REPORT

Human Health and Ecological Risk Assessment

Closure and Reclamation Plan, Meadowbank Complex

Submitted to:

Agnico Eagle Mines Limited

Submitted by:

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CA0025288.9785_Rev0

October 24, 2024

Distribution List

1 e-copy: Agnico Eagle Mines Limited

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List of Abbreviations

%	percent
AF	adjustment factor for fraction of contaminant in fish
Agnico Eagle	Agnico Eagle Mines Limited
APEC	area of potential concern
ATd	averaging time in days
ATSDR	Agency for Toxic Substances and Disease Registry
ATv	averaging time in years
AWAR	all-weather access road
BAF	bioaccumulation factor
BC ENV	British Columbia Ministry of the Environment and Climate Change Strategy
BCF	bioconcentration factor
BLM	Biotic Ligand Model
BTEX	benzene, toluene, ethylbenzene, and xylenes
BW	body weight
CCME	Canadian Council of Ministers of the Environment
Cf	POPC concentration in fish tissue
CGDWQ	Canadian Guideline for Drinking Water Quality
POPC	parameter of potential concern
COSEWIC	Committee on Status of Endangered Wildlife in Canada
CPCMP	Closure and Post-Closure Monitoring Plan
CREMP	Core Receiving Environment Monitoring Program
CRP	Closure and Reclamation Plan
CSM	conceptual site model
Cw	POPC concentration in surface water
DOC	dissolved organic carbon
DQO	data quality objective
EcoSSLs	Ecological Soil Screening Levels

EDI	estimated daily intake
EDv	exposure duration in years
Efd	exposure frequency in days
EIS	Environmental Impact Statement
ERA	ecological risk assessment
ESA	environmental site assessment
ETMF	exposure and toxicity modifying factor
FEIS	Final Environmental Impact Statement
g/t	grams per tonne
HHERA	human health and ecological risk assessment
HHRA	human health risk assessment
HQ	hazard quotient
ICRP	Interim Closure and Reclamation Plan
ILCR	incremental lifetime cancer risk
IQ	Inuit Qaujimajatuqangit
IR	ingestion rate
kg	kilogram
kg/d	kilograms per day
km	kilometres
L/day	litres per day
LOAEL	lowest observed adverse effect level
LOM	life of mine
M	metres
m^3	cubic metres
MAC	maximum acceptable concentration
masl	metres above sea level
mbgs	metres below ground level
mg/kg	milligrams per kilogram
mg/kg bw/day	milligrams per kilogram of bodyweight per day

mg/kg-d	milligrams per kilogram per day
mg/L	milligrams per litre
MLR	Multiple Linear Regression
MRL	minimum risk level
NIRB	Nunavut Impact Review Board
NO_2	nitrogen dioxide
NOAEL	no observed adverse effect level
NPAG/NML	non-potentially acid generating/non-metal leaching waste rock
NWB	Nunavut Water Board
OEHHA	California Office of Environment Health Hazard Assessment
PAG	potentially acid generating
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PFA	perfluoroalkyl and polyfluoroalkyl substance
PHC	petroleum hydrocarbon
PPRTV	Provisional Peer-Reviewed Toxicity Values
RA	risk assessment
RAF_{Oral}	relative absorption factor from the gastrointestinal tract
RfD	reference dose
RIVM	Netherlands National Institute of Public Health and the Environment
ROC	receptor of concern
RSL	regional screening level
SF	slope factor
SQG	soil quality guideline
SQROs	soil quality remediation objectives
TAG	Terrestrial Advisory Group
TDS	total dissolved solids
TK	traditional knowledge
TRV	toxicity reference value

TSF	tailings storage facility
TSP	total suspended particles
TSS	total suspended solids
US EPA	United States Environmental Protection Agency
VOC	volatile organic compound
WAD	weak acid dissociable
WCFSLRA	Wildlife and Country Foods Screening Level Risk Assessment
WRSF	waste rock storage facility
WSLRA	wildlife screening level risk assessment
WSP	WSP Canada Inc.
WTP	water treatment plant

Executive Summary

WSP Canada Inc. (WSP) was retained by Agnico Eagle Mines Limited (Agnico Eagle) to prepare a human health and ecological risk assessment (HHERA) for the Meadowbank Complex as required in support of the Closure and Reclamation Plan (CRP) to be submitted to the Nunavut Water Board (NWB). The objective of the HHERA was to evaluate the potential risks to human health and the environment from the contamination associated with the historical operation of the Site as a gold mine.

The human health risk assessment (HHRA) evaluated a member of the public who may be exposed to soil, water and country foods during Post-Closure at the Meadowbank Complex. The following summarizes the results and conclusions of the HHRA:

- The human receptors evaluated included an adult member of the public.
- The exposure pathways included direct contact (ingestion and dermal contact) with soil, inhalation of soil particulates, direct contact with surface water, and ingestion of country foods (i.e., edible plants, wild game and fish).
- Based on screening against generic guidelines and baseline conditions, arsenic was retained for further evaluation of surface water ingestion and fish ingestion in Whale Tail North Basin, Kangislulik Lake and Lake A15. There were no POPCs identified in soil, therefore, direct contact with soil (e.g., ingestion, dermal contact, inhalation of soil particulates) and consumption of country foods (e.g., plants and wild game) were incomplete pathways.
- The results of the risk characterization indicated that risks due to ingestion of surface water and fish are not expected.
    - There were no threshold or non-threshold health risks identified for members of the public that may rely on any of the assessed waterbodies as their potable water supply should these receptors spend time in the area during Post-Closure.
    - Similarly, no threshold or non-threshold health risks were identified for members of the public that may consume fish from any of the assessed water bodies.

The terrestrial health ecological risk assessment (ERA) evaluated terrestrial ecological receptors that may be exposed to soil, water, and dietary items during Post-Closure at the Meadowbank Complex. The following summarizes the results and conclusions of the terrestrial health ERA:

- The ecological receptors evaluated included terrestrial plants and soil invertebrates, mammals (e.g., caribou, wolverine, Arctic hare, Arctic ground squirrel and northern red-backed vole) and birds (e.g., peregrine falcon, common loon, Canada goose, Lapland longspur, rock ptarmigan, semi-palmated sandpiper).
- The exposure pathways considered included direct contact with soil by terrestrial plants and soil invertebrates, incidental soil ingestion and consumption of plants and dietary items that have accumulated POPCs from soil and water by mammals and birds and ingestion of surface water by mammals and birds.
- Based on screening against generic guidelines and baseline conditions, no POPCs were identified in soil or surface water. Therefore, no complete pathways were carried forward for further assessment in the terrestrial health ERA.

The aquatic health ERA evaluated aquatic receptors that may be exposed to water during Post-Closure at the Meadowbank Complex. The following summarizes the results and conclusions of the aquatic health ERA:

- The aquatic receptors evaluated included aquatic plants and algae, aquatic invertebrates and fish.
- The exposure pathways considered included direct contact with surface water by fish, aquatic invertebrates, aquatic plants and algae, and ingestion of plants and dietary items that have accumulated POPCs from water by fish.
- Based on screening against generic guidelines or site-specific water quality objectives and baseline conditions, copper in Portage Pit was the only waterbody and POPC identified in surface water. However, the results of the risk characterization indicated that risks to aquatic health are not expected.

Overall, there were negligible risks to human, terrestrial and aquatic receptors as a result of predicted Post-Closure conditions at the Meadowbank Complex.

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1.0 INTRODUCTION

WSP Canada Inc. (WSP) was retained by Agnico Eagle Mines Limited (Agnico Eagle) to prepare a human health and ecological risk assessment (HHERA) for the Meadowbank Complex as required in support of the Closure and Reclamation Plan (CRP) to be submitted to the Nunavut Water Board (NWB).

1.1 Background

The Meadowbank Complex is a gold mine located approximately 110 km north of Baker Lake in the Kivalliq District of Nunavut, Canada, and is entirely owned by Agnico Eagle (Figure 1). At present, Meadowbank Complex components include:

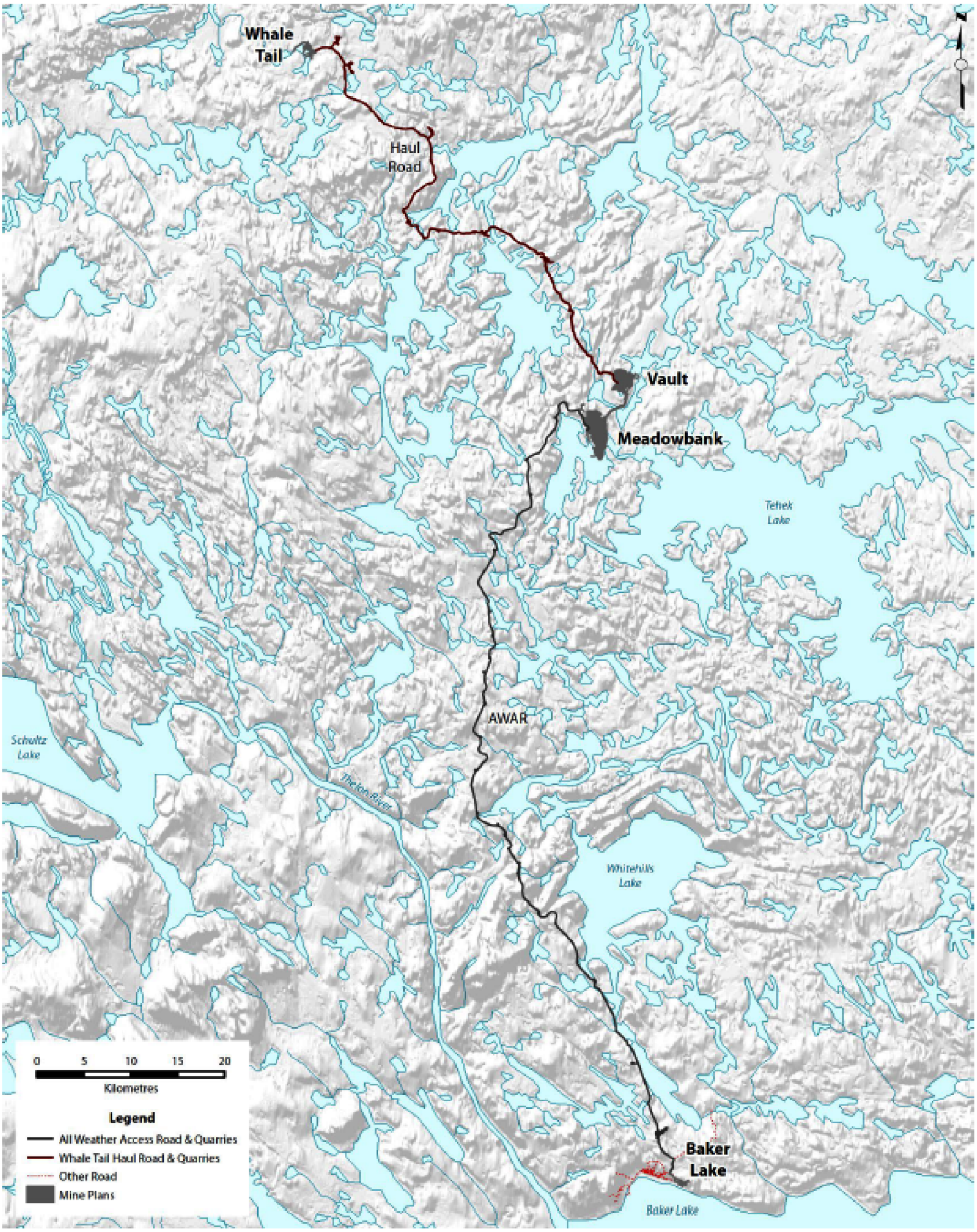
- a Marshalling Facility in Baker Lake
- a 110-km All-Weather Access Road (AWAR) between Baker Lake and the Meadowbank Mine
- the Meadowbank Mine
- the Vault Pit: located 8 km north of Meadowbank Mine
- the Whale Tail Mine: located 50 km northwest of Meadowbank Mine
- the Whale Tail Haul Road, connecting the Meadowbank Mine to Whale Tail Mine

The Meadowbank Complex is regulated by the NWB Water Licence 2AM-MEA1530 for Meadowbank Mine, Water Licence 2AM-WTP1830 for Whale Tail Mine, as well as the Nunavut Impact Review Board (NIRB) Project Certificate No. 004 for Meadowbank Mine and Project Certificate No. 008 for Whale Tail Mine.

Due to the multiple properties and their associated permits, Agnico Eagle wishes to unify their operations under one permit to streamline reporting requirements, given that these properties all function as one larger entity despite their spatial separation. To assist with this unification, WSP has combined the Meadowbank Mine and Whale Tail Mine Interim Closure and Reclamation Plans (ICRPs; AtkinsRéalis 2019; Agnico Eagle 2019) into one CRP document for the Meadowbank Complex.

The Meadowbank Mine was first licensed by the NWB in 2008 and achieved commercial production in March 2010. Shortly after, exploratory activities for the Whale Tail Mine began, with the intention that the new mine would provide additional ore to the Meadowbank Mine mill. Permitting efforts for the Whale Tail Mine commenced in 2016. In July 2018, Meadowbank Mine's original permit (i.e., Water Licence) was renewed and amended to allow for ore from Whale Tail Mine to be hauled and processed at the Meadowbank Mine. The permit also updated the volume of allowed tailings generated at the Meadowbank Mine due to the extended life of the mine (LOM).

Due to the permitting process, the Meadowbank Complex underwent a brief pause in production, following which processing of ore from Whale Tail Mine began in Q4 of 2019. Shortly after, exploration identified further reserves at Whale Tail Mine that would require the creation of an additional pit (the IVR Pit) and underground operations. In early 2020, another amendment to the Water Licence was issued to permit another four years of hauling ore from Whale Tail Mine to accommodate the newly identified reserves. In Q4 of 2020, the IVR Pit became productive, and in August 2022, underground operations reached commercial production.



CLIENT

AGNICO EAGLE

AGNICO EAGLE MINES LIMITED:
MEADOWBANK DIVISION

PROJECT

HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT, CLOSURE AND RECLAMATION PLAN, MEADOWBANK COMPLEX

TITLE

MEADOWBANK COMPLEX LOCATION

CONSULTANT

wsp

YYYY-MM-DD	2024-09-11
DESIGNED	KS
PREPARED	CDB
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0025288.9785	4000/4007	0	1

REFERENCE(S)
COORDINATE SYSTEM: NAD 1983 CSRS UTM ZONE 14N

Presently, all ore at the Meadowbank Complex is sourced from the Whale Tail Mine. Mining at Whale Tail Mine is by open pit and underground operations. The ore is extracted conventionally using drilling and blasting, then hauled via the Whale Tail Haul Road by a long-haul off-road truck fleet to the mill at the Meadowbank facilities for processing. Given the additional tailings generated by the extended LOM, several rounds of permitting ensued prior to haulage of ore from Whale Tail Mine to Meadowbank Mine to allow in-pit tailings disposal at Goose Pit (commenced July 5, 2019) and in Portage Pit E (commenced August 20, 2020). Recent positive grade reconciliation led to adjustments in the ore zone model and mineral reserve estimation parameters, resulting in a new proven and probable mineral reserve estimate of 1.8 million ounces of gold (15.4 million tonnes grading 3.72 gold grams per tonne [g/t gold]). Based on these results, Agnico Eagle has approved an extension to the IVR open pit that is expected to contribute approximately 70,000 ounces of gold to the 2026 production profile and an opportunity to extend the mine life to 2028. Exploration also continued to return significant mineralization at depth, with results up to 11.3 g/t gold over 6.4 m at 979 m depth. Closure of the Meadowbank Complex is expected to commence in 2028 and last 15 to 20 years.

1.2 Previous Environmental Investigations

To inform the closure and reclamation of the Site, a number of environmental investigations have been conducted at the Site since 2005, as follows:

- Wildlife and Country Foods Screening Level Assessments (Azimuth 2006, Agnico Eagle 2011, 2015, 2018a, 2022) – the CRP HHERA relies on the baseline soil and existing conditions soil and plant data collected during these studies (Section 4.0). In addition, the human and wildlife receptor characteristics have been considered and adopted where appropriate.
- 2018 Final Environmental Impact Statement (FEIS) Addendum HHERA (Golder 2019a) – the CRP HHERA builds upon the approach used in this HHERA for the Whale Tail Pit Project and has been expanded to include the Meadowbank Mine. The baseline soil data from this study as been used to support the CRP HHERA (Section 4.0).
- Phase I and II Environmental Site Assessments (WSP 2023a, 2024a,b,c) – the CRP HHERA considers the soil data collected during these studies to inform the development of the Soil Quality Remediation Objectives (SQROs) (Appendix Q of Agnico Eagle 2024a).

These environmental investigations are summarized briefly in the following sections.

1.2.1 Wildlife and Country Foods Screening Level Assessments

In 2006, a pre-construction human health risk assessment (HHRA) and wildlife screening level risk assessment (WSLRA) were completed as part of the original Meadowbank Project 2005 FEIS (Azimuth 2006; Wilson Scientific 2006).

The HHRA (country foods) evaluated the risk to human receptors associated with the ingestion of various country foods under baseline and future operational conditions. No incremental risks from the consumption of country foods were predicted as a result of mine operations.

The WSLRA assessed potential future risks to wildlife via dietary uptake of mine-related contaminants. Under baseline conditions, negligible risks were found for all parameters of potential concern (POPCs) except for chromium, which was determined to pose an improbable but potential risk to songbirds due to naturally elevated concentrations in the region. POPC exposure concentrations were not expected to increase during mine operation, so potential risks were not expected to change from baseline conditions.

In 2016 and 2019, pre-construction HHERAs were also completed for the Whale Tail Pit (2016 FEIS) and Whale Tail Pit Expansion Projects (2018 FEIS Addendum) (summarized in Section 1.2.2).

In accordance with Condition 67 of NIRB Project Certificate No. 004, a human health (country foods) and wildlife screening level risk assessment (HHRA country foods and WSLRA) has been completed for the Meadowbank site every three to four years since 2011 (e.g., 2014, 2017, 2021) and for the Whale Tail site since 2019 (e.g., 2021). The general approach and methodology of the assessments were based on those presented in the pre-construction risk assessments for the Meadowbank and Whale Tail sites (Azimuth 2006; Golder 2019a,b). While the goal of the pre-construction risk assessments was to determine potential risks to wildlife and human receptors from the identified POPCs under projected future site conditions, the aim of the follow-up assessments (2011, 2014, 2017, 2021) was to characterize risk under current operational conditions.

According to the WSLRA Plan (a component of the Terrestrial Ecosystem Monitoring Plan), the WSLRA follows a hazard quotient (HQ) approach based on food-chain modelling developed by Azimuth Consulting Group Inc. for the pre-construction WSLRA (Azimuth 2006), with updates based on the 2019 HHERA for the Whale Tail Pit Expansion Project (Golder 2019a) and Ecological Risk Assessment for the Tailings Storage Facility (Golder, 2019b). The risk assessment framework followed various standard Canadian and American sources (e.g., CCME 1996, 2020; US EPA 1992, 2005a; Health Canada 2021a).

Measured concentrations of contaminants in soil and water samples collected from the six study locations (onsite, near-site, AWAR, Whale Tail Haul Road, Whale Tail Mine, and tailings storage facility) were screened against regulatory guideline values and measured baseline concentrations to identify current-year POPCs for inclusion in the quantitative risk characterization. Exposure of the receptors of concern (ROCs) to POPCs was calculated as an estimated daily intake value (EDI) according to literature-based or site-specific ingestion rates, dietary preferences, and time spent in the area. Calculated EDIs were compared to toxicity reference values (TRVs) from the literature to determine HQs (wildlife target HQ ≤ 1.0; human health target HQ ≤ 0.2).

The 2011 to 2021 assessments support FEIS-stage predictions that the operation of the Meadowbank and Whale Tail sites would not increase risks to wildlife and human receptors exposed to chemical contaminants through consumption of prey or country foods.

1.2.2 2018 Final Environmental Impact Statement (FEIS) Addendum HHERA

An HHERA for the Whale Tail Pit Expansion Project (Golder 2019a) was conducted to summarize the potential risks to human health and the environment as a result of the impacts of the expansion of Whale Tail Pit, development of the IVR Pit, and underground operations (Expansion Project). The Expansion Project is presented in the form of an Addendum to the Whale Tail Pit Project (Approved Project).

The HHERA addressed the requirements of the Environmental Impact Statement (EIS) Guidelines for the Meadowbank Mine (NIRB 2004) in terms of assessing potential risks to human health, wildlife, and aquatic life as a result of changes to environmental quality from the predicted emissions and discharges from the Project. Changes to environmental quality included direct effects to air quality, noise and water quality, and indirect effects to soil quality, vegetation quality, and traditional food quality, including fish and wild game, such as caribou. The spatial and temporal boundaries, as defined by the air quality and water quality components, were adopted for the HHERA. Baseline soil and vegetation samples were collected from 15 locations around Whale Tail Mine to support the HHERA.

The HHRA evaluated human receptors including those of Inuit and non-Inuit members of the public. Changes in air quality for criteria air contaminants and changes in soil quality for metals were evaluated at 16 sensitive

receptor locations (e.g., grave sites, hunting/fishing/tracking areas). Health risks to members of the public for air quality were negligible for all parameters and locations, except for nitrogen dioxide (NO_2) at Grave Site 30. However, given that this location is within the Project boundary and access to members of the public would be restricted, NO_2 was not retained for further evaluation in the residual effects classification given that exposure to members of the public is not expected to occur. Predicted soil concentrations were below screening values and baseline plus (+) 10% concentrations; therefore, no POPCs were retained in the soil, and no residual effects due to change in soil quality were identified. Given that no POPCs were identified in the soil, no changes to country foods quality were anticipated, and thus, no residual effects were identified.

Changes in water quality were evaluated for waterbodies anticipated to be used by human receptors as potable water. Arsenic and manganese were retained as POPCs because predicted surface water concentrations were above baseline concentrations + 10% and human health screening values and in several lakes during various project phases. These POPCs were also evaluated for the consumption of fish. The risk characterization concluded that health risks were not expected for members of the public that may rely on any of the assessed waterbodies as their potable water supply or for consumption of fish should these receptors spend time in the area. As a result, no residual impacts due to changes to water and fish tissue quality were identified.

The wildlife risk assessment (RA) evaluated the following wildlife receptors: barren-ground caribou, wolverine, peregrine falcon, common loon, Canada goose, rock ptarmigan, semipalmated sandpiper, arctic hare and arctic ground squirrel. Predicted concentrations in soil or water were compared to baseline + 10% concentrations and screening values protective of wildlife to identify; however, no POPCs in soil and water (or fish) were identified for evaluation of effects to wildlife. Therefore, no residual impacts due to changes in soil, water and fish quality were identified.

The aquatic RA evaluated effects on aquatic life (e.g., fish, aquatic invertebrates, aquatic plants and algae) due to changes in water quality. Aluminum, arsenic, fluoride, chromium, iron, lithium and strontium were retained as POPCs for one or more project phase and waterbody. Hazard quotients were less than the target HQ of one for all modelled locations and project phases, with the exception of aluminum and chromium for Whale Tail Lake during Post-Closure and arsenic for Whale Tail Pit during the Expansion Project closure maintenance. However, until the water quality in Whale Tail Pit meets the site-specific water quality objective, the dyke will be maintained; therefore, it would not constitute fish habitat. There is no residual effect during the Expansion Project Post-Closure phase; therefore, arsenic was not considered a risk to aquatic life.

Aluminum and chromium were considered further in the residual impact classification. When all criteria were considered, impacts to aquatic life resulting from aluminum and chromium at Whale Tail Lake North Basin during the Post-Closure (late) phase were expected to be insignificant.

Cumulative effects to air quality and surface water quality were expected to be negligible. Therefore, the subsequent effects to human health, wildlife and aquatic life were also expected to be insignificant.

1.2.3 Phase I and II Environmental Site Assessments

In 2023, WSP carried out a desktop study and Phase I Environmental Site Assessment (ESA; WSP 2023a, 2024a) to identify POPCs and areas of potential concern (APECs) at the Meadowbank Complex. Preliminary Phase II ESAs (WSP 2024b,c) were conducted to evaluate the environmental quality within the areas of Meadowbank Mine and Vault Pit at the Meadowbank Complex in support of final closure.

As planning is underway for the closure of the Meadowbank Complex, the objective of the Preliminary Phase II ESAs was to identify environmental contamination at Meadowbank Mine and Vault Pit that may have resulted from ancillary activities (i.e., unrelated to mine-derived waste such as tailings and waste rock), and to identify any issues that may represent materially significant environmental risks or liabilities.

The following summarizes the findings of the Phase I and II ESAs:

- A desktop study completed by WSP (2023a) preliminarily identified the following APECs based on historical spill data from 2008 to 2023 provided by Agnico Eagle:
  - 18 APECs at Meadowbank Mine, including an estimated volume of 26,400 cubic metres (m^3) at the Mill Area and 3,240 m^3 at the Assay Road Seepage Area of potentially contaminated soil (WSP 2023a). The desktop study APECs were preliminarily identified based on historical spill data from 2008 to 2023 provided by Agnico Eagle. Although the spill records stated the type and volume of spilled products and indicated the spills were generally cleaned up, there were no supporting documents regarding the volume of soil remediated or records of confirmatory samples and assessments verifying clean-up. Exceedances of cyanide in soil sampled from the Assay Road Seepage Area indicate that the soil was not remediated.
  - Five APECs at Vault Pit: 1) Camp and Vault Camp Parking Area, 2) Former Fuel Tank Farm Area, 3) Water Treatment Plant/White Coverall Area, 4) Detonator Magazine, and 5) Powder Magazine, with a total estimated volume of 17,420 m^3 of potentially contaminated soil. Three of the APEC areas (i.e., the Camp and Vault Camp Parking Area, the Former Fuel Tank Farm Area, and the Water Treatment Plant/White Coverall Area) had excavated and disposed of potentially impacted soil/snow appropriately; however, there was no confirmatory sampling completed to verify the level of completeness of remediation efforts. No spills were reported for the Detonator Magazine and Powder Magazine areas. Both Detonator Magazine and Powder Magazine areas were used for storage, and no explosives were deployed (WSP 2023a).
- A Phase I ESA completed by WSP (2024a) identified 27 APECs at Meadowbank Mine including the Mill Area and Assay Road Seepage Area, and five APECs at Vault Pit including the 1) Former Shelter / Parking Area and Current Heavy Equipment Maintenance / Storage, 2) Former Fuel Tank Farm Area, and 3) the Former Wastewater Treatment Plant Area, 3) Detonator Magazine, 4) Powder Magazine. In addition, 19 APECs were identified at Whale Tail Mine, six APECs were identified at the Baker Lake Facility, 9 APECs were identified along the AWAR, one APEC was identified for Vault Road, and four APECs were identified for the Whale Tail Haul Road. The APECs were identified through a review of aerial photographs, documents provided by Agnico Eagle, available regulatory documentation and, a private database search, and a ground reconnaissance (WSP 2024a). The APECs identified during the desktop study (WSP 2023a) were updated during the Phase I ESA.
- As part of the Preliminary Phase II ESA at Meadowbank Mine (WSP 2024b), the Mill Area and Assay Road Seepage Area were investigated by completing 12 test holes and submitting soil samples for the analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX), petroleum hydrocarbon (PHC) fractions F1 to F4, polycyclic aromatic hydrocarbons (PAHs), cyanide (free, total and weak acid dissociable [WAD]), salinity, metals, glycols, polychlorinated biphenyls (PCBs), chlorinated volatile organic compounds (VOCs), alcohols and perfluoroalkyl and polyfluoroalkyl substances (PFAs). The following summarizes the results:

- Organic matter/peat was observed from surface to a maximum depth of 0.20 metres below ground (mbgs) in two locations: MS-TP23-09 and MS TP23-10. Frozen peat was observed in MS-TP23-17 between 0.70 mbgs and 0.80 mbgs. Poorly graded sandy gravel with subangular to angular cobbles/boulders was observed at varying depths between the surface and 2.00 mbgs, the maximum depth investigated. Refusal due to frozen soil conditions, representative of permafrost or bedrock, occurred in all 12 test pits at depths ranging from 0.80 to 2.00 mbgs.
- All four soil sample locations within the Assay Road Seepage Area had total cyanide concentrations that exceeded the applied guideline. One soil sample in the Mill Area had a salinity exceedance of electrical conductivity, and one soil sample in the Assay Road Seepage Area had a pH exceedance. All soil sample locations submitted from the Mill Area and Assay Road Seepage Area had metal exceedances for arsenic, chromium (total) and/or nickel. Two soil samples from the Mill Area had exceedance for copper. One VOC exceedance was observed from one sample in the Assay Road Seepage Area. Five methanol exceedances were observed in the Mill Area, and three methanol exceedances were observed in the Assay Road Seepage Area. All remaining samples submitted for analytical assessment were below the applicable guidelines.

- As part of the Preliminary Phase II ESA at Vault Pit (WSP 2024c), the five APECs were investigated by completing 40 test holes and submitting soil samples for the analysis of BTEX, PHC fractions F1 to F4, PAHs, salinity, metals, glycols, PCBs, and alcohols. The following summarizes the results:
  - Sandy gravel was observed in all test pit holes. Refusal due to frozen soil conditions, representative of permafrost or bedrock, occurred in all 40 test pits between 1.00 mbgs and 3.00 mbgs. Peat was observed in VS TP23-33 between 1.20 mbgs and 1.30 mbgs.
  - PHC fraction F3 exceedance was observed at one location at the Former Shelter / Parking Area and Current Heavy Equipment Maintenance / Storage and at one location at the Powder Magazine. pH values were observed below the criteria range in five locations between the Detonator Magazine and Powder Magazine areas. Metal exceedances were observed in all test pit locations within the Former Shelter / Parking Area and Current Heavy Equipment Maintenance / Storage, Water Treatment Plant/White Coverall and Powder Magazine areas. Metal exceedances were identified for one or more of the following parameters: arsenic, chromium (total), cobalt, copper, lead, molybdenum, and nickel. Methanol exceedances were observed in the Former Shelter / Parking Area and Current Heavy Equipment Maintenance / Storage, the Former Fuel Tank Farm Area, and the Water Treatment Plant/White Coverall Area.
- Based on the findings of the Preliminary Phase II ESAs, it was recommended that Supplementary Phase II ESAs be completed to provide a delineation of known impacts, assess additional APECs identified through the Phase I ESA and further understand background conditions.

1.3 Closure and Reclamation Plan

Agnico Eagle's closure objective is to reclaim Meadowbank Complex to a physically and chemically stable and natural state compatible with the surrounding lands at the completion closure activities. The closure concepts include keeping the different water types separated to the extent practical, controlling acid rock drainage, minimizing contact water, meeting discharge criteria before any site contact water is released to the downstream environment, minimizing windblown dust and erosion from surface runoff of all infrastructure associated with waste management facilities, and enhancing the re-establishment of natural vegetation and wildlife habitat.

Main closure activities at Meadowbank Complex include:

- Open pits at Meadowbank Mine will be reflooded at closure passively or actively. For the Portage and Goose area, the flooding plan is to transfer water from the Goose and Portage area to flood the Vault Pit area. If required, water will be treated using a water treatment plant (WTP), to meet the criteria prior to discharge to Wally Lake. The area will be reflooded using a combination of passive (runoff) and active water inflow (from Third Portage Lake and surrounding pit lakes). Based on available data, the final elevation of the reflooding will be the elevation of Third Portage Lake, which is around 133.6 metres above sea level (masl) based. The final elevation of the reflooding of Phaser and Vault Lake will be 139.9 masl.
- Dikes will be breached for reconnection at Meadowbank Mine. The Goose Dike and South Camp Dike will be breached to allow reconnection of the area with Third Portage Lake when the closure objectives for pit flooding are achieved. As per Portage and Goose Pits, the Vault Dike will be breached to allow reconnection of the area with Wally Lake when the closure objectives for pit flooding will be achieved. BB Phaser Pit and Phaser Lake will be flooded exclusively from their watershed run-off inflows until the target elevation of Wally Lake is reached. All dikes shall not be breached until the water quality in the reflooded area meets the Water License requirements.
- At Whale Tail Mine, the underground facilities and IVR Pit will be actively filled, and the Whale Tail Attenuation Pond and the Whale Tail Pit will be passively flooded. The Groundwater Storage Ponds and IVR Attenuation Pond will be emptied at the start of closure and backfilled with non-potentially acid-generating/non-metal leaching (NPAG/NML) waste rock. The Whale Tail and IVR waste rock storage facilities (WRSFs) will be progressively covered with NPAG/NML waste rock throughout operations and are expected to be completely covered at the beginning of closure. The pushback in the IVR Pit will be backfilled with NPAG/NML rock material and filled by natural flow. Contact water management systems will remain on site until monitoring results demonstrate that water quality is acceptable for the discharge of all contact water to the environment without further treatment. Once water quality meets the discharge criteria, the water management systems will be decommissioned to allow the water to naturally flow to the receiving environment.
- The Tailings Storage Facility (TSF) will be covered by a layer of compacted NPAG waste rock with a minimum thickness of 1 m to protect against erosion at closure to promote drainage with water quality monitoring to take place as outlined in the Closure and Post-Closure Monitoring Plan (CPCMP; Appendix E in Agnico Eagle 2024a).
- Portage WRSF at Meadowbank Mine will be covered by a 4.0 m layer of NPAG rock to ensure geochemical stability and to keep the potentially acid-generating (PAG) waste rock frozen. Thermistors will be installed to confirm the cover is performing as required. The contact water management system for the WRSF will be maintained during the closure period until water quality demonstrates that water flowing from the facility is acceptable for direct release to the environment. The Vault WRSF does not require NPAG capping in the closure, as local geology has low amounts of PAG, which was placed in the middle of the pile and capped with NPAG.
- The Whale Tail WRSF and the IVR WRSF will be covered with a 4.7 m thick closure cover constructed with NPAG/NML waste rock to promote freezing as a control strategy against acid generation and migration of contaminants. Both WRSFs will be instrumented to monitor permafrost development. Thermal and water quality monitoring will be carried out during all stages of the mine life to demonstrate the environmental performance of the facilities. Once water quality is acceptable for direct release based on criteria established through the water licensing process, the WRSF contact water management systems will be decommissioned.

- The landfarm facilities at Meadowbank Complex will be decommissioned at mine closure. Remaining contaminated soil at Meadowbank Mine could be placed directly in the TSF or in the WRSFs, and at Whale Tail Mine could be stored underground within the underground mine for use in the backfill of permafrost areas of the mine or placed directly in the WRSFs.
- Salvageable buildings and surface structures at Meadowbank Complex, including the incinerator and composter building, will be dismantled and demobilized from the site.
- The landfills at Meadowbank Complex will be covered by 0.3 to 1 m thickness of rockfill following waste placement. Then, the landfills at Meadowbank Mine will be covered with an additional 4 m thickness of coarse acid-buffering ultramafic waste rock materials, and at Whale Tail Mine, will be covered with a 2 m NPAG cover and integrated into the overall contours of the Whale Tail WRSF. Contact water from the landfills in closure will continue to be managed and monitored.

1.4 Objective of the HHERA

The objective of the HHERA was to evaluate the potential risks to human health and the environment from the contamination associated with the historical operation of the Site as a gold mine.

For the purpose of this assessment, the “Site” is defined as the Meadowbank Complex, which includes Whale Tail mine. The spatial boundaries as defined by surface water quality discipline were adopted for the HHERA and include the waterbodies impacted by mining operations. The spatial boundaries for soil quality include the areas covered by the country foods assessment and the Whale Tail HHERA.

The temporal boundaries for the HHERA include the Post-Closure phase. Post-Closure is the period immediately following closure[1]. The period is characterized by the completion of all reclamation activities, including recontouring, soil placement, and revegetation. Ongoing monitoring and maintenance would be occurring as required. Active or passive water treatment may continue if required.

The HHERA was completed in the context of returning the Site to a condition that protects the health of Nunavut residents and the environment around the mine and considers the area’s historic use (before mine development) by Inuit and wildlife. Potential risks to human health and the environment were evaluated for the use of the Site following closure and reclamation of the Site based on modelled predictions of soil and water quality.

The remainder of this report is structured as follows:

- Section 2.0 Risk Assessment Framework provides a brief overview of the risk assessment framework.
- Section 3.0 Incorporation of Inuit Qaujimajatuqangit (IQ) provides an overview of IQ and how it has been incorporated into the HHERA.
- Section 4.0 Baseline and Existing Environmental Conditions provides a general overview of the environmental quality data (background concentrations, current soil, plant tissue, and surface water quality data) used in support of the HHERA.

[1] Meadowbank Mine and Whale Tail Mine are currently in operations, and this phase is currently scheduled to last until 2028. Closure of the Meadowbank Complex is expected to commence in 2028, and last 15 to 20 years.

- Section 5.0 Predicted Post-Closure Conditions, provides an overview of the models used to predict Post-Closure conditions and presents a summary of the predicted soil and surface water quality used in support of the HHERA.
- Section 6.0 Human Health Risk Assessment provides the evaluation of the potential risks to human receptors associated with any historical mine site-related impacts remaining at Post-Closure.
- Section 7.0 Terrestrial Health – Ecological Risk Assessment provides the evaluation of the potential risks to ecological receptors associated with any historical mine site-related impacts remaining at Post-Closure.
- Section 8.0 Aquatic Health – Ecological Risk Assessment provides the evaluation of the potential risks to aquatic receptors associated with any historical mine site-related impacts remaining at Post-Closure.
- Section 9.0 Conclusions of the Human Health and Ecological Risk Assessment provides the conclusions of the HHERA.

2.0 RISK ASSESSMENT FRAMEWORK

Risk assessment is a scientific tool used to characterize the nature and magnitude of potential risks, if any, associated with the exposure of receptors (i.e., humans, terrestrial wildlife, aquatic life) to chemicals. For there to be a potential risk, the following three conditions must be met:

- a chemical must be present at levels that could be harmful;
- a receptor must be present; and
- there must be an exposure pathway by which the receptor can come into contact with the chemical.

These three conditions are illustrated in Figure 2, where risk is anticipated to occur when the three necessary conditions are met.

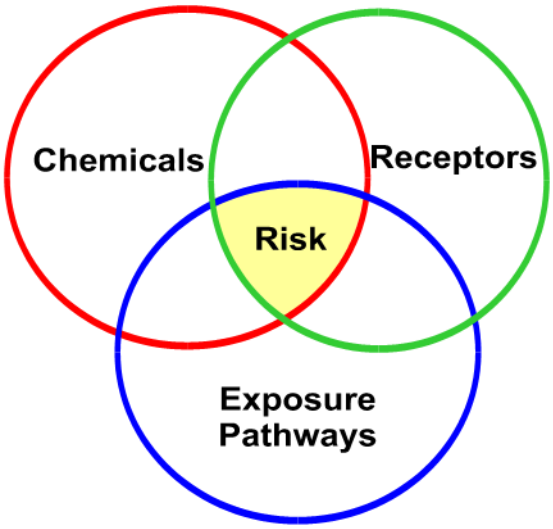


Figure 2: Venn Diagram Showing the Three Conditions that must exist for there to be a Potential Risk to Ecological or Human Health (modified from CCME 1996)

The HHERA follows the risk assessment framework endorsed by federal and provincial regulatory agencies. It is completed based on guidance provided by Health Canada (2010, 2021a), the Canadian Council of Ministers of the Environment (CCME 1996, 2020), the United States Environmental Protection Agency (US EPA 1989, 1993, 1998, 2019), and other applicable risk assessment guidance documents (e.g., Sample et al. 1996). The risk assessment framework includes four components:

- **Problem Formulation:** The problem formulation identifies the chemicals released by the Site and retained in Post-Closure that may be harmful to human health, terrestrial wildlife, and aquatic life (i.e., POPCs), the humans, terrestrial wildlife and aquatic life expected to occur in the area (i.e., receptors), and the plausible exposure pathways between humans, terrestrial wildlife and aquatic life and chemicals released by the Site and predicted to be retained in soil or water after closure activities are complete. The potential for effects on human and ecological health from chemicals is predicated on the coexistence of these three elements. Chemicals must be present at harmful levels, receptors must be present, and there must be a way for receptors to come into contact with the chemicals. The problem formulation focuses the risk assessment on the chemicals, receptors, and exposure pathways of greatest concern (i.e., chemicals with the greatest toxic potential, receptors with the greatest likelihood of being exposed and the greatest susceptibilities, and exposure pathways that account for the majority of exposure to the chemicals). If no potential health effects are predicted for these chemicals, receptors, and exposure pathways, it is unlikely that there would be potential health effects for other chemicals, receptors, and exposure pathways. The information from the problem formulation is summarized in a conceptual site model (CSM), which illustrates the sources of POPCs, the pathways of exposure, and the receptors that are evaluated in the risk assessment.
- **Exposure Assessment:** The exposure assessment determines the amount of the POPC to which each of the receptors is exposed. For terrestrial life and humans, exposure is expressed as the EDI of the POPC from all identified exposure pathways (e.g., from diet, drinking water, and direct ingestion of soil or sediment for terrestrial life). The EDI is expressed as milligrams of a POPC per kilogram body weight per day (mg/kg-d). This permits the evaluation of exposure relative to the TRVs for mammals and birds that are also expressed in this way. For aquatic life, exposure is expressed as the concentrations of the POPCs in the media to which the receptor is exposed (e.g., in milligrams per litre [mg/L] in water). This permits the evaluation of exposure relative to the toxicity benchmarks that are also expressed in this way.
- **Toxicity Assessment:** The toxicity assessment determines the dose (for terrestrial wildlife or humans) or concentration in water/sediment (for aquatic life) that a receptor can be exposed to without experiencing adverse health effects. This value is called the TRV or toxicity benchmark. For terrestrial wildlife or humans, the TRV is expressed as milligram per kilogram per day (mg/kg-d). For aquatic life, the toxicity benchmark is expressed as an acceptable concentration of the POPC in the media to which the receptor is exposed (e.g., µg/L in water). These values are used as benchmarks for comparison with exposure (EDI for terrestrial wildlife and humans and concentration in water for aquatic life) during risk characterization.
- **Risk Characterization:** The risk characterization determines the potential for adverse health effects on receptors to occur. This is assessed by comparing the estimated exposures (from the exposure assessment) with those exposures that are associated with no adverse health effects (from the toxicity assessment). The characterization of risks includes consideration of the uncertainty and conservatism in the risk assessment.

3.0 INCORPORATION OF INUIT QAUJIMAJATUQANGIT

IQ refers to Inuit “traditional knowledge” and ways of knowing the Inuit as a people. IQ forms the basis for many decision-making processes regarding incorporating traditional knowledge into regulatory frameworks in the territory and at the level of regional governments based on the social and economic sustainability of natural resources.

Since the 2016 FEIS submission was made in 2016, additional IQ related to the Meadowbank Complex have been provided by community members and representatives (i.e., Hunters and Trappers Organization and KivIA). IQ was identified through a review of the consultation record and community consultation notes (Agnico Eagle 2018b). In 2024, Agnico Eagle hosted various public meetings, focus groups, meetings and site visits with stakeholders to provide the communities with information on Meadowbank Complex Closure and to answer questions, as well as identify their concerns and feedback regarding closure.

The HHERA is consistent with IQ, traditional knowledge (TK) and engagement incorporation in the 2016 FEIS, the 2018 FEIS Addenda and the HHERA for the Whale Tail Extension (Golder 2019a) and closure consultations (Agnico Eagle 2024b). Information as it pertains to the CRP HHERA has been summarized in Table 1.

Table 1: Summary of Inuit Qaujimajatuqangit, Traditional Knowledge and Engagement

Valued Components	Whale Tail Extension IQ and TK	Summary of Existing IQ and TK
Culturally Important Sites	Community members reiterated that culturally important sites are found in the vicinity of the mine sites. There are grave sites around Upper Amer Lake, and caribou hunting was practiced yearly in that region. Grave sites are also present at Alaniriktuq. Many Elders agree that the traditional camping grounds of their ancestors are still very important to be protected as out of respect, they want to protect them and not move or touch them. It is a traditional practice that no one is to tamper with any of their belongings that used to be placed on their grave be left as is. Inuit made a will to be buried where they want to be placed as a token for their generation to know where they were buried.	The Elders also explained how sites in the region between Baker Lake and the Back River are very spiritual, with several gravesites scattered throughout the region (Baseline Traditional Knowledge Report, Cumberland 2005a). Several Baker Lake community members described how they used to visit the Approved and Expansion Project area and travelled to Gjoa Haven during the summer or by snowmobile in the winter, using one of several travel routes. They explained that several different communities have used the Approved and Expansion Project area, including families from Kugaaruk and Gjoa Haven in the Kitikmeot region, and there would be archaeological sites, including graves and artifacts in the Project area (Agnico Eagle 2018b).
Employment/Training	Elders have said that as of today, Inuit have adjusted to community living, and the younger generation grew up in a community where education has been the only way of knowledge; a lot of them have lost the traditional and culture way of living and surviving in the land. Elders encourage the younger generation to be trained in employment so they do not depend on Social Assistance. The Elders spoke about the great employment and training opportunities the mine extension will create for the younger generation. Elders feel they have the responsibility to ensure the youth's future and encourage them to pursue training programs and employment opportunities.	Comments that youth now have hope for a better future because of mining in Baker Lake, and the community would like to see these opportunities continue for youth (Appendix 7-B – Socio-Economic Assessment Update, Whale Tail Pit Expansion; Agnico Eagle 2018b). During the closure consultations, there were discussions on employment to ensure employees would be made aware of job opportunities with Agnico Eagle following closure (Agnico Eagle 2024b).

Table 1: Summary of Inuit Qaujimajatuqangit, Traditional Knowledge and Engagement

Valued Components	Whale Tail Extension IQ and TK	Summary of Existing IQ and TK
Fish and Fish Habitat	Throughout winter and through to spring are ice fishing months. Fish migrate inland in August (likely Char) - or it could mean fish moving downstream to deeper water for the winter. Fish stop just before entering the ocean to adjust to the change in water temperature (western science says they are likely stopping to adjust to a change in salinity). When fish are spawning, another method of harvest is needed as they will not bite lures.	Fishing in Baker Lake occurs year-round but primarily in the spring (Appendix 7-A – IQ Baseline Update; Agnico Eagle 2018b) Arctic Char are also caught in the sea from the leads that develop in the sea ice in spring and during most of the open water season in August and September. (Appendix 7-A – IQ Baseline Update; Agnico Eagle 2018b) Lake trout and Arctic char were identified as preferred fish species harvested for food, and Elders commented that these species can be found in several of the lakes located in the Project area (Inuit Qaujumajatuqangit Baseline, Whale Tail Pit; Agnico Eagle 2016). The Elders noted that Arctic char run from the middle to the end of August and spawn later in October after the ice forms (Inuit Qaujumajatuqangit Baseline, Whale Tail Pit; Agnico Eagle 2016). Throughout closure consultations, questions were asked whether fish would be monitored and put back in lakes they were removed from for mining (Agnico Eagle 2024b). Fish monitoring is part of the management plans, and when the reconnection of lakes occurs during closure, fish will come back naturally.
Terrestrial Wildlife and Wildlife Habitat	Wildlife adjust itself to the environment, so there isn't much concern for flags on mine road; the safety of humans should be the main concern. The Elders explained that wildlife is sensitive to their surroundings at first, and caribou can sense the footprints made by other animals or people and move to other routes. Eventually, after changing their route they will go back to the first route they used. They get adjusted to the noise and traffic. They will eventually go back to the travel routes if they are not covered by buildings or cabins.	Caribou don't like noise or vibration, and concerns were expressed about the potential effects of Project noise on caribou herds that overlap the Project and on their migration patterns (Inuit Qaujumajatuqangit Baseline, Whale Tail Pit; Agnico Eagle 2016).
Terrestrial Wildlife and Wildlife Habitat	Elders explained that not only the mines disturb the herd. Inuit had saying never to hunt and bother the first herd but now people who do not follow nor have knowledge are also disturbing the travel routes. And with the equipment now used are quicker way of hunting that disturbs the caribou. The second herd was the ones that the Inuit hunted because of their richness in the meat and healthier. Once the first herd has been bothered or hunted the second herd will always change their routes and become scattered.	Throughout the Terrestrial Advisory Group (TAG) meetings, the importance of protecting and not disturbing the lead caribou herd during the migration was mentioned (Agnico Eagle and Golder, 2019).

Table 1: Summary of Inuit Qaujimajatuqangit, Traditional Knowledge and Engagement

Valued Components	Whale Tail Extension IQ and TK	Summary of Existing IQ and TK
Terrestrial Wildlife and Wildlife Habitat	Midsummer through to fall is prime for caribou due to the fur not falling. The more rain that falls means fatter caribou. Caribou migration patterns depend on the food and snow in different environments - caribou doesn't always follow the same trails every year, which is normal. Caribou move less in summer when there is good rain (thus, a good food supply), and herd moves where the food is best and allows for grazed areas to re-generate. The herd will move if the snow is hard or deep, and they cannot access food. Even without disturbances, wildlife will use alternative calving ground to allow the land to reproduce food sources.	Some Elders indicated that they do continue to use the area north of the Project when they are able to, however it is more difficult to travel now. Elders reported that areas targeted for hunting are dependent on caribou movements, and Baker Lake land users repeatedly noted that caribou change their migration patterns in different areas and in different years. Therefore, areas used by Baker Lake harvesters in the past compared to areas currently used will differ based on variations in caribou travel routes over the years (Inuit Qaujumajatuqangit Baseline, Whale Tail Pit; Agnico Eagle 2016). Specific caribou travel routes in the study area could not be identified by Elders during the 2014 TK workshop for the exploration road, as community members use the area less frequently today than in the past (Inuit Qaujumajatuqangit Baseline, Whale Tail Pit; Agnico Eagle 2016).
Terrestrial Wildlife and Wildlife Habitat	Wildlife will adjust to obstacles if not afraid. Elders agree that wildlife will adjust to any obstacles, but it makes their travel slower to where their destination is. They have a way of changing their routes which may not be natural due to traffic, noise and other animals that hunt them, and also people now that are done carelessly. They will change their routes and, in time go back to their original routes. There are many encounters that they have to adjust to in order to keep travelling to the calving grounds and some do not make it as far as they need to.	Not applicable.
Traditional Land Use	The community is harvesting closer to the community nowadays (April 2022). Elders say that the roads that have been built for the mines make it easier for the hunters to have access to hunt and fish (Baker Lake Elders Group, June 2022).	In 2008 Baker Lake hunters reported that they no longer travel as far as they used to hunt caribou, preferring to stay within approximately 40 miles (approx. 64 km) of the community because of caribou availability there (Inuit Qaujumajatuqangit Baseline, Whale Tail Pit; Agnico Eagle 2016). During closure consultations, there was discussion about whether the road would remain after closure (Agnico Eagle 2024b). Feedback from the community suggested the road remaining in place may be beneficial to the community. Agnico Eagle encouraged people to speak with their local representatives and authorities to let them know that community members were interested in having the road stay. The CRP outlines that the road will be removed, and land returned to a natural state per the requirement under the Project Certificate. The HHERA was completed with this assumption.

Table 1: Summary of Inuit Qaujimajatuqangit, Traditional Knowledge and Engagement

Valued Components	Whale Tail Extension IQ and TK	Summary of Existing IQ and TK
Traditional Land Use	Inuit dry/cure/age meat by laying it on gravel big enough to allow air flow under the meat. Elders explained that Inuit and other natives have harvested what was needed only and they never wasted any part of the wildlife they caught. They had a way of harvesting what was caught by drying, curing and aging meat and fish to not waste any part of the meat and even bones. During the summer season, as they had no freezers but made sure that none is spoiled, they had the knowledge to keep the meat in good condition. Also one of the big reasons was to protect the environment to replenish the land and water. As one elder reminded us that, nothing was to be left on the ground that the ground will grow back naturally, for the wildlife will not be bothered as they are very smart in knowing the land that they walk on is clean as they are very sensitive to their surroundings. Elders agreed that traditionally, Inuit harvested only enough for themselves for the winter. Never did they waste any of what they harvested, unlike today.	In the past, caribou were hunted anywhere they were encountered in the region, and the meat was stored in stone caches during the fall and spring, which were especially relied upon during the winter when caribou were scarce (Inuit Qaujumajatuqangit Baseline, Whale Tail Pit; Agnico Eagle 2016). The Elders described how families cached dried meat or caribou skins and then marked the location with rocks so they could be found again during the winter months. Fresh caribou meat continues to be cached today during the fall when the temperature is below zero, and the caches are marked with caribou antlers for later retrieval. However, caching has become less successful over the last 10 years due to the increased frequency with which grizzly bears and wolverines are locating and destroying them; therefore, people do not rely on them as frequently (Inuit Qaujumajatuqangit Baseline, Whale Tail Pit; Agnico Eagle 2016).
Traditional Harvesting	Traditionally, the areas close to the mine site were visited when travelling to other areas on the land. Today, the community is not travelling as much to the areas surrounding the Whale Tail mine site for harvesting. They are fishing and harvesting berries closer to the community. Elders mentioned that camping still plays a large part in wellbeing during the spring and summer seasons.	In 2008 Baker Lake hunters reported that they no longer travel as far as they used to hunt caribou, preferring to stay within approximately 40 miles (approx. 64 km) of the community because of caribou availability there (Agnico Eagle 2016). Specific caribou travel routes in the study area could not be identified by Elders during the 2014 TK workshop for the exploration road, as community members use the area less frequently today than in the past (Agnico Eagle 2016).

Notes: IQ = Inuit Qaujimajatuqangit; TK = traditional knowledge; TAG = terrestrial advisory group; km = kilometres.

4.0 BASELINE AND EXISTING ENVIRONMENTAL CONDITIONS

Baseline concentrations were used in the HHERA as part of the identification of POPCs for further assessment. Baseline data for soil quality and water quality relied upon in the HHERA are described in Sections 4.1.2 and 4.2 below.

The existing environmental conditions relevant to the HHERA were summarized by other disciplines in the Chapter 3 of the CRP (Agnico Eagle 2024a), specifically:

- Air Quality, in Section 3.4;
- Sediment, Surface Water and Groundwater Quality, in Sections 3.14 to 3.16;
- Vegetation and Ecosystems, in Section 3.19;
- Wildlife, in Section 3.20;
- Aquatic Life, in Section 3.21.

Existing conditions for soil quality and plant tissue quality were not summarized in detail in the CRP and thus are summarized in Sections 4.1.2 and 4.2 below. In addition, 2023 soil sampling to support the HHERA and development of SQROs is summarized in Section 4.1.3. While surface water was summarized in the CRP, a high-level summary as related to the HHERA is also provided in Section 4.2..

4.1 Soil Quality

4.1.1 Baseline Soil Conditions

Baseline metal concentration data for soil samples were collected at Meadowbank in 2005 (50 samples) (Azimuth 2006) and at Whale Tail in 2015 (15 samples) (Golder 2019a). Summary statistics for baseline soil quality data used in support of the HHERA are provided in Appendix A, Table A-1. Baseline soil quality sampling stations are shown on Figure 3.

The term metals, as used, includes non-metals (i.e., selenium) and metalloids (i.e., arsenic). The metals data collected as part of the baseline programs were compared to the Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines – Soil Quality Guidelines (SQGs) for the Protection of Environmental and Human Heath (residential) (CCME 1999a). Most of the metals (antimony, barium, beryllium, cadmium, cobalt, copper, lead, molybdenum, selenium, silver, tin, uranium, vanadium, and zinc) analyzed in the soils were below the CCME SQGs. Exceedances were observed for arsenic, chromium, and nickel in some soil samples. Maximum concentrations of these metals were 173 milligrams per kilogram dry weight (mg/kg) for arsenic (SQG is 12 mg/kg), 193 mg/kg for chromium (SQG is 64 mg/kg), and 97.3 mg/kg for nickel (SQG is 45 mg/kg).

4.1.2 On-Going Soil and Vegetation Monitoring

Monitoring data for soil and plant tissue were gathered during the operational period at the Meadowbank Complex at various locations. Specifically, data were gathered in 2011, 2014, 2017, and 2021, as summarized in Table 2 and shown in Figure 3. Existing conditions data for soil and plant tissue are provided in Appendix A, Tables A-2 to A-5.

Table 2: Summary of Existing Conditions Soil and Plant Tissue Data

Year	Soil Sampling Locations[a]	Details[b]	Reference
Soil and Plant Tissue			
2011	4 MBK on-site (T1, T3, T6, T7) 3 near-site (T2, T4, T5) 3 external reference (C1, C2, C3)	Soil, sedge, lichen, berries	2011 Annual Report (Agnico Eagle 2011)
2014	4 MBK on-site (T1, T3, T6, T7) 3 near-site (T2, T4, T5) 1 AWAR (T8) 3 external reference (C1, C2, C3)	Soil, sedge, lichen, berries	2014 Wildlife SLRA (Agnico Eagle 2015)
2017	4 MBK on-site (T1, T3, T6, T7) 3 near-site (T2, T4, T5) 1 AWAR (T8) 3 external reference (C1, C2, C3)	Soil, sedge, lichen, berries	2017 Wildlife SLRA (Agnico Eagle 2018)
2021	4 MBK on-site (T1, T3, T6, T7) 3 near-site (T2, T4, T5) 1 AWAR (T8) 2 WT Pit (T9, T10) 1 WT Haul Road (T11) 3 external reference (C1, C2, C3)	Soil, sedge, lichen, berries	2021 WCFSLA (Agnico Eagle 2022)

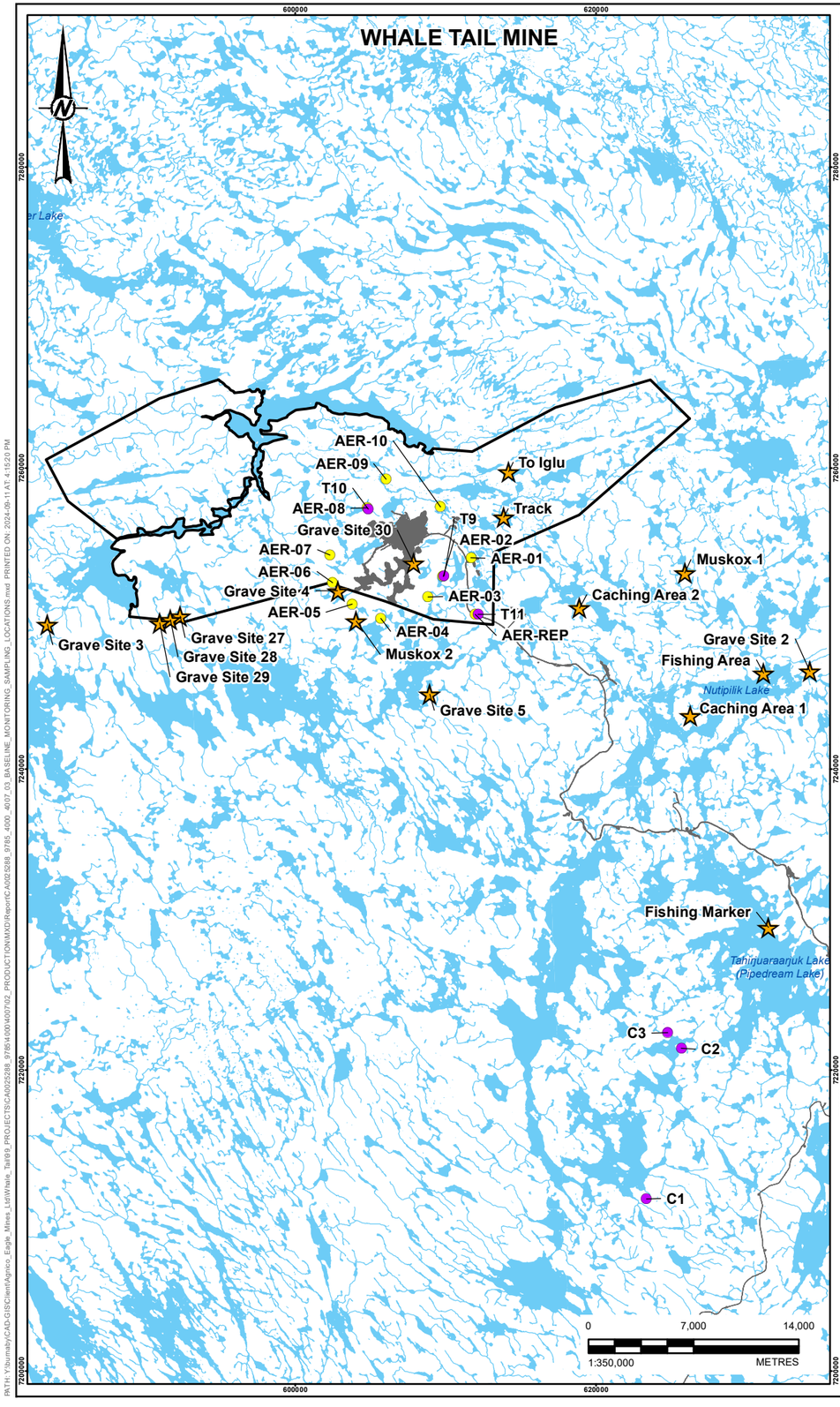
Notes: MBK = Meadowbank; AWAR = all-weather access road; WT = Whale Tail; SLRA = screening level risk assessment; WCFSLA = wildlife and country foods screening level risk assessment.

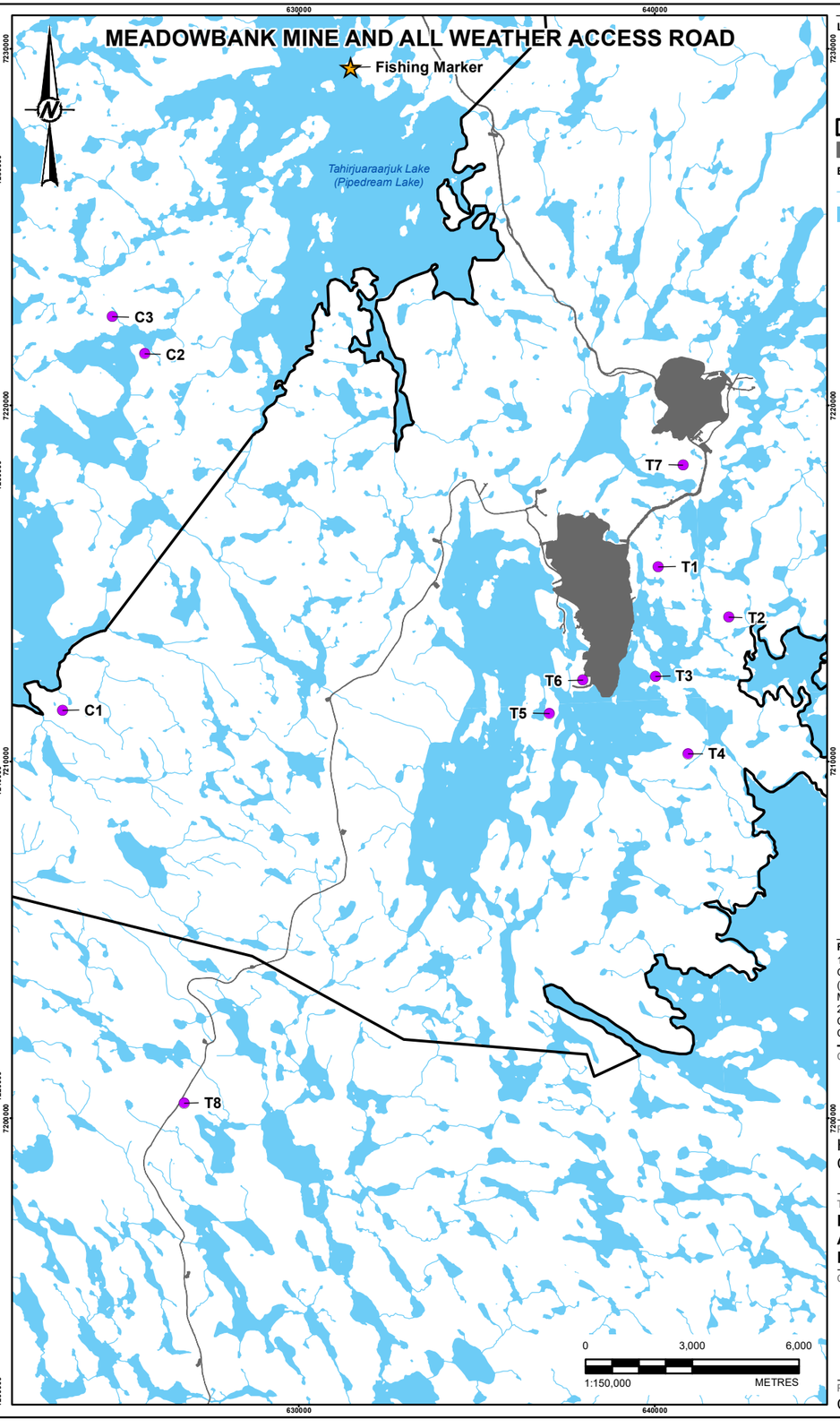
a) Co-located soil and plant tissue samples were collected at three to five stations within each study area.

b) Soil and tissue samples were analyzed for total metals.

Similar to baseline metal concentrations, most metals (antimony, beryllium, cadmium, cobalt, copper, lead, molybdenum, selenium, silver, thallium, tin, uranium, vanadium, and zinc) analyzed in the soils as part of ongoing monitoring were below the CCME SQGs (CCME 1999a). Exceedances were observed for arsenic, barium, chromium and nickel in some soil samples. Maximum concentrations of these metals were 87.1 mg/kg dw for arsenic (SQG is 12 mg/kg dw), 1,890 mg/kg dw for barium (SQG is 500 mg/kg dw), 305 mg/kg dw for chromium (SQG is 64 mg/kg dw), and 182 mg/kg dw for nickel SQG is 45 mg/kg dw).

Overall, the soil metal concentrations in the monitoring data have not substantially deviated from the baseline data collected at the Meadowbank Complex. This is consistent with what was predicted in the FEIS (Cumberland 2005b, Golder 2019a).





LEGEND

- HUMAN HEALTH DISCRETE RECEPTOR
- MONITORING SOIL AND PLANT SAMPLING LOCATION
- BASELINE SOIL AND PLANT SAMPLING LOCATION
- PROPERTY BOUNDARY
- PROJECT FOOTPRINT

BASE DATA

- WATERCOURSE
- WATERBODY

REFERENCE(S)

1. SOIL MONITORING LOCATIONS (AZIMUTH 2022) OBTAINED FROM AZIMUTH CONSULTING GROUP INC. (AZIMUTH). 2022. CORE RECEIVING ENVIRONMENT MONITORING PROGRAM (CREMP) 2022 PLAN UPDATE, MEADOWBANK COMPLEX. PREPARED FOR AGNICO EAGLE MINES LTD. BY AZIMUTH CONSULTING GROUP INC. APRIL 22, 2022.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.

COORDINATE SYSTEM: NAD 1983 UTM ZONE 14N

CLIENT

AGNICO EAGLE MINES LIMITED:
MEADOWBANK DIVISION

PROJECT

HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT, CLOSURE AND RECLAMATION PLAN, MEADOWBANK COMPLEX

TITLE

BASELINE AND MONITORING SAMPLING LOCATIONS FOR SOIL AND PLANTS, AND HUMAN HEALTH DISCRETE RECEPTOR LOCATIONS

CONSULTANT

wsp

YYYY-MM-DD	2024-09-11
DESIGNED	KS
PREPARED	CDB
REVIEWED	
APPROVED	

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4.1.3 2023 Soil Sampling

Soil sampling was conducted at the Meadowbank Complex in 2023. The purpose of the 2023 sampling program was to assess existing soil conditions at locations closer to the mine than those included in the on-going soil and vegetation monitoring. The 2023 sampling program consisted of collecting 30 surficial soil samples for analysis of metals, soil moisture, pH and/or grain size and texture in areas of potential dust settlement onto the surrounding tundra adjacent to the Meadowbank Complex. The methods and results are summarized in Appendix C.

Exceedances of CCME SQGs (CCME 1999a) were observed for arsenic, chromium, copper, and nickel at Meadowbank Mine. Maximum concentrations of these metals were 51 mg/kg for arsenic (SQG is 12 mg/kg), 200 mg/kg for chromium (SQG is 64 mg/kg), 69 mg/kg for copper (SQG is 63 mg/kg) and 84 mg/kg for nickel (SQG is 45 mg/kg).

Exceedances of CCME SQGs were observed for arsenic, chromium, and nickel at Whale Tail Mine. Maximum concentrations of these metals were 120 mg/kg for arsenic (SQG is 12 mg/kg), 360 mg/kg for chromium (SQG is 64 mg/kg), and 140 mg/kg for nickel (SQG is 45 mg/kg).

Exceedances of CCME SQGs were observed for arsenic at Vault Pit, where the maximum concentration was 52 mg/kg compared to the SQG of 12 mg/kg.

Overall, the 2023 soil concentrations for metals at locations close to the mine are similar to the maximum baseline concentrations collected at the Meadowbank Complex (Table A-1, Appendix A; 173 mg/kg for arsenic, 193 mg/kg for chromium, 26 mg/kg for copper and 97 mg/kg for nickel).

4.2 Water Quality

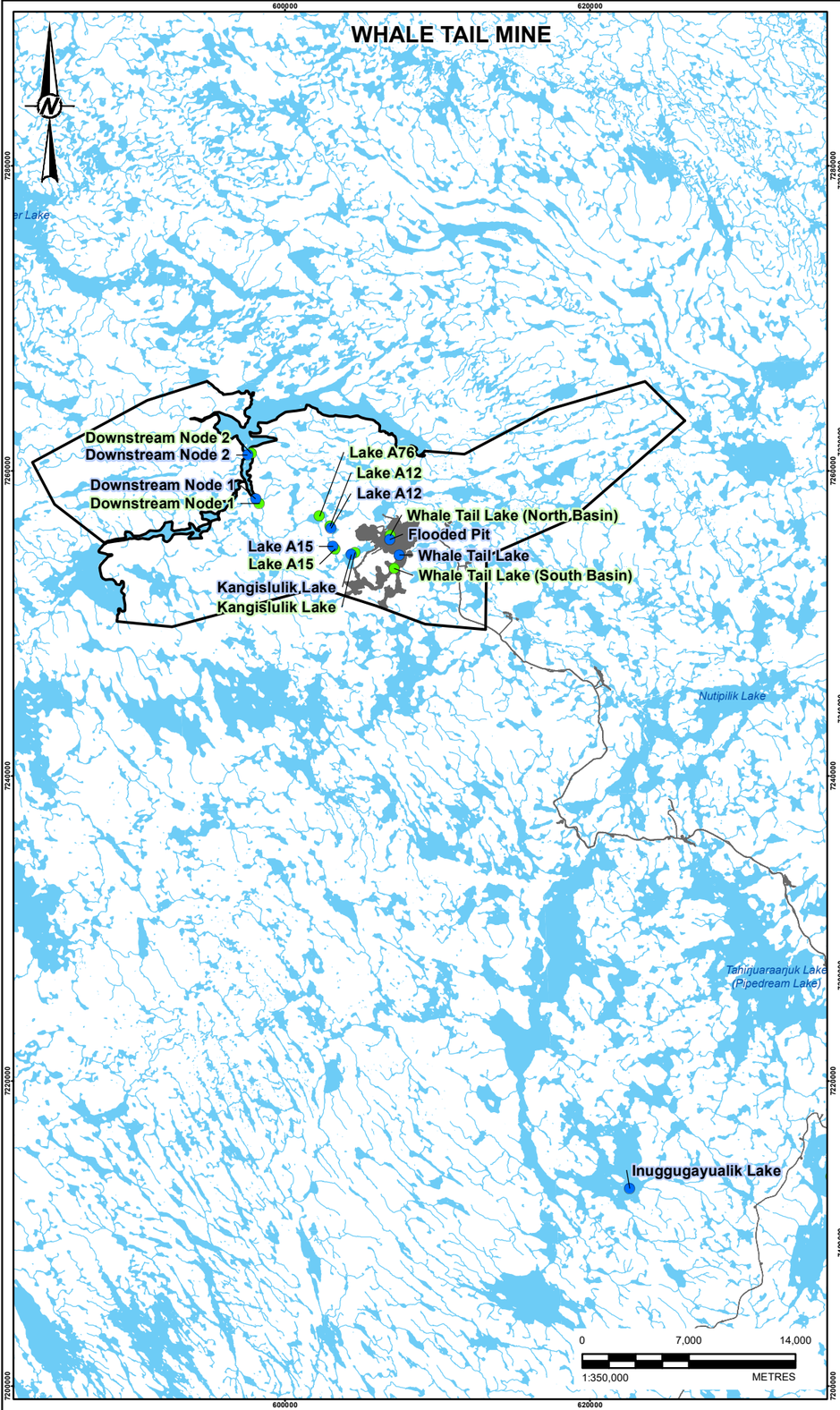
Baseline water quality data were collected at Meadowbank Mine between 1996 and 2002 (Appendix B in Azimuth 2006) and at Whale Tail Mine from 2014 to 2015 (2016 FEIS Volume 6 Appendix 6-G in Agnico Eagle 2016). Baseline water quality sampling was conducted at lakes and tributaries in various watersheds in the area during open-water conditions (Figure 4).

For Meadowbank Mine, 51 surface water samples were collected from Third Portage Lake, Second Portage Lake, Tern Lake, Farside Lake, Amarulik Lake, Tehek Lake, the Vault Lake system, Wally Lake, and Inuggugayualik Lake. Since many of these waterbodies are headwater lakes with no anthropogenic activities in the catchment, the total metal concentrations in surface water samples collected were very low and often below detection limits, which is typical of Arctic lakes. The total metal concentrations were generally below the CCME surface water guidelines for the protection of aquatic life. The exceptions were cadmium and mercury, which had detection limits above the CCME guidelines. However, cadmium concentrations were detected in only 4 of 51 samples, and mercury concentrations were below detection limits in all samples. Some waterbodies were sampled at multiple stations across different seasons and years, but the total metal concentrations were similar, suggesting minimal variability spatially and temporally.

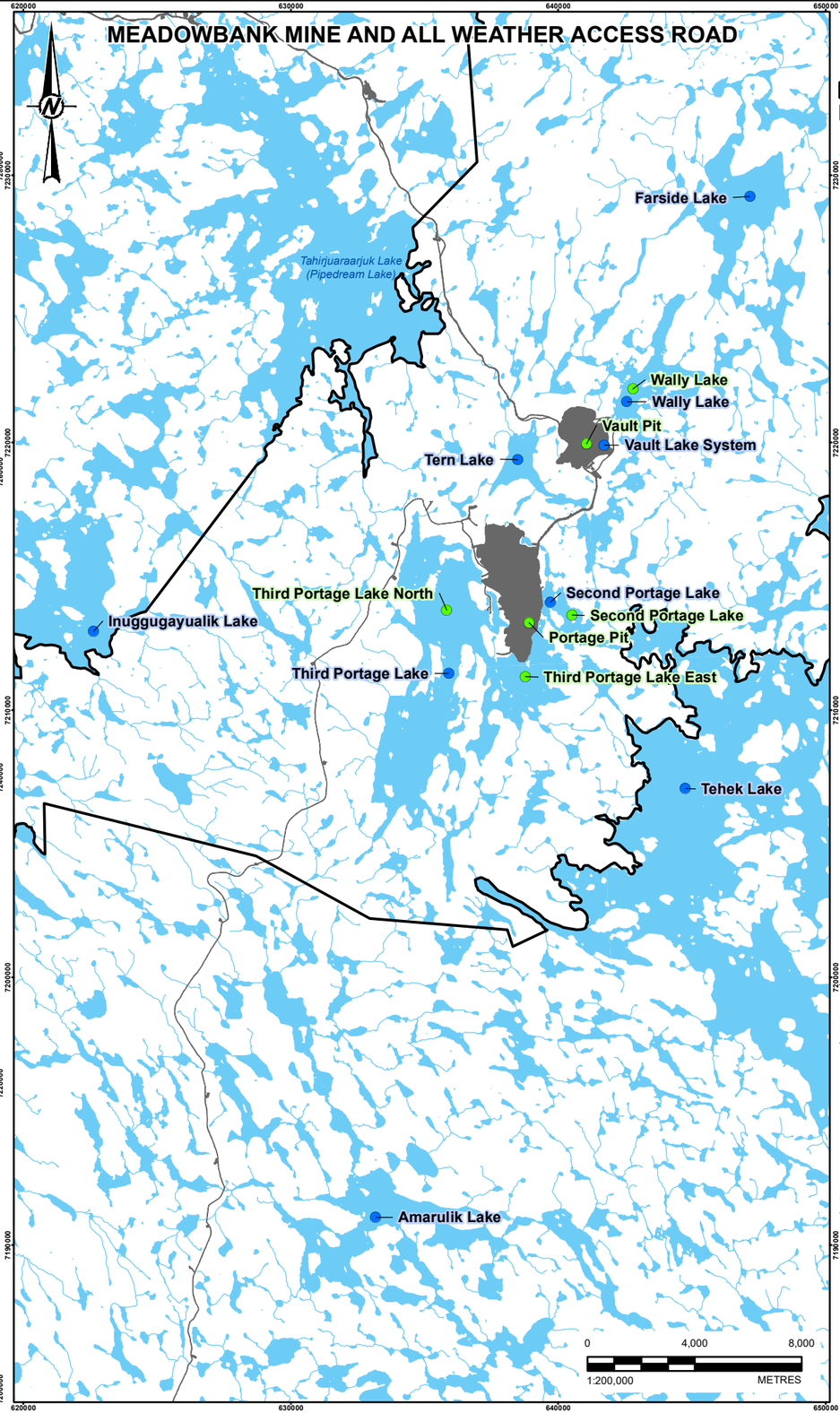
For Whale Tail Mine, waterbodies sampled during baseline programs included Whale Tail Lake, Flooded Pit, Kangislulik Lake (formerly Mammoth Lake), Lakes A15 and A12 and Downstream Node 1 and Downstream Node 2. Surface water collected from lakes during open water season was characterized by low hardness, low alkalinity, low turbidity and low total suspended solids (TSS), which is typical of low-productivity headwater lakes in the Arctic. There was minor thermal stratification evident at some deeper lake stations. The water columns were well-oxygenated, and pH was neutral to slightly acidic. The majority of water chemistry parameter concentrations were below the analytical detection limit and below aquatic life and drinking water guidelines (CCME water quality guidelines and Canadian drinking water guidelines). Surface water collected from tributaries was well-oxygenated with low conductivity and neutral to slightly alkaline pH. Similar to surface water from lakes, the samples from tributaries had concentrations below aquatic life and drinking water guidelines.

The existing conditions for Meadowbank Mine and Whale Tail Mine are summarized in Section 3.15 of the CRP (Agnico Eagle 2024a). Monitoring is completed annually through the Core Receiving Environment Monitoring Program (CREMP). The 2023 CREMP report noted the near-field areas close to the mine had higher concentrations of dissolved solids and major ions such as calcium and magnesium compared to baseline conditions (Azimuth 2024). These results are consistent with previous years. However, Azimuth noted these concentrations were still relatively low and that there is no evidence to suggest that concentrations are increasing each year or will result in adverse ecological effects. There were no trigger exceedances for water quality parameters with CCME water quality guidelines in the 2023 monitoring data, which is consistent with the results from previous years.

WHALE TAIL MINE



MEADOWBANK MINE AND ALL WEATHER ACCESS ROAD



LEGEND

- LAKE WITH BASELINE AND/OR ONGOING MONITORING
- WATER QUALITY PREDICTION NODE
- PROPERTY BOUNDARY
- PROJECT FOOTPRINT

BASE DATA

- WATERCOURSE
- WATERBODY

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 14N

CLIENT

AGNICO EAGLE

AGNICO EAGLE MINES LIMITED:
MEADOWBANK DIVISION

PROJECT

HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT,
CLOSURE AND RECLAMATION PLAN, MEADOWBANK COMPLEX

TITLE

WATER QUALITY MONITORING LAKES

CONSULTANT

wsp

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DESIGNED	KS
PREPARED	CDB
REVIEWED	
APPROVED	

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5.0 PREDICTED POST-CLOSURE CONDITIONS

5.1 Soil Quality

The air quality modelling was completed based upon the historic AERMOD models built for the Whale Tail Project and Meadowbank, including:

- Whale Tail 2018 FEIS Addendum air quality assessment (Golder 2019c)
- Air Quality Re-modelling for Whale Tail 2018 FEIS Addendum (Golder 2019d)
- Whale Tail Extension air quality assessment (WSP 2023b)
- Meadowbank Extension air quality assessment (WSP 2023c)

The same approach and modelling options were used in the previous models to obtain total suspended particles (TSP) deposition rates for the CRP HHERA.

The metal concentrations and deposition rates were estimated using the model-predicted TSP concentrations and deposition rates using a speciation profile derived from Meadowbank Complex waste rock chemistry testing data.

There were no discrete receptor locations selected in the Meadowbank Extension air quality assessment model; therefore, the HHERA used the locations of the soil and vegetation monitoring stations from the Wildlife and Country Foods Screening Level Risk Assessment (WLCFSLRA) Plan (Agnico Eagle 2024c) to evaluate Post-Closure soil quality at the Meadowbank Mine (Table 3, Figure 3).

Human health receptor locations evaluated for Whale Tail Mine were consistent with the discrete receptor locations selected in the previous HHERA (Golder 2019a). Locations identified as part of the IQ Baseline Study (Agnico Eagle 2014) were identified as human receptor locations for the purposes of predicting changes to soil quality through air depositions. No additional human receptor locations were identified in community consultation notes from Agnico Eagle (Agnico Eagle 2018c), NIRB and NWB (2017), and NIRB (2017). Sixteen receptor locations were identified (Table 3, Figure 3).

Due to the proximity of these locations to the Meadowbank operation activities, the following models have been used to predict the deposition rates:

- Meadowbank model for receptors T1 to T7 and C1 to C3 in Table 3
- AWAR model for receptor T8 in Table 3
- Whale Tail model for discrete receptors are listed in Table 4, and receptors T9 to T11 in Table 3

Table 3: Human Health Receptor Location Descriptions for Soil Quality – Meadowbank Complex

Receptor ID	Site	Site #1		Site #2		Site #3		Site #4		Site #5	
		Easting (m)	Northing (m)	Easting (m)	Northing (m)	Easting (m)	Northing (m)	Easting (m)	Northing (m)	Easting (m)	Northing (m)
T1	Meadowbank	640110	7215459	640010	7215458	640137	7215362	640090	7215555	640181	7215525
T2	Meadowbank	642054	7214090	642043	7214197	642145	7214151	642113	7213987	642054	7213885
T3	Meadowbank	640069	7212342	640146	7212421	639967	7212281	639976	7212409	639991	7212541
T4	Meadowbank	640916	7210294	640994	7210201	641112	7210194	640890	7210137	640802	7210271
T5	Meadowbank	637020	7211270	636978	7211160	637013	7211394	637162	7211419	637057	7211513
T6	Meadowbank	637985	7212300	638081	7212270	637887	7212318	637956	7212202	637991	7212401
T7	Meadowbank	640847	7218280	640872	7218395	640755	7218444	640719	7218338	640788	7218177
T8	AWAR	626884	7200614	626837	7200520	626806	7200427	626746	7200306	626675	7200224
T9	Whale Tail	609867	7252815	610005	7252755	609825	7252981	N/A	N/A	N/A	N/A
T10	Whale Tail	604817	7257393	605011	7257344	604771	7257154	N/A	N/A	N/A	N/A
T11	Whale Tail	612035	7250280	612189	7250361	612300	7250217	N/A	N/A	N/A	N/A
C1	Reference	623453	7211586	623450	7211467	623416	7211345	623339	7211252	623217	7211558
C2	Reference	625518	7221488	625569	7221607	625743	7221542	625790	7221388	625825	7221244
C3	Reference	624717	7222685	624818	7222623	624850	7222504	624861	7222349	624636	7222313

Notes: ID = identification; m = metre; AWAR = all-weather access road.

Table 4: Human Health Receptor Location Descriptions for Soil Quality – Whale Tail

Receptor Name[(a)]	Description	Easting	Northing
Grave Site 2	Grave site near Nutipilik Lake, southeast of Whale Tail Mine area	634234	7246486
Grave Site 3	Grave site west of Whale Tail Mine area	583533	7249635
Grave Site 4	Grave site west of Whale Tail Mine area	602840	7251874
Grave Site 5	Grave site south of Whale Tail Mine area	608952	7244985
Grave Site 27	Grave site west of Whale Tail Mine area	592358	7250176
Grave Site 28	Grave site west of Whale Tail Mine area	591723	7249926
Grave Site 29	Grave site west of Whale Tail Mine area	590991	7249714
Grave Site 30	Grave site within secondary disturbance area of Whale Tail Mine area	607895	7253665
Fishing Marker	Fishing area on Pipedream Lake, southeast of Whale Tail Mine area	631472	7229489
Muskox 1	Muskox hunting area, east of Whale Tail Mine area	625925	7253043
Muskox 2	Muskox hunting area, south of Whale Tail Mine area	604079	7249860
To Iglu	Location along the winter travel route to Iglujaalik (Garry Lake), Chantrey Inlet, Gjoa Haven, Hanninajuaq (Middle Back River), northeast of Whale Tail Mine area	614214	7259773
Fishing Area	Fishing area on Nutipilik Lake, identified camping area, southeast of Whale Tail Mine area	631154	7246367
Caching Area 1	Caching area near Nutipilik Lake, southeast of Whale Tail Mine area	626296	7243523
Track	Tracking area (foxes and wolves), east of Whale Tail Mine area	613883	7256750
Caching Area 1	Caching area near Tahinajuk Lake, east of Whale Tail Mine area	618910	7250697

Changes to soil quality during the Post-Closure phase were predicted using wet and dry particulate deposition rates from the air quality models for the non-volatile parameters (i.e., metals) predicted to be present in emissions. In brief, particulate deposition rates were predicted as part of the air quality modelling and methods described in the Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (US EPA 2005a) and were used to predict incremental changes to soil quality. It was assumed that particulate deposition would occur through to the end of Operations (i.e., nine years, 2019-2028 for Whale Tail Mine and 18 years, 2010-2028 for Meadowbank Mine). The incremental changes to soil quality were then added to the measured baseline soil quality data as described in Section 4.1.1 to predict the changes to soil quality during Post-Closure. Predicted deposition rates and incremental concentrations for the Post-Closure are provided in Table B-1 (Appendix B).

5.2 Water Quality

Effects on human, terrestrial and aquatic health were evaluated based on the area's traditional use, access by wildlife and aquatic receptors, and the waterbodies expected to be affected by discharges from the Meadowbank Complex. To represent Post-Closure conditions, the HHERA used either modelled or measured water quality concentrations for major ions, nutrients and total metals. For Vault Pit, Portage Pit and Wally Lake, water quality was predicted by the Meadowbank Mine Water Balance and Water Quality Model (Lorax 2024). This model likely overestimates metal concentrations, given the planned water management strategies discussed in Chapter 6 of the CRP (Agnico Eagle 2024a). For Second Portage Lake, Third Portage Lake East, and Third Portage Lake North, Post-Closure water quality concentrations are expected to be similar to existing conditions. Therefore, water quality for these lakes was based on the 2023 annual average concentrations that were collected during the 2023 CREMP monitoring program (Azimuth 2024). Water quality for Whale Tail Mine waterbodies was predicted

by the Water Balance and Water Quality Model (Lorax 2023). The water quality prediction nodes assessed in the HHERA are summarized in Table 5.

Table 5: Water Quality Prediction Nodes and Predicted Post-Closure Conditions

Water Quality Prediction Node	Predicted Post-Closure Conditions	Source
Meadowbank Mine Waterbodies		
Vault Pit	Maximum predicted during Post-Closure (July 2046 to December 2060)	Meadowbank Mine Water Balance and Water Quality Model (Lorax 2024)
Portage Pit	Maximum predicted during years modelled (August 2043 to July 2044)	Meadowbank Mine Water Balance and Water Quality Model (Lorax 2024)
Wally Lake	Maximum predicted during Post-Closure (July 2046 to December 2060)	Meadowbank Mine Water Balance and Water Quality Model (Lorax 2024)
Second Portage Lake	2023 annual average	CREMP monitoring program (Azimuth 2024)
Third Portage Lake East	2023 annual average	CREMP monitoring program (Azimuth 2024)
Third Portage Lake North	2023 annual average	CREMP monitoring program (Azimuth 2024)
Whale Tail Mine Waterbodies		
Whale Tail North Basin – receiving waterbody for treated effluent	Maximum predicted during Post-Closure (July 2046 to December 2069)	Water Balance and Water Quality Model (Lorax 2023)
Whale Tail South Basin – receiving waterbody for treated effluent		
Kangislulik Lake West Basin – receiving waterbody for treated effluent		
Lake A15 - Downstream of Kangislulik Lake		
Lake A12 - Downstream of Lake A15		
Lake A76 - Downstream of Lake A12		
Downstream Node 1 - Downstream of Lake A76 and small lakes and streams along the downstream path 1 (west and north direction)		
Downstream Node 2 - Downstream of Lake A76 and small lakes and streams along the downstream path 2 (east and north direction)		

6.0 HUMAN HEALTH RISK ASSESSMENT

The objective of the HHRA was to evaluate the potential risks to human health from the contamination associated with the historical operation of the Site as a gold mine. Potential risks to human health were evaluated for use of the Site following closure and reclamation based on predicted Post-Closure environmental conditions (e.g., predicted soil and surface water quality data).

6.1 Problem Formulation

The problem formulation focuses the HHRA on the substances, receptors and exposure pathways of greatest concern (i.e., substances with the greatest toxic potential, receptors with the greatest likelihood of being exposed and the greatest susceptibilities and exposure pathways that account for the majority of exposure to the substances). If no potential risks are determined for these substances, receptors and exposure pathways, it is unlikely that there would be potential risks for other substances, receptors and exposure pathways. The information from the problem formulation is summarized in a CSM, which illustrates the potential links between sources of POPCs, exposure pathways and receptors.

The details of the problem formulation for the Site are provided below.

6.1.1 Receptors of Concern

The HHRA assesses potential human exposures at the Site during Post-Closure, the period immediately following active closure where all reclamation activities are completed, including recontouring, soil placement, and revegetation. Ongoing monitoring and maintenance occur during this period as required, and active or passive water treatment may continue if required. The human receptors were considered in the HHRA are presented in Table 6.

Table 6: Receptors of Concern and Rationale for Selection - Human Health

Receptors of Concern		Rationale for Selection
Members of the Public	Inuit	Inuit are known to reside in Baker Lake and use the lands around Meadowbank Complex for hunting, gathering, and other traditional purposes.
	Non-Inuit	Non-Inuit are known to reside in Baker Lake and may use the area around Meadowbank Complex for recreational purposes.

Monitoring/maintenance workers may be present during Post-Closure; however, they would be less exposed to water, soil and country foods compared to a member of the public. As such, only members of the public were retained in the HHRA.

There are grave sites and fishing locations in the vicinity of the Meadowbank Complex that have been identified as discrete receptor locations (Figure 3 and Table 4); however, people are unlikely to stop at the discrete receptor locations for extended periods of time for the following reasons:

- There are no known permanent residences or cabins near the Site.
- People are not travelling to the areas surrounding the mine site for harvesting but rather are fishing and harvesting berries closer to the community (Section 3.0).
- The winter road to Garry Lake, Back River and Gjoa Haven is mainly used as a travel route to other destinations.

Given the distance from the community and, the main travel routes, and the rough terrain in the area around the mine, it is unlikely that the people would be at the discrete receptor locations daily on a long-term (chronic) basis. To allow a conservative assessment of exposure, it was assumed that members of the public were representative of both Inuit and non-Inuit individuals who may visit the area seasonally in the summer months (e.g., when exposure to Site media would be expected to be the highest) for up to 14 days per year during extended hunting trips in the area. During these hunting trips they may harvest country foods (i.e., wild game, fish and edible plants)

and rely on nearby lakes for potable water. It was assumed that toddlers and children would not be a part of the extended hunting trips given the remote location and that rough terrain would not be suitable for family hunting trips.

6.1.2 Exposure Pathways

Exposure pathways are the means by which a receptor comes into contact with a POPC. Numerous pathways were considered when identifying POPCs for the HHRA. Pathways considered to be complete are identified in the sections below. Pathways deemed incomplete or negligible were not evaluated, and justification for their exclusion is provided below.

The following pathways were considered complete and were evaluated quantitatively:

- Direct contact with soil (ingestion and dermal contact) and exposure by a member of the public;
- Inhalation of soil particulates and exposure by a member of the public;
- Ingestion of edible terrestrial plants by a member of the public;
- Ingestion of wild game (e.g., caribou) that have been exposed to contaminated soil from the Site and exposure by a member of the public;
- Direct contact with surface water (ingestion and dermal contact) from impacted lakes and exposure by a member of the public; and
- Ingestion of fish by a member of the public.

The following pathways were considered incomplete or negligible and, therefore, were not evaluated:

- Inhalation of vapours in outdoor air and exposure by a member of the public: The inhalation of vapours (source from soil) in outdoor air is a potentially complete exposure pathway for a member of the public. However, this pathway was not evaluated further in the HHRA because exposure via this pathway is typically negligible, considering the rapid dilution and dispersion of vapour in outdoor air. In addition, the inhalation of vapours in the air pathway was not assessed as no emissions will occur during Post-Closure.
- Use of groundwater as a drinking water source because lakes near the Site are more likely sources of drinking water;
- Direct contact with groundwater (ingestion and dermal contact) because people are not expected to come in contact with the subsurface;
- Direct contact with sediment (ingestion and dermal contact) because people are not expected to be using the lakes for swimming and
- Inhalation of vapours in indoor air by human receptors because all buildings will be removed during final closure and reclamation.

6.1.3 Identification of Parameters of Potential Concern

6.1.3.1 Soil

Predicted concentrations of metals in soil were screened against the CCME SQGs for residential land use (CCME 1999a). In the absence of a screening value from CCME, the US EPA Regional Screening Levels (RSLs; US EPA 2024a) for residential soils were used because these guidelines are also risk-based and protective of human health. If the maximum predicted concentration in soil for a particular metal was less than its respective screening value, then the metal was not retained for further evaluation. Screening values were unavailable for bismuth, calcium, magnesium, potassium, sodium, and titanium. These metals are commonly analyzed in environmental samples (as part of the standard suite of metals included within the analytical method) but generally have low toxicity at concentrations that occur in the environment (even at industrial sites). Many of these metals are naturally occurring in soil and are present in a toxicologically inert form. In addition, some are essential micro- and macronutrients. Although the following metals may be present in soil under baseline and future conditions, they were excluded from further consideration in the POPC screening process based on their expected low toxicological hazard:

- Essential minerals such as calcium, magnesium, potassium, and sodium serve a variety of biochemical, intracellular, and ion balance purposes in tissues. These are naturally occurring constituents that are included in routine analytical chemical analyses. Government agencies often do not develop regulatory criteria for these and other innocuous constituents. As these constituents are not known or expected to be associated with mine activities, they have been excluded as POPCs in the human health risk assessment HHRA.
- Trace elements such as bismuth and titanium are not commonly assessed in risk assessment because human and animal toxicity data for these compounds are lacking. These trace elements are not known or expected to be associated with mine activities (e.g., they were not identified as POPCs related to dust in the WCFSLRA Plan; Agnico Eagle 2024c). As such, they have been excluded as POPCs in the HHERA.

Maximum predicted concentrations of arsenic, iron, and manganese exceeded their respective screening values; however, maximum baseline concentrations of these metals also exceeded screening values. The incremental change from baseline was 0.6% and 1.7% for arsenic, 2.1% and 2.0% for iron, and 0.7% and 1.6% for manganese for Meadowbank and Whale Tail locations, respectively (Table B-2, Appendix B). These levels are well within the range of analytical uncertainty. For example, CCME (2016) notes that an acceptable relative percent difference between laboratory duplicates of soil samples is around 30% and between field duplicates is 60% due to matrix variability. The British Columbia laboratory manual recommends that an acceptable data quality objective (DQO) for laboratory duplicates of soil is 40% for high variability metals such as aluminum and 30% for other metals such as arsenic and iron. Thus, the changes from a baseline of less than 3% for arsenic, iron, and manganese soil concentrations are considered to be negligible, and no further assessment of metals in soil was required.

Recent soil quality monitoring data support that predicted changes to soil quality due to mine-related emissions are likely negligible. All measured soil concentrations collected from three sampling areas at the Whale Tail Site in 2021 were below screening values protective of human health (Agnico Eagle 2022).

6.1.3.2 Water

POPCs for water were identified if predicted concentrations were above maximum baseline concentrations + 10% (Section 4.2) and above the applied screening value. If no screening values were available for a particular parameter, then this parameter was considered on a case-by-case basis.

Predicted water quality concentrations were compared to health-based drinking water guidelines from Health Canada (i.e., maximum acceptable concentrations) (Health Canada 2024). In the absence of health-based screening values from Health Canada, US EPA RSLs (US EPA 2024a) for tap water (adjusted to a target HQ of 0.2 and target cancer risk of 10^{-5} to be consistent with federal guidance) were used. In the absence of health-based screening values, guidelines based on other endpoints (i.e., Health Canada aesthetic objectives) were considered. The selected water quality criteria for human health are presented in Table D-1 (Appendix D). The screening to baseline concentrations + 10% and water quality criteria are presented in Tables D-2 and D-3 (Appendix D) for Meadowbank and Whale Tail waterbodies, respectively.

Predictions were provided for several nutrients (e.g., total ammonia, phosphorus) and inorganics (e.g., calcium, magnesium, potassium) for which health-based guidelines are neither available nor developed. These parameters and substances are not considered to be directly toxic to human health and were, therefore, not considered POPCs for human health.

Based upon the screening process outlined above, the following POPCs are identified in Table 7.

Table 7: Summary of Water Quality POPCs for Human Health

POPC	Prediction Node	Screening Value (mg/L)	Baseline + 10% (mg/L)	Maximum Predicted Concentration (mg/L)[b,c]
Arsenic	Whale Tail North Basin	0.010[a]	0.00032	0.024
	Kangislulik Lake		0.00052	0.016
	Lake A15		0.00035	0.012

Notes: POPC = parameter of potential concern; mg/L = milligram per litre.

a) Human health screening value for arsenic (0.010 mg/L) is the Health Canada drinking water guidelines maximum acceptable concentration (Health Canada 2024).

b) Predicted concentrations were rounded to two significant digits for presentation purposes. Predicted concentrations, including all decimal places, were used in the risk calculations.

c) Maximum predicted arsenic concentrations for Post-Closure ranged from 0.0034 to 0.024 mg/L (see Appendix D, Table D-3).

Predicted arsenic concentrations exceeded the human health screening value and maximum baseline + 10% in Whale Tail North Basin, Kangislulik Lake, and Lake A15. These waterbodies were carried forward for further assessment of arsenic in the HHRA. Water quality predictions are likely conservative as water management strategies will be implemented as described in Section 6 of the CRP (Agnico Eagle 2024a), which will likely result in lower metal concentrations.

Predicted thallium concentrations exceeded the human health screening value in Vault Pit, Portage Pit, and Wally Lake; however, these predicted concentrations were lower than the maximum baseline + 10% and were not retained for further assessment in the HHRA.

6.1.4 Conceptual Site Model

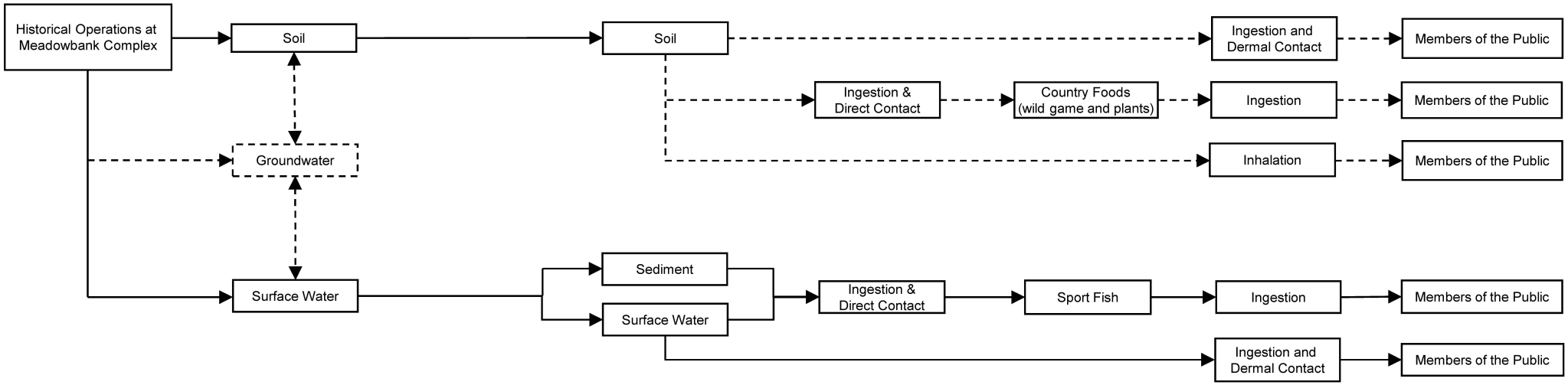
A CSM was developed for human health based on the primary pathways identified above (Section 6.1.2). The exposure pathways between historical operations at Meadowbank Complex, intermediate residency media (i.e., the aspects of the environment that may experience a change in quality due to mine activities/emissions), and receptors are shown to be either complete or incomplete. Where pathways are incomplete, quantitative assessment was not carried out given that environmental quality was not anticipated to differ from baseline conditions and/or to be above generic guidelines based on the POPC screening in Section 6.1.3. no POPCs were identified in soil, therefore, direct contact with soil (e.g., ingestion, dermal contact, inhalation of soil particulates) and consumption of country foods (e.g., plants and wild game) were incomplete pathways.

Complete pathways on the figure indicate that a change to environmental quality was predicted, and a quantitative assessment of the potential effects to human health was carried out. The complete pathways assessed in the HHRA include the following (Figure 5):

- Ingestion and dermal contact with surface water; and
- Consumption of fish.

Conceptual Site Model for the Meadowbank Complex Closure and Reclamation Plan Human Health Risk Assessment

FIGURE 5



NOTES

Solid lines indicate pathways that were considered to be complete and quantitatively evaluated in the human health risk assessment.

Dashed lines indicate pathways that were considered to be incomplete (i.e., no COPCs were identified in site media).

Date: September 2024	wsp	CAD: AW/SG
Project: Meadowbank Complex CRP HHERA		CKD: KCS

6.2 Exposure Assessment

6.2.1 Water Quality

The exposure assessment was completed considering the amount of time members of the public could rely on surface water as a potable water source at the locations with identified POPCs (Table 7).

While there are no discrete receptors identified at Meadowbank Mine, there are grave sites and fishing locations in the vicinity of the Whale Tail Mine that have been identified as discrete receptor locations (Figure 3 and Table 4); however, people are unlikely to stop at the discrete receptor locations for extended periods for the following reasons:

- There are no known permanent residences or cabins near the Site.
- People are not travelling to the areas surrounding the mine site for harvesting but rather are fishing and harvesting berries closer to the community (Section 3.0).
- The winter road to Garry Lake, Back River and Gjoa Haven is mainly used as a travel route to other destinations.

Given the distance from the community and the main travel routes, and the rough terrain in the area around the mine, it is unlikely that people would be at the discrete receptor locations daily on a long-term (chronic) basis. To allow a conservative assessment of exposure, it was assumed that members of the public may visit the area seasonally in the summer months (e.g., when exposure to Site media would be expected to be the highest) for up to 14 days per year during extended hunting trips in the area, during which they may rely on nearby lakes for their potable water. It was assumed that toddlers and children would not be a part of the extended hunting trips given the remote location and that rough terrain would not be suitable for family hunting trips.

Exposure was estimated in terms of a daily dose for each POPC. This value is called the estimated daily intake and is typically expressed as milligrams of a chemical per kilogram of body weight per day (mg/kg bw/day). As discussed further in Section 6.3, POPCs may have threshold or non-threshold effects. Exposure doses for threshold and non-threshold health risks were calculated for the adult life stage only, for the reasons noted above. A composite receptor was not applicable as people would not be returning to the site across all life stages over a lifetime. General receptor characteristics such as water consumption rate and body weight were obtained from Health Canada (2021a). Receptor characteristics and exposure assumptions for water quality are presented in Table 8.

Table 8: Receptor Characteristics and Exposure Assumptions for Water Quality

Exposure Parameter	Potable Water Scenario	Rationale/Source
Water Consumption Rate	1.5 litres per day	Adult, Health Canada (2021a)
Body Weight	70.7 kg	Adult, Health Canada (2021a)
Exposure Frequency and Averaging Time	14 days per year	Assumed a two-week hunting trip each year. However, exposure for threshold POPCs was not amortized, as discussed below.
Exposure Duration	Post-Closure – 60 years	Adult, Health Canada (2021a). The adult was assumed to be exposed to Post-Closure predictions for the full life stage (i.e., 60 years).
Life Expectancy (averaging time in years)	80 years	Health Canada (2021a)

Notes: kg = kilogram.

The maximum predicted concentration of total metals was used as the surface water exposure concentration for Post-Closure as described in Section 5.2. The total metals fraction is applicable for human health as it is assumed people would not filter water prior to consumption. The use of maximum predicted concentration during Post-Closure likely over-estimates the potential risk.

To be conservative and in-line with Health Canada's (2021a) guidance, risks for threshold POPCs were estimated without amortization (or dose averaging).

Considering the assumptions described above (Table 8) and the equation below, exposure doses were calculated for each location and POPC (Table 9).

$$Dose = \frac{C_W \times IR_W}{BW} \times RAF_{oral} \times \frac{EF_d}{AT_d} \times \frac{ED_y}{AT_y}$$

Where

Dose	= estimated dose from ingestion of POPC in surface water (mg/kg-d)
C_W	= POPC concentration in surface water (milligrams per litre [mg/L]) (Table 7)
IR_W	= water ingestion rate (litres per day [L/day])
BW	= body weight (kg)
RAF_{Oral}	= relative absorption factor from the gastrointestinal tract (i.e., bioavailability via water ingestion) (unitless); assumed to be 1
EF_d	= exposure frequency in days
AT_d	= averaging time in days
ED_y	= exposure duration in years (for non-threshold POPCs only)
AT_y	= averaging time in years (for non-threshold POPCs only)

Example calculation for threshold POPCs (Whale Tail North Basin, Post-Closure):

$$Dose\ for\ arsenic\ (threshold) = \frac{0.024\ mg/L \times\ 1.5\ L/d}{70.7\ kg} \times 1 \times \frac{14\ days}{14\ days}$$

$$Dose\ for\ arsenic\ (threshold) = 5.0\ \times\ 10^{-4}\ mg/kg\text{-}d$$

Example calculation for non-threshold POPCs (Whale Tail North Basin, Post-Closure [60 years]):

$$Dose\ for\ arsenic\ (non-threshold) = \frac{0.024\ mg/L \times\ 1.5\ L/day}{70.7\ kg} \times 1 \times \frac{14\ days}{365\ days} \times \frac{60\ years}{80\ years}$$

$$Dose\ for\ arsenic\ (non-threshold) = 1.4\ \times\ 10^{-5}\ mg/kg\text{-}d$$

Table 9: Exposure Doses - Drinking Water

POPC	Location	Exposure Dose (mg/kg-d)[(a)]
Threshold Effects		
Arsenic	Whale Tail North Basin	5.0E-04
	Kangislulik Lake	3.4E-04
	Lake A15	2.6E-04
Non-Threshold Effects		
Arsenic	Whale Tail North Basin	1.4E-05
	Kangislulik Lake	9.9E-06
	Lake A15	7.5E-06

Notes: POPC = parameter of potential concern; mg/kg-d = milligrams per kilogram body weight per day.

a) Exposure doses were rounded to two significant digits for presentation purposes. Predicted surface water concentrations, including all decimal places, were used in the risk calculations.

6.2.2 Fish Tissue Quality

6.2.2.1 Receptor Characteristics

The same receptor characteristics and exposure assumptions described above for water quality (Table 8) were used in the fish tissue quality assessment.

While fishing locations in the vicinity of the mine that have been identified as discrete receptor locations (Figure 3 and Table 4), for the same reasons discussed in Section 6.2.1, people are unlikely to stop at the discrete receptor locations for extended periods of time. Based on IQ and TK information (Section 3.0), people are more likely to harvest fish closer to the communities. As such, it was assumed that human receptors may only consume fish from the area while on an extended hunting trip rather than harvesting for consumption throughout the year. Similar to the water quality assessment (Section 6.2.1), exposure for threshold POPCs was not amortized.

Site-specific fish consumption data are not available; therefore, the fish ingestion rate of 0.22 kilograms per day (kg/d) (Health Canda 2011) was used as this ingestion rate was also used in the HHERA for the Whale Tail Expansion Project (Golder 2019a).

6.2.2.2 Predicted Fish Tissue Concentrations

Changes to fish tissue quality were predicted for the POPCs that were predicted to change in water (i.e., arsenic) using water-to-fish bioconcentration factors (BCFs) calculated in the HHERA for the Whale Tail Expansion Project (Golder 2019a), summarized in Table 10.

Table 10: Water-to-Fish Bioconcentration Factors

POPC	Average Baseline Fish Tissue Concentration (mg/kg wet weight)	Average Baseline Water Quality Concentration (mg/L)	Water-to-Fish Bioconcentration Factor (L/kg)
Arsenic	n/a	n/a	$67.1 \times C_w^{-0.66}$

Notes: POPC = parameter of potential concern; mg/kg = milligram per kilogram; mg/L = milligrams per litre; L/kg = litres per kilogram; n/a = not applicable; C_w = water concentration in µg/L.

For arsenic, changes to fish tissue quality were assessed considering the toxicokinetics of arsenic. Typically, a site-specific BCF may be calculated as the ratio of the concentration of a chemical in the tissue of an aquatic organism to the chemical's concentration in the surrounding water. However, there is evidence that the use of linear models to predict bioaccumulation for a chemical that has an inverse relationship between the BCF and exposure, such as arsenic, may over- or underestimate the chemical's potential bioaccumulation (McIntyre and Linton 2012). Therefore, a more comprehensive approach was used to estimate uptake into fish for arsenic. Williams et al. (2006) competed a review of 12 laboratory and field studies in which arsenic concentrations in water and fish tissue were measured. The four laboratory studies were used to generate BCFs, and the eight field studies were used to generate bioaccumulation factors (BAFs). Given that no significant differences were identified between the laboratory and field studies, the datasets were combined and used to generate a relationship between water concentration and BCF. Using whole body data from carp, channel catfish, bluegill and rainbow trout, a power function (where y = BCF in litres per kilogram [L/kg] and x = water concentration in µg/L) with a r^2 of 0.86 and level of significance of $p < 0.0001$ was derived: $y = 67.1x^{-0.66}$. This equation was used to determine fish tissue concentrations for each water body and each phase of the Project. This equation was also used in the HHERA for the Whale Tail Expansion Project (Golder 2019a).

Using the BCF and maximum predicted surface water concentration of arsenic, changes to fish tissue quality for each lake were predicted using the equation below and calculated for each location (Table 11).

$$Predicted\ fish\ tissue\ concentration\ (arsenic)\ =\ C_W \times (67.1 \times (C_W \times 1000)^{-0.66})$$

Where

Predicted fish tissue concentration = estimated fish tissue concentration of POPC (mg/kg wet weight)
C_w = POPC concentration in surface water (mg/L) (Table 7)

Example calculation for arsenic (Whale Tail North Basin, Post-Closure):

$$Predicted\ fish\ tissue\ concentration\ (arsenic)\ =\ 0.024\ \times (67.1 \times (0.024 \times 1000)^{-0.66})$$

$$Predicted\ fish\ tissue\ concentration\ (arsenic)\ =\ 0.20\ mg/kg\ wet\ weight$$

Table 11: Predicted Fish Tissue Concentrations

POPC	Prediction Nodes	Predicted Fish Tissue Concentrations (mg/kg wet weight)
Arsenic	Whale Tail North Basin	0.20
	Kangislulik Lake	0.17
	Lake A15	0.16

Notes: POPC = parameter of potential concern; mg/kg = milligram per kilogram.

6.2.2.3 Exposure Doses – Fish Tissue

The organic forms of arsenic in fish and shellfish (i.e., arsenobetaine and arsenocholine) have been reported to be essentially non-toxic. However, a small percentage in fish tissue may be the toxic inorganic form. Therefore, an inorganic arsenic fish content of 10% was used in calculations for arsenic exposures via the fish pathway (ATSDR 2007).

Considering the receptor characteristics and exposure assumptions described above in Section 6.2.1 and the equation below (Health Canada 2021), exposure doses were calculated for each location (Table 12).

$$Dose = \frac{C_F \times AF \times IR_W}{BW} \times RAF_{oral} \times \frac{EF_d}{AT_d} \times \frac{ED_y}{AT_y}$$

Where:

- Dose = estimated dose from ingestion of POPC in fish tissue (mg/kg-d)
- C_F = POPC concentration in fish tissue (mg/kg wet weight) (Table 11)
- IR_W = fish ingestion rate (kg /d wet weight)
- AF = adjustment factor for fraction inorganic arsenic in fish (10%)
- BW = body weight (kg)
- RAF_{Oral} = relative absorption factor from the gastrointestinal tract (i.e., bioavailability via food ingestion) (unitless); assumed to be 1
- EF_d = exposure frequency in days
- AT_d = averaging time in days
- ED_y = exposure duration in years (for non-threshold POPCs only)
- AT_y = averaging time in years (for non-threshold POPCs only)

Example calculation for threshold POPCs (Whale Tail North Basin, Post-Closure):

$$Dose\ for\ arsenic\ (threshold) = \frac{0.020\ mg/kg \times 0.1 \times\ 0.22\ kg/day}{70.7\ kg} \times 1 \times \frac{14\ days}{14\ days}$$

$$Dose\ for\ arsenic\ (threshold) = 6.1\ \times\ 10^{-5}\ mg/kg\text{-}d$$

Example calculation for non-threshold (Whale Tail North Basin, Post-Closure [60 years]):

$$Dose\ for\ arsenic\ (non-threshold) = \frac{0.020\ mg/kg \times 0.1 \times\ 0.22\ kg/day}{70.7\ kg} \times 1 \times \frac{14\ days}{365\ days} \times \frac{60\ years}{80\ years}$$

$$Dose\ for\ arsenic\ (non-threshold) = 1.8\ \times\ 10^{-6}\ mg/kg\text{-}d$$

Table 12: Exposure Doses for Fish Tissue

POPC	Prediction Nodes	Exposure Dose (mg/kg-d)
Threshold Effects		
Arsenic	Whale Tail North Basin	6.1E-05
	Kangislulik Lake	5.4E-05
	Lake A15	4.9E-05
Non-Threshold Effects		
Arsenic	Whale Tail North Basin	1.8E-06
	Kangislulik Lake	1.5E-06
	Lake A15	1.4E-06

Notes: POPC = parameter of potential concern; mg/kg-d = milligram per kilogram per day.

6.3 Toxicity Assessment

The toxicity assessment involved a review of toxicity information for the POPC (e.g., arsenic) and included the selection of TRVs. When selecting TRVs, the type of health effect (e.g., non-threshold vs. threshold) and the pathway by which a receptor is exposed to the constituent (e.g., ingestion, dermal contact, inhalation) were considered.

For threshold constituents, a threshold level exists below which no adverse effects are anticipated to occur. In contrast, non-threshold constituents are considered to have some potential for risk of adverse effects at any level of exposure. Several organizations have developed classification systems based on the properties of chemicals (Health Canada 2021b, US EPA 2024b and IARC 2024). Arsenic is known to have non-threshold effects on both the oral pathway.

Toxicity reference values (termed reference doses or RfDs for non-carcinogenic [threshold] substances and slope factors or SFs for carcinogenic [non-threshold] substances) were obtained preferentially from Health Canada (2021b) and US EPA's Integrated Risk Information System (IRIS) (US EPA 2024b). The more current TRV was selected if a value was available from both agencies. Consideration was also given to study subjects (e.g., human versus animal study) and whether the critical endpoint was based on a no observed adverse effect level (NOAEL). In the absence of TRVs from Health Canada and US EPA, other sources such as US EPA Provisional Peer-Reviewed Toxicity Values (PPRTVs; US EPA 2024c), California Office of Environment Health Hazard Assessment (OEHHA 2023), Agency for Toxic Substances and Disease Registry (ATSDR 2024) and Netherlands National Institute of Public Health and the Environment (RIVM 2001; 2009) were consulted.

Health Canada (2010) defines acute (short-term duration) exposure as less than 14 days, sub-chronic (intermediate duration) exposure ranging from 14 days to 90 days, and chronic exposure (long-term duration) as greater than 90 days. Therefore, the exposure scenario assessed in this HHRA represents sub-chronic exposure (i.e., no more than 14 days).

For less-than-chronic threshold exposures, Health Canada (2021a) guidance recommends the use of a short-duration TRV developed for a similar or longer duration as the exposure scenario of interest. The selected TRVs are presented in Table 13, and a description of their basis is provided below.

Table 13: Selected TRVs for POPCs Evaluated in the Water Quality Assessment

POPC	Selected TRV	Duration	Endpoint	Source
Arsenic	RfD: 0.005 mg/kg-day	Acute (i.e., up to 14 days)	Gastrointestinal effects and facial edema	ATSDR 2007
	SF: 1.8 $(mg/kg\text{-}day)^{-1}$	Chronic	Cancer (bladder, lung, liver)	Health Canada 2021b

Notes: POPC = parameter of potential concern; TRV = toxicity reference value; RfD = reference dose; SF = slope factor; mg/kg-day = milligrams per kilogram body weight per day.

Arsenic

RfD: Health Canada did not derive a threshold subchronic TRV for arsenic, so the ATSDR acute oral minimum risk level (MRL) was used instead. The ATSDR acute oral MRL for arsenic is based on the lowest observed adverse effect level (LOAEL) of 0.5 mg/kg-day for gastrointestinal effects and facial edema in Japanese people who ingested arsenic-contaminated soy sauce for two to three weeks (Mizuta et al. 1956 as cited in ATSDR 2007). An uncertainty factor of ten for the use of a LOAEL was applied. The ATSDR defines acute exposure as one to 14 days, and the study exposure duration is similar (or longer) to the exposure scenario considered for the

water quality assessment (i.e., 14-day hunting trip). Therefore, the ATSDR acute oral MRL was selected as an appropriate TRV.

SF: The Health Canada slope factor is based on epidemiological studies where humans were exposed to 10 to greater than 600 µg/L arsenic in drinking water for less than or equal to 60 years (Morales et al. 2000, Chen et al. 1985, Wu et al. 1989; as cited in Health Canada 2006). The unit risks associated with ingestion of 1 µg/L of arsenic in drinking water ranged from $3.06x10^{-6}$ to $3.85x10^{-5}$ (95% upper bound ranging from $6.49x10^{-6}$ to $4.64x10^{-5}$). The most sensitive endpoint for both males and females was lung cancer. The overall unit risk associated with the ingestion of arsenic in drinking water was reported as a range, given that lifetime exposure to arsenic results in more than one cancer endpoint in different individuals. The above unit risk range has the liver cancer unit risk ($3.06x10^{-6}$) as its lower bound and the lung cancer unit risk ($3.85x10^{-5}$) as its upper bound. Based on these data, Health Canada (2006) derived an oral SF of 1.8 $(mg/kg\text{-}d)^{-1}$.

6.4 Risk Characterization

6.4.1 Water Quality

Using the approach described by Health Canada (2021a) to calculate health risks for contaminated water and using a target HQ of 0.2 and target incremental lifetime cancer risk (ILCR) of $3x10^{-5}$ (or 3 in 100,000) for arsenic, HQs and ILCRs were calculated for each location and POPC (Table 14). It is noted that an alternate target ILCR was used for the drinking water pathway for arsenic to be consistent with the estimated cancer risk levels associated with arsenic exposure at the Canadian Guideline for Drinking Water Quality (CGDWQ; Health Canada 2006) for arsenic, which ranges from 3 to 39 in 100,000 at the maximum acceptable concentration (MAC) of 10 µg/L and 8 to 97 in 100,000 at a concentration of 25 µg/L. Therefore, it was considered reasonable to adopt a target ILCR that is consistent with the MAC to ensure that risks due to the Project do not exceed those considered acceptable for the Canadian population.

Table 14: Risk Characterization for Water Quality – Human Health

POPC	Location	Estimated Risk
Threshold Effects – Hazard Quotients		
Arsenic	Whale Tail North Basin	0.10
	Kangislulik Lake	0.07
	Lake A15	0.05
Non-Threshold Effects – ILCR		
Arsenic	Whale Tail North Basin	2.6E-05
	Kangislulik Lake	1.8E-05
	Lake A15	1.3E-05

Notes: POPC = parameter of potential concern; ILCR = incremental lifetime cancer risk.

All calculated HQs were less than their target of 0.2, and all calculated ILCRs for arsenic were less than their target of $3x10^{-5}$. Therefore, threshold and non-threshold health risks are not expected for members of the public that may rely on any of the assessed waterbodies as their potable water supply should these receptors spend time in the area. As a result, water quality was not assessed further with respect to potential human health.

6.4.2 Fish Tissue Quality

Using the approach described by Health Canada (2021a) to calculate health risks for contaminated food and using a target HQ of 0.2 and target ILCR of 1E-05 (or 1 in 100,000), HQs and ILCRs were calculated for each location and POPC (Table 15).

Table 15: Risk Characterization for Fish Tissue

POPC	Location	Estimated Risk
Threshold Effects – Hazard Quotients		
Arsenic	Whale Tail North Basin	0.012
	Kangislulik Lake	0.011
	Lake A15	0.010
Non-Threshold Effects – ILCR		
Arsenic	Whale Tail North Basin	3.2E-06
	Kangislulik Lake	2.8E-06
	Lake A15	2.5E-06

Notes: POPC = parameter of potential concern; ILCR = incremental lifetime cancer risk.

All calculated HQs were less than their target of 0.2, and all calculated ILCRs were less than their target of $1x10^{-5}$. Therefore, threshold and non-threshold health risks are not expected for members of the public that may consume fish from any of the assessed water bodies. As a result, fish tissue quality was not assessed further with respect to potential human health effects.

6.5 Uncertainty Analysis – Human Health Risk Assessment

The key uncertainties that apply to the HHRA are described in Table 16. In general, conservative assumptions were applied in the HHRA to avoid underestimating risks. Detailed discussions of uncertainty related to the assessment of terrestrial health and aquatic health are available in Sections 7.2 and 8.2, respectively.

Table 16: Uncertainties in the Human Health Risk Assessment

Source of Uncertainty	Overestimate/ Underestimate/ Neutral?
The maximum concentrations of measured data from soil and water were used to represent the baseline in the HHRA. For screening purposes, the maximum concentrations plus 10% were used when determining whether predictions were expected to be measurably greater than the baseline. This is considered to be a reasonable approach by neither over- nor underestimating the potential range of baseline concentrations.	Neutral
The concentrations of POPCs in water considered in the HHRA were the maximum monthly predictions across all years of Post-Closure. It was conservatively assumed that the maximum concentration could occur throughout Post-Closure. In addition, water quality predictions are likely conservative as water management strategies will be implemented as described in Chapter 6 of the CRP (Agnico Eagle 2024a).	Overestimate
Two locations for Muskox hunting were identified through IQ and TK information gathered for the HHRA for the Whale Tail Expansion Project (Golder 2019a). However, caribou is the preferred animal for hunting, and recent information states that people are not travelling as far as the mine site for harvesting but prefer to stay within approximately 40 miles (approximately 64 km) of the community because of caribou availability there. Considering the above, it was considered that muskox hunting might occur for up to 14 days per year during an extended hunting trip. Exposure was considered to occur for 24 hours per day each day, as people would be spending most of their time outdoors and camping on the land.	Overestimate

Table 16: Uncertainties in the Human Health Risk Assessment

Source of Uncertainty	Overestimate/ Underestimate/ Neutral?
Two fishing locations (Pipedream Lake and Nutipilik Lake) were identified through IQ and TK information gathered for the HHRA for the Whale Tail Expansion Project (Golder 2019a). Neither of these locations were anticipated to be affected by the operation of the mine, as these lakes were not included in the water quality modelling. Therefore, the assumption that people could spend up to 14 days per year during an extended hunting trip at the waterbodies included in the water quality model, consuming surface water as drinking water and consuming fish caught from the modelled water bodies, is considered to be an overprediction of potential exposure.	Overestimate
There are no discrete receptors identified in the vicinity of the Meadowbank mine as people are not expected to use the area. Therefore, the country's food soil and vegetation monitoring locations were evaluated as an alternative.	Overestimate
It was considered that adults would be the most likely age group to spend time on extended hunting trips, given the remote location and that rough terrain would not be suitable for family hunting trips. The CRP states that the all-weather access road will be removed during closure, which also limits the accessibility of the former mine area to human receptors in post-closure.	Underestimate-Neutral
The fish tissue ingestion rate was adopted from Health Canada (2011). Site-specific fish ingestion rates are unavailable. However, given that the exposure scenario likely overestimates the number of days per year fish are consumed from the mine-influenced waterbodies, the fish quality assessment is overall considered to be conservative.	Neutral
For arsenic, a refined approach to estimating fish tissue concentrations is based upon predicted water concentrations was used. The equation from Williams et al. (2006) is based upon field and laboratory studies in which whole-body tissue residues of total arsenic were measured in comparison to total arsenic in water, resulting in a range of BCFs and BAFs. A concentration-dependent relationship was established that was statistically significant, and this relationship is considered to provide a realistic estimation of fish tissue concentrations. This approach is appropriate given there is evidence that the use of linear models to predict bioaccumulation for a chemical that has an inverse relationship between the BCF and exposure, such as arsenic, may over- or underestimate the chemical's potential bioaccumulation (McIntyre and Linton 2012).	Neutral-Overestimate
The TRVs used in the HHRA was selected from reputable sources, including Health Canada. The TRVs used in this HHRA are generally based on the most sensitive endpoints, with the application of safety factors to protect sensitive subpopulations. The uncertainty associated with TRVs is highly dependent on the number of studies available and whether the key study was based on humans (low uncertainty) or small mammals (high uncertainty) in the case of the human health effects assessment. When few studies are available, several types of safety factors must be applied to account for this uncertainty (e.g., factors for inter- and intraspecies sensitivity).	Neutral-Overestimate

Notes: HHRA = human health risk assessment; POPC = parameter of potential concern; IQ = Inuit Qaujimajatuqangit; TK = Traditional Knowledge; BCF = bioconcentration factor; BAF = bioaccumulation factor.

7.0 TERRESTRIAL HEALTH – ECOLOGICAL RISK ASSESSMENT

The objective of the terrestrial health ERA was to evaluate the potential risks to terrestrial receptors from the contamination associated with the historical operation of the Site as a gold mine. Potential risks to ecological receptors were evaluated for use of the Site following closure and reclamation of the Site based on Post-Closure environmental conditions (e.g., predicted soil and surface water quality data).

7.1 Problem Formulation

7.1.1 Receptors of Concern

Receptors evaluated in the ERA were selected to be consistent with the ERA for the Whale Tail Expansion Project (Golder 2019a) and the WCFSLRA Plan (Agnico Eagle 2024c). Receptor characteristics (including established body weights, food ingestion rates, and other key factors) are unavailable for all species identified as receptors of concern. As a result, representative species for which receptor characteristics are available were selected for assessment in the ERA, and one or two receptors (i.e., typically those with the lowest body weight) were selected to represent each feeding guild. There is no change in approach from the previous ERA for Whale Tail Expansion Project (Golder 2019a), with the exception of the addition of the Lapland longspur and northern red-backed vole for consistency with the WCFSLRA. The terrestrial receptors were considered in the ERA are presented in Table 17.

Table 17: Receptors of Concern - Terrestrial

Receptor Group	ROCs Identified	Receptor Evaluated in the ERA
Primary Producer (plant)	Moss/grass/shrub/tree/forb	Plant community
Invertebrates	Soil invertebrates	Soil invertebrate community
Ungulates	Barren-ground caribou (*Rangifer tarandus groenlandicus*), muskox (*Ovibos moschatus*)	Barren-ground caribou
Predatory Mammals	Grizzly bear (*Ursus arctos horribilis*), wolverine (*Gulo gulo*), Arctic wolf (*Canis lupus arctos*)	Wolverine
Raptors	Peregrine falcon (*Falco peregrinus*), gyrfalcon (*Falco rusticolus*), rough-legged hawk (*Buteo lagopus*), short-eared owl (*Asio flammeus*), snowy owl (*Bubo scandiacus*)	Peregrine falcon
Water Birds	Common loon (*Gavia immer*), red-throated loon (*Gavia stellata*), pacific loon (*Gavia pacifica*), yellow-billed loon (*Gavia adamsii*), Canada goose (*Branta canadensis*), snow goose (*Chen caerulescens*), long-tailed duck (*Clangula hyemalis*)	Common loon, Canada goose
Upland Birds	Lapland longspur (*Calcarius lapponicus*), horned lark (*Eremophila alpestris*), savanna sparrow (*Passerculus sandwichensis*), rock ptarmigan (*Lagopus mutus*), red-necked phalarope (*Phalaropus lobatus*), semipalmated sandpiper (*Calidris pusilla*)	Lapland longspur, Rock ptarmigan, semipalmated sandpiper
Small Mammals	Arctic hare (*Lepus arcticus*), Arctic ground squirrel (Sik Sik) (*Spermophilus parryi*), collared lemming (*Dicrostonyx groenlandicus*), northern red-backed vole (*Myodes rutilus*)	Arctic hare, Arctic ground squirrel (Sik Sik), northern red-backed vole

Notes: Species of concern (national, territorial or Committee on Status of Endangered Wildlife in Canada [COSEWIC] status) are indicated with underlined text.

7.1.2 Exposure Pathways

Exposure pathways are the means by which receptors come into contact with POPCs. For an exposure pathway to exist, a contaminant source, a release mechanism, transport media and a receptor must be present. Incomplete (or inoperable) and/or negligible pathways were not evaluated in the wildlife RA. Pathways deemed incomplete or negligible were not evaluated, and justification for their exclusion is provided below.

The following pathways were considered complete and were evaluated quantitatively:

- Direct contact with soil by terrestrial plants and soil invertebrates;
- Incidental soil ingestion by mammals and birds;
- Ingestion of plants and dietary items that have accumulated POPCs from soil by mammals and birds;
- Ingestion of plants and dietary items that have accumulated POPCs from water by mammals and birds; and
- Ingestion of surface water by mammals and birds.

The following pathways were considered incomplete or negligible and, therefore, were not evaluated:

- Direct contact with groundwater by plants and soil invertebrates: groundwater levels are present below the depth to which plants and soil invertebrates would be exposed (e.g., > 1.5 mbgs).
- Inhalation of soil vapour by mammals and birds: Most chemicals volatilize quickly from soil to air, where they are rapidly diluted and dispersed. In addition, the toxicity data necessary to evaluate this pathway of exposure are often lacking.
- Inhalation of dust by mammals and birds: The transfer factors necessary to evaluate inhalation by mammals and birds, and foliar uptake by plants are often lacking. This pathway is also considered to be negligible compared to direct contact/ingestion of soil.
- Dermal contact with soil by mammals and birds: Exposure via this pathway is expected to be negligible. The presence of fur and feathers of mammals and birds limits dermal contact with contaminated soil (Sample and Suter 1994; US EPA 2005b). Also, the data necessary to evaluate dermal contact is often lacking (Sample and Suter 1994; US EPA 1993) or, if available, based on studies in which the chemical is applied directly to the skin by shaving the fur from laboratory rodents (US EPA 2005b), a type of exposure that would not occur in the natural environment.

7.1.3 Identification of Parameters of Potential Concern

7.1.3.1 Soil

For the protection of wildlife, concentrations of chemicals in soil were screened against the CCME SQGs for residential land use (CCME 1999a) and the US EPA Ecological Soil Screening Levels (EcoSSLs; US EPA 2024d). If the maximum predicted concentration in soil for a particular metal was less than its respective screening value, then the metal was not retained for further evaluation. Screening values were unavailable for aluminum, bismuth, calcium, iron, lithium, magnesium, potassium, sodium, strontium, and titanium. These metals are commonly analyzed in environmental samples (as part of the standard suite of metals included within the analytical method) but generally have low toxicity at concentrations that occur in the environment (even at industrial sites). Many of these metals are naturally occurring in soil and are present in a toxicologically inert form. In addition, some are essential micro- and macronutrients. Although the following metals may be present in soil

under baseline and future conditions, they were excluded from further consideration in the POPC screening process based on their expected low toxicological hazard:

- Essential minerals such as calcium, magnesium, potassium, and sodium serve a variety of biochemical, intracellular, and ion balance purposes in tissues. These constituents are naturally occurring constituents that are included in routine analytical chemical analyses. Government agencies often do not develop regulatory criteria for these and other innocuous constituents. As these constituents are not known or expected to be associated with mine activities, they have been excluded as POPCs in the ERA.
- Trace elements such as bismuth and titanium are not commonly assessed in risk assessment because human and animal toxicity data for these compounds are lacking. These trace elements are not known or expected to be associated with mine activities (e.g., they were not identified as POPCs related to dust in the WCFSLRA Plan; Agnico Eagle 2024c). As such, they have been excluded as POPCs in the ERA.
- Aluminum and iron are naturally abundant in soils/rocks and are often present in forms that are relatively insoluble. The aluminum screening value is an EcoSSL, which is only required for soils where pH is less than 5.5; as soil pH is >5.5 at the Site, this screening value is not appliable to the Site. A screening value for iron is not available. These trace elements are not known or expected to be associated with mine activities (e.g., they were not identified as POPCs related to dust in the WCFSLRA Plan; Agnico Eagle 2024c). As such, they have been excluded as POPCs in the ERA.

Maximum predicted concentrations of arsenic, chromium, manganese, and nickel exceeded their respective screening values; however, maximum baseline concentrations of these metals also exceeded screening values. The incremental change from baseline was 0.6% and 1.7% for arsenic, 1.0% and 1.6% for chromium, and 0.7% and 1.6% for manganese, and 1.7% and 2.6% for nickel for Meadowbank and Whale Tail locations, respectively (Table B-3, Appendix B). These levels are well within the range of analytical uncertainty. For example, CCME (2016) notes that an acceptable relative percent difference between laboratory duplicates of soil samples is around 30% and between field duplicates is 60% due to matrix variability. The BC laboratory manual recommends that an acceptable DQO for laboratory duplicates of soil is 40% for high variability metals such as aluminum and 30% for other metals such as arsenic and iron. Thus, the changes from baseline of less than 3% for arsenic, chromium, manganese, and nickel soil concentrations are considered to be negligible, and no further assessment of metals in soil was required.

With the exception of one soil sample that had elevated metal concentrations that were determined to be anomalous, all measured soil concentrations collected from three sampling areas at the Whale Tail Site in 2021 were below screening values protective of terrestrial health (Agnico Eagle 2022).

7.1.3.2 Water and Fish Quality

Predicted water quality concentrations were compared to screening values protective of wildlife to identify POPCs for the terrestrial health ERA. These included the Livestock Watering Guidelines from Canadian Council of Ministers of the Environment (CCME 1999b) and the British Columbia Ministry of Environment and Climate Change Strategy (BC ENV 2023). In the absence of screening values from CCME and BC ENV, toxicological benchmarks for wildlife from Sample et al. (1996) were used as described below. Screening criteria protective of wildlife health are provided in Table D-4a (Appendix D).

Sample et al. (1996) derived benchmarks for water ingestion for several wildlife species and contaminants. The toxicological benchmarks for each species were derived using TRVs (NOAELs and LOAELs) from the toxicity tests that were subsequently scaled to the body weight of each wildlife species to derive species-specific TRVs. However, scaling TRVs to body weight to derive species-specific TRVs (i.e., allometric dose scaling) is no longer considered to be appropriate (Allard et al. 2010). As such, the toxicological benchmarks derived by Sample et al. (1996) were re-calculated by multiplying the LOAELs (NOAELs were used where LOAELs were not available) from the toxicity tests (as provided in Sample et al. [1996]) by the body weight of each receptor and dividing the water ingestion rate for the wildlife species, as per the equation below:

$$Toxicological\ Benchmark = \frac{LOAEL_{test\ species} \times Body\ Weight_{wildlife\ species}}{Water\ Intake_{wildlife\ species}}$$

The TRVs, body weights and water intakes provided by Sample et al. (1996) were used to re-calculate the benchmarks and are summarized in Table D-4b (Appendix D). Where TRVs were not available from Sample et al. (1996), TRVs were taken from Los Alamos National Laboratory (LANL 2017). The resulting toxicological benchmarks are also provided in Table D-4b (Appendix D). The most stringent of the benchmarks calculated for each wildlife species was used in the screening for each POPC. Use of the re-calculated Sample et al. (1996) benchmarks was considered appropriate because Sample et al. (1996) is cited by ECCC as a source in the derivation of wildlife TRVs for use at Federal Contaminated Sites Action Plan (FCSAP) sites (ECCC 2021a).

Predictions were provided for several nutrients (e.g., phosphorus) and inorganics (e.g., magnesium, potassium, sodium) for which livestock/wildlife health-based guidelines are not available nor have been developed. These parameters and substances are not considered to be directly toxic to wildlife health and were, therefore, not considered to be POPCs for terrestrial health.

Screening values for terrestrial health are not readily available for iron, lithium and total ammonia, and aquatic life criteria were considered to be overly conservative. These parameters are not expected to be toxic to wildlife and rationale for exclusion as POPCs is described below.

- There was no available guideline for iron; however, it is an essential mineral for mammals and birds. The US EPA published a toxicity reference value for iron based on the geometric mean of the lowest observed adverse effect levels for decreased body weight in rats; however, the effect was attributed to the decreased palatability of water as opposed to the toxicity of the iron itself (US EPA 2006). Based on the above, iron is unlikely to pose risks to terrestrial mammals and birds and was not retained as a POPC.
- Predictions were provided for lithium; however, screening values for terrestrial health are not readily available. Due to the lack of human and animal data, lithium is not commonly assessed in risk assessment and was not retained as a POPC.
- A screening value for total ammonia is not available for the protection of wildlife consuming water as there is insufficient information to develop one. In addition, a screening value is not considered necessary as terrestrial mammals and birds have evolved mechanisms to excrete ammonia by converting it to urea or uric acid, respectively. Ammonia is a by-product of metabolism of nitrogen-containing compounds like proteins and nucleic acids in wildlife receptors. As such, wildlife receptors have evolved mechanisms for removing ammonia from the body, such as by converting it to urea (which is excreted in urine) in mammals or to uric acid in birds (Molnar and Gair 2015). In addition, ammonia is a component of the nitrogen cycle and can be oxidized in the environment by microorganisms into nitrate and nitrite, and nitrate and nitrite concentrations in

surface water were below the guidelines for wildlife. Based on the above, ammonia was not retained as a POPC for wildlife.

Identification of Parameters of Potential Concern - Results

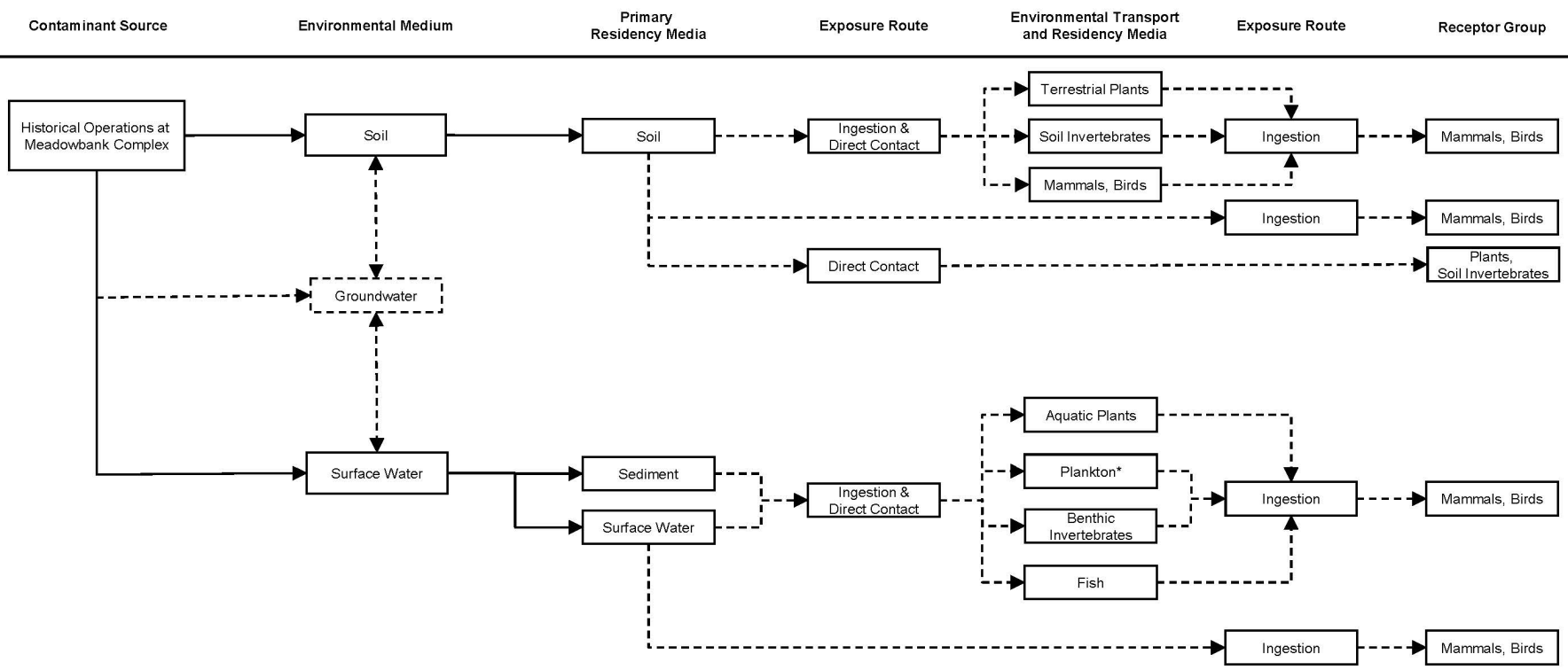
During the Post-Closure period, the maximum predicted concentrations for both Meadowbank and Whale Tail waterbodies did not exceed the screening values identified in Table D-4a and Table D-4b (Appendix D). The complete screening results are provided in Table D-5 (Meadowbank) and Table D-6 (Whale Tail) (Appendix D).

7.1.4 Conceptual Site Model

A CSM (Figure 6) was developed for terrestrial health based upon the primary pathways identified above (Section 7.1.2). The exposure pathways between historical operations at Meadowbank Complex, intermediate residency media (i.e., the aspects of the environment that that may experience a change in quality due to mine activities/emissions), and receptors are shown to be either complete or incomplete. Where pathways are incomplete, quantitative assessment was not carried out given that environmental quality was not anticipated to differ from baseline conditions and/or to be above generic guidelines based on the POPC screening in Section 7.1.3. There were no POPCs identified in soil or surface water; therefore, no complete pathways were carried forward for further assessment in the terrestrial health ERA.

Conceptual Site Model for the Meadowbank Complex Closure and Reclamation Plan Ecological Risk Assessment - Terrestrial Health

FIGURE 6



NOTES

* Phytoplankton and zooplankton

Solid lines indicate pathways that were considered to be complete and quantitatively evaluated in the terrestrial health risk assessment.

Dashed lines indicate pathways that were considered to be incomplete (i.e., no COPCs were identified in site media).

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7.2 Uncertainty Analysis – Terrestrial Health ERA

The key uncertainties that apply to the terrestrial health ERA are described in Table 18. In general, conservative assumptions were applied in the terrestrial health ERA to avoid underestimating risks.

Table 18: Uncertainties in the Terrestrial Health ERA

Source of Uncertainty	Overestimate/ Underestimate/Neutral?
The maximum concentrations of measured data from soil and water were used to represent baseline in the terrestrial health ERA. For screening purposes, the maximum concentrations plus 10% were used when determining whether predictions were expected to be measurably greater than baseline. This is considered to be a reasonable approach by neither over- nor underestimating the potential range of baseline concentrations.	Neutral
The concentrations of POPCs in water considered in the ERA were the maximum monthly predictions across all years of Post-Closure. It was conservatively assumed that the maximum concentration could occur throughout Post-Closure. In addition, water quality predictions are likely conservative as water management strategies will be implemented as described in Chapter 6 of the CRP (Agnico Eagle 2024a).	Overestimate
It was assumed that wildlife would obtain 100% of their drinking water from the mine-influenced waterbodies, when in reality many receptors have larger home ranges and would obtain drinking water from several waterbodies uninfluenced by the mine.	Overestimate

Notes: ERA = ecological risk assessment; POPC = parameters of potential concern.

8.0 AQUATIC HEALTH – ECOLOGICAL RISK ASSESSMENT

The objective of the aquatic health ERA was to evaluate the potential risks to aquatic receptors from the contamination associated with the historical operation of the Site as a gold mine. Potential risks to aquatic receptors were evaluated for the use of the Site following closure and reclamation of the Site based on Post-Closure environmental conditions (e.g., predicted surface water quality data).

8.1 Problem Formulation

8.1.1 Receptors of Concern

The selected aquatic ROCs are described in Table 19 and were consistent with the ERA for the Whale Tail Expansion Project (Golder 2019a).

Table 19: Receptors of Concern and Rationale for Selection - Aquatic Health

Receptor Group	Rationale for Selection
Fish (Arctic Char, Arctic Grayling[(a)], Lake Trout, Round Whitefish)	■ Fish are an important food source for the residents of Baker Lake, and fishing activities occur year-round. ■ Fish are a prey item for piscivorous wildlife. ■ Several forage and sport fish species were identified in the mine area.
Aquatic Invertebrates	■ Includes planktonic and benthic invertebrates; benthic invertebrates play a vital role in nutrient cycling and the breakdown of detritus in the aquatic environment; important food source for fish; sensitive to contamination; various species identified in the mine area.
Aquatic Plants and Algae	■ Important food source for fish; aquatic plants provide habitat to other aquatic organisms; various species identified in the mine area.

Notes: The Arctic Grayling is classified as a sensitive species in the Northwest Territories.

During the baseline wildlife surveys, no amphibians or reptiles were found (Cumberland 2005b); therefore, these were not identified as ROCs.

8.1.2 Exposure Pathways

The following exposure pathways were considered complete and were evaluated quantitatively in the aquatic health ERA:

- Direct contact with surface water by fish, aquatic invertebrates, aquatic plants and algae.
- Ingestion of plants and dietary items that have accumulated POPCs from water by fish.

8.1.3 Identification of Parameters of Potential Concern

Screening Process

POPCs in surface water were identified using a two-step process:

1) Step 1 consisted of comparing maximum predicted water quality concentrations to baseline concentrations plus 10%, as described in Section 4.2, and to long-term screening values protective of aquatic life. For consistency with the CREMP for the site, the HHERA used the CREMP thresholds (Azimuth 2022) as screening values for aquatic life. CREMP thresholds were developed as described in Azimuth (2022); thresholds were either based on regulatory guidelines (e.g., CCME water quality guidelines for the protection of freshwater aquatic life) or baseline conditions. For aluminum, the CREMP provides thresholds for both total and dissolved phases; therefore, water quality predictions were compared to both screening values. The selected screening values for aquatic life and the rationale for their basis are provided in Table D-7 (Appendix D). The results of this step are provided in Table D-8 and Table D-9 (Appendix D).

   For some parameters, screening values are dependent on pH, dissolved organic carbon (DOC), temperature or hardness. For most parameters, measured baseline levels were used to be consistent with the approach in the CREMP. For the manganese and zinc screening values, measured baseline DOC and/or pH were used; however, hardness was calculated from predicted calcium and magnesium concentrations in each waterbody. The minimum predicted hardness was used as it leads to the most conservative estimates of hardness-dependent screening values. For Second Portage Lake and Third Portage Lake North and South, average measured hardness concentrations from 2023 were used.

   Comparison to screening values was considered to represent a conservative evaluation of the potential for the predicted concentrations to elicit adverse effects. Therefore, parameters with predicted concentrations below screening values were considered to pose no risk to aquatic life and were not identified as POPCs. If the predicted concentration was greater than the screening value, the parameter was identified as a POPC and carried forward in the effects assessment.

   In the absence of a CREMP threshold, alternative screening values were considered on a case-by-case basis (e.g., radium), or the parameter was carried forward to Step 2 of the screening process.

2) In Step 2, the modelled parameters were assessed to determine which had the potential to adversely affect aquatic life and which parameters could be excluded from further consideration for one of the following reasons:

   - Potential effects associated with the parameter was assessed elsewhere in the CRP;
   - The parameter has been shown to have limited potential to affect aquatic life (i.e., innocuous substances) and/or
   - The parameter is a component of another parameter (e.g., total dissolved solids [TDS]) which is a more suitable focus point for the aquatic life effects assessment.

Parameters excluded during this step of the screening process were:

- Total phosphorus, because this parameter is not considered to have toxicological effects.
- Calcium, magnesium, potassium, and sodium are essential nutrients (ICMM 2007) and are not expected to result in adverse health effects to aquatic life. Furthermore, major ions such as these can effectively reduce metal toxicity in aquatic biota through competitive interactions at uptake sites (CCME 2018). In addition, these are components of TDS that are evaluated qualitatively in the aquatic health ERA. As such, these parameters were not identified as POPCs for aquatic health.

Results

Based on the screening process outlined above, the POPCs identified for aquatic health are presented in Table 20.

Table 20: Summary of POPCs for Aquatic Health

POPC	Prediction Node	Screening Value (mg/L)	Baseline + 10% (mg/L)	Maximum Predicted Concentration (mg/L)
Copper	Portage Pit	0.0020	0.0011	0.0021

Notes: POPC = parameters of potential concern; mg/L = milligrams per litre.

Predicted copper concentrations exceeded the aquatic health screening value and maximum baseline + 10% in Portage Pit. However, water quality predictions are likely conservative as water management strategies will be implemented as described in Chapter 6 of the CRP (Agnico Eagle 2024a), which will likely result in lower metal concentrations. Copper was retained as a POPC for further assessment in the aquatic health ERA.

Predicted beryllium concentrations exceeded the aquatic health screening value in Vault Pit, Portage Pit, and Wally Lake; however, these predicted concentrations were lower than the maximum baseline + 10% and were not retained for further assessment in the aquatic health ERA.

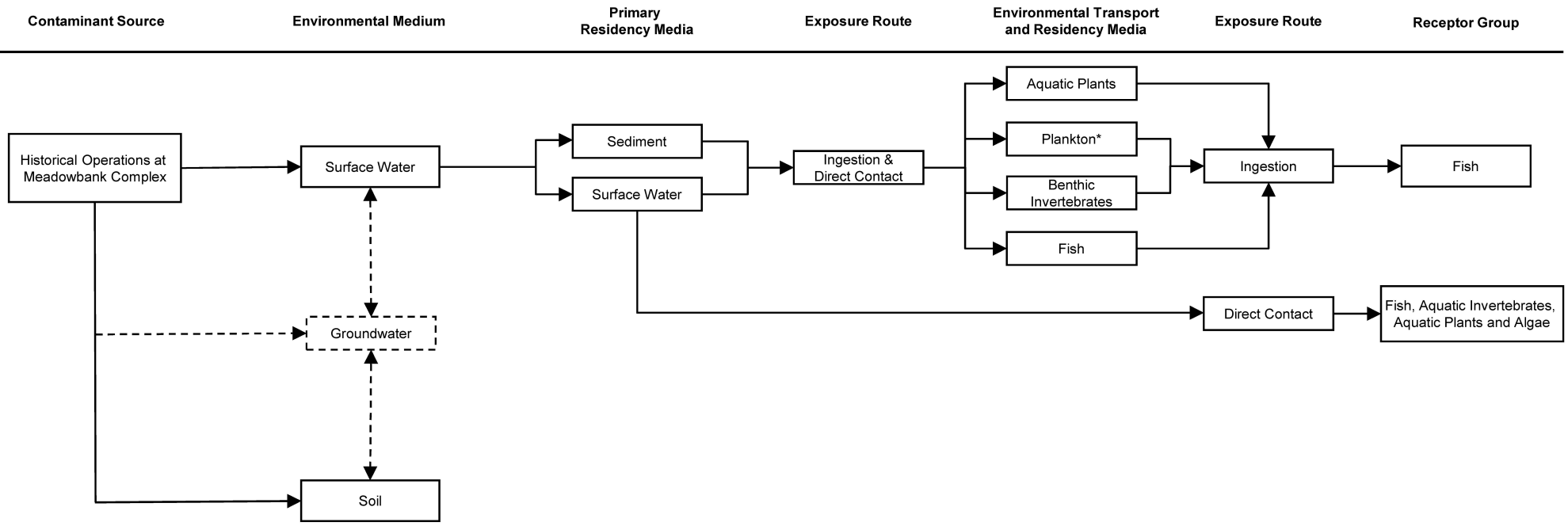
8.1.4 Conceptual Site Model

A CSM (Figure 7) was developed for aquatic life based on the primary pathways identified above (Section 8.1.2). The exposure pathways between historical operations at Meadowbank Complex, intermediate residency media (i.e., the aspects of the environment that may experience a change in quality due to mine activities/emissions), and receptors are shown to be either complete or incomplete. Where pathways are incomplete, quantitative assessment was not carried out, given that environmental quality was not anticipated to differ from baseline conditions. Complete pathways on the figure indicate that a change to environmental quality was predicted, and a quantitative assessment of the potential effects to aquatic life was carried out.

As a result of the POPC screening, the pathways for direct contact with surface water and ingestion of dietary items that have accumulated POPCs from surface water were determined to be negligible for all POPCs, except for copper, given that concentrations were below screening values protective of freshwater aquatic life. Copper was carried forward for further assessment in the aquatic health ERA.

Conceptual Site Model for the Meadowbank Complex Closure and Reclamation Plan Ecological Risk Assessment - Aquatic Health

FIGURE 7



NOTES

* Phytoplankton and zooplankton

Solid lines indicate pathways that were considered to be complete and quantitatively evaluated in the aquatic health risk assessment.

Dashed lines indicate pathways that were considered to be incomplete (i.e., no COPCs were identified in site media).

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8.2 Exposure Assessment

The exposure assessment determines the amount of POPC to which each of the receptors is exposed via each complete exposure pathway. For aquatic life, exposure is expressed as the concentrations of the POPCs in the media to which the receptor is exposed (i.e., in mg/L in water). This permits the evaluation of exposure relative to the toxicity benchmarks that are also expressed in this way.

Exposure of aquatic receptors to copper was assessed using predicted maximum concentrations in water at Portage Pit (i.e., 0.0021 mg/L). Modelled predictions are for dissolved metals, which are assumed to be equal to total metals. Copper was only assessed at Portage Pit because this was the only location where it was identified as a POPC.

8.3 Toxicity Assessment

The toxicity assessment characterizes potential effects associated with POPCs. It provides a basis for evaluating what is an acceptable exposure and what level of exposure may adversely affect the receptors. This involves determining concentrations that receptors can be exposed to without adverse effects. For aquatic life, this is expressed as an acceptable concentration in the media to which the receptor is exposed (i.e., in water in mg/L) and is referred to as the toxicity benchmark. These values are used as thresholds for comparison with exposure concentrations during risk characterization.

The copper screening value for aquatic health was the CREMP threshold (Azimuth 2022), which is based on the hardness-dependent CCME long-term water quality guideline for the protection of freshwater aquatic life (Table D-7, Appendix D). However, this value was not selected as the toxicity benchmark as research since the development of the CCME guideline has indicated that copper toxicity is modified by several exposure and toxicity modifying factors (ETMFs), such as hardness, DOC, and pH.

Mechanistic-based models, such as the Biotic Ligand Model (BLM) and empirical-based models, such as a Multiple Linear Regression (MLR) model, are available to normalize toxicity data to site-specific ETMF conditions and develop long-term (chronic) benchmarks. The Federal Water Quality Guideline BLM (ECCC 2021b) was evaluated for potential application as the toxicity benchmark as it is the most current available model from a Canadian jurisdiction. However, a comparison of the model output relative to measured background dissolved copper in Third Portage Lake and Wally Lake indicated that the BLM-generated benchmark values were generally below the background concentration (95th percentile and average) in the lakes. The BLM was considered to be overly conservative for the water conditions present at Meadowbank Complex and is not suitable to apply as the toxicity benchmark.

An MLR model available from Brix et al. (2017; 2021) was also evaluated for potential application as a toxicity benchmark. The MLR model is based on current science, integrates a Type A species sensitivity distribution approach to guideline derivation, and meets the intended level of protection of aquatic life per CCME (2007) protocols. In addition, a comparison of the model output relative to measured background dissolved copper in Third Portage Lake and Wally Lake indicated that the MLR-generated benchmark values were above natural background conditions in the lakes. Therefore, the MLR model was considered most suitable for the site and the MLR-based benchmark was selected rather than the BLM-based model.

The proposed toxicity benchmark for copper is an ETMF-adjusted equation derived using an MLR model:

$$Toxicity\ benchmark\ (\mu g/L) = \exp[0.855 \times \ln\{DOC\} + 0.221 \times \ln\{Hardness\} + 0.216 \times pH - 1.747]$$

The toxicity benchmark calculated using the above equation is applicable over a DOC range of 0.5 to 15 mg/L, hardness range of 17 to 271 mg/L (as $CaCO_3$), and a pH range of 6.5 to 8.5.

To calculate the toxicity benchmark for Portage Pit in Post-Closure, the median baseline field pH (7.12) and DOC (1.67) for Meadowbank waterbodies and predicted minimum hardness (20 mg/L, calculated from predicted calcium and magnesium) were used. The resulting toxicity benchmark was 0.0024 mg/L.

8.4 Risk Characterization

Risk characterization determines the potential for risks to aquatic receptors. Risks to aquatic receptors were assessed on a quantitative basis by calculating HQs. The HQ is the ratio of the estimated exposure concentration from the exposure assessment (i.e., predicted concentration of copper in surface water) to the chronic toxicity benchmark developed in the toxicity assessment. A target HQ of one was used in the assessment which is consistent with current guidance (CCME 2020).

The calculated HQ for copper in Portage Pit of 0.87 was less than one, indicating that risks to aquatic health are not expected. Furthermore, implementing the planned water management strategies described in Chapter 6 of the CRP (Agnico Eagle 2024a) will likely reduce metal concentrations compared to the surface water predictions used the aquatic health ERA. This provides higher confidence that risks to aquatic health are unlikely.

8.5 Uncertainty Analysis – Aquatic Health ERA

The key uncertainties that apply to the aquatic health ERA are described in Table 21. In general, conservative assumptions were applied in the aquatic ERA to avoid underestimating risks.

Table 21: Uncertainties in the Aquatic Health Risk Assessment

Source of Uncertainty	Overestimate/ Underestimate/Neutral?
The maximum concentrations of measured data from water were used to represent baseline in the ERA. For screening purposes, the maximum concentrations plus 10% were used when determining whether predictions were expected to be measurably greater than baseline. This is considered to be a reasonable approach by neither over- nor underestimating the potential range of baseline concentrations.	Neutral
The concentrations of POPCs in water considered in the ERA were the maximum of monthly predictions across all years of Post-Closure. It was conservatively assumed that the maximum concentration could occur throughout Post-Closure, which likely over-estimates exposure. In addition, water quality predictions are likely conservative as water management strategies will be implemented as described in Chapter 6 of the CRP (Agnico Eagle 2024a).	Overestimate
Individual survival, growth, reproduction, development and population changes were used as endpoints for aquatic life, but these do not necessarily translate into ecologically relevant population-level effects.	Overestimate
The potential for additive effects between POPCs was not considered for aquatic life.	Neutral-Underestimate
Acclimation and adaptation were not considered for aquatic life. However, natural populations chronically exposed to metals often exhibit increased tolerance to exposure relative to unexposed or naïve populations such as those used in laboratory studies upon which the screening values are based.	Overestimate
Copper was identified as a POPC as predicted concentrations exceeded generic water quality guidelines during Post-Closure. However, water quality predictions are likely conservative as water management strategies will be implemented as described in Chapter 6 of the CRP (Agnico Eagle 2024a).	Overestimate

Notes: ERA = ecological risk assessment; POPC = parameters of potential concern.

9.0 CONCLUSIONS OF THE HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

The HHRA evaluated a member of the public who may have been exposed to soil, water and country foods during Post-Closure at the Meadowbank Complex. Based on the screening predicted soil and surface water against generic guidelines and baseline conditions, arsenic was retained for further evaluation of ingestion of surface water and ingestion of fish in Whale Tail North Basin, Kangislulik Lake and Lake A15. The exposure assessment considered how likely members of the public would use of these waterbodies for potable water or consumption of fish. Given the distance from the nearest community, the main travel routes and the rough terrain in this area, it is unlikely that people would be at the discrete receptor locations near these waterbodies on a long-term (chronic) basis. To allow for a conservative estimate of exposure, it was assumed that adults may visit the area seasonally in the summer months for up to 14 days per year during extended hunting trips, during which they may rely on nearby lakes for potable water and food (fish) during the trip. The risk was thus calculated assuming a 14-day exposure. All calculated HQs were less than their target of 0.2, and all calculated ILCRs for arsenic were less than their target of $3x10^{-5}$. Therefore, threshold and non-threshold health risks are not expected for members of the public that may rely on any of the assessed waterbodies as their potable water supply or fish consumption during a 14-day hunting trip in the area.

The terrestrial health ERA evaluated terrestrial ecological receptors (i.e., terrestrial plants and soil invertebrates, mammals and birds) that may be exposed to soil and surface water during Post-Closure at the Meadowbank Complex. Based on screening predicted soil and surface water concentrations against generic guidelines and baseline conditions, no POPCs were identified in soil or surface water. Therefore, no complete pathways were carried forward for further assessment in the terrestrial health ERA.

The aquatic health ERA evaluated aquatic receptors (i.e., aquatic plants and algae, aquatic invertebrates and fish) that may be exposed to water during Post-Closure at the Meadowbank Complex. Based on the screening predicted surface water concentrations against generic guidelines and baseline conditions, the copper in Portage Pit was the only POPC identified in surface water. However, the results of the risk characterization indicated that risks to aquatic health are not expected.

Overall, there were negligible risks to human, terrestrial and aquatic receptors as a result of predicted Post-Closure conditions at the Meadowbank Complex.

Signature Page

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APPENDIX A

Baseline and Existing Conditions Soil Data

Table A-1: Summary Statistics for Baseline Soil Quality

Parameter	Meadowbank (Azimuth 2006)								Whale Tail (Golder 2019)								Overall Maximum (mg/kg dw)
	Sample Size	Detection Frequency (%)	Minimum (mg/kg dw)	Maximum (mg/kg dw)	Mean (mg/kg dw)	Standard Deviation (mg/kg dw)	90th Percentile (mg/kg dw)	Detection Limit (mg/kg dw)	Sample Size	Detection Frequency (%)	Minimum (mg/kg dw)	Maximum (mg/kg dw)	Mean (mg/kg dw)	Standard Deviation (mg/kg dw)	90th Percentile (mg/kg dw)	Detection Limit (mg/kg dw)	
Physical Tests																	
pH (1:2 soil:water)	50	100	4.39	6.79	5.58	0.65	6.36	-	15	100	4.59	5.69	5.34	0.33	5.68	-	6.79
Metals																	
Aluminum (Al)	-	-	-	-	-	-	-	-	15	100	6,030	9,960	7,689	1,382	9,356	50	9,960
Antimony (Sb)	50	0	<10	<10	-	-	-	<10	15	0	<0.10	<0.10	-	-	-	0.1	<10
Arsenic (As)	50	52	<5	173	12.6	24.9	24.5	<5.0	15	100	2.04	12.9	4.91	2.78	8.14	0.1	173
Barium (Ba)	50	100	20.3	174	43.9	25.3	55.8	-	15	100	14.1	86.8	32.6	17.9	47.6	0.5	174
Beryllium (Be)	50	14	<0.5	1.13	-	-	-	<0.50	15	100	0.22	0.54	0.36	0.09	0.49	0.1	1.13
Bismuth (Bi)	-	-	-	-	-	-	-	-	15	40	<0.2	0.3	-	-	-	0.2	0.3
Cadmium (Cd)	50	8	<0.5	0.62	-	-	-	<0.50	15	100	0.026	0.061	0.039	0.008	0.047	0.02	0.62
Calcium (Ca)	-	-	-	-	-	-	-	-	15	100	1,130	3,620	2,622	767	3,436	50	3,620
Chromium (Cr)	50	100	8.6	193	58	47.4	124.9	-	15	100	14.1	140	44.2	33.1	84.5	0.5	193
Cobalt (Co)	50	100	2.3	16.4	7.8	3.8	13.5	-	15	100	4.08	11.6	6.43	2.21	9.06	0.1	16.4
Copper (Cu)	50	100	2.9	26.1	10.2	6.2	20	-	15	100	2.94	10.1	5.85	2.19	9.03	0.5	26.1
Iron (Fe)	-	-	-	-	-	-	-	-	15	100	13,600	21,500	17,760	2,659	21,200	50	21,500
Lead (Pb)	50	2	<30	55	-	-	-	<30	15	100	4.6	7.92	6.01	1.06	7.42	0.5	55
Lithium (Li)	-	-	-	-	-	-	-	-	15	100	6.4	11.7	8.9	1.7	11.1	2	11.7
Magnesium (Mg)	-	-	-	-	-	-	-	-	15	100	2,920	8,810	4,595	1,606	6,374	20	8,810
Manganese (Mn)	50	100	135	721	320	106	436	-	15	100	147	450	247	87	377	1	721
Molybdenum (Mo)	50	0	<4	<4	-	-	-	<4.0	15	100	0.25	0.51	0.35	0.08	0.46	0.1	0.51
Nickel (Ni)	50	98	5	97.3	29.3	23	60.4	<5.0	15	100	7.87	62.9	22.08	13.91	36.46	0.5	97.3
Potassium (K)	-	-	-	-	-	-	-	-	15	100	580	1,890	918	368	1416	100	1,890
Selenium (Se)	50	2	0.1	<0.5	-	-	-	-	15	0	<0.20	<0.20	-	-	-	0.2	0.1
Silver (Ag)	50	0	<2.0	<2.0	-	-	-	-	15	0	<0.10	<0.10	-	-	-	0.1	<2.0
Sodium (Na)	-	-	-	-	-	-	-	-	15	73	<50	113	58	25	81	50	113
Strontium (Sr)	50	100	7.63	39.8	15.46	7.49	25.26	-	15	100	12.7	42.6	28.3	8.1	37.7	0.5	42.6
Tin (Sn)	50	0	<5.0	<5.0	-	-	-		15	0	<2.0	<2.0	-	-	-	2	<5
Titanium (Ti)	-	-	-	-	-	-	-	-	15	100	304	816	618	144	780	1	816
Uranium (U)	-	-	-	-	-	-	-	-	15	100	0.9	3.08	1.76	0.63	2.63	0.05	3.08
Vanadium (V)	50	100	4.8	32.5	15.9	6.8	25.9	-	15	100	11.8	25	17	4.1	23.6	0.2	32.5
Zinc (Zn)	50	100	20.8	64.5	38.6	11	54.8	-	15	100	23.4	41.4	30.5	5	36.7	2	64.5

Notes:
"-" = not analyzed or information not reporte
mg/kg dw = milligram per kilogram dry weigh
One-half the detection limit was substituted for non-detect values when calculating summary statisti
In cases where 50% or more of data were reported as non-detected, no mean or standard deviation was calculat

References:
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Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		T1-NEAR FIELD STN.1 SOIL	T1-NEAR FIELD STN.2 SOIL	T1-NEAR FIELD STN.3 SOIL	T1-NEAR FIELD STN.4 SOIL	T1-NEAR FIELD STN.5 SOIL	T2-FAR FIELD STN.1 SOIL	T2-FAR FIELD STN.2 SOIL	T2-FAR FIELD STN.3 SOIL	T2-FAR FIELD STN.4 SOIL	T2-FAR FIELD STN.5 SOIL	T3-NEAR FIELD STN.1 SOIL	T3-NEAR FIELD STN.2 SOIL	T3-NEAR FIELD STN.3 SOIL	T3-NEAR FIELD STN.4 SOIL	T3-NEAR FIELD STN.5 SOIL	T4-FAR FIELD STN.1 SOIL	T4-FAR FIELD STN.2 SOIL
Date Sampled		17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	15-Aug-2011	15-Aug-2011
ALS Sample ID		L1051858-181	L1051858-185	L1051858-189	L1051858-193	L1051858-197	L1051858-121	L1051858-125	L1051858-129	L1051858-133	L1051858-137	L1051858-101	L1051858-105	L1051858-109	L1051858-113	L1051858-117	L1051858-61	L1051858-65
Physical Tests																		
pH (1:2 soil:water)	No units	5.68	6.13	6.10	6.04	6.14	6.24	6.34	6.53	5.05	5.08	5.96	6.28	6.31	5.34	6.31	6.03	6.10
Metals																		
Aluminum (Al)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	mg/kg dw	<0.10	<0.10	0.15	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic (As)	mg/kg dw	4.53	2.98	7.69	3.98	3.18	2.13	1.54	1.84	0.809	1.52	2.09	2.26	2.45	3.46	1.94	2.45	2.12
Barium (Ba)	mg/kg dw	34.4	30.0	54.6	32.5	24.6	28.2	19.7	25.4	13.2	20.3	23.1	22.1	28.7	39.8	26.3	35.5	30.8
Beryllium (Be)	mg/kg dw	0.51	0.41	0.72	0.46	0.35	0.41	0.39	0.32	0.23	0.34	0.39	0.35	0.40	0.45	0.49	0.42	0.34
Bismuth (Bi)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/kg dw	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Calcium (Ca)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/kg dw	35.9	23.9	51.1	32.3	27.0	18.1	13.3	14.4	4.56	20.1	14.9	20.1	23.0	28.1	14.6	17.1	16.4
Cobalt (Co)	mg/kg dw	7.81	5.34	13.0	6.95	5.34	4.39	3.67	3.94	2.49	4.21	4.88	4.02	5.94	6.05	3.96	4.67	4.79
Copper (Cu)	mg/kg dw	10.2	6.34	27.9	9.10	7.07	4.76	3.37	3.92	2.02	3.54	4.27	3.90	5.02	7.30	3.33	5.67	4.73
Iron (Fe)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg dw	7.40	5.42	9.13	6.00	6.14	6.08	5.87	5.43	3.17	5.59	4.80	5.05	5.87	6.83	4.62	5.52	5.38
Lithium (Li)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	mg/kg dw	1.01	<0.50	1.35	0.66	0.66	0.67	0.64	0.53	<0.50	0.59	0.69	0.51	0.78	0.86	0.65	1.01	0.89
Nickel (Ni)	mg/kg dw	20.4	13.1	35.1	18.2	15.2	9.28	6.69	7.96	3.05	9.82	9.24	10.8	13.1	15.8	8.76	9.65	9.86
Potassium (K)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium (Na)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	mg/kg dw	0.113	0.106	0.149	0.108	0.094	0.120	0.094	0.101	0.072	0.101	0.111	0.103	0.131	0.136	0.147	0.129	0.127
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	mg/kg dw	2.61	2.01	4.04	2.40	2.35	3.74	2.40	3.22	1.25	2.46	1.94	1.56	2.33	3.77	1.73	2.96	2.73
Vanadium (V)	mg/kg dw	20.2	14.9	26.0	17.4	14.0	13.1	10.5	12.2	6.18	11.1	12.1	13.7	15.1	17.0	13.2	14.6	14.4
Zinc (Zn)	mg/kg dw	32.6	30.1	49.6	31.9	26.7	25.9	24.0	22.1	18.1	24.2	25.5	26.0	27.1	32.3	29.4	29.2	27.0

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		T4-FAR FIELD STN.3 SOIL	T4-FAR FIELD STN.4 SOIL	T4-FAR FIELD STN.5 SOIL	T5-FAR FIELD STN.1 SOIL	T5-FAR FIELD STN.2 SOIL	T5-FAR FIELD STN.3 SOIL	T5-FAR FIELD STN.4 SOIL	T5-FAR FIELD STN.5 SOIL	T6-SOUTH ISLAND STN.1 SOIL	T6-SOUTH ISLAND STN.2 SOIL	T6-SOUTH ISLAND STN.3 SOIL	T6-SOUTH ISLAND STN.4 SOIL	T6-SOUTH ISLAND STN.5 SOIL	T7-NEAR FIELD STN.1 SOIL	T7-NEAR FIELD STN.2 SOIL	T7-NEAR FIELD STN.3 SOIL	T7-NEAR FIELD STN.4 SOIL
Date Sampled		15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011
ALS Sample ID		L1051858-69	L1051858-73	L1051858-77	L1051858-81	L1051858-85	L1051858-89	L1051858-93	L1051858-97	L1051858-141	L1051858-145	L1051858-149	L1051858-153	L1051858-157	L1051858-161	L1051858-165	L1051858-169	L1051858-173
Physical Tests																		
pH (1:2 soil:water)	No units	6.20	6.42	4.91	6.19	6.08	5.77	6.46	6.06	5.61	6.31	6.59	5.18	6.05	6.12	6.08	6.06	5.75
Metals																		
Aluminum (Al)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.13	0.14	0.18	0.12
Arsenic (As)	mg/kg dw	1.90	2.46	3.71	6.54	2.54	4.04	2.31	19.4	3.08	3.02	5.21	4.90	2.73	19.1	24.3	16.9	20.4
Barium (Ba)	mg/kg dw	25.4	34.8	53.0	23.5	20.5	26.2	19.0	23.4	26.2	25.6	43.8	28.4	31.7	28.8	25.6	25.6	18.9
Beryllium (Be)	mg/kg dw	0.34	0.42	0.62	0.30	0.23	0.26	0.21	0.29	0.22	0.27	0.34	0.28	0.29	0.45	0.38	0.29	0.29
Bismuth (Bi)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/kg dw	<0.050	<0.050	0.061	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	0.064	<0.050	<0.050	0.063	0.078	0.113	0.159
Calcium (Ca)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/kg dw	14.1	18.0	33.1	55.9	29.3	40.6	45.5	75.7	28.3	38.6	45.1	50.6	35.7	38.7	53.0	44.4	28.0
Cobalt (Co)	mg/kg dw	3.85	5.12	6.67	8.32	4.72	5.61	4.80	7.45	4.63	5.14	7.42	7.09	5.05	10.1	12.8	10.5	8.07
Copper (Cu)	mg/kg dw	3.80	5.22	6.20	11.7	4.27	7.31	4.59	10.0	5.95	5.29	12.6	9.03	6.35	18.6	19.2	15.8	12.2
Iron (Fe)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg dw	5.39	5.79	10.2	9.33	4.79	4.92	4.13	9.69	5.14	4.80	6.97	5.61	5.44	13.5	14.7	11.1	13.7
Lithium (Li)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	mg/kg dw	0.78	0.92	2.11	0.66	<0.50	0.50	0.53	<0.50	0.53	0.57	0.66	0.58	0.75	1.21	0.87	0.65	0.60
Nickel (Ni)	mg/kg dw	8.13	10.4	13.9	28.9	13.8	20.3	16.6	29.2	14.9	18.0	26.1	23.9	17.3	25.3	34.4	26.8	20.4
Potassium (K)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium (Na)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	mg/kg dw	0.124	0.142	0.226	0.103	0.092	0.092	0.078	0.099	0.100	0.105	0.127	0.122	0.129	0.141	0.108	0.110	0.093
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	mg/kg dw	2.43	3.13	2.10	2.22	1.74	2.13	1.10	1.60	2.21	1.78	2.68	1.68	2.35	2.82	1.99	1.83	1.56
Vanadium (V)	mg/kg dw	12.1	14.9	25.8	16.5	13.3	14.2	10.8	16.1	11.9	14.3	18.8	19.1	15.1	21.5	21.4	18.8	16.5
Zinc (Zn)	mg/kg dw	23.1	29.3	48.7	30.5	20.5	23.7	19.0	30.9	19.9	22.4	30.0	28.9	24.7	41.3	44.6	38.3	38.7

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		T7-NEAR FIELD STN.5 SOIL	C1-EXT.REF.STN.1 SOIL	C1-EXT.REF.STN.2 SOIL	C1-EXT.REF.STN.3 SOIL	C1-EXT.REF.STN.4 SOIL	C1-EXT.REF.STN.5 SOIL	C2-EXT.REF.STN.1 SOIL	C2-EXT.REF.STN.2 SOIL	C2-EXT.REF.STN.3 SOIL	C2-EXT.REF.STN.4 SOIL	C2-EXT.REF.STN.5 SOIL	C3-EXT.REF.STN.1 SOIL	C3-EXT.REF.STN.2 SOIL	C3-EXT.REF.STN.3 SOIL	C3-EXT.REF.STN.4 SOIL	C3-EXT.REF.STN.5 SOIL	T1-NEAR FIELD STATION 1 SAMPLE 1 - SOIL
Date Sampled		17-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	18-Aug-2011	18-Aug-2011	18-Aug-2011	18-Aug-2011	18-Aug-2011	14-Aug-2014
ALS Sample ID		L1051858-177	L1051858-21	L1051858-25	L1051858-29	L1051858-33	L1051858-37	L1051858-41	L1051858-45	L1051858-49	L1051858-53	L1051858-57	L1051858-1	L1051858-5	L1051858-9	L1051858-13	L1051858-17	L1510356-1
Physical Tests																		
pH (1:2 soil:water)	No units	5.49	6.45	5.64	4.91	6.44	6.38	6.11	5.44	5.40	5.85	5.62	6.92	6.00	5.69	6.14	5.95	5.73
Metals																		
Aluminum (Al)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12,600
Antimony (Sb)	mg/kg dw	0.19	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	0.11	<0.10	0.10	<0.10	0.10	0.11	<0.10	0.12	0.11
Arsenic (As)	mg/kg dw	48.7	3.22	3.37	2.55	2.59	2.20	5.49	7.72	8.71	7.70	8.21	5.81	10.4	8.57	6.46	9.87	4.95
Barium (Ba)	mg/kg dw	24.6	28.2	26.5	26.8	24.5	19.0	28.6	33.0	27.9	33.9	28.6	24.4	35.9	28.0	31.6	38.1	43.9
Beryllium (Be)	mg/kg dw	0.28	0.27	0.38	0.30	0.26	0.24	0.23	0.36	0.39	0.35	0.32	0.24	0.36	0.31	0.25	0.40	0.61
Bismuth (Bi)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.72
Cadmium (Cd)	mg/kg dw	0.296	<0.050	0.052	<0.050	<0.050	<0.050	0.054	0.080	0.190	0.052	0.060	0.054	0.065	0.090	0.059	0.077	<0.050
Calcium (Ca)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,050
Chromium (Cr)	mg/kg dw	46.5	32.6	37.5	42.5	26.6	21.7	109	126	163	106	82.1	91.0	108	110	106	201	41.4
Cobalt (Co)	mg/kg dw	10.0	6.00	5.10	4.92	5.39	3.64	10.9	12.1	14.1	10.9	8.85	9.93	11.8	11.5	13.4	15.8	8.21
Copper (Cu)	mg/kg dw	14.8	5.59	4.41	3.81	4.44	3.95	9.24	10.5	14.5	12.7	7.15	9.33	11.2	12.2	16.0	10.2	11.6
Iron (Fe)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33,100
Lead (Pb)	mg/kg dw	18.4	6.05	6.75	5.98	5.84	4.77	6.10	9.17	8.39	7.47	8.65	5.99	14.6	7.49	6.74	8.62	7.83
Lithium (Li)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21.1
Magnesium (Mg)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,770
Manganese (Mn)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	308
Molybdenum (Mo)	mg/kg dw	0.79	0.64	0.69	0.74	0.65	<0.50	0.81	1.02	0.75	0.68	0.67	<0.50	0.97	0.78	0.59	1.01	1.25
Nickel (Ni)	mg/kg dw	27.9	18.8	20.0	17.3	15.5	12.0	55.0	66.9	86.5	59.4	41.8	52.7	57.5	56.4	64.5	99.5	22.3
Potassium (K)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,390
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium (Na)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120
Strontium (Sr)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.3
Thallium (Tl)	mg/kg dw	0.104	0.091	0.078	0.093	0.080	0.072	0.109	0.126	0.133	0.121	0.094	0.096	0.133	0.112	0.113	0.135	0.136
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	687
Uranium (U)	mg/kg dw	1.48	2.66	1.44	1.89	2.83	2.94	1.31	0.977	1.21	1.34	1.05	1.28	1.23	1.11	1.64	1.15	2.98
Vanadium (V)	mg/kg dw	20.2	14.3	16.7	15.8	12.7	10.9	23.0	28.6	31.4	26.7	26.0	21.0	28.4	26.2	22.0	37.7	22.1
Zinc (Zn)	mg/kg dw	72.5	23.1	30.4	21.3	19.2	17.9	32.4	42.3	83.1	37.2	36.5	29.6	37.7	44.3	33.6	46.5	35.5

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		T1-NEAR FIELD STATION 2 SAMPLE 1 - SOIL	T1-NEAR FIELD STATION 3 SAMPLE 1 - SOIL	T1-NEAR FIELD STATION 4 SAMPLE 1 - SOIL	T1-NEAR FIELD STATION 5 SAMPLE 1 - SOIL	T2-FAR FIELD STATION 1 SAMPLE 1 - SOIL	T2-FAR FIELD STATION 2 SAMPLE 1 - SOIL	T2-FAR FIELD STATION 3 SAMPLE 1 - SOIL	T2-FAR FIELD STATION 4 SAMPLE 1 - SOIL	T2-FAR FIELD STATION 5 SAMPLE 1 - SOIL	T3-NEAR FIELD STATION 1 SAMPLE 1 - SOIL	T3-NEAR FIELD STATION 2 SAMPLE 1 - SOIL	T3-NEAR FIELD STATION 3 SAMPLE 1 - SOIL	T3-NEAR FIELD STATION 4 SAMPLE 1 - SOIL	T3-NEAR FIELD STATION 5 SAMPLE 1 - SOIL	T4-FAR FIELD STATION 1 SAMPLE 1 - SOIL
Date Sampled		14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	20-Aug-2014	20-Aug-2014	20-Aug-2014	20-Aug-2014	20-Aug-2014	16-Aug-2014
ALS Sample ID		L1510356-5	L1510356-9	L1510356-13	L1510356-17	L1510356-21	L1510356-25	L1510356-29	L1510356-33	L1510356-37	L1510356-41	L1510356-45	L1510356-49	L1510356-53	L1510356-57	L1510356-61
Physical Tests																
pH (1:2 soil:water)	No units	6.65	5.56	6.15	6.42	7.21	5.12	6.49	5.36	5.07	6.51	7.01	6.15	6.93	6.59	6.57
Metals																
Aluminum (Al)	mg/kg dw	7,920	11,700	9,550	9,150	4,430	5,750	4,280	7,490	3,730	6,610	10,400	7,930	10,600	7,720	7,980
Antimony (Sb)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic (As)	mg/kg dw	3.13	4.79	4.10	3.56	1.52	1.07	1.53	1.91	1.03	2.05	3.85	2.46	4.32	2.17	2.81
Barium (Ba)	mg/kg dw	30.9	35.8	36.5	28.5	19.1	18.3	20.2	32.4	11.8	22.3	49.0	30.3	53.9	28.9	41.2
Beryllium (Be)	mg/kg dw	0.47	0.57	0.45	0.43	0.30	0.31	0.31	0.76	0.32	0.50	0.62	0.49	0.58	0.56	0.46
Bismuth (Bi)	mg/kg dw	0.52	0.72	0.46	0.44	0.32	0.40	0.28	0.52	0.23	0.55	0.82	0.50	0.78	0.57	0.72
Cadmium (Cd)	mg/kg dw	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.116	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Calcium (Ca)	mg/kg dw	2,300	1,410	1,710	1,830	2,520	881	2,140	842	1,170	2,340	2,260	2,210	2,570	1,690	2,170
Chromium (Cr)	mg/kg dw	24.9	37.9	31.1	30.7	10.6	13.6	11.3	10.3	5.81	16.4	36.7	25.5	37.7	18.7	24.5
Cobalt (Co)	mg/kg dw	5.27	6.85	7.10	5.95	3.08	2.72	3.01	4.29	2.61	4.67	6.87	6.01	7.11	4.44	5.84
Copper (Cu)	mg/kg dw	6.50	9.39	10.3	7.74	3.21	2.97	3.06	3.78	2.22	4.16	9.16	5.45	9.48	4.04	6.52
Iron (Fe)	mg/kg dw	21,000	32,600	29,100	26,200	11,100	12,600	10,900	12,200	8,830	14,900	20,500	16,700	20,500	15,700	17,100
Lead (Pb)	mg/kg dw	5.72	7.79	6.14	6.79	5.05	4.77	5.21	7.94	4.81	5.11	7.72	6.05	8.51	5.31	6.40
Lithium (Li)	mg/kg dw	16.9	20.8	19.6	17.0	11.5	13.4	11.5	18.3	11.2	16.2	22.9	19.2	22.0	20.7	19.2
Magnesium (Mg)	mg/kg dw	4,720	6,090	5,640	5,270	2,360	2,690	2,380	3,850	2,120	4,020	5,730	4,640	5,560	4,470	4,320
Manganese (Mn)	mg/kg dw	250	303	321	228	202	153	174	607	168	247	320	288	337	230	287
Molybdenum (Mo)	mg/kg dw	<0.50	0.90	0.70	0.70	0.51	0.58	<0.50	<0.50	<0.50	0.75	0.94	0.77	1.00	0.65	0.97
Nickel (Ni)	mg/kg dw	13.4	18.9	17.8	16.9	5.78	5.85	5.93	6.58	3.30	9.26	18.1	13.7	21.2	9.99	12.9
Potassium (K)	mg/kg dw	1,190	1,500	1,360	1,090	830	910	920	710	580	1,100	2,010	1,400	2,320	1,410	1,620
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium (Na)	mg/kg dw	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	160	120	150	<100	<100
Strontium (Sr)	mg/kg dw	13.6	11.5	10.0	10.7	15.1	6.52	11.8	4.99	6.88	13.8	15.6	14.7	17.6	11.2	14.1
Thallium (Tl)	mg/kg dw	0.107	0.132	0.124	0.109	0.092	0.090	0.079	0.082	0.062	0.098	0.167	0.127	0.167	0.128	0.138
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	615	621	493	468	595	481	512	415	378	568	787	637	821	598	681
Uranium (U)	mg/kg dw	2.20	2.41	2.54	2.60	3.26	1.51	2.65	3.13	1.79	2.21	3.97	2.56	4.99	1.93	3.43
Vanadium (V)	mg/kg dw	15.3	20.6	16.8	15.9	10.5	12.9	10.2	10.7	7.35	13.3	20.9	16.3	21.3	14.6	16.6
Zinc (Zn)	mg/kg dw	29.1	35.7	33.7	30.1	17.3	22.1	17.8	43.3	17.9	24.1	38.7	30.1	40.0	29.6	32.8

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		T4-FAR FIELD STATION 2 SAMPLE 1 - SOIL	T4-FAR FIELD STATION 3 SAMPLE 1 - SOIL	T4-FAR FIELD STATION 4 SAMPLE 1 - SOIL	T4-FAR FIELD STATION 5 SAMPLE 1 - SOIL	T5-FAR FIELD STATION 1 SAMPLE 1 - SOIL	T5-FAR FIELD STATION 2 SAMPLE 1 - SOIL	T5-FAR FIELD STATION 3 SAMPLE 1 - SOIL	T5-FAR FIELD STATION 4 SAMPLE 1 - SOIL	T5-FAR FIELD STATION 5 SAMPLE 1 - SOIL	T6-SOUTH ISLAND STATION 1 SAMPLE 1 - SOIL	T6-SOUTH ISLAND STATION 2 SAMPLE 1 - SOIL	T6-SOUTH ISLAND STATION 3 SAMPLE 1 - SOIL	T6-SOUTH ISLAND STATION 4 SAMPLE 1 - SOIL	T6-SOUTH ISLAND STATION 5 SAMPLE 1 - SOIL	T7-NEAR FIELD STATION 1 SAMPLE 1 - SOIL
Date Sampled		16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014
ALS Sample ID		L1510356-65	L1510356-69	L1510356-73	L1510356-77	L1510356-81	L1510356-85	L1510356-89	L1510356-93	L1510356-97	L1510356-101	L1510356-105	L1510356-109	L1510356-113	L1510356-117	L1510356-121
Physical Tests																
pH (1:2 soil:water)	No units	6.72	5.61	6.45	5.15	6.24	5.23	6.36	5.53	5.89	7.08	6.31	6.34	5.20	6.55	7.01
Metals																
Aluminum (Al)	mg/kg dw	5,200	8,160	5,900	7,440	6,610	6,620	5,870	8,280	9,010	8,020	7,950	8,530	9,050	7,790	11,700
Antimony (Sb)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.20
Arsenic (As)	mg/kg dw	1.74	2.60	1.95	1.80	2.77	2.87	2.71	3.66	23.0	4.25	4.40	4.31	5.18	3.55	34.9
Barium (Ba)	mg/kg dw	25.1	36.7	25.8	25.3	28.5	20.1	21.5	33.4	27.8	38.7	38.2	35.1	31.3	37.6	31.2
Beryllium (Be)	mg/kg dw	0.31	0.46	0.35	0.49	0.28	0.24	0.23	0.30	0.34	0.36	0.34	0.36	0.33	0.36	0.43
Bismuth (Bi)	mg/kg dw	0.61	0.76	0.57	0.76	0.47	0.35	0.32	0.43	0.44	0.46	0.46	0.47	0.49	0.45	0.51
Cadmium (Cd)	mg/kg dw	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.061	0.189	<0.050	<0.050	<0.050	<0.050	<0.050	0.157
Calcium (Ca)	mg/kg dw	2,310	1,740	2,160	1,350	1,820	1,220	1,370	1,450	1,420	1,790	1,700	1,730	1,440	1,800	1,970
Chromium (Cr)	mg/kg dw	13.2	26.2	16.9	18.5	44.8	43.8	34.0	77.1	92.8	42.1	49.5	42.5	51.8	46.6	44.3
Cobalt (Co)	mg/kg dw	3.97	5.58	4.12	4.87	5.74	5.78	4.66	7.27	8.50	6.88	6.85	6.68	7.41	6.38	13.1
Copper (Cu)	mg/kg dw	3.84	5.91	3.54	4.72	6.62	5.47	4.96	7.94	11.6	8.49	7.67	9.87	9.83	8.02	19.4
Iron (Fe)	mg/kg dw	13,600	17,200	14,300	15,300	15,500	14,500	13,800	16,900	18,800	17,700	18,500	18,500	20,600	17,500	29,400
Lead (Pb)	mg/kg dw	4.78	6.93	4.74	5.78	5.07	4.92	4.37	5.92	12.5	6.94	6.60	7.39	6.18	6.07	20.1
Lithium (Li)	mg/kg dw	14.1	19.4	15.0	21.4	14.3	14.4	12.4	16.5	17.2	17.9	17.1	17.3	16.6	18.7	17.9
Magnesium (Mg)	mg/kg dw	2,900	4,310	3,320	4,020	4,460	4,370	3,730	6,140	6,330	5,110	4,760	4,950	5,190	5,010	6,860
Manganese (Mn)	mg/kg dw	235	250	216	245	202	194	175	255	221	274	230	216	253	230	328
Molybdenum (Mo)	mg/kg dw	0.76	0.95	0.66	0.83	0.53	<0.50	<0.50	0.64	<0.50	0.83	0.72	0.66	0.59	0.86	0.83
Nickel (Ni)	mg/kg dw	7.50	12.9	8.96	9.34	20.6	19.5	15.9	30.3	35.2	22.0	23.3	20.7	24.5	22.5	30.8
Potassium (K)	mg/kg dw	1,120	1,370	1,150	1,230	1,210	960	790	1,290	970	1,660	1,350	1,500	1,070	1,700	1,400
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10
Sodium (Na)	mg/kg dw	110	110	<100	110	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Strontium (Sr)	mg/kg dw	11.6	12.0	13.2	8.09	11.5	8.48	9.17	9.30	10.9	11.3	10.8	9.92	10.3	10.8	12.9
Thallium (Tl)	mg/kg dw	0.104	0.156	0.120	0.125	0.098	0.095	0.085	0.136	0.114	0.145	0.138	0.142	0.126	0.151	0.124
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	559	722	580	589	539	437	359	492	498	579	526	536	509	574	485
Uranium (U)	mg/kg dw	2.44	3.85	2.19	1.70	1.94	1.24	1.61	1.94	1.79	3.14	2.62	2.61	2.03	2.75	2.38
Vanadium (V)	mg/kg dw	12.7	16.7	13.3	13.9	15.6	14.1	12.1	17.7	19.0	18.0	17.4	17.9	18.8	18.0	21.5
Zinc (Zn)	mg/kg dw	22.3	30.4	24.1	31.6	22.4	24.5	21.5	33.7	37.0	29.8	27.7	30.2	28.6	29.7	43.5

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		T7-NEAR FIELD STATION 2 SAMPLE 1 - SOIL	T7-NEAR FIELD STATION 3 SAMPLE 1 - SOIL	T7-NEAR FIELD STATION 4 SAMPLE 1 - SOIL	T7-NEAR FIELD STATION 5 SAMPLE 1 - SOIL	T8-AWAR STATION 1 SAMPLE 1 - SOIL	T8-AWAR STATION 2 SAMPLE 1 - SOIL	T8-AWAR STATION 3 SAMPLE 1 - SOIL	T8-AWAR STATION 4 SAMPLE 1 - SOIL	T8-AWAR STATION 5 SAMPLE 1 - SOIL	C1-EXT REF STATION 1 SAMPLE 1 - SOIL	C1-EXT REF STATION 2 SAMPLE 1 - SOIL	C1-EXT REF STATION 3 SAMPLE 1 - SOIL	C1-EXT REF STATION 4 SAMPLE 1 - SOIL	C1-EXT REF STATION 5 SAMPLE 1 - SOIL	C2-EXT REF STATION 1 SAMPLE 1 - SOIL
Date Sampled		14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014
ALS Sample ID		L1510356-125	L1510356-129	L1510356-133	L1510356-137	L1510356-141	L1510356-145	L1510356-149	L1510356-153	L1510356-157	L1510356-161	L1510356-165	L1510356-169	L1510356-173	L1510356-177	L1510356-181
Physical Tests																
pH (1:2 soil:water)	No units	6.43	6.19	5.81	5.77	6.53	6.87	6.64	6.25	7.22	6.57	5.93	6.30	6.00	6.22	5.95
Metals																
Aluminum (Al)	mg/kg dw	10,100	13,300	11,400	14,700	6,660	7,460	6,890	5,670	5,300	7,110	4,850	4,790	7,960	4,670	11,700
Antimony (Sb)	mg/kg dw	0.13	0.23	0.16	0.24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic (As)	mg/kg dw	17.0	20.9	27.2	55.7	2.09	2.80	1.86	1.46	1.56	3.21	1.88	1.80	3.03	2.59	5.18
Barium (Ba)	mg/kg dw	19.9	33.3	21.9	33.8	29.2	38.4	31.6	21.0	25.8	29.5	17.3	18.6	33.5	18.8	32.0
Beryllium (Be)	mg/kg dw	0.30	0.35	0.35	0.42	0.25	0.24	0.24	0.31	0.27	0.34	0.22	0.27	0.40	0.24	0.28
Bismuth (Bi)	mg/kg dw	0.33	0.43	0.38	0.59	0.28	0.33	0.28	0.40	0.31	0.36	0.25	0.29	0.46	0.28	0.39
Cadmium (Cd)	mg/kg dw	0.101	0.133	0.177	0.279	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Calcium (Ca)	mg/kg dw	1,680	2,110	1,840	1,390	2,360	2,340	2,260	2,120	2,290	1,990	1,510	1,980	1,950	2,000	2,930
Chromium (Cr)	mg/kg dw	34.8	58.3	33.5	58.7	35.8	43.3	31.7	18.3	22.7	35.6	23.8	20.8	39.5	23.6	117
Cobalt (Co)	mg/kg dw	10.1	13.5	8.59	11.5	5.96	6.23	5.56	3.88	4.57	5.72	4.38	4.42	5.55	3.75	11.3
Copper (Cu)	mg/kg dw	13.2	19.0	13.5	19.5	6.19	9.54	11.1	6.74	5.03	5.50	3.12	3.55	5.64	3.70	9.77
Iron (Fe)	mg/kg dw	26,900	34,400	34,200	38,900	14,400	15,300	15,100	11,200	11,500	15,400	11,400	11,700	15,500	11,900	26,300
Lead (Pb)	mg/kg dw	13.3	13.5	15.6	23.4	4.65	5.20	5.44	4.60	4.48	6.19	4.65	5.03	6.66	4.55	6.33
Lithium (Li)	mg/kg dw	16.4	18.5	20.0	21.9	11.5	11.8	11.1	10.5	8.7	12.2	8.5	9.5	13.5	8.3	13.4
Magnesium (Mg)	mg/kg dw	5,880	7,800	6,430	7,860	4,320	5,040	4,460	3,290	3,280	4,270	2,960	2,920	4,540	2,720	9,180
Manganese (Mn)	mg/kg dw	272	366	263	340	257	187	189	177	194	226	179	187	218	137	307
Molybdenum (Mo)	mg/kg dw	0.61	0.78	0.72	1.08	0.57	0.70	0.53	0.70	0.52	0.55	<0.50	<0.50	0.79	<0.50	0.55
Nickel (Ni)	mg/kg dw	23.2	35.9	23.3	34.4	17.1	19.7	15.0	9.63	11.9	18.6	11.7	11.1	19.9	11.6	57.1
Potassium (K)	mg/kg dw	990	1,400	940	1,340	1,250	1,730	1,640	930	1,130	1,150	800	790	1,270	810	1,200
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium (Na)	mg/kg dw	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	110	120	<100	120
Strontium (Sr)	mg/kg dw	11.6	15.4	11.8	12.1	22.9	17.6	18.3	20.2	21.9	17.5	12.8	16.0	18.1	17.1	32.3
Thallium (Tl)	mg/kg dw	0.085	0.124	0.102	0.136	0.078	0.108	0.104	0.063	0.060	0.082	0.054	0.070	0.091	0.067	0.096
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	412	503	469	558	604	581	572	532	543	533	366	452	591	487	731
Uranium (U)	mg/kg dw	1.74	2.14	1.74	2.33	1.96	1.71	1.28	2.56	1.92	2.33	1.66	2.20	3.20	2.53	1.33
Vanadium (V)	mg/kg dw	17.8	24.6	20.3	25.8	17.1	20.3	18.1	13.3	14.0	15.5	11.1	11.6	16.8	11.5	26.1
Zinc (Zn)	mg/kg dw	35.0	45.0	43.8	66.7	23.8	25.3	25.2	22.9	19.2	23.1	16.6	16.6	24.7	16.2	36.7

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		C2-EXT REF STATION 2 SAMPLE 1 - SOIL	C2-EXT REF STATION 3 SAMPLE 1 - SOIL	C2-EXT REF STATION 4 SAMPLE 1 - SOIL	C2-EXT REF STATION 5 SAMPLE 1 - SOIL	C3-EXT REF STATION 1 SAMPLE 1 - SOIL	C3-EXT REF STATION 2 SAMPLE 1 - SOIL	C3-EXT REF STATION 3 SAMPLE 1 - SOIL	C3-EXT REF STATION 4 SAMPLE 1 - SOIL	C3-EXT REF STATION 5 SAMPLE 1 - SOIL	T1-1-SOIL	T1-2-SOIL	T1-3-SOIL	T1-4-SOIL	T1-5-SOIL	T2-1-SOIL
Date Sampled		19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017
ALS Sample ID		L1510356-185	L1510356-189	L1510356-193	L1510356-197	L1510356-201	L1510356-205	L1510356-209	L1510356-213	L1510356-217	L1988451-1	L1988451-5	L1988451-9	L1988451-13	L1988451-17	L1988451-21
Physical Tests																
pH (1:2 soil:water)	No units	5.41	5.45	5.88	5.64	6.48	5.95	5.71	5.92	5.86	6.11	6.00	5.66	6.41	6.64	6.91
Metals																
Aluminum (Al)	mg/kg dw	16,900	15,700	13,000	12,400	11,200	13,600	12,500	10,300	15,400	11,700	9,730	13,200	13,100	8,100	5,950
Antimony (Sb)	mg/kg dw	0.17	0.11	0.11	<0.10	0.12	0.13	<0.10	<0.10	0.11	<0.10	<0.10	<0.10	0.10	<0.10	<0.10
Arsenic (As)	mg/kg dw	9.95	9.58	7.69	7.33	7.26	25.6	7.88	6.26	9.28	4.16	3.78	5.14	5.76	3.13	2.14
Barium (Ba)	mg/kg dw	46.8	30.5	35.6	30.0	32.1	33.2	27.6	31.5	33.9	34.6	32.3	38.5	44.5	22.9	26.7
Beryllium (Be)	mg/kg dw	0.54	0.42	0.40	0.40	0.30	0.37	0.30	0.29	0.42	0.56	0.54	0.66	0.73	0.38	0.43
Bismuth (Bi)	mg/kg dw	0.77	2.49	0.46	0.47	0.36	0.57	0.43	0.52	0.59	0.57	0.65	0.73	0.76	0.39	0.67
Cadmium (Cd)	mg/kg dw	0.101	0.185	0.052	0.057	<0.050	0.109	0.079	0.061	0.079	0.028	0.040	0.040	0.037	0.040	0.037
Calcium (Ca)	mg/kg dw	2,430	2,410	2,620	2,300	2,510	2,520	2,340	2,530	2,110	2,110	2,080	1,420	2,050	1,840	2,050
Chromium (Cr)	mg/kg dw	152	164	116	113	107	117	126	112	174	33.9	34.9	44.8	46.9	28.7	15.6
Cobalt (Co)	mg/kg dw	13.6	13.8	10.9	11.4	12.4	13.3	12.1	12.2	13.2	8.53	7.14	8.44	8.99	5.22	3.97
Copper (Cu)	mg/kg dw	12.8	15.8	13.1	14.5	12.2	20.5	13.4	15.5	9.04	10.1	9.29	11.0	15.0	6.68	4.82
Iron (Fe)	mg/kg dw	32,900	30,800	29,600	28,100	26,200	28,700	28,000	23,500	32,500	35,300	24,400	34,900	40,000	21,800	12,400
Lead (Pb)	mg/kg dw	11.5	9.27	8.39	7.62	6.34	14.2	7.35	6.62	8.85	7.12	6.93	8.72	8.54	7.07	6.80
Lithium (Li)	mg/kg dw	17.9	15.9	15.0	15.6	12.8	15.5	14.4	11.9	16.7	21.1	20.3	25.3	26.8	16.1	16.1
Magnesium (Mg)	mg/kg dw	11,000	10,900	9,160	9,180	8,370	9,350	8,710	8,420	12,000	6,700	6,150	7,020	7,530	4,690	3,120
Manganese (Mn)	mg/kg dw	317	340	286	262	309	349	353	325	318	337	312	376	395	210	251
Molybdenum (Mo)	mg/kg dw	1.18	0.78	0.67	0.57	0.72	0.73	0.63	0.59	0.90	0.86	0.59	1.05	1.00	0.58	0.71
Nickel (Ni)	mg/kg dw	75.1	79.7	59.1	64.9	86.1	61.6	57.3	62.6	79.9	20.2	19.2	22.0	24.9	15.6	8.87
Potassium (K)	mg/kg dw	1,560	1,160	1,340	1,050	1,160	1,370	1,120	1,230	1,570	1,260	1,360	1,640	1,720	900	1,160
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium (Na)	mg/kg dw	110	<100	<100	<100	<100	<100	<100	<100	110	70	87	73	83	65	80
Strontium (Sr)	mg/kg dw	31.6	29.3	32.0	25.3	26.6	28.9	28.4	23.9	26.3	14.1	12.0	10.9	12.2	11.1	12.0
Thallium (Tl)	mg/kg dw	0.164	0.136	0.131	0.098	0.107	0.135	0.102	0.108	0.120	0.118	0.126	0.160	0.156	0.098	0.114
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	940	798	749	748	652	839	756	545	798	539	486	602	530	393	493
Uranium (U)	mg/kg dw	1.37	1.45	1.88	1.26	1.59	1.82	1.29	1.55	1.05	2.50	2.32	2.87	4.32	2.49	4.78
Vanadium (V)	mg/kg dw	36.5	33.2	28.5	26.5	25.4	29.2	27.8	22.8	34.8	20.2	18.0	23.6	23.0	14.4	12.2
Zinc (Zn)	mg/kg dw	48.2	89.5	36.9	40.8	34.0	49.5	44.2	35.0	42.0	33.7	35.9	41.1	45.2	26.9	24.2

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		T2-2-SOIL	T2-3-SOIL	T2-4-SOIL	T2-5-SOIL	T3-1-SOIL	T3-2-SOIL	T3-3-SOIL	T3-4-SOIL	T3-5-SOIL	T4-1-SOIL	T4-2-SOIL	T4-3-SOIL	T4-4-SOIL	T4-5-SOIL	T5-1-SOIL	T5-2-SOIL	T5-3-SOIL
Date Sampled		15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017
ALS Sample ID		L1988451-25	L1988451-29	L1988451-33	L1988451-37	L1988451-41	L1988451-45	L1988451-49	L1988451-53	L1988451-57	L1988451-61	L1988451-65	L1988451-69	L1988451-73	L1988451-77	L1988451-81	L1988451-85	L1988451-89
Physical Tests																		
pH (1:2 soil:water)	No units	5.38	6.91	6.47	5.13	6.93	5.58	6.49	6.64	5.49	5.95	6.85	6.16	6.01	5.77	6.45	5.47	6.76
Metals																		
Aluminum (Al)	mg/kg dw	4,170	5,030	5,550	5,580	7,930	11,300	8,040	7,230	6,200	7,270	6,290	7,190	9,950	8,310	13,300	11,500	6,570
Antimony (Sb)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	0.11	<0.10	<0.10
Arsenic (As)	mg/kg dw	1.07	1.67	1.66	1.59	2.94	3.47	3.01	3.33	1.92	2.44	2.05	2.88	24.5	2.26	9.46	4.27	2.92
Barium (Ba)	mg/kg dw	13.8	23.2	22.3	19.9	28.4	60.9	31.2	29.0	35.0	34.9	33.6	29.3	29.9	29.7	54.9	51.7	24.4
Beryllium (Be)	mg/kg dw	0.30	0.35	0.38	0.40	0.55	0.57	0.42	0.39	0.37	0.43	0.39	0.43	0.41	0.50	0.54	0.49	0.25
Bismuth (Bi)	mg/kg dw	0.26	0.33	0.43	0.37	0.67	1.17	0.57	0.55	0.69	0.94	0.82	0.71	0.50	1.06	0.91	0.75	0.40
Cadmium (Cd)	mg/kg dw	0.033	0.027	0.033	0.039	0.030	0.086	0.055	0.029	0.035	0.030	0.036	0.033	0.077	0.031	0.036	0.111	0.051
Calcium (Ca)	mg/kg dw	1,520	2,230	1,760	1,250	2,160	1,330	1,960	2,260	1,220	2,400	1,810	2,440	1,820	1,600	2,270	1,620	1,280
Chromium (Cr)	mg/kg dw	8.95	13.8	15.0	13.7	20.7	35.4	28.6	26.9	13.8	18.8	17.4	21.3	96.6	20.8	101	64.2	65.7
Cobalt (Co)	mg/kg dw	2.80	3.82	3.71	3.76	5.51	6.39	6.54	5.47	4.28	4.37	5.02	4.90	10.5	4.63	9.99	7.15	5.64
Copper (Cu)	mg/kg dw	2.27	3.50	3.92	3.49	5.63	6.20	5.78	5.39	2.54	5.43	5.33	5.77	15.2	4.45	18.2	8.97	5.87
Iron (Fe)	mg/kg dw	9,420	11,500	11,900	11,100	16,400	19,900	17,000	16,200	14,000	15,400	14,100	16,200	20,600	19,000	25,100	21,500	13,900
Lead (Pb)	mg/kg dw	4.36	5.30	5.27	6.15	6.16	8.73	7.26	6.36	5.38	5.87	6.06	7.28	13.1	6.43	9.99	10.2	5.01
Lithium (Li)	mg/kg dw	13.1	13.5	15.0	14.2	20.3	19.7	17.5	14.5	14.3	19.7	20.5	17.6	19.9	21.9	25.5	23.2	13.2
Magnesium (Mg)	mg/kg dw	2,250	2,860	3,120	2,860	4,620	5,300	4,890	4,190	3,300	3,900	3,740	3,900	6,860	4,030	8,410	6,080	4,850
Manganese (Mn)	mg/kg dw	189	209	200	216	301	472	297	260	300	314	285	252	275	235	331	307	195
Molybdenum (Mo)	mg/kg dw	0.40	0.51	0.46	0.75	0.86	1.25	0.76	0.68	0.72	0.82	1.02	0.90	0.62	1.02	1.16	1.01	0.58
Nickel (Ni)	mg/kg dw	4.88	7.23	7.83	6.97	12.0	15.4	15.3	13.7	7.14	9.65	9.87	11.1	38.8	9.90	45.1	25.9	25.5
Potassium (K)	mg/kg dw	680	1,040	980	810	1,370	1,910	1,330	1,220	1,220	1,550	1,430	1,270	1,030	1,330	2,240	2,000	960
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium (Na)	mg/kg dw	<50	82	69	<50	83	85	89	84	<50	77	83	95	92	75	182	85	<50
Strontium (Sr)	mg/kg dw	8.18	12.3	9.81	7.46	12.9	13.0	13.3	14.0	8.89	11.5	9.43	12.9	11.9	10.6	16.8	13.3	8.67
Thallium (Tl)	mg/kg dw	0.073	0.098	0.103	0.099	0.128	0.181	0.141	0.120	0.139	0.133	0.138	0.133	0.115	0.149	0.192	0.181	0.101
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	385	493	439	440	565	722	604	582	379	559	421	664	525	571	730	633	384
Uranium (U)	mg/kg dw	1.73	3.24	3.29	3.17	2.86	2.40	2.55	2.99	1.10	3.07	2.84	4.34	2.47	2.24	5.01	2.34	1.59
Vanadium (V)	mg/kg dw	8.70	12.0	11.4	11.1	15.2	22.4	16.1	15.3	13.2	15.6	13.4	15.5	21.6	19.2	28.6	24.1	15.3
Zinc (Zn)	mg/kg dw	18.5	20.5	23.3	23.3	31.4	42.8	30.8	27.7	32.3	31.9	29.5	28.2	41.6	30.7	45.1	46.1	26.2

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		T5-4-SOIL	T5-5-SOIL	T6-1-SOIL	T6-2-SOIL	T6-3-SOIL	T6-4-SOIL	T6-5-SOIL	T7-1-SOIL	T7-2-SOIL	T7-3-SOIL	T7-4-SOIL	T7-5-SOIL	T8-1-SOIL	T8-2-SOIL	T8-3-SOIL	T8-4-SOIL	T8-5-SOIL
Date Sampled		15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
ALS Sample ID		L1988451-93	L1988451-97	L1988451-101	L1988451-105	L1988451-109	L1988451-113	L1988451-117	L1988451-121	L1988451-125	L1988451-129	L1988451-133	L1988451-137	L1988451-141	L1988451-145	L1988451-149	L1988451-153	L1988451-157
Physical Tests																		
pH (1:2 soil:water)	No units	5.60	4.51	6.92	6.64	6.13	5.69	6.36	5.78	6.32	6.10	5.92	6.68	6.62	6.76	6.47	6.39	7.44
Metals																		
Aluminum (Al)	mg/kg dw	6,760	7,990	7,430	11,700	6,970	9,580	5,770	11,800	10,300	13,300	10,600	8,100	5,850	7,180	6,920	4,110	5,960
Antimony (Sb)	mg/kg dw	<0.10	0.13	<0.10	0.20	<0.10	<0.10	<0.10	0.21	0.14	0.28	0.16	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic (As)	mg/kg dw	4.43	2.61	4.54	14.0	4.09	6.21	4.36	30.1	22.2	32.7	31.6	13.1	2.01	2.71	1.92	1.37	1.95
Barium (Ba)	mg/kg dw	25.0	50.4	40.7	66.5	34.8	30.2	30.0	27.4	28.9	40.6	24.3	29.5	24.3	38.5	31.3	16.3	27.9
Beryllium (Be)	mg/kg dw	0.29	0.37	0.38	0.45	0.34	0.43	0.28	0.33	0.40	0.48	0.35	0.39	0.23	0.21	0.28	0.24	0.31
Bismuth (Bi)	mg/kg dw	0.40	1.11	0.47	0.70	0.42	0.53	0.42	0.40	0.45	0.53	0.38	0.57	0.22	0.28	0.28	0.31	0.42
Cadmium (Cd)	mg/kg dw	0.035	0.163	0.042	0.060	0.036	0.059	0.039	0.176	0.088	0.145	0.180	0.103	0.031	0.038	0.039	0.025	0.025
Calcium (Ca)	mg/kg dw	1,980	1,770	2,150	2,560	1,530	1,460	2,030	1,060	1,600	2,010	1,770	2,090	2,310	2,410	2,360	1,840	2,170
Chromium (Cr)	mg/kg dw	37.3	27.2	46.9	147	41.1	63.1	40.6	53.4	40.9	94.1	37.5	28.7	33.1	37.5	30.8	14.0	23.1
Cobalt (Co)	mg/kg dw	5.81	4.56	7.15	14.0	6.83	7.96	6.17	12.1	12.1	16.0	10.9	9.64	5.76	6.40	5.62	3.23	5.01
Copper (Cu)	mg/kg dw	8.16	5.82	8.37	21.3	10.0	10.5	7.12	15.2	17.7	25.8	15.6	12.2	5.38	8.13	11.6	5.24	6.80
Iron (Fe)	mg/kg dw	15,800	17,900	18,900	30,200	17,600	24,400	16,700	31,200	31,300	38,000	36,100	23,200	12,800	14,500	15,400	9,360	12,200
Lead (Pb)	mg/kg dw	6.52	7.91	7.04	8.59	6.67	7.64	6.11	14.4	15.3	15.0	18.4	12.1	4.70	5.01	5.73	3.98	5.05
Lithium (Li)	mg/kg dw	13.6	13.4	19.1	22.9	16.9	20.8	15.0	21.9	22.0	23.8	22.5	20.3	9.7	11.6	12.7	8.3	10.9
Magnesium (Mg)	mg/kg dw	4,090	3,760	5,310	9,610	4,850	6,060	4,320	7,690	6,880	10,400	6,930	5,300	3,790	4,600	4,530	2,460	3,570
Manganese (Mn)	mg/kg dw	197	291	265	383	213	275	236	295	329	438	294	284	234	189	188	154	177
Molybdenum (Mo)	mg/kg dw	0.46	1.41	0.80	0.78	0.58	0.68	0.78	0.83	0.87	1.07	0.71	0.83	0.52	0.66	0.40	0.56	0.57
Nickel (Ni)	mg/kg dw	19.5	11.0	22.7	78.1	20.8	28.2	20.9	34.5	27.8	50.1	26.1	20.3	16.0	17.3	15.9	7.45	11.9
Potassium (K)	mg/kg dw	830	1,570	1,710	2,250	1,340	1,120	1,340	1,040	1,370	1,790	950	1,110	1,000	1,740	1,550	650	1,190
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium (Na)	mg/kg dw	84	79	83	93	68	70	64	<50	63	64	<50	63	68	67	52	<50	86
Strontium (Sr)	mg/kg dw	11.8	13.7	13.3	17.0	8.91	11.7	11.7	8.90	12.3	13.7	10.8	12.2	22.6	19.4	20.5	16.3	18.8
Thallium (Tl)	mg/kg dw	0.089	0.165	0.137	0.174	0.130	0.131	0.114	0.111	0.117	0.150	0.106	0.133	0.072	0.102	0.103	<0.050	0.072
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	434	635	597	581	470	544	492	395	450	513	438	568	571	623	584	375	491
Uranium (U)	mg/kg dw	2.15	2.23	3.16	2.71	2.42	1.84	2.66	1.43	1.98	3.02	1.96	3.80	1.94	1.66	1.34	2.10	2.75
Vanadium (V)	mg/kg dw	14.6	20.2	19.1	29.8	17.5	22.9	15.7	23.8	20.4	27.3	21.4	18.1	15.4	20.3	18.3	10.9	14.4
Zinc (Zn)	mg/kg dw	25.9	38.9	32.5	45.4	30.5	34.7	25.5	52.3	42.0	53.2	48.7	36.9	20.9	25.5	27.0	17.3	23.1

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		C1-1-SOIL	C1-2-SOIL	C1-3-SOIL	C1-4-SOIL	C1-5-SOIL	C2-1-SOIL	C2-2-SOIL	C2-3-SOIL	C2-4-SOIL	C2-5-SOIL	C3-1-SOIL	C3-2-SOIL	C3-3-SOIL	C3-4-SOIL	C3-5-SOIL	T1-S1-Soil
Date Sampled		21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	22-Aug-2021
ALS Sample ID		L1988451-161	L1988451-165	L1988451-169	L1988451-173	L1988451-177	L1988451-181	L1988451-185	L1988451-189	L1988451-193	L1988451-197	L1988451-201	L1988451-205	L1988451-209	L1988451-213	L1988451-217	VA21B9371-001
Physical Tests																	
pH (1:2 soil:water)	No units	5.64	5.89	5.69	5.84	6.24	5.88	6.57	5.52	6.07	5.56	6.30	5.76	5.59	6.02	5.94	4.84
Metals																	
Aluminum (Al)	mg/kg dw	5,730	5,240	5,850	7,120	4,700	13,100	9,030	11,900	12,000	11,100	10,600	11,900	13,500	9,750	13,600	9,050
Antimony (Sb)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	<0.10	<0.10	<0.10	<0.10	0.12	0.11	0.11	<0.10	<0.10	<0.10
Arsenic (As)	mg/kg dw	2.51	2.35	2.58	2.63	2.51	8.14	5.07	7.66	7.26	7.24	7.49	36.1	10.0	5.73	8.20	2.69
Barium (Ba)	mg/kg dw	21.1	17.8	20.4	30.3	18.0	37.2	26.4	23.7	31.7	24.9	33.1	31.8	33.1	28.3	30.9	26.6
Beryllium (Be)	mg/kg dw	0.24	0.22	0.31	0.37	0.27	0.40	0.28	0.35	0.35	0.35	0.30	0.35	0.39	0.27	0.37	0.31
Bismuth (Bi)	mg/kg dw	0.27	0.27	0.34	0.43	0.30	0.55	0.78	1.73	0.41	0.38	0.41	0.54	0.50	0.36	0.49	0.33
Cadmium (Cd)	mg/kg dw	0.024	0.024	0.026	0.025	0.024	0.047	0.079	0.170	0.047	0.071	0.053	0.111	0.072	0.056	0.067	0.046
Calcium (Ca)	mg/kg dw	1,630	1,630	2,250	1,730	2,060	2,490	2,240	2,150	2,810	2,540	2,780	2,450	2,580	2,750	1,890	1,380
Chromium (Cr)	mg/kg dw	28.1	26.6	24.9	32.2	23.0	125	90.6	124	111	77.4	88.5	98.9	117	98.2	150	20
Cobalt (Co)	mg/kg dw	5.57	5.10	4.71	4.68	3.88	11.6	9.97	11.2	10.4	8.92	11.5	11.6	12.0	11.6	12.8	5.45
Copper (Cu)	mg/kg dw	3.97	3.36	3.58	4.80	3.71	13.8	11.5	11.8	11.8	6.96	11.4	18.9	13.9	13.9	8.83	6.09
Iron (Fe)	mg/kg dw	13,900	12,500	13,200	13,500	11,500	27,200	21,000	26,200	28,400	26,500	24,200	26,700	30,800	24,300	28,700	34,500
Lead (Pb)	mg/kg dw	5.34	5.09	5.64	6.01	4.71	8.17	6.44	7.67	7.60	7.05	7.54	13.8	8.40	6.64	7.79	6.63
Lithium (Li)	mg/kg dw	8.9	7.3	11.2	13.1	8.8	15.2	11.1	13.8	13.9	16.6	12.9	14.8	16.8	11.4	15.9	13.3
Magnesium (Mg)	mg/kg dw	3,500	3,080	3,120	4,020	2,990	9,540	7,150	8,970	8,870	7,330	7,590	8,320	9,380	7,550	10,800	6,080
Manganese (Mn)	mg/kg dw	215	206	194	188	145	287	286	286	279	267	302	312	326	303	321	236
Molybdenum (Mo)	mg/kg dw	0.44	0.44	0.52	0.68	0.47	0.83	0.87	0.68	0.59	0.50	0.46	0.72	0.71	0.51	0.72	0.49
Nickel (Ni)	mg/kg dw	14.0	13.0	13.0	17.0	13.1	64.7	49.4	65.2	57.3	40.1	64.8	52.7	58.6	56.3	71.8	13.3
Potassium (K)	mg/kg dw	830	720	790	1,260	790	1,150	860	880	1,240	1,080	1,180	1,190	1,230	1,140	1,330	980
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium (Na)	mg/kg dw	58	51	64	75	69	62	65	75	64	<50	54	52	64	<50	58	<50
Strontium (Sr)	mg/kg dw	13.4	14.4	19.1	16.2	17.7	27.3	21.3	24.5	33.0	27.9	31.4	29.3	29.9	26.2	21.7	9.18
Thallium (Tl)	mg/kg dw	0.073	0.060	0.075	0.094	0.077	0.116	0.090	0.107	0.116	0.077	0.102	0.122	0.121	0.106	0.111	0.069
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	409	400	488	487	411	563	473	626	718	613	596	693	748	557	558	364
Uranium (U)	mg/kg dw	1.90	1.80	1.88	2.88	2.78	1.71	1.40	1.12	1.38	0.952	1.56	1.13	1.36	1.51	1.00	3.26
Vanadium (V)	mg/kg dw	12.4	12.0	13.3	15.5	11.2	28.7	20.3	26.7	27.4	24.0	22.8	26.9	31.4	22.4	30.7	15.6
Zinc (Zn)	mg/kg dw	20.1	17.9	19.3	23.9	17.4	40.4	36.8	73.3	36.2	36.1	33.9	47.1	48.8	32.5	40.5	31.8

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		T1-S2-Soil	T1-S3-Soil	T2-S1-Soil	T2-S3-Soil	T2-S4-Soil	T3-S1-Soil	T3-S2-Soil	T3-S3-Soil	T4-S1-Soil	T4-S2-Soil	T4-S4-Soil	T5-S1-Soil	T5-S4-Soil	T5-S5-Soil	T6-S1-Soil
Date Sampled		22-Aug-2021	23-Aug-2021	26-Aug-2021	26-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	20-Aug-2021
ALS Sample ID		VA21B9371-005	VA21B9371-009	VA21B9371-013	VA21B9371-017	VA21B9371-021	VA21B9371-025	VA21B9371-029	VA21B9371-033	VA21B9371-037	VA21B9371-041	VA21B9371-045	VA21B9371-049	VA21B9371-053	VA21B9371-057	VA21B9371-061
Physical Tests																
pH (1:2 soil:water)	No units	5.03	4.53	4.62	6.04	4.6	5.04	4.64	4.97	5.56	5.43	4.54	4.4	3.85	4.58	5.96
Metals																
Aluminum (Al)	mg/kg dw	6,810	10,000	4,490	6,810	4,860	12,400	4,660	6,140	25,100	8,400	8,160	6,290	3,200	7,740	9,230
Antimony (Sb)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	<0.10	<0.10	0.11	<0.10	<0.10	<0.10	<0.10	0.14	<0.10
Arsenic (As)	mg/kg dw	2.83	4.02	1.18	2.75	4.89	10.8	3.3	5.54	8.86	2.89	2.18	3.32	1.72	38.1	4.39
Barium (Ba)	mg/kg dw	20.1	46.5	20.6	34.1	86.9	73.3	64.7	64.3	146	37.2	31.2	32.7	95	27.2	50.2
Beryllium (Be)	mg/kg dw	0.39	0.39	0.23	0.4	0.48	0.66	0.26	0.34	1.39	0.43	0.39	0.22	0.17	0.25	0.37
Bismuth (Bi)	mg/kg dw	0.45	0.51	0.36	0.47	0.25	1.06	0.35	0.37	2.55	0.82	0.91	0.33	<0.20	0.39	0.46
Cadmium (Cd)	mg/kg dw	0.04	0.058	0.03	0.034	0.16	0.224	0.304	0.308	0.088	0.039	0.077	0.116	0.319	0.106	0.054
Calcium (Ca)	mg/kg dw	1,580	1,460	746	2,020	2,100	2,650	2,800	2,950	2,450	2,050	1,070	980	1,760	1,190	2,160
Chromium (Cr)	mg/kg dw	16.4	32.3	10	20.9	13	60.1	21.2	31.6	60.7	24.2	22.3	38.1	12	92.1	41.4
Cobalt (Co)	mg/kg dw	4.17	5.53	1.92	4.72	5.43	9.43	3.12	4.84	11.3	5.42	4.81	4.36	1.48	5.71	7.32
Copper (Cu)	mg/kg dw	4.15	8.04	1.92	5.82	6.44	15.4	6.44	7.53	21.2	5.98	5.16	8.28	6.2	7.35	8.86
Iron (Fe)	mg/kg dw	15,300	33,800	10,200	14,700	8,080	23,300	9,400	12,500	35,700	17,100	15,800	13,900	4,990	14,800	19,000
Lead (Pb)	mg/kg dw	4.25	6.19	4.89	6.15	7.84	11.3	4.72	6.45	14.5	6.07	5.92	4.81	3.58	8.98	6.84
Lithium (Li)	mg/kg dw	18.3	11.2	7.4	19.3	5.8	20.8	5.2	8	49.8	22.4	17.9	9.2	<2.0	10.6	22.8
Magnesium (Mg)	mg/kg dw	4,360	5,780	1,890	4,360	1,880	7,230	2,220	3,040	9,700	4,840	4,480	3,240	593	5,600	6,130
Manganese (Mn)	mg/kg dw	220	249	113	248	248	480	490	377	935	286	370	136	22.6	184	311
Molybdenum (Mo)	mg/kg dw	0.48	0.88	0.57	0.68	0.6	2.61	0.99	1.14	3.91	1.06	0.91	0.65	0.9	0.52	0.85
Nickel (Ni)	mg/kg dw	9.09	15.7	4.37	10.9	8.81	27.3	9.97	14.8	28.6	11.8	10.5	15.6	6.98	28.6	20.4
Potassium (K)	mg/kg dw	780	1,260	680	1,520	810	2,340	980	1,200	4,920	1,630	1,240	990	790	880	2,300
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.35	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	0.1	<0.10	<0.10	0.1	<0.10	<0.10	<0.10	0.15	<0.10	<0.10
Sodium (Na)	mg/kg dw	<50	<50	<50	87	<50	79	<50	52	179	86	59	<50	52	51	86
Strontium (Sr)	mg/kg dw	10.2	11.8	5.81	12.9	15.5	19.2	15.2	18.3	19.7	13.2	6.65	8.88	13.7	9.79	13.4
Thallium (Tl)	mg/kg dw	0.06	0.108	0.08	0.117	0.078	0.171	0.097	0.116	0.342	0.127	0.121	0.081	<0.050	0.104	0.155
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	397	508	438	668	261	605	240	324	1220	740	587	390	138	448	765
Uranium (U)	mg/kg dw	1.26	1.6	1.36	4.6	4.78	3.77	1.62	2.14	9.2	2.12	1.5	1.29	0.926	1.19	3.13
Vanadium (V)	mg/kg dw	11.6	20.4	11.6	16.1	7.86	23.6	9.17	11.9	40.7	18.2	17.1	15.7	6.95	20	22
Zinc (Zn)	mg/kg dw	29	38.6	18.6	30.8	30	58	38.4	34.2	85	36.4	36.5	23.7	24.9	32.2	38.6

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		T6-S2-Soil	T6-S5-Soil	T7-S1-Soil	T7-S2-Soil	T7-S5-Soil	T8-S1-Soil	T8-S2-Soil	T8-S4-Soil	T9-1-Soil	T9-2-Soil	T9-3-Soil	T10-1-Soil	T10-2-Soil	T10-3-Soil	T11-1-Soil
Date Sampled		20-Aug-2021	20-Aug-2021	24-Aug-2021	24-Aug-2021	24-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	23-Aug-2021	23-Aug-2021	23-Aug-2021	22-Aug-2021	22-Aug-2021	22-Aug-2021	23-Aug-2021
ALS Sample ID		VA21B9371-065	VA21B9371-069	VA21B9371-073	VA21B9371-077	VA21B9371-081	VA21B9371-085	VA21B9371-089	VA21B9371-093	VA21B9195-025	VA21B9195-029	VA21B9195-033	VA21B9195-001	VA21B9195-005	VA21B9195-009	VA21B9195-013
Physical Tests																
pH (1:2 soil:water)	No units	5.31	6.73	4.79	4.56	4.84	5.37	5.61	4.17	6.57	6.42	5.59	4.59	4.77	5.15	5.56
Metals																
Aluminum (Al)	mg/kg dw	9,180	6,840	8,900	6,160	11,800	10,600	16,900	2,440	6,360	5,710	5,940	7,080	25,700	6,640	9,000
Antimony (Sb)	mg/kg dw	<0.10	<0.10	0.13	<0.10	0.24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic (As)	mg/kg dw	5.78	4.4	17.5	10.3	87.1	5.79	6.08	0.66	3.62	3.53	3.64	10.3	3.38	11.7	4.96
Barium (Ba)	mg/kg dw	41.6	33	17.2	43.2	23.3	87.9	123	104	25.2	22.4	19.9	31	1,890	16.2	35.8
Beryllium (Be)	mg/kg dw	0.36	0.3	0.2	0.16	0.36	0.51	0.81	0.12	0.32	0.31	0.29	0.22	1.06	0.27	0.42
Bismuth (Bi)	mg/kg dw	0.6	0.35	0.34	0.21	0.69	0.43	0.98	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.21
Cadmium (Cd)	mg/kg dw	0.04	0.039	0.253	0.239	0.556	0.064	0.165	0.587	0.035	0.024	0.024	0.076	0.081	0.053	0.041
Calcium (Ca)	mg/kg dw	1,680	2,180	991	1,610	1,030	2,760	2,850	2,560	2,460	1,910	1,950	1,640	16,900	1,440	3,000
Chromium (Cr)	mg/kg dw	67.6	44.4	34	23.4	33.8	38.2	65.8	4.65	28.2	22.2	25	38.5	305	28.8	37.9
Cobalt (Co)	mg/kg dw	8.86	6.78	4.6	3.48	6.4	4.57	12.3	1.8	5.9	5.1	4.62	4.2	32.5	4.49	6.42
Copper (Cu)	mg/kg dw	9.07	7.02	10.4	7.35	13.4	23.1	21.8	4.57	6.47	4.79	4.44	4.62	37.9	3.83	6.4
Iron (Fe)	mg/kg dw	20,400	17,000	24,100	15,600	30,100	14,800	25,400	2,360	14,200	13,000	14,200	15,300	47,300	16,500	20,500
Lead (Pb)	mg/kg dw	7.33	5.98	8.77	7.52	14.9	6.15	14.5	1.76	5.43	4.67	4.92	5.7	5.33	6.15	6.34
Lithium (Li)	mg/kg dw	19.8	14.4	9	5.8	19.3	10.7	25.3	<2.0	7.4	6.8	7.2	5.6	26.9	7.5	10
Magnesium (Mg)	mg/kg dw	6,590	5,010	5,090	3,150	6,240	4,860	8,220	909	4,010	3,250	3,370	3,730	37,200	3,570	5,260
Manganese (Mn)	mg/kg dw	296	266	136	178	221	137	619	13.8	216	197	190	173	1310	200	255
Molybdenum (Mo)	mg/kg dw	1.07	0.8	1.17	0.69	1.07	1.24	2.13	0.35	0.35	0.29	0.35	0.38	0.16	0.31	0.38
Nickel (Ni)	mg/kg dw	30.6	21.5	18.2	13.2	19.8	24.5	33.3	4.97	20.2	15.8	14.8	13.9	182	12.2	21.6
Potassium (K)	mg/kg dw	1,840	1,460	970	790	1,050	1,400	2,480	530	670	780	620	770	17,900	720	1,000
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	0.23	<0.20	0.31	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	<0.10	0.13	0.19	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium (Na)	mg/kg dw	74	70	<50	<50	<50	90	98	56	<50	<50	<50	<50	187	<50	52
Strontium (Sr)	mg/kg dw	12.1	13.6	9.41	11.5	8.05	30.4	30.4	30.4	26.4	23.5	21.2	17.9	437	13.8	36.3
Thallium (Tl)	mg/kg dw	0.146	0.114	0.075	0.071	0.121	0.118	0.202	<0.050	0.054	0.054	<0.050	0.06	0.847	0.05	0.074
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	655	611	330	260	427	455	739	82.6	526	438	445	624	1210	430	755
Uranium (U)	mg/kg dw	2.17	2.36	1.35	0.933	1.67	6.13	3.32	0.617	1.87	2.03	1.72	1.12	0.538	0.967	2.15
Vanadium (V)	mg/kg dw	21.8	18	19.1	14.2	20.4	20.8	36.3	2.32	12.4	10.3	10.6	20.1	110	13.8	16.6
Zinc (Zn)	mg/kg dw	37.1	26.5	34.1	24.8	57.3	29.4	71.6	36.1	25.8	24.5	25.8	24.8	87.7	27.1	36.9

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-2: Existing Conditions Soil Analytical Results (2011-2021)

Sample ID		T11-2-Soil	T11-3-Soil	C1-S1-Soil	C1-S2-Soil	C1-S3-Soil	C2-S1-Soil	C2-S2-Soil	C2-S3-Soil	C3-S1-Soil	C3-S2-Soil	C3-S3-Soil
Date Sampled		23-Aug-2021	23-Aug-2021	29-Aug-2021	29-Aug-2021	29-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021
ALS Sample ID		VA21B9195-017	VA21B9195-021	VA21B9372-001	VA21B9372-005	VA21B9372-009	VA21B9372-013	VA21B9372-017	VA21B9372-021	VA21B9372-025	VA21B9372-029	VA21B9372-033
Physical Tests												
pH (1:2 soil:water)	No units	6.08	6.95	4.52	4.94	4.87	4.33	5.42	5.37	5.78	5.19	5.26
Metals												
Aluminum (Al)	mg/kg dw	6,560	8,630	9,770	7,770	7,190	1,300	13,900	15,100	13,400	9,330	14,400
Antimony (Sb)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	<0.10	0.12
Arsenic (As)	mg/kg dw	3.75	4.6	4.56	2.9	3.21	0.65	6.94	7.98	10.8	6.97	11.3
Barium (Ba)	mg/kg dw	26	32.5	49.8	23.8	23.3	63.9	31.5	39.1	27	31.9	37.7
Beryllium (Be)	mg/kg dw	0.35	0.48	0.36	0.29	0.32	<0.10	0.39	0.41	0.38	0.2	0.35
Bismuth (Bi)	mg/kg dw	<0.20	0.21	0.51	0.37	0.44	<0.20	0.56	1.15	0.52	0.44	0.56
Cadmium (Cd)	mg/kg dw	0.042	0.05	0.137	0.035	0.035	0.543	0.11	0.091	0.08	0.093	0.082
Calcium (Ca)	mg/kg dw	2,570	3,720	1,480	1,240	1,370	4,140	2,080	2,300	2,070	2,070	1,840
Chromium (Cr)	mg/kg dw	22.7	31.2	46.6	29.6	25.9	5.66	116	193	120	94.3	136
Cobalt (Co)	mg/kg dw	6.6	6.82	5.02	5.9	3.72	3.36	10.8	11.2	11.8	7.57	11.7
Copper (Cu)	mg/kg dw	5.54	6.55	6.44	3.93	3.6	3.8	10.3	8.21	10.9	5.3	10.3
Iron (Fe)	mg/kg dw	15,800	19,500	16,200	13,400	13,500	1,690	27,000	28,800	28,300	21,600	31,000
Lead (Pb)	mg/kg dw	6	6.89	7.7	5.58	5.91	1.33	6.51	7.95	7.8	7.43	8.33
Lithium (Li)	mg/kg dw	7.5	9.6	9.6	11.5	11.5	<2.0	17.1	18.5	16.5	8.3	19.3
Magnesium (Mg)	mg/kg dw	3,760	4,810	4,520	4,200	3,240	1,140	9,960	11,300	9,640	7,120	11,300
Manganese (Mn)	mg/kg dw	319	297	177	227	153	7.7	303	371	319	242	320
Molybdenum (Mo)	mg/kg dw	0.4	0.54	0.8	0.58	0.6	0.26	0.7	0.67	0.62	0.78	0.83
Nickel (Ni)	mg/kg dw	19	19.9	20.6	15.8	11.9	11.9	58.7	62.7	63.8	37.7	59.6
Potassium (K)	mg/kg dw	900	1,090	1,270	1,030	860	530	970	1,000	1,160	1,210	1,160
Selenium (Se)	mg/kg dw	<0.20	<0.20	<0.20	<0.20	<0.20	0.24	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	mg/kg dw	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium (Na)	mg/kg dw	<50	57	71	<50	54	<50	54	52	58	<50	55
Strontium (Sr)	mg/kg dw	27.1	40.3	18.3	13	12.9	28.5	24.9	24.7	28.5	26	24.8
Thallium (Tl)	mg/kg dw	0.063	0.071	0.1	0.078	0.086	<0.050	0.091	0.117	0.115	0.095	0.11
Tin (Sn)	mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg dw	557	796	504	425	443	40.6	632	698	624	569	671
Uranium (U)	mg/kg dw	2.11	2.88	2.55	1.88	2.16	0.228	1.08	0.937	1.33	0.797	0.996
Vanadium (V)	mg/kg dw	11.6	14.8	19.7	15.6	14.2	2.05	27.7	33.2	27.5	27	33
Zinc (Zn)	mg/kg dw	30.5	38.7	31.5	27.7	20.8	42.9	46.6	52.7	38.9	35.7	55.9

Notes:
"-" = not analyzed; mg/kg dw = milligram per kilogram dry weight

Table A-3: Existing Conditions Sedge Analytical Results (2011-2021)

Sample ID		T1-NEAR FIELD STN.1 SEDGE	T1-NEAR FIELD STN.2 SEDGE	T1-NEAR FIELD STN.3 SEDGE	T1-NEAR FIELD STN.4 SEDGE	T1-NEAR FIELD STN.5 SEDGE	T2-FAR FIELD STN.1 SEDGE	T2-FAR FIELD STN.2 SEDGE	T2-FAR FIELD STN.3 SEDGE	T2-FAR FIELD STN.4 SEDGE	T2-FAR FIELD STN.5 SEDGE	T3-NEAR FIELD STN.1 SEDGE	T3-NEAR FIELD STN.2 SEDGE	T3-NEAR FIELD STN.3 SEDGE
Date Sampled		17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011
ALS Sample ID		L1051858-183	L1051858-187	L1051858-191	L1051858-195	L1051858-199	L1051858-123	L1051858-127	L1051858-131	L1051858-135	L1051858-139	L1051858-103	L1051858-107	L1051858-111
Physical Tests														
% Moisture	%	47.8	64.3	54.0	63.5	63.6	54.7	48.2	59.4	58.4	58.6	48.6	44.0	58.2
Metals														
Aluminum (Al)	mg/kg ww	188	90.7	139	29.2	78.0	80.7	162	80.6	119	41.1	605	1,260	105
Antimony (Sb)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	<0.010
Arsenic (As)	mg/kg ww	0.339	0.227	0.170	0.037	0.108	0.066	0.234	0.106	0.267	0.135	1.99	7.53	0.332
Barium (Ba)	mg/kg ww	7.52	5.51	8.59	3.03	3.36	9.72	35.7	7.68	22.7	6.87	13.6	15.4	9.75
Beryllium (Be)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bismuth (Bi)	mg/kg ww	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Cadmium (Cd)	mg/kg ww	0.0178	<0.0050	0.0107	0.0059	0.0109	0.0099	0.0257	0.0140	0.0217	0.0126	0.0216	0.0425	0.0141
Calcium (Ca)	mg/kg ww	713	475	659	555	684	451	1,600	507	863	374	1,060	1,240	916
Chromium (Cr)	mg/kg ww	5.34	3.04	3.79	1.38	3.05	3.90	5.29	1.54	3.41	1.71	26.2	50.6	4.01
Cobalt (Co)	mg/kg ww	0.203	0.094	0.221	0.049	0.096	0.117	0.191	0.085	0.163	0.105	0.729	1.58	0.145
Copper (Cu)	mg/kg ww	1.63	0.745	0.935	1.01	1.42	0.526	1.53	0.919	1.72	1.14	2.09	3.16	1.52
Iron (Fe)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg ww	0.232	0.044	0.093	0.026	0.055	0.094	0.205	0.093	0.227	0.034	0.416	1.19	0.143
Lithium (Li)	mg/kg ww	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.30	0.64	<0.10
Magnesium (Mg)	mg/kg ww	278	224	302	139	288	174	658	198	385	236	761	1,160	339
Manganese (Mn)	mg/kg ww	93.7	92.0	86.2	36.7	63.7	80.6	151	34.6	106	51.6	286	206	115
Molybdenum (Mo)	mg/kg ww	0.315	0.137	0.511	0.312	0.683	0.262	0.309	0.475	0.252	0.428	0.477	0.789	3.55
Nickel (Ni)	mg/kg ww	2.66	1.27	2.01	0.68	1.38	2.02	3.07	0.89	2.71	1.31	9.73	19.8	1.82
Potassium (K)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg ww	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Sodium (Na)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg ww	2.92	1.33	2.95	1.90	1.82	2.62	9.57	2.78	7.15	2.48	5.18	6.99	3.23
Thallium (Tl)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010
Tin (Sn)	mg/kg ww	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium (U)	mg/kg ww	0.0236	0.0118	0.0368	0.0054	0.0141	0.0117	0.0329	0.0558	0.0542	0.0196	0.0749	0.189	0.0170
Vanadium (V)	mg/kg ww	0.39	0.20	0.28	<0.10	0.18	0.15	0.30	0.12	0.23	<0.10	1.46	2.99	0.24
Zinc (Zn)	mg/kg ww	8.26	4.99	6.07	8.50	3.65	8.82	22.7	5.49	20.7	8.05	28.5	28.5	20.0

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge Analytical Results (2011-2021)

Sample ID		T3-NEAR FIELD STN.4 SEDGE	T3-NEAR FIELD STN.5 SEDGE	T4-FAR FIELD STN.1 SEDGE	T4-FAR FIELD STN.2 SEDGE	T4-FAR FIELD STN.3 SEDGE	T4-FAR FIELD STN.4 SEDGE	T4-FAR FIELD STN.5 SEDGE	T5-FAR FIELD STN.1 SEDGE	T5-FAR FIELD STN.2 SEDGE	T5-FAR FIELD STN.3 SEDGE	T5-FAR FIELD STN.4 SEDGE	T5-FAR FIELD STN.5 SEDGE	T6-SOUTH ISLAND STN.1 SEDGE
Date Sampled		16-Aug-2011	16-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	16-Aug-2011
ALS Sample ID		L1051858-115	L1051858-119	L1051858-63	L1051858-67	L1051858-71	L1051858-75	L1051858-79	L1051858-83	L1051858-87	L1051858-91	L1051858-95	L1051858-99	L1051858-143
Physical Tests														
% Moisture	%	51.0	57.0	56.3	59.3	54.3	64.8	51.1	60.8	59.2	54.3	52.2	56.6	56.1
Metals														
Aluminum (Al)	mg/kg ww	261	212	181	265	132	90.7	211	66.1	67.2	474	858	108	317
Antimony (Sb)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Arsenic (As)	mg/kg ww	0.734	0.389	0.422	0.439	0.429	0.162	0.438	0.134	0.123	1.33	1.10	0.308	0.873
Barium (Ba)	mg/kg ww	35.4	13.5	19.9	10.4	8.00	8.30	19.7	7.14	9.21	15.6	25.5	12.6	20.6
Beryllium (Be)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bismuth (Bi)	mg/kg ww	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.050	<0.030	<0.030
Cadmium (Cd)	mg/kg ww	0.0350	0.0131	0.0251	0.0217	0.0125	0.0078	0.0289	0.0073	0.0128	0.0383	0.0714	0.0118	0.0392
Calcium (Ca)	mg/kg ww	1,370	685	1,180	743	633	506	874	430	494	1,100	1,340	939	1,280
Chromium (Cr)	mg/kg ww	10.1	8.36	6.48	5.59	5.36	3.72	9.16	2.76	2.49	20.1	14.6	5.75	11.7
Cobalt (Co)	mg/kg ww	0.328	0.284	0.236	0.253	0.178	0.116	0.263	0.111	0.158	0.862	2.31	0.171	0.416
Copper (Cu)	mg/kg ww	3.32	0.969	2.25	1.13	0.786	0.623	1.98	0.567	0.654	2.15	4.70	1.86	2.38
Iron (Fe)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg ww	0.246	0.093	0.143	0.217	0.098	0.059	0.291	0.043	0.052	0.590	1.33	0.097	0.237
Lithium (Li)	mg/kg ww	0.10	0.14	<0.10	0.27	<0.10	<0.10	<0.10	0.11	<0.10	0.25	0.71	<0.10	0.15
Magnesium (Mg)	mg/kg ww	840	537	508	394	344	225	383	243	292	690	872	518	831
Manganese (Mn)	mg/kg ww	219	117	220	140	180	130	121	85.7	104	168	114	123	143
Molybdenum (Mo)	mg/kg ww	0.980	0.357	1.06	0.468	0.341	0.186	1.43	0.298	0.341	0.418	0.629	0.353	0.568
Nickel (Ni)	mg/kg ww	4.31	3.15	3.57	2.73	2.77	1.93	4.57	2.67	2.62	9.07	12.3	4.31	5.58
Potassium (K)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg ww	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	<0.20	<0.20
Sodium (Na)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg ww	8.40	3.68	6.29	3.81	2.74	1.94	5.70	2.08	2.94	5.89	9.40	3.84	6.44
Thallium (Tl)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.021	<0.010	<0.010
Tin (Sn)	mg/kg ww	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium (U)	mg/kg ww	0.0489	0.0218	0.0436	0.0883	0.0163	0.0099	0.0335	0.0081	0.0097	0.0804	0.473	0.0135	0.0687
Vanadium (V)	mg/kg ww	0.61	0.51	0.38	0.48	0.32	0.22	0.45	0.16	0.16	1.19	1.43	0.25	0.77
Zinc (Zn)	mg/kg ww	23.8	37.4	19.3	11.6	9.60	7.60	14.7	6.83	16.7	30.7	17.4	14.7	13.7

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge Analytical Results (2011-2021)

Sample ID		T6-SOUTH ISLAND STN.2 SEDGE	T6-SOUTH ISLAND STN.3 SEDGE	T6-SOUTH ISLAND STN.4 SEDGE	T6-SOUTH ISLAND STN.5 SEDGE	T7-NEAR FIELD STN.1 SEDGE	T7-NEAR FIELD STN.2 SEDGE	T7-NEAR FIELD STN.3 SEDGE	T7-NEAR FIELD STN.4 SEDGE	T7-NEAR FIELD STN.5 SEDGE	C1-EXT.REF.STN.1 SEDGE	C1-EXT.REF.STN.2 SEDGE	C1-EXT.REF.STN.3 SEDGE	C1-EXT.REF.STN.4 SEDGE
Date Sampled		16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-11	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011
ALS Sample ID		L1051858-147	L1051858-151	L1051858-155	L1051858-159	L1051858-163	L1051858-167	L1051858-171	L1051858-175	L1051858-179	L1051858-23	L1051858-27	L1051858-31	L1051858-35
Physical Tests														
% Moisture	%	51.4	58.3	41.8	51.8	55.3	52.5	56.7	45.8	40.8	67.3	60.9	59.7	66.3
Metals														
Aluminum (Al)	mg/kg ww	134	79.1	637	202	104	84.6	115	345	527	260	108	50.5	53.5
Antimony (Sb)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010
Arsenic (As)	mg/kg ww	0.373	0.198	0.574	0.510	0.258	0.137	0.215	0.524	1.35	0.106	0.086	0.030	0.041
Barium (Ba)	mg/kg ww	11.4	10.5	8.81	11.1	5.56	10.3	17.1	23.2	33.1	22.6	10.2	10.7	20.7
Beryllium (Be)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bismuth (Bi)	mg/kg ww	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Cadmium (Cd)	mg/kg ww	0.0118	0.0107	0.0171	0.0171	0.0238	0.0273	0.0629	0.145	0.415	0.0164	0.0210	0.0126	0.0165
Calcium (Ca)	mg/kg ww	895	691	1,150	912	457	530	1,070	1,560	2,490	1,050	682	545	939
Chromium (Cr)	mg/kg ww	5.99	3.14	32.7	7.66	3.68	2.92	3.45	5.39	8.12	6.50	6.11	2.29	1.98
Cobalt (Co)	mg/kg ww	0.183	0.103	0.782	0.411	0.187	0.152	0.294	0.340	0.558	0.243	0.293	0.141	0.088
Copper (Cu)	mg/kg ww	1.26	0.859	2.97	1.52	1.87	1.31	1.37	2.29	3.74	2.56	1.01	0.672	1.51
Iron (Fe)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg ww	0.080	0.047	0.379	0.134	0.180	0.202	0.229	12.7	1.11	0.318	0.195	0.113	0.206
Lithium (Li)	mg/kg ww	<0.10	<0.10	0.57	0.11	<0.10	<0.10	<0.10	0.39	0.38	0.24	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	375	214	875	434	201	205	546	448	663	495	329	195	441
Manganese (Mn)	mg/kg ww	81.4	73.9	71.8	91.5	28.7	112	320	96.0	159	103	278	70.7	109
Molybdenum (Mo)	mg/kg ww	0.471	0.547	0.343	0.363	0.111	0.122	0.381	0.200	0.364	0.256	0.314	0.291	0.284
Nickel (Ni)	mg/kg ww	3.18	1.33	14.4	3.69	2.86	2.15	2.21	3.85	5.56	4.86	3.91	2.00	2.60
Potassium (K)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg ww	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Sodium (Na)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg ww	3.58	2.33	5.47	4.28	2.63	3.26	4.47	10.2	14.4	8.60	3.65	2.91	6.58
Thallium (Tl)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010
Tin (Sn)	mg/kg ww	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium (U)	mg/kg ww	0.0187	0.0092	0.101	0.0679	0.0138	0.0118	0.0175	0.0833	0.364	0.139	0.0872	0.0177	0.0131
Vanadium (V)	mg/kg ww	0.35	0.21	1.72	0.48	0.18	0.15	0.27	0.60	0.85	0.51	0.19	<0.10	<0.10
Zinc (Zn)	mg/kg ww	7.45	4.89	12.7	5.73	12.7	9.06	20.0	23.7	36.3	14.9	11.2	7.18	20.6

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge Analytical Results (2011-2021)

Sample ID		C1-EXT.REF.STN.5 SEDGE	C2-EXT.REF.STN.1 SEDGE	C2-EXT.REF.STN.2 SEDGE	C2-EXT.REF.STN.3 SEDGE	C2-EXT.REF.STN.4 SEDGE	C2-EXT.REF.STN.5 SEDGE	C3-EXT.REF.STN.1 SEDGE	C3-EXT.REF.STN.2 SEDGE	C3-EXT.REF.STN.3 SEDGE	C3-EXT.REF.STN.4 SEDGE	C3-EXT.REF.STN.5 SEDGE	T1-NEAR FIELD STATION 1 SAMPLE 2 - SEDGE	T1-NEAR FIELD STATION 2 SAMPLE 2 - SEDGE
Date Sampled		14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	18-Aug-2011	18-Aug-2011	18-Aug-2011	18-Aug-2011	18-Aug-2011	14-Aug-2014	14-Aug-2014
ALS Sample ID		L1051858-39	L1051858-43	L1051858-47	L1051858-51	L1051858-55	L1051858-59	L1051858-3	L1051858-7	L1051858-11	L1051858-15	L1051858-19	L1510356-2	L1510356-6
Physical Tests														
% Moisture	%	62.1	53.8	58.0	49.1	58.8	52.0	65.6	66.5	64.7	57.0	57.8	45.6	44.0
Metals														
Aluminum (Al)	mg/kg ww	31.0	753	17.4	79.2	18.2	241	29.7	34.9	51.9	193	8.5	696	666
Antimony (Sb)	mg/kg ww	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0067	0.0046
Arsenic (As)	mg/kg ww	0.052	0.331	0.029	0.084	0.043	0.180	0.124	0.053	0.145	0.124	0.023	0.705	0.793
Barium (Ba)	mg/kg ww	12.8	17.6	8.92	7.70	6.12	12.3	8.40	7.70	13.8	28.6	6.01	16.7	16.9
Beryllium (Be)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.0227	0.0158
Bismuth (Bi)	mg/kg ww	<0.030	0.038	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.0131	0.0137
Cadmium (Cd)	mg/kg ww	0.0178	0.0342	0.0483	0.0605	0.0357	0.0294	0.0823	0.0352	0.0641	0.0284	0.0168	0.0147	0.0266
Calcium (Ca)	mg/kg ww	789	1,420	685	3,420	1,220	640	1,040	1,350	1,440	1,570	977	1,510	2,770
Chromium (Cr)	mg/kg ww	1.32	16.5	1.04	3.11	0.60	8.62	0.96	0.80	1.02	2.76	0.67	14.1	13.6
Cobalt (Co)	mg/kg ww	0.101	0.859	0.107	0.081	0.032	0.287	0.077	0.071	0.134	0.278	0.023	0.627	0.587
Copper (Cu)	mg/kg ww	1.95	1.40	0.796	1.45	2.48	1.66	1.42	2.01	1.91	3.14	1.27	1.77	2.52
Iron (Fe)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	1,530	1,630
Lead (Pb)	mg/kg ww	0.065	0.658	0.043	0.171	0.051	0.271	0.087	0.046	0.120	0.443	0.021	0.338	0.298
Lithium (Li)	mg/kg ww	<0.10	0.54	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.51	0.49
Magnesium (Mg)	mg/kg ww	398	701	243	263	413	320	280	451	328	674	292	1,040	939
Manganese (Mn)	mg/kg ww	73.0	132	183	73.0	77.0	63.9	75.9	74.4	57.4	119	137	193	66.0
Molybdenum (Mo)	mg/kg ww	3.45	0.154	0.117	0.073	0.222	0.321	0.301	0.323	0.971	1.38	0.349	0.370	0.462
Nickel (Ni)	mg/kg ww	1.85	8.48	1.43	1.41	5.98	6.26	1.89	2.26	2.34	5.08	1.32	5.71	5.03
Potassium (K)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	2,900	3,250
Selenium (Se)	mg/kg ww	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.019	0.011
Sodium (Na)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	17.9	6.3
Strontium (Sr)	mg/kg ww	4.69	8.53	2.78	10.2	2.97	3.45	2.76	3.82	4.34	5.58	2.38	7.13	9.71
Thallium (Tl)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0123	0.00439
Tin (Sn)	mg/kg ww	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.020	<0.020
Uranium (U)	mg/kg ww	0.0154	0.0703	0.0026	0.0078	0.0061	0.0264	0.0046	0.0148	0.0098	0.0295	<0.0020	0.0787	0.0623
Vanadium (V)	mg/kg ww	<0.10	1.58	<0.10	0.17	<0.10	0.53	<0.10	<0.10	0.10	0.36	<0.10	1.50	1.45
Zinc (Zn)	mg/kg ww	21.4	10.4	17.5	14.0	30.3	14.7	22.7	18.3	21.2	22.2	15.3	12.3	9.58

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge
Analytical Results (2011-2021)

Sample ID		T1-NEAR FIELD STATION 3 SAMPLE 2 - SEDGE	T1-NEAR FIELD STATION 4 SAMPLE 2 - SEDGE	T1-NEAR FIELD STATION 5 SAMPLE 2 - SEDGE	T2-FAR FIELD STATION 1 SAMPLE 2 - SEDGE	T2-FAR FIELD STATION 2 SAMPLE 2 - SEDGE	T2-FAR FIELD STATION 3 SAMPLE 2 - SEDGE	T2-FAR FIELD STATION 4 SAMPLE 2 - SEDGE	T2-FAR FIELD STATION 5 SAMPLE 2 - SEDGE	T3-NEAR FIELD STATION 1 SAMPLE 2 - SEDGE	T3-NEAR FIELD STATION 2 SAMPLE 2 - SEDGE	T3-NEAR FIELD STATION 3 SAMPLE 2 - SEDGE	T3-NEAR FIELD STATION 4 SAMPLE 2 - SEDGE	T3-NEAR FIELD STATION 5 SAMPLE 2 - SEDGE
Date Sampled		14-Aug-2014	14-Aug-2014	14-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	20-Aug-2014	20-Aug-2014	20-Aug-2014	20-Aug-2014	20-Aug-2014
ALS Sample ID		L1510356-10	L1510356-14	L1510356-18	L1510356-22	L1510356-26	L1510356-30	L1510356-34	L1510356-38	L1510356-42	L1510356-46	L1510356-50	L1510356-54	L1510356-58
Physical Tests														
% Moisture	%	50.3	45.7	54.9	41.5	41.9	53.0	50.7	49.7	43.5	52.4	55.8	44.4	31.1
Metals														
Aluminum (Al)	mg/kg ww	215	331	448	308	666	71.1	154	134	379	285	72.9	645	1,230
Antimony (Sb)	mg/kg ww	0.0021	0.0027	0.0027	0.0033	0.0042	<0.0020	0.0092	<0.0020	0.0031	<0.0020	<0.0020	0.0047	0.0082
Arsenic (As)	mg/kg ww	0.196	0.352	0.521	0.254	0.592	0.0615	0.168	0.134	0.521	0.421	0.190	1.25	1.45
Barium (Ba)	mg/kg ww	11.6	18.7	13.3	17.2	20.7	14.6	17.5	23.9	13.7	12.6	12.2	51.6	24.8
Beryllium (Be)	mg/kg ww	0.0079	0.0122	0.0107	0.0125	0.0300	0.0096	0.0126	0.0147	0.0144	0.0118	0.0040	0.0198	0.0491
Bismuth (Bi)	mg/kg ww	0.0037	0.0060	0.0080	0.0067	0.0226	<0.0020	0.0034	0.0026	0.0074	0.0073	<0.0020	0.0151	0.0344
Cadmium (Cd)	mg/kg ww	0.0144	0.0141	0.0279	0.0134	0.0214	0.0104	0.0173	0.0147	0.0099	0.0157	0.0096	0.0337	0.0340
Calcium (Ca)	mg/kg ww	1,010	2,730	1,310	1,010	982	984	865	1,180	1,300	966	1,040	2,260	2,290
Chromium (Cr)	mg/kg ww	4.46	6.29	9.72	6.44	9.86	1.14	2.40	2.93	8.87	5.72	1.68	15.4	23.7
Cobalt (Co)	mg/kg ww	0.238	0.322	0.420	0.284	0.501	0.0911	0.178	0.220	0.348	0.326	0.0955	0.645	0.975
Copper (Cu)	mg/kg ww	1.07	1.94	2.91	1.36	1.39	1.30	1.14	1.95	1.41	1.21	1.50	2.71	2.50
Iron (Fe)	mg/kg ww	463	733	1,140	679	1,330	149	295	301	1,020	783	184	1,860	2,910
Lead (Pb)	mg/kg ww	0.131	0.258	0.260	0.222	0.508	0.0906	0.164	0.131	0.250	0.222	0.123	0.491	0.889
Lithium (Li)	mg/kg ww	0.16	0.22	0.33	0.21	0.58	<0.10	<0.10	<0.10	0.29	0.20	<0.10	0.39	0.97
Magnesium (Mg)	mg/kg ww	500	744	659	465	633	329	348	656	751	553	304	1,280	1,350
Manganese (Mn)	mg/kg ww	160	128	183	141	112	103	121	143	88.8	139	100	293	145
Molybdenum (Mo)	mg/kg ww	0.210	0.591	0.509	0.345	0.359	1.15	0.209	0.142	0.584	0.340	4.75	1.66	0.435
Nickel (Ni)	mg/kg ww	3.05	2.79	4.21	3.53	4.07	0.908	1.80	2.20	3.41	3.30	0.992	5.66	8.72
Potassium (K)	mg/kg ww	2,380	2,520	2,370	2,400	2,160	3,330	2,660	2,460	2,860	2,770	2,860	2,900	2,590
Selenium (Se)	mg/kg ww	0.014	0.014	0.012	0.015	0.016	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.016	0.030
Sodium (Na)	mg/kg ww	12.9	5.0	8.1	7.7	12.9	5.5	9.3	11.3	14.2	13.1	7.0	10.6	40.8
Strontium (Sr)	mg/kg ww	4.87	9.44	5.07	4.82	5.60	5.66	4.85	7.95	5.86	4.27	4.28	11.1	10.5
Thallium (Tl)	mg/kg ww	0.00221	0.00363	0.00314	0.00347	0.0106	0.00111	0.00410	0.00201	0.00348	0.00405	0.00089	0.00396	0.0129
Tin (Sn)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.029
Uranium (U)	mg/kg ww	0.0173	0.0400	0.0518	0.0394	0.133	0.0168	0.0319	0.0424	0.0359	0.0306	0.0116	0.0683	0.135
Vanadium (V)	mg/kg ww	0.465	0.690	1.00	0.675	1.27	0.129	0.282	0.277	0.862	0.618	0.161	1.47	2.61
Zinc (Zn)	mg/kg ww	9.47	14.2	10.5	14.0	13.0	8.26	12.9	15.3	10.3	12.0	15.8	32.2	18.0

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge
Analytical Results (2011-2021)

Sample ID		T4-FAR FIELD STATION 1 SAMPLE 2 - SEDGE	T4-FAR FIELD STATION 2 SAMPLE 2 - SEDGE	T4-FAR FIELD STATION 3 SAMPLE 2 - SEDGE	T4-FAR FIELD STATION 4 SAMPLE 2 - SEDGE	T4-FAR FIELD STATION 5 SAMPLE 2 - SEDGE	T5-FAR FIELD STATION 1 SAMPLE 2 - SEDGE	T5-FAR FIELD STATION 2 SAMPLE 2 - SEDGE	T5-FAR FIELD STATION 3 SAMPLE 2 - SEDGE	T5-FAR FIELD STATION 4 SAMPLE 2 - SEDGE	T5-FAR FIELD STATION 5 SAMPLE 2 - SEDGE	T6-SOUTH ISLAND STATION 1 SAMPLE 2 - SEDGE	T6-SOUTH ISLAND STATION 2 SAMPLE 2 - SEDGE	T6-SOUTH ISLAND STATION 3 SAMPLE 2 - SEDGE
Date Sampled		16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014
ALS Sample ID		L1510356-62	L1510356-66	L1510356-70	L1510356-74	L1510356-78	L1510356-82	L1510356-86	L1510356-90	L1510356-94	L1510356-98	L1510356-102	L1510356-106	L1510356-110
Physical Tests														
% Moisture	%	46.7	42.5	28.4	48.0	41.9	50.6	43.6	55.7	36.0	60.2	70.9	67.7	61.3
Metals														
Aluminum (Al)	mg/kg ww	52.9	632	1,660	281	352	197	487	136	158	95.5	255	246	106
Antimony (Sb)	mg/kg ww	0.0027	0.0031	0.0098	<0.0020	0.0166	<0.0020	0.0052	<0.0020	<0.0020	<0.0020	0.0026	0.0030	<0.0020
Arsenic (As)	mg/kg ww	0.104	0.915	5.33	0.379	0.748	0.210	0.658	0.218	0.144	0.0949	0.397	0.340	0.141
Barium (Ba)	mg/kg ww	13.0	45.6	21.2	16.9	22.2	22.0	23.9	16.0	12.4	8.78	16.7	16.3	10.7
Beryllium (Be)	mg/kg ww	0.0036	0.0491	0.0502	0.0119	0.0178	0.0099	0.0277	0.0077	0.0038	0.0056	0.0054	0.0055	0.0035
Bismuth (Bi)	mg/kg ww	<0.0020	0.0139	0.0395	0.0056	0.0069	0.0033	0.0126	0.0060	0.0030	0.0022	0.0115	0.0094	0.0025
Cadmium (Cd)	mg/kg ww	0.0125	0.0333	0.0719	0.0182	0.0345	0.0236	0.0299	0.0142	0.0099	0.0050	0.0184	0.0312	0.0127
Calcium (Ca)	mg/kg ww	1,080	2,180	1,790	1,080	1,330	1,150	1,260	1,050	909	955	918	1,440	1,050
Chromium (Cr)	mg/kg ww	1.14	11.2	44.1	6.17	8.66	4.69	10.5	2.23	3.95	2.04	7.70	7.64	2.85
Cobalt (Co)	mg/kg ww	0.0522	0.668	1.72	0.270	0.383	0.269	1.13	0.224	0.158	0.125	0.282	0.294	0.128
Copper (Cu)	mg/kg ww	1.62	2.32	5.36	1.23	2.09	1.63	2.14	1.72	0.953	1.26	1.79	1.63	1.81
Iron (Fe)	mg/kg ww	124	1,360	6,110	683	932	481	1,160	269	354	204	628	582	258
Lead (Pb)	mg/kg ww	0.0846	0.430	1.79	0.209	0.356	0.137	0.695	0.172	0.128	0.0559	0.160	0.199	0.129
Lithium (Li)	mg/kg ww	<0.10	0.39	1.10	0.20	0.21	0.14	0.40	0.13	0.11	0.14	0.15	0.19	<0.10
Magnesium (Mg)	mg/kg ww	476	1,150	1,960	536	762	637	852	520	500	806	743	684	371
Manganese (Mn)	mg/kg ww	381	195	851	204	213	155	201	173	39.0	37.2	162	56.9	125
Molybdenum (Mo)	mg/kg ww	3.22	2.04	0.626	0.815	2.17	0.584	1.33	0.227	0.314	0.160	0.949	0.392	0.888
Nickel (Ni)	mg/kg ww	0.898	5.17	15.8	3.37	3.65	3.83	8.81	2.85	3.78	2.18	3.15	4.01	1.44
Potassium (K)	mg/kg ww	4,230	4,150	1,750	3,300	3,510	3,880	3,740	3,050	3,730	4,260	2,520	2,140	2,630
Selenium (Se)	mg/kg ww	0.010	0.019	0.036	0.010	0.018	0.012	0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	21.2	8.9	11.5	11.5	7.0	14.9	13.6	13.1	6.8	7.3	18.9	25.3	17.5
Strontium (Sr)	mg/kg ww	5.15	12.4	7.91	4.54	8.64	6.53	6.35	5.14	3.28	4.93	4.44	6.30	3.36
Thallium (Tl)	mg/kg ww	0.00060	0.00383	0.0119	0.00505	0.00463	0.00322	0.00724	0.00382	0.00215	0.00126	0.00177	0.00168	0.00069
Tin (Sn)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)	mg/kg ww	0.00804	0.138	0.157	0.0252	0.0345	0.0156	0.0608	0.0202	0.0130	0.00876	0.0205	0.0233	0.0125
Vanadium (V)	mg/kg ww	0.110	1.05	3.72	0.602	0.788	0.443	1.05	0.285	0.367	0.215	0.627	0.610	0.255
Zinc (Zn)	mg/kg ww	26.0	18.4	28.3	14.5	88.7	27.7	43.9	15.4	17.5	6.08	11.3	9.46	13.7

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge Analytical Results (2011-2021)

Sample ID		T6-SOUTH ISLAND STATION 4 SAMPLE 2 - SEDGE	T6-SOUTH ISLAND STATION 5 SAMPLE 2 - SEDGE	T7-NEAR FIELD STATION 1 SAMPLE 2 - SEDGE	T7-NEAR FIELD STATION 2 SAMPLE 2 - SEDGE	T7-NEAR FIELD STATION 3 SAMPLE 2 - SEDGE	T7-NEAR FIELD STATION 4 SAMPLE 2 - SEDGE	T7-NEAR FIELD STATION 5 SAMPLE 2 - SEDGE	T8-AWAR STATION 1 SAMPLE 2 - SEDGE	T8-AWAR STATION 2 SAMPLE 2 - SEDGE	T8-AWAR STATION 3 SAMPLE 2 - SEDGE	T8-AWAR STATION 4 SAMPLE 2 - SEDGE	T8-AWAR STATION 5 SAMPLE 2 - SEDGE	C1-EXT REF STATION 1 SAMPLE 2 - SEDGE
Date Sampled		14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	19-Aug-2014
ALS Sample ID		L1510356-114	L1510356-118	L1510356-122	L1510356-126	L1510356-130	L1510356-134	L1510356-138	L1510356-142	L1510356-146	L1510356-150	L1510356-154	L1510356-158	L1510356-162
Physical Tests														
% Moisture	%	63.2	56.1	44.9	52.1	41.8	47.4	59.5	49.9	40.2	53.8	48.2	53.9	42.3
Metals														
Aluminum (Al)	mg/kg ww	275	471	239	249	384	391	293	655	1,020	562	286	228	742
Antimony (Sb)	mg/kg ww	0.0029	0.0032	<0.0020	<0.0020	0.0027	0.0030	<0.0020	0.0054	<0.0020	0.0031	<0.0020	<0.0020	0.0065
Arsenic (As)	mg/kg ww	0.367	0.665	0.158	0.219	0.322	0.353	0.157	0.227	0.352	0.209	0.0945	0.0844	0.202
Barium (Ba)	mg/kg ww	8.13	16.3	13.6	11.7	14.8	11.2	8.77	26.1	22.9	26.0	21.6	17.8	26.9
Beryllium (Be)	mg/kg ww	0.0071	0.0100	0.0078	0.0070	0.0106	0.0114	0.0076	0.0163	0.0202	0.0111	0.0133	0.0061	0.0450
Bismuth (Bi)	mg/kg ww	0.0066	0.0128	0.0059	0.0049	0.0075	0.0071	0.0061	0.0096	0.0122	0.0058	0.0048	0.0036	0.0358
Cadmium (Cd)	mg/kg ww	0.0087	0.0190	0.0301	0.0135	0.0395	0.0322	0.0186	0.0177	0.0383	0.0156	0.0239	0.0151	0.0481
Calcium (Ca)	mg/kg ww	1,020	1,620	960	954	1,650	850	929	1,860	2,250	1,360	1,470	1,130	1,240
Chromium (Cr)	mg/kg ww	7.13	13.3	2.47	2.70	5.41	4.84	4.20	6.29	10.3	5.41	2.40	1.96	2.60
Cobalt (Co)	mg/kg ww	0.272	0.584	0.247	0.303	0.408	0.350	0.274	0.503	0.781	0.502	0.369	0.166	0.691
Copper (Cu)	mg/kg ww	1.43	2.68	1.09	0.960	1.41	1.01	1.06	2.39	1.80	3.71	2.50	2.67	1.55
Iron (Fe)	mg/kg ww	619	1,130	401	424	714	706	504	994	1,470	844	445	302	950
Lead (Pb)	mg/kg ww	0.257	0.253	0.218	0.197	0.321	0.478	0.167	0.162	0.195	0.186	0.0977	0.0657	0.854
Lithium (Li)	mg/kg ww	0.18	0.32	0.19	0.20	0.29	0.29	0.21	0.60	0.87	0.47	0.21	0.18	0.49
Magnesium (Mg)	mg/kg ww	517	1,030	431	457	687	483	553	1,060	1,430	926	703	696	548
Manganese (Mn)	mg/kg ww	40.0	168	137	104	405	79.0	127	131	183	123	228	206	195
Molybdenum (Mo)	mg/kg ww	0.183	1.96	0.297	0.352	0.762	0.449	0.262	0.543	0.351	0.149	0.745	0.472	0.296
Nickel (Ni)	mg/kg ww	3.15	6.02	2.46	2.17	3.56	2.92	2.84	3.37	4.55	3.92	2.00	1.69	3.23
Potassium (K)	mg/kg ww	2,600	2,890	2,830	2,730	3,190	2,810	2,560	3,120	3,770	3,050	2,470	3,090	2,320
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	0.010	0.013	0.023	<0.010	<0.010	<0.010	0.033
Sodium (Na)	mg/kg ww	4.6	6.4	4.7	7.4	8.4	9.9	7.7	19.1	31.6	6.1	12.5	9.7	14.9
Strontium (Sr)	mg/kg ww	4.12	7.01	6.12	5.26	7.75	4.21	5.17	12.3	13.4	9.85	9.18	6.88	7.93
Thallium (Tl)	mg/kg ww	0.00227	0.00404	0.00329	0.00408	0.00389	0.00407	0.00258	0.00323	0.00842	0.00552	0.00230	0.00149	0.0135
Tin (Sn)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)	mg/kg ww	0.0239	0.0505	0.0232	0.0241	0.0420	0.0352	0.0239	0.0797	0.106	0.0392	0.0677	0.0408	0.231
Vanadium (V)	mg/kg ww	0.653	1.10	0.447	0.469	0.765	0.750	0.583	1.30	2.07	1.18	0.542	0.459	1.19
Zinc (Zn)	mg/kg ww	5.64	13.3	13.9	17.3	15.4	12.8	8.30	12.0	33.4	19.6	19.7	23.1	15.1

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge Analytical Results (2011-2021)

Sample ID		C1-EXT REF STATION 2 SAMPLE 2 - SEDGE	C1-EXT REF STATION 3 SAMPLE 2 - SEDGE	C1-EXT REF STATION 4 SAMPLE 2 - SEDGE	C1-EXT REF STATION 5 SAMPLE 2 - SEDGE	C2-EXT REF STATION 1 SAMPLE 2 - SEDGE	C2-EXT REF STATION 2 SAMPLE 2 - SEDGE	C2-EXT REF STATION 3 SAMPLE 2 - SEDGE	C2-EXT REF STATION 4 SAMPLE 2 - SEDGE	C2-EXT REF STATION 5 SAMPLE 2 - SEDGE	C3-EXT REF STATION 1 SAMPLE 2 - SEDGE	C3-EXT REF STATION 2 SAMPLE 2 - SEDGE	C3-EXT REF STATION 3 SAMPLE 2 - SEDGE	C3-EXT REF STATION 4 SAMPLE 2 - SEDGE
Date Sampled		19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014
ALS Sample ID		L1510356-166	L1510356-170	L1510356-174	L1510356-178	L1510356-182	L1510356-186	L1510356-190	L1510356-194	L1510356-198	L1510356-202	L1510356-206	L1510356-210	L1510356-214
Physical Tests														
% Moisture	%	45.2	41.6	56.1	62.3	47.0	48.2	52.1	49.1	59.0	54.7	49.9	54.5	52.1
Metals														
Aluminum (Al)	mg/kg ww	159	1,550	125	25.4	144	3,360	208	2,860	1,550	653	639	420	980
Antimony (Sb)	mg/kg ww	0.0032	0.0041	0.0025	0.0020	<0.0020	0.0062	0.0050	0.0045	0.0032	0.0124	0.0067	0.0060	0.0093
Arsenic (As)	mg/kg ww	0.0453	0.388	0.0372	0.0293	0.114	1.33	0.126	1.18	0.674	0.444	0.327	0.197	0.566
Barium (Ba)	mg/kg ww	16.4	26.9	17.7	10.9	14.2	19.0	11.5	16.5	21.9	17.0	29.4	42.9	51.7
Beryllium (Be)	mg/kg ww	0.0165	0.0781	0.0116	0.0050	0.0055	0.0748	0.0067	0.0777	0.0513	0.0203	0.0173	0.0147	0.0327
Bismuth (Bi)	mg/kg ww	0.0113	0.0828	0.0116	0.0059	0.0406	0.287	0.0467	0.0851	0.0481	0.0298	0.0642	0.0189	0.0302
Cadmium (Cd)	mg/kg ww	0.0236	0.0387	0.0166	0.0147	0.0281	0.0792	0.0848	0.0518	0.0486	0.0699	0.0527	0.0640	0.116
Calcium (Ca)	mg/kg ww	827	992	885	530	1,250	1,320	5,570	1,280	1,230	1,830	2,000	4,850	1,940
Chromium (Cr)	mg/kg ww	0.836	5.65	0.417	0.280	1.86	21.8	2.20	37.6	9.94	6.61	6.07	3.16	15.1
Cobalt (Co)	mg/kg ww	0.182	0.908	0.104	0.0826	0.190	1.42	0.138	2.10	1.10	0.956	0.624	0.398	1.24
Copper (Cu)	mg/kg ww	0.890	1.59	1.46	1.56	1.08	1.77	1.61	2.28	2.37	1.76	2.46	1.70	2.69
Iron (Fe)	mg/kg ww	216	2,180	172	75.7	278	5,040	357	4,970	2,700	1,060	1,030	633	1,650
Lead (Pb)	mg/kg ww	0.284	1.19	0.186	0.0626	0.204	1.74	0.495	1.75	1.11	1.28	0.458	0.539	0.890
Lithium (Li)	mg/kg ww	<0.10	1.32	<0.10	<0.10	<0.10	1.76	0.10	1.86	1.37	0.41	0.50	0.25	0.62
Magnesium (Mg)	mg/kg ww	361	737	383	312	419	1,420	328	3,140	1,370	733	1,010	856	1,520
Manganese (Mn)	mg/kg ww	126	281	156	132	114	246	100	127	111	91.7	44.8	60.8	121
Molybdenum (Mo)	mg/kg ww	0.141	0.199	0.345	1.94	0.202	0.427	0.110	0.163	0.328	0.0855	0.0939	0.0531	1.32
Nickel (Ni)	mg/kg ww	2.14	4.36	1.96	0.678	2.36	9.21	1.12	22.5	6.33	13.9	5.59	3.02	14.4
Potassium (K)	mg/kg ww	1,810	1,790	3,230	1,340	1,750	1,530	2,050	1,230	2,780	611	1,770	1,020	1,590
Selenium (Se)	mg/kg ww	0.012	0.036	0.014	<0.010	0.022	0.050	0.030	0.035	0.017	0.051	0.017	0.028	0.029
Sodium (Na)	mg/kg ww	15.1	31.0	7.2	8.0	12.7	25.8	8.7	30.1	17.8	44.7	13.3	9.7	9.6
Strontium (Sr)	mg/kg ww	4.88	7.24	6.88	3.16	5.37	13.1	14.9	11.6	8.85	5.69	9.05	24.7	8.34
Thallium (Tl)	mg/kg ww	0.00263	0.0262	0.00371	0.00082	0.00396	0.0356	0.00653	0.0247	0.0237	0.00875	0.00609	0.00690	0.0122
Tin (Sn)	mg/kg ww	<0.020	0.029	<0.020	<0.020	<0.020	<0.040	<0.020	0.038	<0.020	0.026	<0.020	<0.020	<0.020
Uranium (U)	mg/kg ww	0.0321	0.320	0.0672	0.00936	0.0135	0.229	0.0219	0.269	0.123	0.0740	0.0711	0.0336	0.103
Vanadium (V)	mg/kg ww	0.268	2.94	0.174	0.046	0.290	7.99	0.443	6.43	3.15	1.32	1.31	0.891	2.08
Zinc (Zn)	mg/kg ww	12.8	11.9	11.6	17.7	13.5	18.6	16.4	14.0	12.6	10.6	15.0	17.5	35.0

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge Analytical Results (2011-2021)

Sample ID		C3-EXT REF STATION 5 SAMPLE 2 - SEDGE	T1-1-SEDGE	T1-2-SEDGE	T1-3-SEDGE	T1-4-SEDGE	T1-5-SEDGE	T2-1-SEDGE	T2-2-SEDGE	T2-3-SEDGE	T2-4-SEDGE	T2-5-SEDGE	T3-1-SEDGE	T3-2-SEDGE
Date Sampled		19-Aug-2014	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	16-Aug-2017	16-Aug-2017
ALS Sample ID		L1510356-218	L1988451-2	L1988451-6	L1988451-10	L1988451-14	L1988451-18	L1988451-22	L1988451-26	L1988451-30	L1988451-34	L1988451-38	L1988451-42	L1988451-46
Physical Tests														
% Moisture	%	54.1	43.3	46.7	45.4	45.6	47.2	45.2	36.8	44.3	31.9	47.3	47.2	45.7
Metals														
Aluminum (Al)	mg/kg ww	178	176	486	170	207	141	138	157	139	185	129	119	192
Antimony (Sb)	mg/kg ww	0.0035	<0.0020	0.0052	0.0028	0.0023	<0.0020	<0.0020	0.0023	<0.0020	<0.0020	0.0026	<0.0020	0.0021
Arsenic (As)	mg/kg ww	0.0912	0.126	0.443	0.116	0.234	0.119	0.133	0.109	0.0888	0.133	0.129	0.144	0.371
Barium (Ba)	mg/kg ww	15.3	11.2	19.1	8.91	10.9	11.3	13.6	18.8	16.1	15.5	18.5	7.77	12.9
Beryllium (Be)	mg/kg ww	0.0070	0.0079	0.0194	0.0066	0.0054	0.0058	0.0083	0.0107	0.0171	0.0116	0.0283	0.0056	0.0086
Bismuth (Bi)	mg/kg ww	0.0365	0.0030	0.0139	0.0026	0.0030	0.0026	0.0026	0.0030	0.0036	0.0043	0.0026	0.0022	0.0036
Cadmium (Cd)	mg/kg ww	0.0515	0.0121	0.0483	0.0082	0.0094	0.0333	0.0091	0.0129	0.0187	0.0143	0.0274	0.0081	0.0146
Calcium (Ca)	mg/kg ww	4,750	901	3,010	930	1,380	1,870	962	848	1,060	835	1,190	679	915
Chromium (Cr)	mg/kg ww	2.59	3.49	7.73	3.52	4.23	2.38	2.17	2.08	1.48	2.27	1.69	2.72	4.25
Cobalt (Co)	mg/kg ww	0.176	0.256	0.398	0.221	0.220	0.182	0.151	0.163	0.164	0.170	0.250	0.135	0.241
Copper (Cu)	mg/kg ww	1.84	0.972	2.78	0.694	1.53	2.55	0.815	0.856	1.15	0.923	1.91	0.624	1.01
Iron (Fe)	mg/kg ww	284	325	947	313	418	270	247	269	231	325	315	227	420
Lead (Pb)	mg/kg ww	0.399	0.126	0.359	0.114	0.158	0.166	0.156	0.212	0.263	0.253	0.269	0.149	0.209
Lithium (Li)	mg/kg ww	0.16	0.17	0.51	0.19	0.18	0.18	0.14	0.14	0.12	0.15	<0.10	<0.10	0.12
Magnesium (Mg)	mg/kg ww	331	507	864	493	580	594	377	337	428	329	542	400	499
Manganese (Mn)	mg/kg ww	45.1	170	46.1	154	150	211	159	115	125	126	132	115	154
Molybdenum (Mo)	mg/kg ww	0.431	0.368	0.392	0.329	0.547	1.16	0.471	0.462	0.800	0.347	0.584	0.443	0.482
Nickel (Ni)	mg/kg ww	2.02	2.52	3.23	2.26	1.81	1.78	1.56	1.31	1.27	1.56	2.12	1.41	2.20
Potassium (K)	mg/kg ww	1,630	3,420	3,330	2,520	2,860	4,590	2,740	2,960	3,480	2,580	2,440	3,120	2,910
Selenium (Se)	mg/kg ww	0.019	0.012	0.017	<0.010	0.015	0.018	0.021	<0.010	0.012	0.014	0.011	<0.010	<0.010
Sodium (Na)	mg/kg ww	8.4	17.9	13.6	20.7	11.2	12.3	22.2	14.3	11.9	17.6	7.2	17.5	20.9
Strontium (Sr)	mg/kg ww	9.00	4.19	10.1	3.91	5.11	5.77	5.18	4.49	5.57	4.23	7.04	3.37	4.88
Thallium (Tl)	mg/kg ww	0.00381	0.00297	0.00404	0.00219	0.00195	0.00239	0.00346	0.00551	0.00260	0.00397	0.00485	0.00144	0.00267
Tin (Sn)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)	mg/kg ww	0.0153	0.0146	0.152	0.0164	0.0202	0.0283	0.0220	0.0207	0.0446	0.0331	0.0545	0.0133	0.0200
Vanadium (V)	mg/kg ww	0.374	0.389	0.974	0.381	0.466	0.278	0.269	0.279	0.228	0.313	0.215	0.254	0.418
Zinc (Zn)	mg/kg ww	12.9	9.29	10.2	7.94	9.68	9.40	9.39	11.7	10.5	11.3	12.7	7.59	19.7

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge
Analytical Results (2011-2021)

Sample ID		T3-3-SEDGE	T3-4-SEDGE	T3-5-SEDGE	T4-1-SEDGE	T4-2-SEDGE	T4-3-SEDGE	T4-4-SEDGE	T4-5-SEDGE	T5-1-SEDGE	T5-2-SEDGE	T5-3-SEDGE	T5-4-SEDGE	T5-5-SEDGE
Date Sampled		16-Aug-2017	16-Aug-2017	16-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017
ALS Sample ID		L1988451-50	L1988451-54	L1988451-58	L1988451-62	L1988451-66	L1988451-70	L1988451-74	L1988451-78	L1988451-82	L1988451-86	L1988451-90	L1988451-94	L1988451-98
Physical Tests														
% Moisture	%	40.5	43.8	47.1	62.4	36.9	38.9	23.1	44.7	50.9	55.8	55.6	59.7	38.9
Metals														
Aluminum (Al)	mg/kg ww	257	224	198	361	78.5	70.8	70.3	136	89.5	190	48.6	52.9	146
Antimony (Sb)	mg/kg ww	0.0030	0.0028	0.0022	0.0030	0.0026	<0.0020	<0.0020	0.0061	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	0.404	0.269	0.250	0.316	0.0978	0.114	0.0789	0.157	0.131	0.0931	0.0552	0.0692	0.174
Barium (Ba)	mg/kg ww	15.1	8.58	9.67	19.0	9.70	11.1	11.2	16.2	21.1	8.52	8.47	6.45	15.9
Beryllium (Be)	mg/kg ww	0.0105	0.0087	0.0099	0.0263	0.0047	0.0050	0.0048	0.0070	0.0071	0.0101	0.0036	0.0030	0.0089
Bismuth (Bi)	mg/kg ww	0.0059	0.0051	0.0061	0.0129	<0.0020	<0.0020	0.0021	0.0034	<0.0020	0.0060	<0.0020	<0.0020	0.0037
Cadmium (Cd)	mg/kg ww	0.0229	0.0099	0.0145	0.0154	0.0139	0.0106	0.0074	0.0117	0.0238	0.0098	0.0080	0.0155	0.0141
Calcium (Ca)	mg/kg ww	1,310	899	1,070	1,090	811	672	994	996	1,030	547	487	653	887
Chromium (Cr)	mg/kg ww	6.52	5.59	3.92	5.32	1.88	1.68	1.73	3.18	1.70	1.83	1.00	1.09	2.95
Cobalt (Co)	mg/kg ww	0.310	0.235	0.211	0.342	0.0972	0.100	0.122	0.146	0.177	0.231	0.0990	0.0952	0.148
Copper (Cu)	mg/kg ww	1.18	0.744	1.04	1.52	0.934	0.632	0.912	0.838	1.35	0.703	0.717	0.513	1.06
Iron (Fe)	mg/kg ww	561	456	388	665	159	149	137	274	195	348	96.4	108	288
Lead (Pb)	mg/kg ww	0.409	0.253	0.208	0.265	0.125	0.112	0.139	0.185	0.148	0.161	0.0794	0.0770	0.277
Lithium (Li)	mg/kg ww	0.22	0.25	0.23	0.25	<0.10	<0.10	0.19	0.10	<0.10	0.28	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	607	572	588	611	361	321	723	400	462	373	231	256	400
Manganese (Mn)	mg/kg ww	336	138	133	157	187	139	111	189	196	120	115	94.0	139
Molybdenum (Mo)	mg/kg ww	0.424	0.655	0.508	0.862	0.690	0.319	0.266	0.429	0.628	0.267	0.271	0.185	0.424
Nickel (Ni)	mg/kg ww	2.51	2.67	2.14	2.52	1.54	1.24	1.68	1.88	2.60	1.77	1.22	1.36	1.83
Potassium (K)	mg/kg ww	3,160	2,920	2,730	2,110	3,620	3,070	5,570	3,140	3,090	2,170	2,250	1,800	2,690
Selenium (Se)	mg/kg ww	0.020	0.016	0.018	0.016	0.011	<0.010	<0.010	0.014	0.012	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	15.0	25.3	22.5	9.6	22.9	15.9	23.2	18.8	13.4	14.5	11.2	13.2	13.2
Strontium (Sr)	mg/kg ww	5.92	4.28	4.97	6.13	3.50	3.75	5.07	4.70	6.57	3.15	2.41	3.17	4.38
Thallium (Tl)	mg/kg ww	0.00525	0.00250	0.00287	0.00340	0.00190	0.00237	0.00147	0.00292	0.00318	0.00303	0.00160	0.00103	0.00351
Tin (Sn)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)	mg/kg ww	0.0294	0.0230	0.0296	0.173	0.00924	0.00638	0.00703	0.0120	0.0126	0.0339	0.00497	0.0107	0.0132
Vanadium (V)	mg/kg ww	0.578	0.537	0.437	0.573	0.175	0.160	0.166	0.299	0.184	0.342	0.104	0.115	0.283
Zinc (Zn)	mg/kg ww	17.2	7.46	10.1	12.1	12.7	9.49	7.17	10.5	18.2	7.61	8.24	6.81	12.1

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge Analytical Results (2011-2021)

Sample ID		T6-1-SEDGE	T6-2-SEDGE	T6-3-SEDGE	T6-4-SEDGE	T6-5-SEDGE	T7-1-SEDGE	T7-2-SEDGE	T7-3-SEDGE	T7-4-SEDGE	T7-5-SEDGE	T8-1-SEDGE	T8-2-SEDGE	T8-3-SEDGE
Date Sampled		15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
ALS Sample ID		L1988451-102	L1988451-106	L1988451-110	L1988451-114	L1988451-118	L1988451-122	L1988451-126	L1988451-130	L1988451-134	L1988451-138	L1988451-142	L1988451-146	L1988451-150
Physical Tests														
% Moisture	%	48.9	43.8	42.8	59.1	45.9	44.4	43.1	49.3	37.8	46.0	45.4	37.1	46.0
Metals														
Aluminum (Al)	mg/kg ww	151	210	208	177	276	304	635	441	733	363	907	1,020	186
Antimony (Sb)	mg/kg ww	<0.0020	0.0031	0.0043	0.0036	0.0045	0.0031	0.0082	0.0051	0.0080	0.0034	0.0037	0.0093	<0.0020
Arsenic (As)	mg/kg ww	0.231	0.325	0.348	0.150	0.349	0.282	0.731	0.400	0.743	0.353	0.602	0.456	0.0825
Barium (Ba)	mg/kg ww	27.4	32.7	18.3	4.18	18.2	9.53	14.5	10.4	12.8	8.58	30.9	22.2	27.2
Beryllium (Be)	mg/kg ww	0.0040	0.0056	0.0051	0.0062	0.0086	0.0087	0.0188	0.0111	0.0150	0.0080	0.0134	0.0237	0.0056
Bismuth (Bi)	mg/kg ww	0.0030	0.0042	0.0043	0.0051	0.0052	0.0055	0.0110	0.0057	0.0134	0.0051	0.0124	0.0125	<0.0020
Cadmium (Cd)	mg/kg ww	0.0245	0.0286	0.0294	0.0204	0.0310	0.0761	0.0361	0.0185	0.0439	0.0209	0.0206	0.0630	0.0059
Calcium (Ca)	mg/kg ww	1,370	1,710	1,760	957	1,780	1,280	1,510	1,310	1,560	930	2,010	2,180	1,310
Chromium (Cr)	mg/kg ww	4.17	5.82	5.40	3.76	6.39	2.49	4.93	4.03	6.55	3.39	8.48	9.31	1.97
Cobalt (Co)	mg/kg ww	0.204	0.289	0.311	0.216	0.358	0.334	0.649	0.442	0.673	0.322	1.06	0.932	0.195
Copper (Cu)	mg/kg ww	2.55	2.77	2.90	1.75	2.36	1.29	1.75	1.25	2.28	1.01	2.85	2.52	2.26
Iron (Fe)	mg/kg ww	319	469	491	343	602	557	1,200	856	1,430	690	1,610	1,670	326
Lead (Pb)	mg/kg ww	0.234	0.285	0.319	0.185	0.360	0.363	0.998	0.379	1.07	0.345	0.126	0.207	0.0444
Lithium (Li)	mg/kg ww	<0.10	0.17	0.17	0.21	0.21	0.26	0.65	0.45	0.67	0.31	0.96	0.99	0.17
Magnesium (Mg)	mg/kg ww	874	760	534	559	880	612	783	725	857	591	1,400	1,640	719
Manganese (Mn)	mg/kg ww	293	212	267	68.6	163	188	166	98.9	152	160	150	467	131
Molybdenum (Mo)	mg/kg ww	0.910	0.953	0.694	0.181	1.07	0.533	0.733	0.890	0.666	0.654	0.505	0.410	0.386
Nickel (Ni)	mg/kg ww	2.93	4.44	2.68	1.94	4.31	3.18	3.99	3.39	3.72	2.42	4.56	5.39	1.73
Potassium (K)	mg/kg ww	3,640	3,310	2,460	2,680	3,650	3,580	2,920	3,570	3,360	3,370	3,350	3,640	3,530
Selenium (Se)	mg/kg ww	0.010	0.013	0.017	<0.010	0.017	0.011	0.017	0.013	0.020	<0.010	0.017	0.017	0.013
Sodium (Na)	mg/kg ww	7.0	8.6	7.4	12.1	8.0	19.2	22.7	12.4	13.1	28.6	6.8	11.1	4.4
Strontium (Sr)	mg/kg ww	7.61	8.82	6.01	3.30	7.73	6.33	7.91	6.53	7.39	5.30	12.8	12.2	10.3
Thallium (Tl)	mg/kg ww	0.00217	0.00191	0.00207	0.00160	0.00218	0.00326	0.00511	0.00289	0.00589	0.00329	0.00210	0.00402	0.00185
Tin (Sn)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.034	<0.020	0.021	<0.020	0.025	<0.020	<0.020
Uranium (U)	mg/kg ww	0.0175	0.0207	0.0271	0.0385	0.0433	0.0317	0.0651	0.0416	0.0729	0.0327	0.0693	0.102	0.0161
Vanadium (V)	mg/kg ww	0.360	0.518	0.509	0.410	0.623	0.514	1.13	0.810	1.34	0.652	1.82	2.06	0.386
Zinc (Zn)	mg/kg ww	13.8	18.4	15.0	11.3	15.8	20.6	19.3	10.8	12.7	11.5	13.0	22.7	16.4

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge Analytical Results (2011-2021)

Sample ID		T8-4-SEDGE	T8-5-SEDGE	C1-1-SEDGE	C1-2-SEDGE	C1-3-SEDGE	C1-4-SEDGE	C1-5-SEDGE	C2-1-SEDGE	C2-2-SEDGE	C2-3-SEDGE	C2-4-SEDGE	C2-5-SEDGE	C3-1-SEDGE
Date Sampled		18-Aug-2017	18-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017
ALS Sample ID		L1988451-154	L1988451-158	L1988451-162	L1988451-166	L1988451-170	L1988451-174	L1988451-178	L1988451-182	L1988451-186	L1988451-190	L1988451-194	L1988451-198	L1988451-202
Physical Tests														
% Moisture	%	38.0	42.0	24.7	36.1	35.3	42.7	33.4	36.1	37.9	36.0	45.1	41.6	39.8
Metals														
Aluminum (Al)	mg/kg ww	288	301	35.8	24.7	53.6	15.1	35.5	38.4	42.4	43.1	34.0	51.4	48.9
Antimony (Sb)	mg/kg ww	0.0056	0.0021	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	0.118	0.122	0.0322	0.0228	0.0285	0.0149	0.0163	0.0317	0.0394	0.0335	0.0484	0.0489	0.0441
Barium (Ba)	mg/kg ww	24.2	30.5	15.8	15.7	14.8	11.8	15.7	12.7	9.31	16.7	8.52	8.44	9.02
Beryllium (Be)	mg/kg ww	0.0172	0.0073	0.0058	0.0035	0.0059	0.0031	0.0056	0.0027	0.0026	0.0029	0.0025	0.0026	<0.0020
Bismuth (Bi)	mg/kg ww	0.0054	0.0066	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0035	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0301	0.0261	0.0110	0.0297	0.0094	0.0166	0.0116	0.0183	0.0136	0.0392	0.0352	0.0087	0.0063
Calcium (Ca)	mg/kg ww	2,370	2,100	1,260	993	786	564	702	844	732	1,430	880	809	890
Chromium (Cr)	mg/kg ww	2.61	3.06	0.429	0.305	0.422	0.140	0.330	0.509	0.614	0.520	0.599	0.905	0.813
Cobalt (Co)	mg/kg ww	0.364	0.291	0.0846	0.170	0.136	0.0991	0.0773	0.177	0.122	0.0765	0.193	0.0858	0.142
Copper (Cu)	mg/kg ww	3.76	2.40	1.24	1.30	0.743	0.953	0.775	0.883	1.31	0.997	1.48	0.641	0.601
Iron (Fe)	mg/kg ww	527	542	73.4	49.2	87.2	29.1	61.6	74.4	81.4	76.2	77.9	99.0	94.2
Lead (Pb)	mg/kg ww	0.188	0.0875	0.143	0.0937	0.0765	0.0323	0.112	0.0631	0.0606	0.0735	0.0727	0.0656	0.0500
Lithium (Li)	mg/kg ww	0.26	0.30	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	1,010	1,080	495	422	317	312	295	416	410	424	480	372	587
Manganese (Mn)	mg/kg ww	167	243	220	433	143	97.0	146	168	86.2	143	91.8	115	69.0
Molybdenum (Mo)	mg/kg ww	2.15	1.03	0.522	0.316	0.246	0.224	0.124	0.275	0.238	0.216	0.342	0.371	0.234
Nickel (Ni)	mg/kg ww	2.95	2.46	0.875	0.803	1.53	0.805	0.911	2.10	1.74	1.03	2.27	1.91	7.28
Potassium (K)	mg/kg ww	2,860	4,010	3,220	2,300	3,110	2,640	3,580	2,460	2,710	2,360	3,620	2,640	2,390
Selenium (Se)	mg/kg ww	0.017	0.011	0.021	0.016	0.011	0.011	0.011	<0.010	0.012	0.014	<0.010	0.014	<0.010
Sodium (Na)	mg/kg ww	11.0	7.8	19.5	11.5	22.9	23.4	9.2	13.1	19.0	26.6	13.2	32.0	36.2
Strontium (Sr)	mg/kg ww	15.4	13.4	7.35	4.91	4.83	3.70	4.83	3.70	3.36	6.67	3.42	2.96	2.37
Thallium (Tl)	mg/kg ww	0.00184	0.00122	0.00217	0.00437	0.00460	0.00114	0.00298	0.00290	0.00103	0.00359	0.00520	0.00126	0.00108
Tin (Sn)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)	mg/kg ww	0.0797	0.0463	0.00995	0.00412	0.00979	0.00252	0.00731	0.00394	0.00642	0.00370	0.00386	0.00450	0.00416
Vanadium (V)	mg/kg ww	0.562	0.613	0.070	0.049	0.104	0.027	0.053	0.078	0.094	0.082	0.074	0.112	0.109
Zinc (Zn)	mg/kg ww	19.1	23.4	15.5	22.3	9.94	18.0	16.7	12.9	9.22	43.9	15.4	7.58	4.27

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge
Analytical Results (2011-2021)

Sample ID		C3-2-SEDGE	C3-3-SEDGE	C3-4-SEDGE	C3-5-SEDGE	T1-S1-Sedge	T1-S2-Sedge	T1-S3-Sedge	T2-S1-Sedge	T2-S3-Sedge	T2-S4-Sedge	T3-S1-Sedge	T3-S2-Sedge	T3-S3-Sedge
Date Sampled		21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	22-Aug-2021	22-Aug-2021	23-Aug-2021	26-Aug-2021	26-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021
ALS Sample ID		L1988451-206	L1988451-210	L1988451-214	L1988451-218	VA21B9371-002	VA21B9371-006	VA21B9371-010	VA21B9371-014	VA21B9371-018	VA21B9371-022	VA21B9371-026	VA21B9371-030	VA21B9371-034
Physical Tests														
% Moisture	%	34.0	39.5	37.7	32.2	35.9	50.1	48.9	43.5	52.4	58.6	40.3	53.7	54.2
Metals														
Aluminum (Al)	mg/kg ww	45.4	44.5	42.8	48.8	242	94.6	147	44	69.6	49.9	126	128	60.1
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	0.0021	<0.0046	<0.0035	0.0061	<0.0044	<0.0035	<0.0030	0.0072	0.00	0.0052
Arsenic (As)	mg/kg ww	0.0520	0.0392	0.0463	0.0433	0.725	0.286	0.295	0.163	0.194	0.138	1.21	0.7	0.524
Barium (Ba)	mg/kg ww	11.0	9.21	10.5	10.1	18.7	9.52	10.6	10	16.9	11.4	15.5	9.92	9.4
Beryllium (Be)	mg/kg ww	0.0022	0.0032	0.0024	<0.0020	0.0099	<0.0035	0.0055	0.0044	0.0115	0.0041	0.0077	0.0061	0.0038
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0046	<0.0035	<0.0038	<0.0044	<0.0035	<0.0030	<0.0044	0.00	<0.0032
Cadmium (Cd)	mg/kg ww	0.0337	0.0227	0.0091	0.0087	0.0188	0.0075	0.0094	0.0061	0.0138	0.0092	0.0158	0.0154	0.011
Calcium (Ca)	mg/kg ww	1,160	1,040	1,270	771	1,480	1,300	982	585	1,170	712	1,360	921	884
Chromium (Cr)	mg/kg ww	0.732	0.691	0.803	0.870	3.68	1.17	2.06	0.52	0.819	0.602	2.58	2.14	1.15
Cobalt (Co)	mg/kg ww	0.0796	0.129	0.0686	0.124	0.264	0.099	0.166	0.0689	0.085	0.0536	0.174	0.148	0.0975
Copper (Cu)	mg/kg ww	0.909	0.932	1.11	1.03	2.45	1.82	1.6	0.635	1.62	0.804	1.66	0.865	1.28
Iron (Fe)	mg/kg ww	86.1	83.8	85.1	88.4	537	205	298	94.9	144	108	324	312	165
Lead (Pb)	mg/kg ww	0.0698	0.0495	0.0777	0.0512	0.291	0.118	0.156	0.0776	0.11	0.0777	0.311	0.174	0.0998
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.23	<0.17	<0.19	<0.22	<0.18	<0.15	<0.22	<0.17	<0.16
Magnesium (Mg)	mg/kg ww	280	507	440	349	568	498	446	178	400	255	581	378	470
Manganese (Mn)	mg/kg ww	65.1	144	72.7	74.7	127	87.8	132	129	108	119	140	128	172
Molybdenum (Mo)	mg/kg ww	1.66	0.375	0.463	0.253	0.578	0.917	0.786	0.458	0.825	0.435	1.63	0.534	1.83
Nickel (Ni)	mg/kg ww	2.10	3.03	2.13	1.90	3.21	2.24	2.15	1.07	1.28	1.08	2.61	1.46	1.64
Potassium (K)	mg/kg ww	3,260	3,040	3,540	2,870	3,870	3,940	3,630	3,700	4,190	2,900	3,660	2,780	3,700
Selenium (Se)	mg/kg ww	0.013	0.014	0.014	0.011	<0.023	0.021	0.019	<0.022	<0.018	<0.015	<0.022	<0.017	<0.016
Sodium (Na)	mg/kg ww	29.1	28.0	22.5	38.1	18.4	19.8	14.5	18	19.4	17.5	23	28.2	25.6
Strontium (Sr)	mg/kg ww	2.29	3.51	3.74	3.04	7.4	4.73	4.64	3.19	6.95	3.69	6.84	4.1	3.97
Thallium (Tl)	mg/kg ww	0.00089	0.00133	0.00066	0.00127	0.00235	0.00085	0.00351	0.00276	0.00132	0.00156	0.00156	0.00169	0.00115
Tin (Sn)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	0.092	0.05	0.193	0.122	0.092	0.046	0.125	0.119	0.141
Uranium (U)	mg/kg ww	0.00419	0.00421	0.00372	0.00391	0.0229	0.0109	0.014	0.00461	0.0187	0.005	0.012	0.0142	0.00549
Vanadium (V)	mg/kg ww	0.104	0.095	0.095	0.110	0.497	0.184	0.284	0.075	0.118	0.097	0.268	0.268	0.126
Zinc (Zn)	mg/kg ww	10.4	14.1	6.76	6.69	17.8	13.7	12.3	8.03	15.8	18.7	21.9	8.96	16.9

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge
Analytical Results (2011-2021)

Sample ID		T4-S1-Sedge	T4-S2-Sedge	T4-S4-Sedge	T5-S1-Sedge	T5-S4-Sedge	T5-S5-Sedge	T6-S1-Sedge	T6-S2-Sedge	T6-S5-Sedge	T7-S1-Sedge	T7-S2-Sedge	T7-S5-Sedge	T8-S1-Sedge
Date Sampled		25-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	20-Aug-2021	20-Aug-2021	20-Aug-2021	24-Aug-2021	24-Aug-2021	24-Aug-2021	27-Aug-2021
ALS Sample ID		VA21B9371-038	VA21B9371-042	VA21B9371-046	VA21B9371-050	VA21B9371-054	VA21B9371-058	VA21B9371-062	VA21B9371-066	VA21B9371-070	VA21B9371-074	VA21B9371-078	VA21B9371-082	VA21B9371-086
Physical Tests														
% Moisture	%	53.5	50.6	49.3	38.1	18.4	45.7	31	47.1	62.4	42.5	34.2	37.7	12.1
Metals														
Aluminum (Al)	mg/kg ww	32.9	224	50	140	166	388	230	75.9	213	374	595	113	492
Antimony (Sb)	mg/kg ww	<0.0033	0.00	<0.0038	<0.0068	0.01	<0.0069	0.0166	0.0064	0.0223	0.0073	0.0076	0.0021	0.0024
Arsenic (As)	mg/kg ww	0.27	1.05	0.272	0.755	1.66	0.673	3.15	0.658	2.67	0.589	0.948	0.185	0.12
Barium (Ba)	mg/kg ww	11	20.2	11.2	25.8	25.7	18.7	41.5	7.54	25.7	15.2	19.9	7.46	26
Beryllium (Be)	mg/kg ww	<0.0033	0.0269	0.0048	<0.0068	0.0073	0.0157	0.0088	<0.0037	0.0121	0.0121	0.0157	0.0037	0.0424
Bismuth (Bi)	mg/kg ww	<0.0033	0.0069	<0.0038	<0.0068	<0.0068	0.0169	<0.0068	<0.0037	<0.0034	<0.0068	0.0113	<0.0020	0.0699
Cadmium (Cd)	mg/kg ww	0.013	0.02	0.0149	0.0597	0.0504	0.0649	0.0419	0.0115	0.0305	0.0384	0.053	0.0093	0.0309
Calcium (Ca)	mg/kg ww	1,120	1,490	660	1,970	1,910	1,620	3,090	786	2,420	1,360	2,020	640	2,380
Chromium (Cr)	mg/kg ww	0.549	2.41	0.688	3.29	3.82	4.4	4.58	1.56	4.48	2.76	5.22	0.843	1.77
Cobalt (Co)	mg/kg ww	0.0469	0.206	0.0978	0.244	0.342	0.374	0.291	0.102	0.362	0.337	0.746	0.1	0.416
Copper (Cu)	mg/kg ww	1.61	1.71	0.792	4.38	2.34	2.91	5.39	1.04	3.44	2.01	3.36	0.935	5.73
Iron (Fe)	mg/kg ww	108	474	120	391	456	687	636	186	586	709	1,190	233	2,240
Lead (Pb)	mg/kg ww	0.132	0.316	0.0894	0.275	0.407	0.416	0.616	0.134	0.502	0.56	0.99	0.0853	0.447
Lithium (Li)	mg/kg ww	<0.17	0.19	<0.19	<0.34	<0.34	0.72	<0.34	<0.18	0.21	0.4	0.61	0.14	0.59
Magnesium (Mg)	mg/kg ww	355	586	217	1,400	1,140	1,000	2,100	396	1,130	822	1,040	355	1,290
Manganese (Mn)	mg/kg ww	356	170	158	613	374	255	381	169	186	248	232	106	289
Molybdenum (Mo)	mg/kg ww	1.94	1.07	0.363	1.25	1.03	0.625	1.98	0.548	1.36	0.558	1.38	0.422	0.942
Nickel (Ni)	mg/kg ww	0.686	2.44	0.902	3.48	4.92	3.7	4.63	2.43	6.53	3.83	6.3	1.43	3
Potassium (K)	mg/kg ww	3,410	3,260	3,350	7,120	6,950	9,120	9,860	3,550	6,780	7,780	6,800	3,200	6,890
Selenium (Se)	mg/kg ww	<0.017	0.022	<0.019	0.036	<0.034	<0.035	0.038	<0.018	0.031	<0.034	<0.034	<0.010	0.016
Sodium (Na)	mg/kg ww	6.90	20.2	13.4	19.6	41.5	38	20	26.5	30.6	44.9	37.2	28.9	41.1
Strontium (Sr)	mg/kg ww	5	7.93	3.02	9.42	7.81	6.49	14.9	2.84	11.6	7.57	11.1	3.76	19.5
Thallium (Tl)	mg/kg ww	<0.00067	0.00235	0.00234	0.0026	0.00563	0.00535	0.00292	0.00094	0.00404	0.00478	0.00623	0.00137	0.00296
Tin (Sn)	mg/kg ww	0.12	0.071	0.168	0.219	0.127	0.088	0.099	0.116	0.192	0.231	0.522	0.06	0.216
Uranium (U)	mg/kg ww	0.00676	0.0545	0.0056	0.0142	0.0138	0.0625	0.0589	0.00772	0.0371	0.0404	0.0614	0.00999	0.0773
Vanadium (V)	mg/kg ww	0.065	0.335	0.095	0.342	0.401	0.863	0.474	0.166	0.438	0.639	1.04	0.187	0.76
Zinc (Zn)	mg/kg ww	31.5	15	8.99	51.1	40.4	26.6	28.2	9.97	22.7	24.8	22.5	9.21	22.3

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge
Analytical Results (2011-2021)

Sample ID		T8-S2-Sedge	T8-S4-Sedge	T9-1-Sedge	T9-2-Sedge	T9-3-Sedge	T10-1-Sedge	T10-2-Sedge	T10-3-Sedge	T11-1-Sedge	T11-2-Sedge	T11-3-Sedge	C1-S1-Sedge	C1-S2-Sedge
Date Sampled		27-Aug-2021	27-Aug-2021	23-Aug-2021	23-Aug-2021	23-Aug-2021	22-Aug-2021	22-Aug-2021	22-Aug-2021	23-Aug-2021	23-Aug-2021	23-Aug-2021	29-Aug-2021	29-Aug-2021
ALS Sample ID		VA21B9371-090	VA21B9371-094	VA21B9195-026	VA21B9195-030	VA21B9195-034	VA21B9195-002	VA21B9195-006	VA21B9195-010	VA21B9195-014	VA21B9195-018	VA21B9195-022	VA21B9372-002	VA21B9372-006
Physical Tests														
% Moisture	%	42.4	13.8	58.8	53.8	62.5	55.3	61.5	57.5	49.6	52.3	52.7	54.3	53.1
Metals														
Aluminum (Al)	mg/kg ww	209	696	131	400	122	173	243	272	2,030	474	818	20.4	37.4
Antimony (Sb)	mg/kg ww	<0.0020	0.0038	0.0041	0.0074	0.0046	0.0056	0.0076	0.0082	0.0183	0.0046	0.0104	<0.0020	0.0023
Arsenic (As)	mg/kg ww	0.0634	0.263	0.723	1.34	0.588	0.886	1.32	1.33	3.48	0.578	1.17	0.0352	0.0868
Barium (Ba)	mg/kg ww	23.6	33	12.5	13.3	12.7	14.2	16.4	13.8	19.9	21	16.8	7.96	11.1
Beryllium (Be)	mg/kg ww	0.0194	0.0392	0.0056	0.0331	0.0038	0.0052	0.0062	0.0079	0.0335	0.0123	0.0168	0.0022	0.0046
Bismuth (Bi)	mg/kg ww	0.0482	0.0473	<0.0020	0.0025	<0.0020	<0.0020	<0.0020	<0.0020	0.0135	0.0029	0.0044	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0293	0.0224	0.0132	0.0276	0.0144	0.007	0.009	0.011	0.0172	0.0106	0.0112	0.0104	0.0082
Calcium (Ca)	mg/kg ww	1,860	2,010	790	1,120	789	533	534	657	2,270	1,450	1,610	591	769
Chromium (Cr)	mg/kg ww	0.622	4.29	4.52	9.94	4.17	6.36	8.95	9.73	26.3	6.67	10.9	0.171	0.629
Cobalt (Co)	mg/kg ww	0.189	0.681	0.218	0.684	0.215	0.233	0.357	0.361	2.7	0.503	0.881	0.0432	0.0992
Copper (Cu)	mg/kg ww	4.24	5.11	1.7	2.01	1.13	0.754	1.05	0.942	5.37	2.43	2.98	0.852	0.844
Iron (Fe)	mg/kg ww	750	2,260	241	649	214	297	418	460	3,410	799	1,410	34.5	78.7
Lead (Pb)	mg/kg ww	0.298	0.478	0.0687	0.247	0.0781	0.144	0.135	0.134	0.661	0.173	0.3	0.0303	0.0672
Lithium (Li)	mg/kg ww	0.23	0.74	0.13	0.32	0.11	0.15	0.2	0.23	1.97	0.44	0.79	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	986	1,100	599	866	460	378	511	556	2,640	985	1,270	246	337
Manganese (Mn)	mg/kg ww	176	185	84.1	277	197	63	98.1	92.6	290	235	169	204	153
Molybdenum (Mo)	mg/kg ww	0.944	0.546	0.812	0.211	0.162	0.179	0.12	0.216	0.545	0.328	1.19	0.296	0.327
Nickel (Ni)	mg/kg ww	2.84	3.48	2.59	5.7	2.24	2.76	3.72	4.25	13.1	4.49	5.88	0.777	1.52
Potassium (K)	mg/kg ww	6,990	5,300	2,980	3,470	3,250	2,020	2,280	2,450	5,810	4,950	5,180	3,000	2,520
Selenium (Se)	mg/kg ww	0.022	0.025	0.029	0.04	0.019	<0.010	0.03	0.013	0.031	0.035	0.038	0.01	0.02
Sodium (Na)	mg/kg ww	24.8	22.9	9.4	34.2	9.2	11.7	8.7	9.1	50.4	17.5	22.7	13.5	15.5
Strontium (Sr)	mg/kg ww	15.5	16.6	5.4	6.03	4.09	2.75	2.99	3.36	16	10.7	12.5	3.53	4.43
Thallium (Tl)	mg/kg ww	0.00224	0.00558	0.00153	0.00415	0.0025	0.00329	0.0048	0.0048	0.014	0.00344	0.00607	0.00096	0.00168
Tin (Sn)	mg/kg ww	0.096	0.185	0.043	0.244	0.069	0.047	0.077	0.062	0.15	0.057	0.12	0.068	0.118
Uranium (U)	mg/kg ww	0.0455	0.0776	0.00877	0.0901	0.016	0.0066	0.00866	0.01	0.133	0.0293	0.0501	0.00252	0.00515
Vanadium (V)	mg/kg ww	0.29	1.26	0.391	0.929	0.364	0.526	0.728	0.801	5.37	1.2	2.14	0.027	0.081
Zinc (Zn)	mg/kg ww	18.9	34.8	10.5	19.8	12.6	7.34	7.27	11.4	20.8	13.3	16.5	8.44	8.26

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-3: Existing Conditions Sedge
Analytical Results (2011-2021)

Sample ID		C1-S3-Sedge	C2-S1-Sedge	C2-S2-Sedge	C2-S3-Sedge	C3-S1-Sedge	C3-S2-Sedge	C3-S3-Sedge
Date Sampled		29-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021
ALS Sample ID		VA21B9372-010	VA21B9372-014	VA21B9372-018	VA21B9372-022	VA21B9372-026	VA21B9372-030	VA21B9372-034
Physical Tests								
% Moisture	%	50.2	65	71	70	66.8	55.6	66.7
Metals								
Aluminum (Al)	mg/kg ww	52.5	23.8	12	21.6	85.6	101	54.8
Antimony (Sb)	mg/kg ww	0.0023	0.0038	0.0027	0.004	0.0021	0.0045	0.0038
Arsenic (As)	mg/kg ww	0.0603	0.0604	0.0575	0.0361	0.0956	0.177	0.162
Barium (Ba)	mg/kg ww	14.6	4.08	4.63	3.68	6.11	20	10.3
Beryllium (Be)	mg/kg ww	0.005	<0.0020	<0.0020	<0.0020	0.0026	0.0028	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	0.0024	0.002	<0.0020
Cadmium (Cd)	mg/kg ww	0.0265	0.0051	0.0052	0.0083	0.0168	0.0339	0.0295
Calcium (Ca)	mg/kg ww	1,010	1,030	386	402	781	1,420	1,200
Chromium (Cr)	mg/kg ww	0.616	0.371	0.193	0.306	0.955	1.63	0.916
Cobalt (Co)	mg/kg ww	0.126	0.0371	0.0354	0.0307	0.351	0.132	0.085
Copper (Cu)	mg/kg ww	1.3	0.494	0.421	0.388	0.585	1.71	1.22
Iron (Fe)	mg/kg ww	94	49.9	33.4	40.7	152	179	124
Lead (Pb)	mg/kg ww	0.0912	0.0492	0.0274	0.0474	0.0725	0.104	0.0769
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10
Magnesium (Mg)	mg/kg ww	505	241	149	120	377	438	324
Manganese (Mn)	mg/kg ww	428	74.9	52.2	61.2	63.7	98.6	67.6
Molybdenum (Mo)	mg/kg ww	0.274	0.215	0.0873	0.198	0.218	0.149	0.572
Nickel (Ni)	mg/kg ww	1.2	0.756	0.888	0.548	9.98	1.46	1.33
Potassium (K)	mg/kg ww	2,720	1,670	1,910	1,060	1,840	2,200	2,060
Selenium (Se)	mg/kg ww	0.028	0.016	0.02	0.013	0.013	0.011	0.015
Sodium (Na)	mg/kg ww	12.5	16.1	9.9	17.7	8	5.2	8.2
Strontium (Sr)	mg/kg ww	5.79	2.72	1.92	1.52	2.31	4.97	3.63
Thallium (Tl)	mg/kg ww	0.00157	0.00049	0.0007	0.0006	0.00092	0.00132	0.00078
Tin (Sn)	mg/kg ww	0.322	0.11	0.073	0.043	0.162	0.054	0.128
Uranium (U)	mg/kg ww	0.0183	0.00195	0.00099	0.00181	0.00921	0.00571	0.00356
Vanadium (V)	mg/kg ww	0.1	0.053	0.025	0.044	0.162	0.222	0.123
Zinc (Zn)	mg/kg ww	21.4	6.79	5.27	6.23	5.21	20.4	16.8

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen Analytical Results (2011-2021)

Sample ID		T1-NEAR FIELD STN.1 LICHEN	T1-NEAR FIELD STN.2 LICHEN	T1-NEAR FIELD STN.3 LICHEN	T1-NEAR FIELD STN.4 LICHEN	T1-NEAR FIELD STN.5 LICHEN	T2-FAR FIELD STN.1 LICHEN	T2-FAR FIELD STN.2 LICHEN	T2-FAR FIELD STN.3 LICHEN	T2-FAR FIELD STN.4 LICHEN	T2-FAR FIELD STN.5 LICHEN	T3-NEAR FIELD STN.1 LICHEN	T3-NEAR FIELD STN.2 LICHEN	T3-NEAR FIELD STN.3 LICHEN
Date Sampled		17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011
ALS Sample ID		L1051858-182	L1051858-186	L1051858-190	L1051858-194	L1051858-198	L1051858-122	L1051858-126	L1051858-130	L1051858-134	L1051858-138	L1051858-102	L1051858-106	L1051858-110
Physical Tests														
% Moisture	%	15.8	15.9	23.1	21.0	21.0	14.4	15.3	10.8	17.0	16.9	27.1	20.6	21.5
Metals														
Aluminum (Al)	mg/kg ww	869	890	580	542	588	347	1,730	525	690	1,670	1,490	1,330	1,670
Antimony (Sb)	mg/kg ww	0.010	0.014	<0.010	<0.010	<0.010	<0.010	0.020	0.011	0.013	0.023	0.034	0.020	0.023
Arsenic (As)	mg/kg ww	0.875	0.722	0.709	0.391	0.854	0.952	0.989	0.987	1.11	3.67	4.28	2.45	5.81
Barium (Ba)	mg/kg ww	10.7	12.6	18.1	8.84	8.25	24.8	28.5	28.0	16.3	38.2	23.7	15.0	21.4
Beryllium (Be)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.15	<0.10	<0.10	0.19	<0.10	<0.10	<0.10
Bismuth (Bi)	mg/kg ww	0.033	0.038	<0.030	<0.030	<0.030	<0.030	0.098	0.034	<0.030	0.067	0.128	0.042	0.048
Cadmium (Cd)	mg/kg ww	0.0555	0.0642	0.0263	0.0630	0.0492	0.0772	0.0904	0.118	0.0688	0.117	0.125	0.129	0.123
Calcium (Ca)	mg/kg ww	884	1,730	946	880	995	2,680	2,440	3,110	1,240	2,930	2,430	1,890	2,430
Chromium (Cr)	mg/kg ww	10.8	15.2	11.2	7.55	9.59	9.09	33.9	8.68	11.4	29.0	40.0	31.4	56.1
Cobalt (Co)	mg/kg ww	0.684	0.713	0.518	0.416	0.527	0.414	1.17	0.468	0.486	1.22	1.53	1.26	1.76
Copper (Cu)	mg/kg ww	1.34	1.59	1.29	0.954	1.26	1.69	2.07	2.22	1.34	2.65	4.08	2.91	2.99
Iron (Fe)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg ww	1.63	1.82	0.858	1.49	1.46	0.845	2.94	1.45	1.45	3.10	3.10	2.61	2.78
Lithium (Li)	mg/kg ww	0.57	0.67	0.38	0.33	0.34	0.16	1.28	0.43	0.36	0.62	0.81	0.75	0.93
Magnesium (Mg)	mg/kg ww	542	664	501	381	463	607	974	622	441	945	1,240	1,250	1,430
Manganese (Mn)	mg/kg ww	63.4	110	99.8	57.6	57.0	276	153	147	65.6	197	130	151	136
Molybdenum (Mo)	mg/kg ww	0.110	0.117	0.077	0.067	0.093	0.097	0.332	0.165	0.112	0.207	0.344	0.233	0.428
Nickel (Ni)	mg/kg ww	4.28	5.98	3.99	3.01	3.66	3.69	13.5	4.27	4.56	10.5	12.9	11.3	21.1
Potassium (K)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg ww	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.24	<0.20	<0.20	0.53	<0.20	<0.20	<0.20
Sodium (Na)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg ww	4.90	5.08	3.04	3.05	3.70	7.31	10.2	12.0	5.82	15.8	11.2	8.46	11.5
Thallium (Tl)	mg/kg ww	0.013	<0.010	<0.010	<0.010	<0.010	0.027	0.035	0.013	0.014	0.028	0.021	0.012	0.016
Tin (Sn)	mg/kg ww	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.131	<0.050	<0.050	0.069	0.069	0.058	0.050
Uranium (U)	mg/kg ww	0.129	0.155	0.0743	0.0793	0.0942	0.128	0.475	1.19	0.291	1.11	0.978	0.233	0.272
Vanadium (V)	mg/kg ww	1.52	1.66	1.26	0.93	1.07	0.71	3.86	0.96	1.16	2.61	3.65	2.85	3.76
Zinc (Zn)	mg/kg ww	7.82	9.78	8.57	7.67	11.6	25.3	20.7	26.7	11.9	18.8	19.0	15.4	17.1

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen Analytical Results (2011-2021)

Sample ID		T3-NEAR FIELD STN.4 LICHEN	T3-NEAR FIELD STN.5 LICHEN	T4-FAR FIELD STN.1 LICHEN	T4-FAR FIELD STN.2 LICHEN	T4-FAR FIELD STN.3 LICHEN	T4-FAR FIELD STN.4 LICHEN	T4-FAR FIELD STN.5 LICHEN	T5-FAR FIELD STN.1 LICHEN	T5-FAR FIELD STN.2 LICHEN	T5-FAR FIELD STN.3 LICHEN	T5-FAR FIELD STN.4 LICHEN	T5-FAR FIELD STN.5 LICHEN	T6-SOUTH ISLAND STN.1 LICHEN
Date Sampled		16-Aug-2011	16-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	16-Aug-2011
ALS Sample ID		L1051858-114	L1051858-118	L1051858-62	L1051858-66	L1051858-70	L1051858-74	L1051858-78	L1051858-82	L1051858-86	L1051858-90	L1051858-94	L1051858-98	L1051858-142
Physical Tests														
% Moisture	%	21.5	17.9	47.2	47.3	39.4	39.7	33.3	21.1	21.2	31.8	27.9	28.4	26.0
Metals														
Aluminum (Al)	mg/kg ww	1,640	1,390	194	512	518	500	977	750	659	1,150	553	1,610	922
Antimony (Sb)	mg/kg ww	0.025	0.022	<0.010	<0.010	<0.010	<0.010	0.016	0.016	0.013	0.025	0.015	0.022	0.023
Arsenic (As)	mg/kg ww	5.15	4.30	0.407	1.02	1.02	1.43	1.24	1.27	1.01	1.60	1.50	2.26	3.04
Barium (Ba)	mg/kg ww	17.4	21.3	5.39	16.6	8.48	16.5	15.0	29.6	32.1	15.7	36.3	27.1	10.4
Beryllium (Be)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bismuth (Bi)	mg/kg ww	0.048	0.034	<0.030	<0.030	<0.030	<0.030	0.085	0.033	<0.030	0.049	<0.030	0.061	<0.030
Cadmium (Cd)	mg/kg ww	0.0770	0.118	0.0271	0.0882	0.0301	0.0336	0.0840	0.0987	0.0941	0.114	0.171	0.0767	0.110
Calcium (Ca)	mg/kg ww	2,860	2,930	427	1,780	974	989	1,030	2,120	2,240	1,210	3,130	2,120	2,190
Chromium (Cr)	mg/kg ww	41.9	33.3	4.92	11.6	9.72	12.9	16.1	14.2	12.8	25.2	15.7	76.7	26.1
Cobalt (Co)	mg/kg ww	1.65	1.38	0.166	0.468	0.398	0.440	0.614	0.692	0.906	0.925	0.546	2.08	0.986
Copper (Cu)	mg/kg ww	2.82	2.46	0.772	1.52	1.24	1.20	1.74	2.63	2.97	2.31	2.64	2.98	2.16
Iron (Fe)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg ww	2.17	1.82	0.392	1.19	0.730	0.962	3.73	2.00	1.72	3.68	1.20	2.08	1.02
Lithium (Li)	mg/kg ww	0.74	0.72	<0.10	0.31	0.40	0.32	0.56	0.52	0.42	0.67	0.22	1.29	0.41
Magnesium (Mg)	mg/kg ww	1,600	1,410	243	551	376	464	589	688	700	798	820	1,160	1,130
Manganese (Mn)	mg/kg ww	240	169	69.6	133	64.8	175	47.9	233	231	63.4	133	149	199
Molybdenum (Mo)	mg/kg ww	0.370	0.274	0.139	0.119	0.104	0.100	0.142	0.134	0.124	0.189	0.127	0.465	0.208
Nickel (Ni)	mg/kg ww	14.2	11.4	1.89	4.43	3.70	4.82	5.85	6.06	7.54	10.5	6.20	31.4	9.07
Potassium (K)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg ww	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Sodium (Na)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg ww	10.6	10.4	1.77	5.08	3.10	2.98	4.88	6.67	8.00	5.45	10.2	9.88	7.03
Thallium (Tl)	mg/kg ww	0.019	0.018	<0.010	<0.010	0.011	0.021	0.019	0.022	0.011	0.019	<0.010	0.026	<0.010
Tin (Sn)	mg/kg ww	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.081	<0.050	<0.050	0.065	<0.050	0.083	<0.050
Uranium (U)	mg/kg ww	0.276	0.360	0.0255	0.147	0.110	0.0604	0.130	0.232	0.211	0.302	0.190	0.267	0.184
Vanadium (V)	mg/kg ww	3.85	3.15	0.46	1.07	1.02	1.07	2.05	1.53	1.32	2.08	1.37	3.55	2.30
Zinc (Zn)	mg/kg ww	19.4	20.9	6.26	16.7	6.42	10.7	11.9	23.8	21.9	16.9	38.3	19.1	21.2

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen Analytical Results (2011-2021)

Sample ID		T6-SOUTH ISLAND STN.2 LICHEN	T6-SOUTH ISLAND STN.3 LICHEN	T6-SOUTH ISLAND STN.4 LICHEN	T6-SOUTH ISLAND STN.5 LICHEN	T7-NEAR FIELD STN.1 LICHEN	T7-NEAR FIELD STN.2 LICHEN	T7-NEAR FIELD STN.3 LICHEN	T7-NEAR FIELD STN.4 LICHEN	T7-NEAR FIELD STN.5 LICHEN	C1-EXT.REF.STN.1 LICHEN	C1-EXT.REF.STN.2 LICHEN	C1-EXT.REF.STN.3 LICHEN	C1-EXT.REF.STN.4 LICHEN
Date Sampled		16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011
ALS Sample ID		L1051858-146	L1051858-150	L1051858-154	L1051858-158	L1051858-162	L1051858-166	L1051858-170	L1051858-174	L1051858-178	L1051858-22	L1051858-26	L1051858-30	L1051858-34
Physical Tests														
% Moisture	%	20.3	21.1	10.8	42.1	16.5	18.3	14.1	16.0	14.5	62.3	55.0	63.3	58.7
Metals														
Aluminum (Al)	mg/kg ww	2,070	776	877	1,310	582	362	350	199	1,490	415	398	299	427
Antimony (Sb)	mg/kg ww	0.046	0.018	0.014	0.034	0.011	<0.010	0.010	<0.010	0.025	<0.010	<0.010	<0.010	0.012
Arsenic (As)	mg/kg ww	5.66	1.66	1.80	4.46	0.750	0.635	0.665	0.331	2.83	0.245	0.179	0.159	0.222
Barium (Ba)	mg/kg ww	32.2	8.84	17.8	14.5	16.0	6.29	9.88	6.91	30.2	13.7	23.6	13.0	22.3
Beryllium (Be)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bismuth (Bi)	mg/kg ww	0.105	<0.030	<0.030	<0.030	0.033	<0.030	<0.030	<0.030	0.068	<0.030	<0.030	<0.030	<0.030
Cadmium (Cd)	mg/kg ww	0.143	0.0436	0.0700	0.0875	0.0728	0.0395	0.0632	0.0580	0.254	0.0515	0.0804	0.0454	0.0883
Calcium (Ca)	mg/kg ww	2,420	1,020	2,250	1,890	941	716	1,080	745	2,280	1,370	1,200	712	1,470
Chromium (Cr)	mg/kg ww	63.0	17.4	22.8	45.3	15.0	3.76	4.50	2.36	18.3	4.33	3.29	5.07	4.22
Cobalt (Co)	mg/kg ww	2.40	0.681	0.915	1.44	0.639	0.293	0.405	0.186	1.07	0.433	0.331	0.233	0.434
Copper (Cu)	mg/kg ww	4.16	1.41	2.14	2.53	1.40	0.851	0.691	0.593	4.07	0.976	1.15	0.687	1.35
Iron (Fe)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg ww	3.86	1.27	1.20	1.30	1.85	1.25	0.686	0.876	4.27	1.32	1.48	1.19	1.91
Lithium (Li)	mg/kg ww	1.04	0.38	0.59	0.73	0.59	0.22	0.14	<0.10	1.04	0.20	0.10	0.21	0.26
Magnesium (Mg)	mg/kg ww	1,650	674	770	1,400	380	282	316	197	744	429	302	196	407
Manganese (Mn)	mg/kg ww	156	42.0	78.8	162	97.7	51.9	63.0	50.1	92.3	88.7	56.6	51.3	104
Molybdenum (Mo)	mg/kg ww	0.419	0.140	0.153	0.332	0.124	0.044	0.092	0.040	0.259	0.060	0.061	0.057	0.085
Nickel (Ni)	mg/kg ww	21.8	6.33	8.30	16.6	5.99	1.86	2.20	1.07	8.51	2.94	2.24	2.49	3.45
Potassium (K)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg ww	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Sodium (Na)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg ww	11.2	4.06	8.14	8.44	4.32	2.67	4.91	2.64	10.4	6.42	7.17	3.65	7.53
Thallium (Tl)	mg/kg ww	0.026	<0.010	<0.010	0.011	0.011	<0.010	<0.010	<0.010	0.029	<0.010	0.014	0.014	0.011
Tin (Sn)	mg/kg ww	0.077	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.088	<0.050	<0.050	<0.050	<0.050
Uranium (U)	mg/kg ww	0.894	0.111	0.168	0.243	0.169	0.0849	0.0742	0.0702	0.424	0.169	0.0972	0.0594	0.193
Vanadium (V)	mg/kg ww	5.61	1.77	1.97	3.26	1.05	0.68	0.59	0.35	2.35	0.69	0.51	0.53	0.57
Zinc (Zn)	mg/kg ww	22.5	6.93	15.4	15.9	11.7	6.49	10.6	7.45	25.7	10.6	13.4	7.14	14.4

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen Analytical Results (2011-2021)

Sample ID		C1-EXT.REF.STN.5 LICHEN	C2-EXT.REF.STN.1 LICHEN	C2-EXT.REF.STN.2 LICHEN	C2-EXT.REF.STN.3 LICHEN	C2-EXT.REF.STN.4 LICHEN	C2-EXT.REF.STN.5 LICHEN	C3-EXT.REF.STN.1 LICHEN	C3-EXT.REF.STN.2 LICHEN	C3-EXT.REF.STN.3 LICHEN	C3-EXT.REF.STN.4 LICHEN	C3-EXT.REF.STN.5 LICHEN	T1-NEAR FIELD STATION 1 SAMPLE 3 - LICHEN	T1-NEAR FIELD STATION 2 SAMPLE 3 - LICHEN
Date Sampled		14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	18-Aug-2011	18-Aug-2011	18-Aug-2011	18-Aug-2011	18-Aug-2011	14-Aug-2014	14-Aug-2014
ALS Sample ID		L1051858-38	L1051858-42	L1051858-46	L1051858-50	L1051858-54	L1051858-58	L1051858-2	L1051858-6	L1051858-10	L1051858-14	L1051858-18	L1510356-3	L1510356-7
Physical Tests														
% Moisture	%	57.3	44.7	33.6	31.8	36.1	33.4	53.3	47.8	56.1	46.9	49.2	52.4	41.9
Metals														
Aluminum (Al)	mg/kg ww	555	1,370	667	429	693	821	1,540	543	221	1,490	781	1,010	4,800
Antimony (Sb)	mg/kg ww	<0.010	0.019	0.014	0.015	0.013	0.017	0.033	0.019	<0.010	0.044	0.014	0.0066	0.0144
Arsenic (As)	mg/kg ww	0.252	0.730	0.375	0.349	0.459	0.470	1.16	0.453	0.180	0.762	0.434	1.12	3.56
Barium (Ba)	mg/kg ww	15.0	16.7	24.0	11.5	22.1	22.5	14.7	8.52	16.5	17.9	17.0	17.8	31.7
Beryllium (Be)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.0338	0.180
Bismuth (Bi)	mg/kg ww	<0.030	0.079	0.054	0.062	0.036	0.046	0.092	<0.030	<0.030	0.065	0.035	0.0246	0.196
Cadmium (Cd)	mg/kg ww	0.0535	0.103	0.143	0.145	0.144	0.137	0.0787	0.106	0.0461	0.149	0.124	0.0500	0.173
Calcium (Ca)	mg/kg ww	1,140	1,080	1,160	2,000	2,460	2,260	1,230	1,330	1,450	1,580	1,360	2,770	5,790
Chromium (Cr)	mg/kg ww	8.55	21.7	4.83	6.89	10.1	12.7	36.3	6.26	3.58	15.6	8.39	20.6	59.4
Cobalt (Co)	mg/kg ww	0.624	1.24	0.323	0.331	0.644	0.812	2.17	0.631	0.242	1.27	0.561	0.911	3.01
Copper (Cu)	mg/kg ww	1.58	1.89	1.79	2.26	2.55	2.77	2.49	2.18	1.48	4.00	1.68	1.62	5.40
Iron (Fe)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	2,440	9,010
Lead (Pb)	mg/kg ww	1.25	2.45	2.72	1.46	1.61	1.90	2.51	2.24	0.537	4.99	3.13	0.874	3.98
Lithium (Li)	mg/kg ww	0.47	0.76	0.16	0.15	0.32	0.54	1.00	0.32	0.16	0.91	0.40	0.68	4.51
Magnesium (Mg)	mg/kg ww	398	755	336	375	682	666	1,170	531	416	830	390	981	3,300
Manganese (Mn)	mg/kg ww	112	68.3	50.9	59.1	88.9	87.5	64.5	40.2	54.3	80.5	34.1	155	156
Molybdenum (Mo)	mg/kg ww	0.095	0.174	0.085	0.101	0.131	0.134	0.238	0.078	0.035	0.195	0.091	0.191	0.754
Nickel (Ni)	mg/kg ww	4.42	11.0	2.71	3.39	6.53	7.04	30.9	4.45	2.11	11.5	4.48	6.47	19.5
Potassium (K)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	694	1,250
Selenium (Se)	mg/kg ww	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.034	0.088
Sodium (Na)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	32.0	101
Strontium (Sr)	mg/kg ww	5.69	6.47	5.37	6.49	8.19	9.17	7.67	4.55	5.87	6.78	5.31	6.54	17.8
Thallium (Tl)	mg/kg ww	0.012	0.017	0.020	0.011	0.021	0.020	0.026	<0.010	<0.010	0.023	0.013	0.0227	0.0476
Tin (Sn)	mg/kg ww	<0.050	0.079	<0.050	<0.050	<0.050	0.054	0.087	<0.050	<0.050	0.100	0.053	<0.020	0.103
Uranium (U)	mg/kg ww	0.376	0.181	0.0563	0.0431	0.0901	0.0995	0.320	0.0592	0.0215	0.157	0.0581	0.113	0.898
Vanadium (V)	mg/kg ww	0.90	2.49	0.90	0.79	1.33	1.84	3.80	1.19	0.50	3.31	1.70	2.15	9.55
Zinc (Zn)	mg/kg ww	11.8	15.7	15.6	24.0	21.9	18.3	11.4	12.3	11.3	16.5	10.4	12.4	23.6

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen Analytical Results (2011-2021)

Sample ID		T1-NEAR FIELD STATION 3 SAMPLE 3 - LICHEN	T1-NEAR FIELD STATION 4 SAMPLE 3 - LICHEN	T1-NEAR FIELD STATION 4 SAMPLE 3 - LICHEN	T2-FAR FIELD STATION 1 SAMPLE 3 - LICHEN	T2-FAR FIELD STATION 2 SAMPLE 3 - LICHEN	T2-FAR FIELD STATION 3 SAMPLE 3 - LICHEN	T2-FAR FIELD STATION 4 SAMPLE 3 - LICHEN	T2-FAR FIELD STATION 5 SAMPLE 3 - LICHEN	T3-NEAR FIELD STATION 1 SAMPLE 3 - LICHEN	T3-NEAR FIELD STATION 2 SAMPLE 3 - LICHEN	T3-NEAR FIELD STATION 3 SAMPLE 3 - LICHEN	T3-NEAR FIELD STATION 4 SAMPLE 3 - LICHEN	T3-NEAR FIELD STATION 5 SAMPLE 3 - LICHEN
Date Sampled		14-Aug-2014	14-Aug-2014	14-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	20-Aug-2014	20-Aug-2014	20-Aug-2014	20-Aug-2014	20-Aug-2014
ALS Sample ID		L1510356-11	L1510356-15	L1510356-19	L1510356-23	L1510356-27	L1510356-31	L1510356-35	L1510356-39	L1510356-43	L1510356-47	L1510356-51	L1510356-55	L1510356-59
Physical Tests														
% Moisture	%	45.8	45.7	49.1	19.3	29.9	29.7	17.1	28.4	18.5	32.0	21.8	26.4	25.2
Metals														
Aluminum (Al)	mg/kg ww	2,060	1,830	903	624	793	949	279	501	965	663	1,160	1,030	1,240
Antimony (Sb)	mg/kg ww	0.0110	0.0053	0.0079	0.0062	0.0081	0.0083	0.0035	0.0051	0.0099	0.0064	0.0101	0.0089	0.0081
Arsenic (As)	mg/kg ww	2.07	2.16	1.04	0.484	1.02	1.34	0.475	0.869	1.92	1.50	2.00	2.70	2.38
Barium (Ba)	mg/kg ww	16.3	15.8	10.4	10.1	12.6	21.1	7.89	12.7	8.36	7.67	10.0	12.3	9.03
Beryllium (Be)	mg/kg ww	0.0573	0.0423	0.0236	0.0269	0.0323	0.0380	0.0144	0.0162	0.0331	0.0233	0.0435	0.0364	0.0375
Bismuth (Bi)	mg/kg ww	0.0447	0.0330	0.0290	0.0239	0.0292	0.0308	0.0114	0.0169	0.0318	0.0401	0.0415	0.0381	0.0351
Cadmium (Cd)	mg/kg ww	0.0504	0.0513	0.0306	0.0545	0.0643	0.0905	0.0649	0.0468	0.0756	0.0578	0.0618	0.0953	0.0484
Calcium (Ca)	mg/kg ww	2,480	2,820	2,470	1,860	2,050	2,240	2,290	2,660	2,840	3,250	3,260	4,600	1,920
Chromium (Cr)	mg/kg ww	35.2	34.9	20.6	9.06	15.5	17.0	5.72	10.9	22.1	14.3	26.4	23.6	29.0
Cobalt (Co)	mg/kg ww	1.46	1.40	0.773	0.399	0.636	0.773	0.251	0.424	0.834	0.608	0.995	0.886	1.13
Copper (Cu)	mg/kg ww	2.87	2.38	1.48	1.24	1.54	1.77	0.967	1.24	1.86	1.69	2.19	2.51	2.44
Iron (Fe)	mg/kg ww	4,760	4,550	2,100	1,070	1,760	2,260	635	1,190	2,370	1,860	2,990	2,940	3,270
Lead (Pb)	mg/kg ww	1.86	0.971	0.732	0.978	1.57	1.95	0.611	0.690	1.36	1.21	1.78	1.74	1.36
Lithium (Li)	mg/kg ww	1.49	1.17	0.56	0.46	0.53	0.58	0.15	0.26	0.57	0.38	0.72	0.59	0.72
Magnesium (Mg)	mg/kg ww	1,790	1,760	964	597	832	1,030	439	610	1,050	755	1,220	1,110	1,310
Manganese (Mn)	mg/kg ww	158	138	101	97.2	87.4	102	70.0	119	63.8	67.0	81.3	117	87.8
Molybdenum (Mo)	mg/kg ww	0.272	0.327	0.193	0.115	0.156	0.174	0.0787	0.103	0.209	0.145	0.260	0.245	0.248
Nickel (Ni)	mg/kg ww	11.2	10.7	6.51	3.09	5.12	5.88	2.15	3.61	7.20	5.05	8.51	8.07	9.51
Potassium (K)	mg/kg ww	787	802	836	1,070	976	845	1,350	1,120	1,070	1,040	1,180	1,210	857
Selenium (Se)	mg/kg ww	0.065	0.044	0.038	0.065	0.066	0.062	0.048	0.046	0.062	0.042	0.065	0.052	0.047
Sodium (Na)	mg/kg ww	47.7	60.7	36.6	18.8	34.1	50.0	35.1	25.3	40.0	25.4	27.8	24.2	21.2
Strontium (Sr)	mg/kg ww	7.41	8.78	5.35	5.71	5.95	9.43	5.65	6.31	6.76	7.07	8.60	9.50	5.46
Thallium (Tl)	mg/kg ww	0.0256	0.0167	0.0200	0.0119	0.0151	0.0203	0.0134	0.0186	0.00978	0.0105	0.0103	0.0165	0.0182
Tin (Sn)	mg/kg ww	0.042	<0.020	<0.020	0.032	0.022	0.037	<0.020	<0.020	0.020	<0.020	0.020	0.020	<0.020
Uranium (U)	mg/kg ww	0.260	0.169	0.108	0.170	0.112	0.193	0.0628	0.0914	0.125	0.0900	0.146	0.149	0.148
Vanadium (V)	mg/kg ww	4.27	3.91	2.03	1.21	1.71	1.97	0.610	1.11	2.17	1.44	2.60	2.29	2.77
Zinc (Zn)	mg/kg ww	13.1	15.1	9.73	13.8	12.6	17.9	16.3	13.2	12.6	11.1	14.3	15.8	9.92

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen Analytical Results (2011-2021)

Sample ID		T4-FAR FIELD STATION 1 SAMPLE 3 - LICHEN	T4-FAR FIELD STATION 2 SAMPLE 3 - LICHEN	T4-FAR FIELD STATION 3 SAMPLE 3 - LICHEN	T4-FAR FIELD STATION 4 SAMPLE 3 - LICHEN	T4-FAR FIELD STATION 5 SAMPLE 3 - LICHEN	T5-FAR FIELD STATION 1 SAMPLE 3 - LICHEN	T5-FAR FIELD STATION 2 SAMPLE 3 - LICHEN	T5-FAR FIELD STATION 3 SAMPLE 3 - LICEHN	T5-FAR FIELD STATION 4 SAMPLE 3 - LICHEN	T5-FAR FIELD STATION 5 SAMPLE 3 - LICHEN	T6-SOUTH ISLAND STATION 1 SAMPLE 3 - LICHEN	T6-SOUTH ISLAND STATION 2 SAMPLE 3 - LICHEN	T6-SOUTH ISLAND STATION 3 SAMPLE 3 - LICHEN
Date Sampled		16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-AUG-14	16-Aug-2014	16-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014
ALS Sample ID		L1510356-63	L1510356-67	L1510356-71	L1510356-75	L1510356-79	L1510356-83	L1510356-87	L1510356-91	L1510356-95	L1510356-99	L1510356-103	L1510356-107	L1510356-111
Physical Tests														
% Moisture	%	13.7	20.1	13.0	14.7	12.5	34.6	29.1	32.1	24.4	32.3	69.8	63.7	58.6
Metals														
Aluminum (Al)	mg/kg ww	393	360	458	562	691	1,520	516	812	1,520	1,570	1,170	1,660	1,520
Antimony (Sb)	mg/kg ww	0.0043	0.0055	0.0046	0.0046	0.0050	0.0135	0.0058	0.0054	0.0164	0.0147	0.0068	0.0036	0.0094
Arsenic (As)	mg/kg ww	0.769	0.858	0.686	1.16	1.34	2.15	0.998	0.950	1.93	2.35	1.71	2.67	2.28
Barium (Ba)	mg/kg ww	11.3	7.31	5.91	11.8	9.17	25.2	9.17	16.9	36.0	20.8	6.58	11.9	17.8
Beryllium (Be)	mg/kg ww	0.0156	0.0161	0.0285	0.0178	0.0243	0.0449	0.0174	0.0433	0.0386	0.0458	0.0255	0.0325	0.0321
Bismuth (Bi)	mg/kg ww	0.0159	0.0172	0.0288	0.0167	0.0288	0.0350	0.0166	0.0237	0.0471	0.0387	0.0324	0.0409	0.0381
Cadmium (Cd)	mg/kg ww	0.0449	0.0344	0.0558	0.0391	0.0368	0.116	0.0805	0.0616	0.172	0.118	0.0468	0.0600	0.0368
Calcium (Ca)	mg/kg ww	1,820	1,520	1,940	1,980	2,140	3,270	2,750	1,880	2,920	2,860	1,370	1,730	2,520
Chromium (Cr)	mg/kg ww	9.28	8.74	5.71	13.5	17.2	31.9	12.1	15.9	31.3	31.5	31.3	48.3	41.5
Cobalt (Co)	mg/kg ww	0.360	0.376	0.345	0.547	0.667	1.73	0.609	0.807	1.22	1.42	1.05	1.64	1.55
Copper (Cu)	mg/kg ww	1.38	1.16	1.02	1.61	1.59	3.18	1.26	1.84	3.55	2.62	1.94	2.94	2.57
Iron (Fe)	mg/kg ww	892	874	912	1,460	1,820	4,300	1,380	1,850	3,710	4,020	2,870	4,250	3,870
Lead (Pb)	mg/kg ww	0.823	0.756	1.48	0.753	1.02	1.58	0.796	0.978	1.60	2.35	0.603	0.743	1.16
Lithium (Li)	mg/kg ww	0.22	0.22	0.49	0.32	0.42	0.93	0.30	0.47	0.93	1.00	0.81	1.09	0.93
Magnesium (Mg)	mg/kg ww	633	524	432	718	844	1,730	704	938	1,550	1,540	1,290	1,920	1,740
Manganese (Mn)	mg/kg ww	254	90.2	52.1	138	103	206	81.0	230	167	163	55.0	84.3	103
Molybdenum (Mo)	mg/kg ww	0.111	0.0937	0.104	0.112	0.181	0.293	0.112	0.116	0.257	0.218	0.200	0.226	0.259
Nickel (Ni)	mg/kg ww	3.60	3.19	2.35	4.76	5.86	12.1	4.43	5.89	10.7	10.7	10.1	15.5	13.9
Potassium (K)	mg/kg ww	1,020	881	973	1,090	1,050	1,160	1,120	855	1,100	1,020	493	662	688
Selenium (Se)	mg/kg ww	0.079	0.041	0.078	0.054	0.057	0.067	0.035	0.059	0.083	0.077	0.026	0.031	0.037
Sodium (Na)	mg/kg ww	16.0	13.3	27.9	16.5	27.1	110	26.4	48.8	51.7	73.4	31.9	27.7	65.3
Strontium (Sr)	mg/kg ww	3.91	3.78	5.15	4.98	5.60	9.74	6.71	4.78	8.31	7.85	4.66	5.73	6.67
Thallium (Tl)	mg/kg ww	0.00470	0.0100	0.00987	0.0200	0.0248	0.0222	0.0215	0.0278	0.0208	0.0354	0.00731	0.0110	0.0199
Tin (Sn)	mg/kg ww	<0.020	<0.020	0.029	<0.020	<0.020	0.029	<0.020	<0.020	0.033	0.038	<0.020	<0.020	0.023
Uranium (U)	mg/kg ww	0.0529	0.0525	0.112	0.0610	0.0741	0.158	0.0553	0.113	0.244	0.198	0.111	0.144	0.126
Vanadium (V)	mg/kg ww	0.891	0.832	0.965	1.27	1.56	3.39	1.17	1.71	3.38	3.47	2.76	3.96	3.70
Zinc (Zn)	mg/kg ww	16.1	9.32	10.3	11.4	12.6	22.9	18.0	15.3	27.1	20.3	8.36	12.2	11.6

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen Analytical Results (2011-2021)

Sample ID		T6-SOUTH ISLAND STATION 4 SAMPLE 3 - LICHEN	T6-SOUTH ISLAND STATION 5 SAMPLE 3 - LICHEN	T7-NEAR FIELD STATION 1 SAMPLE 3 - LICHEN	T7-NEAR FIELD STATION 2 SAMPLE 3 - LICHEN	T7-NEAR FIELD STATION 3 SAMPLE 3 - LICHEN	T7-NEAR FIELD STATION 4 SAMPLE 3 - LICHEN	T7-NEAR FIELD STATION 5 SAMPLE 3 - LICHEN	T8-AWAR STATION 1 SAMPLE 3 - LICHEN	T8-AWAR STATION 2 SAMPLE 3 - LICHEN	T8-AWAR STATION 3 SAMPLE 3 - LICHEN	T8-AWAR STATION 4 SAMPLE 3 - LICHEN	T8-AWAR STATION 5 SAMPLE 3 - LICHEN	C1-EXT REF STATION 1 SAMPLE 3 - LICHEN
Date Sampled		14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	19-Aug-2014
ALS Sample ID		L1510356-115	L1510356-119	L1510356-123	L1510356-127	L1510356-131	L1510356-135	L1510356-139	L1510356-143	L1510356-147	L1510356-151	L1510356-155	L1510356-159	L1510356-163
Physical Tests														
% Moisture	%	58.9	57.3	30.2	19.3	30.6	26.8	25.0	26.0	20.0	23.0	22.1	30.7	39.7
Metals														
Aluminum (Al)	mg/kg ww	1,800	1,720	1,410	552	449	1,040	589	3,570	3,070	3,800	2,710	2,930	696
Antimony (Sb)	mg/kg ww	0.0047	0.0084	0.0088	0.0050	0.0042	0.0089	0.0032	0.0156	0.0136	0.0093	0.0177	0.0110	0.0157
Arsenic (As)	mg/kg ww	3.03	2.74	1.53	0.664	0.473	0.908	0.444	1.34	1.09	1.83	1.19	1.35	0.289
Barium (Ba)	mg/kg ww	14.5	9.99	24.6	7.22	6.87	17.4	13.5	43.6	39.7	32.3	26.0	23.7	10.4
Beryllium (Be)	mg/kg ww	0.0442	0.0377	0.0399	0.0215	0.0132	0.0327	0.0150	0.0669	0.0975	0.0733	0.0583	0.0587	0.0451
Bismuth (Bi)	mg/kg ww	0.0832	0.0437	0.0302	0.0170	0.0122	0.0220	0.0150	0.0340	0.0899	0.0481	0.0442	0.0451	0.0291
Cadmium (Cd)	mg/kg ww	0.0449	0.0585	0.301	0.0595	0.0563	0.193	0.0691	0.139	0.171	0.0663	0.0767	0.0997	0.0544
Calcium (Ca)	mg/kg ww	2,910	2,340	3,300	1,260	1,610	4,200	2,580	7,190	9,410	4,740	4,380	4,610	720
Chromium (Cr)	mg/kg ww	48.1	49.4	18.5	6.44	6.85	14.2	10.2	28.9	20.9	32.9	21.1	23.7	2.15
Cobalt (Co)	mg/kg ww	1.63	1.68	1.40	0.435	0.393	0.866	0.478	2.41	1.91	3.18	1.79	1.95	0.366
Copper (Cu)	mg/kg ww	3.04	3.14	2.89	1.32	1.09	1.79	1.21	4.07	4.23	4.05	3.93	3.87	0.773
Iron (Fe)	mg/kg ww	4,990	4,680	2,720	947	807	1,780	1,010	5,280	4,090	5,890	3,770	4,200	1,060
Lead (Pb)	mg/kg ww	1.38	1.04	2.30	1.22	0.561	2.01	0.558	1.12	2.05	2.19	0.956	1.12	2.30
Lithium (Li)	mg/kg ww	1.17	1.11	1.02	0.40	0.28	0.63	0.39	2.98	2.75	3.16	2.19	2.43	0.37
Magnesium (Mg)	mg/kg ww	1,920	1,980	1,520	572	518	994	729	3,530	2,630	3,310	2,560	2,890	383
Manganese (Mn)	mg/kg ww	83.6	104	240	41.1	67.0	130	130	202	147	175	223	225	29.8
Molybdenum (Mo)	mg/kg ww	0.290	0.313	0.271	0.153	0.151	0.345	0.123	0.287	0.274	0.261	0.257	0.234	0.0501
Nickel (Ni)	mg/kg ww	15.2	15.9	7.16	2.47	2.37	4.93	3.49	11.0	8.25	10.8	7.97	8.59	1.31
Potassium (K)	mg/kg ww	753	743	1,070	874	791	1,180	1,060	1,450	1,790	1,180	1,680	1,360	390
Selenium (Se)	mg/kg ww	0.039	0.043	0.061	0.060	0.033	0.058	0.045	0.051	0.069	0.070	0.056	0.052	0.060
Sodium (Na)	mg/kg ww	75.7	55.1	60.6	13.0	20.7	36.7	15.7	94.0	130	62.8	141	107	71.9
Strontium (Sr)	mg/kg ww	8.06	7.32	10.9	5.10	4.79	11.6	6.93	35.8	39.0	22.6	22.9	20.6	4.56
Thallium (Tl)	mg/kg ww	0.0172	0.0124	0.0320	0.00598	0.00919	0.0161	0.0130	0.0208	0.0254	0.0357	0.0183	0.0184	0.0126
Tin (Sn)	mg/kg ww	0.021	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.040	0.048	<0.040	0.025	<0.040	0.057
Uranium (U)	mg/kg ww	0.164	0.167	0.178	0.0861	0.0535	0.178	0.0667	0.332	0.506	0.326	0.379	0.302	0.175
Vanadium (V)	mg/kg ww	4.18	4.14	2.79	1.06	0.950	2.10	1.24	7.31	5.86	7.70	5.27	5.83	1.23
Zinc (Zn)	mg/kg ww	12.2	11.2	38.4	9.63	10.1	16.9	14.7	37.2	30.2	21.5	29.9	30.5	7.99

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen Analytical Results (2011-2021)

Sample ID		C1-EXT REF STATION 2 SAMPLE 3 - LICHEN	C1-EXT REF STATION 3 SAMPLE 3 - LICHEN	C1-EXT REF STATION 4 SAMPLE 3 - LICHEN	C1-EXT REF STATION 5 SAMPLE 3 - LICHEN	C2-EXT REF STATION 1 SAMPLE 3 - LICHEN	C2-EXT REF STATION 2 SAMPLE 3 - LICHEN	C2-EXT REF STATION 3 SAMPLE 3 - LICHEN	C2-EXT REF STATION 4 SAMPLE 3 - LICHEN	C2-EXT REF STATION 5 SAMPLE 3 - LICHEN	C3-EXT REF STATION 1 SAMPLE 3 - LICHEN	C3-EXT REF STATION 2 SAMPLE 3 - LICHEN	C3-EXT REF STATION 3 SAMPLE 3 - LICHEN	C3-EXT REF STATION 4 SAMPLE 3 - LICHEN
Date Sampled		19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014
ALS Sample ID		L1510356-167	L1510356-171	L1510356-175	L1510356-179	L1510356-183	L1510356-187	L1510356-191	L1510356-195	L1510356-199	L1510356-203	L1510356-207	L1510356-211	L1510356-215
Physical Tests														
% Moisture	%	26.7	33.4	40.0	27.4	50.3	59.8	37.9	42.9	54.0	48.3	53.2	51.2	51.6
Metals														
Aluminum (Al)	mg/kg ww	808	598	1,020	821	461	417	492	1,170	1,810	476	859	1,110	446
Antimony (Sb)	mg/kg ww	0.0125	0.0111	0.0118	0.0113	0.0068	0.0130	0.0135	0.0161	0.0214	0.0094	0.0123	0.0080	0.0139
Arsenic (As)	mg/kg ww	0.308	0.307	0.337	0.384	0.317	0.234	0.419	0.574	0.737	0.311	0.538	0.510	0.315
Barium (Ba)	mg/kg ww	12.0	24.0	12.0	20.7	3.49	3.53	10.5	25.2	18.4	13.7	16.7	19.8	23.1
Beryllium (Be)	mg/kg ww	0.0428	0.0341	0.0430	0.0523	0.0127	0.0121	0.0172	0.0544	0.0841	0.0134	0.0382	0.0281	0.0148
Bismuth (Bi)	mg/kg ww	0.0368	0.0300	0.0427	0.0300	0.0230	0.0258	0.0542	0.0494	0.0615	0.0183	0.0333	0.0449	0.0164
Cadmium (Cd)	mg/kg ww	0.0847	0.112	0.0769	0.121	0.0460	0.0545	0.213	0.135	0.0733	0.0234	0.164	0.0750	0.0820
Calcium (Ca)	mg/kg ww	982	2,050	893	1,150	307	442	2,020	1,670	1,480	4,110	2,370	1,630	1,740
Chromium (Cr)	mg/kg ww	2.51	2.61	3.70	2.39	3.89	3.50	3.63	60.9	9.70	4.29	5.47	6.50	4.56
Cobalt (Co)	mg/kg ww	0.351	0.397	0.398	0.548	0.252	0.211	0.338	1.46	1.06	0.553	0.685	0.645	0.435
Copper (Cu)	mg/kg ww	1.18	1.33	1.17	1.06	0.688	0.624	1.81	2.72	2.03	2.19	2.16	2.04	1.51
Iron (Fe)	mg/kg ww	1,130	861	1,400	955	757	704	814	1,890	2,530	840	1,260	1,730	767
Lead (Pb)	mg/kg ww	3.37	2.56	3.18	3.57	1.47	1.91	2.91	4.11	2.92	0.416	2.10	2.22	1.37
Lithium (Li)	mg/kg ww	0.43	0.40	0.48	0.44	0.21	0.16	0.21	0.47	1.10	0.37	0.47	0.52	0.22
Magnesium (Mg)	mg/kg ww	428	597	440	470	289	270	483	682	1,010	1,210	644	612	530
Manganese (Mn)	mg/kg ww	62.8	117	45.3	37.7	10.4	10.1	53.4	111	48.7	51.3	77.1	54.9	194
Molybdenum (Mo)	mg/kg ww	0.0722	0.0921	0.0768	0.0596	0.0432	0.0356	0.0749	0.303	0.123	0.504	0.0814	0.0720	0.118
Nickel (Ni)	mg/kg ww	1.41	1.63	1.64	1.77	2.07	1.47	2.22	33.4	6.09	10.0	4.69	3.88	4.95
Potassium (K)	mg/kg ww	615	877	459	563	335	252	760	677	523	1,420	624	576	632
Selenium (Se)	mg/kg ww	0.092	0.077	0.077	0.091	0.038	0.042	0.119	0.090	0.086	0.026	0.062	0.075	0.047
Sodium (Na)	mg/kg ww	31.7	77.1	48.2	47.2	33.4	30.9	127	49.9	29.5	15.4	46.5	30.0	55.7
Strontium (Sr)	mg/kg ww	5.58	7.99	5.27	8.47	1.98	2.24	7.01	8.27	8.83	11.3	6.35	7.20	4.61
Thallium (Tl)	mg/kg ww	0.0142	0.0266	0.0242	0.0133	0.00821	0.00738	0.0116	0.0219	0.0272	0.00534	0.00957	0.0218	0.0118
Tin (Sn)	mg/kg ww	0.060	0.040	0.044	0.050	0.024	0.026	0.031	0.048	0.072	<0.020	0.029	0.030	0.022
Uranium (U)	mg/kg ww	0.254	0.194	0.297	0.152	0.0394	0.0355	0.0509	0.155	0.196	0.0611	0.0812	0.0769	0.0394
Vanadium (V)	mg/kg ww	1.38	1.08	1.65	1.29	0.852	0.772	0.977	2.44	3.30	0.993	1.50	2.25	0.891
Zinc (Zn)	mg/kg ww	12.1	17.2	9.19	12.1	5.52	4.78	18.5	17.9	11.2	9.19	17.6	12.6	11.8

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen Analytical Results (2011-2021)

Sample ID		C3-EXT REF STATION 5 SAMPLE 3 - LICHEN	T1-1-LICHEN	T1-2-LICHEN	T1-3-LICHEN	T1-4-LICHEN	T1-5-LICHEN	T2-1-LICHEN	T2-2-LICHEN	T2-3-LICHEN	T2-4-LICHEN	T2-5-LICHEN	T3-1-LICHEN	T3-2-LICHEN
Date Sampled		19-Aug-2014	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	16-Aug-2017	16-Aug-2017
ALS Sample ID		L1510356-219	L1988451-3	L1988451-7	L1988451-11	L1988451-15	L1988451-19	L1988451-23	L1988451-27	L1988451-31	L1988451-35	L1988451-39	L1988451-43	L1988451-47
Physical Tests														
% Moisture	%	44.9	15.2	15.1	14.9	14.6	24.0	34.9	14.9	29.1	15.2	22.6	14.8	19.5
Metals														
Aluminum (Al)	mg/kg ww	575	678	4,390	1,890	647	2,280	1,760	530	1,540	458	3,080	697	546
Antimony (Sb)	mg/kg ww	0.0103	0.0057	0.0354	0.0174	0.0067	0.0254	0.0478	0.0073	0.0472	0.0071	0.0994	0.0099	0.0076
Arsenic (As)	mg/kg ww	0.451	0.843	4.31	1.91	0.871	2.30	1.08	0.830	1.31	0.628	2.39	1.35	1.11
Barium (Ba)	mg/kg ww	15.1	9.21	26.4	16.3	8.04	26.3	19.1	9.06	18.9	11.3	45.6	6.60	10.7
Beryllium (Be)	mg/kg ww	0.0152	0.0226	0.101	0.0617	0.0213	0.0499	0.121	0.0215	0.144	0.0174	0.389	0.0330	0.0239
Bismuth (Bi)	mg/kg ww	0.0203	0.0348	0.103	0.0558	0.0247	0.0461	0.0641	0.0473	0.0452	0.0150	0.0884	0.0476	0.0284
Cadmium (Cd)	mg/kg ww	0.0737	0.0643	0.143	0.0885	0.0471	0.0522	0.0509	0.0687	0.0675	0.0639	0.115	0.0759	0.0542
Calcium (Ca)	mg/kg ww	1,660	5,180	5,700	5,530	3,670	2,960	1,150	3,400	1,210	2,100	2,480	3,490	3,250
Chromium (Cr)	mg/kg ww	4.58	13.1	81.1	29.9	13.8	45.3	14.4	9.74	16.4	8.48	30.0	15.2	11.9
Cobalt (Co)	mg/kg ww	1.20	0.586	3.58	1.72	0.577	2.12	0.972	0.454	0.961	0.388	1.67	0.630	0.530
Copper (Cu)	mg/kg ww	4.63	1.36	7.36	3.08	1.43	4.00	1.74	1.25	1.67	1.37	4.04	1.83	1.63
Iron (Fe)	mg/kg ww	1,050	1,440	9,280	3,980	1,410	5,350	2,890	1,160	2,490	1,040	4,800	1,670	1,250
Lead (Pb)	mg/kg ww	1.71	1.29	2.91	2.44	1.11	1.78	3.55	2.14	3.33	0.924	5.70	2.23	1.52
Lithium (Li)	mg/kg ww	0.27	0.45	3.14	1.57	0.46	1.73	1.14	0.36	0.79	0.30	1.78	0.43	0.34
Magnesium (Mg)	mg/kg ww	531	839	4,230	2,180	788	2,320	969	667	1,060	605	1,650	824	717
Manganese (Mn)	mg/kg ww	111	97.6	230	130	90.9	230	107	59.9	93.6	74.9	84.7	45.5	91.1
Molybdenum (Mo)	mg/kg ww	0.0622	0.272	0.961	0.638	0.233	0.639	0.342	0.321	0.275	0.228	0.513	0.258	0.238
Nickel (Ni)	mg/kg ww	4.32	4.33	27.6	10.4	4.55	15.7	5.70	3.46	6.19	3.02	11.1	5.46	4.17
Potassium (K)	mg/kg ww	597	1,340	951	1,360	1,260	837	427	1,070	386	1,070	569	1,090	1,180
Selenium (Se)	mg/kg ww	0.070	0.060	0.093	0.078	0.064	0.067	0.109	0.063	0.126	0.057	0.181	0.094	0.064
Sodium (Na)	mg/kg ww	65.1	65.4	46.4	160	41.8	39.6	17.3	37.5	18.2	27.1	22.7	32.0	19.4
Strontium (Sr)	mg/kg ww	4.10	11.8	17.4	19.0	9.73	9.27	5.78	9.38	5.73	6.39	15.4	10.0	8.09
Thallium (Tl)	mg/kg ww	0.0306	0.0172	0.0197	0.0177	0.0112	0.0226	0.0275	0.0106	0.0149	0.00777	0.0380	0.00832	0.0124
Tin (Sn)	mg/kg ww	0.020	<0.020	0.068	0.046	0.034	0.035	0.097	<0.020	0.071	<0.020	0.102	<0.020	<0.020
Uranium (U)	mg/kg ww	0.0473	0.0917	0.449	0.250	0.0962	0.210	0.640	0.0709	0.257	0.0730	1.38	0.117	0.0947
Vanadium (V)	mg/kg ww	1.18	1.40	9.15	3.71	1.42	5.00	2.79	1.12	2.37	0.978	3.96	1.53	1.14
Zinc (Zn)	mg/kg ww	10.7	13.8	26.0	20.4	10.9	15.5	10.0	12.3	13.4	16.2	15.7	11.1	14.9

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen Analytical Results (2011-2021)

Sample ID		T3-3-LICHEN	T3-4-LICHEN	T3-5-LICHEN	T4-1-LICHEN	T4-2-LICHEN	T4-3-LICHEN	T4-4-LICHEN	T4-5-LICHEN	T5-1-LICHEN	T5-2-LICHEN	T5-3-LICHEN	T5-4-LICHEN	T5-5-LICHEN
Date Sampled		16-Aug-2017	16-Aug-2017	16-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017
ALS Sample ID		L1988451-51	L1988451-55	L1988451-59	L1988451-63	L1988451-67	L1988451-71	L1988451-75	L1988451-79	L1988451-83	L1988451-87	L1988451-91	L1988451-95	L1988451-99
Physical Tests														
% Moisture	%	15.0	17.6	18.3	17.2	11.7	10.3	52.7	16.8	20.9	33.0	25.6	27.4	14.0
Metals														
Aluminum (Al)	mg/kg ww	1,740	512	774	1,080	1,120	645	283	330	1,540	537	296	1,400	2,880
Antimony (Sb)	mg/kg ww	0.0194	0.0086	0.0122	0.0151	0.0143	0.0134	0.0028	0.0052	0.0150	0.0067	0.0043	0.0163	0.0358
Arsenic (As)	mg/kg ww	3.80	1.18	1.63	2.52	2.45	1.41	0.462	0.584	1.96	0.735	0.456	2.42	7.68
Barium (Ba)	mg/kg ww	15.0	7.88	11.6	10.6	8.79	11.6	5.04	8.64	25.2	13.9	12.7	26.5	31.5
Beryllium (Be)	mg/kg ww	0.0527	0.0226	0.0390	0.0249	0.0290	0.0233	0.0091	0.0110	0.0481	0.0145	0.0103	0.0342	0.0729
Bismuth (Bi)	mg/kg ww	0.0505	0.0304	0.0431	0.0248	0.0326	0.0484	0.0105	0.0120	0.0533	0.0175	0.0133	0.0305	0.0800
Cadmium (Cd)	mg/kg ww	0.0717	0.108	0.0807	0.0408	0.0541	0.0486	0.0884	0.0316	0.0780	0.0527	0.0451	0.147	0.0802
Calcium (Ca)	mg/kg ww	4,220	3,660	2,810	1,320	2,210	2,190	1,970	1,750	1,640	1,620	2,030	2,660	2,770
Chromium (Cr)	mg/kg ww	40.8	12.4	15.9	27.1	28.7	15.8	6.66	8.19	29.5	12.7	6.57	30.8	72.3
Cobalt (Co)	mg/kg ww	1.62	0.534	0.707	1.01	1.08	0.629	0.315	0.345	1.39	0.535	0.335	1.28	2.58
Copper (Cu)	mg/kg ww	3.27	1.69	2.10	2.50	2.25	1.65	0.842	1.13	3.12	1.30	1.09	3.66	5.96
Iron (Fe)	mg/kg ww	4,730	1,220	1,840	3,210	3,160	1,690	709	823	3,680	1,310	672	3,550	9,100
Lead (Pb)	mg/kg ww	2.73	1.67	1.95	1.21	1.95	1.44	0.854	0.918	3.11	0.952	0.720	1.73	4.22
Lithium (Li)	mg/kg ww	1.14	0.34	0.55	0.79	0.72	0.44	0.20	0.22	1.15	0.37	0.20	0.93	1.88
Magnesium (Mg)	mg/kg ww	1,980	754	931	1,140	1,250	813	403	468	1,360	617	425	1,660	2,820
Manganese (Mn)	mg/kg ww	124	90.0	61.5	106	94.6	107	56.3	82.5	109	72.7	89.3	177	168
Molybdenum (Mo)	mg/kg ww	0.517	0.257	0.273	0.349	0.346	0.256	0.0905	0.146	0.360	0.157	0.103	0.441	0.647
Nickel (Ni)	mg/kg ww	14.3	4.51	5.80	8.68	9.51	5.38	2.41	2.81	10.4	4.35	2.34	11.1	24.1
Potassium (K)	mg/kg ww	1,290	1,250	1,120	590	911	886	621	893	593	698	966	1,050	935
Selenium (Se)	mg/kg ww	0.074	0.064	0.097	0.052	0.059	0.062	0.037	0.044	0.083	0.047	0.051	0.073	0.113
Sodium (Na)	mg/kg ww	82.1	32.9	21.6	31.3	17.5	36.4	17.0	11.7	28.5	23.7	29.3	71.2	32.8
Strontium (Sr)	mg/kg ww	11.9	9.21	7.90	5.20	6.45	6.29	4.35	3.68	7.22	5.03	4.75	7.85	9.26
Thallium (Tl)	mg/kg ww	0.0227	0.0135	0.00853	0.00671	0.0157	0.0113	0.00740	0.0176	0.0275	0.00632	0.00745	0.00918	0.0467
Tin (Sn)	mg/kg ww	0.028	<0.020	0.025	0.024	0.023	<0.020	<0.020	<0.020	0.049	<0.020	<0.020	0.028	0.058
Uranium (U)	mg/kg ww	0.178	0.101	0.139	0.0952	0.114	0.0794	0.0331	0.0469	0.177	0.0593	0.0424	0.161	0.209
Vanadium (V)	mg/kg ww	3.93	1.19	1.64	2.56	2.53	1.47	0.623	0.752	3.42	1.25	0.659	3.00	6.46
Zinc (Zn)	mg/kg ww	19.7	11.8	14.7	14.4	12.8	14.1	9.74	9.50	15.4	13.1	14.9	32.2	20.3

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen
Analytical Results (2011-2021)

Sample ID		T6-1-LICHEN	T6-2-LICHEN	T6-3-LICHEN	T6-4-LICHEN	T6-5-LICHEN	T7-1-LICHEN	T7-2-LICHEN	T7-3-LICHEN	T7-4-LICHEN	T7-5-LICHEN	T8-1-LICHEN	T8-2-LICHEN	T8-3-LICHEN
Date Sampled		15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
ALS Sample ID		L1988451-103	L1988451-107	L1988451-111	L1988451-115	L1988451-119	L1988451-123	L1988451-127	L1988451-131	L1988451-135	L1988451-139	L1988451-143	L1988451-147	L1988451-151
Physical Tests														
% Moisture	%	20.5	20.0	19.5	14.3	18.5	14.6	15.8	16.3	12.4	14.1	9.55	9.83	13.5
Metals														
Aluminum (Al)	mg/kg ww	2,880	2,680	2,630	6,100	2,680	3,200	1,550	1,010	388	916	6,060	4,490	3,000
Antimony (Sb)	mg/kg ww	0.0302	0.0303	0.0055	0.0263	0.0447	0.0341	0.0150	0.0144	0.0073	0.0177	0.0615	0.0227	0.0249
Arsenic (As)	mg/kg ww	4.53	4.77	3.65	5.25	4.40	4.23	1.42	1.06	0.566	0.912	3.52	1.91	1.32
Barium (Ba)	mg/kg ww	24.4	23.4	22.7	21.8	17.9	26.1	13.7	15.0	7.08	16.8	54.4	49.5	40.7
Beryllium (Be)	mg/kg ww	0.0636	0.0598	0.0783	0.189	0.0548	0.0786	0.0359	0.0311	0.0146	0.0326	0.115	0.0756	0.0948
Bismuth (Bi)	mg/kg ww	0.0607	0.0692	0.0809	0.236	0.0583	0.0697	0.0434	0.0345	0.0208	0.0965	0.0828	0.0679	0.0552
Cadmium (Cd)	mg/kg ww	0.137	0.0958	0.0995	0.151	0.125	0.166	0.0536	0.122	0.112	0.0665	0.243	0.156	0.0794
Calcium (Ca)	mg/kg ww	3,000	3,290	2,970	2,350	2,970	3,270	2,710	5,200	4,700	3,350	6,780	8,860	4,340
Chromium (Cr)	mg/kg ww	74.5	75.5	54.6	61.3	75.1	31.1	15.4	10.1	4.21	9.59	48.2	37.7	24.6
Cobalt (Co)	mg/kg ww	2.87	2.95	2.53	3.66	2.98	3.02	1.27	0.908	0.353	0.658	5.65	3.45	2.49
Copper (Cu)	mg/kg ww	6.08	5.99	4.25	7.61	5.48	6.84	2.94	2.37	1.09	2.34	10.5	6.88	6.33
Iron (Fe)	mg/kg ww	7,090	6,790	5,550	10,200	5,950	6,200	2,840	1,940	684	1,640	10,600	6,840	4,910
Lead (Pb)	mg/kg ww	2.03	2.17	2.96	4.03	2.12	5.83	2.19	2.52	1.80	2.32	4.34	1.47	4.18
Lithium (Li)	mg/kg ww	1.98	1.76	2.17	5.51	1.88	2.71	1.23	0.82	0.30	0.74	6.21	3.92	2.66
Magnesium (Mg)	mg/kg ww	3,210	3,250	2,580	3,850	3,320	2,700	1,370	1,030	508	867	6,060	4,360	2,800
Manganese (Mn)	mg/kg ww	248	227	137	113	247	146	102	132	61.2	82.0	724	224	158
Molybdenum (Mo)	mg/kg ww	0.672	0.643	0.533	0.620	0.642	1.26	0.700	0.694	0.325	0.495	0.487	0.361	0.211
Nickel (Ni)	mg/kg ww	26.8	26.9	19.8	23.2	26.9	13.3	6.29	4.40	1.87	3.99	21.8	15.4	10.5
Potassium (K)	mg/kg ww	697	818	751	1,420	697	808	905	1,300	1,070	1,070	1,100	2,150	1,170
Selenium (Se)	mg/kg ww	0.073	0.075	0.079	0.141	0.077	0.114	0.071	0.070	0.067	0.090	0.160	0.060	0.109
Sodium (Na)	mg/kg ww	18.3	24.1	61.6	48.0	25.3	34.7	33.0	38.4	35.0	37.2	23.6	107	57.0
Strontium (Sr)	mg/kg ww	13.1	11.8	12.0	11.1	10.7	14.6	12.4	15.2	14.1	12.7	36.8	41.0	20.5
Thallium (Tl)	mg/kg ww	0.0155	0.0219	0.0152	0.0668	0.0146	0.0230	0.0208	0.0154	0.00982	0.0165	0.0309	0.0163	0.0267
Tin (Sn)	mg/kg ww	0.045	0.044	0.059	0.054	0.041	0.075	0.035	0.028	<0.020	0.039	0.099	<0.040	0.059
Uranium (U)	mg/kg ww	0.306	0.222	0.334	1.06	0.278	0.322	0.161	0.184	0.0593	0.185	0.844	0.467	0.334
Vanadium (V)	mg/kg ww	6.91	6.68	5.84	11.6	6.44	5.94	2.90	1.89	0.761	1.71	11.6	7.91	5.55
Zinc (Zn)	mg/kg ww	21.7	22.3	17.3	23.2	18.8	24.1	12.7	17.9	11.5	16.5	46.0	36.6	20.5

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen
Analytical Results (2011-2021)

Sample ID		T8-4-LICHEN	T8-5-LICHEN	C1-1-LICHEN	C1-2-LICHEN	C1-3-LICHEN	C1-4-LICHEN	C1-5-LICHEN	C2-1-LICHEN	C2-2-LICHEN	C2-3-LICHEN	C2-4-LICHEN	C2-5-LICHEN	C3-1-LICHEN
Date Sampled		18-Aug-2017	18-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017
ALS Sample ID		L1988451-155	L1988451-159	L1988451-163	L1988451-167	L1988451-171	L1988451-175	L1988451-179	L1988451-183	L1988451-187	L1988451-191	L1988451-195	L1988451-199	L1988451-203
Physical Tests														
% Moisture	%	14.6	15.5	6.72	7.26	8.19	8.20	8.63	9.55	9.75	9.94	9.85	9.52	8.59
Metals														
Aluminum (Al)	mg/kg ww	2,490	3,840	214	208	57.5	165	61.9	775	118	326	695	80.8	343
Antimony (Sb)	mg/kg ww	0.0299	0.0343	0.0052	0.0072	0.0042	0.0058	0.0029	0.0164	0.0036	0.0103	0.0117	0.0031	0.0118
Arsenic (As)	mg/kg ww	1.37	1.81	0.313	0.126	0.0995	0.154	0.0877	0.645	0.142	0.303	0.807	0.162	0.537
Barium (Ba)	mg/kg ww	35.0	44.5	12.0	9.28	4.75	8.19	4.62	18.3	2.10	5.86	7.03	9.32	6.03
Beryllium (Be)	mg/kg ww	0.0644	0.0824	0.0140	0.0175	0.0073	0.0118	0.0042	0.0260	0.0064	0.0124	0.0194	0.0070	0.0106
Bismuth (Bi)	mg/kg ww	0.0376	0.0536	0.0092	0.0119	0.0041	0.0092	0.0027	0.0308	0.0091	0.0599	0.0238	0.0060	0.0126
Cadmium (Cd)	mg/kg ww	0.187	0.138	0.0575	0.0984	0.0479	0.0671	0.0312	0.104	0.0779	0.127	0.0815	0.0740	0.0870
Calcium (Ca)	mg/kg ww	4,440	6,260	1,220	1,950	636	1,100	566	1,570	400	875	1,320	3,180	1,770
Chromium (Cr)	mg/kg ww	21.6	36.5	2.42	1.65	0.443	1.35	0.626	7.86	1.18	3.08	11.2	0.904	6.20
Cobalt (Co)	mg/kg ww	2.37	3.32	0.256	0.177	0.0681	0.183	0.0815	0.616	0.136	0.225	0.554	0.154	1.25
Copper (Cu)	mg/kg ww	6.34	6.24	1.01	0.791	0.580	1.02	0.564	1.90	0.610	1.07	1.68	0.806	0.982
Iron (Fe)	mg/kg ww	3,910	6,500	384	368	82.6	266	98.6	1,390	204	575	1,510	142	679
Lead (Pb)	mg/kg ww	1.56	1.62	0.823	1.82	0.693	0.684	0.392	2.80	0.888	2.97	1.22	0.627	1.09
Lithium (Li)	mg/kg ww	2.14	4.06	0.15	0.13	<0.10	0.19	<0.10	0.42	<0.10	0.17	0.47	<0.10	0.21
Magnesium (Mg)	mg/kg ww	3,310	4,940	496	308	165	297	174	719	206	375	829	303	1,670
Manganese (Mn)	mg/kg ww	571	395	50.0	27.4	23.6	66.2	37.4	82.9	10.1	25.1	48.2	61.7	47.7
Molybdenum (Mo)	mg/kg ww	0.327	0.472	0.0654	0.0444	0.0252	0.0851	0.0259	0.142	0.0255	0.0638	0.205	0.0436	0.0919
Nickel (Ni)	mg/kg ww	10.7	15.6	2.04	0.935	0.306	0.963	0.414	4.32	0.871	1.50	4.48	0.891	32.7
Potassium (K)	mg/kg ww	910	1,170	1,150	893	733	1,050	791	865	623	836	1,070	1,040	962
Selenium (Se)	mg/kg ww	0.079	0.076	0.091	0.089	0.066	0.074	0.050	0.105	0.070	0.140	0.069	0.079	0.075
Sodium (Na)	mg/kg ww	25.2	30.4	69.1	49.5	31.0	44.2	18.9	83.0	44.8	74.9	93.1	42.3	202
Strontium (Sr)	mg/kg ww	24.2	31.1	5.55	8.12	2.34	4.35	1.89	5.92	1.61	3.20	4.91	6.66	4.66
Thallium (Tl)	mg/kg ww	0.0112	0.0143	0.00808	0.00716	0.00453	0.00843	0.00282	0.0137	0.00331	0.00687	0.00839	0.00410	0.00448
Tin (Sn)	mg/kg ww	0.031	0.031	<0.020	0.020	<0.020	0.022	<0.020	0.048	<0.020	0.050	0.028	<0.020	<0.020
Uranium (U)	mg/kg ww	0.585	0.521	0.0387	0.0452	0.0165	0.0618	0.0132	0.0892	0.0121	0.0335	0.0537	0.0116	0.0340
Vanadium (V)	mg/kg ww	4.74	7.83	0.428	0.395	0.114	0.329	0.133	1.56	0.228	0.643	1.50	0.151	0.763
Zinc (Zn)	mg/kg ww	43.7	45.4	13.2	11.6	7.75	14.6	7.76	15.0	6.39	11.5	13.4	12.5	10.8

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen
Analytical Results (2011-2021)

Sample ID		C3-2-LICHEN	C3-3-LICHEN	C3-4-LICHEN	C3-5-LICHEN	T1-S1-Lichen	T1-S2-Lichen	T1-S3-Lichen	T2-S1-Lichen	T2-S3-Lichen	T2-S4-Lichen	T3-S1-Lichen	T3-S2-Lichen	T3-S3-Lichen
Date Sampled		21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	22-Aug-2021	22-Aug-2021	23-Aug-2021	26-Aug-2021	26-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021
ALS Sample ID		L1988451-207	L1988451-211	L1988451-215	L1988451-219	VA21B9371-003	VA21B9371-007	VA21B9371-011	VA21B9371-015	VA21B9371-019	VA21B9371-023	VA21B9371-027	VA21B9371-031	VA21B9371-035
Physical Tests														
% Moisture	%	10.7	7.76	6.77	8.13	15.7	12.4	15.6	9.2	12.2	55	49.2	39.7	44.4
Metals														
Aluminum (Al)	mg/kg ww	152	390	532	420	1,350	3,950	5,270	641	1,270	574	519	3,030	1,230
Antimony (Sb)	mg/kg ww	0.0059	0.0077	0.0122	0.0101	0.0163	0.0285	0.0357	0.0113	0.0184	0.007	0.0136	0.0319	0.0248
Arsenic (As)	mg/kg ww	0.201	0.349	0.738	0.297	2	5.11	4.49	1	1.81	0.9	3.96	9.47	7.71
Barium (Ba)	mg/kg ww	9.87	11.5	14.5	18.9	18.5	34.5	46.7	13.8	17.1	8.22	6.66	13.6	9.33
Beryllium (Be)	mg/kg ww	0.0062	0.0150	0.0184	0.0196	0.0302	0.13	0.193	0.0252	0.0331	0.0304	0.0197	0.0663	0.035
Bismuth (Bi)	mg/kg ww	0.0086	0.0158	0.0205	0.0207	0.0276	0.152	0.144	0.0227	0.0319	0.0226	0.0262	0.501	0.0406
Cadmium (Cd)	mg/kg ww	0.0637	0.103	0.134	0.100	0.0431	0.134	0.116	0.0599	0.0567	0.0451	0.0401	0.0593	0.0563
Calcium (Ca)	mg/kg ww	1,720	2,120	2,140	2,320	4,330	8,870	4,000	1,990	2,440	1,860	3,470	2,670	3,220
Chromium (Cr)	mg/kg ww	1.60	3.52	7.32	3.31	25.4	62.2	74	10	22.2	7.48	12.2	69.6	28.6
Cobalt (Co)	mg/kg ww	0.207	0.445	0.614	0.416	1.16	3.2	3.97	0.544	1.06	0.443	0.583	2.87	1.21
Copper (Cu)	mg/kg ww	1.16	1.20	1.65	1.32	2.64	7.7	8.42	1.71	2.82	1.06	1.59	6.16	2.72
Iron (Fe)	mg/kg ww	285	699	1,080	668	2,750	7,940	10,700	1,280	2,920	1,290	1,570	8,760	3,740
Lead (Pb)	mg/kg ww	0.625	1.25	2.18	1.33	1.63	4.43	6.27	2.09	2.11	1.13	2.59	3.94	3.38
Lithium (Li)	mg/kg ww	<0.10	0.25	0.35	0.25	0.87	3.59	3.85	0.43	0.79	0.62	0.34	1.99	0.84
Magnesium (Mg)	mg/kg ww	345	600	760	443	1,500	3,610	3,980	672	1,280	512	666	3,010	1,460
Manganese (Mn)	mg/kg ww	78.7	52.6	58.0	44.4	138	181	278	69.4	158	50.8	62.1	123	72.4
Molybdenum (Mo)	mg/kg ww	0.0666	0.0777	0.177	0.0595	0.543	1.28	1.09	0.346	0.673	0.215	0.36	0.897	0.671
Nickel (Ni)	mg/kg ww	1.32	2.24	4.11	2.50	9.56	22.8	27.3	3.99	8.34	2.82	5.31	25.5	11.2
Potassium (K)	mg/kg ww	1,250	1,030	1,160	926	1,580	1,560	1,210	1,190	1,300	646	894	865	1,040
Selenium (Se)	mg/kg ww	0.070	0.094	0.088	0.104	0.089	0.102	0.192	0.101	0.092	0.043	0.048	0.08	0.06
Sodium (Na)	mg/kg ww	78.4	107	166	60.3	85.7	143	101	48.9	58	29.7	58.9	55.3	102
Strontium (Sr)	mg/kg ww	3.62	6.48	6.35	7.14	13	27	17.9	6.86	6.95	6	9.05	9.81	10.1
Thallium (Tl)	mg/kg ww	0.00620	0.00643	0.00791	0.00894	0.0265	0.0264	0.0398	0.0108	0.0162	0.0091	0.00951	0.021	0.0124
Tin (Sn)	mg/kg ww	<0.020	0.021	0.030	0.029	0.178	0.096	0.524	0.142	0.11	0.086	0.062	0.115	0.077
Uranium (U)	mg/kg ww	0.0224	0.0403	0.0465	0.0790	0.122	0.513	0.8	0.0818	0.147	0.185	0.06	0.196	0.0965
Vanadium (V)	mg/kg ww	0.292	0.807	1.04	0.830	2.86	7.78	10.2	1.25	2.63	1.13	1.16	6.89	2.83
Zinc (Zn)	mg/kg ww	15.0	14.7	15.7	14.5	17	31.4	28.4	14.6	16.4	9.28	8.75	15.9	12

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen
Analytical Results (2011-2021)

Sample ID		T4-S1-Lichen	T4-S2-Lichen	T4-S4-Lichen	T5-S1-Lichen	T5-S4-Lichen	T5-S5-Lichen	T6-S1-Lichen	T6-S2-Lichen	T6-S5-Lichen	T7-S1-Lichen	T7-S2-Lichen	T7-S5-Lichen	T8-S1-Lichen
Date Sampled		25-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	20-Aug-2021	20-Aug-2021	20-Aug-2021	24-Aug-2021	24-Aug-2021	24-Aug-2021	27-Aug-2021
ALS Sample ID		VA21B9371-039	VA21B9371-043	VA21B9371-047	VA21B9371-051	VA21B9371-055	VA21B9371-059	VA21B9371-063	VA21B9371-067	VA21B9371-071	VA21B9371-075	VA21B9371-079	VA21B9371-083	VA21B9371-087
Physical Tests														
% Moisture	%	11.9	16.3	11.9	8.18	7.5	7.82	17.4	17.7	44.2	7.7	7.58	6.71	8.3
Metals														
Aluminum (Al)	mg/kg ww	1,180	378	608	2,100	2,280	2,540	1,280	3,690	2,190	6,780	1,980	4,840	1,540
Antimony (Sb)	mg/kg ww	0.0202	0.01	0.0132	0.0297	0.0295	0.0434	0.0306	0.0684	0.0632	0.0736	0.0229	0.025	0.0114
Arsenic (As)	mg/kg ww	3.3	1.47	2.49	3.39	5.35	6.68	7.59	16.5	14.2	11.8	2.37	7.34	0.801
Barium (Ba)	mg/kg ww	12.9	11.4	9.94	36.8	28.1	15.6	12.7	34	21.9	59.8	18.1	33.5	19.1
Beryllium (Be)	mg/kg ww	0.0486	0.0129	0.028	0.0723	0.0492	0.073	0.0319	0.0798	0.0541	0.18	0.054	0.148	0.0575
Bismuth (Bi)	mg/kg ww	0.0474	0.0118	0.0239	0.0587	0.0434	0.0655	0.0339	0.0934	0.052	0.153	0.0716	0.125	0.0976
Cadmium (Cd)	mg/kg ww	0.0742	0.0388	0.057	0.195	0.097	0.113	0.133	0.268	0.149	0.206	0.0858	0.452	0.117
Calcium (Ca)	mg/kg ww	3,250	2,250	2,180	4,760	3,410	1,990	4,660	8,120	6,790	5,360	5,590	4,410	11,600
Chromium (Cr)	mg/kg ww	22.3	8.57	11.4	38.6	54.2	43.7	32.8	101	55.6	56.7	19.3	43	11.1
Cobalt (Co)	mg/kg ww	0.996	0.423	0.619	1.87	2.05	2.27	1.3	3.92	2.24	6.37	1.47	3.58	1.21
Copper (Cu)	mg/kg ww	3.29	1.44	2.26	4.22	5.54	4.95	4.19	10.7	6.83	14.8	3.92	10	4.34
Iron (Fe)	mg/kg ww	3,060	895	1,550	4,440	5,460	5,890	3,230	9,420	6,080	13,300	3,600	8,860	3,360
Lead (Pb)	mg/kg ww	3.04	1.53	2.87	3.34	3.03	3.93	2.62	5.12	4.27	12.3	5.41	9.1	1.46
Lithium (Li)	mg/kg ww	0.83	0.23	0.35	1.55	1.57	2.01	0.9	2.59	1.52	6.18	1.47	5.04	1.52
Magnesium (Mg)	mg/kg ww	1,210	553	785	2,490	2,740	2,160	1,870	4,640	3,080	5,220	1,660	3,480	1,920
Manganese (Mn)	mg/kg ww	165	103	90.4	396	264	75.3	192	313	222	360	79	136	116
Molybdenum (Mo)	mg/kg ww	0.512	0.216	0.35	0.583	0.907	0.734	0.7	1.36	1.68	2.16	1.25	1.8	0.364
Nickel (Ni)	mg/kg ww	8.85	3.5	5.08	15	19.5	17	12.6	37.3	21.9	26.4	8.01	18	5.1
Potassium (K)	mg/kg ww	1,460	1,200	1,560	1,620	1,800	986	1,560	1,950	2,000	1,430	1,350	938	1,890
Selenium (Se)	mg/kg ww	0.097	0.047	0.103	0.166	0.106	0.109	0.084	0.122	0.105	0.137	0.087	0.137	0.067
Sodium (Na)	mg/kg ww	64.2	35.8	52.9	156	94.3	152	149	221	209	55.3	37.3	43	262
Strontium (Sr)	mg/kg ww	8.56	5.14	6.96	15.6	9.14	8.84	13.2	22.4	19.9	27	24.4	19.8	42.9
Thallium (Tl)	mg/kg ww	0.0176	0.0151	0.0135	0.0329	0.0294	0.0217	0.0105	0.0289	0.0187	0.0711	0.0161	0.0532	0.00988
Tin (Sn)	mg/kg ww	0.162	0.07	0.244	0.372	0.247	0.327	0.318	0.277	0.142	0.336	0.548	0.342	0.04
Uranium (U)	mg/kg ww	0.341	0.0373	0.116	0.336	0.186	0.286	0.152	0.33	0.226	0.677	0.194	1.08	0.207
Vanadium (V)	mg/kg ww	2.42	0.819	1.23	4.52	5.17	5.55	2.9	8.85	5.21	12	3.69	8.78	2.91
Zinc (Zn)	mg/kg ww	19.7	11.4	16.8	38.3	27.6	17.3	21.7	47.1	29.9	49.2	15.6	39.3	22.8

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen
Analytical Results (2011-2021)

Sample ID		T8-S2-Lichen	T8-S4-Lichen	T9-1-Lichen	T9-2-Lichen	T9-3-Lichen	T10-1-Lichen	T10-2-Lichen	T10-3-Lichen	T11-1-Lichen	T11-2-Lichen	T11-3-Lichen	C1-S1-Lichen	C1-S2-Lichen
Date Sampled		27-Aug-2021	27-Aug-2021	23-Aug-2021	23-Aug-2021	23-Aug-2021	22-Aug-2021	22-Aug-2021	22-Aug-2021	23-Aug-2021	23-Aug-2021	23-Aug-2021	29-Aug-2021	29-Aug-2021
ALS Sample ID		VA21B9371-091	VA21B9371-095	VA21B9195-027	VA21B9195-031	VA21B9195-035	VA21B9195-003	VA21B9195-007	VA21B9195-011	VA21B9195-015	VA21B9195-019	VA21B9195-023	VA21B9372-003	VA21B9372-007
Physical Tests														
% Moisture	%	7.4	7.8	12.8	13.2	13	39.2	37	58.5	21.2	18.2	15.5	46.5	40.4
Metals														
Aluminum (Al)	mg/kg ww	4,110	3,510	499	323	316	659	731	278	2,060	822	1,960	446	352
Antimony (Sb)	mg/kg ww	0.0161	0.0116	0.0176	0.0113	0.011	0.0181	0.0234	0.0108	0.0205	0.0129	0.0248	0.007	0.0069
Arsenic (As)	mg/kg ww	2.06	1.89	2.04	1.41	1.59	2.5	3.58	1.32	2.3	1.08	2.58	0.599	0.289
Barium (Ba)	mg/kg ww	25.8	20.8	20.1	11.2	9.81	10.9	15.2	6.25	18.9	11.1	19.6	12.9	12.2
Beryllium (Be)	mg/kg ww	0.0983	0.0795	0.0268	0.0154	0.0113	0.0192	0.0185	0.0092	0.0439	0.0191	0.0545	0.0238	0.0303
Bismuth (Bi)	mg/kg ww	0.105	0.102	0.0073	0.0077	0.0045	0.006	0.0055	0.0035	0.0155	0.0088	0.0224	0.0469	0.0129
Cadmium (Cd)	mg/kg ww	0.0901	0.0765	0.0749	0.0758	0.0314	0.0297	0.0337	0.0213	0.0442	0.0612	0.0729	0.0585	0.0407
Calcium (Ca)	mg/kg ww	6,220	4,210	4,090	3,280	1,470	1,040	1,930	1,020	4,230	3,430	7,660	1,410	877
Chromium (Cr)	mg/kg ww	34.2	30.4	13.6	8.2	9.37	21.3	26.7	9.39	29	12.3	26.1	5.35	2.88
Cobalt (Co)	mg/kg ww	3.49	3.02	0.626	0.396	0.368	0.736	0.91	0.373	2.14	0.827	1.97	0.458	0.297
Copper (Cu)	mg/kg ww	8.28	6.38	1.52	1.29	1.19	1.29	1.57	0.745	3.49	1.75	3.44	0.936	0.891
Iron (Fe)	mg/kg ww	7,940	6,480	873	555	539	1,110	1,270	497	3,340	1,320	3,240	724	579
Lead (Pb)	mg/kg ww	2	2.9	0.861	0.568	0.488	0.619	0.728	0.497	1.12	0.66	1.58	0.912	0.761
Lithium (Li)	mg/kg ww	4.29	3.69	0.4	0.25	0.26	0.54	0.63	0.23	1.98	0.7	1.84	0.38	0.23
Magnesium (Mg)	mg/kg ww	3,830	3,300	798	584	562	908	1,090	429	2,120	1,010	1,980	599	398
Manganese (Mn)	mg/kg ww	162	137	72.2	71	69.7	50.3	50.3	26.1	84.5	66.4	83.1	88.4	49.4
Molybdenum (Mo)	mg/kg ww	0.443	0.341	0.0845	0.0527	0.086	0.106	0.121	0.0634	0.178	0.106	0.24	0.0799	0.0538
Nickel (Ni)	mg/kg ww	13.6	11.4	5.51	3.31	3.4	6.8	8.91	3.39	11.3	4.99	11.2	2.33	1.55
Potassium (K)	mg/kg ww	1,320	905	1,350	1,110	1,190	658	818	546	1,140	1,150	1,490	921	746
Selenium (Se)	mg/kg ww	0.08	0.096	0.087	0.076	0.086	0.069	0.07	0.041	0.075	0.078	0.096	0.057	0.062
Sodium (Na)	mg/kg ww	112	80.6	30.6	22.5	19.7	18.6	15.7	12.4	43.4	28.7	43.8	129	48
Strontium (Sr)	mg/kg ww	30.8	20.3	15.4	10.4	5.68	3.76	6.93	3.16	19.6	14.1	33.2	6.45	5.15
Thallium (Tl)	mg/kg ww	0.0181	0.0173	0.0102	0.00542	0.00969	0.00895	0.0122	0.00594	0.0183	0.00808	0.0187	0.0112	0.00788
Tin (Sn)	mg/kg ww	0.226	0.05	0.096	0.437	0.199	0.048	0.046	0.027	0.205	0.108	0.193	0.258	0.094
Uranium (U)	mg/kg ww	0.409	0.305	0.0646	0.0448	0.0276	0.0353	0.0303	0.0191	0.12	0.0502	0.186	0.0762	0.122
Vanadium (V)	mg/kg ww	8.09	6.82	1.33	0.849	0.884	1.87	2.18	0.786	5.45	2.1	5	0.856	0.627
Zinc (Zn)	mg/kg ww	28.9	23.7	15.8	12.8	11.1	8	9.39	5.75	14.7	13.3	16.8	12.8	8.96

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-4: Existing Conditions Lichen Analytical Results (2011-2021)

Sample ID		C1-S3-Lichen	C2-S1-Lichen	C2-S2-Lichen	C2-S3-Lichen	C3-S1-Lichen	C3-S2-Lichen	C3-S3-Lichen
Date Sampled		29-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021
ALS Sample ID		VA21B9372-011	VA21B9372-015	VA21B9372-019	VA21B9372-023	VA21B9372-027	VA21B9372-031	VA21B9372-035
Physical Tests								
% Moisture	%	49.5	33.9	60	58.8	56.5	59.1	52.7
Metals								
Aluminum (Al)	mg/kg ww	201	537	314	457	523	1,000	2,160
Antimony (Sb)	mg/kg ww	0.00	0.0086	0.0068	0.0097	0.0132	0.0149	0.013
Arsenic (As)	mg/kg ww	0.274	0.617	0.314	0.35	0.596	1.18	1.08
Barium (Ba)	mg/kg ww	3.97	12.4	3.64	4.06	8.86	11.8	10.9
Beryllium (Be)	mg/kg ww	0.0066	0.0185	0.0091	0.0155	0.0134	0.0268	0.0401
Bismuth (Bi)	mg/kg ww	0.007	0.0207	0.0128	0.355	0.0682	0.0714	0.0494
Cadmium (Cd)	mg/kg ww	0.0221	0.0985	0.0457	0.0949	0.0563	0.0627	0.084
Calcium (Ca)	mg/kg ww	420	1,820	411	853	1,140	1,370	1,560
Chromium (Cr)	mg/kg ww	2.42	5.44	2.87	3.12	5.19	7.36	16
Cobalt (Co)	mg/kg ww	0.146	0.525	0.213	0.273	0.831	0.802	1.97
Copper (Cu)	mg/kg ww	0.556	1.32	0.628	1.53	1.2	1.75	2.76
Iron (Fe)	mg/kg ww	345	930	540	768	973	1,720	4,120
Lead (Pb)	mg/kg ww	0.47	1.69	1.02	1.94	0.885	1.65	1.59
Lithium (Li)	mg/kg ww	0.15	0.30	0.16	0.17	0.36	0.81	2.16
Magnesium (Mg)	mg/kg ww	214	602	247	265	738	707	1,830
Manganese (Mn)	mg/kg ww	33.6	55.9	13.3	16.5	51	54	64.8
Molybdenum (Mo)	mg/kg ww	0.038	0.106	0.0504	0.113	0.0826	0.11	0.151
Nickel (Ni)	mg/kg ww	0.968	2.92	1.42	1.46	15.6	4.75	9.99
Potassium (K)	mg/kg ww	447	790	364	302	502	495	548
Selenium (Se)	mg/kg ww	0.058	0.102	0.063	0.106	0.063	0.057	0.069
Sodium (Na)	mg/kg ww	32.4	66.7	30.5	32.8	31.5	22.7	17.6
Strontium (Sr)	mg/kg ww	1.6	6.05	1.92	3.54	3.49	4.5	6.33
Thallium (Tl)	mg/kg ww	0.00556	0.00898	0.00459	0.00624	0.00825	0.0106	0.0136
Tin (Sn)	mg/kg ww	0.094	0.173	0.03	0.06	0.044	0.098	0.106
Uranium (U)	mg/kg ww	0.0303	0.0463	0.0246	0.0395	0.055	0.0773	0.17
Vanadium (V)	mg/kg ww	0.412	1	0.58	0.688	1.14	1.88	4.68
Zinc (Zn)	mg/kg ww	5.83	14.9	5.77	9.85	8.2	10.6	14.7

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		T1-NEAR FIELD STN.1 BERRIES	T1-NEAR FIELD STN.2 BERRIES	T1-NEAR FIELD STN.3 BERRIES	T1-NEAR FIELD STN.4 BERRIES	T1-NEAR FIELD STN.5 BERRIES	T2-FAR FIELD STN.1 BERRIES	T2-FAR FIELD STN.2 BERRIES	T2-FAR FIELD STN.3 BERRIES	T2-FAR FIELD STN.4 BERRIES	T2-FAR FIELD STN.5 BERRIES	T3-NEAR FIELD STN.1 BERRIES	T3-NEAR FIELD STN.2 BERRIES	T3-NEAR FIELD STN.3 BERRIES
Date Sampled		17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011
ALS Sample ID		L1051858-184	L1051858-188	L1051858-192	L1051858-196	L1051858-200	L1051858-124	L1051858-128	L1051858-132	L1051858-136	L1051858-140	L1051858-104	L1051858-108	L1051858-112
Physical Tests														
% Moisture	%	85.3	83.3	84.5	83.6	83.5	82.8	81.4	82.9	83.8	82.8	81.4	83.5	84.8
Metals														
Aluminum (Al)	mg/kg ww	10.5	28.1	13.1	22.1	25.5	7.3	5.2	5.0	6.2	14.2	13.4	14.2	16.6
Antimony (Sb)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Arsenic (As)	mg/kg ww	0.010	0.025	0.012	0.018	0.033	<0.010	<0.010	<0.010	0.012	0.028	0.030	0.022	0.056
Barium (Ba)	mg/kg ww	0.754	1.04	1.03	1.02	1.45	1.27	1.22	0.933	1.13	1.55	0.897	0.928	1.28
Beryllium (Be)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bismuth (Bi)	mg/kg ww	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Cadmium (Cd)	mg/kg ww	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Calcium (Ca)	mg/kg ww	200	180	244	192	409	231	211	115	175	189	205	240	186
Chromium (Cr)	mg/kg ww	0.60	1.57	0.99	1.01	0.95	2.02	2.87	0.60	0.47	0.85	1.78	1.23	0.76
Cobalt (Co)	mg/kg ww	<0.020	0.039	0.024	0.026	0.034	0.036	0.048	<0.020	<0.020	0.023	0.035	0.029	0.023
Copper (Cu)	mg/kg ww	0.668	0.782	0.744	0.875	0.937	1.06	1.04	0.894	0.811	0.889	1.24	1.10	0.673
Iron (Fe)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	83.5	91.6	93.3	96.1	114	97.1	81.3	78.2	86.6	91.8	105	94.2	89.1
Manganese (Mn)	mg/kg ww	10.2	8.32	13.4	13.1	11.6	17.1	11.1	6.66	11.9	15.2	12.3	13.9	10.1
Molybdenum (Mo)	mg/kg ww	0.032	0.092	0.043	0.043	0.072	0.123	0.163	0.038	0.035	0.042	0.109	0.071	0.037
Nickel (Ni)	mg/kg ww	0.49	0.92	0.65	0.63	0.63	1.30	1.70	0.45	0.37	0.52	1.12	0.76	0.51
Potassium (K)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg ww	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Sodium (Na)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg ww	0.461	0.337	0.374	0.256	0.457	0.453	0.437	0.357	0.360	0.586	0.289	0.284	0.414
Thallium (Tl)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Tin (Sn)	mg/kg ww	<0.050	0.055	0.064	<0.050	0.056	0.133	0.176	0.201	0.208	0.170	0.224	0.190	0.139
Uranium (U)	mg/kg ww	<0.0020	0.0047	<0.0020	0.0023	0.0037	0.0026	<0.0020	<0.0020	<0.0020	0.0027	<0.0020	<0.0020	0.0020
Vanadium (V)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Zinc (Zn)	mg/kg ww	0.90	1.06	1.23	1.32	1.52	1.49	1.43	1.17	1.28	1.41	1.99	1.70	1.39

Notes:
"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		T3-NEAR FIELD STN.4 BERRIES	T3-NEAR FIELD STN.5 BERRIES	T4-FAR FIELD STN.1 BERRIES	T4-FAR FIELD STN.2 BERRIES	T4-FAR FIELD STN.3 BERRIES	T4-FAR FIELD STN.4 BERRIES	T4-FAR FIELD STN.5 BERRIES	T5-FAR FIELD STN.1 BERRIES	T5-FAR FIELD STN.2 BERRIES	T5-FAR FIELD STN.3 BERRIES	T5-FAR FIELD STN.4 BERRIES	T5-FAR FIELD STN.5 BERRIES	T6-SOUTH ISLAND STN.1 BERRIES
Date Sampled		16-Aug-2011	16-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	15-Aug-2011	16-Aug-2011
ALS Sample ID		L1051858-116	L1051858-120	L1051858-64	L1051858-68	L1051858-72	L1051858-76	L1051858-80	L1051858-84	L1051858-88	L1051858-92	L1051858-96	L1051858-100	L1051858-144
Physical Tests														
% Moisture	%	82.1	79.7	83.6	83.2	85.9	84.3	82.2	81.5	82.9	83.7	82.3	81.2	83.5
Metals														
Aluminum (Al)	mg/kg ww	11.2	34.4	6.6	6.1	12.3	10.0	16.9	6.2	6.6	9.8	7.2	5.5	16.2
Antimony (Sb)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Arsenic (As)	mg/kg ww	0.016	0.049	<0.010	<0.010	0.020	0.011	<0.010	<0.010	0.016	0.013	0.013	0.013	0.035
Barium (Ba)	mg/kg ww	0.809	1.46	0.714	0.842	0.728	0.942	1.13	0.948	1.03	1.23	1.38	1.15	0.863
Beryllium (Be)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bismuth (Bi)	mg/kg ww	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Cadmium (Cd)	mg/kg ww	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0052	<0.0050	<0.0050
Calcium (Ca)	mg/kg ww	128	239	159	208	138	162	150	175	171	180	219	145	221
Chromium (Cr)	mg/kg ww	1.99	2.39	0.37	0.28	0.76	0.32	0.91	0.63	0.28	0.43	4.67	0.66	0.59
Cobalt (Co)	mg/kg ww	0.036	0.060	<0.020	<0.020	<0.020	<0.020	0.023	<0.020	<0.020	<0.020	0.078	<0.020	0.022
Copper (Cu)	mg/kg ww	1.06	1.38	1.08	0.964	0.757	0.921	0.776	0.985	0.815	1.04	1.10	1.10	1.13
Iron (Fe)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg ww	<0.020	0.034	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	85.4	136	81.0	94.2	72.5	81.5	84.6	96.2	91.5	111	106	93.6	106
Manganese (Mn)	mg/kg ww	9.21	20.6	17.2	16.2	12.5	7.22	7.40	8.43	12.0	14.2	13.0	11.8	24.1
Molybdenum (Mo)	mg/kg ww	0.115	0.125	0.037	0.026	0.038	0.020	0.052	0.037	0.034	0.043	0.258	0.039	0.042
Nickel (Ni)	mg/kg ww	1.19	1.37	0.30	0.24	0.46	0.23	0.50	0.53	0.38	0.45	2.82	0.60	0.40
Potassium (K)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg ww	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Sodium (Na)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg ww	0.244	0.534	0.203	0.292	0.259	0.320	0.346	0.351	0.303	0.375	0.382	0.256	0.338
Thallium (Tl)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Tin (Sn)	mg/kg ww	0.167	0.283	0.062	0.051	<0.050	0.086	<0.050	0.239	0.236	0.183	0.247	0.226	0.124
Uranium (U)	mg/kg ww	<0.0020	0.0054	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0025	<0.0020	<0.0020	<0.0020	0.0023
Vanadium (V)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Zinc (Zn)	mg/kg ww	1.45	2.85	1.34	1.42	1.04	1.22	1.29	1.32	1.51	1.56	1.97	1.40	1.86

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		T6-SOUTH ISLAND STN.2 BERRIES	T6-SOUTH ISLAND STN.3 BERRIES	T6-SOUTH ISLAND STN.4 BERRIES	T6-SOUTH ISLAND STN.5 BERRIES	T7-NEAR FIELD STN.1 BERRIES	T7-NEAR FIELD STN.2 BERRIES	T7-NEAR FIELD STN.3 BERRIES	T7-NEAR FIELD STN.4 BERRIES	T7-NEAR FIELD STN.5 BERRIES	C1-EXT.REF.STN.1 BERRIES	C1-EXT.REF.STN.2 BERRIES	C1-EXT.REF.STN.3 BERRIES	C1-EXT.REF.STN.4 BERRIES
Date Sampled		16-Aug-2011	16-Aug-2011	16-Aug-2011	16-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	17-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011
ALS Sample ID		L1051858-148	L1051858-152	L1051858-156	L1051858-160	L1051858-164	L1051858-168	L1051858-172	L1051858-176	L1051858-180	L1051858-24	L1051858-28	L1051858-32	L1051858-36
Physical Tests														
% Moisture	%	84.0	82.3	81.8	82.8	85.8	83.5	84.1	83.9	85.3	83.8	86.2	87.2	86.3
Metals														
Aluminum (Al)	mg/kg ww	25.3	13.9	15.7	25.0	7.3	8.3	9.7	8.6	5.2	<2.0	3.6	2.6	14.6
Antimony (Sb)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Arsenic (As)	mg/kg ww	0.050	0.022	0.031	0.045	<0.010	0.020	0.012	0.022	<0.010	<0.010	<0.010	<0.010	<0.010
Barium (Ba)	mg/kg ww	1.36	0.987	1.16	1.25	1.13	1.10	1.16	1.20	0.941	1.26	0.828	1.10	0.786
Beryllium (Be)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bismuth (Bi)	mg/kg ww	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Cadmium (Cd)	mg/kg ww	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Calcium (Ca)	mg/kg ww	230	166	193	189	156	164	203	255	220	276	253	250	330
Chromium (Cr)	mg/kg ww	1.99	2.18	1.11	0.95	0.49	0.65	0.44	0.47	1.21	0.72	0.38	0.59	2.05
Cobalt (Co)	mg/kg ww	0.054	0.044	0.031	0.033	<0.020	0.025	<0.020	<0.020	0.025	<0.020	<0.020	<0.020	0.044
Copper (Cu)	mg/kg ww	1.12	0.957	0.982	1.04	0.913	0.803	0.974	1.06	0.945	0.903	0.771	0.688	0.705
Iron (Fe)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.048	<0.020	<0.020	<0.020	<0.020	<0.020	0.022
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	129	99.5	89.8	117	93.7	93.0	81.1	91.7	71.8	86.0	71.1	74.3	71.8
Manganese (Mn)	mg/kg ww	26.3	7.92	9.31	23.0	15.2	11.6	9.21	11.0	5.75	7.21	6.30	11.4	7.00
Molybdenum (Mo)	mg/kg ww	0.105	0.114	0.058	0.052	0.032	0.031	0.036	0.024	0.077	0.042	0.030	0.038	0.140
Nickel (Ni)	mg/kg ww	1.28	1.33	0.65	0.55	0.46	0.56	0.45	0.44	0.83	0.62	0.38	0.51	1.25
Potassium (K)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg ww	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Sodium (Na)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg ww	0.345	0.298	0.342	0.356	0.336	0.398	0.299	0.551	0.398	0.896	0.580	0.729	0.486
Thallium (Tl)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Tin (Sn)	mg/kg ww	0.205	0.078	0.204	0.103	<0.050	0.052	0.156	0.212	0.165	0.126	<0.050	<0.050	0.066
Uranium (U)	mg/kg ww	0.0032	<0.0020	<0.0020	0.0030	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0039
Vanadium (V)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Zinc (Zn)	mg/kg ww	1.76	1.18	1.32	1.61	1.33	1.06	1.24	1.34	1.12	1.30	1.20	1.08	1.01

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		C1-EXT.REF.STN.5 BERRIES	C2-EXT.REF.STN.1 BERRIES	C2-EXT.REF.STN.2 BERRIES	C2-EXT.REF.STN.3 BERRIES	C2-EXT.REF.STN.4 BERRIES	C2-EXT.REF.STN.5 BERRIES	C3-EXT.REF.STN.1 BERRIES	C3-EXT.REF.STN.2 BERRIES	C3-EXT.REF.STN.3 BERRIES	C3-EXT.REF.STN.4 BERRIES	C3-EXT.REF.STN.5 BERRIES	T1-NEAR FIELD STATION 1 SAMPLE 4 - BERRIES	T1-NEAR FIELD STATION 2 SAMPLE 4 - BERRIES
Date Sampled		14-Aug-2011	14-AUG-11	14-Aug-2011	14-Aug-2011	14-Aug-2011	14-Aug-2011	18-Aug-2011	18-Aug-2011	18-Aug-2011	18-Aug-2011	18-Aug-2011	14-Aug-2014	14-Aug-2014
ALS Sample ID		L1051858-40	L1051858-44	L1051858-48	L1051858-52	L1051858-56	L1051858-60	L1051858-4	L1051858-8	L1051858-12	L1051858-16	L1051858-20	L1510356-4	L1510356-8
Physical Tests														
% Moisture	%	81.8	81.7	82.2	83.4	85.2	85.2	86.6	86.1	86.5	83.5	83.7	84.8	83.8
Metals														
Aluminum (Al)	mg/kg ww	2.1	2.8	3.2	2.6	3.9	2.8	10.0	30.4	13.9	7.3	6.6	12.2	29.0
Antimony (Sb)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0086	0.0242
Barium (Ba)	mg/kg ww	1.19	1.52	1.42	1.07	1.60	0.753	0.706	0.788	0.921	1.25	1.45	0.998	2.30
Beryllium (Be)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.0020	<0.0020
Bismuth (Bi)	mg/kg ww	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	<0.0050	<0.0050	<0.0050	<0.0050	0.0109	<0.0050	<0.0050	<0.0050	0.0060	<0.0050	<0.0050	<0.0010	0.0195
Calcium (Ca)	mg/kg ww	184	190	157	204	372	280	108	129	142	157	192	193	321
Chromium (Cr)	mg/kg ww	1.26	3.16	0.17	0.41	0.40	0.38	0.90	1.31	0.83	1.82	0.85	0.144	0.353
Cobalt (Co)	mg/kg ww	0.024	0.057	<0.020	<0.020	<0.020	<0.020	0.024	0.039	0.027	0.037	0.024	0.0113	0.0228
Copper (Cu)	mg/kg ww	0.947	1.17	0.971	1.01	0.684	0.750	0.724	0.778	0.869	0.868	0.887	0.719	0.756
Iron (Fe)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	22.5	56.0
Lead (Pb)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.021	<0.020	<0.020	<0.020	0.0060	0.0167
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	92.4	102	91.2	89.9	105	73.2	71.7	85.3	85.1	98.3	98.4	71.6	117
Manganese (Mn)	mg/kg ww	8.90	12.6	12.6	7.74	9.90	6.89	4.07	6.80	5.45	7.52	9.20	8.20	19.8
Molybdenum (Mo)	mg/kg ww	0.098	0.179	0.015	0.039	0.038	0.028	0.079	0.079	0.052	0.131	0.056	0.0176	0.0540
Nickel (Ni)	mg/kg ww	0.88	2.10	0.42	0.30	0.69	0.40	0.88	0.93	0.77	1.47	0.88	0.187	0.359
Potassium (K)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	1,140	1,040
Selenium (Se)	mg/kg ww	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.010	<0.010
Sodium (Na)	mg/kg ww	-	-	-	-	-	-	-	-	-	-	-	5.5	6.1
Strontium (Sr)	mg/kg ww	0.545	0.400	0.352	0.323	0.532	0.285	0.195	0.156	0.251	0.271	0.352	0.387	0.618
Thallium (Tl)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.00040	<0.00040
Tin (Sn)	mg/kg ww	0.163	0.064	0.081	0.084	0.081	<0.050	<0.050	0.068	0.061	0.231	0.090	0.045	0.044
Uranium (U)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00135	0.00467
Vanadium (V)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.021	0.051
Zinc (Zn)	mg/kg ww	1.37	1.63	1.43	1.81	1.62	1.10	0.91	1.23	1.60	1.19	1.41	0.88	1.95

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		T1-NEAR FIELD STATION 3 SAMPLE 4 - BERRIES	T1-NEAR FIELD STATION 4 SAMPLE 4 - BERRIES	T1-NEAR FIELD STATION 4 SAMPLE 1 - BERRIES	T2-FAR FIELD STATION 1 SAMPLE 4 - BERRIES	T2-FAR FIELD STATION 2 SAMPLE 4 - BERRIES	T2-FAR FIELD STATION 3 SAMPLE 4 - BERRIES	T2-FAR FIELD STATION 4 SAMPLE 4 - BERRIES	T2-FAR FIELD STATION 5 SAMPLE 4 - BERRIES	T3-NEAR FIELD STATION 1 SAMPLE 4 - BERRIES	T3-NEAR FIELD STATION 2 SAMPLE 4 - BERRIES	T3-NEAR FIELD STATION 3 SAMPLE 4 - BERRIES	T3-NEAR FIELD STATION 4 SAMPLE 4 - BERRIES
Date Sampled		14-Aug-2014	14-Aug-2014	14-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	20-Aug-2014	20-Aug-2014	20-Aug-2014	20-Aug-2014
ALS Sample ID		L1510356-12	L1510356-16	L1510356-20	L1510356-24	L1510356-28	L1510356-32	L1510356-36	L1510356-40	L1510356-44	L1510356-48	L1510356-52	L1510356-56
Physical Tests													
% Moisture	%	83.6	84.4	85.5	84.7	82.4	83.2	85.2	84.2	82.4	84.8	82.8	82.6
Metals													
Aluminum (Al)	mg/kg ww	6.38	14.2	17.8	5.90	1.34	4.63	2.61	3.16	7.67	8.98	119	37.7
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	0.0054	0.0141	0.0135	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0077	0.0103	0.0212	0.0639
Barium (Ba)	mg/kg ww	1.34	1.33	2.11	3.87	0.523	1.48	1.24	1.31	1.05	1.08	1.55	1.19
Beryllium (Be)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0110	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0089	<0.0020
Cadmium (Cd)	mg/kg ww	0.0079	0.0142	0.0130	0.0021	<0.0010	0.0031	0.0072	0.0054	<0.0010	0.0036	0.0021	0.0036
Calcium (Ca)	mg/kg ww	170	272	254	351	88.4	304	261	224	156	241	389	200
Chromium (Cr)	mg/kg ww	0.082	0.171	0.188	0.029	0.016	0.059	0.026	0.034	0.141	0.116	0.232	0.762
Cobalt (Co)	mg/kg ww	0.0187	0.0151	0.0160	0.0067	<0.0040	0.0045	0.0048	<0.0040	0.0085	0.0095	0.0537	0.0346
Copper (Cu)	mg/kg ww	0.495	0.640	0.657	0.629	0.467	0.846	0.619	0.679	0.964	0.936	0.717	0.746
Iron (Fe)	mg/kg ww	12.0	25.9	33.8	4.74	1.75	8.26	3.96	5.20	18.3	16.8	149	100
Lead (Pb)	mg/kg ww	<0.0040	0.0127	0.0115	<0.0040	<0.0040	<0.0040	0.0040	<0.0040	0.0060	0.0059	0.0720	0.0378
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.44	<0.10
Magnesium (Mg)	mg/kg ww	76.9	75.5	77.6	111	46.2	81.5	60.5	64.9	87.4	75.4	122	104
Manganese (Mn)	mg/kg ww	5.74	16.9	11.5	52.6	4.69	17.9	8.86	10.6	8.33	9.65	10.3	12.9
Molybdenum (Mo)	mg/kg ww	0.0061	0.0194	0.0117	0.0195	0.0077	0.0224	0.0158	0.0063	0.0209	0.0133	0.0125	0.0160
Nickel (Ni)	mg/kg ww	0.275	0.259	0.197	0.216	0.059	0.121	0.189	0.109	0.191	0.159	0.238	0.407
Potassium (K)	mg/kg ww	1,040	1,060	895	994	856	1,040	1,030	1,040	1,190	1,200	1,200	1,120
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	<4.0	4.8	5.1	5.3	5.0	5.7	6.3	4.9	5.3	7.1	7.4	5.7
Strontium (Sr)	mg/kg ww	0.305	0.429	0.532	0.872	0.201	0.441	0.348	0.500	0.301	0.322	0.700	0.431
Thallium (Tl)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	0.00101	<0.00040	<0.00040	<0.00040	0.00225	<0.00040
Tin (Sn)	mg/kg ww	0.036	0.096	0.028	0.098	<0.020	0.026	0.036	0.049	0.028	0.043	0.024	<0.020
Uranium (U)	mg/kg ww	0.00082	0.00265	0.00302	0.00090	<0.00040	0.00084	0.00158	0.00063	0.00103	0.00160	0.0162	0.00534
Vanadium (V)	mg/kg ww	<0.020	0.024	0.030	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.178	0.078
Zinc (Zn)	mg/kg ww	1.55	1.37	1.23	1.19	0.63	1.19	1.19	0.95	1.31	1.31	1.45	1.38

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		T3-NEAR FIELD STATION 5 SAMPLE 4 - BERRIES	T4-FAR FIELD STATION 1 SAMPLE 4 - BERRIES	T4-FAR FIELD STATION 2 SAMPLE 4 - BERRIES	T4-FAR FIELD STATION 3 SAMPLE 4 - BERRIES	T4-FAR FIELD STATION 4 SAMPLE 4 - BERRIES	T4-FAR FIELD STATION 5 SAMPLE 4 - BERRIES	T5-FAR FIELD STATION 1 SAMPLE 4 - BERRIES	T5-FAR FIELD STATION 2 SAMPLE 4 - BERRIES	T5-FAR FIELD STATION 3 SAMPLE 4 - BERRIES	T5-FAR FIELD STATION 4 SAMPLE 4 - BERRIES	T5-FAR FIELD STATION 5 SAMPLE 4 - BERRIES	T6-SOUTH ISLAND STATION 1 SAMPLE 4 - BERRIES
Date Sampled		20-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	16-Aug-2014	14-Aug-2014
ALS Sample ID		L1510356-60	L1510356-64	L1510356-68	L1510356-72	L1510356-76	L1510356-80	L1510356-84	L1510356-88	L1510356-92	L1510356-96	L1510356-100	L1510356-104
Physical Tests													
% Moisture	%	84.5	87.3	80.9	88.3	84.4	81.1	84.7	86.8	81.0	85.5	79.8	86.5
Metals													
Aluminum (Al)	mg/kg ww	8.82	7.79	7.56	5.08	14.2	8.51	5.81	13.2	3.95	3.93	12.5	40.7
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	0.0079	0.0051	0.0094	0.0065	0.0103	0.0126	0.0077	0.0094	<0.0040	<0.0040	0.0196	0.0582
Barium (Ba)	mg/kg ww	0.660	0.909	1.42	0.909	0.898	0.866	1.03	1.14	0.742	0.965	1.54	1.64
Beryllium (Be)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0021	0.0062	0.0017	0.0038	<0.0010	<0.0010	0.0021	0.0056	<0.0010	0.0133	0.0026	0.0229
Calcium (Ca)	mg/kg ww	157	266	267	219	164	211	243	231	267	236	187	403
Chromium (Cr)	mg/kg ww	0.131	0.054	0.122	0.089	0.239	0.173	0.087	0.122	0.050	0.051	0.141	0.869
Cobalt (Co)	mg/kg ww	0.0096	0.0050	0.0087	0.0052	0.0106	0.0073	0.0065	0.0124	0.0058	0.0070	0.0166	0.0362
Copper (Cu)	mg/kg ww	0.758	0.676	0.750	0.691	0.783	0.787	0.725	0.515	0.647	0.578	0.789	0.811
Iron (Fe)	mg/kg ww	18.7	10.3	14.6	11.4	30.7	19.7	11.3	20.5	6.92	7.15	21.3	92.8
Lead (Pb)	mg/kg ww	0.0054	<0.0040	0.0060	<0.0040	0.0096	0.0054	<0.0040	0.0069	<0.0040	<0.0040	0.0138	0.0348
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	68.6	69.8	84.7	64.1	76.4	72.0	69.2	64.2	71.4	70.7	87.3	125
Manganese (Mn)	mg/kg ww	4.65	19.5	8.99	11.2	7.31	7.04	5.18	6.33	9.11	13.4	4.43	26.0
Molybdenum (Mo)	mg/kg ww	0.0054	0.0313	0.0124	0.0073	0.0115	0.0108	0.0055	0.0126	0.0116	0.0152	0.0217	0.0304
Nickel (Ni)	mg/kg ww	0.170	0.204	0.255	0.120	0.161	0.282	0.183	0.270	0.152	0.315	0.294	0.432
Potassium (K)	mg/kg ww	1,160	1,070	1,190	1,040	1,140	1,090	1,030	1,080	1,230	995	1,320	1,180
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	6.0	7.3	6.0	5.3	6.5	6.4	6.7	6.3	7.8	4.1	5.9	7.5
Strontium (Sr)	mg/kg ww	0.216	0.296	0.488	0.300	0.273	0.341	0.503	0.357	0.339	0.310	0.347	0.565
Thallium (Tl)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)	mg/kg ww	0.037	0.133	<0.020	0.029	0.069	0.029	0.035	<0.020	0.075	0.073	0.041	0.072
Uranium (U)	mg/kg ww	0.00088	0.00170	0.00124	0.00074	0.00168	0.00094	0.00117	0.00197	0.00085	0.00058	0.00190	0.00666
Vanadium (V)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	0.028	<0.020	<0.020	0.021	<0.020	<0.020	0.024	0.085
Zinc (Zn)	mg/kg ww	1.22	1.75	1.61	0.89	1.00	0.90	0.96	1.07	0.95	1.87	1.43	2.76

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		T6-SOUTH ISLAND STATION 2 SAMPLE 4 - BERRIES	T6-SOUTH ISLAND STATION 3 SAMPLE 4 - BERRIES	T6-SOUTH ISLAND STATION 4 SAMPLE 4 - BERRIES	T6-SOUTH ISLAND STATION 5 SAMPLE 4 - BERRIES	T7-NEAR FIELD STATION 1 SAMPLE 4 - BERRIES	T7-NEAR FIELD STATION 2 SAMPLE 4 - BERRIES	T7-NEAR FIELD STATION 3 SAMPLE 4 - BERRIES	T7-NEAR FIELD STATION 4 SAMPLE 4 - BERRIES	T7-NEAR FIELD STATION 5 SAMPLE 4 - BERRIES	T8-AWAR STATION 1 SAMPLE 4 - BERRIES	T8-AWAR STATION 2 SAMPLE 4 - BERRIES	T8-AWAR STATION 3 SAMPLE 4 - BERRIES
Date Sampled		14-AUG-14	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014
ALS Sample ID		L1510356-108	L1510356-112	L1510356-116	L1510356-120	L1510356-124	L1510356-128	L1510356-132	L1510356-136	L1510356-140	L1510356-144	L1510356-148	L1510356-152
Physical Tests													
% Moisture	%	84.1	84.2	85.0	82.6	80.4	77.8	79.9	84.4	82.6	83.7	86.0	81.6
Metals													
Aluminum (Al)	mg/kg ww	13.7	17.3	20.2	14.6	104	27.2	14.9	14.4	14.1	61.5	37.1	43.1
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	0.0261	0.0217	0.0210	0.0241	0.193	0.0307	0.0140	0.0084	0.0263	0.0187	0.0092	0.0129
Barium (Ba)	mg/kg ww	1.09	1.02	1.21	0.760	1.49	0.975	1.25	1.35	1.46	1.55	1.88	1.07
Beryllium (Be)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	0.0028	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	0.0025	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0078	0.0119	0.0035	0.0053	0.0025	0.0020	0.0012	0.0011	0.0128	0.0108	0.0284	0.0012
Calcium (Ca)	mg/kg ww	197	292	263	223	187	227	301	290	289	369	429	156
Chromium (Cr)	mg/kg ww	0.325	0.322	0.329	0.295	0.459	0.186	0.103	0.108	0.071	0.506	0.276	0.412
Cobalt (Co)	mg/kg ww	0.0182	0.0166	0.0204	0.0157	0.0995	0.0242	0.0281	0.0135	0.0328	0.0427	0.0251	0.0350
Copper (Cu)	mg/kg ww	0.879	0.850	0.690	0.686	0.987	0.991	0.737	0.808	0.556	0.795	0.580	0.748
Iron (Fe)	mg/kg ww	32.0	39.4	42.1	33.1	191	45.9	26.1	21.9	21.3	88.9	52.9	62.1
Lead (Pb)	mg/kg ww	0.0090	0.0122	0.0129	0.0118	0.103	0.0253	0.0101	0.0120	0.0118	0.0187	0.0122	0.0086
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	86.6	88.2	88.2	79.7	115	84.2	86.8	77.2	85.8	125	132	102
Manganese (Mn)	mg/kg ww	13.5	8.57	5.99	9.10	8.62	9.33	4.29	14.6	6.44	21.0	22.1	6.53
Molybdenum (Mo)	mg/kg ww	0.0301	0.0269	0.0092	0.0175	0.0128	0.0098	0.0082	0.0066	0.0074	0.0292	0.0244	0.0080
Nickel (Ni)	mg/kg ww	0.320	0.295	0.278	0.241	0.426	0.260	0.428	0.191	0.359	0.443	0.340	0.271
Potassium (K)	mg/kg ww	1,150	1,190	1,120	1,230	1,160	1,140	1,370	1,160	1,220	1,100	970	1,080
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	<4.0	6.2	5.8	8.9	6.6	8.3	8.1	7.0	5.6	10.8	13.0	4.7
Strontium (Sr)	mg/kg ww	0.304	0.372	0.430	0.287	0.601	0.444	0.550	0.468	0.606	0.822	1.10	0.619
Thallium (Tl)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	0.00084	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)	mg/kg ww	<0.020	0.024	0.025	0.048	<0.020	0.069	0.034	0.066	0.057	0.128	0.125	0.049
Uranium (U)	mg/kg ww	0.00179	0.00370	0.00243	0.00341	0.0122	0.00287	0.00187	0.00159	0.00190	0.00738	0.00514	0.00294
Vanadium (V)	mg/kg ww	0.028	0.038	0.040	0.033	0.219	0.045	0.026	0.024	0.021	0.118	0.073	0.087
Zinc (Zn)	mg/kg ww	1.66	1.53	1.33	1.25	1.44	1.14	1.35	1.09	1.56	1.99	2.91	1.10

Notes:
"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		T8-AWAR STATION 4 SAMPLE 4 - BERRIES	T8-AWAR STATION 5 SAMPLE 4 - BERRIES	C1-EXT REF STATION 1 SAMPLE 4 - BERRIES	C1-EXT REF STATION 2 SAMPLE 4 - BERRIES	C1-EXT REF STATION 3 SAMPLE 4 - BERRIES	C1-EXT REF STATION 4 SAMPLE 4 - BERRIES	C1-EXT REF STATION 5 SAMPLE 4 - BERRIES	C2-EXT REF STATION 1 SAMPLE 4 - BERRIES	C2-EXT REF STATION 2 SAMPLE 4 - BERRIES	C2-EXT REF STATION 3 SAMPLE 4 - BERRIES	C2-EXT REF STATION 4 SAMPLE 4 - BERRIES	C2-EXT REF STATION 5 SAMPLE 4 - BERRIES
Date Sampled		14-Aug-2014	14-AUG-14	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014
ALS Sample ID		L1510356-156	L1510356-160	L1510356-164	L1510356-168	L1510356-172	L1510356-176	L1510356-180	L1510356-184	L1510356-188	L1510356-192	L1510356-196	L1510356-200
Physical Tests													
% Moisture	%	85.2	83.5	78.5	86.1	80.2	84.9	82.8	82.3	83.3	82.6	85.3	86.1
Metals													
Aluminum (Al)	mg/kg ww	15.8	34.4	15.9	4.51	5.93	14.4	4.04	6.40	18.0	7.35	6.09	7.13
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	0.0064	0.0087	<0.0040	<0.0040	<0.0040	<0.0040	0.0056	<0.0040	0.0099	<0.0040	<0.0040	0.0046
Barium (Ba)	mg/kg ww	1.12	1.41	2.04	0.803	1.63	1.36	1.87	1.68	1.21	1.98	1.25	1.25
Beryllium (Be)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0147	0.0124	0.0022	0.0012	<0.0010	<0.0010	0.0016	0.0050	0.0019	0.0042	0.0046	0.0055
Calcium (Ca)	mg/kg ww	302	322	247	121	157	174	285	273	252	347	153	267
Chromium (Cr)	mg/kg ww	0.112	0.250	0.061	0.016	0.027	0.055	0.021	0.061	0.132	0.053	0.043	0.049
Cobalt (Co)	mg/kg ww	0.0152	0.0221	0.0104	0.0040	0.0074	0.0080	0.0056	0.0172	0.0152	0.0137	0.0101	0.0092
Copper (Cu)	mg/kg ww	0.679	0.937	0.618	0.494	0.626	0.878	0.884	1.06	0.814	0.940	0.853	0.964
Iron (Fe)	mg/kg ww	21.6	48.9	19.2	5.98	6.80	17.0	5.62	10.3	27.2	8.95	9.32	10.2
Lead (Pb)	mg/kg ww	0.0042	0.0114	0.0142	0.0060	0.0096	0.0140	0.0063	0.0049	0.0139	0.0044	0.0050	0.0177
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	91.9	107	81.5	57.6	74.7	70.5	82.0	82.3	72.9	111	73.6	69.5
Manganese (Mn)	mg/kg ww	31.1	22.6	14.9	5.18	9.81	8.52	17.8	9.78	6.12	16.4	6.99	10.3
Molybdenum (Mo)	mg/kg ww	0.0345	0.0764	0.0091	0.0128	0.0069	0.0154	0.0171	0.0098	0.0110	0.0124	0.0137	0.0084
Nickel (Ni)	mg/kg ww	0.284	0.339	0.174	0.179	0.168	0.262	0.208	0.430	0.235	0.313	0.280	0.224
Potassium (K)	mg/kg ww	1,050	1,210	984	1,040	1,050	1,010	1,050	1,140	970	1,080	1,130	1,100
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	7.5	7.8	7.8	<4.0	<4.0	7.8	5.0	5.1	5.7	5.6	4.3	6.2
Strontium (Sr)	mg/kg ww	0.480	0.595	0.926	0.398	0.846	0.692	0.705	0.420	0.436	0.397	0.299	0.355
Thallium (Tl)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)	mg/kg ww	0.111	0.167	0.036	0.065	0.068	0.110	0.053	0.185	0.075	<0.020	0.322	0.165
Uranium (U)	mg/kg ww	0.00268	0.00508	0.00264	0.00069	0.00078	0.00386	0.00174	0.00093	0.00176	0.00099	0.00079	0.00135
Vanadium (V)	mg/kg ww	0.028	0.061	<0.020	<0.020	<0.020	0.022	<0.020	<0.020	0.033	<0.020	<0.020	<0.020
Zinc (Zn)	mg/kg ww	2.20	2.07	1.18	0.75	1.04	1.00	1.31	1.31	1.01	1.74	1.14	1.13

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		C3-EXT REF STATION 1 SAMPLE 4 - BERRIES	C3-EXT REF STATION 2 SAMPLE 4 - BERRIES	C3-EXT REF STATION 3 SAMPLE 4 - BERRIES	C3-EXT REF STATION 4 SAMPLE 4 - BERRIES	C3-EXT REF STATION 5 SAMPLE 4 - BERRIES	T1-1-BERRIES	T1-2-BERRIES	T1-3-BERRIES	T1-4-BERRIES	T1-5-BERRIES	T2-1-BERRIES	T2-2-BERRIES	T2-3-BERRIES
Date Sampled		19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	19-Aug-2014	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017
ALS Sample ID		L1510356-204	L1510356-208	L1510356-212	L1510356-216	L1510356-220	L1988451-4	L1988451-8	L1988451-12	L1988451-16	L1988451-20	L1988451-24	L1988451-28	L1988451-32
Physical Tests														
% Moisture	%	85.6	84.7	87.3	86.2	85.0	85.1	86.8	86.2	84.7	87.9	86.3	86.9	86.1
Metals														
Aluminum (Al)	mg/kg ww	8.23	20.0	4.60	11.8	128	8.83	7.94	7.82	10.9	8.37	3.63	5.93	2.92
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	0.0052	0.0409	<0.0040	0.0073	0.0195	0.0081	0.0096	0.0104	0.0099	0.0128	0.0079	<0.0040	<0.0040
Barium (Ba)	mg/kg ww	0.968	1.95	0.591	1.65	1.74	0.655	0.797	0.958	0.689	0.750	1.85	0.834	1.05
Beryllium (Be)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0019	0.0155	<0.0010	0.0082	0.0029	<0.0010	0.0020	0.0017	<0.0010	<0.0010	0.0043	<0.0010	0.0025
Calcium (Ca)	mg/kg ww	216	269	174	199	200	162	171	173	163	161	193	168	180
Chromium (Cr)	mg/kg ww	0.062	0.139	0.030	0.095	0.441	0.167	0.152	0.140	0.190	0.153	0.034	0.093	0.036
Cobalt (Co)	mg/kg ww	0.0092	0.0200	0.0075	0.0142	0.0703	0.0090	0.0095	0.0139	0.0106	0.0098	0.0041	0.0053	<0.0040
Copper (Cu)	mg/kg ww	0.978	0.957	0.757	0.779	0.900	0.611	0.660	0.506	0.764	0.602	0.603	0.546	0.599
Iron (Fe)	mg/kg ww	12.2	31.8	6.13	16.0	161	19.4	17.4	16.1	23.4	19.9	6.31	12.0	5.62
Lead (Pb)	mg/kg ww	0.0080	0.0267	<0.0040	0.0096	0.0706	<0.0040	<0.0040	0.0040	0.0042	0.0051	0.0053	0.0055	<0.0040
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	72.7	95.2	54.8	72.8	123	74.1	69.4	71.2	84.3	62.2	78.8	72.4	66.4
Manganese (Mn)	mg/kg ww	4.63	12.6	3.55	10.9	8.48	7.00	6.13	5.71	7.36	5.64	24.9	5.50	10.2
Molybdenum (Mo)	mg/kg ww	0.0189	0.0345	0.0055	0.0199	0.0137	0.0080	0.0098	0.0077	0.0170	0.0115	0.0144	0.0070	0.0145
Nickel (Ni)	mg/kg ww	0.356	0.365	0.251	0.413	0.426	0.167	0.167	0.256	0.197	0.157	0.150	0.123	0.106
Potassium (K)	mg/kg ww	1,080	1,170	1,160	1,070	1,140	1,310	1,170	1,150	1,160	980	1,140	1,160	988
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	4.3	<4.0	4.0	<4.0	5.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Strontium (Sr)	mg/kg ww	0.319	0.362	0.198	0.282	0.776	0.312	0.304	0.358	0.335	0.387	0.520	0.416	0.369
Thallium (Tl)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	0.00197	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)	mg/kg ww	0.135	0.044	0.037	0.097	0.061	0.056	0.062	0.028	0.055	0.036	0.061	0.038	0.036
Uranium (U)	mg/kg ww	0.00176	0.00247	0.00083	0.00169	0.00476	0.00081	0.00075	0.00078	0.00090	0.00086	0.00061	0.00058	<0.00040
Vanadium (V)	mg/kg ww	<0.020	0.038	<0.020	<0.020	0.360	0.020	<0.020	<0.020	0.023	<0.020	<0.020	<0.020	<0.020
Zinc (Zn)	mg/kg ww	0.81	1.99	0.82	0.95	1.31	0.74	0.80	1.27	1.13	0.75	1.05	0.76	1.00

Notes:
"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		T2-4-BERRIES	T2-5-BERRIES	T3-1-BERRIES	T3-2-BERRIES	T3-3-BERRIES	T3-4-BERRIES	T3-5-BERRIES	T4-1-BERRIES	T4-2-BERRIES	T4-3-BERRIES	T4-4-BERRIES	T4-5-BERRIES	T5-1-BERRIES	T5-2-BERRIES
Date Sampled		15-Aug-2017	15-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	15-Aug-2017	15-Aug-2017
ALS Sample ID		L1988451-36	L1988451-40	L1988451-44	L1988451-48	L1988451-52	L1988451-56	L1988451-60	L1988451-64	L1988451-68	L1988451-72	L1988451-76	L1988451-80	L1988451-84	L1988451-88
Physical Tests															
% Moisture	%	86.9	86.1	87.9	87.3	86.3	88.0	85.5	87.1	87.5	87.6	86.7	85.0	84.8	85.4
Metals															
Aluminum (Al)	mg/kg ww	3.82	3.99	6.37	5.33	5.83	5.80	5.26	2.96	15.4	3.04	3.76	4.91	2.53	1.60
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0033
Arsenic (As)	mg/kg ww	0.0049	<0.0040	0.0077	0.0049	0.0169	0.0068	0.0107	0.0046	0.0152	0.0047	0.0095	0.0112	0.0091	<0.0040
Barium (Ba)	mg/kg ww	0.608	0.951	0.529	0.860	1.04	0.662	0.877	1.12	1.28	0.644	2.15	1.10	0.933	0.882
Beryllium (Be)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0019	0.0042	<0.0010	0.0021	<0.0010	<0.0010	0.0045	0.0106	0.0058	<0.0010	0.0251	<0.0010	0.0030	0.0032
Calcium (Ca)	mg/kg ww	141	114	152	123	132	129	121	202	188	175	257	196	185	132
Chromium (Cr)	mg/kg ww	0.054	0.058	0.142	0.096	0.134	0.125	0.091	0.042	0.145	0.064	0.052	0.090	0.041	0.023
Cobalt (Co)	mg/kg ww	<0.0040	0.0047	0.0080	0.0056	0.0117	0.0062	0.0074	<0.0040	0.0122	0.0052	0.0162	0.0065	0.0057	0.0100
Copper (Cu)	mg/kg ww	0.458	0.544	0.874	0.657	0.634	0.747	0.542	0.521	0.795	0.726	0.516	0.759	0.722	0.616
Iron (Fe)	mg/kg ww	7.60	8.49	14.2	11.0	11.7	11.5	11.0	4.37	29.9	6.71	5.67	9.56	4.78	5.20
Lead (Pb)	mg/kg ww	<0.0040	<0.0040	0.0054	<0.0040	0.0067	0.0041	<0.0040	<0.0040	0.0112	<0.0040	<0.0040	0.0041	<0.0040	<0.0040
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	56.4	58.3	79.4	59.6	69.0	72.3	62.5	64.2	88.6	68.9	96.5	79.8	77.9	65.9
Manganese (Mn)	mg/kg ww	6.81	8.85	6.93	7.84	11.9	6.89	8.37	25.5	19.7	6.44	15.7	9.86	9.66	6.04
Molybdenum (Mo)	mg/kg ww	0.0079	0.0086	0.0179	0.0054	0.0104	0.0202	0.0073	0.0192	0.0129	0.0120	0.0304	0.0102	0.0158	0.0128
Nickel (Ni)	mg/kg ww	0.085	0.092	0.135	0.148	0.135	0.167	0.159	0.217	0.209	0.141	0.235	0.148	0.218	0.171
Potassium (K)	mg/kg ww	981	836	1,420	1,060	1,050	1,190	964	922	1,270	1,230	1,220	1,100	1,220	1,100
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Strontium (Sr)	mg/kg ww	0.262	0.342	0.257	0.250	0.372	0.275	0.297	0.274	0.406	0.278	0.451	0.381	0.426	0.307
Thallium (Tl)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)	mg/kg ww	0.030	0.058	0.058	0.051	0.063	0.049	<0.020	0.038	0.049	0.049	0.057	0.039	0.031	0.055
Uranium (U)	mg/kg ww	<0.00040	<0.00040	0.00051	<0.00040	<0.00040	0.00045	0.00054	<0.00040	0.00420	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Vanadium (V)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.028	<0.020	<0.020	<0.020	<0.020	<0.020
Zinc (Zn)	mg/kg ww	0.67	0.73	1.20	1.00	0.80	0.86	1.05	1.75	1.40	0.89	1.56	0.96	1.03	0.98

Notes:
"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		T5-3-BERRIES	T5-4-BERRIES	T5-5-BERRIES	T6-1-BERRIES	T6-2-BERRIES	T6-3-BERRIES	T6-4-BERRIES	T6-5-BERRIES	T7-1-BERRIES	T7-2-BERRIES	T7-3-BERRIES	T7-4-BERRIES	T7-5-BERRIES	T8-1-BERRIES
Date Sampled		15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	18-Aug-2017
ALS Sample ID		L1988451-92	L1988451-96	L1988451-100	L1988451-104	L1988451-108	L1988451-112	L1988451-116	L1988451-120	L1988451-124	L1988451-128	L1988451-132	L1988451-136	L1988451-140	L1988451-144
Physical Tests															
% Moisture	%	86.1	87.1	80.5	85.6	86.3	87.3	82.9	81.6	84.9	86.9	88.6	86.6	87.5	86.1
Metals															
Aluminum (Al)	mg/kg ww	2.37	1.79	6.86	3.97	8.05	4.37	5.07	11.3	10.3	12.9	14.0	10.8	12.2	16.3
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	0.0046	<0.0040	0.0110	0.0099	0.0139	0.0078	0.0115	0.0201	0.0267	0.0121	0.0204	0.0117	0.0152	0.0198
Barium (Ba)	mg/kg ww	0.869	1.45	1.03	0.969	0.968	0.881	1.05	0.989	0.689	0.690	0.626	0.576	0.974	1.29
Beryllium (Be)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0039	0.0264	<0.0010	0.0081	0.0039	0.0070	0.0012	0.0108	0.0016	<0.0010	<0.0010	<0.0010	0.0040	0.0170
Calcium (Ca)	mg/kg ww	135	211	111	174	125	158	179	156	82.5	109	101	106	131	163
Chromium (Cr)	mg/kg ww	0.046	<0.010	0.140	0.097	0.195	0.095	0.118	0.165	0.086	0.111	0.129	0.101	0.108	0.145
Cobalt (Co)	mg/kg ww	0.0057	<0.0040	0.0075	0.0070	0.0107	0.0066	0.0099	0.0253	0.0239	0.0120	0.0136	0.0100	0.0135	0.0156
Copper (Cu)	mg/kg ww	0.570	0.518	0.758	0.734	0.788	0.689	0.663	0.678	0.612	0.643	0.636	0.592	0.621	0.540
Iron (Fe)	mg/kg ww	5.47	2.35	15.1	7.57	15.1	8.41	10.4	19.9	21.3	24.5	27.6	21.4	23.6	28.0
Lead (Pb)	mg/kg ww	<0.0040	<0.0040	0.0099	<0.0040	0.0061	<0.0040	0.0060	0.0101	0.0066	0.0137	0.0104	0.0071	0.0078	0.0075
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	63.8	84.9	71.8	86.4	78.2	70.3	80.2	74.2	61.1	67.7	60.2	60.3	70.0	90.1
Manganese (Mn)	mg/kg ww	7.92	18.5	6.98	17.7	12.3	8.91	6.12	12.4	3.31	5.45	5.63	6.10	6.91	17.4
Molybdenum (Mo)	mg/kg ww	0.0149	0.0154	0.0102	0.0173	0.0159	0.0170	0.0061	0.0143	0.0105	0.0129	0.0155	0.0085	0.0140	0.0153
Nickel (Ni)	mg/kg ww	0.169	0.316	0.126	0.207	0.237	0.200	0.193	0.259	0.214	0.221	0.188	0.156	0.172	0.333
Potassium (K)	mg/kg ww	1,140	909	1,110	1,220	1,160	1,190	1,170	892	1,010	1,030	1,080	937	1,040	968
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Strontium (Sr)	mg/kg ww	0.330	0.385	0.329	0.312	0.240	0.273	0.429	0.289	0.374	0.307	0.210	0.229	0.394	0.488
Thallium (Tl)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)	mg/kg ww	0.062	0.034	0.037	0.022	0.050	0.035	0.040	0.049	0.035	<0.020	0.031	<0.020	0.036	0.037
Uranium (U)	mg/kg ww	<0.00040	<0.00040	0.00057	<0.00040	0.00153	0.00056	0.00040	0.00615	0.00063	0.00101	0.00110	0.00088	0.00093	0.00246
Vanadium (V)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.025	<0.020	0.022	0.026	<0.020	0.020	0.030
Zinc (Zn)	mg/kg ww	0.76	2.24	0.92	1.65	1.10	1.10	1.01	1.68	1.00	0.75	0.66	0.79	0.91	1.89

Notes:
"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		T8-2-BERRIES	T8-3-BERRIES	T8-4-BERRIES	T8-5-BERRIES	C1-1-BERRIES	C1-2-BERRIES	C1-3-BERRIES	C1-4-BERRIES	C1-5-BERRIES	C2-1-BERRIES	C2-2-BERRIES	C2-3-BERRIES	C2-4-BERRIES	C2-5-BERRIES
Date Sampled		18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017
ALS Sample ID		L1988451-148	L1988451-152	L1988451-156	L1988451-160	L1988451-164	L1988451-168	L1988451-172	L1988451-176	L1988451-180	L1988451-184	L1988451-188	L1988451-192	L1988451-196	L1988451-200
Physical Tests															
% Moisture	%	88.3	87.7	85.3	84.8	88.7	89.5	91.2	92.1	91.5	86.4	86.3	88.0	86.8	88.3
Metals															
Aluminum (Al)	mg/kg ww	9.19	8.82	6.48	11.9	0.68	0.62	0.85	0.68	0.80	1.13	1.95	1.08	1.63	1.09
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	0.0049	<0.0040	<0.0040	0.0063	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Barium (Ba)	mg/kg ww	1.28	0.432	1.22	1.27	0.902	0.763	0.715	0.598	0.514	0.925	0.890	0.667	1.09	0.601
Beryllium (Be)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0156	<0.0010	0.0196	0.0178	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	0.0029	0.0094	<0.0010	0.0051	<0.0010
Calcium (Ca)	mg/kg ww	138	57.2	174	197	94.2	96.8	95.3	107	104	137	122	103	132	85.6
Chromium (Cr)	mg/kg ww	0.070	0.076	0.050	0.093	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	0.024	0.015	0.016	0.017
Cobalt (Co)	mg/kg ww	0.0102	0.0085	0.0076	0.0100	0.0051	<0.0040	<0.0040	<0.0040	<0.0040	0.0074	0.0082	<0.0040	0.0068	<0.0040
Copper (Cu)	mg/kg ww	0.479	0.324	0.596	0.724	0.497	0.377	0.474	0.455	0.474	0.447	0.567	0.659	0.531	0.504
Iron (Fe)	mg/kg ww	15.8	15.8	10.8	20.4	1.70	1.41	1.74	1.39	1.49	2.15	3.01	2.35	2.66	2.49
Lead (Pb)	mg/kg ww	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	78.5	35.7	75.6	98.0	54.2	43.5	43.9	45.3	43.9	63.2	64.6	51.9	67.9	47.4
Manganese (Mn)	mg/kg ww	11.1	2.27	40.5	32.6	4.81	3.04	3.65	5.52	6.93	9.32	7.09	4.19	8.51	3.30
Molybdenum (Mo)	mg/kg ww	0.0154	<0.0040	0.0304	0.0324	<0.0040	<0.0040	0.0069	0.0082	0.0072	0.0049	0.0113	0.0079	0.0077	<0.0040
Nickel (Ni)	mg/kg ww	0.222	0.088	0.247	0.386	0.134	0.099	0.116	0.090	0.075	0.220	0.260	0.076	0.278	0.142
Potassium (K)	mg/kg ww	923	509	1,010	1,100	919	806	753	755	803	967	856	940	919	919
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Strontium (Sr)	mg/kg ww	0.427	0.242	0.381	0.418	0.598	0.363	0.502	0.316	0.192	0.262	0.298	0.195	0.277	0.144
Thallium (Tl)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)	mg/kg ww	0.026	<0.020	0.023	0.026	0.028	0.039	0.027	0.023	0.036	<0.020	0.030	0.041	0.023	0.050
Uranium (U)	mg/kg ww	0.00042	0.00056	0.00083	0.00090	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Vanadium (V)	mg/kg ww	<0.020	<0.020	<0.020	0.023	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Zinc (Zn)	mg/kg ww	1.77	0.41	2.01	2.81	0.58	0.62	0.53	0.57	0.51	0.92	0.90	0.87	0.90	0.61

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		C3-1-BERRIES	C3-2-BERRIES	C3-3-BERRIES	C3-4-BERRIES	C3-5-BERRIES	T1-S1-Berries	T1-S2-Berries	T1-S3-Berries	T2-S1-Berries	T2-S3-Berries	T2-S4-Berries	T3-S1-Berries	T3-S2-Berries	T3-S3-Berries
Date Sampled		21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	22-Aug-2021	22-Aug-2021	23-Aug-2021	26-Aug-2021	26-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021
ALS Sample ID		L1988451-204	L1988451-208	L1988451-212	L1988451-216	L1988451-220	VA21B9371-004	VA21B9371-008	VA21B9371-012	VA21B9371-016	VA21B9371-020	VA21B9371-024	VA21B9371-028	VA21B9371-032	VA21B9371-036
Physical Tests															
% Moisture	%	88.1	87.8	85.9	89.9	89.0	86.7	86.1	87.8	86.8	84.4	88.8	87.1	89.7	87.2
Metals															
Aluminum (Al)	mg/kg ww	0.98	1.73	1.11	1.22	0.94	5.05	3.9	1.74	1.68	2.64	1.93	23	2.82	3.6
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	<0.0040	<0.0040	<0.0040	0.0048	<0.0040	0.0168	0.0133	0.0047	0.0065	0.0114	0.0046	0.141	0.0264	0.0478
Barium (Ba)	mg/kg ww	0.519	0.945	0.499	0.728	0.414	0.841	0.847	1.6	0.895	0.763	0.72	0.848	0.466	0.627
Beryllium (Be)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0013	0.0073	0.0068	0.0012	<0.0010	<0.0010	0.0038	0.0137	0.0017	<0.0010	0.0014	0.0017	0.0015	<0.0010
Calcium (Ca)	mg/kg ww	75.3	123	92.4	86.1	56.6	113	109	143	112	109	108	126	89.1	103
Chromium (Cr)	mg/kg ww	0.012	0.151	0.014	0.016	0.012	0.061	0.048	0.012	0.021	0.039	0.024	0.562	0.058	0.073
Cobalt (Co)	mg/kg ww	0.0076	0.0112	0.0046	0.0041	<0.0040	0.0071	0.0064	0.0121	<0.0040	<0.0040	<0.0040	0.0239	0.0051	0.0051
Copper (Cu)	mg/kg ww	0.361	0.554	0.377	0.463	0.506	0.71	0.602	0.392	0.643	0.588	0.592	0.759	0.535	0.689
Iron (Fe)	mg/kg ww	2.03	3.15	2.08	2.41	1.99	11.5	9.56	3.59	4.23	6.37	4.36	69	7.88	9.84
Lead (Pb)	mg/kg ww	<0.0040	<0.0040	0.0052	<0.0040	<0.0040	0.0067	0.0044	<0.0040	<0.0040	0.0061	<0.0040	0.0569	<0.0040	0.0047
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	50.0	57.4	48.9	52.0	32.2	78.4	63.8	71.3	69.8	69.9	74.6	91.5	62.5	74.4
Manganese (Mn)	mg/kg ww	3.20	9.28	5.47	5.11	2.35	7.67	6.17	11.6	8.47	8.13	10.6	8.92	6.5	8.68
Molybdenum (Mo)	mg/kg ww	0.0061	0.0123	0.0046	0.0134	<0.0040	0.0068	0.0058	0.0093	0.0085	0.0062	0.0082	0.023	0.0065	0.0062
Nickel (Ni)	mg/kg ww	0.503	0.623	0.204	0.211	0.111	0.148	0.132	0.201	0.087	0.107	0.081	0.305	0.108	0.123
Potassium (K)	mg/kg ww	936	935	893	824	702	1,250	993	1,090	1,080	1,290	1,230	1,170	1,190	1,280
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Strontium (Sr)	mg/kg ww	0.104	0.205	0.133	0.151	0.099	0.34	0.232	0.338	0.398	0.307	0.221	0.332	0.153	0.248
Thallium (Tl)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)	mg/kg ww	0.023	0.036	0.040	0.028	0.027	0.403	0.051	0.064	0.208	0.129	0.172	0.247	<0.020	0.163
Uranium (U)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	0.00194	<0.00040	<0.00040
Vanadium (V)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.052	<0.020	<0.020
Zinc (Zn)	mg/kg ww	0.61	0.89	0.97	0.58	0.49	0.98	1.18	1.62	0.97	1.05	0.97	1.24	1.01	0.99

Notes:

"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		T4-S1-Berries	T4-S2-Berries	T4-S4-Berries	T5-S1-Berries	T5-S4-Berries	T5-S5-Berries	T6-S1-Berries	T6-S2-Berries	T6-S5-Berries	T7-S1-Berries	T7-S2-Berries	T7-S5-Berries	T8-S1-Berries	T8-S2-Berries
Date Sampled		25-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	25-Aug-2021	20-Aug-2021	20-Aug-2021	20-Aug-2021	24-Aug-2021	24-Aug-2021	24-Aug-2021	27-Aug-2021	27-Aug-2021
ALS Sample ID		VA21B9371-040	VA21B9371-044	VA21B9371-048	VA21B9371-052	VA21B9371-056	VA21B9371-060	VA21B9371-064	VA21B9371-068	VA21B9371-072	VA21B9371-076	VA21B9371-080	VA21B9371-084	VA21B9371-088	VA21B9371-092
Physical Tests															
% Moisture	%	89.2	87.7	85	85.8	88.9	85.5	85.6	88	85.1	85.3	84.7	87.4	84.8	88.1
Metals															
Aluminum (Al)	mg/kg ww	1.86	1.93	2.6	2.13	3.03	2.64	1.52	1.84	2.18	2.03	1.22	2.07	8.74	13.2
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0040	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	0.0173	0.0388	0.0394	0.0166	0.0386	0.019	0.0255	0.02	0.0291	0.0058	<0.0040	<0.0080	<0.0040	<0.0040
Barium (Ba)	mg/kg ww	0.793	0.629	0.754	0.876	1.03	0.987	0.378	0.704	0.627	0.635	0.522	0.95	0.937	0.823
Beryllium (Be)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0040	<0.0020	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0040	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0069	0.002	0.0033	0.0018	0.0121	0.0041	0.008	0.0074	0.0069	0.0224	0.0092	0.0068	0.0089	0.0011
Calcium (Ca)	mg/kg ww	128	109	97.9	124	123	135	93.3	129	100	115	89.5	128	126	107
Chromium (Cr)	mg/kg ww	0.034	0.031	0.04	0.043	0.052	0.042	0.027	0.036	0.05	0.017	<0.010	<0.020	0.032	0.056
Cobalt (Co)	mg/kg ww	<0.0040	0.0053	0.0059	0.0094	0.0066	0.0102	0.0085	0.0154	0.014	0.015	0.0175	0.0182	0.0097	0.0113
Copper (Cu)	mg/kg ww	0.531	0.614	0.537	0.7	0.466	0.625	0.293	0.369	0.406	0.341	0.347	0.404	0.539	0.691
Iron (Fe)	mg/kg ww	5.08	6.08	6.91	5.88	7.28	6.75	4.36	5.46	7.16	5	3.15	5.2	39.8	63.5
Lead (Pb)	mg/kg ww	<0.0040	<0.0040	<0.0040	<0.0040	0.0046	<0.0040	<0.0040	0.0041	0.0044	<0.0040	<0.0040	<0.0080	0.0099	0.0104
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	72.6	72.9	64.2	87.1	66.4	91.4	88	91	95	91	79	75.5	83.5	73.5
Manganese (Mn)	mg/kg ww	14.4	8.12	6.63	8.79	13.1	7.2	1.84	3.61	2.03	2.25	1.37	2.04	9.34	5.55
Molybdenum (Mo)	mg/kg ww	0.0168	0.008	0.0064	0.0137	0.01	0.0088	0.0043	0.0056	0.0075	<0.0040	<0.0040	<0.0080	0.0136	0.0126
Nickel (Ni)	mg/kg ww	0.18	0.168	0.12	0.231	0.189	0.24	0.197	0.3	0.288	0.472	0.4	0.222	0.184	0.165
Potassium (K)	mg/kg ww	1,180	1,300	1,110	1,400	944	1,470	1,340	1,220	1,360	1,490	1,360	1,350	1,210	1,200
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010
Sodium (Na)	mg/kg ww	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<8.0	<4.0	<4.0
Strontium (Sr)	mg/kg ww	0.242	0.232	0.262	0.281	0.223	0.34	0.177	0.238	0.223	0.388	0.324	0.412	0.442	0.494
Thallium (Tl)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00080	<0.00040	<0.00040
Tin (Sn)	mg/kg ww	0.158	0.079	0.072	0.192	0.35	0.21	0.049	0.212	0.247	0.183	0.202	0.136	0.218	0.138
Uranium (U)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00080	0.00112	0.0018
Vanadium (V)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.040	<0.020	0.02
Zinc (Zn)	mg/kg ww	1.57	1.38	1.08	1.3	1.43	1.52	1.92	2.13	2.48	2.16	2.04	1.69	1.36	0.93

Notes:
"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		T8-S4-Berries	T9-1-Berries	T9-2-Berries	T9-3-Berries	T10-1-Berries	T10-2-Berries	T10-3-Berries	T11-1-Berries	T11-2-Berries	T11-3-Berries	C1-S1-Berries	C1-S2-Berries	C1-S3-Berries	C2-S1-Berries
Date Sampled		27-Aug-2021	23-Aug-2021	23-Aug-2021	23-Aug-2021	22-Aug-2021	22-Aug-2021	22-Aug-2021	23-Aug-2021	23-Aug-2021	23-Aug-2021	29-Aug-2021	29-Aug-2021	29-Aug-2021	30-Aug-2021
ALS Sample ID		VA21B9371-096	VA21B9195-028	VA21B9195-032	VA21B9195-036	VA21B9195-004	VA21B9195-008	VA21B9195-012	VA21B9195-016	VA21B9195-020	VA21B9195-024	VA21B9372-004	VA21B9372-008	VA21B9372-012	VA21B9372-016
Physical Tests															
% Moisture	%	85.3	82.9	81.6	84.3	83.8	81.5	85.4	84.8	86.8	86.7	89.2	88.2	85.6	85.3
Metals															
Aluminum (Al)	mg/kg ww	14.6	14.1	9.87	14	9.13	14.8	11.9	37.9	18.6	51.2	1.66	1.32	1.1	1.56
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	0.0089	0.077	0.0672	0.075	0.0718	0.0742	0.0398	0.0297	0.0195	0.0568	<0.0040	0.0188	<0.0040	<0.0040
Barium (Ba)	mg/kg ww	0.991	1.21	1.37	0.942	1.36	1.26	0.959	0.802	0.753	0.824	0.734	0.495	0.725	0.924
Beryllium (Be)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0024	0.001	<0.0010	<0.0010	0.003	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Calcium (Ca)	mg/kg ww	130	140	146	155	147	134	114	129	130	132	78.3	59	92.2	125
Chromium (Cr)	mg/kg ww	0.08	0.5	0.339	0.519	0.34	0.564	0.462	0.503	0.267	0.675	0.02	0.023	0.021	0.023
Cobalt (Co)	mg/kg ww	0.0139	0.0155	0.0167	0.0172	0.0149	0.0194	0.012	0.0346	0.0169	0.0446	<0.0040	0.0083	<0.0040	<0.0040
Copper (Cu)	mg/kg ww	0.74	0.893	0.882	0.923	0.684	0.926	0.83	0.796	0.824	0.872	0.5	0.544	0.609	0.688
Iron (Fe)	mg/kg ww	51.3	26	18.2	24.9	16.4	28.6	22.2	62.7	32.2	85.6	2.89	3.05	2.74	3.99
Lead (Pb)	mg/kg ww	0.0123	0.0046	0.005	0.0041	<0.0040	0.0067	0.0058	0.0133	0.0077	0.0164	<0.0040	<0.0040	<0.0040	0.0044
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	77.2	93.5	94.2	100	94.6	104	72.7	101	93.8	103	48.7	35.7	59.9	68.3
Manganese (Mn)	mg/kg ww	6.52	8.13	9.27	20.7	7.2	4.8	3.28	12.6	12.9	5.05	3.4	2.51	5.98	4.41
Molybdenum (Mo)	mg/kg ww	0.0122	<0.0040	<0.0040	<0.0040	0.0044	0.0118	0.0042	0.0073	0.0043	0.0086	<0.0040	0.0065	0.0069	0.0085
Nickel (Ni)	mg/kg ww	0.143	0.407	0.351	0.353	0.343	0.336	0.294	0.364	0.282	0.412	0.109	0.102	0.121	0.146
Potassium (K)	mg/kg ww	1,090	1,180	1,230	1,310	1,280	1,290	1,100	1,280	1,320	975	985	748	1,050	1,010
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	<4.0	4.4	4.3	4.9	4.2	<4.0	<4.0	7.6	5.4	4.8	<4.0	<4.0	4.1	<4.0
Strontium (Sr)	mg/kg ww	0.549	0.456	0.635	0.364	0.352	0.447	0.387	0.58	0.44	0.682	0.406	0.289	0.361	0.24
Thallium (Tl)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)	mg/kg ww	0.069	0.034	0.06	0.067	0.072	0.129	0.057	0.051	0.065	0.065	0.115	0.068	0.159	0.269
Uranium (U)	mg/kg ww	0.00183	<0.00040	<0.00040	0.0004	<0.00040	0.00062	<0.00040	0.00178	0.00085	0.00232	<0.00040	<0.00040	<0.00040	<0.00040
Vanadium (V)	mg/kg ww	0.024	0.041	0.027	0.04	0.025	0.043	0.036	0.088	0.041	0.124	<0.020	<0.020	<0.020	<0.020
Zinc (Zn)	mg/kg ww	1.16	1.3	1.17	1.1	1.36	1.43	0.94	1.11	1.11	1.06	0.6	0.5	0.74	0.95

Notes:
"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

Table A-5: Existing Conditions Berries
Analytical Results (2011-2021)

Sample ID		C2-S2-Berries	C2-S3-Berries	C3-S1-Berries	C3-S2-Berries	C3-S3-Berries
Date Sampled		30-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021	30-Aug-2021
ALS Sample ID		VA21B9372-020	VA21B9372-024	VA21B9372-028	VA21B9372-032	VA21B9372-036
Physical Tests						
% Moisture	%	88.4	87.6	85.8	87.1	89.3
Metals						
Aluminum (Al)	mg/kg ww	1.62	2.51	1.61	1.7	4.74
Antimony (Sb)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	mg/kg ww	<0.0040	<0.0040	<0.0040	0.0044	0.0056
Barium (Ba)	mg/kg ww	0.726	0.675	0.488	0.659	0.498
Beryllium (Be)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)	mg/kg ww	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	mg/kg ww	0.0018	0.0013	<0.0010	0.0038	<0.0010
Calcium (Ca)	mg/kg ww	111	86.9	60.9	91.8	61.5
Chromium (Cr)	mg/kg ww	0.03	0.033	0.039	0.029	0.055
Cobalt (Co)	mg/kg ww	0.0046	0.004	0.0049	0.0044	0.0045
Copper (Cu)	mg/kg ww	0.467	0.657	0.415	0.698	0.446
Iron (Fe)	mg/kg ww	3.82	5.17	3.47	3.89	9.49
Lead (Pb)	mg/kg ww	<0.0040	<0.0040	<0.0040	<0.0040	0.0042
Lithium (Li)	mg/kg ww	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	mg/kg ww	69.5	57.2	44.7	52	36
Manganese (Mn)	mg/kg ww	7.65	4.41	3.49	5.12	4.01
Molybdenum (Mo)	mg/kg ww	0.0153	0.0046	0.0087	0.0069	<0.0040
Nickel (Ni)	mg/kg ww	0.219	0.101	0.312	0.256	0.106
Potassium (K)	mg/kg ww	1,220	1,200	860	979	771
Selenium (Se)	mg/kg ww	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)	mg/kg ww	<4.0	<4.0	<4.0	<4.0	<4.0
Strontium (Sr)	mg/kg ww	0.178	0.195	0.13	0.119	0.094
Thallium (Tl)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)	mg/kg ww	0.211	0.26	0.117	0.079	0.093
Uranium (U)	mg/kg ww	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Vanadium (V)	mg/kg ww	<0.020	<0.020	<0.020	<0.020	<0.020
Zinc (Zn)	mg/kg ww	0.93	1.08	0.52	0.9	0.56

Notes:
"-" = not analyzed; mg/kg ww = milligram per kilogram wet weight

APPENDIX B

Soil Screening Tables

Table B-1: Predicted Soil Concentrations

Parameter	Baseline Soil Concentration[a] (mg/kg)	Whale Tail Human Health Discrete Receptors[f]				Meadowbank Complex Wildlife and Country Foods Soil and Vegetation Monitoring Locations[g]			
		Post-Closure Dry Deposition Rate[b] ($g/m^2/yr$)	Post-Closure Wet Deposition Rate[b] ($g/m^2/yr$)	Post-Closure Incremental Soil Concentration[c] (mg/kg)	Post-Closure Predicted Soil Concentration[d] (mg/kg)	Post-Closure Dry Deposition Rate[b] ($g/m^2/yr$)	Post-Closure Wet Deposition Rate[b] ($g/m^2/yr$)	Post-Closure Incremental Soil Concentration[c] (mg/kg)	Post-Closure Predicted Soil Concentration[d] (mg/kg)
Metals									
Aluminum	9,960	6.54E-01	1.92E-02	1.98E+02	1.02E+04	3.27E-01	3.57E-03	1.99E+02	1.02E+04
Antimony	10	5.96E-05	1.75E-06	1.80E-02	1.00E+01	1.86E-05	2.03E-07	1.13E-02	1.00E+01
Arsenic	173	9.97E-03	2.93E-04	3.01E+00	1.76E+02	1.75E-03	1.91E-05	1.06E+00	1.74E+02
Barium	174	4.93E-03	1.45E-04	1.49E+00	1.75E+02	2.19E-03	2.39E-05	1.33E+00	1.75E+02
Beryllium	1.13	1.59E-05	4.68E-07	4.81E-03	1.13E+00	7.62E-06	8.31E-08	4.62E-03	1.13E+00
Bismuth	0.30	5.38E-06	1.58E-07	1.63E-03	3.02E-01	3.00E-06	3.27E-08	1.82E-03	3.02E-01
Cadmium	0.62	2.70E-06	7.93E-08	8.14E-04	6.21E-01	1.66E-06	1.81E-08	1.01E-03	6.21E-01
Calcium	3,620	4.66E-01	1.37E-02	1.41E+02	3.76E+03	1.68E-01	1.83E-03	1.02E+02	3.72E+03
Chromium	193	1.05E-02	3.07E-04	3.16E+00	1.96E+02	3.21E-03	3.50E-05	1.95E+00	1.95E+02
Cobalt	16.4	7.46E-04	2.19E-05	2.25E-01	1.66E+01	2.53E-04	2.76E-06	1.54E-01	1.66E+01
Copper	26.1	6.70E-04	1.97E-05	2.02E-01	2.63E+01	2.63E-04	2.87E-06	1.59E-01	2.63E+01
Iron	21,500	1.43E+00	4.21E-02	4.32E+02	2.19E+04	7.47E-01	8.15E-03	4.53E+02	2.20E+04
Lead	55	1.50E-04	4.41E-06	4.53E-02	5.50E+01	1.24E-04	1.35E-06	7.51E-02	5.51E+01
Lithium	11.7	3.28E-04	9.64E-06	9.90E-02	1.18E+01	1.43E-04	1.56E-06	8.70E-02	1.18E+01
Magnesium	8,810	6.26E-01	1.84E-02	1.89E+02	9.00E+03	2.95E-01	3.21E-03	1.79E+02	8.99E+03
Manganese	721	3.79E-02	1.12E-03	1.15E+01	7.32E+02	8.53E-03	9.30E-05	5.17E+00	7.26E+02
Molybdenum	4	2.54E-05	7.46E-07	7.66E-03	4.01E+00	5.43E-05	5.92E-07	3.29E-02	4.03E+00
Nickel	97.3	8.53E-03	2.51E-04	2.58E+00	9.99E+01	2.70E-03	2.94E-05	1.64E+00	9.89E+01
Potassium	1,890	2.27E-01	6.67E-03	6.85E+01	1.96E+03	9.89E-02	1.08E-03	6.00E+01	1.95E+03
Selenium	0.5	1.55E-05	4.55E-07	4.68E-03	5.05E-01	9.79E-06	1.07E-07	5.94E-03	5.06E-01
Silver	2.0 [e]	2.49E-05	7.31E-07	7.51E-03	2.01E+00	5.81E-06	6.33E-08	3.52E-03	2.00E+00
Sodium	320	8.19E-02	2.41E-03	2.47E+01	3.45E+02	5.03E-02	5.48E-04	3.05E+01	3.50E+02
Strontium	42.6	2.40E-03	7.06E-05	7.26E-01	4.33E+01	9.86E-04	1.08E-05	5.98E-01	4.32E+01
Thallium	1.0 [e]	6.44E-06	1.89E-07	1.95E-03	1.00E+00	2.54E-06	2.77E-08	1.54E-03	1.00E+00
Tin	5 [e]	2.34E-04	6.87E-06	7.06E-02	5.07E+00	5.33E-05	5.81E-07	3.23E-02	5.03E+00
Titanium	816	3.20E-02	9.41E-04	9.67E+00	8.26E+02	1.26E-02	1.38E-04	7.66E+00	8.24E+02
Uranium	3.08	1.80E-05	5.29E-07	5.44E-03	3.09E+00	1.43E-05	1.55E-07	8.65E-03	3.09E+00
Vanadium	32.5	1.51E-03	4.45E-05	4.58E-01	3.30E+01	6.06E-04	6.61E-06	3.67E-01	3.29E+01
Zinc	64.5	1.15E-03	3.39E-05	3.49E-01	6.48E+01	5.50E-04	5.99E-06	3.33E-01	6.48E+01

Notes:

$g/m^2/yr$ = gram per square metre per year; < = less than; $\mu g/m^2/s$ = microgram per square metre per second; mg/kg = milligram per kilogram

(a) Maximum measured baseline soil concentration from Appendix A, Table A-1.

(b) Maximum dry/wet deposition rate of all receptor locations.

(c) Maximum incremental soil concentration of all receptor locations.

(d) Calculated as the sum of the baseline soil concentration and the incremental soil concentration from particulate deposition.

(e) Maximum baseline soil concentration was equal to the highest detection limit in the baseline dataset.

(f) Country foods soil and vegetation monitoring stations T9, T10, and T11 were grouped with the Whale Tail human health discrete receptors as they are located near Whale Tail mine and deposition rates were predicted using the Whale Tail model.

(g) Includes monitoring stations T1 to T7, T8 and C1 to C3.

Table B-2: Soil Deposition Screening for Human Health

Parameter	CCME SQG_{HH}[a] (mg/kg)	US EPA RSL[b] (mg/kg)	Baseline Soil Concentration[c] + 10% (mg/kg)	Post-Closure - Whale Tail Discrete Receptors[f]					Post-Closure - Meadowbank Complex Wildlife and Country Foods Locations[g]				
				Predicted Soil Concentration[d] (mg/kg)	Greater than a Screening Value?	Relative Change from Baseline	Retained as a POPC?	Rationale	Predicted Soil Concentration[d] (mg/kg)	Greater than a Screening Value?	Relative Change from Baseline	Retained as a POPC?	Rationale
Metals													
Aluminum	NV	15,400	10,956	10,158	No	1.9%	No	<RSL, <Baseline+10%	10,159	No	2.0%	No	<RSL, <Baseline+10%
Antimony	20[e]	n/a	11	10	No	0.2%	No	<SQG, <Baseline+10%	10	No	0.1%	No	<SQG, <Baseline+10%
Arsenic	12	n/a	190	176	Yes	1.7%	No	>SQG, <Baseline+10%	174	Yes	0.6%	No	>SQG, <Baseline+10%
Barium	6,800	n/a	191	175	No	0.8%	No	<SQG, <Baseline+10%	175	No	0.8%	No	<SQG, <Baseline+10%
Beryllium	75	n/a	1.24	1.13	No	0.4%	No	<SQG, <Baseline+10%	1.13	No	0.4%	No	<SQG, <Baseline+10%
Bismuth	NV	NV	0.33	0.30	NV	0.5%	No	<Baseline+10%	0.30	NV	0.6%	No	<Baseline+10%
Cadmium	14	n/a	0.68	0.62	No	0.1%	No	<SQG, <Baseline+10%	0.62	No	0.2%	No	<SQG, <Baseline+10%
Calcium	NV	NV	3,982	3,761	NV	3.7%	No	<Baseline+10%	3,722	NV	2.7%	No	<Baseline+10%
Chromium	220	n/a	212	196	No	1.6%	No	<SQG, <Baseline+10%	195	No	1.0%	No	<SQG, <Baseline+10%
Cobalt	50[e]	n/a	18.0	16.6	No	1.4%	No	<SQG, <Baseline+10%	16.6	No	0.9%	No	<SQG, <Baseline+10%
Copper	1,100	n/a	28.7	26.3	No	0.8%	No	<SQG, <Baseline+10%	26.3	No	0.6%	No	<SQG, <Baseline+10%
Iron	NV	11,000	23,650	21,932	Yes	2.0%	No	>RSL, <Baseline+10%	21,953	Yes	2.1%	No	>RSL, <Baseline+10%
Lead	140	n/a	61	55	No	0.1%	No	<SQG, <Baseline+10%	55	No	0.1%	No	<SQG, <Baseline+10%
Lithium	NV	32	12.9	11.8	No	0.8%	No	<RSL, <Baseline+10%	11.8	No	0.7%	No	<RSL, <Baseline+10%
Magnesium	NV	NV	9,691	8,999	NV	2.1%	No	<Baseline+10%	8,989	NV	2.0%	No	<Baseline+10%
Manganese	NV	360	793	732	Yes	1.6%	No	>RSL, <Baseline+10%	726	Yes	0.7%	No	>RSL, <Baseline+10%
Molybdenum	10[e]	n/a	4.4	4.0	No	0.2%	No	<SQG, <Baseline+10%	4.0	No	0.8%	No	<SQG, <Baseline+10%
Nickel	200	n/a	107	100	No	2.6%	No	<SQG, <Baseline+10%	99	No	1.7%	No	<SQG, <Baseline+10%
Potassium	NV	NV	2,079	1,959	NV	3.5%	No	<Baseline+10%	1,950	NV	3.1%	No	<Baseline+10%
Selenium	80	n/a	0.55	0.50	No	0.9%	No	<SQG, <Baseline+10%	0.51	No	1.2%	No	<SQG, <Baseline+10%
Silver	20[e]	n/a	2.2	2.0	No	0.4%	No	<SQG, <Baseline+10%	2.0	No	0.2%	No	<SQG, <Baseline+10%
Sodium	NV	NV	352	345	NV	7.2%	No	<Baseline+10%	350	NV	8.7%	No	<Baseline+10%
Strontium	NV	9,400	47	43	No	1.7%	No	<RSL, <Baseline+10%	43	No	1.4%	No	<RSL, <Baseline+10%
Thallium	1[e]	n/a	1.1	1.0	No	0.2%	No	<SQG, <Baseline+10%	1.0	No	0.2%	No	<SQG, <Baseline+10%
Tin	50[e]	n/a	5.5	5.1	No	1.4%	No	<SQG, <Baseline+10%	5.0	No	0.6%	No	<SQG, <Baseline+10%
Titanium	NV	NV	898	826	No	1.2%	No	<Baseline+10%	824	No	0.9%	No	<Baseline+10%
Uranium	23	n/a	3.39	3.09	No	0.2%	No	<SQG, <Baseline+10%	3.09	No	0.3%	No	<SQG, <Baseline+10%
Vanadium	130[e]	n/a	35.8	33.0	No	1.4%	No	<SQG, <Baseline+10%	32.9	No	1.1%	No	<SQG, <Baseline+10%
Zinc	10,000	n/a	71.0	64.8	No	0.5%	No	<SQG, <Baseline+10%	64.8	No	0.5%	No	<SQG, <Baseline+10%

Notes:

POPC = parameter of potential concern; > = greater than; < = less than; mg/kg = milligram per kilogram; n/a = not applicable - a soil guideline/standard is available from CCME, therefore screening against US EPA RSLs was not required; NV = no value.

(a) Canadian Council of Ministers of the Environment (CCME). Canadian Soil Quality Guidelines (SQG) for the Protection of Environmental and Human Health. Residential land use. Parameter-specific Factsheets: Arsenic (1997); Barium (2013); Beryllium (2015); Cadmium (1999); Chromium: total chromium (1997); Copper (1999); Lead (1999); Nickel (2015); Selenium (2009); Thallium (1999); Uranium (2007); Vanadium (1997); Zinc (2018). SGQ_{HH} = soil quality guideline protective of human health.

(b) United States Environmental Protection Agency (US EPA). 2024. Regional Screening Levels (RSL) for resident soils. Last updated May 2024. Accessed May 2024 from https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables. RSLs were adjusted to reflect a hazard quotient of 0.2 (multiplied by 0.2).

(c) Maximum measured baseline soil concentration plus 10% (from Appendix A, Table A-1).

(d) Calculated as the sum of the baseline soil concentration and the incremental soil concentration from particulate deposition.

(e) Overall Residential/Parkland guideline (1991); CCME factsheet unavailable.

(f) Country foods soil and vegetation monitoring stations T9, T10, and T11 were grouped with the Whale Tail human health discrete receptors as they are located near Whale Tail mine and deposition rates were predicted using the Whale Tail model.

(g) Includes monitoring stations T1 to T7, T8 and C1 to C3.

Table B-3: Soil Deposition Screening for Ecological Health

Parameter	CCME SQG_E[a] (mg/kg)	US EPA EcoSSL[b] (mg/kg)	Baseline Soil Concentration[c] + 10% (mg/kg)	Post-Closure - Whale Tail Discrete Receptors[j]					Post-Closure - Meadowbank Complex Wildlife and Country Foods Locations[k]				
				Predicted Soil Concentration[d] (mg/kg)	Greater than a Screening Value?	Relative Change from Baseline	Retained as a POPC?	Rationale	Predicted Soil Concentration[d] (mg/kg)	Greater than a Screening Value?	Relative Change from Baseline	Retained as a POPC?	Rationale
Metals													
Aluminum	NV	Narrative[e]	10,956	10,158	No	1.9%	No	pH >5.5, <Baseline+10%	10,159	No	2.0%	No	pH >5.5, <Baseline+10%
Antimony	20[f]	n/a	11	10	No	0.2%	No	<SQG, <Baseline+10%	10	No	0.1%	No	<SQG, <Baseline+10%
Arsenic	17	n/a	190	176	Yes	1.7%	No	>SQG, <Baseline+10%	174	Yes	0.6%	No	>SQG, <Baseline+10%
Barium	500[g]	n/a	191	175	No	0.8%	No	<SQG, <Baseline+10%	175	No	0.8%	No	<SQG, <Baseline+10%
Beryllium	4[h]	n/a	1.24	1.13	No	0.4%	No	<SQG, <Baseline+10%	1.13	No	0.4%	No	<SQG, <Baseline+10%
Bismuth	NV	NV	0.33	0.30	NV	0.5%	No	<Baseline+10%	0.30	NV	0.6%	No	<Baseline+10%
Cadmium	10	n/a	0.68	0.62	No	0.1%	No	<SQG, <Baseline+10%	0.62	No	0.2%	No	<SQG, <Baseline+10%
Calcium	NV	NV	3,982	3,761	NV	3.7%	No	<Baseline+10%	3,722	NV	2.7%	No	<Baseline+10%
Chromium	64	n/a	212	196	Yes	1.6%	No	>SQG, <Baseline+10%	195	Yes	1.0%	No	>SQG, <Baseline+10%
Cobalt	50[f]	n/a	18.0	16.6	No	1.4%	No	<SQG, <Baseline+10%	16.6	No	0.9%	No	<SQG, <Baseline+10%
Copper	63	n/a	28.7	26.3	No	0.8%	No	<SQG, <Baseline+10%	26.3	No	0.6%	No	<SQG, <Baseline+10%
Iron	NV	NV	23,650	21,932	NV	2.0%	No	<Baseline+10%	21,953	NV	2.1%	No	<Baseline+10%
Lead	300	n/a	61	55	No	0.1%	No	<SQG, <Baseline+10%	55	No	0.1%	No	<SQG, <Baseline+10%
Lithium	NV	NV	12.9	11.8	NV	0.8%	No	<Baseline+10%	11.8	NV	0.7%	No	<Baseline+10%
Magnesium	NV	NV	9,691	8,999	NV	2.1%	No	<Baseline+10%	8,989	NV	2.0%	No	<Baseline+10%
Manganese	NV	220[i]	793	732	Yes	1.6%	No	>SQG, <Baseline+10%	726	Yes	0.7%	No	>SQG, <Baseline+10%
Molybdenum	10[f]	n/a	4.4	4.0	No	0.2%	No	<SQG, <Baseline+10%	4.0	No	0.8%	No	<SQG, <Baseline+10%
Nickel	45	n/a	107	99.9	Yes	2.6%	No	>SQG, <Baseline+10%	98.9	Yes	1.7%	No	>SQG, <Baseline+10%
Potassium	NV	NV	2,079	1,959	NV	3.5%	No	<Baseline+10%	1,950	NV	3.1%	No	<Baseline+10%
Selenium	1	n/a	0.55	0.50	No	0.9%	No	<SQG, <Baseline+10%	0.51	No	1.2%	No	<SQG, <Baseline+10%
Silver	20[f]	n/a	2.2	2.0	No	0.4%	No	<SQG, <Baseline+10%	2.0	No	0.2%	No	<SQG, <Baseline+10%
Sodium	NV	NV	352	345	NV	7.2%	No	<Baseline+10%	350	NV	8.7%	No	<Baseline+10%
Strontium	NV	NV	46.9	43.3	NV	1.7%	No	<Baseline+10%	43.2	NV	1.4%	No	<Baseline+10%
Thallium	1.4	n/a	1.1	1.0	No	0.2%	No	<SQG, <Baseline+10%	1.0	No	0.2%	No	<SQG, <Baseline+10%
Tin	50[f]	n/a	5.5	5.1	No	1.4%	No	<SQG, <Baseline+10%	5.0	No	0.6%	No	<SQG, <Baseline+10%
Titanium	NV	NV	898	826	NV	1.2%	No	<Baseline+10%	824	NV	0.9%	No	<Baseline+10%
Uranium	500	n/a	3.39	3.09	No	0.2%	No	<SQG, <Baseline+10%	3.09	No	0.3%	No	<SQG, <Baseline+10%
Vanadium	130	n/a	35.8	33.0	No	1.4%	No	<SQG, <Baseline+10%	32.9	No	1.1%	No	<SQG, <Baseline+10%
Zinc	250	n/a	71.0	64.8	No	0.5%	No	<SQG, <Baseline+10%	64.8	No	0.5%	No	<SQG, <Baseline+10%

Notes:

POPC = parameter of potential concern; > = greater than; < = less than; mg/kg = milligram per kilogram; n/a = not applicable - a soil guideline/standard is available from CCME, therefore screening against US EPA RSLs was not required; NV = no value.

(a) Canadian Council of Ministers of the Environment (CCME). Canadian Soil Quality Guidelines (SQG) for the Protection of Environmental and Human Health. Residential land use. Parameter-specific Factsheets: Arsenic (1997); Barium (2013); Beryllium (2015); Cadmium (1999); Chromium: total chromium (1997); Copper (1999); Lead (1999); Nickel (2015); Selenium (2009); Thallium (1999); Uranium (2007); Vanadium (1997); Zinc (2018). SGQ_E = soil quality guideline protective of ecological receptors.

(b) United States Environmental Protection Agency (US EPA). 2024. Ecological Soil Screening Levels (Eco-SSLs). Last updated April 25, 2025. Accessed May 2024 from https://www.epa.gov/chemical-research/interim-ecological-soil-screening-level-documents.

(c) Maximum measured baseline soil concentration plus 10% (from Appendix A, Table A-1).

(d) Calculated as the sum of the baseline soil concentration and the incremental soil concentration from particulate deposition.

(e) An EcoSSL is only required for soils where pH is less than 5.5 (pH is >5.5 at the site).

(f) Overall Residential/Parkland guideline (1991); CCME factsheet unavailable.

(g) Overall Residential/Parkland guideline (1999); only a SQG_{HH} was derived (no value for SQG_E).

(h) In the absence of an SQG_E, the SQG was used.

(i) Screening value was selected based on the lowest EcoSSL (plants) of all receptors.

(j) Country foods soil and vegetation monitoring stations T9, T10, and T11 were grouped with the Whale Tail human health discrete receptors as they are located near Whale Tail mine and deposition rates were predicted using the Whale Tail model.

(k) Includes monitoring stations T1 to T7, T8 and C1 to C3.

APPENDIX C

2023 Soil Sampling Memorandum

REPORT

2023 Soil Sampling Program to Support the Human Health and Ecological Risk Assessment for the Closure and Remediation Plan

Meadowbank Complex

Kivalliq Region, Nunavut

Submitted to:

Agnico Eagle Mines Ltd.

Meadowbank Division
Suite 540 - Baker Lake
Nunavut, Canada X0C 0A0

Submitted by:

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24 April 2024

Distribution List

1 Electronic Copy - Agnico Eagle Mines Limited

1 Electronic Copy - WSP Canada Inc.

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1.0 INTRODUCTION

WSP Canada Inc. (WSP) was retained by Agnico Eagle Mines Limited (AEM), through a Master Services Agreement with Nuqsana Golder, to collect surficial soil samples to support the development of soil quality remediation objectives (SQROs) to be used in preparation of the Closure Remediation Program (CRP), as part of a Human Health and Ecological Risk Assessment. The SQROs and CRP will be used to guide final remediation, reclamation and closure activities at the Meadowbank Complex, consisting of the Meadowbank Mine, Vault Pit, Whale Tail Mine, and Baker Lake Facilities (the Complex), in Nunavut. The site location is presented in Figure 1.

This report documents the methods and results of surficial soil sample collection conducted on 15 September and between 21 and 24 September 2023.

The scope of work for this investigation consisted of the following activities:

- collecting 30 surficial soil samples for analysis of metals, soil moisture, pH and/or grain size and texture from the Complex in areas of potential dust settlement onto the surrounding tundra adjacent to the Complex
- collecting three field duplicate surficial soil samples for analysis of metals, soil moisture and pH
- recording GPS coordinates of sampling locations
- preparing a factual report documenting and detailing the methods and results of the investigation activities

2.0 SITE DESCRIPTION

Meadowbank Mine is approximately 70 kilometres (km) north of the Hamlet of Baker Lake, Kivalliq Region, Nunavut. Baker Lake Facilities are 2 km east of the Hamlet of Baker Lake. The Whale Tail Mine is approximately 50 km northwest of the Meadowbank Mine and 150 km north of the Hamlet of Baker Lake. The Vault Pit is approximately 3.8 km northeast of the Meadowbank Mine. There are three main roads including the All-Weather Access Road, Vault Road and Haul Road that connect the Complex facilities to each other. The Complex is surrounded by heath tundra exposed bedrock.

The general features of the Site are illustrated in Figures 2 to 5.

3.0 REGULATORY FRAMEWORK AND APPLIED GUIDELINES

The objective of collecting surficial soil samples was to support the development of risk-based SQROs for the Meadowbank Complex that would be incorporated into the CRP and guide site remediation and closure activities.

Under the Amended Water Licence No. 2AM-WTP1830 issued by the Nunavut Water Board (NWB 2018), Canadian Council of Ministers of the Environment (CCME) guidelines and the Government of Nunavut (GN) Environmental Guideline for Site Remediation (GN 2014) are applicable to the licence.

Generic criteria listed in the Guideline apply to either fine- or coarse-grained soil in four specific land uses (agricultural/wildland, residential/parkland, commercial and industrial), sourced from the CCME Canadian Environmental Quality Guidelines (CEQG), published in various years, dating back to 1999 (CCME 1999). The CEQGs adopted in the Guideline include the Canadian Soil Quality Guidelines for the Protection of Environment and Human Health, Canadian Water Quality Guidelines for Protection of Aquatic Life, and Canadian Sediment Quality Guidelines for Protection of Aquatic Life.

For the purposes of this report, generic GN and CCME guidelines have been applied for screening and comparison purposes only, and these are not expected to be in effect for mine closure activities.

4.0 FIELD WORK AND METHODS

Surficial soil samples, including three field duplicate samples, were collected from areas of potential Mine-related dust deposition (e.g., by roads, open pits, tailings areas), targeting nine locations from Meadowbank Mine, Whale Tail Mine and Vault Pit and three locations at the Baker Lake Facilities. Three shallow (<20 centimetre [cm]) holes were advanced using a shovel at each sample location and a sub-sample was collected to create one composite soil sample by mixing the three sub-samples into a single bag for laboratory submission. The top layer of litter/organic material was removed, and mineral soil was collected from the upper soil horizons to a maximum depth of 20 cm.

Sampling equipment was decontaminated between sampling locations using Liquinox and distilled water. To help prevent cross-contamination, a new pair of clean nitrile gloves were used for the collection of each sample.

Field activities were documented in field notes and results were recorded on standard field forms. GPS coordinates and a photographic log were collected to support interpretation of the results. All samples were analyzed for analytical parameters including metals, moisture content and pH. Six samples were also analyzed for grain size and texture. All samples were placed in laboratory-supplied bottles and submitted in ice-filled coolers under chain-of-custody protocols to Bureau Veritas Laboratories.

5.0 RESULTS

5.1 Site Stratigraphy

The stratigraphy adjacent to the Complex, on the surrounding tundra, generally consists of the following:

- Organic matter/peat was observed from surface to a maximum depth of 0.1 metres below ground surface (mbgs).
- Coarse-grained material (sand, gravel) and trace fine-grained material were observed at varying depths between the surface and 0.2 mbgs, the maximum depth investigated.

Guidelines for coarse-grained soils were applied as subsurface soils (below 0.1 mbgs) were observed and documented to be coarse-grained both on- and off-site. Grain size analysis can be found in Table 1. Site photographs can be found in Appendix A.

5.2 Soil Analytical Results

The soil analytical results are illustrated in Figures 2 to 5 and summarized in Tables 1 and 2.

A summary of the soil results is provided in the following table.

Table A: Summary of Soil Analytical Exceedances

Complex Location	Exceedances
Meadowbank Mine	pH, arsenic, chromium (total), copper, nickel
Whale Tail Mine	pH, arsenic, chromium (total), nickel

Complex Location	Exceedances
Vault Pit	pH, arsenic
Baker Lake Site Facilities	pH, copper

Note: Copies of the laboratory certificates of analysis are included in Appendix B.

6.0 FIELD AND LABORATORY QUALITY ASSURANCE / QUALITY CONTROL

A quality assurance/quality control (QA/QC) program was followed to manage and quantify the quality of the investigation results. The program included laboratory procedures and the use of QC samples to quantify the results of the program. A discussion of the QA/QC program is included in Appendix C.

The analytical results collected by WSP field staff in this soil sampling program are considered reliable.

7.0 CONCLUSIONS

Below is a summary of the results for the soil sampling:

- Surficial soil sample exceedances of pH and select metals were identified at the Meadowbank Mine, Whale Tail Mine, Vault Pit and Baker Lake Facility.
- Based on the review of the QA/QC results, the data presented in this report are considered to be reliable.

8.0 REFERENCES

GN (Government of Nunavut). 2014. Environmental Guideline for the Management of Contaminated Sites. December 2014.

NWB (Nunavut Water Board). 2018. Amended Water Licence No. 2AM-WTP1830 – Issued 29 May 2018; Expiry 7 March 2030. Nunavut Water Board. May 2018.

CCME (Canadian Council of Ministers of the Environment). 1999 and updates. Canadian Environmental Quality Guidelines for the Protection of Environmental and Human Health, Canadian Environmental Quality Guidelines. https://ccme.ca/en/summary-table.

9.0 IMPORTANT INFORMATION AND LIMITATIONS OF THIS REPORT

Standard of Care: WSP Canada Inc. (WSP) has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering and science professions currently practising under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied is made.

Basis and Use of the Report: This report has been prepared for the specific site, design objective, development and purpose described to WSP by the Client. The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location. Any change of site conditions, purpose, development plans or if the project is not initiated within eighteen months of the date of the report may alter the validity of the report. WSP cannot be responsible for use of this report, or portions thereof, unless WSP is requested to review and, if necessary, revise the report.

The information, recommendations and opinions expressed in this report are for the sole benefit of the Client. No other party may use or rely on this report or any portion thereof without WSP's express written consent. If the report was prepared to be included for a specific permit application process, then upon the reasonable request of the client, WSP may authorize in writing the use of this report by the regulatory agency as an Approved User for the specific and identified purpose of the applicable permit review process. Any other use of this report by others is prohibited and is without responsibility to WSP. The report, all plans, data, drawings and other documents as well as all electronic media prepared by WSP are considered its professional work product and shall remain the copyright property of WSP, who authorizes only the Client and Approved Users to make copies of the report, but only in such quantities as are reasonably necessary for the use of the report by those parties. The Client and Approved Users may not give, lend, sell, or otherwise make available the report or any portion thereof to any other party without the express written permission of WSP. The Client acknowledges that electronic media is susceptible to unauthorized modification, deterioration and incompatibility and therefore the Client cannot rely upon the electronic media versions of WSP's report or other work products.

The report is of a summary nature and is not intended to stand alone without reference to the instructions given to WSP by the Client, communications between WSP and the Client, and to any other reports prepared by WSP for the Client relative to the specific site described in the report. In order to properly understand the suggestions, recommendations and opinions expressed in this report, reference must be made to the whole of the report. WSP cannot be responsible for use of portions of the report without reference to the entire report.

Unless otherwise stated, the suggestions, recommendations and opinions given in this report are intended only for the guidance of the Client in the design of the specific project. The extent and detail of investigations, including the number of test holes, necessary to determine all of the relevant conditions which may affect construction costs would normally be greater than has been carried out for design purposes. Contractors bidding on, or undertaking the work, should rely on their own investigations, as well as their own interpretations of the factual data presented in the report, as to how subsurface conditions may affect their work, including but not limited to proposed construction techniques, schedule, safety and equipment capabilities.

Soil, Rock and Groundwater Conditions: Classification and identification of soils, rocks, and geologic units have been based on commonly accepted methods employed in the practice of geotechnical engineering and related disciplines. Classification and identification of the type and condition of these materials or units involves judgment, and boundaries between different soil, rock or geologic types or units may be transitional rather than abrupt. Accordingly, WSP does not warrant or guarantee the exactness of the descriptions.

Special risks occur whenever engineering or related disciplines are applied to identify subsurface conditions and even a comprehensive investigation, sampling and testing program may fail to detect all or certain subsurface conditions. The environmental, geologic, geotechnical, geochemical and hydrogeologic conditions that Golder interprets to exist between and beyond sampling points may differ from those that actually exist. In addition to soil variability, fill of variable physical and chemical composition can be present over portions of the site or on adjacent properties. The professional services retained for this project include only the geotechnical aspects of the subsurface conditions at the site, unless otherwise specifically stated and identified in the report. The presence or implication(s) of possible surface and/or subsurface contamination resulting from previous activities or uses of the site and/or resulting from the introduction onto the site of materials from off-site sources are outside the terms of reference for this project and have not been investigated or addressed.

Soil and groundwater conditions shown in the factual data and described in the report are the observed conditions at the time of their determination or measurement. Unless otherwise noted, those conditions form the basis of the recommendations in the report. Groundwater conditions may vary between and beyond reported locations and can be affected by annual, seasonal and meteorological conditions. The condition of the soil, rock and groundwater may be significantly altered by construction activities (traffic, excavation, groundwater level lowering, pile driving, blasting, etc.) on the site or on adjacent sites. Excavation may expose the soils to changes due to wetting, drying or frost. Unless otherwise indicated the soil must be protected from these changes during construction.

Sample Disposal: WSP will dispose of all uncontaminated soil and/or rock samples 90 days following issue of this report or, upon written request of the Client, will store uncontaminated samples and materials at the Client's expense. In the event that actual contaminated soils, fills or groundwater are encountered or are inferred to be present, all contaminated samples shall remain the property and responsibility of the Client for proper disposal.

Follow-Up and Construction Services: All details of the design were not known at the time of submission of WSP's report. WSP should be retained to review the final design, project plans and documents prior to construction, to confirm that they are consistent with the intent of WSP's report.

During construction, WSP should be retained to perform sufficient and timely observations of encountered conditions to confirm and document that the subsurface conditions do not materially differ from those interpreted conditions considered in the preparation of WSP's report and to confirm and document that construction activities do not adversely affect the suggestions, recommendations and opinions contained in WSP's report. Adequate field review, observation and testing during construction are necessary for WSP to be able to provide letters of assurance, in accordance with the requirements of many regulatory authorities. In cases where this recommendation is not followed, WSP's responsibility is limited to interpreting accurately the information encountered at the borehole locations, at the time of their initial determination or measurement during the preparation of the Report.

Changed Conditions and Drainage: Where conditions encountered at the site differ significantly from those anticipated in this report, either due to natural variability of subsurface conditions or construction activities, it is a condition of this report that WSP be notified of any changes and be provided with an opportunity to review or revise the recommendations within this report. Recognition of changed soil and rock conditions requires experience and it is recommended that WSP be employed to visit the site with sufficient frequency to detect if conditions have changed significantly.

Drainage of subsurface water is commonly required either for temporary or permanent installations for the project. Improper design or construction of drainage or dewatering can have serious consequences. WSP takes no responsibility for the effects of drainage unless specifically involved in the detailed design and construction monitoring of the system.

Signature Page

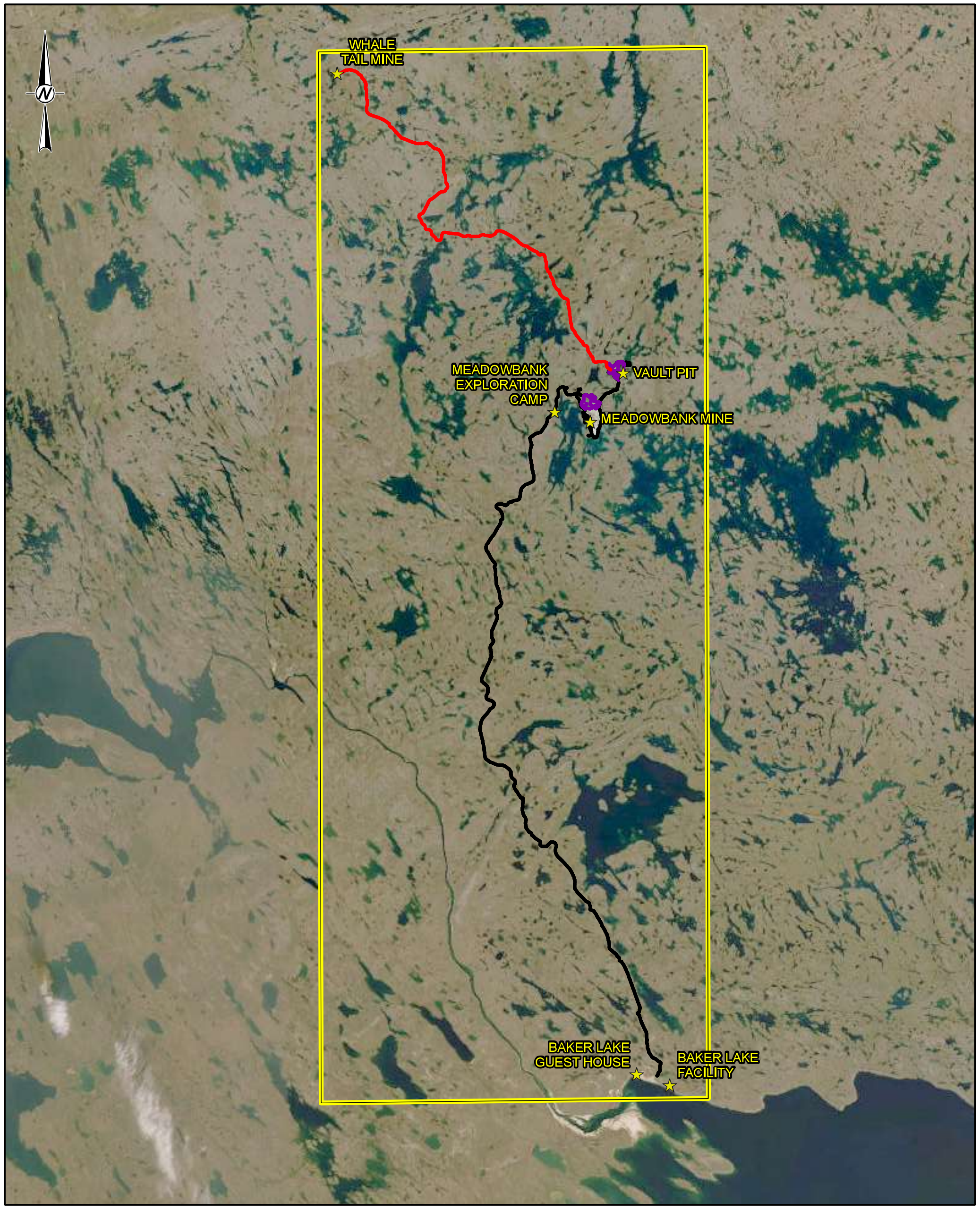
WSP Canada Inc.

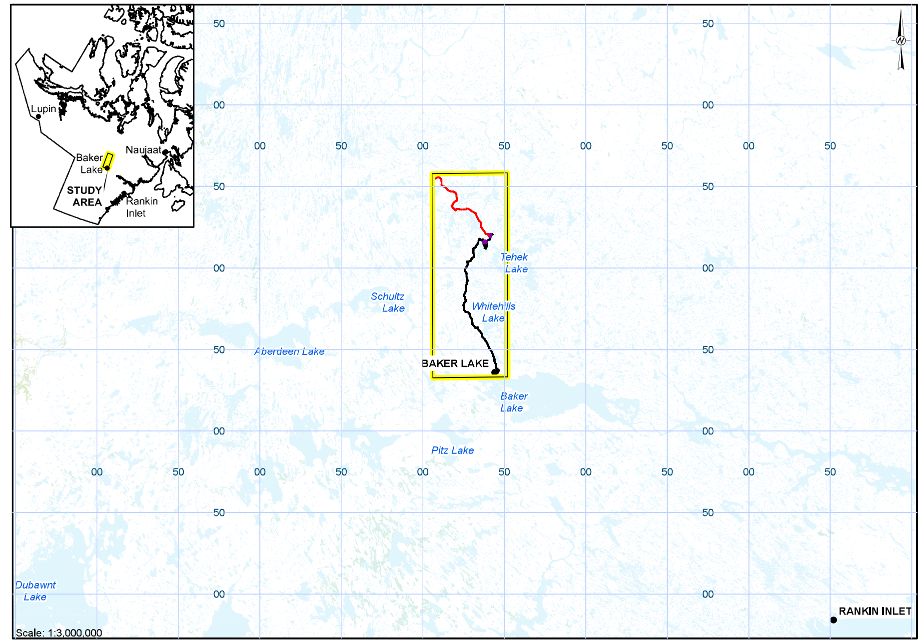
Melissa Lord, CET
Environmental Technologist

Lenz Haderlein, MSc
Principal, Project Director

ML/LH/al

FIGURES





LEGEND

- CONTOUR (100 M INTERVAL)
- WATERBODY
- SWAMP
- WOODED AREA
- STUDY AREA
- ALL WEATHER ACCESS ROAD
- HAUL ROAD
- VAULT ROAD

REFERENCE(S)

1. BASE MAP: EARTHSTAR GEOGRAPHICS; MAZAR IMAGE SOURCE DATE: JULY 26, 2022.
2. KEY TOPOGRAPHICAL MAP CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - CANADA.
3. PROJECTION: NAD 1983 CSRS UTM ZONE 14N, TRANSVERSE MERCATOR

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CLIENT
AGNICO EAGLE MINES LIMITED

PROJECT
HHERA SOIL SAMPLING PROGRAM
MEADOWBANK COMPLEX
KIVALLIQ REGION, NUNAVUT

CONSULTANT

YYYY-MM-DD	2024-04-24
DESIGNED	J.REDSTONE
PREPARED	J.REDSTONE
REVIEWED	K.SERBEN
APPROVED	L.HADERLEIN

TITLE
MEADOWBANK COMPLEX PROJECT LOCATIONS

PROJECT NO.	CONTROL	REV.	FIGURE
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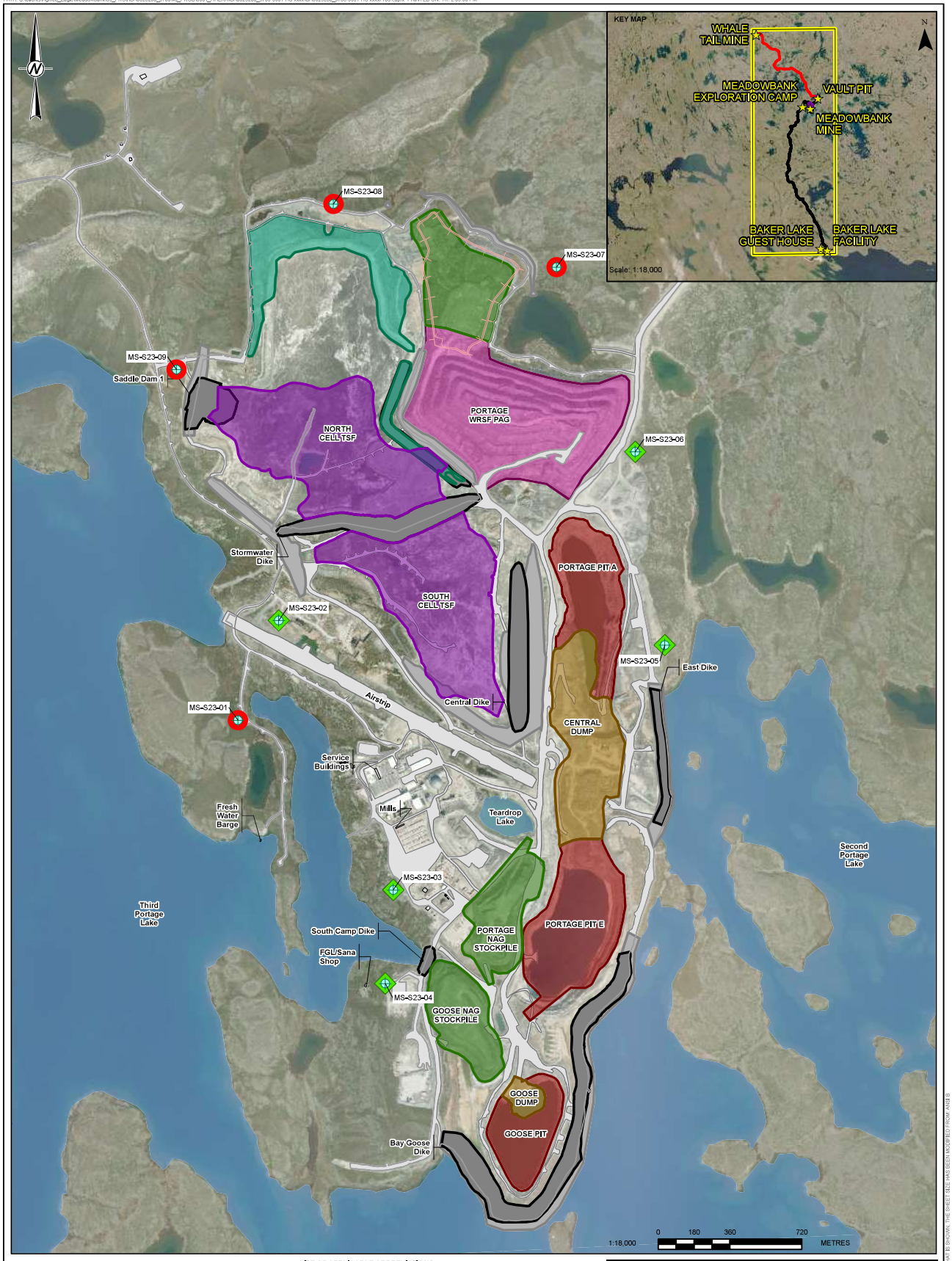

LEGEND

- ROAD
- CREST
- TOE
- HAND AUGER LOCATION
- ROCK STORAGE FACILITY
- WASTE DUMP STORAGE
- WASTE ROCK STORAGE
- PIT
- CELL
- TSF NPAG COVER
- EXISTING DIKE
- FORMER DIKE
- EXISTING INFRASTRUCTURE
- PROJECT WATERBODY
- ROADWAY

LIST OF APPLICABLE ABBREVIATIONS

NAG	NON ACID-GENERATING
NPAG	NON-POTENTIALLY ACID-GENERATING
PAG	POTENTIALLY ACID-GENERATING
TSF	TAILINGS STORAGE FACILITY
RSF	ROCK STORAGE FACILITY
WRSF	WASTE ROCK STORAGE FACILITY

NOTE(S)

1. LOCATIONS WHERE SOIL SAMPLE MEETS APPLICABLE GUIDELINES/STANDARDS FOR ALL METAL PARAMETERS ANALYZED SHOWN AS AN GREEN DIAMOND (♦).
2. LOCATIONS WHERE SOIL SAMPLE EXCEEDS APPLICABLE GUIDELINES/ STANDARDS FOR AT LEAST ONE OF THE METAL PARAMETERS ANALYZED SHOWN AS AN RED CIRCLE (●).
3. FOR ANALYTICAL RESULTS REFER TO THE TABLES IN THE REPORT.

REFERENCE(S)

1. ORIGINAL DRAWING PDF OBTAINED FROM SNC-LAVALIN: FILE: SNC651196_RP_F2-1-SITE_LAYOUT_TAB_180622.MXD; SCALE: 1:20,000; DATE: JUNE 2018.
2. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - CANADA
3. BASE MAP: EARTHSTAR GEOGRAPHICS, MAXAR
4. COORDINATE SYSTEM: NAD 1983 CSRS UTM ZONE 14N

CLIENT
AGNICO EAGLE MINES LIMITED

PROJECT
HHERA SOIL SAMPLING PROGRAM
MEADOWBANK COMPLEX
KIVALLIQ REGION, NUNAVUT

TITLE
MEADOWBANK MINE SITE PLAN AND SOIL ANALYTICAL RESULTS - METALS

CONSULTANT
wsp

YYYY-MM-DD	2024-04-24
DESIGNED	J.REDSTONE
PREPARED	J.REDSTONE
REVIEWED	K.SERBEN
APPROVED	L.HADERLEIN

PROJECT NO.	CONTROL	REV.	FIGURE
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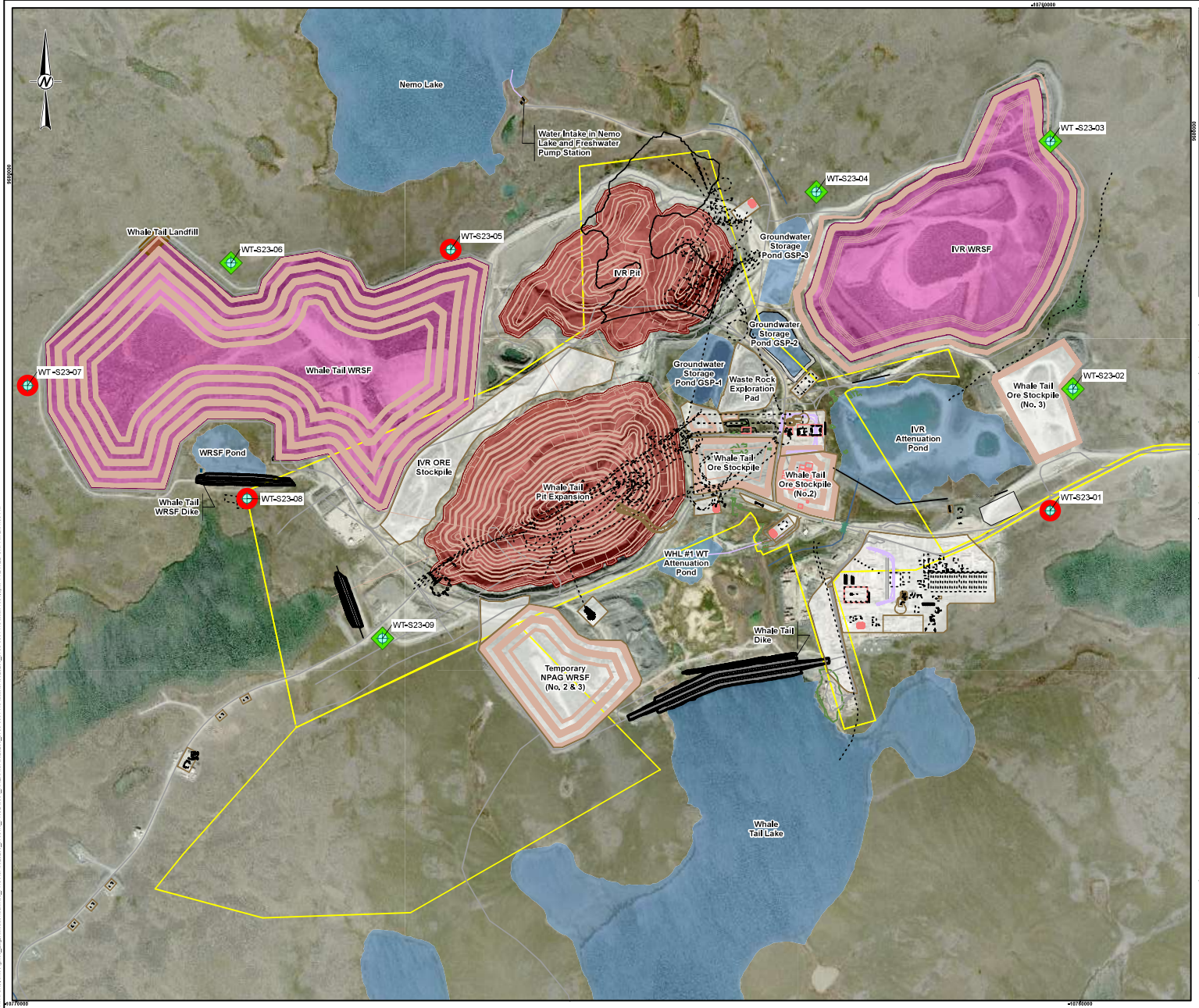

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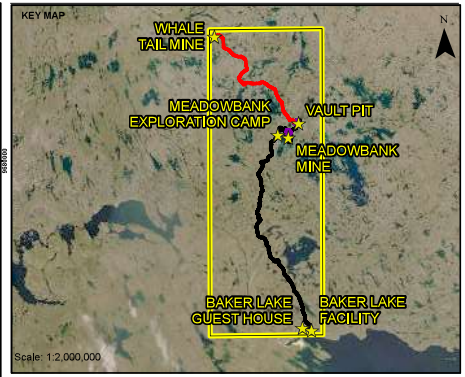

LEGEND

- EXISTING INFRASTRUCTURE
- MINING FEATURE
- PAD
- DIKE
- PROJECT CONTOUR
- UTILITY
- PUMPING SYSTEM
- CULVERT
- DIVERSION DITCH
- ROAD
- PARCEL SEGMENT
- NATURAL FEATURE
- HAND AUGER LOCATION
- WASTE DUMP STORAGE
- WASTE ROCK STORAGE FACILITY
- PIT
- EXISTING DIKE
- EXISTING INFRASTRUCTURE
- PROJECT WATERBODY

LIST OF APPLICABLE ABBREVIATIONS

NPAG	NON-POTENTIALLY ACID-GENERATING
WRSF	WASTE ROCK STORAGE FACILITY

0 500 1,000

1:15,000 METRES

NOTE(S)

1. LOCATIONS WHERE SOIL SAMPLE MEETS APPLICABLE GUIDELINES/STANDARDS FOR ALL METAL PARAMETERS ANALYZED SHOWN AS AN GREEN DIAMOND (♦) .
2. LOCATIONS WHERE SOIL SAMPLE EXCEEDS APPLICABLE GUIDELINES/STANDARDS FOR AT LEAST ONE OF THE METAL PARAMETERS ANALYZED SHOWN AS AN RED CIRCLE (●).
3. FOR ANALYTICAL RESULTS REFER TO THE TABLES IN THE REPORT.

REFERENCE(S)

1. INFRASTRUCTURE OBTAINED FROM AGNICO EAGLE LIMITED FROM AMQ_2025Q4V7_DWG.
2. BASE MAP: EARTHSTAR GEOGRAPHICS, MAXAR
3. PROJECTION: NAD 1983 CSRS UTM ZONE 14N, TRANSVERSE MERCATOR

CLIENT
AGNICO EAGLE MINES LIMITED

PROJECT
HHERA SOIL SAMPLING PROGRAM
MEADOWBANK COMPLEX
KIVALLIQ REGION, NUNAVUT

TITLE
WHALE TAIL MINE SITE PLAN AND SOIL ANALYTICAL RESULTS - METALS

CONSULTANT

wsp

YYYY-MM-DD	2024-04-24
DESIGNED	J.REDSTONE
PREPARED	J.REDSTONE
REVIEWED	K.SERBEN
APPROVED	L.HADERLEIN

PROJECT NO.	CONTROL	REV.	FIGURE
CA0025288.9785	0001	0	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B
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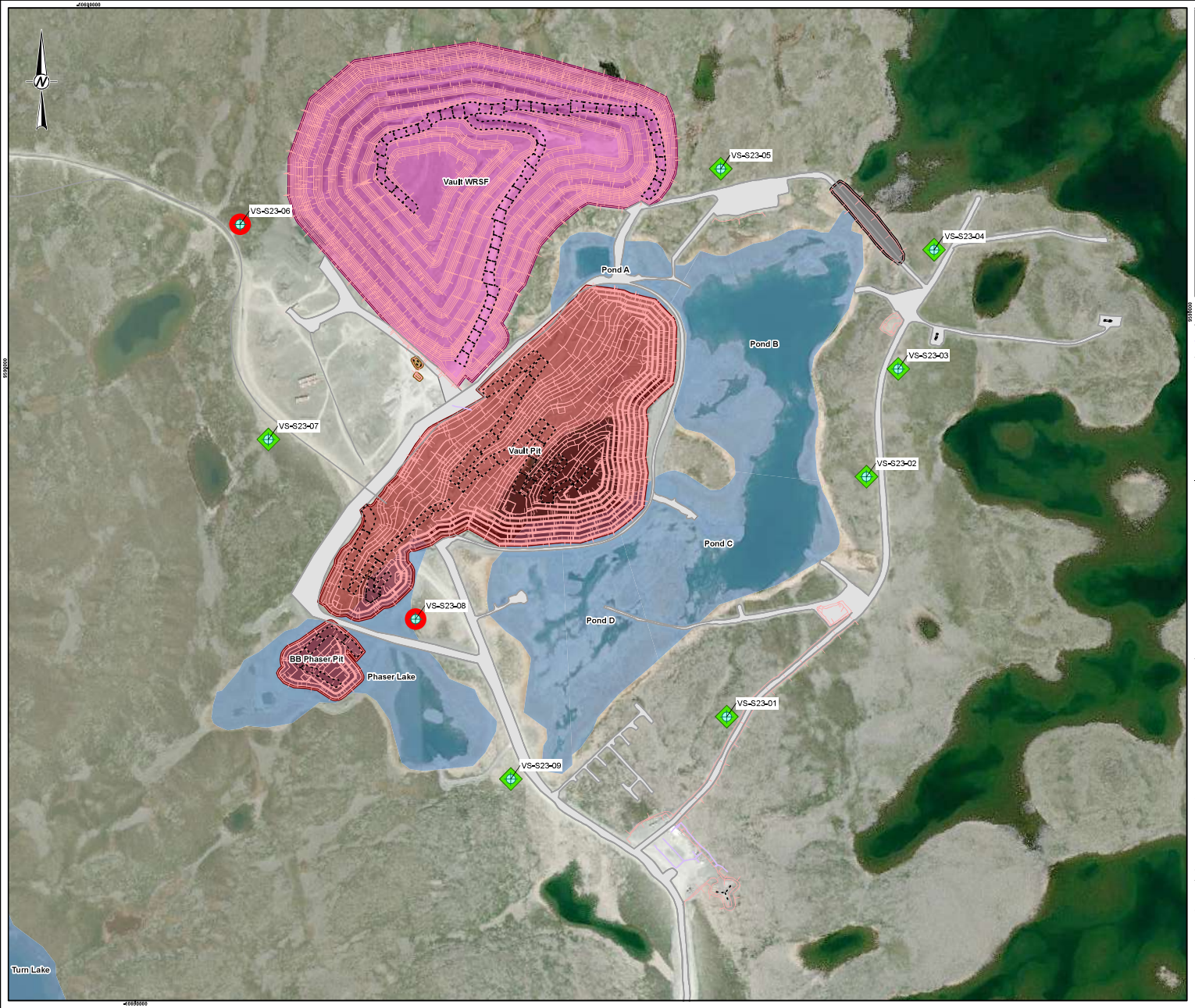

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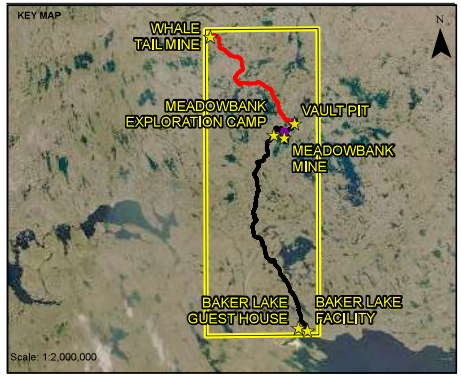

LEGEND

- EXISTING INFRASTRUCTURE
- UTILITY
- ROAD
- CREST
- TOE
- HAND AUGER LOCATION
- WASTE DUMP STORAGE
- WASTE ROCK STORAGE FACILITY
- PIT
- EXISTING DIKE
- EXISTING INFRASTRUCTURE
- PROJECT WATERBODY
- ROADWAY

LIST OF APPLICABLE ABBREVIATIONS

WRSF WASTE ROCK STORAGE FACILITY

0 250 500

1:12,000 METRES

NOTE(S)

1. LOCATIONS WHERE SOIL SAMPLE MEETS APPLICABLE GUIDELINES/STANDARDS FOR ALL METAL PARAMETERS ANALYZED SHOWN AS AN GREEN DIAMOND (♦) .
2. LOCATIONS WHERE SOIL SAMPLE EXCEEDS APPLICABLE GUIDELINES/STANDARDS FOR AT LEAST ONE OF THE METAL PARAMETERS ANALYZED SHOWN AS AN RED CIRCLE (●).
3. FOR ANALYTICAL RESULTS REFER TO THE TABLES IN THE REPORT.

REFERENCE(S)

1. ORIGINAL DRAWING OBTAINED FROM MEADOWBANK DIVISION ENGINEERING, APRIL 12, 2023.
2. BASE MAP: EARTHSTAR GEOGRAPHICS, MAXAR
3. PROJECTION: NAD 1983 CSRS UTM ZONE 14N, TRANSVERSE MERCATOR

CLIENT

AGNICO EAGLE MINES LIMITED

PROJECT

HHERA SOIL SAMPLING PROGRAM
MEADOWBANK COMPLEX
KIVALLIQ REGION, NUNAVUT

TITLE

VAULT PIT SITE PLAN AND SOIL ANALYTICAL RESULTS - METALS

CONSULTANT

wsp

YYYY-MM-DD	2024-04-24
DESIGNED	J.REDSTONE
PREPARED	J.REDSTONE
REVIEWED	K.SERBEN
APPROVED	L.HADERLEIN

PROJECT NO.	CONTROL	REV.	FIGURE
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

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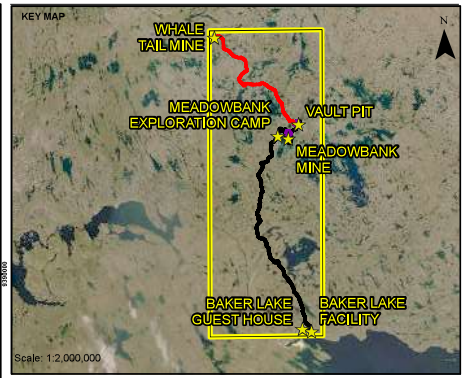

LEGEND

- EXISTING INFRASTRUCTURE
- PAD
- UTILITY
- ROAD
- PARCEL SEGMENT
- HAND AUGER LOCATION
- EXISTING DIKE
- EXISTING INFRASTRUCTURE
- ROADWAY

0 50 100

1:4,000 METRES

NOTE(S)

1. LOCATIONS WHERE SOIL SAMPLE MEETS APPLICABLE GUIDELINES/STANDARDS FOR ALL METAL PARAMETERS ANALYZED SHOWN AS AN GREEN DIAMOND (♦) .
2. LOCATIONS WHERE SOIL SAMPLE EXCEEDS APPLICABLE GUIDELINES/STANDARDS FOR AT LEAST ONE OF THE METAL PARAMETERS ANALYZED SHOWN AS AN RED CIRCLE (●).
3. FOR ANALYTICAL RESULTS REFER TO THE TABLES IN THE REPORT.

REFERENCE(S)

1. ORIGINAL DRAWING PDF OBTAINED FROM AGINCO-EAGLE; MARCH 13, 2012.
2. BASE MAP: EARTHSTAR GEOGRAPHICS, MAXAR
3. PROJECTION: NAD 1983 CSRS UTM ZONE 14N, TRANSVERSE MERCATOR

CLIENT
AGNICO EAGLE MINES LIMITED

PROJECT
PHASE I ENVIRONMENTAL SITE ASSESSMENT
MEADOWBANK COMPLEX
KIVALLIQ REGION, NUNAVUT

TITLE
BAKER LAKE FACILITY SITE PLAN AND SOIL ANALYTICAL RESULTS - METALS

CONSULTANT

wsp

YYYY-MM-DD	2024-04-24
DESIGNED	J.REDSTONE
PREPARED	J.REDSTONE
REVIEWED	K.SERBEN
APPROVED	L.HADERLEIN

PROJECT NO.	CONTROL	REV.	FIGURE
CA0025288.9785	0001	0	5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B
25mm
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TABLES

Table 1
Summary of Soil Analytical Results - Grain Size and pH
Meadowbank Complex, Kivalliq Region, Nunavut
Agnico Eagle Mines Limited

			Site Location	**MEADOWBANK MINE**									
			Sample Location	**MS-S23-01**		**MS-S23-02**	**MS-S23-03**	**MS-S23-04**	**MS-S23-05**	**MS-S23-06**	**MS-S23-07**	**MS-S23-08**	**MS-S23-09**
			Sample ID	MS-S23-01	MS-S23-01B	MS-S23-02	MS-S23-03	MS-S23-04	MS-S23-05	MS-S23-06	MS-S23-07	MS-S23-08	MS-S23-09
			Lab Sample ID	XCR435	XCR436	XCR437	XCR438	XCR439	XCR440	XCR441	XCR442	XCR443	XCR444
			Lab Job Number	C3T8621	C3T8621	C3T8621	C3T8621	C3T8621	C3T8621	C3T8621	C3T8621	C3T8621	C3T8621
			Sample Date	2023-09-21	2023-09-21	2023-09-21	2023-09-21	2023-09-21	2023-09-23	2023-09-23	2023-09-23	2023-09-23	2023-09-23
			Sample Depth (mbgs)	0.00 - 0.20	0.00 - 0.20	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15
Parameters	**Units**	**RDL**	**Criteria[a]**										
Grain Size	n/a	n/a	n/g	COARSE	-	-	-	-	FINE	-	-	-	-
% Moisture	%	1.0	n/g	14	17	17	14	40	15	14	33	16	17
pH	pH units	n/a	6 - 8	**4.84**	**4.57**	**4.91**	6.39	**4.79**	**4.18**	**5.06**	**5.01**	**5.65**	**5.74**

Notes:

[a] Canadian Council of Ministers of the Environment, Soil Quality Guidelines for residential/parkland land use and coarse-grained soils (CCME 1999 and updates)

Bold/Underlined - value exceeds criteria

dS/m - decisiemens per metre

mbgs - metres below ground surface

n/a - not applicable

n/g - no guideline

RDL - reportable detection limit

< - less than

- not available or no data

Table 1
Summary of Soil Analytical Results - Grain Size and pH
Meadowbank Complex, Kivalliq Region, Nunavut
Agnico Eagle Mines Limited

			Site Location	**WHALE TAIL MINE**									
			Sample Location	**WT-S23-01**		**WT-S23-02**	**WT-S23-03**	**WT-S23-04**	**WT-S23-05**	**WT-S23-06**	**WT-S23-07**	**WT-S23-08**	**WT-S23-09**
			Sample ID	WT-S23-01	WT-S23-01B	WT-S23-02	WT-S23-03	WT-S23-04	WT-S23-05	WT-S23-06	WT-S23-07	WT-S23-08	WT-S23-09
			Lab Sample ID	XCR380	XCR381	XCR382	XCR383	XCR385	XCR386	XCR387	XCR388	XCR389	XCR390
			Lab Job Number	C3T8600	C3T8600	C3T8600	C3T8600	C3T8600	C3T8600	C3T8600	C3T8600	C3T8600	C3T8600
			Sample Date	2023-09-22	2023-09-22	2023-09-22	2023-09-22	2023-09-22	2023-09-22	2023-09-22	2023-09-22	2023-09-22	2023-09-22
			Sample Depth (mbgs)	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15
Parameters	**Units**	**RDL**	**Criteria[a]**										
Grain Size	n/a	n/a	n/g	FINE	-	-	FINE	-	-	-	-	-	-
% Moisture	%	1.0	n/g	18	17	14	9.7	24	12	8.6	18	10	18
pH	pH units	n/a	6 - 8	**4.70**	**4.34**	**3.98**	**5.10**	**4.07**	**4.31**	**4.71**	**4.54**	**4.48**	**5.00**

Notes:

[a] Canadian Council of Ministers of the Environment, Soil Quality Guidelines for residential/parkland land use and coarse-grained soils (CCME 1999 and updates)

Bold/Underlined - value exceeds criteria

dS/m - decisiemens per metre

mbgs - metres below ground surface

n/a - not applicable

n/g - no guideline

RDL - reportable detection limit

< - less than

- not available or no data

Table 1
Summary of Soil Analytical Results - Grain Size and pH
Meadowbank Complex, Kivalliq Region, Nunavut
Agnico Eagle Mines Limited

			Site Location	VAULT PIT										BAKER LAKE FACILITY		
			Sample Location	VS-S23-01		VS-S23-02	VS-S23-03	VS-S23-04	VS-S23-05	VS-S23-06	VS-S23-07	VS-S23-08	VS-S23-09	BL-S23-01	BL-S23-02	BL-S23-03
			Sample ID	VS-S23-01	VS-S23-01B	VS-S23-02	VS-S23-03	VS-S23-04	VS-S23-05	VS-S23-06	VS-S23-07	VS-S23-08	VS-S23-09	BL-S23-01	BL-S23-02	BL-S23-03
			Lab Sample ID	XCR568	XCR569	XCR570	XCR571	XCR572	XCR573	XCR574	XCR575	XCR576	XCR577	XBI097	XBI098	XBI099
			Lab Job Number	C3T8633	C3T8633	C3T8633	C3T8633	C3T8633	C3T8633	C3T8633	C3T8633	C3T8633	C3T8633	C3T2450	C3T2450	C3T2450
			Sample Date	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-15	2023-09-15	2023-09-15
			Sample Depth (mbgs)	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.20	0.00 - 0.15	0.00 - 0.20
Parameters	**Units**	**RDL**	**Criteria[a]**													
Grain Size	n/a	n/a	n/g	COARSE	-	-	-	-	-	-	-	-	-	FINE	-	-
% Moisture	%	1.0	n/g	11	10	11	15	23	9.4	12	12	12	12	13	32	59
pH	pH units	n/a	6 - 8	**5.03**	**4.47**	**3.97**	**3.45**	**3.68**	**4.75**	**5.70**	**4.78**	6.10	**4.84**	**4.54**	6.34	**5.63**

Notes:

[a] Canadian Council of Ministers of the Environment, Soil Quality Guidelines for residential/parkland land use and coarse-grained soils (CCME 1999 and updates)

Bold/Underlined - value exceeds criteria

dS/m - decisiemens per metre

mbgs - metres below ground surface

n/a - not applicable

n/g - no guideline

RDL - reportable detection limit

< - less than

- not available or no data

Table 2
Summary of Soil Analytical Results - Metals
Meadowbank Complex, Kivalliq Region, Nunavut
Agnico Eagle Mines Limited

				Site Location	MEADOWBANK MINE									
				Sample Location	MS-S23-01		MS-S23-02	MS-S23-03	MS-S23-04	MS-S23-05	MS-S23-06	MS-S23-07	MS-S23-08	MS-S23-09
				Sample ID	MS-S23-01	MS-S23-01B	MS-S23-02	MS-S23-03	MS-S23-04	MS-S23-05	MS-S23-06	MS-S23-07	MS-S23-08	MS-S23-09
				Lab Sample ID	XCR435	XCR436	XCR437	XCR438	XCR439	XCR440	XCR441	XCR442	XCR443	XCR444
				Lab Job Number	C3T8621	C3T8621	C3T8621	C3T8621	C3T8621	C3T8621	C3T8621	C3T8621	C3T8621	C3T8621
				Sample Date	2023-09-21	2023-09-21	2023-09-21	2023-09-21	2023-09-21	2023-09-23	2023-09-23	2023-09-23	2023-09-23	2023-09-23
				Sample Depth (mbgs)	0.00 - 0.20	0.00 - 0.20	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15
Parameters	**Units**	**RDL**	**Criteria[(a)]**											
Antimony	mg/kg	0.20	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.46	<0.20	<0.20
Arsenic	mg/kg	1.0	12	5.4	5.2	1.7	3.8	4.8	4.6	3.2	**51**	7.1	10
Barium	mg/kg	0.50	500	34	35	25	22	53	22	34	110	41	67
Beryllium	mg/kg	0.20	4	0.33	0.35	<0.20	0.23	0.45	0.34	0.49	1.2	0.51	0.48
Boron	mg/kg	5.0	n/g	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	7.1	<5.0	<5.0
Cadmium	mg/kg	0.10	10	<0.10	<0.10	0.38	<0.10	<0.10	<0.10	<0.10	0.24	<0.10	0.11
Chromium (Total)	mg/kg	1.0	64	**130**	**130**	33	42	45	39	35	**150**	**73**	**200**
Cobalt	mg/kg	0.10	50	9.3	8.8	2.9	4.8	7.1	5.3	6.1	22	9.1	15
Copper	mg/kg	0.50	63	13	13	8.5	5.1	15	5.9	8.2	**69**	12	25
Lead	mg/kg	1.0	140	6.6	6.7	2.3	5.2	9.7	6.5	7.8	24	8.7	10
Mercury	mg/kg	0.050	6.6	<0.050	<0.050	0.13	<0.050	<0.050	<0.050	<0.050	0.086	<0.050	<0.050
Molybdenum	mg/kg	0.50	10	<0.50	<0.50	0.60	1.1	1.2	0.76	0.81	3.2	0.86	1.1
Nickel	mg/kg	0.50	45	**49**	**48**	17	17	23	18	18	**84**	31	**70**
Selenium	mg/kg	0.50	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	mg/kg	0.20	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.55	<0.20	<0.20
Thallium	mg/kg	0.050	1	0.13	0.14	<0.050	0.12	0.20	0.099	0.15	0.38	0.16	0.20
Tin	mg/kg	1.0	50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0
Uranium	mg/kg	0.050	23	2.1	2.1	1.1	1.5	4.0	1.8	3.6	7.4	4.5	3.4
Vanadium	mg/kg	5.0	130	25	24	5.9	14	20	15	18	43	21	36
Zinc	mg/kg	5.0	250	34	35	16	24	45	29	39	91	36	55

Notes:

[(a)] Canadian Council of Ministers of the Environment, Soil Quality Guidelines for residential/parkland land use and coarse-grained soils (CCME 1999 and updates)

Bold/Underlined - value exceeds criteria

mbgs - metres below ground surface

mg/kg - milligrams per kilogram

n/g - no guideline

RDL - reportable detection limit

< - less than

Table 2
Summary of Soil Analytical Results - Metals
Meadowbank Complex, Kivalliq Region, Nunavut
Agnico Eagle Mines Limited

				Site Location	WHALE TAIL MINE									
				Sample Location	WT-S23-01		WT-S23-02	WT-S23-03	WT-S23-04	WT-S23-05	WT-S23-06	WT-S23-07	WT-S23-08	WT-S23-09
				Sample ID	WT-S23-01	WT-S23-01B	WT-S23-02	WT-S23-03	WT-S23-04	WT-S23-05	WT-S23-06	WT-S23-07	WT-S23-08	WT-S23-09
				Lab Sample ID	XCR380	XCR381	XCR382	XCR383	XCR385	XCR386	XCR387	XCR388	XCR389	XCR390
				Lab Job Number	C3T8600	C3T8600	C3T8600	C3T8600	C3T8600	C3T8600	C3T8600	C3T8600	C3T8600	C3T8600
				Sample Date	2023-09-22	2023-09-22	2023-09-22	2023-09-22	2023-09-22	2023-09-22	2023-09-22	2023-09-22	2023-09-22	2023-09-22
				Sample Depth (mbgs)	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15
Parameters	**Units**	**RDL**	**Criteria[(a)]**											
Antimony	mg/kg	0.20	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	mg/kg	1.0	12	**19**	**19**	4.6	3.3	5.3	**21**	3.1	**120**	**27**	5.3
Barium	mg/kg	0.50	500	43	41	16	19	22	17	19	58	41	51
Beryllium	mg/kg	0.20	4	0.26	0.29	<0.20	0.24	0.25	0.29	0.26	0.36	0.37	0.49
Boron	mg/kg	5.0	n/g	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	mg/kg	0.10	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium (Total)	mg/kg	1.0	64	61	59	37	37	31	**84**	21	**360**	**94**	46
Cobalt	mg/kg	0.10	50	6.2	5.9	5.5	5.2	4.9	7.7	4.9	23	9.5	7.4
Copper	mg/kg	0.50	63	8.3	7.5	6.2	4.7	7.3	8.4	3.3	39	11	7.1
Lead	mg/kg	1.0	140	5.8	6.2	6.3	4.9	5.3	5.3	3.9	13	7.8	6.8
Mercury	mg/kg	0.050	6.6	0.062	0.077	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	mg/kg	0.50	10	0.63	0.70	<0.50	<0.50	<0.50	<0.50	<0.50	0.65	<0.50	0.54
Nickel	mg/kg	0.50	45	25	24	23	21	19	40	15	**140**	40	24
Selenium	mg/kg	0.50	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	mg/kg	0.20	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	mg/kg	0.050	1	0.14	0.13	<0.050	0.051	0.064	0.062	<0.050	0.28	0.12	0.097
Tin	mg/kg	1.0	50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium	mg/kg	0.050	23	1.2	1.4	0.94	1.4	1.5	1.1	1.0	1.2	1.5	2.4
Vanadium	mg/kg	5.0	130	21	21	14	13	13	18	12	49	22	19
Zinc	mg/kg	5.0	250	33	33	21	24	24	24	20	53	30	36

Notes:

[(a)] Canadian Council of Ministers of the Environment, Soil Quality Guidelines for residential/parkland land use and coarse-grained soils (CCME 1999 and updates)

Bold/Underlined - value exceeds criteria

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mg/kg - milligrams per kilogram

n/g - no guideline

RDL - reportable detection limit

< - less than

Table 2
Summary of Soil Analytical Results - Metals
Meadowbank Complex, Kivalliq Region, Nunavut
Agnico Eagle Mines Limited

				Site Location	VAULT PIT										BAKER LAKE FACILITY		
				Sample Location	VS-S23-01		VS-S23-02	VS-S23-03	VS-S23-04	VS-S23-05	VS-S23-06	VS-S23-07	VS-S23-08	VS-S23-09	BL-S23-01	BL-S23-02	BL-S23-03
				Sample ID	VS-S23-01	VS-S23-01B	VS-S23-02	VS-S23-03	VS-S23-04	VS-S23-05	VS-S23-06	VS-S23-07	VS-S23-08	VS-S23-09	BL-S23-01	BL-S23-02	BL-S23-03
				Lab Sample ID	XCR568	XCR569	XCR570	XCR571	XCR572	XCR573	XCR574	XCR575	XCR576	XCR577	XBI097	XBI098	XBI099
				Lab Job Number	C3T8633	C3T8633	C3T8633	C3T8633	C3T8633	C3T8633	C3T8633	C3T8633	C3T8633	C3T8633	C3T2450	C3T2450	C3T2450
				Sample Date	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-24	2023-09-15	2023-09-15	2023-09-15
				Sample Depth (mbgs)	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.20	0.00 - 0.15	0.00 - 0.20
Parameters	**Units**	**RDL**	**Criteria[a]**														
Antimony	mg/kg	0.20	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.26	0.22
Arsenic	mg/kg	1.0	12	5.1	4.9	1.3	1.3	1.2	11	**14**	**52**	**16**	5.6	2.8	8.4	3.5
Barium	mg/kg	0.50	500	21	17	14	16	12	22	45	35	30	22	120	340	500
Beryllium	mg/kg	0.20	4	0.48	0.65	0.34	0.38	0.31	0.34	0.46	0.40	0.45	0.38	0.27	0.66	0.93
Boron	mg/kg	5.0	n/g	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	15	19
Cadmium	mg/kg	0.10	10	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	0.20	<0.10	<0.10	<0.10	0.15	0.23
Chromium (Total)	mg/kg	1.0	64	33	25	20	20	20	27	49	47	40	25	14	39	35
Cobalt	mg/kg	0.10	50	7.3	5.4	3.8	3.6	3.3	7.3	11	11	12	5.4	5.0	12	7.7
Copper	mg/kg	0.50	63	13	14	6.8	8.6	6.8	14	20	20	20	8.8	8.1	37	**86**
Lead	mg/kg	1.0	140	14	14	8.6	8.6	6.5	13	12	24	15	9.6	10	12	15
Mercury	mg/kg	0.050	6.6	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	mg/kg	0.50	10	2.0	3.1	1.1	1.4	1.4	1.4	0.84	0.94	0.91	0.69	<0.50	1.4	0.79
Nickel	mg/kg	0.50	45	20	14	11	11	11	19	30	30	27	15	8.7	26	28
Selenium	mg/kg	0.50	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.55
Silver	mg/kg	0.20	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	mg/kg	0.050	1	0.13	0.10	0.083	0.092	0.054	0.12	0.16	0.14	0.16	0.12	0.090	0.21	0.28
Tin	mg/kg	1.0	50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium	mg/kg	0.050	23	3.1	2.7	2.8	3.6	1.7	3.3	3.1	2.6	4.2	3.9	1.2	6.5	7.7
Vanadium	mg/kg	5.0	130	17	16	12	12	11	14	23	22	20	15	22	43	36
Zinc	mg/kg	5.0	250	38	35	23	26	19	34	44	57	43	29	25	67	77

Notes:

[a] Canadian Council of Ministers of the Environment, Soil Quality Guidelines for residential/parkland land use and coarse-grained soils (CCME 1999 and updates)

Bold/Underlined - value exceeds criteria

mbgs - metres below ground surface

mg/kg - milligrams per kilogram

n/g - no guideline

RDL - reportable detection limit

< - less than

APPENDIX A

Site Photographs

Photo 1: **Meadowbank Mine and South Cell for Tailings Storage Facility (former Meadowbank Attenutation Pond)** (21 September 2023)

Photo 2: **Whale Tail Pit** (22 September 2023)

Photo 3: **Vault Waste Rock Storage Stockpile and Vault Attenuation Pond** (24 September 2023)

Photo 4: **Hazardous Materials Seacan Storage Area, Loading Area and Dry Freight Storage, and Marshalling/Oil Handling Area** (15 September 2023)

Photo 5: **MS-23-01** (21 September 2023)

Photo 6: **WT-S23-07** (22 September 2023)

Photo 7: **VS-23-03** (24 September 2023)

Photo 8: **BL-S23-01** (15 September 2023)

APPENDIX B

Laboratory Certificates of Analysis and Data Quality Review Checklists

Your Project #: 22522889
Site Location: MEADOWBANK COMPLEX-SQRO
Your C.O.C. #: 952334-12-01

Attention: Sharon Guin

WSP Canada Inc.
100 Scotia Crt
Whitby, ON
CANADA L1N 8Y6

Report Date: 2023/10/02
Report #: R7841242
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3T2450
Received: 2023/09/21, 15:18

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Acid Extractable Metals by ICPMS (1)	1	2023/09/28	2023/09/28	CAM SOP-00447	EPA 6020B m
Acid Extractable Metals by ICPMS (1)	2	2023/09/29	2023/09/29	CAM SOP-00447	EPA 6020B m
Moisture (1)	1	N/A	2023/09/27	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture (1)	2	N/A	2023/09/28	CAM SOP-00445	Carter 2nd ed 51.2 m
pH CaCl2 EXTRACT (1)	3	2023/09/28	2023/09/28	CAM SOP-00413	EPA 9045 D m
Sieve, 75um (1)	1	N/A	2023/09/29	CAM SOP-00467	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, MELCCFP, EPA, APHA.

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

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

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

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

Your Project #: 22522889
Site Location: MEADOWBANK COMPLEX-SQRO
Your C.O.C. #: 952334-12-01

Attention: Sharon Guin

WSP Canada Inc.
100 Scotia Crt
Whitby, ON
CANADA L1N 8Y6

Report Date: 2023/10/02
Report #: R7841242
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3T2450
Received: 2023/09/21, 15:18

Encryption Key

Bureau Veritas
02 Oct 2023 15:06:40

Please direct all questions regarding this Certificate of Analysis to:
Ankita Bhalla, Project Manager
Email: Ankita.Bhalla@bureauveritas.com
Phone# (613) 274-0573

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This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C3T2450
Report Date: 2023/10/02

WSP Canada Inc.
Client Project #: 22522889
Site Location: MEADOWBANK COMPLEX-SQRO
Sampler Initials: MEL

CCME ICPMS METALS (SOIL)

Bureau Veritas ID		XBI097		XBI098		XBI099		
Sampling Date		2023/09/15 14:00		2023/09/15 14:30		2023/09/15 14:40		
COC Number		952334-12-01		952334-12-01		952334-12-01		
	UNITS	BL-S23-01	QC Batch	BL-S23-02	QC Batch	BL-S23-03	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	8947269	0.26	8949648	0.22	0.20	8949624
Acid Extractable Arsenic (As)	ug/g	2.8	8947269	8.4	8949648	3.5	1.0	8949624
Acid Extractable Barium (Ba)	ug/g	120	8947269	340	8949648	500	0.50	8949624
Acid Extractable Beryllium (Be)	ug/g	0.27	8947269	0.66	8949648	0.93	0.20	8949624
Acid Extractable Boron (B)	ug/g	<5.0	8947269	15	8949648	19	5.0	8949624
Acid Extractable Cadmium (Cd)	ug/g	<0.10	8947269	0.15	8949648	0.23	0.10	8949624
Acid Extractable Chromium (Cr)	ug/g	14	8947269	39	8949648	35	1.0	8949624
Acid Extractable Cobalt (Co)	ug/g	5.0	8947269	12	8949648	7.7	0.10	8949624
Acid Extractable Copper (Cu)	ug/g	8.1	8947269	37	8949648	86	0.50	8949624
Acid Extractable Lead (Pb)	ug/g	10	8947269	12	8949648	15	1.0	8949624
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	8947269	1.4	8949648	0.79	0.50	8949624
Acid Extractable Nickel (Ni)	ug/g	8.7	8947269	26	8949648	28	0.50	8949624
Acid Extractable Selenium (Se)	ug/g	<0.50	8947269	<0.50	8949648	0.55	0.50	8949624
Acid Extractable Silver (Ag)	ug/g	<0.20	8947269	<0.20	8949648	<0.20	0.20	8949624
Acid Extractable Thallium (Tl)	ug/g	0.090	8947269	0.21	8949648	0.28	0.050	8949624
Acid Extractable Tin (Sn)	ug/g	<1.0	8947269	<1.0	8949648	<1.0	1.0	8949624
Acid Extractable Uranium (U)	ug/g	1.2	8947269	6.5	8949648	7.7	0.050	8949624
Acid Extractable Vanadium (V)	ug/g	22	8947269	43	8949648	36	5.0	8949624
Acid Extractable Zinc (Zn)	ug/g	25	8947269	67	8949648	77	5.0	8949624
Acid Extractable Mercury (Hg)	ug/g	<0.050	8947269	<0.050	8949648	<0.050	0.050	8949624

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C3T2450
Report Date: 2023/10/02

WSP Canada Inc.
Client Project #: 22522889
Site Location: MEADOWBANK COMPLEX-SQRO
Sampler Initials: MEL

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		XBI097		XBI097			XBI098	XBI099		
Sampling Date		2023/09/15 14:00		2023/09/15 14:00			2023/09/15 14:30	2023/09/15 14:40		
COC Number		952334-12-01		952334-12-01			952334-12-01	952334-12-01		
	UNITS	BL-S23-01	QC Batch	BL-S23-01 Lab-Dup	RDL	QC Batch	BL-S23-02	BL-S23-03	RDL	QC Batch
Inorganics										
Moisture	%	13	8945135	13	1.0	8945135	32	59	1.0	8947938
Available (CaCl2) pH	pH	4.54	8947313				6.34	5.63		8947313
Miscellaneous Parameters										
Grain Size	%	FINE	8949144	FINE	N/A	8949144				
Sieve - #200 (<0.075mm)	%	52	8949144	51	1	8949144				
Sieve - #200 (>0.075mm)	%	48	8949144	49	1	8949144				

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

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

TEST SUMMARY

Bureau Veritas ID: XBI097
Sample ID: BL-S23-01
Matrix: Soil

Collected: 2023/09/15
Shipped:
Received: 2023/09/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8947269	2023/09/28	2023/09/28	Prempal Bhatti
Moisture	BAL	8945135	N/A	2023/09/27	Shivani Desai
pH CaCl2 EXTRACT	AT	8947313	2023/09/28	2023/09/28	Gurparteek KAUR
Sieve, 75um	SIEV	8949144	N/A	2023/09/29	Min Yang

Bureau Veritas ID: XBI097 Dup
Sample ID: BL-S23-01
Matrix: Soil

Collected: 2023/09/15
Shipped:
Received: 2023/09/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8945135	N/A	2023/09/27	Shivani Desai
Sieve, 75um	SIEV	8949144	N/A	2023/09/29	Min Yang

Bureau Veritas ID: XBI098
Sample ID: BL-S23-02
Matrix: Soil

Collected: 2023/09/15
Shipped:
Received: 2023/09/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8949648	2023/09/29	2023/09/29	Daniel Teclu
Moisture	BAL	8947938	N/A	2023/09/28	Joe Thomas
pH CaCl2 EXTRACT	AT	8947313	2023/09/28	2023/09/28	Gurparteek KAUR

Bureau Veritas ID: XBI099
Sample ID: BL-S23-03
Matrix: Soil

Collected: 2023/09/15
Shipped:
Received: 2023/09/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8949624	2023/09/29	2023/09/29	Daniel Teclu
Moisture	BAL	8947938	N/A	2023/09/28	Joe Thomas
pH CaCl2 EXTRACT	AT	8947313	2023/09/28	2023/09/28	Gurparteek KAUR

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GENERAL COMMENTS

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

Package 1	16.0°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8945135	IPR	RPD [XBI097-01]	Moisture	2023/09/27	1.6		%	20
8947269	PBA	Matrix Spike	Acid Extractable Antimony (Sb)	2023/09/29		104	%	75 - 125
			Acid Extractable Arsenic (As)	2023/09/29		108	%	75 - 125
			Acid Extractable Barium (Ba)	2023/09/29		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/09/29		108	%	75 - 125
			Acid Extractable Boron (B)	2023/09/29		94	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/09/29		105	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/09/29		106	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/09/29		104	%	75 - 125
			Acid Extractable Copper (Cu)	2023/09/29		NC	%	75 - 125
			Acid Extractable Lead (Pb)	2023/09/29		NC	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/09/29		110	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/09/29		104	%	75 - 125
			Acid Extractable Selenium (Se)	2023/09/29		105	%	75 - 125
			Acid Extractable Silver (Ag)	2023/09/29		108	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/09/29		100	%	75 - 125
			Acid Extractable Tin (Sn)	2023/09/29		106	%	75 - 125
			Acid Extractable Uranium (U)	2023/09/29		102	%	75 - 125
			Acid Extractable Vanadium (V)	2023/09/29		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2023/09/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2023/09/29		112	%	75 - 125
8947269	PBA	Spiked Blank	Acid Extractable Antimony (Sb)	2023/09/28		107	%	80 - 120
			Acid Extractable Arsenic (As)	2023/09/28		100	%	80 - 120
			Acid Extractable Barium (Ba)	2023/09/28		101	%	80 - 120
			Acid Extractable Beryllium (Be)	2023/09/28		95	%	80 - 120
			Acid Extractable Boron (B)	2023/09/28		91	%	80 - 120
			Acid Extractable Cadmium (Cd)	2023/09/28		97	%	80 - 120
			Acid Extractable Chromium (Cr)	2023/09/28		101	%	80 - 120
			Acid Extractable Cobalt (Co)	2023/09/28		102	%	80 - 120
			Acid Extractable Copper (Cu)	2023/09/28		99	%	80 - 120
			Acid Extractable Lead (Pb)	2023/09/28		101	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2023/09/28		98	%	80 - 120
			Acid Extractable Nickel (Ni)	2023/09/28		101	%	80 - 120
			Acid Extractable Selenium (Se)	2023/09/28		99	%	80 - 120
			Acid Extractable Silver (Ag)	2023/09/28		100	%	80 - 120
			Acid Extractable Thallium (Tl)	2023/09/28		103	%	80 - 120
			Acid Extractable Tin (Sn)	2023/09/28		95	%	80 - 120
			Acid Extractable Uranium (U)	2023/09/28		101	%	80 - 120
			Acid Extractable Vanadium (V)	2023/09/28		100	%	80 - 120
			Acid Extractable Zinc (Zn)	2023/09/28		101	%	80 - 120
			Acid Extractable Mercury (Hg)	2023/09/28		103	%	80 - 120
8947269	PBA	Method Blank	Acid Extractable Antimony (Sb)	2023/09/28	<0.20		ug/g	
			Acid Extractable Arsenic (As)	2023/09/28	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2023/09/28	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2023/09/28	<0.20		ug/g	
			Acid Extractable Boron (B)	2023/09/28	<5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2023/09/28	<0.10		ug/g	
			Acid Extractable Chromium (Cr)	2023/09/28	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2023/09/28	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2023/09/28	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2023/09/28	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2023/09/28	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2023/09/28	<0.50		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Selenium (Se)	2023/09/28	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2023/09/28	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2023/09/28	<0.050		ug/g	
			Acid Extractable Tin (Sn)	2023/09/28	<1.0		ug/g	
			Acid Extractable Uranium (U)	2023/09/28	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2023/09/28	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2023/09/28	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2023/09/28	<0.050		ug/g	
8947269	PBA	RPD	Acid Extractable Antimony (Sb)	2023/09/28	37 (1)		%	30
			Acid Extractable Arsenic (As)	2023/09/28	4.8		%	30
			Acid Extractable Barium (Ba)	2023/09/28	22		%	30
			Acid Extractable Beryllium (Be)	2023/09/28	5.2		%	30
			Acid Extractable Boron (B)	2023/09/28	1.3		%	30
			Acid Extractable Cadmium (Cd)	2023/09/28	15		%	30
			Acid Extractable Chromium (Cr)	2023/09/28	4.2		%	30
			Acid Extractable Cobalt (Co)	2023/09/28	4.4		%	30
			Acid Extractable Copper (Cu)	2023/09/28	1.6		%	30
			Acid Extractable Lead (Pb)	2023/09/28	0.53		%	30
			Acid Extractable Molybdenum (Mo)	2023/09/28	19		%	30
			Acid Extractable Nickel (Ni)	2023/09/28	4.0		%	30
			Acid Extractable Selenium (Se)	2023/09/28	NC		%	30
			Acid Extractable Silver (Ag)	2023/09/28	NC		%	30
			Acid Extractable Thallium (Tl)	2023/09/28	7.7		%	30
			Acid Extractable Uranium (U)	2023/09/28	5.5		%	30
			Acid Extractable Vanadium (V)	2023/09/28	2.2		%	30
			Acid Extractable Zinc (Zn)	2023/09/28	1.6		%	30
			Acid Extractable Mercury (Hg)	2023/09/28	9.3		%	30
8947313	GTK	Spiked Blank	Available (CaCl2) pH	2023/09/28		100	%	97 - 103
8947313	GTK	RPD	Available (CaCl2) pH	2023/09/28	0.71		%	N/A
8947938	JTS	RPD	Moisture	2023/09/28	7.3		%	20
8949144	MYG	QC Standard	Sieve - #200 (<0.075mm)	2023/09/29		55	%	53 - 58
			Sieve - #200 (>0.075mm)	2023/09/29		45	%	42 - 47
8949144	MYG	RPD [XBI097-02]	Sieve - #200 (<0.075mm)	2023/09/29	0.83		%	20
			Sieve - #200 (>0.075mm)	2023/09/29	0.89		%	20
8949624	DT1	Matrix Spike	Acid Extractable Antimony (Sb)	2023/09/29		88	%	75 - 125
			Acid Extractable Arsenic (As)	2023/09/29		91	%	75 - 125
			Acid Extractable Barium (Ba)	2023/09/29		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/09/29		84	%	75 - 125
			Acid Extractable Boron (B)	2023/09/29		74 (2)	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/09/29		93	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/09/29		82	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/09/29		86	%	75 - 125
			Acid Extractable Copper (Cu)	2023/09/29		82	%	75 - 125
			Acid Extractable Lead (Pb)	2023/09/29		88	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/09/29		91	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/09/29		81	%	75 - 125
			Acid Extractable Selenium (Se)	2023/09/29		91	%	75 - 125
			Acid Extractable Silver (Ag)	2023/09/29		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/09/29		93	%	75 - 125
			Acid Extractable Tin (Sn)	2023/09/29		94	%	75 - 125
			Acid Extractable Uranium (U)	2023/09/29		93	%	75 - 125
			Acid Extractable Vanadium (V)	2023/09/29		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2023/09/29		NC	%	75 - 125

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Mercury (Hg)	2023/09/29		97	%	75 - 125
8949624	DT1	Spiked Blank	Acid Extractable Antimony (Sb)	2023/09/29		101	%	80 - 120
			Acid Extractable Arsenic (As)	2023/09/29		97	%	80 - 120
			Acid Extractable Barium (Ba)	2023/09/29		97	%	80 - 120
			Acid Extractable Beryllium (Be)	2023/09/29		95	%	80 - 120
			Acid Extractable Boron (B)	2023/09/29		93	%	80 - 120
			Acid Extractable Cadmium (Cd)	2023/09/29		97	%	80 - 120
			Acid Extractable Chromium (Cr)	2023/09/29		92	%	80 - 120
			Acid Extractable Cobalt (Co)	2023/09/29		96	%	80 - 120
			Acid Extractable Copper (Cu)	2023/09/29		97	%	80 - 120
			Acid Extractable Lead (Pb)	2023/09/29		96	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2023/09/29		96	%	80 - 120
			Acid Extractable Nickel (Ni)	2023/09/29		95	%	80 - 120
			Acid Extractable Selenium (Se)	2023/09/29		98	%	80 - 120
			Acid Extractable Silver (Ag)	2023/09/29		102	%	80 - 120
			Acid Extractable Thallium (Tl)	2023/09/29		98	%	80 - 120
			Acid Extractable Tin (Sn)	2023/09/29		87	%	80 - 120
			Acid Extractable Uranium (U)	2023/09/29		97	%	80 - 120
			Acid Extractable Vanadium (V)	2023/09/29		94	%	80 - 120
			Acid Extractable Zinc (Zn)	2023/09/29		97	%	80 - 120
			Acid Extractable Mercury (Hg)	2023/09/29		99	%	80 - 120
8949624	DT1	Method Blank	Acid Extractable Antimony (Sb)	2023/09/29	<0.20		ug/g	
			Acid Extractable Arsenic (As)	2023/09/29	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2023/09/29	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2023/09/29	<0.20		ug/g	
			Acid Extractable Boron (B)	2023/09/29	<5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2023/09/29	<0.10		ug/g	
			Acid Extractable Chromium (Cr)	2023/09/29	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2023/09/29	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2023/09/29	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2023/09/29	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2023/09/29	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2023/09/29	<0.50		ug/g	
			Acid Extractable Selenium (Se)	2023/09/29	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2023/09/29	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2023/09/29	<0.050		ug/g	
			Acid Extractable Tin (Sn)	2023/09/29	<1.0		ug/g	
			Acid Extractable Uranium (U)	2023/09/29	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2023/09/29	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2023/09/29	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2023/09/29	<0.050		ug/g	
8949624	DT1	RPD	Acid Extractable Antimony (Sb)	2023/09/29	8.9		%	30
			Acid Extractable Arsenic (As)	2023/09/29	1.0		%	30
			Acid Extractable Barium (Ba)	2023/09/29	6.6		%	30
			Acid Extractable Beryllium (Be)	2023/09/29	14		%	30
			Acid Extractable Boron (B)	2023/09/29	8.1		%	30
			Acid Extractable Cadmium (Cd)	2023/09/29	4.2		%	30
			Acid Extractable Chromium (Cr)	2023/09/29	5.1		%	30
			Acid Extractable Cobalt (Co)	2023/09/29	6.0		%	30
			Acid Extractable Copper (Cu)	2023/09/29	6.8		%	30
			Acid Extractable Lead (Pb)	2023/09/29	3.7		%	30
			Acid Extractable Molybdenum (Mo)	2023/09/29	NC		%	30
			Acid Extractable Nickel (Ni)	2023/09/29	5.4		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Selenium (Se)	2023/09/29	NC		%	30
			Acid Extractable Silver (Ag)	2023/09/29	NC		%	30
			Acid Extractable Thallium (Tl)	2023/09/29	9.6		%	30
			Acid Extractable Tin (Sn)	2023/09/29	NC		%	30
			Acid Extractable Uranium (U)	2023/09/29	8.6		%	30
			Acid Extractable Vanadium (V)	2023/09/29	5.1		%	30
			Acid Extractable Zinc (Zn)	2023/09/29	1.4		%	30
			Acid Extractable Mercury (Hg)	2023/09/29	NC		%	30
8949648	DT1	Matrix Spike	Acid Extractable Antimony (Sb)	2023/09/29		90	%	75 - 125
			Acid Extractable Arsenic (As)	2023/09/29		90	%	75 - 125
			Acid Extractable Barium (Ba)	2023/09/29		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/09/29		86	%	75 - 125
			Acid Extractable Boron (B)	2023/09/29		79	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/09/29		92	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/09/29		85	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/09/29		87	%	75 - 125
			Acid Extractable Copper (Cu)	2023/09/29		84	%	75 - 125
			Acid Extractable Lead (Pb)	2023/09/29		88	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/09/29		91	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/09/29		86	%	75 - 125
			Acid Extractable Selenium (Se)	2023/09/29		91	%	75 - 125
			Acid Extractable Silver (Ag)	2023/09/29		111	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/09/29		93	%	75 - 125
			Acid Extractable Tin (Sn)	2023/09/29		95	%	75 - 125
			Acid Extractable Uranium (U)	2023/09/29		92	%	75 - 125
			Acid Extractable Vanadium (V)	2023/09/29		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2023/09/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2023/09/29		109	%	75 - 125
8949648	DT1	Spiked Blank	Acid Extractable Antimony (Sb)	2023/09/29		101	%	80 - 120
			Acid Extractable Arsenic (As)	2023/09/29		99	%	80 - 120
			Acid Extractable Barium (Ba)	2023/09/29		98	%	80 - 120
			Acid Extractable Beryllium (Be)	2023/09/29		92	%	80 - 120
			Acid Extractable Boron (B)	2023/09/29		88	%	80 - 120
			Acid Extractable Cadmium (Cd)	2023/09/29		98	%	80 - 120
			Acid Extractable Chromium (Cr)	2023/09/29		92	%	80 - 120
			Acid Extractable Cobalt (Co)	2023/09/29		96	%	80 - 120
			Acid Extractable Copper (Cu)	2023/09/29		98	%	80 - 120
			Acid Extractable Lead (Pb)	2023/09/29		98	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2023/09/29		98	%	80 - 120
			Acid Extractable Nickel (Ni)	2023/09/29		96	%	80 - 120
			Acid Extractable Selenium (Se)	2023/09/29		100	%	80 - 120
			Acid Extractable Silver (Ag)	2023/09/29		102	%	80 - 120
			Acid Extractable Thallium (Tl)	2023/09/29		100	%	80 - 120
			Acid Extractable Tin (Sn)	2023/09/29		90	%	80 - 120
			Acid Extractable Uranium (U)	2023/09/29		99	%	80 - 120
			Acid Extractable Vanadium (V)	2023/09/29		94	%	80 - 120
			Acid Extractable Zinc (Zn)	2023/09/29		99	%	80 - 120
			Acid Extractable Mercury (Hg)	2023/09/29		99	%	80 - 120
8949648	DT1	Method Blank	Acid Extractable Antimony (Sb)	2023/09/29	<0.20		ug/g	
			Acid Extractable Arsenic (As)	2023/09/29	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2023/09/29	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2023/09/29	<0.20		ug/g	
			Acid Extractable Boron (B)	2023/09/29	<5.0		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Cadmium (Cd)	2023/09/29	<0.10		ug/g	
			Acid Extractable Chromium (Cr)	2023/09/29	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2023/09/29	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2023/09/29	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2023/09/29	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2023/09/29	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2023/09/29	<0.50		ug/g	
			Acid Extractable Selenium (Se)	2023/09/29	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2023/09/29	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2023/09/29	<0.050		ug/g	
			Acid Extractable Tin (Sn)	2023/09/29	<1.0		ug/g	
			Acid Extractable Uranium (U)	2023/09/29	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2023/09/29	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2023/09/29	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2023/09/29	<0.050		ug/g	
8949648	DT1	RPD	Acid Extractable Antimony (Sb)	2023/09/29	NC		%	30
			Acid Extractable Arsenic (As)	2023/09/29	6.8		%	30
			Acid Extractable Barium (Ba)	2023/09/29	6.3		%	30
			Acid Extractable Beryllium (Be)	2023/09/29	2.5		%	30
			Acid Extractable Boron (B)	2023/09/29	NC		%	30
			Acid Extractable Cadmium (Cd)	2023/09/29	11		%	30
			Acid Extractable Chromium (Cr)	2023/09/29	5.8		%	30
			Acid Extractable Cobalt (Co)	2023/09/29	7.9		%	30
			Acid Extractable Copper (Cu)	2023/09/29	5.2		%	30
			Acid Extractable Lead (Pb)	2023/09/29	3.7		%	30
			Acid Extractable Molybdenum (Mo)	2023/09/29	NC		%	30
			Acid Extractable Nickel (Ni)	2023/09/29	6.7		%	30
			Acid Extractable Selenium (Se)	2023/09/29	NC		%	30
			Acid Extractable Silver (Ag)	2023/09/29	NC		%	30
			Acid Extractable Thallium (Tl)	2023/09/29	1.2		%	30
			Acid Extractable Uranium (U)	2023/09/29	12		%	30
			Acid Extractable Vanadium (V)	2023/09/29	10		%	30
			Acid Extractable Zinc (Zn)	2023/09/29	10		%	30

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) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvna.com

Received in Ottawa

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:	REPORT TO:	PROJECT INFORMATION:	Laboratory Use Only:
Company Name: #2045 ~~#38921~~ WSP Canada Inc.	Company Name:	Quotation #: ~~C33667~~ C31027	Bureau Veritas Job #: / Bottle Order #: 952334
Attention: ~~Accounts Payable~~ Sharon Guin, Project Manager	Attention:	P.O. #: ~~OL-1324166~~ 27522889	
Address: ~~237-4th Avenue SW, Suite 3600~~ 100 Scotia Court	Address:	Project:	COC #: C#952334-12-01
~~Calgary AB T2P 4K3~~ Whitby, Ontario, L1N 8Y6		Project Name: Meadowbank Complex-SQRO	Project Manager: Ankita Bhalla
Tel: (403) 299-5600 Fax:	Tel: Fax:	Site #:	
Email: ~~capayablesinvoice@wsp.com~~ sharon.guin@wsp.com	Email:	Sampled By: Melissa Lord	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table ___ ; ☐ Res/Park ☐ Ind/Comm ☐ Agri/Other ; ☐ Medium/Fine ☐ Coarse ☐ For RSC

Other Regulations: ☒ CCME ☐ Reg 558 ☐ MISA ☐ PWQO ☐ Other ; ☐ Sanitary Sewer Bylaw ☐ Storm Sewer Bylaw Municipality ___ ☐ Reg 406 Table ___

Special Instructions: Facility Code 43008764

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Metals (Vault – camp and parking)	Moisture Content (Vault – Fuel tank farm)	pH (Vault – water treatment plant)	Soil texture (Vault – Powder magazine)	Grain Size (Vault – detonator magazine)	# of Bottles	Comments
1		BL-S23-01	2023/09/15	1400	Soil		X	X	X	X	X	2	Email report to: gld.iol-equis@wsp.com
2		BL-S23-02	↓	1430	Soil		X	X	X			1	aemdgr@wsp.com
3		BL-S23-03	↓	1440	Soil		X	X	X			1	joyce.monteirodesantana@wsp.com
4													sharon.guin@wsp.com
5													Kerrie.serben@wsp.com
6													
7													
8													
9													
10													

21-Sep-23 15:18
Ankita Bhalla
C3T2450
PK ENV-603

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: ___
Rush Confirmation Number: ___ (call lab for #)

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Melissa Lord	23/09/18	0800	Allison Lawrence	2023/09/21	1518	
			Ravneet Kaur Brar	2023/09/22	~~01:01~~	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt: 16, 16, 16 ice packs	Custody Seal	Yes	No
		Present	—	
		Intact	✓	

White: Bureau Veritas Yellow: Client

Refer to ACTR

* 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/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-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.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

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

Bureau Veritas Canada (2019) Inc. 2023/09/22 08:42 RKB

WSP CANADA INC. DATA QUALITY REVIEW CHECKLIST

Site Location: Baker Lake

Sampling Date: September 15, 2023

WSP Project Number: 22522889

Laboratory: Bureau Veritas Ottawa

Lab Submission Number: C3T2450

Was the Cooler Received at the lab under a sealed and intact custody seal?	Yes
Was proper chain of custody of the samples documented and kept?	Yes
Were sample temperatures acceptable when they reached lab?:	No
Were all samples analyzed and extracted within hold times?:	Yes
Has lab warranted all tests were in statistical control in CoA?:	Yes
Was sufficient sample provided for the requested analysis?	Yes
Has lab warranted all samples were analyzed with limited headspace present?:	Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery			X	All remaining laboratory QC results are within
Method Blank Concentration	X			acceptance criteria, please see QA/QC
Laboratory Duplicate RPD		X		appendix.
Matrix Spike Recovery		X		
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	No field QC samples were collected.
Trip Blank Concentration			X	
Field Duplicate RPD			X	

Is data considered reliable (Yes/No/Suspect)?: Yes

If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Melanie Dubois

Data Reviewed by (Signature): Melanie Dubois

Date: November 14, 2023

Your Project #: 22522889
Site Location: MEADOWBANK COMPLEX- SQRO
Your C.O.C. #: 952337-03-01

Attention: Sharon Guin

WSP Canada Inc.
100 Scotia Crt
Whitby, ON
CANADA L1N 8Y6

Report Date: 2023/10/05
Report #: R7847412
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3T8621
Received: 2023/09/27, 11:43

Sample Matrix: Soil
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Acid Extractable Metals by ICPMS (1)	4	2023/10/03	2023/10/04	CAM SOP-00447	EPA 6020B m
Acid Extractable Metals by ICPMS (1)	6	2023/10/04	2023/10/04	CAM SOP-00447	EPA 6020B m
Moisture (1)	10	N/A	2023/10/02	CAM SOP-00445	Carter 2nd ed 51.2 m
pH CaCl2 EXTRACT (1)	10	2023/10/03	2023/10/03	CAM SOP-00413	EPA 9045 D m
Sieve, 75um (1)	2	N/A	2023/10/02	CAM SOP-00467	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, MELCCFP, EPA, APHA.

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

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

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

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

Your Project #: 22522889
Site Location: MEADOWBANK COMPLEX- SQRO
Your C.O.C. #: 952337-03-01

Attention: Sharon Guin

WSP Canada Inc.
100 Scotia Crt
Whitby, ON
CANADA L1N 8Y6

Report Date: 2023/10/05
Report #: R7847412
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3T8621
Received: 2023/09/27, 11:43

Encryption Key

Bureau Veritas
05 Oct 2023 17:25:40

Please direct all questions regarding this Certificate of Analysis to:
Ankita Bhalla, Project Manager
Email: Ankita.Bhalla@bureauveritas.com
Phone# (613) 274-0573

==========

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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C3T8621
Report Date: 2023/10/05

WSP Canada Inc.
Client Project #: 22522889
Site Location: MEADOWBANK COMPLEX- SQRO
Sampler Initials: ML

CCME ICPMS METALS (SOIL)

Bureau Veritas ID		XCR435		XCR436		XCR437		
Sampling Date		2023/09/21 10:50		2023/09/21 10:50		2023/09/21 11:10		
COC Number		952337-03-01		952337-03-01		952337-03-01		
	UNITS	MS-S23-01	QC Batch	MS-S23-01B	QC Batch	MS-S23-02	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	8957471	<0.20	8958979	<0.20	0.20	8959251
Acid Extractable Arsenic (As)	ug/g	5.4	8957471	5.2	8958979	1.7	1.0	8959251
Acid Extractable Barium (Ba)	ug/g	34	8957471	35	8958979	25	0.50	8959251
Acid Extractable Beryllium (Be)	ug/g	0.33	8957471	0.35	8958979	<0.20	0.20	8959251
Acid Extractable Boron (B)	ug/g	<5.0	8957471	<5.0	8958979	<5.0	5.0	8959251
Acid Extractable Cadmium (Cd)	ug/g	<0.10	8957471	<0.10	8958979	0.38	0.10	8959251
Acid Extractable Chromium (Cr)	ug/g	130	8957471	130	8958979	33	1.0	8959251
Acid Extractable Cobalt (Co)	ug/g	9.3	8957471	8.8	8958979	2.9	0.10	8959251
Acid Extractable Copper (Cu)	ug/g	13	8957471	13	8958979	8.5	0.50	8959251
Acid Extractable Lead (Pb)	ug/g	6.6	8957471	6.7	8958979	2.3	1.0	8959251
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	8957471	<0.50	8958979	0.60	0.50	8959251
Acid Extractable Nickel (Ni)	ug/g	49	8957471	48	8958979	17	0.50	8959251
Acid Extractable Selenium (Se)	ug/g	<0.50	8957471	<0.50	8958979	<0.50	0.50	8959251
Acid Extractable Silver (Ag)	ug/g	<0.20	8957471	<0.20	8958979	<0.20	0.20	8959251
Acid Extractable Thallium (Tl)	ug/g	0.13	8957471	0.14	8958979	<0.050	0.050	8959251
Acid Extractable Tin (Sn)	ug/g	<1.0	8957471	<1.0	8958979	<1.0	1.0	8959251
Acid Extractable Uranium (U)	ug/g	2.1	8957471	2.1	8958979	1.1	0.050	8959251
Acid Extractable Vanadium (V)	ug/g	25	8957471	24	8958979	5.9	5.0	8959251
Acid Extractable Zinc (Zn)	ug/g	34	8957471	35	8958979	16	5.0	8959251
Acid Extractable Mercury (Hg)	ug/g	<0.050	8957471	<0.050	8958979	0.13	0.050	8959251

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas Job #: C3T8621
Report Date: 2023/10/05

WSP Canada Inc.
Client Project #: 22522889
Site Location: MEADOWBANK COMPLEX- SQRO
Sampler Initials: ML

CCME ICPMS METALS (SOIL)

Bureau Veritas ID		XCR438	XCR439	XCR440	XCR441		XCR442		
Sampling Date		2023/09/21 11:30	2023/09/21 11:50	2023/09/23 16:00	2023/09/23 16:15		2023/09/23 16:30		
COC Number		952337-03-01	952337-03-01	952337-03-01	952337-03-01		952337-03-01		
	UNITS	MS-S23-03	MS-S23-04	MS-S23-05	MS-S23-06	QC Batch	MS-S23-07	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	8958979	0.46	0.20	8957471
Acid Extractable Arsenic (As)	ug/g	3.8	4.8	4.6	3.2	8958979	51	1.0	8957471
Acid Extractable Barium (Ba)	ug/g	22	53	22	34	8958979	110	0.50	8957471
Acid Extractable Beryllium (Be)	ug/g	0.23	0.45	0.34	0.49	8958979	1.2	0.20	8957471
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	<5.0	8958979	7.1	5.0	8957471
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	<0.10	<0.10	8958979	0.24	0.10	8957471
Acid Extractable Chromium (Cr)	ug/g	42	45	39	35	8958979	150	1.0	8957471
Acid Extractable Cobalt (Co)	ug/g	4.8	7.1	5.3	6.1	8958979	22	0.10	8957471
Acid Extractable Copper (Cu)	ug/g	5.1	15	5.9	8.2	8958979	69	0.50	8957471
Acid Extractable Lead (Pb)	ug/g	5.2	9.7	6.5	7.8	8958979	24	1.0	8957471
Acid Extractable Molybdenum (Mo)	ug/g	1.1	1.2	0.76	0.81	8958979	3.2	0.50	8957471
Acid Extractable Nickel (Ni)	ug/g	17	23	18	18	8958979	84	0.50	8957471
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	8958979	<0.50	0.50	8957471
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	8958979	0.55	0.20	8957471
Acid Extractable Thallium (Tl)	ug/g	0.12	0.20	0.099	0.15	8958979	0.38	0.050	8957471
Acid Extractable Tin (Sn)	ug/g	<1.0	<1.0	<1.0	<1.0	8958979	1.2	1.0	8957471
Acid Extractable Uranium (U)	ug/g	1.5	4.0	1.8	3.6	8958979	7.4	0.050	8957471
Acid Extractable Vanadium (V)	ug/g	14	20	15	18	8958979	43	5.0	8957471
Acid Extractable Zinc (Zn)	ug/g	24	45	29	39	8958979	91	5.0	8957471
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	<0.050	8958979	0.086	0.050	8957471

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

CCME ICPMS METALS (SOIL)

Bureau Veritas ID		XCR443	XCR444		
Sampling Date		2023/09/23 16:45	2023/09/23 17:00		
COC Number		952337-03-01	952337-03-01		
	UNITS	MS-S23-08	MS-S23-09	RDL	QC Batch
Metals					
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	0.20	8957471
Acid Extractable Arsenic (As)	ug/g	7.1	10	1.0	8957471
Acid Extractable Barium (Ba)	ug/g	41	67	0.50	8957471
Acid Extractable Beryllium (Be)	ug/g	0.51	0.48	0.20	8957471
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	5.0	8957471
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.11	0.10	8957471
Acid Extractable Chromium (Cr)	ug/g	73	200	1.0	8957471
Acid Extractable Cobalt (Co)	ug/g	9.1	15	0.10	8957471
Acid Extractable Copper (Cu)	ug/g	12	25	0.50	8957471
Acid Extractable Lead (Pb)	ug/g	8.7	10	1.0	8957471
Acid Extractable Molybdenum (Mo)	ug/g	0.86	1.1	0.50	8957471
Acid Extractable Nickel (Ni)	ug/g	31	70	0.50	8957471
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	0.50	8957471
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	0.20	8957471
Acid Extractable Thallium (Tl)	ug/g	0.16	0.20	0.050	8957471
Acid Extractable Tin (Sn)	ug/g	<1.0	<1.0	1.0	8957471
Acid Extractable Uranium (U)	ug/g	4.5	3.4	0.050	8957471
Acid Extractable Vanadium (V)	ug/g	21	36	5.0	8957471
Acid Extractable Zinc (Zn)	ug/g	36	55	5.0	8957471
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	0.050	8957471

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C3T8621
Report Date: 2023/10/05

WSP Canada Inc.
Client Project #: 22522889
Site Location: MEADOWBANK COMPLEX- SQRO
Sampler Initials: ML

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		XCR435			XCR436	XCR437	XCR438	XCR439		
Sampling Date		2023/09/21 10:50			2023/09/21 10:50	2023/09/21 11:10	2023/09/21 11:30	2023/09/21 11:50		
COC Number		952337-03-01			952337-03-01	952337-03-01	952337-03-01	952337-03-01		
	UNITS	MS-S23-01	RDL	QC Batch	MS-S23-01B	MS-S23-02	MS-S23-03	MS-S23-04	RDL	QC Batch
Inorganics										
Moisture	%	14	1.0	8954343	17	17	14	40	1.0	8954343
Available (CaCl2) pH	pH	4.84		8956318	4.57	4.91	6.39	4.79		8956318
Miscellaneous Parameters										
Grain Size	%	COARSE	N/A	8953149						
Sieve - #200 (<0.075mm)	%	49	1	8953149						
Sieve - #200 (>0.075mm)	%	51	1	8953149						

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

Bureau Veritas ID		XCR440			XCR441	XCR442	XCR443	XCR444		
Sampling Date		2023/09/23 16:00			2023/09/23 16:15	2023/09/23 16:30	2023/09/23 16:45	2023/09/23 17:00		
COC Number		952337-03-01			952337-03-01	952337-03-01	952337-03-01	952337-03-01		
	UNITS	MS-S23-05	RDL	QC Batch	MS-S23-06	MS-S23-07	MS-S23-08	MS-S23-09	RDL	QC Batch
Inorganics										
Moisture	%	15	1.0	8954343	14	33	16	17	1.0	8954343
Available (CaCl2) pH	pH	4.18		8956318	5.06	5.01	5.65	5.74		8956318
Miscellaneous Parameters										
Grain Size	%	FINE	N/A	8953149						
Sieve - #200 (<0.075mm)	%	62	1	8953149						
Sieve - #200 (>0.075mm)	%	38	1	8953149						

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

TEST SUMMARY

Bureau Veritas ID: XCR435 **Collected:** 2023/09/21
Sample ID: MS-S23-01 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8957471	2023/10/03	2023/10/04	Prempal Bhatti
Moisture	BAL	8954343	N/A	2023/10/02	Joe Thomas
pH CaCl2 EXTRACT	AT	8956318	2023/10/03	2023/10/03	Gurparteek KAUR
Sieve, 75um	SIEV	8953149	N/A	2023/10/02	Muhammad Chhaidan

Bureau Veritas ID: XCR436 **Collected:** 2023/09/21
Sample ID: MS-S23-01B **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954343	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956318	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR437 **Collected:** 2023/09/21
Sample ID: MS-S23-02 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8959251	2023/10/04	2023/10/04	Japneet Gill
Moisture	BAL	8954343	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956318	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR438 **Collected:** 2023/09/21
Sample ID: MS-S23-03 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954343	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956318	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR439 **Collected:** 2023/09/21
Sample ID: MS-S23-04 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954343	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956318	2023/10/03	2023/10/03	Gurparteek KAUR

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TEST SUMMARY

Bureau Veritas ID: XCR440 **Collected:** 2023/09/23
Sample ID: MS-S23-05 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954343	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956318	2023/10/03	2023/10/03	Gurparteek KAUR
Sieve, 75um	SIEV	8953149	N/A	2023/10/02	Muhammad Chhaidan

Bureau Veritas ID: XCR441 **Collected:** 2023/09/23
Sample ID: MS-S23-06 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954343	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956318	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR442 **Collected:** 2023/09/23
Sample ID: MS-S23-07 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8957471	2023/10/03	2023/10/04	Prempal Bhatti
Moisture	BAL	8954343	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956318	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR443 **Collected:** 2023/09/23
Sample ID: MS-S23-08 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8957471	2023/10/03	2023/10/04	Prempal Bhatti
Moisture	BAL	8954343	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956318	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR444 **Collected:** 2023/09/23
Sample ID: MS-S23-09 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8957471	2023/10/03	2023/10/04	Prempal Bhatti
Moisture	BAL	8954343	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956318	2023/10/03	2023/10/03	Gurparteek KAUR

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GENERAL COMMENTS

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

Package 1	16.0°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8953149	MYG	QC Standard	Sieve - #200 (<0.075mm)	2023/10/02		56	%	53 - 58
			Sieve - #200 (>0.075mm)	2023/10/02		44	%	42 - 47
8953149	MYG	RPD	Sieve - #200 (<0.075mm)	2023/10/02	0.29		%	20
			Sieve - #200 (>0.075mm)	2023/10/02	0.32		%	20
8954343	IPR	RPD	Moisture	2023/10/02	0.82		%	20
8956318	GTK	Spiked Blank	Available (CaCl2) pH	2023/10/03		100	%	97 - 103
8956318	GTK	RPD	Available (CaCl2) pH	2023/10/03	0.095		%	N/A
8957471	PBA	Matrix Spike	Acid Extractable Antimony (Sb)	2023/10/04		88	%	75 - 125
			Acid Extractable Arsenic (As)	2023/10/04		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2023/10/04		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/10/04		104	%	75 - 125
			Acid Extractable Boron (B)	2023/10/04		102	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/10/04		91	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/10/04		NC	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/10/04		95	%	75 - 125
			Acid Extractable Copper (Cu)	2023/10/04		94	%	75 - 125
			Acid Extractable Lead (Pb)	2023/10/04		93	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/10/04		93	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/10/04		NC	%	75 - 125
			Acid Extractable Selenium (Se)	2023/10/04		96	%	75 - 125
			Acid Extractable Silver (Ag)	2023/10/04		94	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/10/04		97	%	75 - 125
			Acid Extractable Tin (Sn)	2023/10/04		93	%	75 - 125
			Acid Extractable Uranium (U)	2023/10/04		96	%	75 - 125
			Acid Extractable Vanadium (V)	2023/10/04		97	%	75 - 125
			Acid Extractable Zinc (Zn)	2023/10/04		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2023/10/04		97	%	75 - 125
8957471	PBA	Spiked Blank	Acid Extractable Antimony (Sb)	2023/10/04		102	%	80 - 120
			Acid Extractable Arsenic (As)	2023/10/04		102	%	80 - 120
			Acid Extractable Barium (Ba)	2023/10/04		102	%	80 - 120
			Acid Extractable Beryllium (Be)	2023/10/04		103	%	80 - 120
			Acid Extractable Boron (B)	2023/10/04		106	%	80 - 120
			Acid Extractable Cadmium (Cd)	2023/10/04		98	%	80 - 120
			Acid Extractable Chromium (Cr)	2023/10/04		101	%	80 - 120
			Acid Extractable Cobalt (Co)	2023/10/04		101	%	80 - 120
			Acid Extractable Copper (Cu)	2023/10/04		102	%	80 - 120
			Acid Extractable Lead (Pb)	2023/10/04		102	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2023/10/04		101	%	80 - 120
			Acid Extractable Nickel (Ni)	2023/10/04		103	%	80 - 120
			Acid Extractable Selenium (Se)	2023/10/04		103	%	80 - 120
			Acid Extractable Silver (Ag)	2023/10/04		101	%	80 - 120
			Acid Extractable Thallium (Tl)	2023/10/04		106	%	80 - 120
			Acid Extractable Tin (Sn)	2023/10/04		99	%	80 - 120
			Acid Extractable Uranium (U)	2023/10/04		102	%	80 - 120
			Acid Extractable Vanadium (V)	2023/10/04		102	%	80 - 120
			Acid Extractable Zinc (Zn)	2023/10/04		101	%	80 - 120
			Acid Extractable Mercury (Hg)	2023/10/04		104	%	80 - 120
8957471	PBA	Method Blank	Acid Extractable Antimony (Sb)	2023/10/04	<0.20		ug/g	
			Acid Extractable Arsenic (As)	2023/10/04	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2023/10/04	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2023/10/04	<0.20		ug/g	
			Acid Extractable Boron (B)	2023/10/04	<5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2023/10/04	<0.10		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Chromium (Cr)	2023/10/04	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2023/10/04	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2023/10/04	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2023/10/04	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2023/10/04	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2023/10/04	<0.50		ug/g	
			Acid Extractable Selenium (Se)	2023/10/04	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2023/10/04	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2023/10/04	<0.050		ug/g	
			Acid Extractable Tin (Sn)	2023/10/04	<1.0		ug/g	
			Acid Extractable Uranium (U)	2023/10/04	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2023/10/04	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2023/10/04	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2023/10/04	<0.050		ug/g	
8957471	PBA	RPD	Acid Extractable Antimony (Sb)	2023/10/04	NC		%	30
			Acid Extractable Arsenic (As)	2023/10/04	2.1		%	30
			Acid Extractable Barium (Ba)	2023/10/04	0.31		%	30
			Acid Extractable Beryllium (Be)	2023/10/04	14		%	30
			Acid Extractable Boron (B)	2023/10/04	NC		%	30
			Acid Extractable Cadmium (Cd)	2023/10/04	20		%	30
			Acid Extractable Chromium (Cr)	2023/10/04	0.041		%	30
			Acid Extractable Cobalt (Co)	2023/10/04	0.38		%	30
			Acid Extractable Copper (Cu)	2023/10/04	0.50		%	30
			Acid Extractable Lead (Pb)	2023/10/04	2.8		%	30
			Acid Extractable Molybdenum (Mo)	2023/10/04	8.2		%	30
			Acid Extractable Nickel (Ni)	2023/10/04	1.8		%	30
			Acid Extractable Selenium (Se)	2023/10/04	NC		%	30
			Acid Extractable Silver (Ag)	2023/10/04	NC		%	30
			Acid Extractable Thallium (Tl)	2023/10/04	1.2		%	30
			Acid Extractable Tin (Sn)	2023/10/04	NC		%	30
			Acid Extractable Uranium (U)	2023/10/04	2.8		%	30
			Acid Extractable Vanadium (V)	2023/10/04	1.5		%	30
			Acid Extractable Zinc (Zn)	2023/10/04	1.8		%	30
			Acid Extractable Mercury (Hg)	2023/10/04	NC		%	30
8958979	PBA	Matrix Spike	Acid Extractable Antimony (Sb)	2023/10/04		94	%	75 - 125
			Acid Extractable Arsenic (As)	2023/10/04		95	%	75 - 125
			Acid Extractable Barium (Ba)	2023/10/04		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/10/04		103	%	75 - 125
			Acid Extractable Boron (B)	2023/10/04		98	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/10/04		95	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/10/04		NC	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/10/04		97	%	75 - 125
			Acid Extractable Copper (Cu)	2023/10/04		96	%	75 - 125
			Acid Extractable Lead (Pb)	2023/10/04		95	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/10/04		95	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/10/04		95	%	75 - 125
			Acid Extractable Selenium (Se)	2023/10/04		100	%	75 - 125
			Acid Extractable Silver (Ag)	2023/10/04		95	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/10/04		99	%	75 - 125
			Acid Extractable Tin (Sn)	2023/10/04		95	%	75 - 125
			Acid Extractable Uranium (U)	2023/10/04		97	%	75 - 125
			Acid Extractable Vanadium (V)	2023/10/04		93	%	75 - 125
			Acid Extractable Zinc (Zn)	2023/10/04		NC	%	75 - 125

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Mercury (Hg)	2023/10/04		98	%	75 - 125
8958979	PBA	Spiked Blank	Acid Extractable Antimony (Sb)	2023/10/04		101	%	80 - 120
			Acid Extractable Arsenic (As)	2023/10/04		99	%	80 - 120
			Acid Extractable Barium (Ba)	2023/10/04		98	%	80 - 120
			Acid Extractable Beryllium (Be)	2023/10/04		102	%	80 - 120
			Acid Extractable Boron (B)	2023/10/04		106	%	80 - 120
			Acid Extractable Cadmium (Cd)	2023/10/04		96	%	80 - 120
			Acid Extractable Chromium (Cr)	2023/10/04		98	%	80 - 120
			Acid Extractable Cobalt (Co)	2023/10/04		99	%	80 - 120
			Acid Extractable Copper (Cu)	2023/10/04		99	%	80 - 120
			Acid Extractable Lead (Pb)	2023/10/04		98	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2023/10/04		99	%	80 - 120
			Acid Extractable Nickel (Ni)	2023/10/04		100	%	80 - 120
			Acid Extractable Selenium (Se)	2023/10/04		98	%	80 - 120
			Acid Extractable Silver (Ag)	2023/10/04		98	%	80 - 120
			Acid Extractable Thallium (Tl)	2023/10/04		101	%	80 - 120
			Acid Extractable Tin (Sn)	2023/10/04		95	%	80 - 120
			Acid Extractable Uranium (U)	2023/10/04		99	%	80 - 120
			Acid Extractable Vanadium (V)	2023/10/04		99	%	80 - 120
			Acid Extractable Zinc (Zn)	2023/10/04		100	%	80 - 120
			Acid Extractable Mercury (Hg)	2023/10/04		98	%	80 - 120
8958979	PBA	Method Blank	Acid Extractable Antimony (Sb)	2023/10/04	<0.20		ug/g	
			Acid Extractable Arsenic (As)	2023/10/04	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2023/10/04	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2023/10/04	<0.20		ug/g	
			Acid Extractable Boron (B)	2023/10/04	<5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2023/10/04	<0.10		ug/g	
			Acid Extractable Chromium (Cr)	2023/10/04	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2023/10/04	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2023/10/04	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2023/10/04	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2023/10/04	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2023/10/04	<0.50		ug/g	
			Acid Extractable Selenium (Se)	2023/10/04	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2023/10/04	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2023/10/04	<0.050		ug/g	
			Acid Extractable Tin (Sn)	2023/10/04	<1.0		ug/g	
			Acid Extractable Uranium (U)	2023/10/04	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2023/10/04	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2023/10/04	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2023/10/04	<0.050		ug/g	
8958979	PBA	RPD	Acid Extractable Antimony (Sb)	2023/10/04	NC		%	30
			Acid Extractable Arsenic (As)	2023/10/04	7.9		%	30
			Acid Extractable Barium (Ba)	2023/10/04	9.6		%	30
			Acid Extractable Beryllium (Be)	2023/10/04	4.5		%	30
			Acid Extractable Boron (B)	2023/10/04	NC		%	30
			Acid Extractable Cadmium (Cd)	2023/10/04	NC		%	30
			Acid Extractable Chromium (Cr)	2023/10/04	5.0		%	30
			Acid Extractable Cobalt (Co)	2023/10/04	1.3		%	30
			Acid Extractable Copper (Cu)	2023/10/04	7.5		%	30
			Acid Extractable Lead (Pb)	2023/10/04	4.6		%	30
			Acid Extractable Molybdenum (Mo)	2023/10/04	6.7		%	30
			Acid Extractable Nickel (Ni)	2023/10/04	2.6		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Selenium (Se)	2023/10/04	NC		%	30
			Acid Extractable Silver (Ag)	2023/10/04	NC		%	30
			Acid Extractable Thallium (Tl)	2023/10/04	3.1		%	30
			Acid Extractable Tin (Sn)	2023/10/04	NC		%	30
			Acid Extractable Uranium (U)	2023/10/04	6.2		%	30
			Acid Extractable Vanadium (V)	2023/10/04	1.9		%	30
			Acid Extractable Zinc (Zn)	2023/10/04	3.5		%	30
			Acid Extractable Mercury (Hg)	2023/10/04	4.4		%	30
8959251	JGC	Matrix Spike	Acid Extractable Antimony (Sb)	2023/10/04		90	%	75 - 125
			Acid Extractable Arsenic (As)	2023/10/04		91	%	75 - 125
			Acid Extractable Barium (Ba)	2023/10/04		93	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/10/04		89	%	75 - 125
			Acid Extractable Boron (B)	2023/10/04		86	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/10/04		92	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/10/04		90	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/10/04		91	%	75 - 125
			Acid Extractable Copper (Cu)	2023/10/04		86	%	75 - 125
			Acid Extractable Lead (Pb)	2023/10/04		92	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/10/04		93	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/10/04		92	%	75 - 125
			Acid Extractable Selenium (Se)	2023/10/04		93	%	75 - 125
			Acid Extractable Silver (Ag)	2023/10/04		95	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/10/04		95	%	75 - 125
			Acid Extractable Tin (Sn)	2023/10/04		93	%	75 - 125
			Acid Extractable Uranium (U)	2023/10/04		95	%	75 - 125
			Acid Extractable Vanadium (V)	2023/10/04		93	%	75 - 125
			Acid Extractable Zinc (Zn)	2023/10/04		92	%	75 - 125
			Acid Extractable Mercury (Hg)	2023/10/04		93	%	75 - 125
8959251	JGC	Spiked Blank	Acid Extractable Antimony (Sb)	2023/10/04		99	%	80 - 120
			Acid Extractable Arsenic (As)	2023/10/04		101	%	80 - 120
			Acid Extractable Barium (Ba)	2023/10/04		98	%	80 - 120
			Acid Extractable Beryllium (Be)	2023/10/04		93	%	80 - 120
			Acid Extractable Boron (B)	2023/10/04		94	%	80 - 120
			Acid Extractable Cadmium (Cd)	2023/10/04		97	%	80 - 120
			Acid Extractable Chromium (Cr)	2023/10/04		95	%	80 - 120
			Acid Extractable Cobalt (Co)	2023/10/04		100	%	80 - 120
			Acid Extractable Copper (Cu)	2023/10/04		95	%	80 - 120
			Acid Extractable Lead (Pb)	2023/10/04		100	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2023/10/04		95	%	80 - 120
			Acid Extractable Nickel (Ni)	2023/10/04		100	%	80 - 120
			Acid Extractable Selenium (Se)	2023/10/04		100	%	80 - 120
			Acid Extractable Silver (Ag)	2023/10/04		100	%	80 - 120
			Acid Extractable Thallium (Tl)	2023/10/04		103	%	80 - 120
			Acid Extractable Tin (Sn)	2023/10/04		90	%	80 - 120
			Acid Extractable Uranium (U)	2023/10/04		100	%	80 - 120
			Acid Extractable Vanadium (V)	2023/10/04		96	%	80 - 120
			Acid Extractable Zinc (Zn)	2023/10/04		93	%	80 - 120
			Acid Extractable Mercury (Hg)	2023/10/04		104	%	80 - 120
8959251	JGC	Method Blank	Acid Extractable Antimony (Sb)	2023/10/04	<0.20		ug/g	
			Acid Extractable Arsenic (As)	2023/10/04	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2023/10/04	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2023/10/04	<0.20		ug/g	
			Acid Extractable Boron (B)	2023/10/04	<5.0		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Cadmium (Cd)	2023/10/04	<0.10		ug/g	
			Acid Extractable Chromium (Cr)	2023/10/04	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2023/10/04	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2023/10/04	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2023/10/04	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2023/10/04	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2023/10/04	<0.50		ug/g	
			Acid Extractable Selenium (Se)	2023/10/04	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2023/10/04	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2023/10/04	<0.050		ug/g	
			Acid Extractable Tin (Sn)	2023/10/04	<1.0		ug/g	
			Acid Extractable Uranium (U)	2023/10/04	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2023/10/04	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2023/10/04	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2023/10/04	<0.050		ug/g	
8959251	JGC	RPD	Acid Extractable Antimony (Sb)	2023/10/04	NC		%	30
			Acid Extractable Arsenic (As)	2023/10/04	7.3		%	30
			Acid Extractable Barium (Ba)	2023/10/04	3.4		%	30
			Acid Extractable Beryllium (Be)	2023/10/04	NC		%	30
			Acid Extractable Boron (B)	2023/10/04	NC		%	30
			Acid Extractable Cadmium (Cd)	2023/10/04	NC		%	30
			Acid Extractable Chromium (Cr)	2023/10/04	1.2		%	30
			Acid Extractable Cobalt (Co)	2023/10/04	0.0091		%	30
			Acid Extractable Copper (Cu)	2023/10/04	2.4		%	30
			Acid Extractable Lead (Pb)	2023/10/04	0.71		%	30
			Acid Extractable Molybdenum (Mo)	2023/10/04	NC		%	30
			Acid Extractable Nickel (Ni)	2023/10/04	1.1		%	30
			Acid Extractable Selenium (Se)	2023/10/04	NC		%	30
			Acid Extractable Silver (Ag)	2023/10/04	NC		%	30
			Acid Extractable Thallium (Tl)	2023/10/04	3.8		%	30
			Acid Extractable Tin (Sn)	2023/10/04	NC		%	30
			Acid Extractable Uranium (U)	2023/10/04	1.1		%	30
			Acid Extractable Vanadium (V)	2023/10/04	0.58		%	30
			Acid Extractable Zinc (Zn)	2023/10/04	0.55		%	30
			Acid Extractable Mercury (Hg)	2023/10/04	NC		%	30

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).

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvna.com

27-Sep-23 11:43
Ankita Bhalla
C3T8621
A1V
ENV-1752

Page 1 of 1

INVOICE TO: # 2045	REPORT TO:	PROJECT INFORMATION:	
Company Name: ~~#38921~~ WSP Canada Inc.	Company Name:	Quotation #: ~~C33867~~ C31027	Bottle Order #: 952337
Attention: ~~Accounts Payable~~ Sharon Guin, Project Manager	Attention: Sharon Guin	P.O. #: ~~OL-1324166~~ 22522889	
Address: ~~237-4th Avenue SW, Suite 3800~~ 100 Scotia Court	Address:	Project:	COC #: C#952337-03-01
~~Calgary AB T2P 4K3~~ Whitby Ontario L1N 8Y6		Project Name: Meadowbank Complex - SARO	Project Manager: Ankita Bhalla
Tel: ~~(403) 269-5600~~ 780-483-3499 Fax:	Tel: Fax:	Site #:	
Email: ~~capayablesinvoice@wsp.com~~ sharon.guin@wsp.com	Email: sharon.guin@wsp.com	Sampled By: Melissa Lord	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☒ CCME ☐ Sanitary Sewer Bylaw	Facility Code 42617322
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality	
☐ Table	☐ PWQO ☐ Reg 406 Table	
	☐ Other	

Include Criteria on Certificate of Analysis (Y/N)?

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Metals (Meadowbank – power house)	Soil texture (~~Meadowbank – mill~~)	Grain Size (~~Texture by Hydrometer~~)	Moisture Content	pH	# of Bottles	Comments
1		MS-S23-01	2023/09/21	1050	Soil		X	X	X	X	X	2	Email report to:
2		MS-S23-01B	↓	1050	↓		X			X	X	1	gldiiol-equis@wsp.com
3		MS-S23-02		1110			X			X	X	1	joyce.monteirodesantana@wsp.com
4		MS-S23-03		1130			X			X	X	1	sharon.guin@wsp.com
5		MS-S23-04		1150			X			X	X	1	Kerrie.serben@wsp.com
6		MS-S23-05	2023/09/23	1600	Soil		X	X	X	X	X	2	
7		MS-S23-06	↓	1615	↓		X			X	X	1	
8		MS-S23-07		1630			X			X	X	1	
9		MS-S23-08		1645			X			X	X	1	
10		MS-S23-09		1700			X			X	X	1	

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: ☐
Rush Confirmation Number: (call lab for #)

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Melissa Lord	23/09/25	0800	Sagar Sawan	2023/09/27	11:43	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	16 / 16 / 16	Present		
		Intact	✓	

* 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/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-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.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

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

White: Bureau Veritas Yellow: Client

on ice

WSP CANADA INC. DATA QUALITY REVIEW CHECKLIST

Site Location: Meadowbank Mine

Sampling Date: September 21 and 23, 2023

WSP Project Number: 22522889

Laboratory: Bureau Veritas Ottawa

Lab Submission Number: C3T8621

Was the Cooler Received at the lab under a sealed and intact custody seal?	Yes
Was proper chain of custody of the samples documented and kept?	Yes
Were sample temperatures acceptable when they reached lab?:	No
Were all samples analyzed and extracted within hold times?:	Yes
Has lab warranted all tests were in statistical control in CoA?:	Yes
Was sufficient sample provided for the requested analysis?	Yes
Has lab warranted all samples were analyzed with limited headspace present?:	Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery			X	All laboratory QC results are within
Method Blank Concentration	X			acceptance criteria.
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	All field QC samples are within
Trip Blank Concentration			X	alert limits.
Field Duplicate RPD	X			

Is data considered reliable (Yes/No/Suspect)?: Yes

If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Melanie Dubois

Data Reviewed by (Signature): Melanie Dubois

Date: October 30, 2023

Your Project #: 22522889
Site Location: MEADOWBANK COMPLEX- SQRO
Your C.O.C. #: 952334-05-01

Attention: Sharon Guin

WSP Canada Inc.
100 Scotia Crt
Whitby, ON
CANADA L1N 8Y6

Report Date: 2023/10/05
Report #: R7846664
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3T8633
Received: 2023/09/27, 11:38

Sample Matrix: Soil
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Acid Extractable Metals by ICPMS (1)	4	2023/10/03	2023/10/04	CAM SOP-00447	EPA 6020B m
Acid Extractable Metals by ICPMS (1)	6	2023/10/04	2023/10/04	CAM SOP-00447	EPA 6020B m
Moisture (1)	10	N/A	2023/10/02	CAM SOP-00445	Carter 2nd ed 51.2 m
pH CaCl2 EXTRACT (1)	10	2023/10/03	2023/10/03	CAM SOP-00413	EPA 9045 D m
Sieve, 75um (1)	1	N/A	2023/10/02	CAM SOP-00467	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, MELCCFP, EPA, APHA.

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

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

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

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

Your Project #: 22522889
Site Location: MEADOWBANK COMPLEX- SQRO
Your C.O.C. #: 952334-05-01

Attention: Sharon Guin

WSP Canada Inc.
100 Scotia Crt
Whitby, ON
CANADA L1N 8Y6

Report Date: 2023/10/05
Report #: R7846664
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3T8633
Received: 2023/09/27, 11:38

Encryption Key

Bureau Veritas
05 Oct 2023 12:33:55

Please direct all questions regarding this Certificate of Analysis to:
Ankita Bhalla, Project Manager
Email: Ankita.Bhalla@bureauveritas.com
Phone# (613) 274-0573

==========

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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C3T8633
Report Date: 2023/10/05

WSP Canada Inc.
Client Project #: 22522889
Site Location: MEADOWBANK COMPLEX- SQRO
Sampler Initials: ML

CCME ICPMS METALS (SOIL)

Bureau Veritas ID		XCR568		XCR569	XCR570		XCR571		
Sampling Date		2023/09/24 08:00		2023/09/24 08:00	2023/09/24 08:20		2023/09/24 08:40		
COC Number		952334-05-01		952334-05-01	952334-05-01		952334-05-01		
	UNITS	VS-S23-01	QC Batch	VS-S23-01B	VS-S23-02	QC Batch	VS-S23-03	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	8959111	<0.20	<0.20	8957471	<0.20	0.20	8959111
Acid Extractable Arsenic (As)	ug/g	5.1	8959111	4.9	1.3	8957471	1.3	1.0	8959111
Acid Extractable Barium (Ba)	ug/g	21	8959111	17	14	8957471	16	0.50	8959111
Acid Extractable Beryllium (Be)	ug/g	0.48	8959111	0.65	0.34	8957471	0.38	0.20	8959111
Acid Extractable Boron (B)	ug/g	<5.0	8959111	<5.0	<5.0	8957471	<5.0	5.0	8959111
Acid Extractable Cadmium (Cd)	ug/g	<0.10	8959111	<0.10	<0.10	8957471	<0.10	0.10	8959111
Acid Extractable Chromium (Cr)	ug/g	33	8959111	25	20	8957471	20	1.0	8959111
Acid Extractable Cobalt (Co)	ug/g	7.3	8959111	5.4	3.8	8957471	3.6	0.10	8959111
Acid Extractable Copper (Cu)	ug/g	13	8959111	14	6.8	8957471	8.6	0.50	8959111
Acid Extractable Lead (Pb)	ug/g	14	8959111	14	8.6	8957471	8.6	1.0	8959111
Acid Extractable Molybdenum (Mo)	ug/g	2.0	8959111	3.1	1.1	8957471	1.4	0.50	8959111
Acid Extractable Nickel (Ni)	ug/g	20	8959111	14	11	8957471	11	0.50	8959111
Acid Extractable Selenium (Se)	ug/g	<0.50	8959111	<0.50	<0.50	8957471	<0.50	0.50	8959111
Acid Extractable Silver (Ag)	ug/g	<0.20	8959111	<0.20	<0.20	8957471	<0.20	0.20	8959111
Acid Extractable Thallium (Tl)	ug/g	0.13	8959111	0.10	0.083	8957471	0.092	0.050	8959111
Acid Extractable Tin (Sn)	ug/g	<1.0	8959111	<1.0	<1.0	8957471	<1.0	1.0	8959111
Acid Extractable Uranium (U)	ug/g	3.1	8959111	2.7	2.8	8957471	3.6	0.050	8959111
Acid Extractable Vanadium (V)	ug/g	17	8959111	16	12	8957471	12	5.0	8959111
Acid Extractable Zinc (Zn)	ug/g	38	8959111	35	23	8957471	26	5.0	8959111
Acid Extractable Mercury (Hg)	ug/g	<0.050	8959111	<0.050	<0.050	8957471	<0.050	0.050	8959111

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas Job #: C3T8633
Report Date: 2023/10/05

WSP Canada Inc.
Client Project #: 22522889
Site Location: MEADOWBANK COMPLEX- SQRO
Sampler Initials: ML

CCME ICPMS METALS (SOIL)

Bureau Veritas ID		XCR572		XCR573	XCR574		XCR575		
Sampling Date		2023/09/24 08:55		2023/09/24 09:10	2023/09/24 09:25		2023/09/24 09:45		
COC Number		952334-05-01		952334-05-01	952334-05-01		952334-05-01		
	UNITS	VS-S23-04	QC Batch	VS-S23-05	VS-S23-06	QC Batch	VS-S23-07	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	8957471	<0.20	<0.20	8959111	<0.20	0.20	8957471
Acid Extractable Arsenic (As)	ug/g	1.2	8957471	11	14	8959111	52	1.0	8957471
Acid Extractable Barium (Ba)	ug/g	12	8957471	22	45	8959111	35	0.50	8957471
Acid Extractable Beryllium (Be)	ug/g	0.31	8957471	0.34	0.46	8959111	0.40	0.20	8957471
Acid Extractable Boron (B)	ug/g	<5.0	8957471	<5.0	<5.0	8959111	<5.0	5.0	8957471
Acid Extractable Cadmium (Cd)	ug/g	<0.10	8957471	0.11	<0.10	8959111	0.20	0.10	8957471
Acid Extractable Chromium (Cr)	ug/g	20	8957471	27	49	8959111	47	1.0	8957471
Acid Extractable Cobalt (Co)	ug/g	3.3	8957471	7.3	11	8959111	11	0.10	8957471
Acid Extractable Copper (Cu)	ug/g	6.8	8957471	14	20	8959111	20	0.50	8957471
Acid Extractable Lead (Pb)	ug/g	6.5	8957471	13	12	8959111	24	1.0	8957471
Acid Extractable Molybdenum (Mo)	ug/g	1.4	8957471	1.4	0.84	8959111	0.94	0.50	8957471
Acid Extractable Nickel (Ni)	ug/g	11	8957471	19	30	8959111	30	0.50	8957471
Acid Extractable Selenium (Se)	ug/g	<0.50	8957471	<0.50	<0.50	8959111	<0.50	0.50	8957471
Acid Extractable Silver (Ag)	ug/g	<0.20	8957471	<0.20	<0.20	8959111	<0.20	0.20	8957471
Acid Extractable Thallium (Tl)	ug/g	0.054	8957471	0.12	0.16	8959111	0.14	0.050	8957471
Acid Extractable Tin (Sn)	ug/g	<1.0	8957471	<1.0	<1.0	8959111	<1.0	1.0	8957471
Acid Extractable Uranium (U)	ug/g	1.7	8957471	3.3	3.1	8959111	2.6	0.050	8957471
Acid Extractable Vanadium (V)	ug/g	11	8957471	14	23	8959111	22	5.0	8957471
Acid Extractable Zinc (Zn)	ug/g	19	8957471	34	44	8959111	57	5.0	8957471
Acid Extractable Mercury (Hg)	ug/g	<0.050	8957471	<0.050	<0.050	8959111	<0.050	0.050	8957471

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

CCME ICPMS METALS (SOIL)

Bureau Veritas ID		XCR575		XCR576	XCR577		
Sampling Date		2023/09/24 09:45		2023/09/24 10:05	2023/09/24 10:30		
COC Number		952334-05-01		952334-05-01	952334-05-01		
	UNITS	VS-S23-07 Lab-Dup	QC Batch	VS-S23-08	VS-S23-09	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	<0.20	8957471	<0.20	<0.20	0.20	8959111
Acid Extractable Arsenic (As)	ug/g	51	8957471	16	5.6	1.0	8959111
Acid Extractable Barium (Ba)	ug/g	36	8957471	30	22	0.50	8959111
Acid Extractable Beryllium (Be)	ug/g	0.46	8957471	0.45	0.38	0.20	8959111
Acid Extractable Boron (B)	ug/g	<5.0	8957471	<5.0	<5.0	5.0	8959111
Acid Extractable Cadmium (Cd)	ug/g	0.16	8957471	<0.10	<0.10	0.10	8959111
Acid Extractable Chromium (Cr)	ug/g	47	8957471	40	25	1.0	8959111
Acid Extractable Cobalt (Co)	ug/g	11	8957471	12	5.4	0.10	8959111
Acid Extractable Copper (Cu)	ug/g	20	8957471	20	8.8	0.50	8959111
Acid Extractable Lead (Pb)	ug/g	23	8957471	15	9.6	1.0	8959111
Acid Extractable Molybdenum (Mo)	ug/g	0.87	8957471	0.91	0.69	0.50	8959111
Acid Extractable Nickel (Ni)	ug/g	29	8957471	27	15	0.50	8959111
Acid Extractable Selenium (Se)	ug/g	<0.50	8957471	<0.50	<0.50	0.50	8959111
Acid Extractable Silver (Ag)	ug/g	<0.20	8957471	<0.20	<0.20	0.20	8959111
Acid Extractable Thallium (Tl)	ug/g	0.15	8957471	0.16	0.12	0.050	8959111
Acid Extractable Tin (Sn)	ug/g	<1.0	8957471	<1.0	<1.0	1.0	8959111
Acid Extractable Uranium (U)	ug/g	2.7	8957471	4.2	3.9	0.050	8959111
Acid Extractable Vanadium (V)	ug/g	22	8957471	20	15	5.0	8959111
Acid Extractable Zinc (Zn)	ug/g	56	8957471	43	29	5.0	8959111
Acid Extractable Mercury (Hg)	ug/g	<0.050	8957471	<0.050	<0.050	0.050	8959111

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

Bureau Veritas Job #: C3T8633
Report Date: 2023/10/05

WSP Canada Inc.
Client Project #: 22522889
Site Location: MEADOWBANK COMPLEX- SQRO
Sampler Initials: ML

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		XCR568			XCR569	XCR570	XCR571	XCR572		
Sampling Date		2023/09/24 08:00			2023/09/24 08:00	2023/09/24 08:20	2023/09/24 08:40	2023/09/24 08:55		
COC Number		952334-05-01			952334-05-01	952334-05-01	952334-05-01	952334-05-01		
	UNITS	VS-S23-01	RDL	QC Batch	VS-S23-01B	VS-S23-02	VS-S23-03	VS-S23-04	RDL	QC Batch
Inorganics										
Moisture	%	11	1.0	8954965	10	11	15	23	1.0	8954965
Available (CaCl2) pH	pH	5.03		8956503	4.47	3.97	3.45	3.68		8956503
Miscellaneous Parameters										
Grain Size	%	COARSE	N/A	8953149						
Sieve - #200 (<0.075mm)	%	31	1	8953149						
Sieve - #200 (>0.075mm)	%	69	1	8953149						

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

Bureau Veritas ID		XCR573	XCR574	XCR575	XCR576	XCR577		
Sampling Date		2023/09/24 09:10	2023/09/24 09:25	2023/09/24 09:45	2023/09/24 10:05	2023/09/24 10:30		
COC Number		952334-05-01	952334-05-01	952334-05-01	952334-05-01	952334-05-01		
	UNITS	VS-S23-05	VS-S23-06	VS-S23-07	VS-S23-08	VS-S23-09	RDL	QC Batch
Inorganics								
Moisture	%	9.4	12	12	12	12	1.0	8954965
Available (CaCl2) pH	pH	4.75	5.70	4.78	6.10	4.84		8956503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

TEST SUMMARY

Bureau Veritas ID: XCR568 **Collected:** 2023/09/24
Sample ID: VS-S23-01 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8959111	2023/10/04	2023/10/04	Daniel Teclu
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956503	2023/10/03	2023/10/03	Gurparteek KAUR
Sieve, 75um	SIEV	8953149	N/A	2023/10/02	Muhammad Chhaidan

Bureau Veritas ID: XCR569 **Collected:** 2023/09/24
Sample ID: VS-S23-01B **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8957471	2023/10/03	2023/10/04	Prempal Bhatti
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956503	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR570 **Collected:** 2023/09/24
Sample ID: VS-S23-02 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8957471	2023/10/03	2023/10/04	Prempal Bhatti
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956503	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR571 **Collected:** 2023/09/24
Sample ID: VS-S23-03 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8959111	2023/10/04	2023/10/04	Daniel Teclu
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956503	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR572 **Collected:** 2023/09/24
Sample ID: VS-S23-04 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8957471	2023/10/03	2023/10/04	Prempal Bhatti
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956503	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

TEST SUMMARY

Bureau Veritas ID: XCR573 **Collected:** 2023/09/24
Sample ID: VS-S23-05 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8959111	2023/10/04	2023/10/04	Daniel Teclu
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956503	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR574 **Collected:** 2023/09/24
Sample ID: VS-S23-06 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8959111	2023/10/04	2023/10/04	Daniel Teclu
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956503	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR575 **Collected:** 2023/09/24
Sample ID: VS-S23-07 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8957471	2023/10/03	2023/10/04	Prempal Bhatti
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956503	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR575 Dup **Collected:** 2023/09/24
Sample ID: VS-S23-07 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8957471	2023/10/03	2023/10/04	Prempal Bhatti

Bureau Veritas ID: XCR576 **Collected:** 2023/09/24
Sample ID: VS-S23-08 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8959111	2023/10/04	2023/10/04	Daniel Teclu
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956503	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR577 **Collected:** 2023/09/24
Sample ID: VS-S23-09 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8959111	2023/10/04	2023/10/04	Daniel Teclu
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956503	2023/10/03	2023/10/03	Gurparteek KAUR

GENERAL COMMENTS

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

Package 1	16.7°C

Results relate only to the items tested.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8953149	MYG	QC Standard	Sieve - #200 (<0.075mm)	2023/10/02		56	%	53 - 58
			Sieve - #200 (>0.075mm)	2023/10/02		44	%	42 - 47
8953149	MYG	RPD	Sieve - #200 (<0.075mm)	2023/10/02	0.29		%	20
			Sieve - #200 (>0.075mm)	2023/10/02	0.32		%	20
8954965	MUC	RPD	Moisture	2023/10/02	1.2		%	20
8956503	GTK	Spiked Blank	Available (CaCl2) pH	2023/10/03		100	%	97 - 103
8956503	GTK	RPD	Available (CaCl2) pH	2023/10/03	2.2		%	N/A
8957471	PBA	Matrix Spike [XCR575-01]	Acid Extractable Antimony (Sb)	2023/10/04		88	%	75 - 125
			Acid Extractable Arsenic (As)	2023/10/04		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2023/10/04		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/10/04		104	%	75 - 125
			Acid Extractable Boron (B)	2023/10/04		102	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/10/04		91	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/10/04		NC	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/10/04		95	%	75 - 125
			Acid Extractable Copper (Cu)	2023/10/04		94	%	75 - 125
			Acid Extractable Lead (Pb)	2023/10/04		93	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/10/04		93	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/10/04		NC	%	75 - 125
			Acid Extractable Selenium (Se)	2023/10/04		96	%	75 - 125
			Acid Extractable Silver (Ag)	2023/10/04		94	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/10/04		97	%	75 - 125
			Acid Extractable Tin (Sn)	2023/10/04		93	%	75 - 125
			Acid Extractable Uranium (U)	2023/10/04		96	%	75 - 125
			Acid Extractable Vanadium (V)	2023/10/04		97	%	75 - 125
			Acid Extractable Zinc (Zn)	2023/10/04		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2023/10/04		97	%	75 - 125
8957471	PBA	Spiked Blank	Acid Extractable Antimony (Sb)	2023/10/04		102	%	80 - 120
			Acid Extractable Arsenic (As)	2023/10/04		102	%	80 - 120
			Acid Extractable Barium (Ba)	2023/10/04		102	%	80 - 120
			Acid Extractable Beryllium (Be)	2023/10/04		103	%	80 - 120
			Acid Extractable Boron (B)	2023/10/04		106	%	80 - 120
			Acid Extractable Cadmium (Cd)	2023/10/04		98	%	80 - 120
			Acid Extractable Chromium (Cr)	2023/10/04		101	%	80 - 120
			Acid Extractable Cobalt (Co)	2023/10/04		101	%	80 - 120
			Acid Extractable Copper (Cu)	2023/10/04		102	%	80 - 120
			Acid Extractable Lead (Pb)	2023/10/04		102	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2023/10/04		101	%	80 - 120
			Acid Extractable Nickel (Ni)	2023/10/04		103	%	80 - 120
			Acid Extractable Selenium (Se)	2023/10/04		103	%	80 - 120
			Acid Extractable Silver (Ag)	2023/10/04		101	%	80 - 120
			Acid Extractable Thallium (Tl)	2023/10/04		106	%	80 - 120
			Acid Extractable Tin (Sn)	2023/10/04		99	%	80 - 120
			Acid Extractable Uranium (U)	2023/10/04		102	%	80 - 120
			Acid Extractable Vanadium (V)	2023/10/04		102	%	80 - 120
			Acid Extractable Zinc (Zn)	2023/10/04		101	%	80 - 120
			Acid Extractable Mercury (Hg)	2023/10/04		104	%	80 - 120
8957471	PBA	Method Blank	Acid Extractable Antimony (Sb)	2023/10/04	<0.20		ug/g	
			Acid Extractable Arsenic (As)	2023/10/04	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2023/10/04	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2023/10/04	<0.20		ug/g	
			Acid Extractable Boron (B)	2023/10/04	<5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2023/10/04	<0.10		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Chromium (Cr)	2023/10/04	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2023/10/04	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2023/10/04	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2023/10/04	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2023/10/04	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2023/10/04	<0.50		ug/g	
			Acid Extractable Selenium (Se)	2023/10/04	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2023/10/04	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2023/10/04	<0.050		ug/g	
			Acid Extractable Tin (Sn)	2023/10/04	<1.0		ug/g	
			Acid Extractable Uranium (U)	2023/10/04	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2023/10/04	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2023/10/04	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2023/10/04	<0.050		ug/g	
8957471	PBA	RPD [XCR575-01]	Acid Extractable Antimony (Sb)	2023/10/04	NC		%	30
			Acid Extractable Arsenic (As)	2023/10/04	2.1		%	30
			Acid Extractable Barium (Ba)	2023/10/04	0.31		%	30
			Acid Extractable Beryllium (Be)	2023/10/04	14		%	30
			Acid Extractable Boron (B)	2023/10/04	NC		%	30
			Acid Extractable Cadmium (Cd)	2023/10/04	20		%	30
			Acid Extractable Chromium (Cr)	2023/10/04	0.041		%	30
			Acid Extractable Cobalt (Co)	2023/10/04	0.38		%	30
			Acid Extractable Copper (Cu)	2023/10/04	0.50		%	30
			Acid Extractable Lead (Pb)	2023/10/04	2.8		%	30
			Acid Extractable Molybdenum (Mo)	2023/10/04	8.2		%	30
			Acid Extractable Nickel (Ni)	2023/10/04	1.8		%	30
			Acid Extractable Selenium (Se)	2023/10/04	NC		%	30
			Acid Extractable Silver (Ag)	2023/10/04	NC		%	30
			Acid Extractable Thallium (Tl)	2023/10/04	1.2		%	30
			Acid Extractable Tin (Sn)	2023/10/04	NC		%	30
			Acid Extractable Uranium (U)	2023/10/04	2.8		%	30
			Acid Extractable Vanadium (V)	2023/10/04	1.5		%	30
			Acid Extractable Zinc (Zn)	2023/10/04	1.8		%	30
			Acid Extractable Mercury (Hg)	2023/10/04	NC		%	30
8959111	DT1	Matrix Spike	Acid Extractable Antimony (Sb)	2023/10/04		100	%	75 - 125
			Acid Extractable Arsenic (As)	2023/10/04		101	%	75 - 125
			Acid Extractable Barium (Ba)	2023/10/04		96	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/10/04		98	%	75 - 125
			Acid Extractable Boron (B)	2023/10/04		92	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/10/04		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/10/04		98	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/10/04		99	%	75 - 125
			Acid Extractable Copper (Cu)	2023/10/04		94	%	75 - 125
			Acid Extractable Lead (Pb)	2023/10/04		95	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/10/04		98	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/10/04		100	%	75 - 125
			Acid Extractable Selenium (Se)	2023/10/04		101	%	75 - 125
			Acid Extractable Silver (Ag)	2023/10/04		100	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/10/04		97	%	75 - 125
			Acid Extractable Tin (Sn)	2023/10/04		97	%	75 - 125
			Acid Extractable Uranium (U)	2023/10/04		99	%	75 - 125
			Acid Extractable Vanadium (V)	2023/10/04		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2023/10/04		92	%	75 - 125

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Mercury (Hg)	2023/10/04		97	%	75 - 125
8959111	DT1	Spiked Blank	Acid Extractable Antimony (Sb)	2023/10/04		101	%	80 - 120
			Acid Extractable Arsenic (As)	2023/10/04		102	%	80 - 120
			Acid Extractable Barium (Ba)	2023/10/04		102	%	80 - 120
			Acid Extractable Beryllium (Be)	2023/10/04		100	%	80 - 120
			Acid Extractable Boron (B)	2023/10/04		100	%	80 - 120
			Acid Extractable Cadmium (Cd)	2023/10/04		99	%	80 - 120
			Acid Extractable Chromium (Cr)	2023/10/04		100	%	80 - 120
			Acid Extractable Cobalt (Co)	2023/10/04		102	%	80 - 120
			Acid Extractable Copper (Cu)	2023/10/04		100	%	80 - 120
			Acid Extractable Lead (Pb)	2023/10/04		99	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2023/10/04		98	%	80 - 120
			Acid Extractable Nickel (Ni)	2023/10/04		102	%	80 - 120
			Acid Extractable Selenium (Se)	2023/10/04		102	%	80 - 120
			Acid Extractable Silver (Ag)	2023/10/04		101	%	80 - 120
			Acid Extractable Thallium (Tl)	2023/10/04		101	%	80 - 120
			Acid Extractable Tin (Sn)	2023/10/04		92	%	80 - 120
			Acid Extractable Uranium (U)	2023/10/04		101	%	80 - 120
			Acid Extractable Vanadium (V)	2023/10/04		101	%	80 - 120
			Acid Extractable Zinc (Zn)	2023/10/04		102	%	80 - 120
			Acid Extractable Mercury (Hg)	2023/10/04		102	%	80 - 120
8959111	DT1	Method Blank	Acid Extractable Antimony (Sb)	2023/10/04	<0.20		ug/g	
			Acid Extractable Arsenic (As)	2023/10/04	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2023/10/04	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2023/10/04	<0.20		ug/g	
			Acid Extractable Boron (B)	2023/10/04	<5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2023/10/04	<0.10		ug/g	
			Acid Extractable Chromium (Cr)	2023/10/04	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2023/10/04	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2023/10/04	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2023/10/04	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2023/10/04	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2023/10/04	<0.50		ug/g	
			Acid Extractable Selenium (Se)	2023/10/04	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2023/10/04	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2023/10/04	<0.050		ug/g	
			Acid Extractable Tin (Sn)	2023/10/04	<1.0		ug/g	
			Acid Extractable Uranium (U)	2023/10/04	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2023/10/04	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2023/10/04	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2023/10/04	<0.050		ug/g	
8959111	DT1	RPD	Acid Extractable Antimony (Sb)	2023/10/04	NC		%	30
			Acid Extractable Arsenic (As)	2023/10/04	2.1		%	30
			Acid Extractable Barium (Ba)	2023/10/04	3.2		%	30
			Acid Extractable Beryllium (Be)	2023/10/04	NC		%	30
			Acid Extractable Boron (B)	2023/10/04	NC		%	30
			Acid Extractable Cadmium (Cd)	2023/10/04	NC		%	30
			Acid Extractable Chromium (Cr)	2023/10/04	6.3		%	30
			Acid Extractable Cobalt (Co)	2023/10/04	4.2		%	30
			Acid Extractable Copper (Cu)	2023/10/04	4.1		%	30
			Acid Extractable Lead (Pb)	2023/10/04	0.66		%	30
			Acid Extractable Molybdenum (Mo)	2023/10/04	NC		%	30
			Acid Extractable Nickel (Ni)	2023/10/04	3.4		%	30

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Selenium (Se)	2023/10/04	NC		%	30
			Acid Extractable Silver (Ag)	2023/10/04	NC		%	30
			Acid Extractable Thallium (Tl)	2023/10/04	NC		%	30
			Acid Extractable Uranium (U)	2023/10/04	3.5		%	30
			Acid Extractable Vanadium (V)	2023/10/04	12		%	30
			Acid Extractable Zinc (Zn)	2023/10/04	9.5		%	30

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).

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvna.com

27-Sep-23 11:38
Ankita Bhalla
C3T8633
A1V ENV-1161

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#2045 ~~#38921~~ WSP Canada Inc.	Company Name:		Quotation #:	~~033867~~ C31027
Attention:	~~Accounts Payable~~ Sharon Guin, Project Manag	Attention:	Sharon Guin	P.O. #:	~~QL-1034166~~ 22522389
Address:	~~237 4th Avenue SW, Suite 3000~~ 100 Scotia Court	Address:		Project:	
	~~Calgary AB T2P 4K3~~ Whitby, Ontario L1N 8Y6			Project Name:	Meadowbank Complex-SQRO
Tel:	(403) 299-5600 Fax:	Tel:	Fax:	Site #:	
Email:	~~capayablesinvoice@wsp.com~~ sharon.guin@wsp.com	Email:	sharon.guin@wsp.com	Sampled By:	Melissa Lord

Bottle Order #: 952334
COC #: C#952334-05-01
Project Manager: Ankita Bhalla

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)			Other Regulations		Special Instructions
☐ Table 1	☐ Res/Park	☐ Medium/Fine	☒ CCME	☐ Sanitary Sewer Bylaw	Facility Code
☐ Table 2	☐ Ind/Comm	☐ Coarse	☐ Reg 558	☐ Storm Sewer Bylaw	42214017
☐ Table 3	☐ Agri/Other	☐ For RSC	☐ MISA	Municipality	
☐ Table			☐ PWQO	☐ Reg 406 Table	
			☐ Other		

Include Criteria on Certificate of Analysis (Y/N)?

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Metals	pH	Moisture	Grain Size	Particle Size	# of Bottles	Comments
1		VS-S23-01	2023/09/24	0800	Soil		X	X	X	X	X	2	Email report to:
2		VS-S23-01B	↓	0800	↓		X	X	X			1	gldiol-equis@wsp.com
3		VS-S23-02		0820			X	X	X			1	joyce.monteirodesantana@wsp.com
4		VS-S23-03		0840			X	X	X			1	Kemi.serben@wsp.com
5		VS-S23-04		0855			X	X	X			1	
6		VS-S23-05		0910			X	X	X			1	
7		VS-S23-06		0925			X	X	X			1	
8		VS-S23-07		0945			X	X	X			1	
9		VS-S23-08		1005			X	X	X			1	
10		VS-S23-09	↓	1030	↓		X	X	X			1	

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: ☐
Rush Confirmation Number: (call lab for #)

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Melissa Lord	23/09/25	0800	SA Sverisz SAWAH	2023/09/27	11:38	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	17/17/16	Present	✓	
		Intact	✓	

* 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/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-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.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

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

White: Bureau Veritas Yellow: Client

on ice

Bureau Veritas Canada (2019) Inc.

WSP CANADA INC. DATA QUALITY REVIEW CHECKLIST

Site Location: Vault Site

Sampling Date: September 24, 2023

WSP Project Number: 22522889

Laboratory: Bureau Veritas Ottawa

Lab Submission Number: C3T8633

Was the Cooler Received at the lab under a sealed and intact custody seal?	Yes
Was proper chain of custody of the samples documented and kept?	Yes
Were sample temperatures acceptable when they reached lab?:	No
Were all samples analyzed and extracted within hold times?:	Yes
Has lab warranted all tests were in statistical control in CoA?:	Yes
Was sufficient sample provided for the requested analysis?	Yes
Has lab warranted all samples were analyzed with limited headspace present?:	Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery			X	All laboratory QC results are within
Method Blank Concentration	X			acceptance criteria.
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	All field QC samples are within
Trip Blank Concentration			X	alert limits.
Field Duplicate RPD	X			

Is data considered reliable (Yes/No/Suspect)?: Yes

If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Melanie Dubois

Data Reviewed by (Signature): Melanie Dubois

Date: October 30, 2023

Your Project #: 22522889
Site Location: MEADOWBANK COMPLEX SQRO
Your C.O.C. #: 952334-12-01

Attention: Sharon Guin

WSP Canada Inc.
100 Scotia Crt
Whitby, ON
CANADA L1N 8Y6

Report Date: 2023/10/05
Report #: R7847422
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3T8600
Received: 2023/09/27, 11:40

Sample Matrix: Soil
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Acid Extractable Metals by ICPMS (1)	10	2023/10/04	2023/10/04	CAM SOP-00447	EPA 6020B m
Moisture (1)	10	N/A	2023/10/02	CAM SOP-00445	Carter 2nd ed 51.2 m
pH CaCl2 EXTRACT (1)	10	2023/10/03	2023/10/03	CAM SOP-00413	EPA 9045 D m
Sieve, 75um (1)	2	N/A	2023/10/02	CAM SOP-00467	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, MELCCFP, EPA, APHA.

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

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

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

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

Your Project #: 22522889
Site Location: MEADOWBANK COMPLEX SQRO
Your C.O.C. #: 952334-12-01

Attention: Sharon Guin

WSP Canada Inc.
100 Scotia Crt
Whitby, ON
CANADA L1N 8Y6

Report Date: 2023/10/05
Report #: R7847422
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3T8600
Received: 2023/09/27, 11:40

Encryption Key

Bureau Veritas
05 Oct 2023 17:29:52

Please direct all questions regarding this Certificate of Analysis to:
Ankita Bhalla, Project Manager
Email: Ankita.Bhalla@bureauveritas.com
Phone# (613) 274-0573

==========

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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

CCME ICPMS METALS (SOIL)

Bureau Veritas ID		XCR380	XCR381	XCR381	XCR382	XCR383		
Sampling Date		2023/09/22 13:50	2023/09/22 14:10	2023/09/22 14:10	2023/09/22 14:30	2023/09/22 14:45		
COC Number		952334-12-01	952334-12-01	952334-12-01	952334-12-01	952334-12-01		
	UNITS	WT-S23-01	WT-S23-01B	WT-S23-01B Lab-Dup	WT-S23-02	WT-S23-03	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8958979
Acid Extractable Arsenic (As)	ug/g	19	19	17	4.6	3.3	1.0	8958979
Acid Extractable Barium (Ba)	ug/g	43	41	37	16	19	0.50	8958979
Acid Extractable Beryllium (Be)	ug/g	0.26	0.29	0.28	<0.20	0.24	0.20	8958979
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8958979
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8958979
Acid Extractable Chromium (Cr)	ug/g	61	59	56	37	37	1.0	8958979
Acid Extractable Cobalt (Co)	ug/g	6.2	5.9	5.9	5.5	5.2	0.10	8958979
Acid Extractable Copper (Cu)	ug/g	8.3	7.5	6.9	6.2	4.7	0.50	8958979
Acid Extractable Lead (Pb)	ug/g	5.8	6.2	5.9	6.3	4.9	1.0	8958979
Acid Extractable Molybdenum (Mo)	ug/g	0.63	0.70	0.75	<0.50	<0.50	0.50	8958979
Acid Extractable Nickel (Ni)	ug/g	25	24	23	23	21	0.50	8958979
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8958979
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8958979
Acid Extractable Thallium (Tl)	ug/g	0.14	0.13	0.12	<0.050	0.051	0.050	8958979
Acid Extractable Tin (Sn)	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8958979
Acid Extractable Uranium (U)	ug/g	1.2	1.4	1.3	0.94	1.4	0.050	8958979
Acid Extractable Vanadium (V)	ug/g	21	21	21	14	13	5.0	8958979
Acid Extractable Zinc (Zn)	ug/g	33	33	32	21	24	5.0	8958979
Acid Extractable Mercury (Hg)	ug/g	0.062	0.077	0.080	<0.050	<0.050	0.050	8958979

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

Bureau Veritas Job #: C3T8600
Report Date: 2023/10/05

WSP Canada Inc.
Client Project #: 22522889
Site Location: MEADOWBANK COMPLEX SQRO
Sampler Initials: ML

CCME ICPMS METALS (SOIL)

Bureau Veritas ID		XCR385	XCR386	XCR387	XCR388	XCR389		
Sampling Date		2023/09/22 14:55	2023/09/22 15:05	2023/09/22 15:10	2023/09/22 15:15	2023/09/22 15:30		
COC Number		952334-12-01	952334-12-01	952334-12-01	952334-12-01	952334-12-01		
	UNITS	**WT-S23-04**	**WT-S23-05**	**WT-S23-06**	**WT-S23-07**	**WT-S23-08**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8958979
Acid Extractable Arsenic (As)	ug/g	5.3	21	3.1	120	27	1.0	8958979
Acid Extractable Barium (Ba)	ug/g	22	17	19	58	41	0.50	8958979
Acid Extractable Beryllium (Be)	ug/g	0.25	0.29	0.26	0.36	0.37	0.20	8958979
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8958979
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8958979
Acid Extractable Chromium (Cr)	ug/g	31	84	21	360	94	1.0	8958979
Acid Extractable Cobalt (Co)	ug/g	4.9	7.7	4.9	23	9.5	0.10	8958979
Acid Extractable Copper (Cu)	ug/g	7.3	8.4	3.3	39	11	0.50	8958979
Acid Extractable Lead (Pb)	ug/g	5.3	5.3	3.9	13	7.8	1.0	8958979
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	<0.50	0.65	<0.50	0.50	8958979
Acid Extractable Nickel (Ni)	ug/g	19	40	15	140	40	0.50	8958979
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8958979
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8958979
Acid Extractable Thallium (Tl)	ug/g	0.064	0.062	<0.050	0.28	0.12	0.050	8958979
Acid Extractable Tin (Sn)	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8958979
Acid Extractable Uranium (U)	ug/g	1.5	1.1	1.0	1.2	1.5	0.050	8958979
Acid Extractable Vanadium (V)	ug/g	13	18	12	49	22	5.0	8958979
Acid Extractable Zinc (Zn)	ug/g	24	24	20	53	30	5.0	8958979
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8958979

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

CCME ICPMS METALS (SOIL)

Bureau Veritas ID		XCR390		
Sampling Date		2023/09/22 16:00		
COC Number		952334-12-01		
	UNITS	WT-S23-09	RDL	QC Batch
Metals				
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	8958979
Acid Extractable Arsenic (As)	ug/g	5.3	1.0	8958979
Acid Extractable Barium (Ba)	ug/g	51	0.50	8958979
Acid Extractable Beryllium (Be)	ug/g	0.49	0.20	8958979
Acid Extractable Boron (B)	ug/g	<5.0	5.0	8958979
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	8958979
Acid Extractable Chromium (Cr)	ug/g	46	1.0	8958979
Acid Extractable Cobalt (Co)	ug/g	7.4	0.10	8958979
Acid Extractable Copper (Cu)	ug/g	7.1	0.50	8958979
Acid Extractable Lead (Pb)	ug/g	6.8	1.0	8958979
Acid Extractable Molybdenum (Mo)	ug/g	0.54	0.50	8958979
Acid Extractable Nickel (Ni)	ug/g	24	0.50	8958979
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	8958979
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	8958979
Acid Extractable Thallium (Tl)	ug/g	0.097	0.050	8958979
Acid Extractable Tin (Sn)	ug/g	<1.0	1.0	8958979
Acid Extractable Uranium (U)	ug/g	2.4	0.050	8958979
Acid Extractable Vanadium (V)	ug/g	19	5.0	8958979
Acid Extractable Zinc (Zn)	ug/g	36	5.0	8958979
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	8958979

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas Job #: C3T8600
Report Date: 2023/10/05

WSP Canada Inc.
Client Project #: 22522889
Site Location: MEADOWBANK COMPLEX SQRO
Sampler Initials: ML

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		XCR380			XCR381		XCR382		
Sampling Date		2023/09/22 13:50			2023/09/22 14:10		2023/09/22 14:30		
COC Number		952334-12-01			952334-12-01		952334-12-01		
	UNITS	WT-S23-01	RDL	QC Batch	WT-S23-01B	QC Batch	WT-S23-02	RDL	QC Batch
Inorganics									
Moisture	%	18	1.0	8954965	17	8954965	14	1.0	8954983
Available (CaCl2) pH	pH	4.70		8956491	4.34	8956491	3.98		8956491
Miscellaneous Parameters									
Grain Size	%	FINE	N/A	8953149					
Sieve - #200 (<0.075mm)	%	55	1	8953149					
Sieve - #200 (>0.075mm)	%	45	1	8953149					

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

Bureau Veritas ID		XCR383			XCR385	XCR386	XCR387	XCR388		
Sampling Date		2023/09/22 14:45			2023/09/22 14:55	2023/09/22 15:05	2023/09/22 15:10	2023/09/22 15:15		
COC Number		952334-12-01			952334-12-01	952334-12-01	952334-12-01	952334-12-01		
	UNITS	WT-S23-03	RDL	QC Batch	WT-S23-04	WT-S23-05	WT-S23-06	WT-S23-07	RDL	QC Batch
Inorganics										
Moisture	%	9.7	1.0	8954965	24	12	8.6	18	1.0	8954983
Available (CaCl2) pH	pH	5.10		8956491	4.07	4.31	4.71	4.54		8956491
Miscellaneous Parameters										
Grain Size	%	FINE	N/A	8953149						
Sieve - #200 (<0.075mm)	%	52	1	8953149						
Sieve - #200 (>0.075mm)	%	48	1	8953149						

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

Bureau Veritas ID		XCR389		XCR390		
Sampling Date		2023/09/22 15:30		2023/09/22 16:00		
COC Number		952334-12-01		952334-12-01		
	UNITS	WT-S23-08	QC Batch	WT-S23-09	RDL	QC Batch
Inorganics						
Moisture	%	10	8954965	18	1.0	8954983
Available (CaCl2) pH	pH	4.48	8956491	5.00		8956491

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

TEST SUMMARY

Bureau Veritas ID: XCR380 **Collected:** 2023/09/22
Sample ID: WT-S23-01 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956491	2023/10/03	2023/10/03	Gurparteek KAUR
Sieve, 75um	SIEV	8953149	N/A	2023/10/02	Muhammad Chhaidan

Bureau Veritas ID: XCR381 **Collected:** 2023/09/22
Sample ID: WT-S23-01B **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956491	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR381 Dup **Collected:** 2023/09/22
Sample ID: WT-S23-01B **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti

Bureau Veritas ID: XCR382 **Collected:** 2023/09/22
Sample ID: WT-S23-02 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954983	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956491	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR383 **Collected:** 2023/09/22
Sample ID: WT-S23-03 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956491	2023/10/03	2023/10/03	Gurparteek KAUR
Sieve, 75um	SIEV	8953149	N/A	2023/10/02	Muhammad Chhaidan

Bureau Veritas ID: XCR385 **Collected:** 2023/09/22
Sample ID: WT-S23-04 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti

TEST SUMMARY

Bureau Veritas ID: XCR385 **Collected:** 2023/09/22
Sample ID: WT-S23-04 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8954983	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956491	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR386 **Collected:** 2023/09/22
Sample ID: WT-S23-05 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954983	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956491	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR387 **Collected:** 2023/09/22
Sample ID: WT-S23-06 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954983	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956491	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR388 **Collected:** 2023/09/22
Sample ID: WT-S23-07 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954983	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956491	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR389 **Collected:** 2023/09/22
Sample ID: WT-S23-08 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954965	N/A	2023/10/02	Ibadat Preet
pH CaCl2 EXTRACT	AT	8956491	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas ID: XCR390 **Collected:** 2023/09/22
Sample ID: WT-S23-09 **Shipped:**
Matrix: Soil **Received:** 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8958979	2023/10/04	2023/10/04	Prempal Bhatti
Moisture	BAL	8954983	N/A	2023/10/02	Ibadat Preet

Bureau Veritas Job #: C3T8600
Report Date: 2023/10/05

WSP Canada Inc.
Client Project #: 22522889
Site Location: MEADOWBANK COMPLEX SQRO
Sampler Initials: ML

TEST SUMMARY

Bureau Veritas ID: XCR390
Sample ID: WT-S23-09
Matrix: Soil

Collected: 2023/09/22
Shipped:
Received: 2023/09/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	8956491	2023/10/03	2023/10/03	Gurparteek KAUR

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

GENERAL COMMENTS

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

Package 1	17.0°C

Results relate only to the items tested.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8953149	MYG	QC Standard	Sieve - #200 (<0.075mm)	2023/10/02		56	%	53 - 58
			Sieve - #200 (>0.075mm)	2023/10/02		44	%	42 - 47
8953149	MYG	RPD	Sieve - #200 (<0.075mm)	2023/10/02	0.29		%	20
			Sieve - #200 (>0.075mm)	2023/10/02	0.32		%	20
8954965	MUC	RPD	Moisture	2023/10/02	1.2		%	20
8954983	MUC	RPD	Moisture	2023/10/02	1.2		%	20
8956491	GTK	Spiked Blank	Available (CaCl2) pH	2023/10/03		100	%	97 - 103
8956491	GTK	RPD	Available (CaCl2) pH	2023/10/03	0.15		%	N/A
8958979	PBA	Matrix Spike [XCR381-01]	Acid Extractable Antimony (Sb)	2023/10/04		94	%	75 - 125
			Acid Extractable Arsenic (As)	2023/10/04		95	%	75 - 125
			Acid Extractable Barium (Ba)	2023/10/04		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/10/04		103	%	75 - 125
			Acid Extractable Boron (B)	2023/10/04		98	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/10/04		95	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/10/04		NC	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/10/04		97	%	75 - 125
			Acid Extractable Copper (Cu)	2023/10/04		96	%	75 - 125
			Acid Extractable Lead (Pb)	2023/10/04		95	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/10/04		95	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/10/04		95	%	75 - 125
			Acid Extractable Selenium (Se)	2023/10/04		100	%	75 - 125
			Acid Extractable Silver (Ag)	2023/10/04		95	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/10/04		99	%	75 - 125
			Acid Extractable Tin (Sn)	2023/10/04		95	%	75 - 125
			Acid Extractable Uranium (U)	2023/10/04		97	%	75 - 125
			Acid Extractable Vanadium (V)	2023/10/04		93	%	75 - 125
			Acid Extractable Zinc (Zn)	2023/10/04		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2023/10/04		98	%	75 - 125
8958979	PBA	Spiked Blank	Acid Extractable Antimony (Sb)	2023/10/04		101	%	80 - 120
			Acid Extractable Arsenic (As)	2023/10/04		99	%	80 - 120
			Acid Extractable Barium (Ba)	2023/10/04		98	%	80 - 120
			Acid Extractable Beryllium (Be)	2023/10/04		102	%	80 - 120
			Acid Extractable Boron (B)	2023/10/04		106	%	80 - 120
			Acid Extractable Cadmium (Cd)	2023/10/04		96	%	80 - 120
			Acid Extractable Chromium (Cr)	2023/10/04		98	%	80 - 120
			Acid Extractable Cobalt (Co)	2023/10/04		99	%	80 - 120
			Acid Extractable Copper (Cu)	2023/10/04		99	%	80 - 120
			Acid Extractable Lead (Pb)	2023/10/04		98	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2023/10/04		99	%	80 - 120
			Acid Extractable Nickel (Ni)	2023/10/04		100	%	80 - 120
			Acid Extractable Selenium (Se)	2023/10/04		98	%	80 - 120
			Acid Extractable Silver (Ag)	2023/10/04		98	%	80 - 120
			Acid Extractable Thallium (Tl)	2023/10/04		101	%	80 - 120
			Acid Extractable Tin (Sn)	2023/10/04		95	%	80 - 120
			Acid Extractable Uranium (U)	2023/10/04		99	%	80 - 120
			Acid Extractable Vanadium (V)	2023/10/04		99	%	80 - 120
			Acid Extractable Zinc (Zn)	2023/10/04		100	%	80 - 120
			Acid Extractable Mercury (Hg)	2023/10/04		98	%	80 - 120
8958979	PBA	Method Blank	Acid Extractable Antimony (Sb)	2023/10/04	<0.20		ug/g	
			Acid Extractable Arsenic (As)	2023/10/04	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2023/10/04	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2023/10/04	<0.20		ug/g	
			Acid Extractable Boron (B)	2023/10/04	<5.0		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Cadmium (Cd)	2023/10/04	<0.10		ug/g	
			Acid Extractable Chromium (Cr)	2023/10/04	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2023/10/04	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2023/10/04	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2023/10/04	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2023/10/04	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2023/10/04	<0.50		ug/g	
			Acid Extractable Selenium (Se)	2023/10/04	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2023/10/04	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2023/10/04	<0.050		ug/g	
			Acid Extractable Tin (Sn)	2023/10/04	<1.0		ug/g	
			Acid Extractable Uranium (U)	2023/10/04	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2023/10/04	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2023/10/04	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2023/10/04	<0.050		ug/g	
8958979	PBA	RPD [XCR381-01]	Acid Extractable Antimony (Sb)	2023/10/04	NC		%	30
			Acid Extractable Arsenic (As)	2023/10/04	7.9		%	30
			Acid Extractable Barium (Ba)	2023/10/04	9.6		%	30
			Acid Extractable Beryllium (Be)	2023/10/04	4.5		%	30
			Acid Extractable Boron (B)	2023/10/04	NC		%	30
			Acid Extractable Cadmium (Cd)	2023/10/04	NC		%	30
			Acid Extractable Chromium (Cr)	2023/10/04	5.0		%	30
			Acid Extractable Cobalt (Co)	2023/10/04	1.3		%	30
			Acid Extractable Copper (Cu)	2023/10/04	7.5		%	30
			Acid Extractable Lead (Pb)	2023/10/04	4.6		%	30
			Acid Extractable Molybdenum (Mo)	2023/10/04	6.7		%	30
			Acid Extractable Nickel (Ni)	2023/10/04	2.6		%	30
			Acid Extractable Selenium (Se)	2023/10/04	NC		%	30
			Acid Extractable Silver (Ag)	2023/10/04	NC		%	30
			Acid Extractable Thallium (Tl)	2023/10/04	3.1		%	30
			Acid Extractable Tin (Sn)	2023/10/04	NC		%	30
			Acid Extractable Uranium (U)	2023/10/04	6.2		%	30
			Acid Extractable Vanadium (V)	2023/10/04	1.9		%	30
			Acid Extractable Zinc (Zn)	2023/10/04	3.5		%	30
			Acid Extractable Mercury (Hg)	2023/10/04	4.4		%	30

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).

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

27-Sep-23 11:40
Ankita Bhalla
C3T8600
A1V ENV-1752

Page 1 of 1

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvna.com

INVOICE TO: #3045	REPORT TO:	PROJECT INFORMATION:	Bottle Order #:
Company Name: ~~#38321~~ WSP Canada Inc.	Company Name:	Quotation #: ~~C38367~~ C31027	952334
Attention: ~~Accounts Payable~~ Sharon Guin, Project Manager	Attention: Sharon Guin	P.O. #: ~~OL-1374166~~ 22522889	COC #: C#952334-12-01
Address: ~~207 9th Avenue SW, Suite 0300~~ 100 Scotia Court	Address:	Project:	Project Manager: Ankita Bhalla
~~Calgary AB T2P 4K3~~ Whitby, Ontario, L1N 8Y6		Project Name: Meadowbank Complex SQ20	
Tel: (403) 299-5600 Fax:	Tel: Fax:	Site #:	
Email: ~~capayablesinvoice@wsp.com~~ sharon.guin@wsp.com	Email: sharon.guin@wsp.com	Sampled By: Melissa Lord	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table ___ ☐ Res/Park ☐ Ind/Comm ☐ Agri/Other ☐ Medium/Fine ☐ Coarse ☐ For RSC

Other Regulations: ☒ CCME ☐ Reg 558 ☐ MISA ☐ PWQO ☐ Other ☐ Sanitary Sewer Bylaw ☐ Storm Sewer Bylaw Municipality ___ ☐ Reg 406 Table ___

Special Instructions: Facility Code 43008761

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals	pH	Moisture	Grain Size	Particle Size	# of Bottles	Comments
1		WT-S23-01	2023/09/22	1350	Soil	X	X	X	X	X	2	Email report to
2		WT-S23-01B		1410		X	X	X			1	gld.iol-equis@wsp.com
3		WT-S23-02		1430		X	X	X			1	joyce.monteirodesantana@wsp.com
4		WT-S23-03		1445		X	X	X	X	X	2	sharon.guin@wsp.com
5		WT-S23-04		1455		X	X	X			1	kem.serbeen@wsp.com
6		WT-S23-05		1505		X	X	X			1	
7		WT-S23-06		1510		X	X	X			1	
8		WT-S23-07		1515		X	X	X			1	
9		WT-S23-08		1530		X	X	X			1	
10		WT-S23-09		1600		X	X	X			1	

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: ___ ☐
Rush Confirmation Number: ___ (call lab for #)

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
[signature] / Melissa Lord	23/09/25	0800	[signature] Sugmy Savan	2023/09/27	11:40			17/17/17	Present	✓	
									Intact	✓	

Laboratory Use Only

* 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/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-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.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

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

White: Bureau Veritas Yellow: Client

on ice

WSP CANADA INC. DATA QUALITY REVIEW CHECKLIST

Site Location: Whale Tale

Sampling Date: September 22, 2023

WSP Project Number: 22522889

Laboratory: Bureau Veritas Ottawa

Lab Submission Number: C3T8600

Was the Cooler Received at the lab under a sealed and intact custody seal?	Yes
Was proper chain of custody of the samples documented and kept?	Yes
Were sample temperatures acceptable when they reached lab?:	No
Were all samples analyzed and extracted within hold times?:	Yes
Has lab warranted all tests were in statistical control in CoA?:	Yes
Was sufficient sample provided for the requested analysis?	Yes
Has lab warranted all samples were analyzed with limited headspace present?:	Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery			X	All laboratory QC results are within
Method Blank Concentration	X			acceptance criteria.
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	All field QC samples are within
Trip Blank Concentration			X	alert limits.
Field Duplicate RPD	X			

Is data considered reliable (Yes/No/Suspect)?: Yes

If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Melanie Dubois

Data Reviewed by (Signature): Melanie Dubois

Date: October 30, 2023

APPENDIX C

Quality Assurance / Quality Control

QUALITY ASSURANCE/QUALITY CONTROL

In conjunction with the field investigations completed to date, a quality assurance/quality control (QA/QC) program was implemented to ensure the integrity of the soil sampling and analytical testing results.

1.0 FIELD PROGRAM

Sampling activities were completed in accordance with WSP Technical Field Procedures by trained WSP personnel. Field activities were documented in field notes and results were recorded on standard field forms. Reusable field equipment involved in the sampling and monitoring of soil was decontaminated between sampling locations in accordance with WSP's Technical Procedures. Soil samples were collected using appropriate handling protocols and were placed in sample containers provided by Bureau Veritas Laboratories (BVL).

All samples were not directly contacted by hand. To help prevent cross-contamination, a new pair of clean nitrile gloves were used for the collection of each sample.

Soil samples were placed in laboratory-supplied containers, consisting of plastic bag(s), suitable for the analytes. Soil samples were given unique identification numbers and the sampling containers were preserved in ice-filled coolers to maintain temperatures below 10 degrees Celsius. Samples were logged onto formal chain-of-custody documents and transported to BVL for chemical analysis. BVL is accredited by the Standards Council of Canada.

Blind field duplicate soil samples were submitted for analysis. Submission of blind field duplicate QC samples was at a minimum rate of 10% of total samples.

2.0 LABORATORY PROGRAM

The laboratory QA/QC program included adherence to laboratory sampling and analysis protocols (e.g., hold times, sample containers, preservatives, detection limits and approved methodology) and the analysis of laboratory method blanks, laboratory control sample (blank spike), laboratory sample duplicates, surrogate recovery and matrix spikes.

Laboratory method blank samples are free of the target analytes and are analyzed through the same analytical method as the test samples. Method blank results are used to detect interferences or impurities introduced by the laboratory equipment, reagents, or solvents.

Laboratory control samples are fortified with a known concentration of the select target analytes and then analyzed through the same analytical method than the test samples. Laboratory control samples are used to monitor the analyte recovery and validate the calibration of the instrumentation.

For laboratory duplicate samples, a second aliquot from a randomly selected sample within an analytical batch is processed through the same analytical method. Laboratory duplicate sample results are used to evaluate the reproducibility of the analytical method.

Matrix spikes were conducted by adding known concentrations of the analyte of interest to a sample to evaluate the effects of the sample matrix on the analytical method.

3.0 DATA RECEPTION

Once laboratory analytical results were received, WSP completed a review of field and laboratory quality. This included review of laboratory QC performance to confirm results are within acceptance criteria, as well as evaluation of field duplicate and blank results to confirm they were within alert limits. Upon receipt of the analytical

results, relative percent difference (RPD) values between the original samples and their blind field duplicates were calculated as follows:

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

Where: RPD = relative percent difference

S = sample value

D = field duplicate value.

Since analytical error increases near the reportable detection limit (RDL), an RPD was only calculated where the concentrations of both the original and blind field duplicate samples were greater than five times the RDL. The calculated RPDs were then compared to parameter-specific alert limits.

Exceedances of the QC acceptance or alert criteria were investigated with the laboratory and, if warranted, a corrective action report was requested from the laboratory.

4.0 DATA QUALITY REVIEW RESULTS

The results of the data quality review are summarized in Table C1. The RPD calculations and QC results are presented in Table C2. As part of this program, three field duplicate soil samples were collected and submitted to the laboratory for analysis of metals, soil moisture and pH.

Based on the data quality reviews, six data quality issues were identified. There were several data quality issues related to the average temperature of the samples exceeding ten degrees upon receipt by BVL. However, they did not have a material effect on the overall reliability of the data presented in this report. One data quality issue in COA C3T2450 resulted in a potential low-biased result for boron; however, there is no applicable guideline, indicating that there will not be a material effect on the interpretation of the results for this sample location. One data quality issue in COA C3T2450 resulted in a potential high-biased for antimony; however, results were below the applicable guideline, indicating that there will not be a material effect on the interpretation of the results for this sample location.

5.0 SUMMARY OF RESULTS

Based on the review of the laboratory and field QA/QC results, no field or laboratory QA/QC issues were identified that would affect the overall conclusions presented in this report. The results reported are considered reliable.

Table C1
Summary of Quality Assurance / Quality Control Results
Meadowbank Complex, Kivalliq Region, Nunavut
Agnico Eagle Mines Limited

BVL Job Number	Matrix	BVL Sample ID Affected	Test Affected	Data Quality Issue	Comments
C3T2450	Soil	XBI099	Acid Extractable Boron (B)	Matrix spike recovery for acid extractable boron (74%) below the acceptance criteria of (75-125%) for batch 8949624.	This data quality issue may represent a potential low bias for this sample for this parameter. There is no applicable guideline for acid extractable boron therefore indicating that there will not be a material effect on the interpretation of the results of this parameter. Under these circumstances, the acid extractable boron data reported can be considered reliable.
		XBI097	Acid Extractable Antimony (B)	Laboratory duplicate RPD for acid extractable antimony (37%) exceeded the acceptance criteria of (30%) for batch 8947269.	This data quality issue may represent a potential high bias for this sample for this parameter. This may increase the uncertainty associated with these results. Acid extractable antimony concentrations were below the regulatory guideline in both the sample and the lab duplicate, indicating that the data quality issue will not have a material effect on the interpretation of the results for this parameter. Under these circumstances, the acid extractable antimony data reported can be considered reliable.
		All	All	Average temperature upon receipt exceeded ten degrees Celsius.	Samples were packed on ice and in a sealed cooler. Data integrity is not affected for inorganic parameters. Thus, these data should be considered reliable.
C3T8621	Soil	All	All	Average temperature upon receipt exceeded ten degrees Celsius.	Samples were packed on ice and in a sealed cooler. Data integrity is not affected for inorganic parameters. Thus, these data should be considered reliable.
C3T8633	Soil	All	All	Average temperature upon receipt exceeded ten degrees Celsius.	Samples were packed on ice and in a sealed cooler. Data integrity is not affected for inorganic parameters. Thus, these data should be considered reliable.
C3T8600	Soil	All	All	Average temperature upon receipt exceeded ten degrees Celsius.	Samples were packed on ice and in a sealed cooler. Data integrity is not affected for inorganic parameters. Thus, these data should be considered reliable.

Notes:
BVL - Bureau Veritas Laboratories
RPD - relative percent difference

Table C2
Summary of Field Duplicate Sample Results - Soil
Meadowbank Complex, Kivalliq Region, Nunavut
Agnico Eagle Mines Limited

Sample Location	Units	Alert Limit	RDL	MS-S23-01	MS-S23-01B	RPD %	WT-S23-01	WT-S23-01B	RPD %	VS-S23-01	VS-S23-01B	RPD %
Sample Depth (mbgs)				0.00 - 0.20	0.00 - 0.20		0.00 - 0.15	0.00 - 0.15		0.30	0.30	
Sample Collection Date				21-Sep-2023	21-Sep-2023		22-Sep-2023	22-Sep-2023		24-Sep-2023	24-Sep-2023	
Laboratory Sample ID				XCR435	XCR436		XCR380	XCR381		XCR568	XCR569	
pH	pH	+ or - 0.6	n/a	4.84	4.57	6	4.7	4.34	8	5.03	4.47	12
Antimony	µg/g	>60%	0.2	<0.20	<0.20	n/c	<0.20	<0.20	n/c	<0.20	<0.20	n/c
Arsenic	µg/g	>60%	1	5.4	5.2	4	19	19	0	5.1	4.9	n/c
Barium	µg/g	>80%	0.5	34	35	3	43	41	5	21	17	21
Beryllium	µg/g	>60%	0.2	0.33	0.35	n/c	0.26	0.29	n/c	0.48	0.65	n/c
Boron	µg/g	>80%	5	<5.0	<5.0	n/c	<5.0	<5.0	n/c	<5.0	<5.0	n/c
Cadmium	µg/g	>60%	0.1	<0.10	<0.10	n/c	<0.10	<0.10	n/c	<0.10	<0.10	n/c
Chromium (Total)	µg/g	>70%	1	130	130	0	61	59	3	33	25	28
Cobalt	µg/g	>60%	0.1	9.3	8.8	6	6.2	5.9	5	7.3	5.4	30
Copper	µg/g	>60%	0.5	13	13	0	8.3	7.5	10	13	14	7
Lead	µg/g	>80%	1	6.6	6.7	2	5.8	6.2	7	14	14	0
Mercury	µg/g	>80%	0.05	<0.050	<0.050	n/c	0.062	0.077	n/c	<0.050	<0.050	n/c
Molybdenum	µg/g	>80%	0.5	<0.50	<0.50	n/c	0.63	0.7	n/c	2	3.1	n/c
Nickel	µg/g	>60%	0.5	49	48	2	25	24	4	20	14	35
Selenium	µg/g	>60%	0.5	<0.50	<0.50	n/c	<0.50	<0.50	n/c	<0.50	<0.50	n/c
Silver	µg/g	>80%	0.2	<0.20	<0.20	n/c	<0.20	<0.20	n/c	<0.20	<0.20	n/c
Thallium	µg/g	>60%	0.05	0.13	0.14	n/c	0.14	0.13	n/c	0.13	0.1	n/c
Tin	µg/g	>80%	1	<1.0	<1.0	n/c	<1.0	<1.0	n/c	<1.0	<1.0	n/c
Uranium	µg/g	>60%	0.05	2.1	2.1	0	1.2	1.4	15	3.1	2.7	14
Vanadium	µg/g	>60%	5	25	24	n/c	21	21	n/c	17	16	n/c
Zinc	µg/g	>60%	5	34	35	3	33	33	0	38	35	8

Notes:

Bold/Underlined - RPD exceeds alert limit

mbgs - metres below ground surface

n/a - not applicable

n/c - not calculated

RDL - reportable detection limit

RPD - relative percent difference

> - greater than

< - less than

µg/g - micrograms per gram

RPD is not calculated if either the original or field duplicate sample has a result less than 5X the RDL

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APPENDIX D

Surface Water Screening Tables

Table D-1: Surface Water Screening Criteria for Human Health

Parameter	Unit	Health Canada Drinking Water[(a)]		US EPA RSL for Tapwater[(b)]
Conventional Parameters				
Total dissolved solids (calculated)	mg/L	≤500	AO	NV
Major Ions				
Calcium	mg/L	none required	-	NV
Chloride	mg/L	≤250	AO	NV
Cyanide	mg/L	0.2	MAC	
Fluoride	mg/L	1.5	MAC	NR
Magnesium	mg/L	none required	-	NV
Potassium	mg/L	NV	-	NV
Sodium	mg/L	≤200	AO	NV
Sulphate	mg/L	≤500	AO	NV
Nutrients				
Nitrate	mg-N/L	10	MAC	NR
Nitrite	mg-N/L	1	MAC	NR
Total ammonia	mg-N/L	none required	-	NV
Total Metals				
Aluminum	mg/L	2.9	MAC	NR
Antimony	mg/L	0.006	MAC	NR
Arsenic	mg/L	0.01	MAC	NR
Barium	mg/L	2.0	MAC	NR
Beryllium	mg/L	NV	-	0.0049
Boron	mg/L	5	MAC	NR
Cadmium	mg/L	0.007	MAC	NR
Chromium	mg/L	0.05	MAC	NR
Cobalt	mg/L	NV	-	0.0012
Copper	mg/L	2	MAC	NR
Iron	mg/L	≤0.3	AO	2.8
Lead	mg/L	0.005	MAC	NR
Lithium	mg/L	NV	-	0.0080
Manganese	mg/L	0.12	MAC	NR
Mercury	mg/L	0.001	MAC	NR
Molybdenum	mg/L	NV	-	0.02
Nickel	mg/L	NV	-	0.079
Selenium	mg/L	0.05	MAC	NR
Silver	mg/L	none required	-	0.019
Strontium	mg/L	7.0	MAC	NR
Thallium	mg/L	NV	-	0.000040
Uranium	mg/L	0.02	MAC	NV
Vanadium	mg/L	NV	-	0.017
Zinc	mg/L	≤5.0	AO	1.2
Radionuclides				
Radium (Ra226)	Bq/L	0.5	-	NV

Notes: NV = no value; NR = not required; AO = aesthetic objective; MAC = maximum acceptable concentration; mg/L = milligram per litre; mg-N/L = milligram per litre as nitrogen; Bq/L = becquerel per litre; "-" = value not available

(a) Health Canada (2024). Guidelines for Canadian Drinking Water Quality (HC GCDWQ). June 2024. The MAC was selected when available.

(b) In the absence of a health-based HC GCDWQ screening value (i.e., MAC), the screening value was obtained from US EPA RSL for tapwater. A target hazard quotient of 0.2 and target cancer risk of 10^{5} were used to be to be consistent with federal guidance.

Table D-2: Water Quality Screening for Human Health - Meadowbank Waterbodies

Parameter	Unit	Health Canada Drinking Water[a]	Health Canada Aesthetic[a]	US EPA RSL Tapwater[b]	Baseline Concentrations +10% [e]	Surface Water Concentrations					
						Second Portage Lake	Third Portage Lake East	Third Portage Lake North	Vault Pit	Portage Pit	Wally Lake
Conventional Parameters											
Hardness, as $CaCO_3$ [d]	mg/L	-	-	-	-	14	9.9	9.2	43	20	21
Alkalinity as $CaCO_3$	mg/L	-	-	-	-	11	7.9	6.9	49	49	21
Total dissolved solids	mg/L	-	500	-	-	26	22	17	65	38	37
Major Ions											
Calcium	mg/L	-	-	-	-	4.0	2.7	2.4	12	6.5	6.5
Chloride	mg/L	-	250	-	-	0.90	0.81	0.84	5.7	3.6	1.7
Total cyanide	mgL	0.2[f]	-	-	-	0.0013	0.0014	0.0012	0.00075	0.00048	0.00099
WAD cyanide	mgL	0.2	-	-	-	0.0013	0.0014	0.0012	0.00065	0.00048	0.00098
Fluoride	mg/L	1.5	-	-	-	0.073	0.079	0.075	0.095	0.061	0.062
Magnesium	mg/L	-	-	-	-	1.3	1.1	0.98	3.9	1.6	1.9
Potassium	mg/L	-	-	-	-	0.55	0.55	0.52	2.3	1.1	0.86
Sodium	mg/L	-	200	-	-	0.87	1.1	1.1	4.5	2.2	1.4
Sulphate	mg/L	-	500	-	-	4.9	4.5	4.5	20	9.4	8.0
Nutrients											
Nitrate	mg-N/L	10	-	-	-	0.0064	0.0070	0.0067	0.51	0.099	0.11
Nitrite	mg-N/L	1.0	-	-	-	0.0010	0.0010	0.0010	0.0088	0.0054	0.0025
Total ammonia	mg-N/L	-	-	-	-	0.012	0.0095	0.011	0.082	0.026	0.026
Total Metals											
Aluminum	mg/L	2.9	-	-	0.024	0.0070	0.0061	0.0053	0.0056	0.0037	0.0055
Antimony	mg/L	0.0060	-	-	0.00055	0.00010	0.00010	0.00010	0.00019	0.000075	0.00012
Arsenic	mg/L	0.010	-	-	0.00055	0.00039	0.00055	0.00022	0.0024	0.0014	0.00072
Barium	mg/L	2.0	-	-	0.022	0.0027	0.0029	0.0029	0.0039	0.0020	0.0029
Beryllium	mg/L	-	-	0.0049	0.0055	0.00010	0.00010	0.00010	0.00033	0.00025	0.00014
Boron	mg/L	5.0	-	-	0.11	0.010	0.010	0.010	0.014	0.0076	0.011
Cadmium	mg/L	0.0070	-	-	0.0064	0.0000050	0.0000050	0.0000050	0.000016	0.000010	0.0000071
Chromium	mg/L	0.050[c]	-	-	0.0011	0.00010	0.00010	0.00011	0.00071	0.00032	0.00045
Cobalt	mg/L	-	-	0.0012	0.0011	0.00010	0.00010	0.00010	0.00049	0.00056	0.00017
Copper	mg/L	2.0	-	-	0.0011	0.00073	0.00050	0.00050	0.00085	0.0021	0.0011
Iron	mg/L	-	0.30	2.8	0.033	0.026	0.016	0.010	0.013	0.0072	0.017
Lead	mg/L	0.0050	-	-	0.0043	0.000050	0.000079	0.000065	0.00022	0.00015	0.00010
Lithium	mg/L	-	-	0.0080	0.011	0.0010	0.0010	0.0010	0.0033	0.0026	0.0014
Manganese	mg/L	0.12	-	-	0.0055	0.0020	0.0014	0.0012	0.012	0.0044	0.0036
Mercury	mg/L	0.0010	-	-	0.00011	0.0000050	0.0000050	0.0000050	0.0000071	0.0000050	0.0000054
Molybdenum	mg/L	-	-	0.020	0.0011	0.00013	0.00012	0.00011	0.0036	0.00050	0.00090
Nickel	mg/L	-	-	0.079	0.0011	0.00051	0.00056	0.00050	0.0023	0.0011	0.00086
Selenium	mg/L	0.050	-	-	0.0011	0.000050	0.000050	0.000050	0.00062	0.00053	0.00016
Silver	mg/L	-	-	0.019	0.00011	0.000010	0.000010	0.000010	0.000057	0.000051	0.000019
Strontium	mg/L	7.0	-	-	0.013	0.019	0.013	0.011	0.062	0.032	0.033
Thallium	mg/L	-	-	0.000040	0.11	0.000010	0.000010	0.000010	**0.00047[U]**	**0.00038[U]**	**0.000099[U]**
Uranium	mg/L	0.020	-	-	0.00022	0.000051	0.000041	0.000041	0.0013	0.00058	0.00030
Vanadium	mg/L	-	-	0.017	0.033	0.00050	0.00050	0.00050	0.00033	0.00025	0.00049
Zinc	mg/L	-	5.0	1.2	0.025	0.0030	0.0030	0.0030	0.0011	0.00061	0.0030

Notes:

"-" = no guideline or no baseline data; mg/L = milligrams per litre; mg-N/L = milligrams nitrogen per litre; $CaCO_3$ = calcium carbonate

[a] Health Canada (2024). Guidelines for Canadian Drinking Water Quality, maximum acceptable concentrations (MAC) and aesthetic objectives.

[b] United States Environmental Protection Agency (US EPA 2024). Regional Screening Levels (RSL), tapwater. A target hazard quotient of 0.2 and target cancer risk of 10^{5} were used to be to be consistent with federal guidance.

[c] = guideline is for chromium VI.

[d] = hardness values presented are minimum measured (Second Portage Lake, Third Portage Lake East, Third Portage Lake North) or predicted (Vault Pit, Portage Pit, Wally Lake).

[e] Baseline concentrations are maximum concentrations in lake water reported in Azimuth (2006).

[f] Guideline for free cyanide

[D] = concentration is higher than the Health Canada drinking water guideline (none met this criteria).

[S] = concentration is higher than the Health Canada aesthetic guideline (none met this criteria).

[U] = concentration is higher than the US EPA RSL tap water screening value.

Bolded concentrations are higher than water quality guidelines.

Underlined concentrations are higher than Baseline +10%

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision*after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

Water quality predictions were rounded to two significant digits for presentation purposes. Values including all decimal places were used in the risk calculations.

Source: Concentrations for Second Portage Lake and Third Portage Lake are annual averages from the 2023 monitoring data in the 2023 Core Recieiving Environment Monitoring Program report (Azimuth 2024). Concentrations for Vault Pit and Wally Lake are maximum predicted concentrations during post-closure (July 2046-December 2060). Concentrations for Portage Pit the maximum predicted concentrations during the last year modelled (August 2043-July 2044).

Table D-3: Water Quality Screening for Human Health - Whale Tail Waterbodies

Parameter	Unit	Health Canada Drinking Water[a]	Health Canada Aesthetic[a]	US EPA RSL Tapwater[b]	Baseline Concentrations + 10%						Maximum Predicted Surface Water Concentrations							
					Whale Tail Lake	Flooded Pit	Kangislulik Lake (formerly Mammoth Lake)	Lakes A15 and A12	Downstream Node 1	Downstream Node 2	Whale Tail North Basin	Whale Tail South Basin	Kangislulik Lake	Lake A15	Lake A12	Lake A76	Downstream Node 1	Downstream Node 2
Conventional Parameters																		
Hardness, as $CaCO_3$ [(d)]	mg/L	-	-	-	-	-	-	-	-	-	32	25	38	29	27	14	11	12
Total dissolved solids	mg/L	-	500	-	23	23	24	20	22	22	79	58	127	102	92	45	36	37
Major Ions																		
Calcium	mg/L	-	-	-	2.4	2.4	2.6	2.8	2.2	2.2	14	8.2	17	14	13	6.1	5.1	5.2
Chloride	mg/L	-	250	-	-	-	-	-	-	-	13	12	25	21	19	9.2	7.2	7.4
Fluoride	mg/L	1.5	-	-	-	-	0.04	0.03	0.04	0.04	0.061	0.043	0.065	0.056	0.053	0.027	0.034	0.034
Magnesium	mg/L	-	-	-	0.87	0.87	0.87	0.95	0.94	0.94	2.9	1.8	3.9	3.3	3.0	1.5	1.5	1.5
Potassium	mg/L	-	-	-	0.48	0.48	0.58	0.63	0.37	0.65	2.0	1.6	3.2	2.6	2.4	1.2	1.0	1.0
Sodium	mg/L	-	200	-	0.61	0.61	0.61	0.64	0.80	0.80	1.3	1.2	2.2	1.9	1.8	0.88	0.91	0.89
Sulphate	mg/L	-	500	-	2.9	2.9	3.2	3.6	1.3	2.6	21	4.6	18	15	13	6.6	5.1	5.3
Nutrients																		
Nitrate	mg-N/L	10	-	-	-	-	-	-	-	-	0.17	0.100	0.45	0.34	0.30	0.14	0.091	0.10
Nitrite	mg-N/L	1	-	-	-	-	-	-	-	-	0.00060	0.00053	0.0011	0.00097	0.00085	0.00043	0.00050	0.00050
Total ammonia	mg-N/L	-	-	-	-	-	-	-	-	-	0.00098	0.0086	0.0047	0.0059	0.0070	0.0035	0.013	0.013
Total Metals																		
Aluminum	mg/L	2.9	-	-	0.024	0.012	-	-	-	-	0.014	0.0074	0.014	0.012	0.010	0.0048	0.0056	0.0055
Antimony	mg/L	0.006	-	-	0.00024	0.000055	0.000055	0.000055	0.000055	0.000055	0.00024	0.000054	0.00026	0.00021	0.00017	0.000089	0.000083	0.000083
Arsenic	mg/L	0.01	-	-	0.00032	0.00033	0.00052	0.00035	0.00017	0.00018	**0.024**[(D)]	0.00058	**0.016**[(D)]	**0.012**[(D)]	0.010	0.0051	0.0034	0.0038
Barium	mg/L	2	-	-	0.00484	0.0046	0.00517	0.00671	0.00341	0.00814	0.019	0.015	0.028	0.023	0.021	0.011	0.0099	0.0098
Beryllium	mg/L	-	-	0.0049	-	-	0.000055	0.000011	0.000011	0.000011	0.000014	0.000011	0.000013	0.000013	0.000012	0.0000063	0.000010	0.000010
Boron	mg/L	5	-	-	-	-	-	-	-	-	0.0063	0.0053	0.0061	0.0058	0.0057	0.0030	0.0050	0.0050
Cadmium	mg/L	0.007	-	-	-	-	-	-	-	-	0.0000075	0.0000028	0.0000062	0.0000059	0.0000056	0.0000026	0.0000054	0.0000049
Chromium	mg/L	0.050[(c)]	-	-	0.00015	0.000055	0.000055	0.000055	0.000055	0.000055	0.00022	0.00022	0.00020	0.00017	0.00016	0.000079	0.000095	0.000092
Cobalt	mg/L	-	-	0.0012	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.00015	0.000062	0.00014	0.00012	0.00011	0.000055	0.000051	0.000051
Copper	mg/L	2	-	-	-	-	-	-	-	-	0.00097	0.00053	0.00094	0.00079	0.00069	0.00035	0.00037	0.00036
Iron	mg/L	-	0.3	2.8	0.041	0.11	-	-	-	-	0.052	0.049	0.048	0.039	0.033	0.017	0.015	0.015
Lead	mg/L	0.005	-	-	-	-	-	-	-	-	0.000049	0.000048	0.000047	0.00015	0.00021	0.000091	0.00055	0.00049
Lithium	mg/L	-	-	0.0080	0.00055	0.00055	0.00055	0.00055	0.00055	0.00055	0.0022	0.0020	0.0029	0.0023	0.0020	0.00099	0.00080	0.00083
Manganese	mg/L	0.12	-	-	0.0070	0.0050	0.0035	0.0006	0.0007	0.0007	0.040	0.026	0.048	0.037	0.030	0.014	0.0100	0.011
Mercury	mg/L	0.001	-	-	-	-	-	-	-	-	0.0000043	0.0000026	0.0000044	0.0000039	0.0000037	0.0000019	0.0000025	0.0000025
Molybdenum	mg/L	-	-	0.020	0.000065	0.000028	0.000028	0.000028	0.000028	0.000028	0.0015	0.00030	0.0013	0.0010	0.00085	0.00043	0.00029	0.00032
Nickel	mg/L	-	-	0.079	0.00095	0.00090	0.00098	0.00715	0.00028	0.00028	0.0096	0.0015	0.0071	0.0055	0.0048	0.0024	0.0016	0.0018
Selenium	mg/L	0.05	-	-	-	-	-	-	-	-	0.00012	0.000027	0.00015	0.00012	0.00010	0.000049	0.000041	0.000042
Silver	mg/L	-	-	0.0188	-	-	-	-	-	-	0.0000062	0.0000053	0.0000061	0.0000058	0.0000057	0.0000030	0.0000050	0.0000050
Strontium	mg/L	7	-	-	0.017	0.017	0.014	0.012	0.007	0.009	0.069	0.064	0.11	0.090	0.080	0.039	0.031	0.032
Thallium	mg/L	-	-	0.000040	0.0000055	5.5E-06	0.0000055	0.0000055	0.0000055	0.0000055	0.0000064	0.0000053	0.0000064	0.0000060	0.0000059	0.0000031	0.0000050	0.0000050
Uranium	mg/L	0.02	-	-	-	-	-	-	-	-	0.00024	0.000081	0.00025	0.00019	0.00016	0.000081	0.000056	0.000061
Vanadium	mg/L	-	-	0.017	0.00055	0.00055	0.00055	0.00028	0.00028	0.00028	0.00045	0.00026	0.00042	0.00038	0.00036	0.00018	0.00025	0.00025
Zinc	mg/L	-	5	1.2	-	-	-	-	-	-	0.0019	0.0016	0.0019	0.0019	0.0020	0.00095	0.0021	0.0019
Radionuclides																		
Radium	Bq/L	0.5	-	-	-	-	-	-	-	-	0.00063	0.000012	0.00043	0.00032	0.00027	0.00014	0.00009	0.00010

Notes:

"-" = no guideline or no baseline data; mg/L = milligrams per litre; mg-N/L = milligrams nitrogen per litre; Bq/L = Becquerel per litre

[(a)] Health Canada (2024). Guidelines for Canadian Drinking Water Quality, maximum acceptable concentrations (MAC) and aesthetic objectives.

[(b)] United States Environmental Protection Agency (US EPA) Regional Screening Levels (RSL), tapwater (2024). A target hazard quotient of 0.2 and target cancer risk of 10^{-5} were used to be to be consistent with federal guidance.

[(c)] = guideline is for chromium VI.

[(d)] = minimum calcualted hardness values are presented.

[(D)] = concentration is higher than the Health Canada drinking water guideline.

[(S)] = concentration is higher than the Health Canada aesthetic guideline (none met this criteria).

[(U)] = concentration is higher than the US EPA RSL tap water screening value (none met this criteria).

Bolded concentrations are higher than water quality guidelines.

Underlined concentrations are higher than Baseline +10%

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

Water quality predictions were rounded to two significant digits for presentation purposes. Values including all decimal places were used in the risk calculations.

Source: Lorax (Lorax Environmental Services). 2024. Whale Tail Mine: Water Management Plan (Version 13_NWB). May 2024.

Table D-4a Surface Water Screening Criteria for Terrestrial Health

Parameter	Unit	CCME WQG Livestock[(a)]	BC ENV WQG Wildlife/Livestock[(b)]	Sample et al. (1996) Toxicological Benchmark[(c)]
Conventional Parameters				
Hardness, as $CaCO_3$	mg/L	NV	NV	NV
Alkalinity as $CaCO_3$	mg/L	NV	NV	NV
Total dissolved solids	mg/L	3,000	NV	NR
Major Ions				
Calcium	mg/L	1,000	NV	NR
Chloride	mg/L	NV	600	NR
Total cyanide	mg/L	NV	NV	229
WAD cyanide	mg/L	NV	NV	NV
Fluoride	mg/L	2.0	1	NR
Magnesium	mg/L	NV	NV	NV
Potassium	mg/L	NV	NV	NV
Sodium	mg/L	NV	NV	NV
Sulphate	mg/L	1,000	1,000	NR
Nutrients				
Nitrate	mg-N/L	NV	NV	3767
Nitrite	mg-N/L	10	NV	NR
Total ammonia	mg-N/L	NV	NV	NV
Total Metals				
Aluminum	mg/L	5.0	NV	NR
Antimony	mg/L	NV	NV	4.2
Arsenic	mg/L	0.025	0.025	NR
Barium	mg/L	NV	NV	66
Beryllium	mg/L	0.10	NV	NR
Boron	mg/L	5.0	5	NR
Cadmium	mg/L	0.080	NV	NR
Chromium	mg/L	0.050	NV	NR
Cobalt	mg/L	1.0	NV	NR
Copper	mg/L	0.50	NV	NR
Iron	mg/L	NV	NV	NV
Lead	mg/L	0.10	NV	NR
Lithium	mg/L	NV	NV	NV
Manganese	mg/L	NV	NV	947
Mercury	mg/L	0.0030	NV	NR
Molybdenum	mg/L	0.50	0.034	NR
Nickel	mg/L	1.0	NV	NR
Selenium	mg/L	0.050	0.002	NR
Silver	mg/L	NV	NV	70[(e)]
Strontium	mg/L	NV	NV	877
Thallium	mg/L	NV	NV	0.25
Uranium	mg/L	0.20	NV	NR
Vanadium	mg/L	0.10	NV	NR
Zinc	mg/L	50	2	NR
Radionuclides				
Radium (Ra-226)	Bq/L	NV	NV	NV

Notes:
NV = no value; mg/L = milligram per litre; mg-N/L = milligram per litre as nitrogen; mg-P/L = milligram per litre as phosphorus; Bq/L = becquerel per litre; NR = not required as a wildlife screening value is available; $CaCO_3$ = calcium carbonate.

(a) Canadian Council of Ministers of the Environment (CCME 2024) Water Quality Guidelines (WQG) for the Protection of Agriculture, Livestock.

(b) British Columbia Ministry of Environment and Climate Change Strategy (BC ENV 2023) Approved Water Quality Guidelines (WQG) for wildlife/livestock.

(c) Sample et al. (1996) Toxicological Benchmarks for Wildlife. Most conservative of the available toxicity benchmarks was selected as the screening value. Calculation of the the toxicity benchmarks is presented in Table C-3b.

(d) In the absence of a wildlife screening value, the CCME WQG for the Protection of Aquatic Life, freshwater, was used. While these guidelines are intended to be protective of aquatic life, it is considered that they are also protective of wildlife. This is because the CCME guidelines are developed in consideration of the end water use, and protection of aquatic life is generally considered the most sensitive end use. Aquatic life guidelines are typically more protective than those set for the protection of wildlife, and as a result this is considered to be a conservative approach.

(e) Los Alamos National Laboratory (LANL) Ecological Screening Level (ESL) for wildlife

References:

British Columbia Ministry of Environment and Climate Change Strategy (BC ENV). 2023. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture - Guideline Summary. Water Quality Guideline Series, WQG-20. Prov. B.C., Victoria B.C.

Canadian Council of Ministers of the Environment (CCME). 1999, with updates to 2024. Water Quality Guidelines for the Protection of Agriculture, Livestock.

Table D-4b: Calculation of Toxicological Benchmarks for Water for Wildlife - Ingestion of Drinking Water

Parameter	Mammal TRV (mg/kg-d)[a]	Bird TRV (mg/kg-d)[a]	Toxicological Benchmark for Water Ingestion (mg/L) [c]							
			Short-tailed Shrew	Little Brown Bat	Meadow Vole	White-footed Mouse	Eastern Cottontail	Mink	Red Fox	White-tailed Deer
Nitrate as Nitrogen	1130	NV	5136	7063	8287	3767	11690	11414	13382	17255
Antimony	1.25	NV	5.7	7.8	9.2	4.2	13	13	15	19
Barium	19.8	41.7	90	124	145	66	205	200	234	302
Cyanide	68.7	NV	312	429	504	229	711	694	814	1049
Manganese	284	977	1291	1775	2083	947	2938	2869	3363	4337
Strontium	263	NV	1195	1644	1929	877	2721	2657	3114	4016
Thallium	0.074	3.5	0.34	0.46	0.54	0.25	0.77	0.75	0.88	1.1
Body Weight (kg)[b]			0.015	0.0075	0.044	0.022	1.2	1.0	4.5	56.5
Water Intake (L/d)[b]			0.0033	0.0012	0.006	0.0066	0.116	0.099	0.38	3.7

Notes:

mg/L - milligram per litre; TRV = toxicity reference value; mg/kg-d = milligrams per kilogram per day; kg = kilogram; L/d = litres per day; NV = no value; '-- = not calculated because no TRV available; LOAEL = lowest observed adverse effect level; NOAEL = no observed adverse effect level.

[a] TRVs were taken from Sample et al. (1996). In the absence of a TRV from Sample et al. (1996), TRVs were taken from Los Alamos National Laboratory (LANL, 2017; thallium). Where available, LOAEL-based TRVs were used. Where lacking, NOAEL-based TRVs were used.

[b] Body weights and water intakes were taken from Sample et al. (1996).

[c] Toxicological benchmarks were calculated as follows: LOAEL of test species (in mg/kg/d) x body weight of wildlife species (in kg) / water intake of wildlife species (in L/d).

Table D-4b: Calculation of Toxicological Benchmarks for Water for Wildlife - Ingestion of Drinking Water

Parameter	Mammal TRV (mg/kg-d)[a]	Bird TRV (mg/kg-d)[a]	Toxicological Benchmark for Water Ingestion (mg/L) [c]										
			American Robin	Rough-winged Swallow	American Woodcock	Wild Turkey	Belted Kingfisher	Great Blue Heron	Barred Owl	Barn Owl	Cooper's Hawk	Red-tailed Hawk	Osprey
Nitrate as Nitrogen	1130	NV	--	--	--	--	--	--	--	--	--	--	--
Antimony	1.25	NV	--	--	--	--	--	--	--	--	--	--	--
Barium	19.8	41.7	303	179	413	1273	386	942	636	555	538	734	812
Cyanide	68.7	NV	--	--	--	--	--	--	--	--	--	--	--
Manganese	284	977	7097	4198	9672	29824	9037	22070	14904	13008	12615	17189	19032
Strontium	263	NV	--	--	--	--	--	--	--	--	--	--	--
Thallium	0.074	3.5	25	15	35	107	32	79	53	47	45	62	68
Body Weight (kg)[b]			0.077	0.0159	0.198	5.8	0.148	2.39	0.717	0.466	0.439	1.126	1.5
Water Intake (L/d)[b]			0.0106	0.0037	0.02	0.19	0.016	0.1058	0.047	0.035	0.034	0.064	0.077

Notes:

mg/L - milligram per litre; TRV = toxicity reference value; mg/kg-d = milligrams per kilogram per day; kg = kilogram; L/d = litres per day; NV = no value; '-- = not calculated because no TRV available; LOAEL = lowest observed adverse effect level; NOAEL = no observed adverse effect level.

[a] TRVs were taken from Sample et al. (1996). In the absence of a TRV from Sample et al. (1996), TRVs were taken from Los Alamos National Laboratory (LANL, 2017; thallium). Where available, LOAEL-based TRVs were used. Where lacking, NOAEL-based TRVs were used.

[b] Body weights and water intakes were taken from Sample et al. (1996).

[c] Toxicological benchmarks were calculated as follows: LOAEL of test species (in mg/kg/d) x body weight of wildlife species (in kg) / water intake of wildlife species (in L/d).

Table D-5: Water Quality Screening for Terrestrial Health - Meadowbank Waterbodies

Parameter	Unit	Guidelines for the protection of:		Baseline Concentrations +10% [e]	Surface Water Concentrations					
		Wildlife Health (Livestock) (CCME)	Other Wildlife		Second Portage Lake	Third Portage Lake East	Third Portage Lake North	Vault Pit	Portage Pit	Wally Lake
Conventional Parameters										
Hardness, as $CaCO_3$ [c]	mg/L	-	-	-	14	9.9	9.2	43	20	21
Alkalinity as $CaCO_3$	mg/L	-	-		11	7.9	6.9	49	49	21
Total dissolved solids	mg/L	3,000	-	-	26	22	17	65	38	37
Major Ions										
Calcium	mg/L	1,000	-	-	4.0	2.7	2.4	12	6.5	6.5
Chloride	mg/L	-	600[a]	-	0.90	0.81	0.84	5.7	3.6	1.7
Total cyanide	mg/L	-	229[b]	-	0.0013	0.0014	0.0012	0.00075	0.00048	0.00099
WAD cyanide	mg/L	-	-	-	0.0013	0.0014	0.0012	0.00065	0.00048	0.00098
Fluoride	mg/L	2.0	1[a]	-	0.073	0.079	0.075	0.095	0.061	0.062
Magnesium	mg/L	-	-	-	1.3	1.1	0.98	3.9	1.6	1.9
Potassium	mg/L	-	-	-	0.55	0.55	0.52	2.3	1.1	0.86
Sodium	mg/L	-	-	-	0.87	1.1	1.1	4.5	2.2	1.4
Sulphate	mg/L	1,000	1000[a]	-	4.9	4.5	4.5	20	9.4	8.0
Nutrients										
Nitrate	mg-N/L	-	3767[b]	-	0.0064	0.0070	0.0067	0.51	0.099	0.11
Nitrite	mg-N/L	10	-	-	0.0010	0.0010	0.0010	0.0088	0.0054	0.0025
Total ammonia	mg-N/L	-	-	-	0.012	0.0095	0.011	0.082	0.026	0.026
Total Metals										
Aluminum	mg/L	5.0	-	0.024	0.0070	0.0061	0.0053	0.0056	0.0037	0.0055
Antimony	mg/L	-	4.2[b]	0.00055	0.00010	0.00010	0.00010	0.00019	0.000075	0.00012
Arsenic	mg/L	0.025	0.025[a]	0.00055	0.00039	0.00055	0.00022	0.0024	0.0014	0.00072
Barium	mg/L	-	66[b]	0.022	0.0027	0.0029	0.0029	0.0039	0.0020	0.0029
Beryllium	mg/L	0.10	-	0.0055	0.00010	0.00010	0.00010	0.00033	0.00025	0.00014
Boron	mg/L	5.0	5[a]	0.11	0.010	0.010	0.010	0.014	0.0076	0.011
Cadmium	mg/L	0.080	-	0.0064	0.0000050	0.0000050	0.0000050	0.000016	0.000010	0.0000071
Chromium	mg/L	0.050	-	0.0011	0.00010	0.00010	0.00011	0.00071	0.00032	0.00045
Cobalt	mg/L	1.0	-	0.0011	0.00010	0.00010	0.00010	0.00049	0.00056	0.00017
Copper	mg/L	0.50	-	0.0011	0.00073	0.00050	0.00050	0.00085	0.0021	0.0011
Iron	mg/L	-	-	0.033	0.026	0.016	0.010	0.013	0.0072	0.017
Lead	mg/L	0.10	-	0.0043	0.000050	0.000079	0.000065	0.00022	0.00015	0.00010
Lithium	mg/L	-	-	0.011	0.0010	0.0010	0.0010	0.0033	0.0026	0.0014
Manganese	mg/L	-	947[b]	0.0055	0.0020	0.0014	0.0012	0.012	0.0044	0.0036
Mercury	mg/L	0.0030	-	0.00011	0.0000050	0.0000050	0.0000050	0.0000071	0.0000050	0.0000054
Molybdenum	mg/L	0.50	0.034[a]	0.0011	0.00013	0.00012	0.00011	0.0036	0.00050	0.00090
Nickel	mg/L	1.0	-	0.0011	0.00051	0.00056	0.00050	0.0023	0.0011	0.00086
Selenium	mg/L	0.050	0.002[a]	0.0011	0.000050	0.000050	0.000050	0.00062	0.00053	0.00016
Silver	mg/L	-	70[d]	0.00011	0.000010	0.000010	0.000010	0.000057	0.000051	0.000019
Strontium	mg/L	-	877[b]	0.013	0.019	0.013	0.011	0.062	0.032	0.033
Thallium	mg/L	-	0.25[b]	0.11	0.000010	0.000010	0.000010	0.00047	0.00038	0.000099
Uranium	mg/L	0.20	-	0.00022	0.000051	0.000041	0.000041	0.0013	0.00058	0.00030
Vanadium	mg/L	0.10	-	0.033	0.00050	0.00050	0.00050	0.00033	0.00025	0.00049
Zinc	mg/L	50	2[a]	0.025	0.0030	0.0030	0.0030	0.0011	0.00061	0.0030

Notes: **"-"** = no guideline or no baseline data; mg/L = milligrams per litre; mg-N/L = milligrams nitrogen per litre; $CaCO_3$ = calcium carbonate

[a] British Columbia Ministry of Environment and Climate Change Strategy (BC ENV 2023) Approved Water Quality Guidelines (WQG) for wildlife/livestock.

[b] Sample et al. (1996) Toxicological Benchmarks for Wildlife. Most conservative of the available toxicity benchmarks was selected as the screening value. Calculation of the the toxicity benchmarks is presented in Table D-4b.

[c] = hardness values presented are minimum measured (Second Portage Lake, Third Portage Lake East, Third Portage Lake North) or predicted (Vault Pit, Portage Pit, Wally Lake).

[d] Los Alamos National Laboratory (LANL) Ecological Screening Level (ESL) for wildlife.

[e] Baseline concentrations are maximum concentrations in lake water reported in Azimuth (2006).

Bolded concentrations are higher than water quality guidelines (none meet this criteria).

Underlined concentrations are higher than Baseline +10%

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

Water quality predictions were rounded to two significant digits for presentation purposes. Values including all decimal places were used in the risk calculations.

Source: Concentrations for Second Portage Lake and Third Portage Lake are annual averages from the 2023 monitoring data in the 2023 Core Recieiving Environment Monitoring Program report (Azimuth 2024). Concentrations for Vault Pit and Wally Lake are maximum predicted concentrations during post-closure (July 2046-December 2060). Concentrations for Portage Pit the maximum predicted concentrations during the last year modelled (August 2043-July 2044).

Table D-6: Water Quality Screening for Terrestrial Health - Whale Tail Waterbodies

Parameter	Unit	Guidelines for the protection of:		Baseline Concentrations + 10%						Maximum Predicted Surface Water Concentrations							
		Wildlife Health (Livestock) (CCME)	Other Wildlife	Whale Tail Lake	Flooded Pit	Kangislulik Lake (formerly Mammoth Lake)	Lakes A15 and A12	Downstream Node 1	Downstream Node 2	Whale Tail North Basin	Whale Tail South Basin	Kangislulik Lake	Lake A15	Lake A12	Lake A76	Downstream Node 1	Downstream Node 2
Conventional Parameters																	
Hardness, as $CaCO_3$ [(c)]	mg/L	-	-	-	-	-	-	-	-	32	25	38	29	27	14	11	12
Total dissolved solids	mg/L	3,000	-	23	23	24	20	22	22	79	58	127	102	92	45	36	37
Major Ions																	
Calcium	mg/L	1,000	-	2.4	2.4	2.6	2.8	2.2	2.2	14	8.2	17	14	13	6.1	5.1	5.2
Chloride	mg/L	-	600[(a)]	-	-	-	-	-	-	13	12	25	21	19	9.2	7.2	7.4
Fluoride	mg/L	2.0	1[(a)]	-	-	-	-	-	-	0.061	0.043	0.065	0.056	0.053	0.027	0.034	0.034
Magnesium	mg/L	-	-	0.87	0.87	0.87	0.95	0.94	0.94	2.9	1.8	3.9	3.3	3.0	1.5	1.5	1.5
Potassium	mg/L	-	-	0.48	0.48	0.58	0.63	0.37	0.65	2.0	1.6	3.2	2.6	2.4	1.2	1.0	1.0
Sodium	mg/L	-	-	0.61	0.61	0.61	0.64	0.80	0.80	1.3	1.2	2.2	1.9	1.8	0.88	0.91	0.89
Sulphate	mg/L	1,000	1000[(a)]	2.9	2.9	3.2	3.6	1.3	2.6	21	4.6	18	15	13	6.6	5.1	5.3
Nutrients																	
Nitrate	mg-N/L	-	3767[(b)]	-	-	-	-	-	-	0.17	0.100	0.45	0.34	0.30	0.14	0.091	0.10
Nitrite	mg-N/L	10	-	-	-	-	-	-	-	0.00060	0.00053	0.0011	0.00097	0.00085	0.00043	0.00050	0.00050
Total ammonia	mg-N/L	-	-	-	-	-	-	-	-	0.00098	0.0086	0.0047	0.0059	0.0070	0.0035	0.013	0.013
Total Metals																	
Aluminum	mg/L	5.0	-	0.0242	0.0121	-	-	-	-	0.014	0.0074	0.014	0.012	0.010	0.0048	0.0056	0.0055
Antimony	mg/L	-	4.2[(b)]	0.00024	0.000055	0.000055	0.000055	0.000055	0.000055	0.00024	0.000054	0.00026	0.00021	0.00017	0.000089	0.000083	0.000083
Arsenic	mg/L	0.025	0.025[(a)]	0.00032	0.00033	0.00052	0.00035	0.00017	0.00018	0.024	0.00058	0.016	0.012	0.010	0.0051	0.0034	0.0038
Barium	mg/L	-	66[(b)]	0.0048	0.0046	0.0052	0.0067	0.0034	0.0081	0.019	0.015	0.028	0.023	0.021	0.011	0.0099	0.0098
Beryllium	mg/L	0.10	-	-	-	0.000055	0.000011	0.000011	0.000011	0.000014	0.000011	0.000013	0.000013	0.000012	0.0000063	0.000010	0.000010
Boron	mg/L	5.0	5[(a)]	-	-	-	-	-	-	0.0063	0.0053	0.0061	0.0058	0.0057	0.0030	0.0050	0.0050
Cadmium	mg/L	0.080	-	-	-	-	-	-	-	0.0000075	0.0000028	0.0000062	0.0000059	0.0000056	0.0000026	0.0000054	0.0000049
Chromium	mg/L	0.050	-	0.000154	0.000055	0.000055	0.000055	0.000055	0.000055	0.00022	0.00022	0.00020	0.00017	0.00016	0.000079	0.000095	0.000092
Cobalt	mg/L	1.0	-	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.00015	0.000062	0.00014	0.00012	0.00011	0.000055	0.000051	0.000051
Copper	mg/L	0.50	-	-	-	-	-	-	-	0.00097	0.00053	0.00094	0.00079	0.00069	0.00035	0.00037	0.00036
Iron	mg/L	-	-	0.041	0.11	-	-	-	-	0.052	0.049	0.048	0.039	0.033	0.017	0.015	0.015
Lead	mg/L	0.10	-	0.00055	0.00055	-	-	-	-	0.000049	0.000048	0.000047	0.00015	0.00021	0.000091	0.00055	0.00049
Lithium	mg/L	-	-	0.0070	0.0050	0.00055	0.00055	0.00055	0.00055	0.0022	0.0020	0.0029	0.0023	0.0020	0.00099	0.00080	0.00083
Manganese	mg/L	-	947[(b)]	-	-	0.0035	0.00065	0.00075	0.00075	0.040	0.026	0.048	0.037	0.030	0.014	0.0100	0.011
Mercury	mg/L	0.0030	-	-	-	-	-	-	-	0.0000043	0.0000026	0.0000044	0.0000039	0.0000037	0.0000019	0.0000025	0.0000025
Molybdenum	mg/L	0.50	0.034[(a)]	0.000065	0.000028	0.000028	0.000028	0.000028	0.000028	0.0015	0.00030	0.0013	0.0010	0.00085	0.00043	0.00029	0.00032
Nickel	mg/L	1.0	-	0.00095	0.00090	0.00098	0.00072	0.00028	0.00028	0.0096	0.0015	0.0071	0.0055	0.0048	0.0024	0.0016	0.0018
Selenium	mg/L	0.050	0.002[(a)]	-	-	-	-	-	-	0.00012	0.000027	0.00015	0.00012	0.00010	0.000049	0.000041	0.000042
Silver	mg/L	-	70[(d)]	-	-	-	-	-	-	0.0000062	0.0000053	0.0000061	0.0000058	0.0000057	0.0000030	0.0000050	0.0000050
Strontium	mg/L	-	877[(b)]	0.017	0.017	0.014	0.012	0.0068	0.0090	0.069	0.064	0.11	0.090	0.080	0.039	0.031	0.032
Thallium	mg/L	-	0.25[(b)]	0.0000055	0.0000055	0.0000055	0.0000055	0.0000055	0.0000055	0.0000064	0.0000053	0.0000064	0.0000060	0.0000059	0.0000031	0.0000050	0.0000050
Uranium	mg/L	0.20	-	-	-	-	-	-	-	0.00024	0.000081	0.00025	0.00019	0.00016	0.000081	0.000056	0.000061
Vanadium	mg/L	0.10	-	0.00055	0.00055	0.00055	0.00028	0.00028	0.00028	0.00045	0.00026	0.00042	0.00038	0.00036	0.00018	0.00025	0.00025
Zinc	mg/L	50	2[(a)]	-	-	-	-	-	-	0.0019	0.0016	0.0019	0.0019	0.0020	0.00095	0.0021	0.0019
Radionuclide																	
Radium-226	Bq/L	-	-	-	-	-	-	-		0.000627	0.000012	0.000426	0.000323	0.000268	0.000136	0.0000887	0.0000984

Notes:

"-" = no guideline or no data available; mg/L = milligrams per litre; mg-N/L = milligrams nitrogen per litre; Bq/L = Becquerel per litre

[(a)] British Columbia Ministry of Environment and Climate Change Strategy (BC ENV 2023) Approved Water Quality Guidelines (WQG) for wildlife/livestock.

[(b)] Sample et al. (1996) Toxicological Benchmarks for Wildlife. Most conservative of the available toxicity benchmarks was selected as the screening value. Calculation of the the toxicity benchmarks is presented in Table D-4b.

[(c)] = minimum calcualted hardness values are presented.

[(d)] Los Alamos National Laboratory (LANL) Ecological Screening Level (ESL) for wildlife.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

Water quality predictions were rounded to two significant digits for presentation purposes. Values including all decimal places were used in the risk calculations.

Source: Lorax (Lorax Environmental Services). 2024. Whale Tail Mine: Water Management Plan (Version 13_NWB). May 2024.

Table D-7: Surface Water Screening Criteria for Aquatic Health

Parameter	Unit	CREMP Threshold[a]	Basis of CREMP Threshold[b]
Conventional Parameters			
Total dissolved solids	mg/L	NV	n/a
Major Ions			
Calcium	mg/L	NV	n/a
Chloride	mg/L	120	CCME 2011
Fluoride	mg/L	0.12	CCME 2002
Magnesium	mg/L	NV	n/a
Potassium	mg/L	NV	n/a
Sodium	mg/L	NV	n/a
Sulphate	mg/L	128	BC MOE 2013. From BC MOE, approved WQG, 2013; 128 mg/L for very soft water (hardness=0-30 mg/L); 218 mg/L for soft to moderate (hardness=31-75 mg/L); 309 mg/L for moderate to hard (hardness=76-180).
Nutrients			
Nitrate	mg-N/L	3	CCME 2012
Nitrite	mg-N/L	0.06	CCME 1987
Total ammonia	mg-N/L	0.126	CCME 2001. The proposed threshold for Ammonia-N (Meadowbank and Baker) was conservatively derived using two discrete CCME guidelines corresponding to specific pH and temperature values. Note that the maximum pH among baseline data for Meadowbank/Wally/Baker/Whale Tail is 8.85, while maximum temperatures in the lakes are around 16 to 18 degrees. The two CCME guidelines that span these maximum (i.e., worst-case) conditions are as follows: (1) total ammonia = 0.239 mg/L for pH = 8.5 and temperature = 15 degrees; and (2) total ammonia = 0.067 mg/L for pH = 9.0 and temperature = 20 degrees. The mid-point of these two values is 0.153 mg/L, which when converted from total ammonia to total ammonia as N is 0.126 mg/L.
Total Metals			
Aluminum	mg/L	0.1	CCME 1987. The CCME guideline for total aluminum in water is 0.005 mg/L when pH < 6.5, and 0.1 mg/L when pH ≥ 6.5. Given the strong tendancy for pH to equal or exceed 6.5 across baseline samples, the CCME guideline of 0.1 mg/L was adopted.
Antimony	mg/L	0.009	BC MOE 2017. Working WQG; Reference to ANZECC (2000b); for Sb(III).
Arsenic	mg/L	0.025	Golder 2019. Site-specific number derived for the Whale Tail Pit Study areas (Addendum Volume 6, Appendix 6-I, Figure 6-I-2).
		0.005	CCME 1997. This threshold value applies to Meadowbank, Wally, and Baker Lake.
Barium	mg/L	1	BC MOE 2017. Working Guideline (30-d average [long-term]); Working WQG; Reference to Haywood and Drinnin (1983).
Beryllium	mg/L	0.00013	BC MOE 2000. Working WQG; Reference to ANZECC (2000).
Boron	mg/L	1.5	CCME 2009
Cadmium	mg/L	0.00004	CCME 2014. The hardness-dependent CCME guideline for total cadmium (mg/L) is 0.00004 mg/L when hardness > 0 to < 17 mg/L $CaCO_3$ and is 0.001*100.83*log(H)-2.46 where H = hardness (mg/L $CaCO_3$) when hardness is >= 17 to <= 280 mg/L $CaCO_3$. For hardness > 280 mg/L $CaCO_3$, the guideline is 0.00037 mg/L. The median hardness of baseline samples for Whale Tail was 9.1 mg/L $CaCO_3$, therefore the CCME guideline of 0.00004 mg/L was applied.
Chromium	mg/L	0.005	FEQG 2018 for Cr(VI).
Cobalt	mg/L	0.00077	FEQG 2017. Hardness dependent guideline: WQG=exp{(0.414[ln(hardness)] – 1.887} Value shown for hardness of 50 mg/L.
Copper	mg/L	0.002	CCME 1987
Iron	mg/L	0.3	CCME 1987
Lead	mg/L	0.001	CCME 1987
Lithium	mg/L	NV	No CCME, BC MOE, or other applicable WQG for lithium; Previous BC MOE Working WQG is no longer listed.
Manganese	mg/L	Equation: 0.0044*hardness+0.605	BC MOE 2001. There is no CCME guideline for total manganese in water. The hardness-dependent BC MOE guideline for total manganese in mg/L is 0.0044*H + 0.605, where H = hardness (mg/L $CaCO_3$). A waterbody-specific screening value was calcuated using predicted minimum hardness (calculated from predicted calcium and magnesium for Vault Pit, Portage Pit and Wally Lake) or measured minimum hardness (for Second Portage Lake and Third Portage Lake).
Mercury	mg/L	0.000026	CCME 2003
Molybdenum	mg/L	0.073	CCME 1999
Nickel	mg/L	0.025	CCME 1987. Based on hardness <60 mg/L $CaCO_3$.
Selenium	mg/L	0.001	CCME 1987
Silver	mg/L	0.00025	CCME 2015
Strontium	mg/L	2.5	FEQG 2020

Table D-7: Surface Water Screening Criteria for Aquatic Health

Parameter	Unit	CREMP Threshold[a]	Basis of CREMP Threshold[b]
Thallium	mg/L	0.0008	CCME 1999
Uranium	mg/L	0.015	CCME 2011
Vanadium	mg/L	0.12	FEQG 2016
Zinc	mg/L	Equation: exp(0.947 *[ln(hardness)] - 0.815*(pH)+ 0.398*[ln(DOC)] + 4.625)	CCME 2018 equation for for dissolved Zn. Median baseline field pH (6.88) and DOC (1.79 mg/L) for Whale Tail Pit were used. Median baseline field pH (7.12) and DOC (1.67) for Meadowbank waterbodies were used. Median baseline field pH (7.67) and DOC (2.2) for Wally Lake were used. A waterbody-specific screening value was calcuated using predicted minimum hardness (calculated from predicted calcium and magnesium for Vault Pit, Portage Pit and Wally Lake) or measured minimum hardness (for Second Portage Lake and Third Portage Lake).
Dissolved Metals			
Aluminum	mg/L	0.05	BC MOE 2001. A pH-dependent water quality guideline for dissolved-aluminum (mg/L) has been developed by BC MOE for protection of freshwater aquatic life when pH <6.5 as follows: dissolved-aluninum = e(1.6-3.327*pH + 0.402*K) where K = pH2. For pH >= 6.5 the guideline is 0.05 mg/L. Based on the median lab pH observed in baseline samples for Whale Tail (6.94) and for Meadowbank (6.90), the corresponding guideline is 0.05 mg/L in both cases.
Radionuclides			
Radium (Ra226)	Bq/L	0.11[c]	There is no CREMP Threshold for radium. The Saskatchewan Environmental Quality Guideline of 0.11 Bq/L for dissolved radium-226 was selected as the screening value for the HHERA as it is considered protective of aquatic receptors.

Notes:
CREMP = Core Receiving Environment Monitoring Plan; mg/L = milligram per litre; NV = no value; n/a = not applicable; CCME = Canadian Council of Ministers of the Environment; BC MOE = British Columbia Ministry of Environment; WQG = water quality guideline; mg-N/L = milligram nitrogen per litre; N = nitrogen; mg-P/L = milligrams phosphorus per litre; CaCO3 = calcium carbonate; FEQG = federal environmental quality guideline; Cr(VI) = chromium VI; DOC = dissolved organic carbon; Bq/L = becqurel per litre; HHERA = human health and ecological risk assessment.

(a) Azimuth Consulting Group Inc. 2022. Core Receiving Environment Monitoring Plan (CREMP) 2022 Plan Update. Meadowbank Complex. Prepared by Azimuth Consulting Group Inc. for Agnico Eagle Mines Ltd. April 22, 2022. Appendix B: Water Quality Triggers - 2019 Update.

(b) References as cited by Azimuth 2022.

(c) Government of Saskatchewan. 2017. Saskatchewan Environmental Quality Guidelines. Fact Sheet: Radium-226 in Surface Water.

Table D-8: Water Quality Screening for Aquatic Health - Meadowbank Waterbodies

Parameter	Unit	CREMP Threshold for Aquatic Health	Baseline Concentrations +10% [e]	Surface Water Concentrations			Surface Water Concentrations		
				Second Portage Lake	Third Portage Lake East	Third Portage Lake North	Vault Pit	Portage Pit	Wally Lake
Conventional Parameters									
Hardness, as $CaCO_3$ [d]	mg/L	-	-	14	9.9	9.2	43	20	21
Alkalinity as $CaCO_3$	mg/L	-	-	11	7.9	6.9	49	49	21
Total dissolved solids	mg/L	-	-	26	22	17	65	38	37
Major Ions									
Calcium	mg/L	-	-	4.0	2.7	2.4	12	6.5	6.5
Chloride	mg/L	120	-	0.90	0.81	0.84	5.7	3.6	1.7
Total cyanide	mg/L	0.005 [f]	-	0.0013	0.0014	0.0012	0.00075	0.00048	0.00099
WAD cyanide	mg/L	0.005 [f]	-	0.0013	0.0014	0.0012	0.00065	0.00048	0.00098
Fluoride	mg/L	0.12	-	0.073	0.079	0.075	0.095	0.061	0.062
Magnesium	mg/L	-	-	1.3	1.1	0.98	3.9	1.6	1.9
Potassium	mg/L	-	-	0.55	0.55	0.52	2.3	1.1	0.86
Sodium	mg/L	-	-	0.87	1.1	1.1	4.5	2.2	1.4
Sulphate	mg/L	128	-	4.9	4.5	4.5	20	9.4	8.0
Nutrients and Biological Indicators									
Nitrate	mg-N/L	3.0	-	0.0064	0.0070	0.0067	0.51	0.099	0.11
Nitrite	mg-N/L	0.060	-	0.0010	0.0010	0.0010	0.0088	0.0054	0.0025
Total ammonia	mg-N/L	0.13	-	0.012	0.0095	0.011	0.082	0.026	0.026
Total phosphorus	mg-P/L	-		-	-	-	0.023	0.020	0.0069
Total Metals									
Aluminum	mg/L	0.10	0.0242	0.0070	0.0061	0.0053	0.0056	0.0037	0.0055
Antimony	mg/L	0.0090	0.00055	0.00010	0.00010	0.00010	0.00019	0.000075	0.00012
Arsenic	mg/L	0.0050	0.00055	0.00039	0.00055	0.00022	0.0024	0.0014	0.00072
Barium	mg/L	1.0	0.022	0.0027	0.0029	0.0029	0.0039	0.0020	0.0029
Beryllium	mg/L	0.00013	0.0055	0.00010	0.00010	0.00010	**0.00033**[C]	**0.00025**[C]	**0.00014**[C]
Boron	mg/L	1.5	0.11	0.010	0.010	0.010	0.014	0.0076	0.011
Cadmium	mg/L	0.000040	0.00638	0.0000050	0.0000050	0.0000050	0.000016	0.000010	0.0000071
Chromium	mg/L	0.0050	0.0011	0.00010	0.00010	0.00011	0.00071	0.00032	0.00045
Cobalt	mg/L	0.00077	0.0011	0.00010	0.00010	0.00010	0.00049	0.00056	0.00017
Copper	mg/L	0.0020	0.0011	0.00073	0.00050	0.00050	0.00085	**0.0021**[C]	0.0011
Iron	mg/L	0.30	0.033	0.026	0.016	0.010	0.013	0.0072	0.017
Lead	mg/L	0.0010	0.00429	0.000050	0.000079	0.000065	0.00022	0.00015	0.00010
Lithium	mg/L	-	0.011	0.0010	0.0010	0.0010	0.0033	0.0026	0.0014
Manganese	mg/L	0.77 - 0.80[a]	0.0055	0.0020	0.0014	0.0012	0.012	0.0044	0.0036
Mercury	mg/L	0.000026	0.00011	0.0000050	0.0000050	0.0000050	0.0000071	0.0000050	0.0000054
Molybdenum	mg/L	0.073	0.0011	0.00013	0.00012	0.00011	0.0036	0.00050	0.00090
Nickel	mg/L	0.025	0.0011	0.00051	0.00056	0.00050	0.0023	0.0011	0.00086
Selenium	mg/L	0.0010	0.0011	0.000050	0.000050	0.000050	0.00062	0.00053	0.00016
Silver	mg/L	0.00025	0.00011	0.000010	0.000010	0.000010	0.000057	0.000051	0.000019
Strontium	mg/L	2.5	0.0132	0.019	0.013	0.011	0.062	0.032	0.033
Thallium	mg/L	0.00080	0.11	0.000010	0.000010	0.000010	0.00047	0.00038	0.000099
Uranium	mg/L	0.015	0.00022	0.000051	0.000041	0.000041	0.0013	0.00058	0.00030
Vanadium	mg/L	0.12	0.033	0.00050	0.00050	0.00050	0.00033	0.00025	0.00049
Zinc	mg/L	0.0053 - 0.013[b, a, c]	0.025	0.0030	0.0030	0.0030	0.0011	0.00061	0.0030
Dissolved Metals									
Aluminum	mg/L	0.050	-	0.0000034	0.0000029	0.0000024	-	-	-

Notes:

"-" = no guideline or no baseline data; mg/L = milligrams per litre; mg-N/L = milligrams nitrogen per litre; $CaCO_3$ = calcium carbonate

[a] = guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (9.2 to 43 mg/L). The guideline is calculated based on the individual hardness value for each waterbody. For waterbodies where the minimum hardness was below the validity range of the criteria, a the lower bound hardness of 37 mg/L was used.

[b] = guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.1 to 7.7). The guideline is calculated based on the individual pH for each waterbody.

[c] = guideline is dissolved organic carbon dependent. The guideline range shown is based on the baseline DOC concentration range observed in the dataset (1.7 to 2.2 mg/L). The guideline is calculated based on the individual DOC concentration in each waterbody.

[d] = hardness values presented are minimum measured (Second Portage Lake, Third Portage Lake East, Third Portage Lake North) or predicted (Vault Pit, Portage Pit, Wally Lake).

[e] Baseline concentrations are maximum concentrations in lake water reported in Azimuth (2006).

[f] There was no CREMP Threshold, therefore the Canadian Council of Ministers of the Environment (CCME 2024) Water Quality Guideline (freshwater, long-term) for free cyanide was used.

[C] = concentration is higher than the CREMP screening value.

Bolded concentrations are higher than water quality guidelines.

Underlined concentrations are higher than Baseline +10%

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

Water quality predictions were rounded to two significant digits for presentation purposes. Values including all decimal places were used in the risk calculations.

Source: Concentrations for Second Portage Lake and Third Portage Lake are annual averages from the 2023 monitoring data in the 2023 Core Recieiving Environment Monitoring Program report (Azimuth 2024). Concentrations for Vault Pit and Wally Lake are maximum predicted concentrations during post-closure (July 2046-December 2060). Concentrations for Portage Pit the maximum predicted concentrations during the last year modelled (August 2043-July 2044).

Table D-9: Water Quality Screening for Aquatic Health - Whale Tail Waterbodies

Parameter	Unit	CREMP Threshold for Aquatic Health	Baseline Concentrations + 10%						Maximum Predicted Surface Water Concentrations							
			Whale Tail Lake	Flooded Pit	Kangislulik Lake (formerly Mammoth Lake)	Lakes A15 and A12	Downstream Node 1	Downstream Node 2	Whale Tail North Basin	Whale Tail South Basin	Kangislulik Lake	Lake A15	Lake A12	Lake A76	Downstream Node 1	Downstream Node 2
Conventional Parameters																
Hardness, as $CaCO_3$ [(d)]	mg/L	-	-	-	-	-	-	-	32	25	38	29	27	14	11	12
Total dissolved solids	mg/L	-	23	23	24	20	22	22	79	58	127	102	92	45	36	37
Major Ions																
Calcium	mg/L	-	2.4	2.4	2.6	2.8	2.2	2.2	14	8.2	17	14	13	6.1	5.1	5.2
Chloride	mg/L	120	-	-	-	-	-	-	13	12	25	21	19	9.2	7.2	7.4
Fluoride	mg/L	0.12	-	-	-	-	-	-	0.061	0.043	0.065	0.056	0.053	0.027	0.034	0.034
Magnesium	mg/L	-	0.87	0.87	0.87	0.95	0.94	0.94	2.9	1.8	3.9	3.3	3.0	1.5	1.5	1.5
Potassium	mg/L	-	0.48	0.48	0.58	0.63	0.37	0.65	2.0	1.6	3.2	2.6	2.4	1.2	1.0	1.0
Sodium	mg/L	-	0.61	0.61	0.61	0.64	0.80	0.80	1.3	1.2	2.2	1.9	1.8	0.88	0.91	0.89
Sulphate	mg/L	128	2.9	2.9	3.2	3.6	1.3	2.6	21	4.6	18	15	13	6.6	5.1	5.3
Nutrients																
Nitrate	mg-N/L	3.0	-	-	-	-	-	-	0.17	0.100	0.45	0.34	0.30	0.14	0.091	0.10
Nitrite	mg-N/L	0.060	-	-	-	-	-	-	0.00060	0.00053	0.0011	0.00097	0.00085	0.00043	0.00050	0.00050
Total ammonia	mg-N/L	0.13	-	-	-	-	-	-	0.00098	0.0086	0.0047	0.0059	0.0070	0.0035	0.013	0.013
Total Metals																
Aluminum	mg/L	0.10	0.0242	0.0121	-	-	-	-	0.014	0.0074	0.014	0.012	0.010	0.0048	0.0056	0.0055
Antimony	mg/L	0.0090	0.00024	0.000055	0.000055	0.000055	0.000055	0.000055	0.00024	0.000054	0.00026	0.00021	0.00017	0.000089	0.000083	0.000083
Arsenic	mg/L	0.025	0.00032	0.00033	0.00052	0.00035	0.00017	0.00018	0.024	0.00058	0.016	0.012	0.010	0.0051	0.0034	0.0038
Barium	mg/L	1.0	0.0048	0.0046	0.0052	0.0067	0.0034	0.0081	0.019	0.015	0.028	0.023	0.021	0.011	0.0099	0.0098
Beryllium	mg/L	0.00013	-	-	0.000055	0.000011	0.000011	0.000011	0.000014	0.000011	0.000013	0.000013	0.000012	0.0000063	0.000010	0.000010
Boron	mg/L	1.5	-	-	-	-	-	-	0.0063	0.0053	0.0061	0.0058	0.0057	0.0030	0.0050	0.0050
Cadmium	mg/L	0.000040	-	-	-	-	-	-	0.0000075	0.0000028	0.0000062	0.0000059	0.0000056	0.0000026	0.0000054	0.0000049
Chromium	mg/L	0.0050	0.000154	0.000055	0.000055	0.000055	0.000055	0.000055	0.00022	0.00022	0.00020	0.00017	0.00016	0.000079	0.000095	0.000092
Cobalt	mg/L	0.00077	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.00015	0.000062	0.00014	0.00012	0.00011	0.000055	0.000051	0.000051
Copper	mg/L	0.0020	-	-	-	-	-	-	0.00097	0.00053	0.00094	0.00079	0.00069	0.00035	0.00037	0.00036
Iron	mg/L	0.30	0.041	0.11	-	-	-	-	0.052	0.049	0.048	0.039	0.033	0.017	0.015	0.015
Lead	mg/L	0.0010	0.00055	0.00055	-	-	-	-	0.000049	0.000048	0.000047	0.00015	0.00021	0.000091	0.00055	0.00049
Lithium	mg/L	-	0.0070	0.0050	0.00055	0.00055	0.00055	0.00055	0.0022	0.0020	0.0029	0.0023	0.0020	0.00099	0.00080	0.00083
Manganese	mg/L	0.77 - 0.77[(a)]	-	-	0.0035	0.00065	0.00075	0.00075	0.040	0.026	0.048	0.037	0.030	0.014	0.0100	0.011
Mercury	mg/L	0.000026	-	-	-	-	-	-	0.0000043	0.0000026	0.0000044	0.0000039	0.0000037	0.0000019	0.0000025	0.0000025
Molybdenum	mg/L	0.073	0.000065	0.000028	0.000028	0.000028	0.000028	0.000028	0.0015	0.00030	0.0013	0.0010	0.00085	0.00043	0.00029	0.00032
Nickel	mg/L	0.025	0.00095	0.00090	0.00098	0.00072	0.00028	0.00028	0.0096	0.0015	0.0071	0.0055	0.0048	0.0024	0.0016	0.0018
Selenium	mg/L	0.0010	-	-	-	-	-	-	0.00012	0.000027	0.00015	0.00012	0.00010	0.000049	0.000041	0.000042
Silver	mg/L	0.00025	-	-	-	-	-	-	0.0000062	0.0000053	0.0000061	0.0000058	0.0000057	0.0000030	0.0000050	0.0000050
Strontium	mg/L	2.5	0.017	0.017	0.014	0.012	0.0068	0.0090	0.069	0.064	0.11	0.090	0.080	0.039	0.031	0.032
Thallium	mg/L	0.00080	0.0000055	0.0000055	0.0000055	0.0000055	0.0000055	0.0000055	0.0000064	0.0000053	0.0000064	0.0000060	0.0000059	0.0000031	0.0000050	0.0000050
Uranium	mg/L	0.015	-	-	-	-	-	-	0.00024	0.000081	0.00025	0.00019	0.00016	0.000081	0.000056	0.000061
Vanadium	mg/L	0.12	0.00055	0.00055	0.00055	0.00028	0.00028	0.00028	0.00045	0.00026	0.00042	0.00038	0.00036	0.00018	0.00025	0.00025
Zinc	mg/L	0.014 - 0.015[(a, b, c)]	-	-	-	-	-	-	0.0019	0.0016	0.0019	0.0019	0.0020	0.00095	0.0021	0.0019
Dissolved Metals																
Aluminum	mg/L	0.05	-	-	-	-	-	-	0.014	0.0074	0.014	0.012	0.010	0.0048	0.0056	0.0055
Radionuclides																
Radium	Bq/L	0.11	-	-	-	-	-	-	0.000627	0.000012	0.000426	0.000323	0.000268	0.000136	0.0000887	0.0000984

Notes:

"-" = no guideline or no data available; mg/L = milligrams per litre; mg-N/L = milligrams nitrogen per litre; Bq/L = Becquerel per litre

[(a)] = guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (11 to 38 mg/L). The guideline is calculated based on the individual hardness value for each waterbody. For waterbodies where the minimum hardness was below the validity range of the criteria, a the lower bound hardness of 37 mg/L was used.

[(b)] = guideline is pH dependent. The guideline range shown is based on the median baseline pH observed in the dataset (6.88).

[(c)] = guideline is dissolved organic carbon dependent. The guideline range shown is based on the median baseline dissolved organic carbon observed in the dataset (1.79 mg/L).

[(d)] = minimum calcualted hardness values are presented.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

Water quality predictions were rounded to two significant digits for presentation purposes. Values including all decimal places were used in the risk calculations.

Source: Lorax (Lorax Environmental Services). 2024. Whale Tail Mine: Water Management Plan (Version 13_NWB). May 2024.

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