
			Dissolved Arsenic (As)	2022/07/20		98	%	80 - 120
			Dissolved Barium (Ba)	2022/07/20		102	%	80 - 120
			Dissolved Beryllium (Be)	2022/07/20		106	%	80 - 120
			Dissolved Bismuth (Bi)	2022/07/20		104	%	80 - 120
			Dissolved Boron (B)	2022/07/20		106	%	80 - 120
			Dissolved Cadmium (Cd)	2022/07/20		101	%	80 - 120
			Dissolved Calcium (Ca)	2022/07/20		106	%	80 - 120
			Dissolved Chromium (Cr)	2022/07/20		100	%	80 - 120
			Dissolved Cobalt (Co)	2022/07/20		100	%	80 - 120
			Dissolved Copper (Cu)	2022/07/20		99	%	80 - 120
			Dissolved Iron (Fe)	2022/07/20		105	%	80 - 120
			Dissolved Lead (Pb)	2022/07/20		104	%	80 - 120
			Dissolved Magnesium (Mg)	2022/07/20		104	%	80 - 120
			Dissolved Manganese (Mn)	2022/07/20		103	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/07/20		107	%	80 - 120
			Dissolved Nickel (Ni)	2022/07/20		101	%	80 - 120
			Dissolved Phosphorus (P)	2022/07/20		108	%	80 - 120
			Dissolved Potassium (K)	2022/07/20		108	%	80 - 120
			Dissolved Selenium (Se)	2022/07/20		102	%	80 - 120
			Dissolved Silver (Ag)	2022/07/20		100	%	80 - 120
			Dissolved Sodium (Na)	2022/07/20		103	%	80 - 120
			Dissolved Strontium (Sr)	2022/07/20		103	%	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
			Dissolved Thallium (Tl)	2022/07/20		105	%	80 - 120
			Dissolved Tin (Sn)	2022/07/20		106	%	80 - 120
			Dissolved Titanium (Ti)	2022/07/20		106	%	80 - 120
			Dissolved Uranium (U)	2022/07/20		106	%	80 - 120
			Dissolved Vanadium (V)	2022/07/20		104	%	80 - 120
			Dissolved Zinc (Zn)	2022/07/20		98	%	80 - 120
8117498	JHY	Method Blank	Dissolved Aluminum (Al)	2022/07/19	<5.0		ug/L	
			Dissolved Antimony (Sb)	2022/07/19	<1.0		ug/L	
			Dissolved Arsenic (As)	2022/07/19	<1.0		ug/L	
			Dissolved Barium (Ba)	2022/07/19	<1.0		ug/L	
			Dissolved Beryllium (Be)	2022/07/19	<0.10		ug/L	
			Dissolved Bismuth (Bi)	2022/07/19	<2.0		ug/L	
			Dissolved Boron (B)	2022/07/19	<50		ug/L	
			Dissolved Cadmium (Cd)	2022/07/19	<0.010		ug/L	
			Dissolved Calcium (Ca)	2022/07/19	<100		ug/L	
			Dissolved Chromium (Cr)	2022/07/19	<1.0		ug/L	
			Dissolved Cobalt (Co)	2022/07/19	<0.40		ug/L	
			Dissolved Copper (Cu)	2022/07/19	<0.50		ug/L	
			Dissolved Iron (Fe)	2022/07/19	<50		ug/L	
			Dissolved Lead (Pb)	2022/07/19	<0.50		ug/L	
			Dissolved Magnesium (Mg)	2022/07/19	<100		ug/L	
			Dissolved Manganese (Mn)	2022/07/19	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2022/07/19	<2.0		ug/L	
			Dissolved Nickel (Ni)	2022/07/19	<2.0		ug/L	
			Dissolved Phosphorus (P)	2022/07/19	<100		ug/L	
			Dissolved Potassium (K)	2022/07/19	<100		ug/L	
			Dissolved Selenium (Se)	2022/07/19	<0.50		ug/L	
			Dissolved Silver (Ag)	2022/07/19	<0.10		ug/L	
			Dissolved Sodium (Na)	2022/07/19	<100		ug/L	
			Dissolved Strontium (Sr)	2022/07/19	<2.0		ug/L	
			Dissolved Thallium (Tl)	2022/07/19	<0.10		ug/L	
			Dissolved Tin (Sn)	2022/07/19	<2.0		ug/L	
			Dissolved Titanium (Ti)	2022/07/19	<2.0		ug/L	
			Dissolved Uranium (U)	2022/07/19	<0.10		ug/L	
			Dissolved Vanadium (V)	2022/07/19	<2.0		ug/L	
			Dissolved Zinc (Zn)	2022/07/19	<5.0		ug/L	
8117498	JHY	RPD	Dissolved Aluminum (Al)	2022/07/20	1.1		%	20
			Dissolved Antimony (Sb)	2022/07/20	NC		%	20
			Dissolved Arsenic (As)	2022/07/20	3.0		%	20
			Dissolved Barium (Ba)	2022/07/20	0.82		%	20
			Dissolved Beryllium (Be)	2022/07/20	NC		%	20
			Dissolved Bismuth (Bi)	2022/07/20	NC		%	20
			Dissolved Boron (B)	2022/07/20	NC		%	20
			Dissolved Cadmium (Cd)	2022/07/20	NC		%	20
			Dissolved Calcium (Ca)	2022/07/20	0.91		%	20
			Dissolved Chromium (Cr)	2022/07/20	NC		%	20
			Dissolved Cobalt (Co)	2022/07/20	NC		%	20
			Dissolved Copper (Cu)	2022/07/20	NC		%	20
			Dissolved Iron (Fe)	2022/07/20	7.4		%	20
			Dissolved Lead (Pb)	2022/07/20	NC		%	20
			Dissolved Magnesium (Mg)	2022/07/20	0.0038		%	20
			Dissolved Manganese (Mn)	2022/07/20	0.94		%	20
			Dissolved Molybdenum (Mo)	2022/07/20	0.39		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Nickel (Ni)	2022/07/20	NC		%	20
			Dissolved Phosphorus (P)	2022/07/20	NC		%	20
			Dissolved Potassium (K)	2022/07/20	1.3		%	20
			Dissolved Selenium (Se)	2022/07/20	NC		%	20
			Dissolved Silver (Ag)	2022/07/20	NC		%	20
			Dissolved Sodium (Na)	2022/07/20	0.86		%	20
			Dissolved Strontium (Sr)	2022/07/20	0.72		%	20
			Dissolved Thallium (Tl)	2022/07/20	NC		%	20
			Dissolved Tin (Sn)	2022/07/20	NC		%	20
			Dissolved Titanium (Ti)	2022/07/20	NC		%	20
			Dissolved Uranium (U)	2022/07/20	0.55		%	20
			Dissolved Vanadium (V)	2022/07/20	5.1		%	20
			Dissolved Zinc (Zn)	2022/07/20	NC		%	20
8120122	JHY	Matrix Spike	Dissolved Aluminum (Al)	2022/07/20		96	%	80 - 120
			Dissolved Antimony (Sb)	2022/07/20		106	%	80 - 120
			Dissolved Arsenic (As)	2022/07/20		95	%	80 - 120
			Dissolved Barium (Ba)	2022/07/20		97	%	80 - 120
			Dissolved Beryllium (Be)	2022/07/20		100	%	80 - 120
			Dissolved Bismuth (Bi)	2022/07/20		97	%	80 - 120
			Dissolved Boron (B)	2022/07/20		102	%	80 - 120
			Dissolved Cadmium (Cd)	2022/07/20		99	%	80 - 120
			Dissolved Calcium (Ca)	2022/07/20		101	%	80 - 120
			Dissolved Chromium (Cr)	2022/07/20		95	%	80 - 120
			Dissolved Cobalt (Co)	2022/07/20		97	%	80 - 120
			Dissolved Copper (Cu)	2022/07/20		95	%	80 - 120
			Dissolved Iron (Fe)	2022/07/20		NC	%	80 - 120
			Dissolved Lead (Pb)	2022/07/20		99	%	80 - 120
			Dissolved Magnesium (Mg)	2022/07/20		97	%	80 - 120
			Dissolved Manganese (Mn)	2022/07/20		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/07/20		101	%	80 - 120
			Dissolved Nickel (Ni)	2022/07/20		97	%	80 - 120
			Dissolved Phosphorus (P)	2022/07/20		102	%	80 - 120
			Dissolved Potassium (K)	2022/07/20		100	%	80 - 120
			Dissolved Selenium (Se)	2022/07/20		100	%	80 - 120
			Dissolved Silver (Ag)	2022/07/20		99	%	80 - 120
			Dissolved Sodium (Na)	2022/07/20		96	%	80 - 120
			Dissolved Strontium (Sr)	2022/07/20		99	%	80 - 120
			Dissolved Thallium (Tl)	2022/07/20		101	%	80 - 120
			Dissolved Tin (Sn)	2022/07/20		102	%	80 - 120
			Dissolved Titanium (Ti)	2022/07/20		101	%	80 - 120
			Dissolved Uranium (U)	2022/07/20		101	%	80 - 120
			Dissolved Vanadium (V)	2022/07/20		98	%	80 - 120
			Dissolved Zinc (Zn)	2022/07/20		101	%	80 - 120
8120122	JHY	Spiked Blank	Dissolved Aluminum (Al)	2022/07/20		107	%	80 - 120
			Dissolved Antimony (Sb)	2022/07/20		103	%	80 - 120
			Dissolved Arsenic (As)	2022/07/20		94	%	80 - 120
			Dissolved Barium (Ba)	2022/07/20		99	%	80 - 120
			Dissolved Beryllium (Be)	2022/07/20		101	%	80 - 120
			Dissolved Bismuth (Bi)	2022/07/20		99	%	80 - 120
			Dissolved Boron (B)	2022/07/20		104	%	80 - 120
			Dissolved Cadmium (Cd)	2022/07/20		101	%	80 - 120
			Dissolved Calcium (Ca)	2022/07/20		109	%	80 - 120
			Dissolved Chromium (Cr)	2022/07/20		95	%	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
			Dissolved Cobalt (Co)	2022/07/20		97	%	80 - 120
			Dissolved Copper (Cu)	2022/07/20		96	%	80 - 120
			Dissolved Iron (Fe)	2022/07/20		107	%	80 - 120
			Dissolved Lead (Pb)	2022/07/20		101	%	80 - 120
			Dissolved Magnesium (Mg)	2022/07/20		105	%	80 - 120
			Dissolved Manganese (Mn)	2022/07/20		99	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/07/20		98	%	80 - 120
			Dissolved Nickel (Ni)	2022/07/20		98	%	80 - 120
			Dissolved Phosphorus (P)	2022/07/20		109	%	80 - 120
			Dissolved Potassium (K)	2022/07/20		106	%	80 - 120
			Dissolved Selenium (Se)	2022/07/20		99	%	80 - 120
			Dissolved Silver (Ag)	2022/07/20		98	%	80 - 120
			Dissolved Sodium (Na)	2022/07/20		103	%	80 - 120
			Dissolved Strontium (Sr)	2022/07/20		98	%	80 - 120
			Dissolved Thallium (Tl)	2022/07/20		100	%	80 - 120
			Dissolved Tin (Sn)	2022/07/20		106	%	80 - 120
			Dissolved Titanium (Ti)	2022/07/20		103	%	80 - 120
			Dissolved Uranium (U)	2022/07/20		102	%	80 - 120
			Dissolved Vanadium (V)	2022/07/20		97	%	80 - 120
			Dissolved Zinc (Zn)	2022/07/20		101	%	80 - 120
8120122	JHY	Method Blank	Dissolved Aluminum (Al)	2022/07/20	<5.0		ug/L	
			Dissolved Antimony (Sb)	2022/07/20	<1.0		ug/L	
			Dissolved Arsenic (As)	2022/07/20	<1.0		ug/L	
			Dissolved Barium (Ba)	2022/07/20	<1.0		ug/L	
			Dissolved Beryllium (Be)	2022/07/20	<0.10		ug/L	
			Dissolved Bismuth (Bi)	2022/07/20	<2.0		ug/L	
			Dissolved Boron (B)	2022/07/20	<50		ug/L	
			Dissolved Cadmium (Cd)	2022/07/20	<0.010		ug/L	
			Dissolved Calcium (Ca)	2022/07/20	<100		ug/L	
			Dissolved Chromium (Cr)	2022/07/20	<1.0		ug/L	
			Dissolved Cobalt (Co)	2022/07/20	<0.40		ug/L	
			Dissolved Copper (Cu)	2022/07/20	<0.50		ug/L	
			Dissolved Iron (Fe)	2022/07/20	<50		ug/L	
			Dissolved Lead (Pb)	2022/07/20	<0.50		ug/L	
			Dissolved Magnesium (Mg)	2022/07/20	<100		ug/L	
			Dissolved Manganese (Mn)	2022/07/20	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2022/07/20	<2.0		ug/L	
			Dissolved Nickel (Ni)	2022/07/20	<2.0		ug/L	
			Dissolved Phosphorus (P)	2022/07/20	<100		ug/L	
			Dissolved Potassium (K)	2022/07/20	<100		ug/L	
			Dissolved Selenium (Se)	2022/07/20	<0.50		ug/L	
			Dissolved Silver (Ag)	2022/07/20	<0.10		ug/L	
			Dissolved Sodium (Na)	2022/07/20	<100		ug/L	
			Dissolved Strontium (Sr)	2022/07/20	<2.0		ug/L	
			Dissolved Thallium (Tl)	2022/07/20	<0.10		ug/L	
			Dissolved Tin (Sn)	2022/07/20	<2.0		ug/L	
			Dissolved Titanium (Ti)	2022/07/20	<2.0		ug/L	
			Dissolved Uranium (U)	2022/07/20	<0.10		ug/L	
			Dissolved Vanadium (V)	2022/07/20	<2.0		ug/L	
			Dissolved Zinc (Zn)	2022/07/20	<5.0		ug/L	
8120122	JHY	RPD	Dissolved Manganese (Mn)	2022/07/20	0.69		%	20

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Bureau Veritas Job #: C2J2832
Report Date: 2022/07/22

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Zinc (Zn)	2022/07/20	3.2		%	20

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.

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 #: C2J2832
Report Date: 2022/07/22

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

VALIDATION SIGNATURE PAGE

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

Janah Rhyno, Metals Supervisor-Bedford

Bureau Veritas Proprietary Software
Logiciel Propriétaire de Bureau Veritas

Automated Statchk

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200 Bluewater Road, Bedford, Nova Scotia Canada B4B 1G9 Tel:(902) 420-0203 Toll-free:800-563-6266 Fax:(902) 420-8612 www.bvna.com

Chain Of Custody Record

1 of 1

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#25656 AECOM Canada Ltd	Company Name		Quotation #		Bureau Veritas Job #	Bottle Order #:
Contact Name	Accounts Payable	Contact Name	Rory McNeil	P.O. #		C2J2832	885378
Address	1701 Hollis St SH400 Halifax NS B3J 3M8	Address		Project #	60680068	Chain Of Custody Record	Project Manager
Phone	(902) 428-2021 Fax: (902) 428-2031	Phone	Fax: (902) 428-2021	Project Name		C#885378-05-01	Marie Muise
Email	CANSSC.E-billing@aecom.com	Email	rory.mcneil@aecom.com	Site #			
				Sampled By	DB		

Regulatory Criteria:

** Specify Matrix: Surface/Ground/Tapwater/Sewage/Effluent/Seawater Potable/Nonpotable/Tissue/Soil/Sludge/Metal

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered & Preserved	Lab Filtration Required	At. RCAp-MS Dissolved (FieldFilt) in W	Metals Water Diss. MS (as rec'd)	Mercury - Dissolved (CVAA,LL)	Metals Water Total MS	Atlantic RCAp-MS Total Metals in Water	Mercury - Total (CVAA,LL)	Metals Water Total ICPMS	Atlantic RCAp-MS Total Metals	Mercury - Total CVAA	Metals Bulk Acid Extr. ICPMS and Geochemical analysis -3 bags required for tests	# of Bottles	Comments / Hazards / Other Required Analysis
1	SID#585904	SEB-MW23A	July 6/22	AM	GW	X		X		X								5	
2	SID#585905	SEB-MW27A	↓	↓	↓	X			X	X								2	
3	SID#585906	SEB-MW22A	↓	↓	↓	X			X	X								2	
4	SID#585907	SEB-MW17-2	July 7/22	↓	↓	X			X	X								2	
5	SID#585908	SEB-MW2																	
6	SID#585909	SEB-MW3																	
7	SID#585910	SEB-MW4																	
8	SID#585911	SEB-MW5																	
9	SID#585912	SEB-MW6																	
10	SID#585913	SEB-MW7																	

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [X]

(will be applied if Rush TAT is not specified):

Standard TAT = 5-7 Working days for most tests..

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

Date Required: Time Required

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
	July 5/22	9:06	HOLLY JESSNE				[ ]	ACTR	[ ] Yes [ ] No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Bureau Veritas Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your Project #: 60680068
Site Location: Seal Harbour, NS

Attention: Rory McNeil

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

Your C.O.C. #: 885378-05-01, 885378-01-01, 885378-02-01, 885378-03-01, 885378-04-01

Report Date: 2022/08/04
Report #: R7238745
Version: 2 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2J9495
Received: 2022/07/15, 11:47

Sample Matrix: Surface Water
Samples Received: 26

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	6	N/A	2022/07/22	N/A	SM 23 4500-CO2 D
Alkalinity	4	N/A	2022/07/21	ATL SOP 00142	SM 23 2320 B
Alkalinity	2	N/A	2022/07/22	ATL SOP 00142	SM 23 2320 B
Chloride	3	N/A	2022/07/21	ATL SOP 00014	SM 23 4500-Cl- E m
Chloride	1	N/A	2022/07/22	ATL SOP 00014	SM 23 4500-Cl- E m
Chloride	2	N/A	2022/07/26	ATL SOP 00014	SM 23 4500-Cl- E m
Colour	3	N/A	2022/07/22	ATL SOP 00020	SM 23 2120C m
Colour	3	N/A	2022/07/25	ATL SOP 00020	SM 23 2120C m
Total Cyanide (1)	3	2022/07/21	2022/07/21	CAM SOP-00457	OMOE E3015 5 m
Conductance - water	6	N/A	2022/07/21	ATL SOP 00004	SM 23 2510B m
Hardness (calculated as CaCO3)	3	N/A	2022/07/28	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3)	3	N/A	2022/07/29	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	1	2022/07/22	2022/07/22	ATL SOP 00026	EPA 245.1 R3 m
Mercury - Total (CVAA,LL)	25	2022/07/25	2022/07/25	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	10	2022/07/27	2022/07/27	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	15	2022/07/27	2022/07/28	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	1	2022/07/27	2022/07/29	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	3	N/A	2022/07/28	N/A	Auto Calc.
Ion Balance (% Difference)	3	N/A	2022/07/29	N/A	Auto Calc.
Anion and Cation Sum	3	N/A	2022/07/28	N/A	Auto Calc.
Anion and Cation Sum	3	N/A	2022/07/29	N/A	Auto Calc.
Nitrogen Ammonia - water	6	N/A	2022/07/21	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	4	N/A	2022/07/21	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrate + Nitrite	2	N/A	2022/07/25	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	4	N/A	2022/07/21	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrite	2	N/A	2022/07/26	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	4	N/A	2022/07/22	ATL SOP 00018	ASTM D3867-16

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Bureau Veritas - Partial/Rush Results

Your Project #: 60680068
Site Location: Seal Harbour, NS

Attention: Rory McNeil

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

Your C.O.C. #: 885378-05-01, 885378-01-01, 885378-02-01, 885378-03-01, 885378-04-01

Report Date: 2022/08/04
Report #: R7238745
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CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2J9495
Received: 2022/07/15, 11:47

Sample Matrix: Surface Water
Samples Received: 26

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Nitrogen - Nitrate (as N)	2	N/A	2022/07/27	ATL SOP 00018	ASTM D3867-16
pH (2)	4	N/A	2022/07/21	ATL SOP 00003	SM 23 4500-H+ B m
pH (2)	2	N/A	2022/07/22	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho	4	N/A	2022/07/21	ATL SOP 00021	SM 23 4500-P E m
Phosphorus - ortho	2	N/A	2022/07/26	ATL SOP 00021	SM 23 4500-P E m
Sat. pH and Langelier Index (@ 20C)	3	N/A	2022/07/28	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 20C)	3	N/A	2022/07/29	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	3	N/A	2022/07/28	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	3	N/A	2022/07/29	ATL SOP 00049	Auto Calc.
Reactive Silica	4	N/A	2022/07/21	ATL SOP 00022	EPA 366.0 m
Reactive Silica	2	N/A	2022/07/26	ATL SOP 00022	EPA 366.0 m
Sulphate	2	N/A	2022/07/21	ATL SOP 00023	ASTM D516-16 m
Sulphate	1	N/A	2022/07/22	ATL SOP 00023	ASTM D516-16 m
Sulphate	3	N/A	2022/07/26	ATL SOP 00023	ASTM D516-16 m
Total Dissolved Solids (TDS calc)	3	N/A	2022/07/28	N/A	Auto Calc.
Total Dissolved Solids (TDS calc)	3	N/A	2022/07/29	N/A	Auto Calc.
Organic carbon - Total (TOC) (3)	5	N/A	2022/07/21	ATL SOP 00203	SM 23 5310B m
Organic carbon - Total (TOC) (3)	1	N/A	2022/07/22	ATL SOP 00203	SM 23 5310B m
Turbidity	6	N/A	2022/07/26	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

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Bureau Veritas - Partial/Rush Results

Your Project #: 60680068
Site Location: Seal Harbour, NS

Attention: Rory McNeil

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CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2J9495
Received: 2022/07/15, 11:47

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.
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 Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
(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.

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas
04 Aug 2022 09:24:23

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253
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Bureau Veritas - Partial/Rush Results

Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

RESULTS OF ANALYSES OF SURFACE WATER

Bureau Veritas ID		TES388			TES396			TES397		
Sampling Date		2022/07/13			2022/07/13			2022/07/13		
COC Number		885378-01-01			885378-02-01			885378-02-01		
	UNITS	**SW-1**	**RDL**	**QC Batch**	**SW-9**	**RDL**	**QC Batch**	**SW-10**	**RDL**	**QC Batch**
Calculated Parameters										
Anion Sum	me/L	0.210	N/A	8114744	5.90	N/A	8114744			
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	8114741	<1.0	1.0	8114741			
Calculated TDS	mg/L	27	1.0	8114748	260	1.0	8114748			
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	8114741	<1.0	1.0	8114741			
Cation Sum	me/L	0.530	N/A	8114744	1.79	N/A	8114744			
Hardness (CaCO3)	mg/L	6.1	1.0	8114710	20	1.0	8114710			
Ion Balance (% Difference)	%	43.2	N/A	8114743	53.5	N/A	8114743			
Langelier Index (@ 20C)	N/A	NC		8114746	NC		8114746			
Langelier Index (@ 4C)	N/A	NC		8114747	NC		8114747			
Nitrate (N)	mg/L	<0.050	0.050	8114745	<0.050	0.050	8114745			
Saturation pH (@ 20C)	N/A	NC		8114746	NC		8114746			
Saturation pH (@ 4C)	N/A	NC		8114747	NC		8114747			
Inorganics										
Total Alkalinity (Total as CaCO3)	mg/L	<2.0	2.0	8121923	<2.0	2.0	8121923			
Dissolved Chloride (Cl-)	mg/L	7.5	1.0	8124571	180	5.0	8121853			
Colour	TCU	160 (1)	25	8124586	130	25	8121860			
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	8124589	<0.050	0.050	8121864			
Nitrite (N)	mg/L	<0.010	0.010	8124590	<0.010	0.010	8121865			
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	8121934	0.16	0.050	8121934			
Total Organic Carbon (C)	mg/L	25	0.50	8122344	15	0.50	8122347			
Orthophosphate (P)	mg/L	<2.0 (2)	2.0	8124588	0.059	0.010	8121861			
pH	pH	5.22		8121921	4.24		8121921			
Reactive Silica (SiO2)	mg/L	7.6	0.50	8124585	1.1	0.50	8121856			
Dissolved Sulphate (SO4)	mg/L	<2.0	2.0	8124573	34	2.0	8121855			
Total Cyanide (CN)	mg/L				<0.0050	0.0050	8122226	<0.0050	0.0050	8122226
Turbidity	NTU	16	0.10	8130685	1.5	0.10	8130648			
Conductivity	uS/cm	64	1.0	8121916	750	1.0	8121916			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Poor duplicate agreement due to sample inhomogeniety.
(2) Elevated reporting limit due to sample matrix.

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

RESULTS OF ANALYSES OF SURFACE WATER

Bureau Veritas ID		TES398			TES405			TES407		
Sampling Date		2022/07/14			2022/07/14			2022/07/13		
COC Number		885378-02-01			885378-03-01			885378-03-01		
	UNITS	**SW-11**	**RDL**	**QC Batch**	**SW-18**	**RDL**	**QC Batch**	**PW-1**	**RDL**	**QC Batch**
Calculated Parameters										
Anion Sum	me/L	456	N/A	8114744				0.990	N/A	8114744
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	97	1.0	8114741				33	1.0	8114741
Calculated TDS	mg/L	26000	1.0	8114748				1300	1.0	8114748
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	8114741				<1.0	1.0	8114741
Cation Sum	me/L	459	N/A	8114744				46.0	N/A	8114744
Hardness (CaCO3)	mg/L	4800	1.0	8114710				300	1.0	8114710
Ion Balance (% Difference)	%	0.390	N/A	8114743				95.8	N/A	8114743
Langelier Index (@ 20C)	N/A	0.262		8114746				-1.81		8114746
Langelier Index (@ 4C)	N/A	0.0240		8114747				-2.05		8114747
Nitrate (N)	mg/L	<0.050	0.050	8114745				<0.050	0.050	8114745
Saturation pH (@ 20C)	N/A	7.37		8114746				8.13		8114746
Saturation pH (@ 4C)	N/A	7.60		8114747				8.37		8114747
Inorganics										
Total Alkalinity (Total as CaCO3)	mg/L	98	2.0	8121923				33	2.0	8121923
Dissolved Chloride (Cl-)	mg/L	15000	500	8124591				8.0	1.0	8121853
Colour	TCU	7.6	5.0	8124878				200	25	8125886
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	8124884				<0.050	0.050	8121864
Nitrite (N)	mg/L	<0.010	0.010	8124887				<0.010	0.010	8121865
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	8121934				<0.50 (1)	0.50	8121934
Total Organic Carbon (C)	mg/L	3.1	0.50	8122344				170 (2)	50	8122344
Orthophosphate (P)	mg/L	<0.010	0.010	8124880				0.48	0.010	8121861
pH	pH	7.63		8121921				6.32		8121921
Reactive Silica (SiO2)	mg/L	<0.50	0.50	8124872				30	1.0	8121856
Dissolved Sulphate (SO4)	mg/L	2100	200	8124867				3.0	2.0	8121855
Total Cyanide (CN)	mg/L				<0.0050	0.0050	8122226			
Turbidity	NTU	0.93	0.10	8130685				>1000	1.0	8130685
Conductivity	uS/cm	45000	1.0	8121916				110	1.0	8121916

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Elevated reporting limit due to sample matrix.
(2) Elevated reporting limit due to turbidity.

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

RESULTS OF ANALYSES OF SURFACE WATER

Bureau Veritas ID		TES410			TES411		
Sampling Date		2022/07/13			2022/07/14		
COC Number		885378-03-01			885378-03-01		
	UNITS	**PW-4**	**RDL**	**QC Batch**	**PW-5**	**RDL**	**QC Batch**
Calculated Parameters							
Anion Sum	me/L	373	N/A	8114744	8.60	N/A	8114744
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	72	1.0	8114741	<1.0	1.0	8114741
Calculated TDS	mg/L	22000	1.0	8114748	1100	1.0	8114748
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	8114741	<1.0	1.0	8114741
Cation Sum	me/L	381	N/A	8114744	35.3	N/A	8114744
Hardness (CaCO3)	mg/L	4000	1.0	8114710	400	1.0	8114710
Ion Balance (% Difference)	%	1.08	N/A	8114743	60.8	N/A	8114743
Langelier Index (@ 20C)	N/A	-0.116		8114746	NC		8114746
Langelier Index (@ 4C)	N/A	-0.353		8114747	NC		8114747
Nitrate (N)	mg/L	<0.050	0.050	8114745	<0.050	0.050	8114745
Saturation pH (@ 20C)	N/A	7.60		8114746	NC		8114746
Saturation pH (@ 4C)	N/A	7.84		8114747	NC		8114747
Inorganics							
Total Alkalinity (Total as CaCO3)	mg/L	72	2.0	8124839	<2.0	2.0	8124839
Dissolved Chloride (Cl-)	mg/L	12000	50	8121853	280	5.0	8121853
Colour	TCU	12	5.0	8121860	<5.0	5.0	8121860
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	8121864	<0.050	0.050	8121864
Nitrite (N)	mg/L	<0.010	0.010	8121865	<0.010	0.010	8121865
Nitrogen (Ammonia Nitrogen)	mg/L	0.064	0.050	8121934	<0.050	0.050	8121934
Total Organic Carbon (C)	mg/L	18 (1)	5.0	8122344	16 (1)	5.0	8122344
Orthophosphate (P)	mg/L	0.020	0.010	8121861	<0.010	0.010	8121861
pH	pH	7.48		8124831	5.10		8124831
Reactive Silica (SiO2)	mg/L	2.4	0.50	8121856	3.5	0.50	8121856
Dissolved Sulphate (SO4)	mg/L	1700	100	8121855	33	2.0	8125842
Turbidity	NTU	250	1.0	8130685	960	1.0	8130685
Conductivity	uS/cm	37000	1.0	8121916	1100	1.0	8121916

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Elevated reporting limit due to turbidity.

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

MERCURY BY COLD VAPOUR AA (SURFACE WATER)

Bureau Veritas ID		TES384		TES385	TES386	TES387	TES388		
Sampling Date		2022/07/13		2022/07/14	2022/07/13	2022/07/14	2022/07/13		
COC Number		885378-01-01		885378-01-01	885378-01-01	885378-01-01	885378-01-01		
	UNITS	PW-DUP1	QC Batch	BG-1	SW DUP1	SW-DUP-2	SW-1	RDL	QC Batch
Metals									
Total Mercury (Hg)	ug/L	0.36	8119892	<0.013	0.020	0.015	0.050	0.013	8124531

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		TES389	TES390	TES391	TES392	TES393	TES394		
Sampling Date		2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13	2022/07/13		
COC Number		885378-01-01	885378-01-01	885378-01-01	885378-01-01	885378-01-01	885378-02-01		
	UNITS	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	RDL	QC Batch
Metals									
Total Mercury (Hg)	ug/L	0.090	<0.013	<0.013	<0.013	<0.013	0.013	0.013	8124531

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		TES395	TES396	TES397	TES398	TES399	TES400		
Sampling Date		2022/07/13	2022/07/13	2022/07/13	2022/07/14	2022/07/14	2022/07/14		
COC Number		885378-02-01	885378-02-01	885378-02-01	885378-02-01	885378-02-01	885378-02-01		
	UNITS	SW-8	SW-9	SW-10	SW-11	SW-12	SW-13	RDL	QC Batch
Metals									
Total Mercury (Hg)	ug/L	<0.013	0.020	0.020	<0.013	0.018	<0.013	0.013	8124531

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		TES401	TES405	TES406		TES407		
Sampling Date		2022/07/14	2022/07/14	2022/07/14		2022/07/13		
COC Number		885378-02-01	885378-03-01	885378-03-01		885378-03-01		
	UNITS	SW-14	SW-18	SW-19	RDL	PW-1	RDL	QC Batch
Metals								
Total Mercury (Hg)	ug/L	<0.013	0.022	0.017	0.013	14	0.13	8124531

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		TES408	TES409	TES410	TES411	TES850		
Sampling Date		2022/07/13	2022/07/13	2022/07/13	2022/07/14	2022/07/14		
COC Number		885378-03-01	885378-03-01	885378-03-01	885378-03-01	885378-02-01		
	UNITS	PW-2	PW-3	PW-4	PW-5	SW 20	RDL	QC Batch
Metals								
Total Mercury (Hg)	ug/L	0.16	0.15	0.63	0.048	0.017	0.013	8124532

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

ELEMENTS BY ICP/MS (SURFACE WATER)

Bureau Veritas ID		TES384		TES385	TES386	TES387		TES388		
Sampling Date		2022/07/13		2022/07/14	2022/07/13	2022/07/14		2022/07/13		
COC Number		885378-01-01		885378-01-01	885378-01-01	885378-01-01		885378-01-01		
	UNITS	PW-DUP1	RDL	BG-1	SW DUP1	SW-DUP-2	RDL	SW-1	RDL	QC Batch
Metals										
Total Aluminum (Al)	ug/L	22000	50	300	320	330	5.0	680	5.0	8132803
Total Antimony (Sb)	ug/L	<10	10	<1.0	<1.0	<1.0	1.0	<1.0	1.0	8132803
Total Arsenic (As)	ug/L	6400	100	3.7	260	330	1.0	6000	100	8132803
Total Barium (Ba)	ug/L	110	10	2.1	2.6	2.8	1.0	3.0	1.0	8132803
Total Beryllium (Be)	ug/L	1.3	1.0	<0.10	<0.10	<0.10	0.10	<0.10	0.10	8132803
Total Bismuth (Bi)	ug/L	<20	20	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8132803
Total Boron (B)	ug/L	3100	500	<50	<50	<50	50	<50	50	8132803
Total Cadmium (Cd)	ug/L	1.1	0.10	0.011	0.013	0.016	0.010	0.024	0.010	8132803
Total Calcium (Ca)	ug/L	280000	1000	550	2400	920	100	1200	100	8132803
Total Chromium (Cr)	ug/L	42	10	<1.0	<1.0	<1.0	1.0	1.3	1.0	8132803
Total Cobalt (Co)	ug/L	64	4.0	<0.40	<0.40	0.41	0.40	0.67	0.40	8132803
Total Copper (Cu)	ug/L	61	5.0	<0.50	0.74	0.51	0.50	1.1	0.50	8132803
Total Iron (Fe)	ug/L	74000	500	390	1400	1600	50	4100	50	8132803
Total Lead (Pb)	ug/L	200	5.0	<0.50	0.91	0.69	0.50	1.4	0.50	8132803
Total Magnesium (Mg)	ug/L	820000	1000	360	3400	440	100	760	100	8132803
Total Manganese (Mn)	ug/L	5000	20	14	57	49	2.0	32	2.0	8132803
Total Molybdenum (Mo)	ug/L	<20	20	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8132803
Total Nickel (Ni)	ug/L	63	20	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8132803
Total Phosphorus (P)	ug/L	2500	1000	<100	<100	<100	100	<100	100	8132803
Total Potassium (K)	ug/L	260000	1000	240	1100	350	100	420	100	8132803
Total Selenium (Se)	ug/L	<5.0	5.0	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8132803
Total Silver (Ag)	ug/L	<1.0	1.0	<0.10	<0.10	<0.10	0.10	<0.10	0.10	8132803
Total Sodium (Na)	ug/L	6800000	1000	3500	27000	4100	100	5700	100	8132803
Total Strontium (Sr)	ug/L	5200	20	5.1	26	7.6	2.0	11	2.0	8132803
Total Thallium (Tl)	ug/L	1.8	1.0	<0.10	<0.10	<0.10	0.10	<0.10	0.10	8132803
Total Tin (Sn)	ug/L	<20	20	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8132803
Total Titanium (Ti)	ug/L	540	20	3.6	4.9	4.7	2.0	15	2.0	8132803
Total Uranium (U)	ug/L	11	1.0	<0.10	<0.10	<0.10	0.10	<0.10	0.10	8132803
Total Vanadium (V)	ug/L	46	20	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8132803
Total Zinc (Zn)	ug/L	210	50	5.5	<5.0	<5.0	5.0	7.2	5.0	8132803

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

ELEMENTS BY ICP/MS (SURFACE WATER)

Bureau Veritas ID		TES389		TES390	TES391	TES392	TES393		
Sampling Date		2022/07/13		2022/07/13	2022/07/13	2022/07/13	2022/07/13		
COC Number		885378-01-01		885378-01-01	885378-01-01	885378-01-01	885378-01-01		
	UNITS	SW-2	RDL	SW-3	SW-4	SW-5	SW-6	RDL	QC Batch
Metals									
Total Aluminum (Al)	ug/L	2100	5.0	300	290	140	99	5.0	8132803
Total Antimony (Sb)	ug/L	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	1.0	8132803
Total Arsenic (As)	ug/L	7800	100	41	15	150	110	1.0	8132803
Total Barium (Ba)	ug/L	23	1.0	2.2	2.3	2.5	2.5	1.0	8132803
Total Beryllium (Be)	ug/L	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	0.10	8132803
Total Bismuth (Bi)	ug/L	<2.0	2.0	<2.0	<2.0	<2.0	<2.0	2.0	8132803
Total Boron (B)	ug/L	<50	50	<50	<50	<50	<50	50	8132803
Total Cadmium (Cd)	ug/L	0.046	0.010	0.011	0.012	<0.010	<0.010	0.010	8132803
Total Calcium (Ca)	ug/L	2000	100	610	590	4100	3500	100	8132803
Total Chromium (Cr)	ug/L	3.1	1.0	<1.0	<1.0	<1.0	<1.0	1.0	8132803
Total Cobalt (Co)	ug/L	1.7	0.40	<0.40	<0.40	<0.40	<0.40	0.40	8132803
Total Copper (Cu)	ug/L	2.2	0.50	<0.50	<0.50	<0.50	<0.50	0.50	8132803
Total Iron (Fe)	ug/L	18000	50	450	400	1500	1500	50	8132803
Total Lead (Pb)	ug/L	9.4	0.50	<0.50	<0.50	<0.50	<0.50	0.50	8132803
Total Magnesium (Mg)	ug/L	1100	100	360	360	870	840	100	8132803
Total Manganese (Mn)	ug/L	150	2.0	15	16	57	53	2.0	8132803
Total Molybdenum (Mo)	ug/L	<2.0	2.0	<2.0	<2.0	<2.0	<2.0	2.0	8132803
Total Nickel (Ni)	ug/L	3.0	2.0	<2.0	<2.0	<2.0	<2.0	2.0	8132803
Total Phosphorus (P)	ug/L	180	100	<100	<100	<100	<100	100	8132803
Total Potassium (K)	ug/L	820	100	230	230	230	180	100	8132803
Total Selenium (Se)	ug/L	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	0.50	8132803
Total Silver (Ag)	ug/L	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	0.10	8132803
Total Sodium (Na)	ug/L	5800	100	3700	3700	5100	4600	100	8132803
Total Strontium (Sr)	ug/L	22	2.0	5.5	5.4	18	19	2.0	8132803
Total Thallium (Tl)	ug/L	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	0.10	8132803
Total Tin (Sn)	ug/L	<2.0	2.0	<2.0	<2.0	<2.0	<2.0	2.0	8132803
Total Titanium (Ti)	ug/L	92	2.0	3.8	3.0	2.1	<2.0	2.0	8132803
Total Uranium (U)	ug/L	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	0.10	8132803
Total Vanadium (V)	ug/L	5.4	2.0	<2.0	<2.0	<2.0	<2.0	2.0	8132803
Total Zinc (Zn)	ug/L	14	5.0	<5.0	<5.0	5.2	5.7	5.0	8132803

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

ELEMENTS BY ICP/MS (SURFACE WATER)

Bureau Veritas ID		TES394		TES395		TES396	TES397		TES398		
Sampling Date		2022/07/13		2022/07/13		2022/07/13	2022/07/13		2022/07/14		
COC Number		885378-02-01		885378-02-01		885378-02-01	885378-02-01		885378-02-01		
	UNITS	SW-7	RDL	SW-8	RDL	SW-9	SW-10	RDL	SW-11	RDL	QC Batch
Metals											
Total Aluminum (Al)	ug/L	290	5.0	56	5.0	330	360	5.0	<50	50	8132803
Total Antimony (Sb)	ug/L	<1.0	1.0	<1.0	1.0	<1.0	<1.0	1.0	<10	10	8132803
Total Arsenic (As)	ug/L	130	1.0	1100	10	270	280	1.0	<10	10	8132803
Total Barium (Ba)	ug/L	2.1	1.0	9.0	1.0	3.2	2.9	1.0	<10	10	8132803
Total Beryllium (Be)	ug/L	<0.10	0.10	<0.10	0.10	<0.10	<0.10	0.10	<1.0	1.0	8132803
Total Bismuth (Bi)	ug/L	<2.0	2.0	<2.0	2.0	<2.0	<2.0	2.0	<20	20	8132803
Total Boron (B)	ug/L	<50	50	<50	50	<50	<50	50	3600	500	8132803
Total Cadmium (Cd)	ug/L	0.012	0.010	0.046	0.010	0.015	0.014	0.010	<0.10	0.10	8132803
Total Calcium (Ca)	ug/L	610	100	17000	100	2400	1500	100	320000	1000	8132803
Total Chromium (Cr)	ug/L	<1.0	1.0	<1.0	1.0	<1.0	<1.0	1.0	<10	10	8132803
Total Cobalt (Co)	ug/L	<0.40	0.40	2.4	0.40	<0.40	0.45	0.40	<4.0	4.0	8132803
Total Copper (Cu)	ug/L	<0.50	0.50	0.55	0.50	0.72	0.76	0.50	<5.0	5.0	8132803
Total Iron (Fe)	ug/L	490	50	3700	50	1400	1500	50	<500	500	8132803
Total Lead (Pb)	ug/L	<0.50	0.50	0.55	0.50	0.93	0.94	0.50	<5.0	5.0	8132803
Total Magnesium (Mg)	ug/L	360	100	1700	100	3500	510	100	980000	1000	8132803
Total Manganese (Mn)	ug/L	18	2.0	750	2.0	60	61	2.0	<20	20	8132803
Total Molybdenum (Mo)	ug/L	<2.0	2.0	<2.0	2.0	<2.0	<2.0	2.0	<20	20	8132803
Total Nickel (Ni)	ug/L	<2.0	2.0	2.6	2.0	<2.0	<2.0	2.0	<20	20	8132803
Total Phosphorus (P)	ug/L	<100	100	<100	100	<100	<100	100	<1000	1000	8132803
Total Potassium (K)	ug/L	230	100	1500	100	1200	280	100	300000	1000	8132803
Total Selenium (Se)	ug/L	<0.50	0.50	<0.50	0.50	<0.50	<0.50	0.50	<5.0	5.0	8132803
Total Silver (Ag)	ug/L	<0.10	0.10	<0.10	0.10	<0.10	<0.10	0.10	<1.0	1.0	8132803
Total Sodium (Na)	ug/L	3600	100	6300	100	28000	4200	100	8200000	1000	8132803
Total Strontium (Sr)	ug/L	5.5	2.0	120	2.0	27	11	2.0	6100	20	8132803
Total Thallium (Tl)	ug/L	<0.10	0.10	<0.10	0.10	<0.10	<0.10	0.10	<1.0	1.0	8132803
Total Tin (Sn)	ug/L	<2.0	2.0	<2.0	2.0	<2.0	<2.0	2.0	<20	20	8132803
Total Titanium (Ti)	ug/L	3.1	2.0	<2.0	2.0	4.3	5.0	2.0	<20	20	8132803
Total Uranium (U)	ug/L	<0.10	0.10	<0.10	0.10	<0.10	<0.10	0.10	2.6	1.0	8132803
Total Vanadium (V)	ug/L	<2.0	2.0	<2.0	2.0	<2.0	<2.0	2.0	<20	20	8132803
Total Zinc (Zn)	ug/L	<5.0	5.0	9.1	5.0	<5.0	<5.0	5.0	<50	50	8132803

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

ELEMENTS BY ICP/MS (SURFACE WATER)

Bureau Veritas ID		TES399		TES400	TES401		TES405	TES406		
Sampling Date		2022/07/14		2022/07/14	2022/07/14		2022/07/14	2022/07/14		
COC Number		885378-02-01		885378-02-01	885378-02-01		885378-03-01	885378-03-01		
	UNITS	SW-12	RDL	SW-13	SW-14	RDL	SW-18	SW-19	RDL	QC Batch
Metals										
Total Aluminum (Al)	ug/L	330	5.0	200	130	50	330	250	5.0	8132804
Total Antimony (Sb)	ug/L	<1.0	1.0	<10	<10	10	<1.0	<1.0	1.0	8132804
Total Arsenic (As)	ug/L	240	1.0	150	86	10	280	480	1.0	8132804
Total Barium (Ba)	ug/L	4.3	1.0	<10	<10	10	2.9	2.4	1.0	8132804
Total Beryllium (Be)	ug/L	<0.10	0.10	<1.0	<1.0	1.0	<0.10	<0.10	0.10	8132804
Total Bismuth (Bi)	ug/L	<2.0	2.0	<20	<20	20	<2.0	<2.0	2.0	8132804
Total Boron (B)	ug/L	410	50	1400	2200	500	<50	<50	50	8132804
Total Cadmium (Cd)	ug/L	0.019	0.010	<0.10	<0.10	0.10	0.013	0.011	0.010	8132804
Total Calcium (Ca)	ug/L	37000	100	120000	200000	1000	1400	760	100	8132804
Total Chromium (Cr)	ug/L	<1.0	1.0	<10	<10	10	<1.0	<1.0	1.0	8132804
Total Cobalt (Co)	ug/L	<0.40	0.40	<4.0	<4.0	4.0	0.47	<0.40	0.40	8132804
Total Copper (Cu)	ug/L	0.70	0.50	<5.0	<5.0	5.0	0.81	<0.50	0.50	8132804
Total Iron (Fe)	ug/L	1400	50	720	<500	500	1500	1700	50	8132804
Total Lead (Pb)	ug/L	0.98	0.50	<5.0	<5.0	5.0	0.92	0.67	0.50	8132804
Total Magnesium (Mg)	ug/L	110000	100	380000	600000	1000	520	380	100	8132804
Total Manganese (Mn)	ug/L	54	2.0	38	35	20	59	27	2.0	8132804
Total Molybdenum (Mo)	ug/L	<2.0	2.0	<20	<20	20	<2.0	<2.0	2.0	8132804
Total Nickel (Ni)	ug/L	<2.0	2.0	<20	<20	20	<2.0	<2.0	2.0	8132804
Total Phosphorus (P)	ug/L	<100	100	<1000	<1000	1000	<100	<100	100	8132804
Total Potassium (K)	ug/L	35000	100	120000	190000	1000	270	270	100	8132804
Total Selenium (Se)	ug/L	<0.50	0.50	<5.0	<5.0	5.0	<0.50	<0.50	0.50	8132804
Total Silver (Ag)	ug/L	<0.10	0.10	<1.0	<1.0	1.0	<0.10	<0.10	0.10	8132804
Total Sodium (Na)	ug/L	910000	100	3100000	5200000	1000	4200	4000	100	8132804
Total Strontium (Sr)	ug/L	660	2.0	2200	3600	20	11	6.8	2.0	8132804
Total Thallium (Tl)	ug/L	<0.10	0.10	<1.0	<1.0	1.0	<0.10	<0.10	0.10	8132804
Total Tin (Sn)	ug/L	<2.0	2.0	<20	<20	20	<2.0	<2.0	2.0	8132804
Total Titanium (Ti)	ug/L	5.7	2.0	<20	<20	20	5.9	4.2	2.0	8132804
Total Uranium (U)	ug/L	0.28	0.10	<1.0	1.6	1.0	<0.10	<0.10	0.10	8132804
Total Vanadium (V)	ug/L	<2.0	2.0	<20	<20	20	<2.0	<2.0	2.0	8132804
Total Zinc (Zn)	ug/L	5.2	5.0	<50	<50	50	<5.0	<5.0	5.0	8132804

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

ELEMENTS BY ICP/MS (SURFACE WATER)

Bureau Veritas ID		TES407		TES408	TES409		TES410		TES411		
Sampling Date		2022/07/13		2022/07/13	2022/07/13		2022/07/13		2022/07/14		
COC Number		885378-03-01		885378-03-01	885378-03-01		885378-03-01		885378-03-01		
	UNITS	PW-1	RDL	PW-2	PW-3	RDL	PW-4	RDL	PW-5	RDL	QC Batch
Metals											
Total Aluminum (Al)	ug/L	64000	50	170000	31000	50	21000	50	40000	50	8132804
Total Antimony (Sb)	ug/L	16	10	24	<10	10	<10	10	<10	10	8132804
Total Arsenic (As)	ug/L	65000	1000	19000	13000	100	6300	100	49	10	8132804
Total Barium (Ba)	ug/L	1700	10	1100	170	10	110	10	120	10	8132804
Total Beryllium (Be)	ug/L	14	1.0	11	3.1	1.0	1.1	1.0	1.7	1.0	8132804
Total Bismuth (Bi)	ug/L	<20	20	<20	<20	20	<20	20	<20	20	8132804
Total Boron (B)	ug/L	<500	500	<500	<500	500	3000	500	<500	500	8132804
Total Cadmium (Cd)	ug/L	2.5	0.10	5.7	1.0	0.10	1.1	0.10	0.19	0.10	8132804
Total Calcium (Ca)	ug/L	86000	1000	96000	37000	1000	270000	1000	27000	1000	8132804
Total Chromium (Cr)	ug/L	160	10	230	90	10	41	10	59	10	8132804
Total Cobalt (Co)	ug/L	270	4.0	140	30	4.0	63	4.0	17	4.0	8132804
Total Copper (Cu)	ug/L	38	5.0	360	78	5.0	56	5.0	61	5.0	8132804
Total Iron (Fe)	ug/L	1100000	5000	240000	55000	500	71000	500	42000	500	8132804
Total Lead (Pb)	ug/L	760	5.0	1700	150	5.0	200	5.0	53	5.0	8132804
Total Magnesium (Mg)	ug/L	20000	1000	69000	10000	1000	800000	1000	79000	1000	8132804
Total Manganese (Mn)	ug/L	14000	20	3500	2100	20	5000	20	720	20	8132804
Total Molybdenum (Mo)	ug/L	<20	20	<20	<20	20	<20	20	21	20	8132804
Total Nickel (Ni)	ug/L	730	20	350	91	20	61	20	56	20	8132804
Total Phosphorus (P)	ug/L	14000	1000	40000	1900	1000	2400	1000	2300	1000	8132804
Total Potassium (K)	ug/L	27000	1000	32000	5900	1000	260000	1000	25000	1000	8132804
Total Selenium (Se)	ug/L	<5.0	5.0	<5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	8132804
Total Silver (Ag)	ug/L	<1.0	1.0	1.9	<1.0	1.0	<1.0	1.0	<1.0	1.0	8132804
Total Sodium (Na)	ug/L	15000	10000	12000	5500	1000	6700000	10000	580000	1000	8132804
Total Strontium (Sr)	ug/L	560	20	890	260	20	5100	20	450	20	8132804
Total Thallium (Tl)	ug/L	1.1	1.0	3.1	<1.0	1.0	1.6	1.0	<1.0	1.0	8132804
Total Tin (Sn)	ug/L	40	20	<20	<20	20	<20	20	<20	20	8132804
Total Titanium (Ti)	ug/L	1200	20	4300	1600	20	550	20	1600	20	8132804
Total Uranium (U)	ug/L	1.9	1.0	3.0	3.2	1.0	11	1.0	3.3	1.0	8132804
Total Vanadium (V)	ug/L	110	20	220	54	20	43	20	46	20	8132804
Total Zinc (Zn)	ug/L	10000	50	1100	290	50	230	50	120	50	8132804

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

ELEMENTS BY ICP/MS (SURFACE WATER)

Bureau Veritas ID		TES850		
Sampling Date		2022/07/14		
COC Number		885378-02-01		
	UNITS	SW 20	RDL	QC Batch
Metals				
Total Aluminum (Al)	ug/L	340	5.0	8132804
Total Antimony (Sb)	ug/L	<1.0	1.0	8132804
Total Arsenic (As)	ug/L	330	1.0	8132804
Total Barium (Ba)	ug/L	2.9	1.0	8132804
Total Beryllium (Be)	ug/L	<0.10	0.10	8132804
Total Bismuth (Bi)	ug/L	<2.0	2.0	8132804
Total Boron (B)	ug/L	<50	50	8132804
Total Cadmium (Cd)	ug/L	0.017	0.010	8132804
Total Calcium (Ca)	ug/L	930	100	8132804
Total Chromium (Cr)	ug/L	<1.0	1.0	8132804
Total Cobalt (Co)	ug/L	0.41	0.40	8132804
Total Copper (Cu)	ug/L	0.54	0.50	8132804
Total Iron (Fe)	ug/L	1600	50	8132804
Total Lead (Pb)	ug/L	0.71	0.50	8132804
Total Magnesium (Mg)	ug/L	470	100	8132804
Total Manganese (Mn)	ug/L	51	2.0	8132804
Total Molybdenum (Mo)	ug/L	<2.0	2.0	8132804
Total Nickel (Ni)	ug/L	<2.0	2.0	8132804
Total Phosphorus (P)	ug/L	<100	100	8132804
Total Potassium (K)	ug/L	390	100	8132804
Total Selenium (Se)	ug/L	<0.50	0.50	8132804
Total Silver (Ag)	ug/L	<0.10	0.10	8132804
Total Sodium (Na)	ug/L	4200	100	8132804
Total Strontium (Sr)	ug/L	7.8	2.0	8132804
Total Thallium (Tl)	ug/L	<0.10	0.10	8132804
Total Tin (Sn)	ug/L	<2.0	2.0	8132804
Total Titanium (Ti)	ug/L	5.1	2.0	8132804
Total Uranium (U)	ug/L	<0.10	0.10	8132804
Total Vanadium (V)	ug/L	<2.0	2.0	8132804
Total Zinc (Zn)	ug/L	6.6	5.0	8132804

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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GENERAL COMMENTS

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

Package 1	5.0°C
Package 2	5.3°C
Package 3	6.3°C

Sample TES384 [PW-DUP1] : Elevated reporting limits for trace metals due to sample matrix.

Sample TES388 [SW-1] : Ion balance acceptable. Low ionic strength sample.

Sample TES396 [SW-9] : ortho-Phosphate > Phosphorus: Both values fall within the method uncertainty for duplicates and are likely equivalent.
Poor RCAp Ion Balance due to sample matrix. Anion/Cation values verified by repeat analysis.

Sample TES398 [SW-11] : Elevated reporting limits for trace metals due to sample matrix.

Sample TES400 [SW-13] : Elevated reporting limits for trace metals due to sample matrix.

Sample TES401 [SW-14] : Elevated reporting limits for trace metals due to sample matrix.

Sample TES407 [PW-1] : Elevated reporting limits for trace metals due to sample matrix.
Poor RCAp Ion Balance due to sample matrix. Excess cations due to presence of turbidity.Anion sum does not include contribution from Total Organic Carbon.

Sample TES408 [PW-2] : Elevated reporting limits for trace metals due to sample matrix.

Sample TES409 [PW-3] : Elevated reporting limits for trace metals due to sample matrix.

Sample TES410 [PW-4] : Elevated reporting limits for trace metals due to sample matrix.

Sample TES411 [PW-5] : Elevated reporting limits for trace metals due to sample matrix.
Poor RCAp Ion Balance due to sample matrix. Excess cations due to presence of turbidity.Anion sum does not include contribution from Total Organic Carbon.

Results relate only to the items tested.

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8119892	FJO	Matrix Spike	Total Mercury (Hg)	2022/07/22		87	%	80 - 120
8119892	FJO	Spiked Blank	Total Mercury (Hg)	2022/07/22		87	%	80 - 120
8119892	FJO	Method Blank	Total Mercury (Hg)	2022/07/22	<0.013		ug/L	
8119892	FJO	RPD	Total Mercury (Hg)	2022/07/22	NC		%	20
8121853	MCN	Matrix Spike	Dissolved Chloride (Cl-)	2022/07/21		98	%	80 - 120
8121853	MCN	Spiked Blank	Dissolved Chloride (Cl-)	2022/07/21		90	%	80 - 120
8121853	MCN	Method Blank	Dissolved Chloride (Cl-)	2022/07/21	<1.0		mg/L	
8121853	MCN	RPD	Dissolved Chloride (Cl-)	2022/07/21	0.95		%	20
8121855	MCN	Matrix Spike	Dissolved Sulphate (SO4)	2022/07/21		NC	%	80 - 120
8121855	MCN	Spiked Blank	Dissolved Sulphate (SO4)	2022/07/21		90	%	80 - 120
8121855	MCN	Method Blank	Dissolved Sulphate (SO4)	2022/07/21	<2.0		mg/L	
8121855	MCN	RPD	Dissolved Sulphate (SO4)	2022/07/21	0.87		%	20
8121856	MCN	Matrix Spike	Reactive Silica (SiO2)	2022/07/21		92	%	80 - 120
8121856	MCN	Spiked Blank	Reactive Silica (SiO2)	2022/07/21		92	%	80 - 120
8121856	MCN	Method Blank	Reactive Silica (SiO2)	2022/07/21	<0.50		mg/L	
8121856	MCN	RPD	Reactive Silica (SiO2)	2022/07/21	1.1		%	20
8121860	MCN	Spiked Blank	Colour	2022/07/22		96	%	80 - 120
8121860	MCN	Method Blank	Colour	2022/07/22	<5.0		TCU	
8121860	MCN	RPD	Colour	2022/07/22	1.6		%	20
8121861	MCN	Matrix Spike	Orthophosphate (P)	2022/07/21		83	%	80 - 120
8121861	MCN	Spiked Blank	Orthophosphate (P)	2022/07/21		87	%	80 - 120
8121861	MCN	Method Blank	Orthophosphate (P)	2022/07/21	<0.010		mg/L	
8121861	MCN	RPD	Orthophosphate (P)	2022/07/21	NC		%	20
8121864	MCN	Matrix Spike	Nitrate + Nitrite (N)	2022/07/21		96	%	80 - 120
8121864	MCN	Spiked Blank	Nitrate + Nitrite (N)	2022/07/21		100	%	80 - 120
8121864	MCN	Method Blank	Nitrate + Nitrite (N)	2022/07/21	<0.050		mg/L	
8121864	MCN	RPD	Nitrate + Nitrite (N)	2022/07/21	NC		%	20
8121865	MCN	Matrix Spike	Nitrite (N)	2022/07/21		100	%	80 - 120
8121865	MCN	Spiked Blank	Nitrite (N)	2022/07/21		109	%	80 - 120
8121865	MCN	Method Blank	Nitrite (N)	2022/07/21	<0.010		mg/L	
8121865	MCN	RPD	Nitrite (N)	2022/07/21	NC		%	20
8121916	NGI	Spiked Blank	Conductivity	2022/07/21		97	%	80 - 120
8121916	NGI	Method Blank	Conductivity	2022/07/21	<1.0		uS/cm	
8121916	NGI	RPD	Conductivity	2022/07/21	0.27		%	10
8121921	NGI	Spiked Blank	pH	2022/07/21		100	%	97 - 103
8121921	NGI	RPD	pH	2022/07/21	0.51		%	N/A
8121923	NGI	Spiked Blank	Total Alkalinity (Total as CaCO3)	2022/07/21		94	%	80 - 120
8121923	NGI	Method Blank	Total Alkalinity (Total as CaCO3)	2022/07/21	<2.0		mg/L	
8121923	NGI	RPD	Total Alkalinity (Total as CaCO3)	2022/07/21	0.056		%	20
8121934	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2022/07/21		92	%	80 - 120
8121934	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2022/07/21		95	%	80 - 120
8121934	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2022/07/21	<0.050		mg/L	
8121934	MCN	RPD	Nitrogen (Ammonia Nitrogen)	2022/07/21	NC		%	20
8122226	KJP	Matrix Spike	Total Cyanide (CN)	2022/07/21		90	%	80 - 120
8122226	KJP	Spiked Blank	Total Cyanide (CN)	2022/07/21		91	%	80 - 120
8122226	KJP	Method Blank	Total Cyanide (CN)	2022/07/21	<0.0050		mg/L	
8122226	KJP	RPD	Total Cyanide (CN)	2022/07/21	NC		%	20
8122344	JHH	Matrix Spike	Total Organic Carbon (C)	2022/07/21		97	%	85 - 115
8122344	JHH	Spiked Blank	Total Organic Carbon (C)	2022/07/21		99	%	80 - 120
8122344	JHH	Method Blank	Total Organic Carbon (C)	2022/07/21	<0.50		mg/L	
8122344	JHH	RPD	Total Organic Carbon (C)	2022/07/21	0.55		%	15
8122347	JHH	Matrix Spike	Total Organic Carbon (C)	2022/07/22		98	%	85 - 115
8122347	JHH	Spiked Blank	Total Organic Carbon (C)	2022/07/22		99	%	80 - 120
8122347	JHH	Method Blank	Total Organic Carbon (C)	2022/07/22	<0.50		mg/L	

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Bureau Veritas - Partial/Rush Results

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8122347	JHH	RPD	Total Organic Carbon (C)	2022/07/22	1.6		%	15
8124531	FJO	Matrix Spike [TES386-02]	Total Mercury (Hg)	2022/07/25		96	%	80 - 120
8124531	FJO	Spiked Blank	Total Mercury (Hg)	2022/07/25		95	%	80 - 120
8124531	FJO	Method Blank	Total Mercury (Hg)	2022/07/25	<0.013		ug/L	
8124531	FJO	RPD [TES385-02]	Total Mercury (Hg)	2022/07/25	NC		%	20
8124532	FJO	Matrix Spike	Total Mercury (Hg)	2022/07/25		99	%	80 - 120
8124532	FJO	Spiked Blank	Total Mercury (Hg)	2022/07/25		98	%	80 - 120
8124532	FJO	Method Blank	Total Mercury (Hg)	2022/07/25	<0.013		ug/L	
8124532	FJO	RPD	Total Mercury (Hg)	2022/07/25	NC		%	20
8124571	MCN	Matrix Spike [TES388-02]	Dissolved Chloride (Cl-)	2022/07/26		101	%	80 - 120
8124571	MCN	Spiked Blank	Dissolved Chloride (Cl-)	2022/07/26		99	%	80 - 120
8124571	MCN	Method Blank	Dissolved Chloride (Cl-)	2022/07/26	<1.0		mg/L	
8124571	MCN	RPD [TES388-02]	Dissolved Chloride (Cl-)	2022/07/26	3.6		%	20
8124573	MCN	Matrix Spike [TES388-02]	Dissolved Sulphate (SO4)	2022/07/26		110	%	80 - 120
8124573	MCN	Spiked Blank	Dissolved Sulphate (SO4)	2022/07/26		103	%	80 - 120
8124573	MCN	Method Blank	Dissolved Sulphate (SO4)	2022/07/26	<2.0		mg/L	
8124573	MCN	RPD [TES388-02]	Dissolved Sulphate (SO4)	2022/07/26	NC		%	20
8124585	MCN	Matrix Spike [TES388-02]	Reactive Silica (SiO2)	2022/07/26		94	%	80 - 120
8124585	MCN	Spiked Blank	Reactive Silica (SiO2)	2022/07/26		98	%	80 - 120
8124585	MCN	Method Blank	Reactive Silica (SiO2)	2022/07/26	<0.50		mg/L	
8124585	MCN	RPD [TES388-02]	Reactive Silica (SiO2)	2022/07/26	0.38		%	20
8124586	MCN	Spiked Blank	Colour	2022/07/25		92	%	80 - 120
8124586	MCN	Method Blank	Colour	2022/07/25	<5.0		TCU	
8124586	MCN	RPD [TES388-02]	Colour	2022/07/25	30 (1)		%	20
8124588	MCN	Matrix Spike [TES388-02]	Orthophosphate (P)	2022/07/26		NC	%	80 - 120
8124588	MCN	Spiked Blank	Orthophosphate (P)	2022/07/26		95	%	80 - 120
8124588	MCN	Method Blank	Orthophosphate (P)	2022/07/26	<0.010		mg/L	
8124588	MCN	RPD [TES388-02]	Orthophosphate (P)	2022/07/26	NC (2)		%	20
8124589	MCN	Matrix Spike [TES388-02]	Nitrate + Nitrite (N)	2022/07/25		98	%	80 - 120
8124589	MCN	Spiked Blank	Nitrate + Nitrite (N)	2022/07/25		103	%	80 - 120
8124589	MCN	Method Blank	Nitrate + Nitrite (N)	2022/07/25	<0.050		mg/L	
8124589	MCN	RPD [TES388-02]	Nitrate + Nitrite (N)	2022/07/25	NC		%	20
8124590	MCN	Matrix Spike [TES388-02]	Nitrite (N)	2022/07/26		85	%	80 - 120
8124590	MCN	Spiked Blank	Nitrite (N)	2022/07/26		99	%	80 - 120
8124590	MCN	Method Blank	Nitrite (N)	2022/07/26	<0.010		mg/L	
8124590	MCN	RPD [TES388-02]	Nitrite (N)	2022/07/26	NC		%	20
8124591	MCN	Matrix Spike [TES398-02]	Dissolved Chloride (Cl-)	2022/07/26		NC	%	80 - 120
8124591	MCN	Spiked Blank	Dissolved Chloride (Cl-)	2022/07/26		101	%	80 - 120
8124591	MCN	Method Blank	Dissolved Chloride (Cl-)	2022/07/26	<1.0		mg/L	
8124591	MCN	RPD [TES398-02]	Dissolved Chloride (Cl-)	2022/07/26	12		%	20
8124831	NGI	Spiked Blank	pH	2022/07/22		100	%	97 - 103
8124831	NGI	RPD	pH	2022/07/22	0.13		%	N/A
8124839	NGI	Spiked Blank	Total Alkalinity (Total as CaCO3)	2022/07/22		92	%	80 - 120
8124839	NGI	Method Blank	Total Alkalinity (Total as CaCO3)	2022/07/22	<2.0		mg/L	
8124839	NGI	RPD	Total Alkalinity (Total as CaCO3)	2022/07/22	2.1		%	20
8124867	MCN	Matrix Spike [TES398-02]	Dissolved Sulphate (SO4)	2022/07/26		NC	%	80 - 120
8124867	MCN	Spiked Blank	Dissolved Sulphate (SO4)	2022/07/26		104	%	80 - 120
8124867	MCN	Method Blank	Dissolved Sulphate (SO4)	2022/07/26	<2.0		mg/L	
8124867	MCN	RPD [TES398-02]	Dissolved Sulphate (SO4)	2022/07/26	11		%	20
8124872	MCN	Matrix Spike [TES398-02]	Reactive Silica (SiO2)	2022/07/26		89	%	80 - 120
8124872	MCN	Spiked Blank	Reactive Silica (SiO2)	2022/07/26		96	%	80 - 120
8124872	MCN	Method Blank	Reactive Silica (SiO2)	2022/07/26	<0.50		mg/L	
8124872	MCN	RPD [TES398-02]	Reactive Silica (SiO2)	2022/07/26	NC		%	20
8124878	MCN	Spiked Blank	Colour	2022/07/25		89	%	80 - 120

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Bureau Veritas - Partial/Rush Results

Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8124878	MCN	Method Blank	Colour	2022/07/25	<5.0		TCU	
8124878	MCN	RPD [TES398-02]	Colour	2022/07/25	5.9		%	20
8124880	MCN	Matrix Spike [TES398-02]	Orthophosphate (P)	2022/07/26		73 (3)	%	80 - 120
8124880	MCN	Spiked Blank	Orthophosphate (P)	2022/07/26		98	%	80 - 120
8124880	MCN	Method Blank	Orthophosphate (P)	2022/07/26	<0.010		mg/L	
8124880	MCN	RPD [TES398-02]	Orthophosphate (P)	2022/07/26	NC		%	20
8124884	MCN	Matrix Spike [TES398-02]	Nitrate + Nitrite (N)	2022/07/25		102	%	80 - 120
8124884	MCN	Spiked Blank	Nitrate + Nitrite (N)	2022/07/25		102	%	80 - 120
8124884	MCN	Method Blank	Nitrate + Nitrite (N)	2022/07/25	<0.050		mg/L	
8124884	MCN	RPD [TES398-02]	Nitrate + Nitrite (N)	2022/07/25	NC		%	20
8124887	MCN	Matrix Spike [TES398-02]	Nitrite (N)	2022/07/26		71 (3)	%	80 - 120
8124887	MCN	Spiked Blank	Nitrite (N)	2022/07/26		102	%	80 - 120
8124887	MCN	Method Blank	Nitrite (N)	2022/07/26	<0.010		mg/L	
8124887	MCN	RPD [TES398-02]	Nitrite (N)	2022/07/26	NC		%	20
8125842	MCN	Matrix Spike	Dissolved Sulphate (SO4)	2022/07/26		103	%	80 - 120
8125842	MCN	Spiked Blank	Dissolved Sulphate (SO4)	2022/07/26		104	%	80 - 120
8125842	MCN	Method Blank	Dissolved Sulphate (SO4)	2022/07/26	<2.0		mg/L	
8125842	MCN	RPD	Dissolved Sulphate (SO4)	2022/07/26	2.7		%	20
8125886	MCN	Spiked Blank	Colour	2022/07/25		108	%	80 - 120
8125886	MCN	Method Blank	Colour	2022/07/25	<5.0		TCU	
8125886	MCN	RPD	Colour	2022/07/25	NC		%	20
8130648	NGI	QC Standard	Turbidity	2022/07/26		113	%	80 - 120
8130648	NGI	Spiked Blank	Turbidity	2022/07/26		102	%	80 - 120
8130648	NGI	Method Blank	Turbidity	2022/07/26	<0.10		NTU	
8130648	NGI	RPD [TES396-02]	Turbidity	2022/07/26	4.0		%	20
8130685	NGI	QC Standard	Turbidity	2022/07/26		111	%	80 - 120
8130685	NGI	Spiked Blank	Turbidity	2022/07/26		101	%	80 - 120
8130685	NGI	Method Blank	Turbidity	2022/07/26	<0.10		NTU	
8130685	NGI	RPD	Turbidity	2022/07/26	0.96		%	20
8132803	JHY	Matrix Spike	Total Aluminum (Al)	2022/07/27		98	%	80 - 120
			Total Antimony (Sb)	2022/07/27		100	%	80 - 120
			Total Arsenic (As)	2022/07/27		91	%	80 - 120
			Total Barium (Ba)	2022/07/27		94	%	80 - 120
			Total Beryllium (Be)	2022/07/27		92	%	80 - 120
			Total Bismuth (Bi)	2022/07/27		96	%	80 - 120
			Total Boron (B)	2022/07/27		96	%	80 - 120
			Total Cadmium (Cd)	2022/07/27		94	%	80 - 120
			Total Calcium (Ca)	2022/07/27		NC	%	80 - 120
			Total Chromium (Cr)	2022/07/27		93	%	80 - 120
			Total Cobalt (Co)	2022/07/27		93	%	80 - 120
			Total Copper (Cu)	2022/07/27		91	%	80 - 120
			Total Iron (Fe)	2022/07/27		97	%	80 - 120
			Total Lead (Pb)	2022/07/27		95	%	80 - 120
			Total Magnesium (Mg)	2022/07/27		98	%	80 - 120
			Total Manganese (Mn)	2022/07/27		94	%	80 - 120
			Total Molybdenum (Mo)	2022/07/27		97	%	80 - 120
			Total Nickel (Ni)	2022/07/27		92	%	80 - 120
			Total Phosphorus (P)	2022/07/27		99	%	80 - 120
			Total Potassium (K)	2022/07/27		96	%	80 - 120
			Total Selenium (Se)	2022/07/27		92	%	80 - 120
			Total Silver (Ag)	2022/07/27		95	%	80 - 120
			Total Sodium (Na)	2022/07/27		98	%	80 - 120
			Total Strontium (Sr)	2022/07/27		NC	%	80 - 120
			Total Thallium (Tl)	2022/07/27		96	%	80 - 120

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Bureau Veritas - Partial/Rush Results

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Tin (Sn)	2022/07/27		97	%	80 - 120
			Total Titanium (Ti)	2022/07/27		96	%	80 - 120
			Total Uranium (U)	2022/07/27		99	%	80 - 120
			Total Vanadium (V)	2022/07/27		95	%	80 - 120
			Total Zinc (Zn)	2022/07/27		92	%	80 - 120
8132803	JHY	Spiked Blank	Total Aluminum (Al)	2022/07/27		101	%	80 - 120
			Total Antimony (Sb)	2022/07/27		100	%	80 - 120
			Total Arsenic (As)	2022/07/27		90	%	80 - 120
			Total Barium (Ba)	2022/07/27		96	%	80 - 120
			Total Beryllium (Be)	2022/07/27		93	%	80 - 120
			Total Bismuth (Bi)	2022/07/27		98	%	80 - 120
			Total Boron (B)	2022/07/27		98	%	80 - 120
			Total Cadmium (Cd)	2022/07/27		92	%	80 - 120
			Total Calcium (Ca)	2022/07/27		98	%	80 - 120
			Total Chromium (Cr)	2022/07/27		93	%	80 - 120
			Total Cobalt (Co)	2022/07/27		94	%	80 - 120
			Total Copper (Cu)	2022/07/27		92	%	80 - 120
			Total Iron (Fe)	2022/07/27		98	%	80 - 120
			Total Lead (Pb)	2022/07/27		97	%	80 - 120
			Total Magnesium (Mg)	2022/07/27		99	%	80 - 120
			Total Manganese (Mn)	2022/07/27		95	%	80 - 120
			Total Molybdenum (Mo)	2022/07/27		98	%	80 - 120
			Total Nickel (Ni)	2022/07/27		95	%	80 - 120
			Total Phosphorus (P)	2022/07/27		100	%	80 - 120
			Total Potassium (K)	2022/07/27		99	%	80 - 120
			Total Selenium (Se)	2022/07/27		93	%	80 - 120
			Total Silver (Ag)	2022/07/27		95	%	80 - 120
			Total Sodium (Na)	2022/07/27		98	%	80 - 120
			Total Strontium (Sr)	2022/07/27		90	%	80 - 120
			Total Thallium (Tl)	2022/07/27		97	%	80 - 120
			Total Tin (Sn)	2022/07/27		99	%	80 - 120
			Total Titanium (Ti)	2022/07/27		97	%	80 - 120
			Total Uranium (U)	2022/07/27		99	%	80 - 120
			Total Vanadium (V)	2022/07/27		95	%	80 - 120
			Total Zinc (Zn)	2022/07/27		95	%	80 - 120
8132803	JHY	Method Blank	Total Aluminum (Al)	2022/07/27	<5.0		ug/L	
			Total Antimony (Sb)	2022/07/27	<1.0		ug/L	
			Total Arsenic (As)	2022/07/27	<1.0		ug/L	
			Total Barium (Ba)	2022/07/27	<1.0		ug/L	
			Total Beryllium (Be)	2022/07/27	<0.10		ug/L	
			Total Bismuth (Bi)	2022/07/27	<2.0		ug/L	
			Total Boron (B)	2022/07/27	<50		ug/L	
			Total Cadmium (Cd)	2022/07/27	<0.010		ug/L	
			Total Calcium (Ca)	2022/07/27	<100		ug/L	
			Total Chromium (Cr)	2022/07/27	<1.0		ug/L	
			Total Cobalt (Co)	2022/07/27	<0.40		ug/L	
			Total Copper (Cu)	2022/07/27	<0.50		ug/L	
			Total Iron (Fe)	2022/07/27	<50		ug/L	
			Total Lead (Pb)	2022/07/27	<0.50		ug/L	
			Total Magnesium (Mg)	2022/07/27	<100		ug/L	
			Total Manganese (Mn)	2022/07/27	<2.0		ug/L	
			Total Molybdenum (Mo)	2022/07/27	<2.0		ug/L	
			Total Nickel (Ni)	2022/07/27	<2.0		ug/L	
			Total Phosphorus (P)	2022/07/27	<100		ug/L	

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Bureau Veritas - Partial/Rush Results

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Potassium (K)	2022/07/27	<100		ug/L	
			Total Selenium (Se)	2022/07/27	<0.50		ug/L	
			Total Silver (Ag)	2022/07/27	<0.10		ug/L	
			Total Sodium (Na)	2022/07/27	<100		ug/L	
			Total Strontium (Sr)	2022/07/27	<2.0		ug/L	
			Total Thallium (Tl)	2022/07/27	<0.10		ug/L	
			Total Tin (Sn)	2022/07/27	<2.0		ug/L	
			Total Titanium (Ti)	2022/07/27	<2.0		ug/L	
			Total Uranium (U)	2022/07/27	<0.10		ug/L	
			Total Vanadium (V)	2022/07/27	<2.0		ug/L	
			Total Zinc (Zn)	2022/07/27	<5.0		ug/L	
8132803	JHY	RPD	Total Aluminum (Al)	2022/07/27	0.89		%	20
			Total Antimony (Sb)	2022/07/27	NC		%	20
			Total Arsenic (As)	2022/07/27	NC		%	20
			Total Barium (Ba)	2022/07/27	1.0		%	20
			Total Beryllium (Be)	2022/07/27	NC		%	20
			Total Bismuth (Bi)	2022/07/27	NC		%	20
			Total Boron (B)	2022/07/27	NC		%	20
			Total Cadmium (Cd)	2022/07/27	NC		%	20
			Total Calcium (Ca)	2022/07/27	2.5		%	20
			Total Chromium (Cr)	2022/07/27	NC		%	20
			Total Cobalt (Co)	2022/07/27	NC		%	20
			Total Copper (Cu)	2022/07/27	9.2		%	20
			Total Iron (Fe)	2022/07/27	NC		%	20
			Total Lead (Pb)	2022/07/27	0.21		%	20
			Total Magnesium (Mg)	2022/07/27	1.2		%	20
			Total Manganese (Mn)	2022/07/27	0.17		%	20
			Total Molybdenum (Mo)	2022/07/27	0.45		%	20
			Total Nickel (Ni)	2022/07/27	NC		%	20
			Total Phosphorus (P)	2022/07/27	NC		%	20
			Total Potassium (K)	2022/07/27	2.3		%	20
			Total Selenium (Se)	2022/07/27	NC		%	20
			Total Silver (Ag)	2022/07/27	NC		%	20
			Total Sodium (Na)	2022/07/27	1.1		%	20
			Total Strontium (Sr)	2022/07/27	0.28		%	20
			Total Thallium (Tl)	2022/07/27	NC		%	20
			Total Tin (Sn)	2022/07/27	NC		%	20
			Total Titanium (Ti)	2022/07/27	NC		%	20
			Total Uranium (U)	2022/07/27	0.94		%	20
			Total Vanadium (V)	2022/07/27	NC		%	20
			Total Zinc (Zn)	2022/07/27	0.72		%	20
8132804	JHY	Matrix Spike [TES400-01]	Total Aluminum (Al)	2022/07/28		107	%	80 - 120
			Total Antimony (Sb)	2022/07/28		102	%	80 - 120
			Total Arsenic (As)	2022/07/28		NC	%	80 - 120
			Total Barium (Ba)	2022/07/28		98	%	80 - 120
			Total Beryllium (Be)	2022/07/28		99	%	80 - 120
			Total Bismuth (Bi)	2022/07/28		95	%	80 - 120
			Total Boron (B)	2022/07/28		NC	%	80 - 120
			Total Cadmium (Cd)	2022/07/28		94	%	80 - 120
			Total Calcium (Ca)	2022/07/28		NC	%	80 - 120
			Total Chromium (Cr)	2022/07/28		96	%	80 - 120
			Total Cobalt (Co)	2022/07/28		93	%	80 - 120
			Total Copper (Cu)	2022/07/28		95	%	80 - 120
			Total Iron (Fe)	2022/07/28		95	%	80 - 120

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Bureau Veritas - Partial/Rush Results

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Lead (Pb)	2022/07/28		95	%	80 - 120
			Total Magnesium (Mg)	2022/07/28		NC	%	80 - 120
			Total Manganese (Mn)	2022/07/28		101	%	80 - 120
			Total Molybdenum (Mo)	2022/07/28		118	%	80 - 120
			Total Nickel (Ni)	2022/07/28		91	%	80 - 120
			Total Phosphorus (P)	2022/07/28		105	%	80 - 120
			Total Potassium (K)	2022/07/28		NC	%	80 - 120
			Total Selenium (Se)	2022/07/28		91	%	80 - 120
			Total Silver (Ag)	2022/07/28		97	%	80 - 120
			Total Sodium (Na)	2022/07/28		NC	%	80 - 120
			Total Strontium (Sr)	2022/07/28		NC	%	80 - 120
			Total Thallium (Tl)	2022/07/28		94	%	80 - 120
			Total Tin (Sn)	2022/07/28		110	%	80 - 120
			Total Titanium (Ti)	2022/07/28		92	%	80 - 120
			Total Uranium (U)	2022/07/28		94	%	80 - 120
			Total Vanadium (V)	2022/07/28		104	%	80 - 120
			Total Zinc (Zn)	2022/07/28		93	%	80 - 120
8132804	JHY	Spiked Blank	Total Aluminum (Al)	2022/07/27		105	%	80 - 120
			Total Antimony (Sb)	2022/07/27		101	%	80 - 120
			Total Arsenic (As)	2022/07/27		91	%	80 - 120
			Total Barium (Ba)	2022/07/27		96	%	80 - 120
			Total Beryllium (Be)	2022/07/27		91	%	80 - 120
			Total Bismuth (Bi)	2022/07/27		97	%	80 - 120
			Total Boron (B)	2022/07/27		95	%	80 - 120
			Total Cadmium (Cd)	2022/07/27		94	%	80 - 120
			Total Calcium (Ca)	2022/07/27		102	%	80 - 120
			Total Chromium (Cr)	2022/07/27		94	%	80 - 120
			Total Cobalt (Co)	2022/07/27		94	%	80 - 120
			Total Copper (Cu)	2022/07/27		92	%	80 - 120
			Total Iron (Fe)	2022/07/27		100	%	80 - 120
			Total Lead (Pb)	2022/07/27		97	%	80 - 120
			Total Magnesium (Mg)	2022/07/27		102	%	80 - 120
			Total Manganese (Mn)	2022/07/27		96	%	80 - 120
			Total Molybdenum (Mo)	2022/07/27		98	%	80 - 120
			Total Nickel (Ni)	2022/07/27		94	%	80 - 120
			Total Phosphorus (P)	2022/07/27		102	%	80 - 120
			Total Potassium (K)	2022/07/27		101	%	80 - 120
			Total Selenium (Se)	2022/07/27		92	%	80 - 120
			Total Silver (Ag)	2022/07/27		96	%	80 - 120
			Total Sodium (Na)	2022/07/27		102	%	80 - 120
			Total Strontium (Sr)	2022/07/27		92	%	80 - 120
			Total Thallium (Tl)	2022/07/27		97	%	80 - 120
			Total Tin (Sn)	2022/07/27		100	%	80 - 120
			Total Titanium (Ti)	2022/07/27		97	%	80 - 120
			Total Uranium (U)	2022/07/27		100	%	80 - 120
			Total Vanadium (V)	2022/07/27		97	%	80 - 120
			Total Zinc (Zn)	2022/07/27		95	%	80 - 120
8132804	JHY	Method Blank	Total Aluminum (Al)	2022/07/28	5.6, RDL=5.0 (4)		ug/L	
			Total Antimony (Sb)	2022/07/28	<1.0		ug/L	
			Total Arsenic (As)	2022/07/28	<1.0		ug/L	
			Total Barium (Ba)	2022/07/28	<1.0		ug/L	
			Total Beryllium (Be)	2022/07/28	<0.10		ug/L	
			Total Bismuth (Bi)	2022/07/28	<2.0		ug/L	

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Bureau Veritas - Partial/Rush Results

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Boron (B)	2022/07/28	<50		ug/L	
			Total Cadmium (Cd)	2022/07/28	<0.010		ug/L	
			Total Calcium (Ca)	2022/07/28	<100		ug/L	
			Total Chromium (Cr)	2022/07/28	<1.0		ug/L	
			Total Cobalt (Co)	2022/07/28	<0.40		ug/L	
			Total Copper (Cu)	2022/07/28	<0.50		ug/L	
			Total Iron (Fe)	2022/07/28	<50		ug/L	
			Total Lead (Pb)	2022/07/28	<0.50		ug/L	
			Total Magnesium (Mg)	2022/07/28	<100		ug/L	
			Total Manganese (Mn)	2022/07/28	<2.0		ug/L	
			Total Molybdenum (Mo)	2022/07/28	<2.0		ug/L	
			Total Nickel (Ni)	2022/07/28	<2.0		ug/L	
			Total Phosphorus (P)	2022/07/28	<100		ug/L	
			Total Potassium (K)	2022/07/28	<100		ug/L	
			Total Selenium (Se)	2022/07/28	<0.50		ug/L	
			Total Silver (Ag)	2022/07/28	<0.10		ug/L	
			Total Sodium (Na)	2022/07/28	<100		ug/L	
			Total Strontium (Sr)	2022/07/28	<2.0		ug/L	
			Total Thallium (Tl)	2022/07/28	<0.10		ug/L	
			Total Tin (Sn)	2022/07/28	<2.0		ug/L	
			Total Titanium (Ti)	2022/07/28	<2.0		ug/L	
			Total Uranium (U)	2022/07/28	<0.10		ug/L	
			Total Vanadium (V)	2022/07/28	<2.0		ug/L	
			Total Zinc (Zn)	2022/07/28	<5.0		ug/L	
8132804	JHY	RPD [TES399-01]	Total Aluminum (Al)	2022/07/27	1.5		%	20
			Total Antimony (Sb)	2022/07/27	NC		%	20
			Total Arsenic (As)	2022/07/27	2.3		%	20
			Total Barium (Ba)	2022/07/27	1.7		%	20
			Total Beryllium (Be)	2022/07/27	NC		%	20
			Total Bismuth (Bi)	2022/07/27	NC		%	20
			Total Boron (B)	2022/07/27	1.5		%	20
			Total Cadmium (Cd)	2022/07/27	6.7		%	20
			Total Calcium (Ca)	2022/07/27	3.6		%	20
			Total Chromium (Cr)	2022/07/27	NC		%	20
			Total Cobalt (Co)	2022/07/27	NC		%	20
			Total Copper (Cu)	2022/07/27	4.9		%	20
			Total Iron (Fe)	2022/07/27	3.3		%	20
			Total Lead (Pb)	2022/07/27	2.8		%	20
			Total Magnesium (Mg)	2022/07/27	2.8		%	20
			Total Manganese (Mn)	2022/07/27	1.2		%	20
			Total Molybdenum (Mo)	2022/07/27	NC		%	20
			Total Nickel (Ni)	2022/07/27	NC		%	20
			Total Phosphorus (P)	2022/07/27	NC		%	20
			Total Potassium (K)	2022/07/27	2.4		%	20
			Total Selenium (Se)	2022/07/27	NC		%	20
			Total Silver (Ag)	2022/07/27	NC		%	20
			Total Sodium (Na)	2022/07/27	2.0		%	20
			Total Strontium (Sr)	2022/07/27	2.2		%	20
			Total Thallium (Tl)	2022/07/27	NC		%	20
			Total Tin (Sn)	2022/07/27	NC		%	20
			Total Titanium (Ti)	2022/07/27	6.9		%	20
			Total Uranium (U)	2022/07/27	6.3		%	20
			Total Vanadium (V)	2022/07/27	NC		%	20

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J9495
Report Date: 2022/08/04

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Zinc (Zn)	2022/07/27	4.6		%	20

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.

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) Poor duplicate agreement due to sample inhomogeniety.

(2) Elevated reporting limit due to sample matrix.

(3) Poor spike recovery due to probable sample matrix interference.

(4) Low level lab contamination.

Bureau Veritas - Partial/Rush Results

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VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

Colleen Acker, B.Sc, Scientific Service Specialist

Janah Rhyno, Metals Supervisor-Bedford

Bureau Veritas Proprietary Software
Logiciel Propriétaire de Bureau Veritas

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Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Your Project #: 60680068
Site Location: Seal Harbour, NS

Attention: Rory McNeil

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

Your C.O.C. #: 885378-05-01, 885378-01-01, 885378-02-01, 885378-03-01, 885378-04-01

Report Date: 2022/07/26
Report #: R7227531
Version: 1 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2J9495
Received: 2022/07/15, 11:47

Sample Matrix: Sediment
Samples Received: 19

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals Solids Acid Extr. ICPMS	11	2022/07/21	2022/07/22	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	4	2022/07/21	2022/07/25	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	4	2022/07/22	2022/07/22	ATL SOP 00058	EPA 6020B 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.
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.

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Bureau Veritas - Partial/Rush Results

Your Project #: 60680068
Site Location: Seal Harbour, NS

Attention: Rory McNeil

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

Your C.O.C. #: 885378-05-01, 885378-01-01, 885378-02-01, 885378-03-01, 885378-04-01

Report Date: 2022/07/26
Report #: R7227531
Version: 1 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2J9495
Received: 2022/07/15, 11:47

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas
26 Jul 2022 15:29:13

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253
==========
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Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/07/26

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		TES412	TES413	TES414	TES415	TES416		
Sampling Date		2022/07/14	2022/07/14	2022/07/14	2022/07/13	2022/07/14		
COC Number		885378-03-01	885378-03-01	885378-04-01	885378-04-01	885378-04-01		
	UNITS	**SED 18**	**SED-20**	**SED 19**	**SED DUP1**	**SED DUP2**	**RDL**	**QC Batch**
Metals								
Acid Extractable Aluminum (Al)	mg/kg	8700	8100	20000	7700	8500	10	8122201
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8122201
Acid Extractable Arsenic (As)	mg/kg	520	410	520	1800	500	20	8122201
Acid Extractable Barium (Ba)	mg/kg	9.6	20	83	48	22	5.0	8122201
Acid Extractable Beryllium (Be)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8122201
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8122201
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	<50	50	8122201
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	<0.30	0.42	<0.30	0.30	8122201
Acid Extractable Chromium (Cr)	mg/kg	13	12	27	11	13	2.0	8122201
Acid Extractable Cobalt (Co)	mg/kg	5.2	4.4	2.1	8.5	4.8	1.0	8122201
Acid Extractable Copper (Cu)	mg/kg	25	13	14	21	13	2.0	8122201
Acid Extractable Iron (Fe)	mg/kg	17000	16000	31000	17000	18000	50	8122201
Acid Extractable Lead (Pb)	mg/kg	37	11	25	22	12	0.50	8122201
Acid Extractable Lithium (Li)	mg/kg	16	15	36	12	15	2.0	8122201
Acid Extractable Manganese (Mn)	mg/kg	190	230	450	730	280	2.0	8122201
Acid Extractable Mercury (Hg)	mg/kg	0.23	0.15	2.7	0.26	0.17	0.10	8122201
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8122201
Acid Extractable Nickel (Ni)	mg/kg	15	12	14	21	12	2.0	8122201
Acid Extractable Rubidium (Rb)	mg/kg	7.8	10	44	13	11	2.0	8122201
Acid Extractable Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	0.66	<0.50	0.50	8122201
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8122201
Acid Extractable Strontium (Sr)	mg/kg	10	5.3	16	38	5.2	5.0	8122201
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	0.30	0.18	<0.10	0.10	8122201
Acid Extractable Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8122201
Acid Extractable Uranium (U)	mg/kg	0.91	0.41	0.63	0.70	0.39	0.10	8122201
Acid Extractable Vanadium (V)	mg/kg	9.8	14	31	17	15	2.0	8122201
Acid Extractable Zinc (Zn)	mg/kg	70	28	71	85	27	5.0	8122201

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/07/26

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		TES417		TES418		TES419		TES420		
Sampling Date		2022/07/13		2022/07/13		2022/07/13		2022/07/13		
COC Number		885378-04-01		885378-04-01		885378-04-01		885378-04-01		
	UNITS	SED-1	RDL	SED-2	RDL	SED-3	RDL	SED-4	RDL	QC Batch
Metals										
Acid Extractable Aluminum (Al)	mg/kg	14000	10	15000	10	6900	10	5000	10	8122201
Acid Extractable Antimony (Sb)	mg/kg	2.2	2.0	2.3	2.0	34	2.0	15	2.0	8122201
Acid Extractable Arsenic (As)	mg/kg	40000	200	5000	20	57000	2000	32000	200	8122201
Acid Extractable Barium (Ba)	mg/kg	120	5.0	100	5.0	54	5.0	40	5.0	8122201
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8122201
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	2.0	2.8	2.0	<2.0	2.0	8122201
Acid Extractable Boron (B)	mg/kg	<50	50	<50	50	<50	50	<50	50	8122201
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	<0.30	0.30	0.58	0.30	<0.30	0.30	8122201
Acid Extractable Chromium (Cr)	mg/kg	23	2.0	23	2.0	12	2.0	12	2.0	8122201
Acid Extractable Cobalt (Co)	mg/kg	5.8	1.0	3.7	1.0	55	1.0	1.2	1.0	8122201
Acid Extractable Copper (Cu)	mg/kg	23	2.0	25	2.0	52	2.0	9.6	2.0	8122201
Acid Extractable Iron (Fe)	mg/kg	87000	50	45000	50	62000	50	42000	50	8122201
Acid Extractable Lead (Pb)	mg/kg	37	0.50	73	0.50	86	0.50	110	0.50	8122201
Acid Extractable Lithium (Li)	mg/kg	26	2.0	23	2.0	13	2.0	7.9	2.0	8122201
Acid Extractable Manganese (Mn)	mg/kg	350	2.0	280	2.0	170	2.0	110	2.0	8122201
Acid Extractable Mercury (Hg)	mg/kg	2.8	1.0	6.7	1.0	68	1.0	7.4	1.0	8122201
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	<2.0	2.0	2.1	2.0	<2.0	2.0	8122201
Acid Extractable Nickel (Ni)	mg/kg	18	2.0	14	2.0	91	2.0	4.6	2.0	8122201
Acid Extractable Rubidium (Rb)	mg/kg	45	2.0	28	2.0	21	2.0	16	2.0	8122201
Acid Extractable Selenium (Se)	mg/kg	<0.50	0.50	0.71	0.50	0.90	0.50	<0.50	0.50	8122201
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	1.4	0.50	4.0	0.50	0.67	0.50	8122201
Acid Extractable Strontium (Sr)	mg/kg	20	5.0	16	5.0	11	5.0	5.1	5.0	8122201
Acid Extractable Thallium (Tl)	mg/kg	0.37	0.10	0.29	0.10	0.26	0.10	0.22	0.10	8122201
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	1.7	1.0	<1.0	1.0	<1.0	1.0	8122201
Acid Extractable Uranium (U)	mg/kg	0.26	0.10	0.47	0.10	0.26	0.10	0.20	0.10	8122201
Acid Extractable Vanadium (V)	mg/kg	24	2.0	26	2.0	12	2.0	12	2.0	8122201
Acid Extractable Zinc (Zn)	mg/kg	65	5.0	62	5.0	51	5.0	17	5.0	8122201

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/07/26

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		TES421		TES422		TES423	TES424		
Sampling Date		2022/07/13		2022/07/13		2022/07/13	2022/07/13		
COC Number		885378-04-01		885378-04-01		885378-04-01	885378-05-01		
	UNITS	SED-5	RDL	SED-6	RDL	SED-7	SED-8	RDL	QC Batch
Metals									
Acid Extractable Aluminum (Al)	mg/kg	7600	10	5500	10	8400	9900	10	8122201
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	<2.0	2.0	3.4	<2.0	2.0	8122201
Acid Extractable Arsenic (As)	mg/kg	1600	20	1200	20	40000	16000	200	8122201
Acid Extractable Barium (Ba)	mg/kg	44	5.0	41	5.0	98	85	5.0	8122201
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	<1.0	1.0	<1.0	1.4	1.0	8122201
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	<2.0	2.0	8122201
Acid Extractable Boron (B)	mg/kg	<50	50	<50	50	<50	<50	50	8122201
Acid Extractable Cadmium (Cd)	mg/kg	0.44	0.30	0.34	0.30	<0.30	0.44	0.30	8122201
Acid Extractable Chromium (Cr)	mg/kg	11	2.0	8.0	2.0	10	19	2.0	8122201
Acid Extractable Cobalt (Co)	mg/kg	7.7	1.0	11	1.0	6.4	15	1.0	8122201
Acid Extractable Copper (Cu)	mg/kg	22	2.0	16	2.0	7.1	31	2.0	8122201
Acid Extractable Iron (Fe)	mg/kg	17000	50	12000	50	100000	110000	5000	8122201
Acid Extractable Lead (Pb)	mg/kg	24	0.50	20	0.50	73	56	0.50	8122201
Acid Extractable Lithium (Li)	mg/kg	12	2.0	6.6	2.0	6.8	14	2.0	8122201
Acid Extractable Manganese (Mn)	mg/kg	600	2.0	450	2.0	1000	1000	2.0	8122201
Acid Extractable Mercury (Hg)	mg/kg	<1.0	1.0	<10	10	<10	<10	10	8122201
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	<2.0	2.0	8122201
Acid Extractable Nickel (Ni)	mg/kg	19	2.0	19	2.0	8.0	22	2.0	8122201
Acid Extractable Rubidium (Rb)	mg/kg	12	2.0	5.5	2.0	10	17	2.0	8122201
Acid Extractable Selenium (Se)	mg/kg	0.74	0.50	0.55	0.50	1.5	0.58	0.50	8122201
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	<0.50	0.50	0.56	2.7	0.50	8122201
Acid Extractable Strontium (Sr)	mg/kg	40	5.0	42	5.0	12	47	5.0	8122201
Acid Extractable Thallium (Tl)	mg/kg	0.20	0.10	0.14	0.10	0.19	0.24	0.10	8122201
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	<1.0	1.0	1.3	<1.0	1.0	8122201
Acid Extractable Uranium (U)	mg/kg	0.66	0.10	0.64	0.10	0.37	2.5	0.10	8122201
Acid Extractable Vanadium (V)	mg/kg	16	2.0	13	2.0	21	28	2.0	8122201
Acid Extractable Zinc (Zn)	mg/kg	91	5.0	130	5.0	21	140	5.0	8122201

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/07/26

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		TES425	TES426		TES427	TES428	TES429		
Sampling Date		2022/07/13	2022/07/13		2022/07/14	2022/07/14	2022/07/14		
COC Number		885378-05-01	885378-05-01		885378-05-01	885378-05-01	885378-05-01		
	UNITS	SED-9	SED-10	QC Batch	SED-11	SED-12	SED-13	RDL	QC Batch
Metals									
Acid Extractable Aluminum (Al)	mg/kg	8900	8000	8122201	7900	7800	7900	10	8124541
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	8122201	<2.0	<2.0	<2.0	2.0	8124541
Acid Extractable Arsenic (As)	mg/kg	440	210	8122201	11	100	270	2.0	8124541
Acid Extractable Barium (Ba)	mg/kg	18	9.5	8122201	12	19	12	5.0	8124541
Acid Extractable Beryllium (Be)	mg/kg	<1.0	<1.0	8122201	<1.0	<1.0	<1.0	1.0	8124541
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	8122201	<2.0	<2.0	<2.0	2.0	8124541
Acid Extractable Boron (B)	mg/kg	<50	<50	8122201	<50	<50	<50	50	8124541
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	8122201	<0.30	<0.30	<0.30	0.30	8124541
Acid Extractable Chromium (Cr)	mg/kg	15	12	8122201	12	13	13	2.0	8124541
Acid Extractable Cobalt (Co)	mg/kg	9.5	3.4	8122201	4.4	5.0	4.9	1.0	8124541
Acid Extractable Copper (Cu)	mg/kg	12	8.6	8122201	4.6	6.5	14	2.0	8124541
Acid Extractable Iron (Fe)	mg/kg	23000	16000	8122201	16000	13000	17000	50	8124541
Acid Extractable Lead (Pb)	mg/kg	13	16	8122201	6.2	8.9	15	0.50	8124541
Acid Extractable Lithium (Li)	mg/kg	19	15	8122201	18	20	19	2.0	8124541
Acid Extractable Manganese (Mn)	mg/kg	860	290	8122201	200	190	180	2.0	8124541
Acid Extractable Mercury (Hg)	mg/kg	<0.10	0.27	8122201	0.10	0.12	0.19	0.10	8124541
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	8122201	2.2	<2.0	<2.0	2.0	8124541
Acid Extractable Nickel (Ni)	mg/kg	15	11	8122201	13	12	14	2.0	8124541
Acid Extractable Rubidium (Rb)	mg/kg	12	6.1	8122201	6.0	10	9.4	2.0	8124541
Acid Extractable Selenium (Se)	mg/kg	<0.50	<0.50	8122201	<0.50	<0.50	<0.50	0.50	8124541
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	8122201	<0.50	<0.50	<0.50	0.50	8124541
Acid Extractable Strontium (Sr)	mg/kg	9.5	8.6	8122201	13	6.5	16	5.0	8124541
Acid Extractable Thallium (Tl)	mg/kg	0.10	<0.10	8122201	<0.10	<0.10	<0.10	0.10	8124541
Acid Extractable Tin (Sn)	mg/kg	<1.0	<1.0	8122201	<1.0	<1.0	<1.0	1.0	8124541
Acid Extractable Uranium (U)	mg/kg	0.58	0.38	8122201	0.42	0.67	0.57	0.10	8124541
Acid Extractable Vanadium (V)	mg/kg	13	8.8	8122201	14	15	13	2.0	8124541
Acid Extractable Zinc (Zn)	mg/kg	48	40	8122201	29	28	55	5.0	8124541

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/07/26

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		TES430		
Sampling Date		2022/07/14		
COC Number		885378-05-01		
	UNITS	**SED-14**	**RDL**	**QC Batch**
Metals				
Acid Extractable Aluminum (Al)	mg/kg	8700	10	8124541
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	8124541
Acid Extractable Arsenic (As)	mg/kg	280	2.0	8124541
Acid Extractable Barium (Ba)	mg/kg	15	5.0	8124541
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	8124541
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	8124541
Acid Extractable Boron (B)	mg/kg	<50	50	8124541
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	8124541
Acid Extractable Chromium (Cr)	mg/kg	15	2.0	8124541
Acid Extractable Cobalt (Co)	mg/kg	5.1	1.0	8124541
Acid Extractable Copper (Cu)	mg/kg	14	2.0	8124541
Acid Extractable Iron (Fe)	mg/kg	18000	50	8124541
Acid Extractable Lead (Pb)	mg/kg	18	0.50	8124541
Acid Extractable Lithium (Li)	mg/kg	20	2.0	8124541
Acid Extractable Manganese (Mn)	mg/kg	190	2.0	8124541
Acid Extractable Mercury (Hg)	mg/kg	0.18	0.10	8124541
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	8124541
Acid Extractable Nickel (Ni)	mg/kg	15	2.0	8124541
Acid Extractable Rubidium (Rb)	mg/kg	10	2.0	8124541
Acid Extractable Selenium (Se)	mg/kg	<0.50	0.50	8124541
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	8124541
Acid Extractable Strontium (Sr)	mg/kg	21	5.0	8124541
Acid Extractable Thallium (Tl)	mg/kg	0.10	0.10	8124541
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	8124541
Acid Extractable Uranium (U)	mg/kg	0.63	0.10	8124541
Acid Extractable Vanadium (V)	mg/kg	15	2.0	8124541
Acid Extractable Zinc (Zn)	mg/kg	59	5.0	8124541

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results

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GENERAL COMMENTS

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

Package 1	5.0°C
Package 2	5.3°C
Package 3	6.3°C

Results relate only to the items tested.

Bureau Veritas - Partial/Rush Results

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Bureau Veritas Job #: C2J9495
Report Date: 2022/07/26

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8122201	BAN	Matrix Spike [TES413-01]	Acid Extractable Antimony (Sb)	2022/07/22		80	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/22		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/22		99	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/22		98	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/22		102	%	75 - 125
			Acid Extractable Boron (B)	2022/07/22		94	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/22		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/22		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/22		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/22		99	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/22		101	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/22		101	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/22		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/22		94	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/22		102	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/22		102	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/22		99	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/22		98	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/22		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/22		98	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/22		100	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/22		101	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/22		98	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/22		99	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/22		101	%	75 - 125
8122201	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/22		106	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/22		101	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/22		97	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/22		98	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/22		97	%	75 - 125
			Acid Extractable Boron (B)	2022/07/22		109	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/22		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/22		100	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/22		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/22		97	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/22		98	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/22		100	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/22		101	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/22		103	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/22		102	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/22		99	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/22		100	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/22		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/22		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/22		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/22		99	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/22		102	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/22		98	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/22		98	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/22		100	%	75 - 125
8122201	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/07/22	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/22	<5.0		mg/kg	

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Bureau Veritas - Partial/Rush Results

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Beryllium (Be)	2022/07/22	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/07/22	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/22	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/22	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/22	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/22	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/22	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/22	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/22	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/22	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/22	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/22	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/07/22	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/22	<5.0		mg/kg	
8122201	BAN	RPD [TES413-01]	Acid Extractable Aluminum (Al)	2022/07/22	2.4		%	35
			Acid Extractable Antimony (Sb)	2022/07/22	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/22	16		%	35
			Acid Extractable Barium (Ba)	2022/07/22	6.7		%	35
			Acid Extractable Beryllium (Be)	2022/07/22	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/07/22	NC		%	35
			Acid Extractable Boron (B)	2022/07/22	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/22	NC		%	35
			Acid Extractable Chromium (Cr)	2022/07/22	3.5		%	35
			Acid Extractable Cobalt (Co)	2022/07/22	1.3		%	35
			Acid Extractable Copper (Cu)	2022/07/22	5.4		%	35
			Acid Extractable Iron (Fe)	2022/07/22	3.0		%	35
			Acid Extractable Lead (Pb)	2022/07/22	7.5		%	35
			Acid Extractable Lithium (Li)	2022/07/22	9.8		%	35
			Acid Extractable Manganese (Mn)	2022/07/22	7.2		%	35
			Acid Extractable Mercury (Hg)	2022/07/22	2.2		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/22	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/22	0.58		%	35
			Acid Extractable Rubidium (Rb)	2022/07/22	5.1		%	35
			Acid Extractable Selenium (Se)	2022/07/22	NC		%	35
			Acid Extractable Silver (Ag)	2022/07/22	NC		%	35
			Acid Extractable Strontium (Sr)	2022/07/22	0.90		%	35
			Acid Extractable Thallium (Tl)	2022/07/22	NC		%	35
			Acid Extractable Tin (Sn)	2022/07/22	NC		%	35
			Acid Extractable Uranium (U)	2022/07/22	5.4		%	35
			Acid Extractable Vanadium (V)	2022/07/22	0.86		%	35
			Acid Extractable Zinc (Zn)	2022/07/22	5.4		%	35
8124541	JHY	Matrix Spike	Acid Extractable Antimony (Sb)	2022/07/22		54 (1)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/22		98	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/22		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/22		99	%	75 - 125

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Bureau Veritas - Partial/Rush Results

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Bismuth (Bi)	2022/07/22		100	%	75 - 125
			Acid Extractable Boron (B)	2022/07/22		82	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/22		93	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/22		97	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/22		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/22		95	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/22		104	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/22		102	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/22		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/22		94	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/22		99	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/22		99	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/22		93	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/22		92	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/22		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/22		99	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/22		99	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/22		102	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/22		93	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/22		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/22		NC	%	75 - 125
8124541	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/22		105	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/22		101	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/22		107	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/22		100	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/22		100	%	75 - 125
			Acid Extractable Boron (B)	2022/07/22		101	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/22		95	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/22		101	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/22		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/22		97	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/22		97	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/22		101	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/22		100	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/22		103	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/22		101	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/22		101	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/22		102	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/22		99	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/22		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/22		97	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/22		101	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/22		113	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/22		94	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/22		102	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/22		111	%	75 - 125
8124541	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/07/22	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/22	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/22	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/07/22	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/22	<0.30		mg/kg	

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Bureau Veritas - Partial/Rush Results

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Chromium (Cr)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/22	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/22	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/22	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/22	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/22	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/22	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/22	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/22	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/22	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/07/22	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/22	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/22	<5.0		mg/kg	
8124541	JHY	RPD	Acid Extractable Aluminum (Al)	2022/07/22	8.0		%	35
			Acid Extractable Antimony (Sb)	2022/07/22	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/22	56 (2)		%	35
			Acid Extractable Barium (Ba)	2022/07/22	11		%	35
			Acid Extractable Beryllium (Be)	2022/07/22	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/07/22	NC		%	35
			Acid Extractable Boron (B)	2022/07/22	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/22	2.3		%	35
			Acid Extractable Chromium (Cr)	2022/07/22	11		%	35
			Acid Extractable Cobalt (Co)	2022/07/22	1.6		%	35
			Acid Extractable Copper (Cu)	2022/07/22	2.0		%	35
			Acid Extractable Iron (Fe)	2022/07/22	1.0		%	35
			Acid Extractable Lead (Pb)	2022/07/22	28		%	35
			Acid Extractable Lithium (Li)	2022/07/22	7.5		%	35
			Acid Extractable Manganese (Mn)	2022/07/22	4.0		%	35
			Acid Extractable Mercury (Hg)	2022/07/22	10		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/22	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/22	6.3		%	35
			Acid Extractable Rubidium (Rb)	2022/07/22	7.3		%	35
			Acid Extractable Selenium (Se)	2022/07/22	50 (2)		%	35
			Acid Extractable Silver (Ag)	2022/07/22	NC		%	35
			Acid Extractable Strontium (Sr)	2022/07/22	9.6		%	35
			Acid Extractable Thallium (Tl)	2022/07/22	NC		%	35
			Acid Extractable Tin (Sn)	2022/07/22	NC		%	35
			Acid Extractable Uranium (U)	2022/07/22	5.6		%	35
			Acid Extractable Vanadium (V)	2022/07/22	6.7		%	35

Bureau Veritas - Partial/Rush Results

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

Bureau Veritas Job #: C2J9495
Report Date: 2022/07/26

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Zinc (Zn)	2022/07/22	4.2		%	35

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.

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) Matrix Spike exceeds acceptance limits, probable matrix interference.

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

Bureau Veritas - Partial/Rush Results

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VALIDATION SIGNATURE PAGE

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

Janah M Rhyno

Janah Rhyno, Metals Supervisor-Bedford

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.

Bureau Veritas - Partial/Rush Results

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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
	Leave in Place - No Remedial Action	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	
Waste Rock												
Excavation and Off-Site Disposal	4	4	4	2	3	5	4	2	5	1	5	15.9
Soil Cap	3	4	4	3	4	4	4	3	3	3	2	14.9
Soil/Synthetic Cap	4	4	3	4	4	4	4	4	4	3	3	16.2
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 Tailings - Dry Areas												
Excavation and Off-Site Disposal	3	4	3	2	3	4	4	2	3	1	5	13.3
Soil Cap	4	4	4	3	4	4	4	3	3	3	2	15.3
Soil/Synthetic Cap	4	4	3	3	4	4	4	4	4	2	3	15.4
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 Tailings - Wet Areas												
Excavation and Off-Site Disposal	3	4	3	2	3	4	4	2	3	1	5	13.3
Soil Cap	4	4	4	3	4	4	4	3	3	3	2	15.3
Soil/Synthetic Cap	4	4	3	3	4	4	4	4	4	2	3	15.4
Risk Management	2	1	5	5	5	3	3	5	2	4	1	14.3
Leave in Place - No Remedial Action	3	1	5	5	5	3	3	5	3	5	1	15.8
Impacted Soils												
Excavation and Off-Site Disposal	3	4	2	2	3	4	4	2	3	1	5	12.8
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	3	1	5	5	5	4	3	5	2	4	1	15.2
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 and Sediment - Fresh Water												
Environmental monitoring and risk assessment- no remedial action at this time	4	1	5	5	5	4	4	5	4	5	3	18.4
Impacted Surface Water and Sediment - Marine												
Dredge	3	3	2	3	4	5	5	4	3	3	5	15.8
Environmental monitoring and risk assessment- no remedial action at this time	4	1	5	5	5	2	3	5	3	5	3	16.2
Impacted Groundwater												
Leave in Place - No Remedial Action	2	1	5	5	5	2	1	5	1	5	3	13.0

Appendix E. NSE Forms

Print Clear Form

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: Gold Brook Lake and Seal Harbour, Goldboro, NS
City: _____
Parcel Identification Number (PID): 35094366
Postal Code: _____
GPS (NAD83 UTM coordinates, source central point) Easting: 606983 Northing: 5005984
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 Inc.
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	11
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	3.2.3	20
3	Determination has been made whether free product in soil or groundwater exist at the site	☑	1	3.2	20
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	31
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	31

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	31
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	31
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	11
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	2
14	Basic site information, including physical address, PID and/or GPS coordinates if available	☑	1	2.0	2
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	6, 11
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	35
17	A description of geological, hydrogeological and hydrological information as required by PRO-200, Environmental Site Assessment for Limited Remediation Protocol	☑	1	2.4	4
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	6, 13
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. A	-

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	21, 31
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	31, 62
22	Recommendations regarding risks posed by any contaminants remaining on site, and recommended action(s)	☑	1	4.0. 7.0	31, 62
23	A list of any references and supporting documentation used in the preparation of the Limited Phase 2 ESA report	☑	1	10	68
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	16
28	Monitoring well installation, development and groundwater sampling procedures	☑	1	3.1.2	16
29	QA/QC procedures	☑	1	3.1.4	19
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

Signature
Site Professional

Professional Registration Number/Stamp 0029

Date 2022/10/06
YYYY/MM/DD

Reports Applicable to Checklist

Report Title	**3 Digit Report ID**
Phase II Environmental Site Assessment - Gold Brook Lake and Seal Harbour Mine Site (AECOM, October 20	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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