

APPENDIX H 2024 VEGETATION MONITORING PROGRAM REPORT



B2Gold Back River Corp. **2024 Vegetation Monitoring Program Report**

Back River Project

17 March 2025

CA0035158.8381-181 R-Rev0-5000



Distribution List

1 Electronic Copy - B2Gold Nunavut

1 Electronic Copy - WSP Canada Inc.

Acronyms and Abbreviations

Term	Definition
ALS	ALS Laboratories
AQMMP	Air Quality Monitoring and Management Plan
CESCC	Canadian Endangered Species Conservation Council
DL	detection limit
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Statement
GN	Government of Nunavut
LSA	Local Study Area
NIRB	Nunavut Impact Review Board
MLA	Marine Laydown Area
NA	no visible damage to vegetation
PMP	permanent monitoring plot
PDA	Potential Development Area
RPD	relative percent difference
RSA	Regional Study Area
TL	mesic dwarf-shrub tundra vegetation association
TH	dry sparse tundra vegetation association
TS	shrubby tundra vegetation association
VMP	Vegetation Monitoring Plan
WIR	winter ice road
WSP	WSP Canada Inc.
ZOI	Zone of Influences

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1 INTRODUCTION

WSP Canada Inc. (WSP) was retained by B2Gold Back River Corp. (B2Gold Nunavut) to implement a vegetation monitoring program designed to quantify the potential impacts on vegetation at the Back River Project (the Project).

1.1 Background

The Vegetation Monitoring Plan (VMP or Plan; Sabina 2020) outlines the approach for monitoring Project-related vegetation impacts throughout the Project life. The Plan has been developed following the requirements of the Nunavut Impact Review Board (NIRB) to B2Gold Nunavut (NIRB 2013) and to address the terms and conditions outlined in Project Certificate No. 007 (prior to the July 2024 amendment), as well as any commitments made by B2Gold Nunavut throughout the regulatory review process. Five monitoring components of the VMP are outlined in Table 1. The vegetation monitoring conducted in 2024 represents the fifth year of implementation of the VMP since it was updated in January 2020.

Table 1: Vegetation Monitoring Plan Components

Monitoring Component	Description	Monitoring Schedule/Frequency	Years Completed	Comments
Footprint Monitoring	Spatial comparison of the previous footprint to the current year's footprint Cumulative vegetation loss will be quantified by ecosystem type	Annually, during construction and Operation	2020 - 2024	Reported in NIRB Annual reports
WIR Monitoring	Assessment of paired vegetation monitoring plots along WIR	Every three years, during construction and operations	2018, 2019, 2020, 2022	Plots were added/established as the alignment of winter road changed
	Photographic monitoring	Annually	2019, 2022, 2023, 2024	Photographs only taken on years the WIR was constructed
Vegetation Monitoring	Permanent monitoring plots (PMPs) assessed at distance gradients from the PDA	Every three years, during construction and operations	2021, 2024	Reported in this report
Non-Native Plant Monitoring	Focused surveys around Goose and MLA sites			
Lichen Monitoring	Sampling sites in alignment with vegetation PMPs			

NIRB = Nunavut Impact Review Board; WIR = winter ice road; PMP = permanent monitoring plot; PDA = Potential Development Area; MLA = Marine Laydown Area.

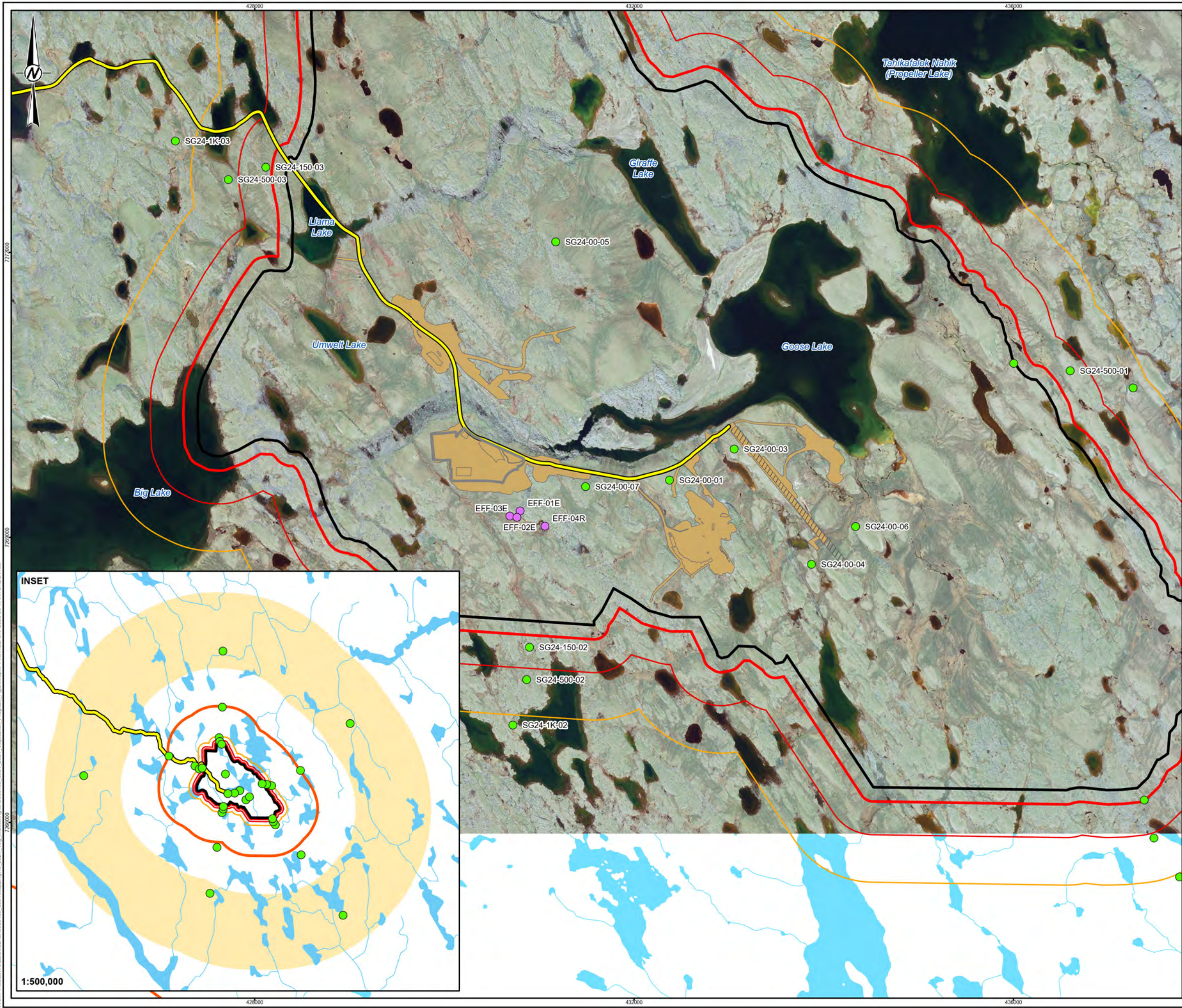
Vegetation monitoring includes monitoring vascular and non-vascular species abundance, richness (diversity), and vigour (health). This has been conducted through the establishment of fixed areas and permanent monitoring plots in dominant vegetation associations within the Local Study Area (LSA) and Regional Study Area (RSA). Lichen monitoring coincides with the vegetation monitoring locations, collecting samples for baseline metal analysis. The lichen monitoring locations were aligned with the Air Quality Monitoring and Management Plan (AQMMP) sampling locations to capture potential dust deposition effects from the mine's operations on lichen tissue. The Environmental Impact Statement (EIS) for the mine determined that winds are predominantly from the south during the growing season (Sabina 2015, Volume 4) and was used to guide where permanent vegetation monitoring plots were established. Winter ice road (WIR) monitoring also took place in 2024 in the form of annual photographic monitoring.

2 STUDY AREA AND MONITORING LOCATIONS

The Project lies in western Nunavut in the West Kitikmeot Region within the continuous permafrost zone of the continental Canadian Arctic. The Project is composed of two main areas: the Goose Property Area and the Marine Laydown Area (MLA), with a WIR connecting the two (Figures 1, 2 and 3, respectively). The MLA is located on the western shore of Southern Bathurst Inlet, approximately 130 kilometres (km) north of the Goose Property. A WIR is used to transport supplies between the MLA and Goose Property during the winter months.

Since a formal system of ecosystem classification does not exist for the Canadian Arctic, a preliminary classification system developed by Rescan (2013) for the Project Baseline was used for ecosite classification. This system involved incorporating data from other studies with previously developed site level ecosystem classification systems to delineate mappable ecological units with consistent vegetation associations, soil properties, and subject to a similar climate.

Broad ecosystem classes in the Project area include tundra, freshwater, marine, wetland, bedrock, riparian, and esker. Wetland/riparian ecosystems were defined according to MacKenzie and Moran (2004), and tundra was defined according to EBA (2002). Brief definitions and key characteristics of these ecosystem classes and specific vegetation associations are presented in the Back River Project: 2012 Ecosystems and Vegetation Baseline Report (Rescan 2013).



LEGEND

- EFFLUENT RELEASE AREA PLOT
- 2024 VEGETATION MONITORING LOCATION
- WATERCOURSE
- WINTER ICE ROAD
- AIRSTRIP
- CAMP/PLANT SITE
- JUNE 2024 AS-BUILT FOOTPRINT
- WATERBODY
- 10-20km INSET

DISTANCE FROM PDA

- GOOSE PROPERTY PDA
- 150m
- 500m
- 1km
- 5km

REFERENCE(S)

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PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 13N

CLIENT

B2GOLD BACK RIVER CORP.

PROJECT

B2GOLD BACK RIVER PROJECT

2024 VEGETATION PERMIT APPLICATION

TITLE

2024 VEGETATION, NON-NATIVE PLANT AND LICHEN MONITORING LOCATIONS – GOOSE PROPERTY

CLIENT	YYYY-MM-DD	2025-03-17
CONSULTANT	DESIGNED	BCF
	PREPARED	PMT
	REVIEWED	KS
	APPROVED	KW

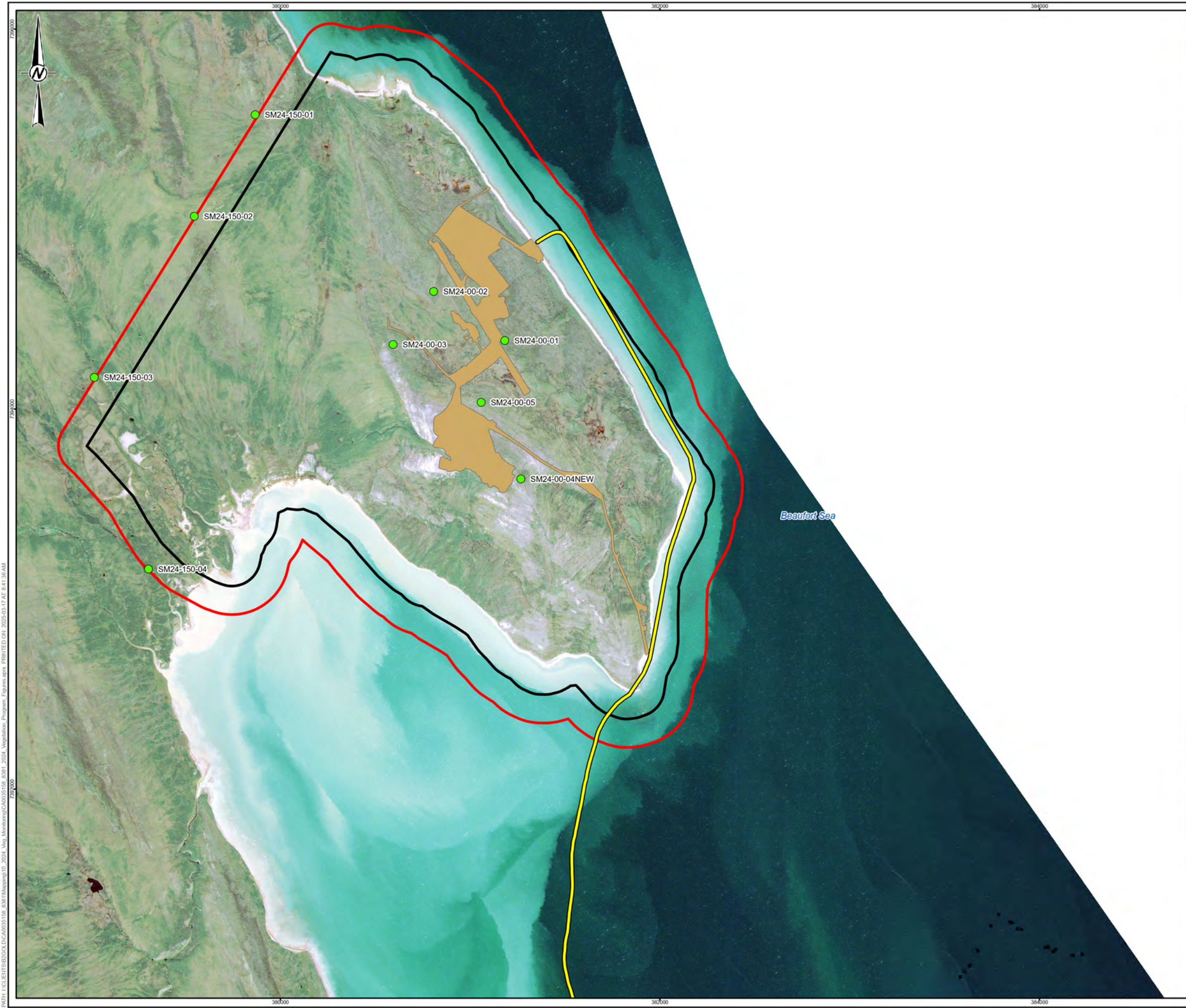
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FIGURE 1

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LEGEND

- 2024 VEGETATION MONITORING LOCATION
- WINTER ICE ROAD
- JUNE 2024 AS-BUILT FOOTPRINT

DISTANCE FROM PDA

- MARINE LAYDOWN AREA PDA
- 150m

0 500 1,000
1:20,000 METRES

REFERENCE(S)
PROJECT DATA AN IMAGERY OBTAINED FROM CLIENT. HYDROGRAPHY DATA OBTAINED FROM GEOGRATIS. © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
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CLIENT
B2GOLD BACK RIVER CORP.

PROJECT
B2GOLD BACK RIVER PROJECT
2024 VEGETATION PERMIT APPLICATION

TITLE
2024 VEGETATION, NON-NATIVE PLANT AND LICHEN
MONITORING LOCATIONS – MARINE LAYDOWN AREA

CLIENT	YYYY-MM-DD	2025-03-17
CONSULTANT	DESIGNED	BCF
	PREPARED	PMT
	REVIEWED	KS
	APPROVED	KW

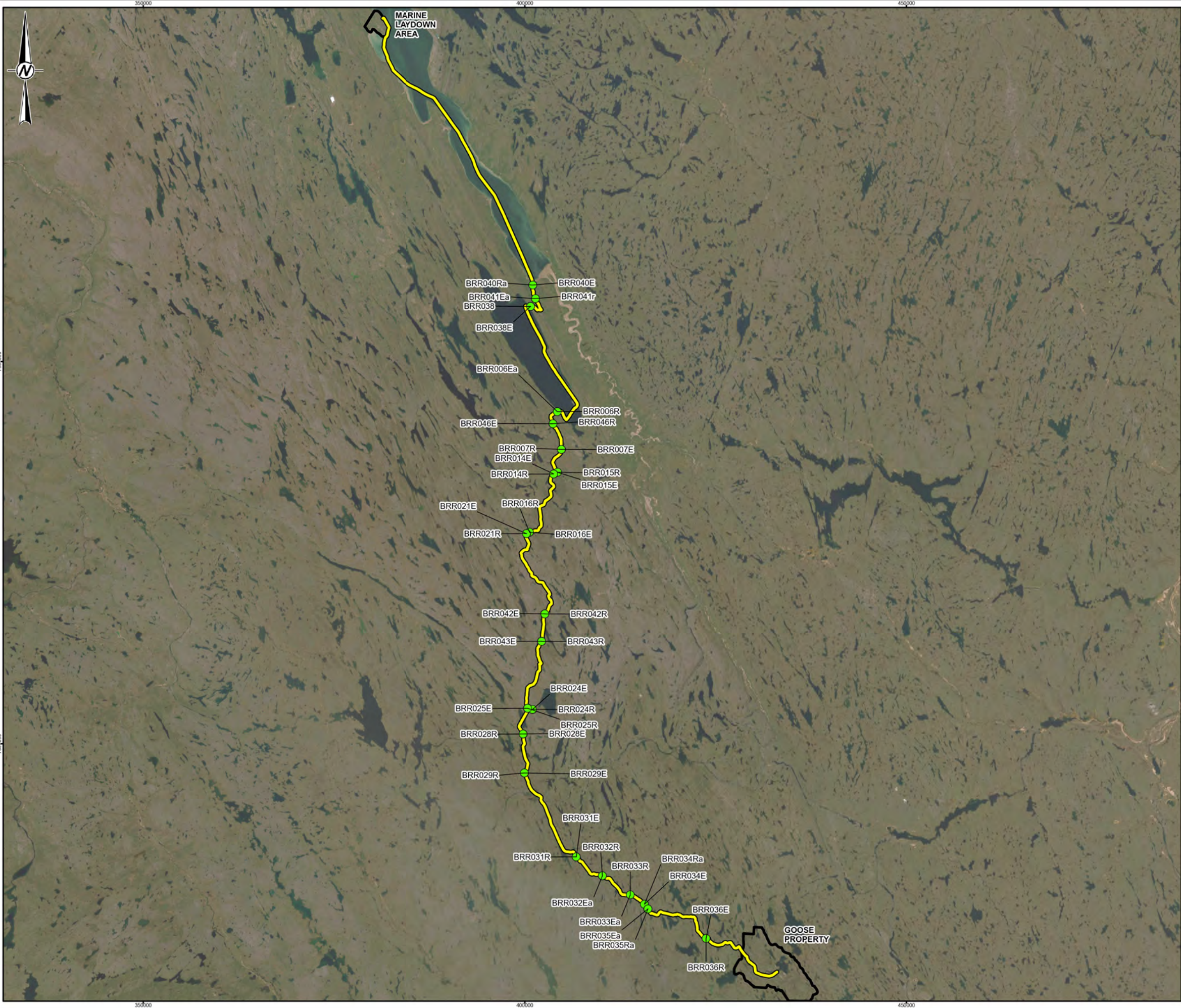
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LEGEND

- 2024 VEGETATION MONITORING LOCATION
- WINTER ICE ROAD
- ▭ PDA BOUNDARY

REFERENCE(S)

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CLIENT

B2GOLD BACK RIVER CORP.


PROJECT

B2GOLD BACK RIVER PROJECT

2024 VEGETATION PERMIT APPLICATION

TITLE

2024 WINTER ICE ROAD MONITORING LOCATIONS

CLIENT		YYYY-MM-DD	2025-03-17
CONSULTANT		DESIGNED	BCF
		PREPARED	SP
		REVIEWED	KS
		APPROVED	KW

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3 VEGETATION MONITORING PROGRAM OBJECTIVES

The main objectives of the vegetation monitoring program are:

- to measure plant species abundance (percent cover), diversity (richness), and health at vegetation plots along the WIR, MLA and Goose site
- to measure direct loss and indirect effects to plant communities as a result of the construction and operations of the WIR
- to measure the distribution and abundance of non-native plant species
- to monitor and evaluate the effectiveness of mitigation measures
- to provide an early warning of undesirable environmental changes and inform adaptive management strategies

The vegetation monitoring program consists of five main components:

- footprint monitoring
- WIR monitoring
- vegetation monitoring
- non-native plant monitoring
- lichen monitoring

Based on the monitoring schedule outlined in the VMP, the vegetation monitoring program completed in 2024 consisted of vegetation monitoring, non-native plant monitoring and lichen monitoring components, and annual photographic monitoring of the WIR.

WSP also conducted an ad-hoc assessment of vegetation health in an effluent area near the main plant where water was being discharged.

4 METHODS

Plot locations were selected in alignment with AQMMP sampling locations to capture potential dust deposition effects on vegetation. The gradient design is designed to capture Zone of Influences (ZOI) from dust on vegetation with increasing distance from the Project. Sampling locations were established along a distance gradient away from each Potential Development Area (PDA) boundary to allow evaluation of results relative to distance from Project activities and coincide with vegetation monitoring locations. Distances for sampling locations aligned with AQMMP sampling locations to capture potential effects of the Project's operations on lichen tissue and will include distances in the AQMMP and vegetation monitoring component:

- 0 m from the Goose Project Area
- 150 m from the Goose Project Area
- 500 m from the Goose Project Area
- 1 km from the Goose Project Area
- 5 km from the Goose Project Area

- 10 to 20 km from the Goose Project Area
- 0 m from the MLA
- 150 m from the MLA

Data collection at the vegetation monitoring plots was completed from July 3 to 10, 2024. A total of 40 vegetation monitoring plots have been previously established (31 on the Goose Property, 9 in the Marine Laydown Area) with distances from the PDA aligning with the AQMMP. One plot at the Goose Property and one at MLA had been lost due to development and had to be reestablished with a plot nearby. Both vegetation monitoring and lichen sampling were conducted at these plots. The location and vegetation class of these plots are presented in Table 2, Figure 1 and Figure 2.

Table 2: Summary of Vegetation Monitoring Plots Assessed in 2024

Project Component	Distance from PDA Boundary	Number of Plots
Goose Project Area	0 m	6
	150 m	5
	500 m	5
	1 km	5
	5 km	5
	10 to 20 km	5
subtotal		31
Marine Laydown Area	0 m	5
	150 m	4
subtotal		9
Total		40

4.1 Vegetation Monitoring

To capture the potential effects of the Project’s operations, vegetation monitoring plots were established in 2021 and revisited in 2024. The plots were established in cardinal directions surrounding the Project components in the dominant vegetation associations - mesic dwarf tundra and dry sparse tundra (Table 3). In 2021, many plots classified as undifferentiated tundra were recategorized into the correct vegetation associations in 2024.

Table 3: Distribution of Vegetation Monitoring Plots by Vegetation Association

Project Component	Vegetation Association	Number of Monitoring Plots
Goose Project	Dry Sparse Tundra (TH)	29
	Mesic Dwarf Tundra (TL)	2
Marine Laydown Area	Dry Sparse Tundra (TH)	5
	Mesic Dwarf Tundra (TL)	4

Monitoring was conducted during the peak flowering period for most species when fruiting structures were likely to be present to allow for accurate identification, consistent with the 2021 monitoring also conducted in early July. The vegetation dataset is limited to those species with pronounced fruiting structures (and characteristics) present in early summer (i.e., early July), which allowed for their identification.

The monitoring plots were assessed by a vegetation ecologist and included plant species present by vegetation strata layer, ground cover, detailed site information and vegetation association data. The plots were one square meter in size, and plot corners were identified with labelled metal tags or markers to be identifiable in future sampling events. Information collected at each site included:

- plant species composition (richness) and relative abundance (relative mean plant species percent cover) of vascular plant and non-vascular species
- average heights of plant species observed
- vigour class or overall plant health of vascular plant species
- relative abundance (percent cover) of surface substrate materials
- dominant structural stage, moisture regime, and nutrient regime
- wildlife sign (e.g., fecal pellets, browsing/grazing, beds, digging) observations, if present

Other recorded plot attributes included the dominant structural stage, moisture regime, and nutrient regime. The structural stage describes the existing dominant vegetation strata structure (e.g., dominated by lichen, bryophyte, forb, etc.). Moisture and nutrient regimes signify the relative moisture and nutrient supply available in the soil to vegetation and are limiting factors in vegetation growth. The plant species present and soil information are used to estimate moisture and nutrient regimes.

Total vegetation abundance inclusive of all vegetation layers could add to more than 100% due to overlap in the layers (e.g., shrub layer, forb layer, graminoid layer); however, within a vegetation layer, abundance cannot add to more than 100%. Relative abundance (percent cover) of each vegetation layer was recorded for each plot, including:

- shrubs
- forbs
- graminoids (grasses and sedges)
- bryophytes (mosses, liverworts and hornworts)
- lichens

Percent cover of surface substrate materials (adding to 100%) was recorded within each plot, including:

- live vegetation
- exposed mineral soil/bare ground
- bedrock
- cobbles and stones
- water

- decaying wood
- animal pellets
- litter

Qualitative analytical approaches were completed using an *in-situ* vigour class scale to evaluate overall plant health. Vigour classes closely follow the Ecological Land Survey Site Description Manual (AEP 1994), as follows:

- 0 = very poor (>50% leaves necrotic)
- 1 = poor (31 to 50% leaves necrotic)
- 2 = fair (16 to 30% leaves necrotic)
- 3 = good (6 to 15% leaves necrotic)
- 4 = very good (0 to 5% leaves necrotic)

A similar qualitative approach was also used to assign a disturbance class to each WIR monitoring plot as follows:

- NA = No visible damage
- Low = 0 to 25% vegetation in plot necrotic/damaged
- Moderate = 26 to 50% of the vegetation in the plot necrotic/damaged
- High = 51 to 75% of the vegetation in the plot necrotic/damaged
- Very High = >75% of vegetation in the plot necrotic/damaged, nearly no living vegetation

WIR plots with documented disturbance classes other than NA were considered impacted. Digital photographs were taken from the south side of each plot and facing north. A summary of plots by Project component and vegetative characteristics is provided in Table 3.

4.1.1 Treated Wastewater Effluent Release Area

In addition to the general vegetation monitoring plots, four additional plots were established in 2024 in an area where treated wastewater effluent was being released on native vegetation within the Goose Property. Three plots were established in exposure (affected) areas and one in a nearby reference (unaffected) area. These plots aim to monitor if there are effects from the treated effluent discharge on vegetation.

4.2 Non-Native Plant Monitoring

The Government of Nunavut (GN) and Environment and Climate Change Canada (ECCC) define a non-native species as 'an organism that is not normally found in a region' (CESCC 2010). The Canadian Endangered Species Conservation Council (CESCC) identified 17 non-native plant species not normally found in Nunavut with a potential for becoming established, 14 of which are vascular (non-native) plants to the region (CESCC 2010). To minimize the potential introduction of non-native plants, B2Gold Nunavut has established cleaning requirements for the transport of goods to the site by air or water. The requirements include the inspection and removal of any debris from any inbound equipment and bulk goods prior to transport, as well as on arrival at the site.

Under the VMP, non-native plant species monitoring is to occur during Construction and Operation Phases of the Project, until Closure. Monitoring will be conducted within the Goose Property, MLA, WIR footprint and adjacent habitats to ensure non-native plant species are not introduced to the Arctic environment. This monitoring was conducted by surveillance of the footprint and adjacent habitat during the vegetation monitoring surveys between July 3 and July 10, 2024, similar to how the monitoring was conducted in 2021.

4.3 Lichen Monitoring

The Project is expected to create fugitive dust through various sources, primarily by blasting and crushing rock, and road construction and traffic. As part of the AQMMP, dustfall monitoring occurred during the summer months in experimental and control areas to determine the level of dust deposition associated with the Project (Goose Property and MLA). Additional details of this sampling can be found within the AQMMP (Sabina 2019).

Under the VMP, dustfall impacts were monitored through the evaluation of lichen tissue metal concentrations. A subset of the vegetation monitoring plots outside the footprint and representing a range of distances from Project activities were selected for lichen tissue metal sampling. This sampling was conducted adjacent to the vegetation monitoring plots so as not to alter vegetation composition within the permanent plot itself but also to provide complementary information for both monitoring programs.

The prevailing winds are predominantly southerly during the foliage season for both the Goose Property and MLA (Sabina 2015, Volume 4, Figures 3.1-6 and 3.1-7). The distance gradient was designed in conjunction with the AQMMP, in consideration of the Project footprint and dominant wind direction. Lichen sampling was conducted in close association with vegetation monitoring locations, with actual sampling locations lying outside of monitoring plots. Collected lichen samples were sent to ALS Laboratories for metals analysis.

The lichen sampling program intends to report on baseline levels of metals in lichen potentially affected by the Project. To evaluate the potential for adverse health effects to terrestrial life associated with changes in environmental quality due to chemical releases from the Project, the existing (or baseline) conditions of the environment must first be understood. Lichen species were chosen because they are estimated to account for 87 to 90% of the diet for caribou (Thomas 1998). Lichen can also effectively and preferentially bioaccumulate airborne contaminants because of their lack of roots, large surface area, long life span, and high ion exchange capacity (Naeth and Wilkinson 2006). This allows lichens to provide “worst-case” exposure concentrations for assessment of risks to caribou. Locations of the lichen sampling are provided in Table 4.

Table 4: Lichen Sampling Locations

Project Location	Distance from PDA	Plot Number	Location (13W)	
			Easting	Northing
Goose Project	0 m	SG24-00-01	432371	7269602
		SG24-00-03	433053	7269921
		SG24-00-04	433874	7268703
		SG24-00-05	431140	7272091
		SG24-00-06	434333	7269114
		SG24-00-07 ^(a)	431491	7269541
	150 m	SG24-150-01	436003	7270821
		SG24-150-02	430897	7267853
		SG24-150-03	428118	7272895
		SG24-150-04	430683	7276033

Table 4: Lichen Sampling Locations

Project Location	Distance from PDA	Plot Number	Location (13W)	
			Easting	Northing
Goose Project	500 m	SG24-150-05	437373	7266227
		SG24-500-01	436600	7270761
		SG24-500-02	430871	7267500
		SG24-500-03	427723	7272760
		SG24-500-04	430438	7276331
		SG24-500-05	437479	7265825
	1 km	SG24-1K-01	437259	7270577
		SG24-1K-02	430722	7267013
		SG24-1K-03	427154	7273151
		SG24-1K-04	430446	7276993
		SG24-1K-05	437755	7265431
	5 km	SG24-5K-01	430773	7280923
		SG24-5K-02	441055	7272581
		SG24-5K-03	430053	7262481
		SG24-5K-04	423722	7274466
		SG24-5K-05	441141	7261468
	10 to 20 km	SG24-15K-01	430833	7288284
		SG24-15K-02	447583	7278766
		SG24-15K-03	429144	7256417
		SG24-15K-04	412495	7271862
		SG24-15K-05	446632	7252514
Marine Laydown Area	0 m	SM24-00-01	381187	7394360
		SM24-00-02	380802	7394622
		SM24-00-03	380566	7394354
		SM24-00-04new ^(a)	381267	7393632
		SM24-00-05	381058	7394032
	150 m	SM24-150-01	379864	7395543
		SM24-150-02	379543	7395013
		SM24-150-03	379020	7394173
		SM24-150-04	379307	7393172

(a) A plot was newly established in 2024 to replace plots lost due to project-related disturbance.

Lichen sampling was conducted concurrently with the vegetation monitoring program from July 3 to July 10, 2024. For each sample location, species of lichen collected, weather conditions at the time of sampling, and surface substrate percentages were recorded.

4.3.1 Field Protocols

Clean sampling protocols were implemented so that samples were not contaminated by external sources following the same procedures employed for the 2021 lichen monitoring (Golder 2022). Powderless nitrile gloves were used for all contact with lichens. Titanium scissors were used to snip the upper leafy portion from several plants within the same location at each sample site to create a composite sample. Samples were collected in Ziploc bags and kept cool until they could be frozen and transported to the laboratory for analysis. All tools used in sampling were cleaned between sites by washing with detergent and rinsing with distilled water. New nitrile gloves were used at each sample plot.

Lichen samples were not washed or otherwise cleaned of dust and soil prior to analysis. A cleaning step was not considered appropriate given that the purpose of the lichen monitoring program was to assess dust deposition on lichen and its associated effects on caribou health. Caribou are also known to inadvertently ingest dust and soil while foraging.

Field duplicates of lichen were collected to assess the variability in results within a sampling location. Eight lichen duplicate samples were collected, with one sample collected from a plot within each distance gradient from the PDA. At each location where the duplicate was collected, the lichen sample was gently mixed to form a composite and then split into two separate samples for metals analysis.

4.3.2 Laboratory Analysis

Lichen samples were analyzed by ALS Environmental (ALS), Burnaby, British Columbia. Lichen samples were analyzed for total mercury by cold vapour atomic fluorescence spectrophotometry (CVAFS), total metals by collision/reaction cell inductively coupled plasma mass spectrometry (CRC ICP-MS), and percent moisture. The analyzed metals included aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, calcium, cesium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, mercury, molybdenum, nickel, phosphorus, potassium, rubidium, selenium, sodium, strontium, tellurium, thallium, tin, uranium, vanadium, zinc, and zirconium.

4.3.3 Quality Assurance and Quality Control

Quality assurance and quality control practices were followed to confirm that the chemistry data collected are representative, of known data quality, properly documented and are scientifically defensible.

Quality assurance procedures for field operations involved field crew training, pre-field meetings, use of standardized methods, and providing clear instructions for collecting and handling field data. Quality control procedures implemented during field operations included the collection of duplicate samples to evaluate sample heterogeneity. The results obtained from the duplicate samples were used to calculate the relative percent difference (RPD) for each parameter. A lower RPD indicates higher sample homogeneity. An RPD was considered notable when it was 40% or greater and both samples had concentrations greater than five times the detection limit. This second criterion takes into account the potential for data accuracy error when parameter concentrations approach detection limits. Relative percent difference was calculated from the following formula:

$$RPD = \left(\frac{|sample - duplicate|}{mean} \right) \times 100$$

Quality assurance procedures for laboratory operations included submitting the lichen samples to a laboratory accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for the analytical suite for this Project. To receive accreditation, a laboratory must pass an evaluation of its internal procedures, analytical methods, and quality assurance and quality control processes. Parameters were analyzed by the laboratory using standard methods published by internationally recognized agencies, such as the United States Environmental Protection Agency. Quality control procedures for laboratory operations included the analysis of laboratory quality control samples including method blanks, laboratory control samples, laboratory duplicates, and reference materials.

4.3.4 Data Analysis

Metals concentrations in lichen collected were tabulated, and summary statistics were calculated for each area (e.g., mean, standard deviation, standard error, minimum and maximum concentrations). One-half the detection limit (DL) was substituted for non-detect values in the dataset. Mean concentrations of parameters measured in lichen were compared graphically to baseline concentrations (Intrinsik 2015)¹ and concentrations measured at the Back River Project in 2021 (Golder 2022) to determine how metal concentrations have changed over time and from the distance from the PDA.

4.4 Winter Ice Road Photographic Monitoring

Annual photographic monitoring of the previously established WIR vegetation monitoring plots was conducted at 44 previously established monitoring locations along the WIR route on July 8, 2024. Due to the nature of the WIR, permanent plot markers are difficult to maintain; therefore, some plots may have been adjusted slightly due to limited GPS accuracy. Photographs were taken from the south side of the plot facing north. The monitoring locations are those that are currently on the WIR alignment and are expected to remain on the WIR alignment in future years. A quantitative approach to assign a disturbance class to each plot was used as follows:

- NA = No visible damage
- Low = 0 to 25% vegetation in plot necrotic/damaged
- Moderate = 26 to 50% of the vegetation in the plot necrotic/damaged
- High = 51 to 75% of the vegetation in the plot necrotic/damaged
- Very High = >75% of the vegetation in the plot necrotic/damaged, nearly no living vegetation

The disturbance classes allow for comparison between years and to document trends in changes to vegetation along the WIR.

¹ Lichen chemistry was measured for the Project in 2015 as part of the country foods baseline screening level risk assessment (Intrinsik 2015).

5 RESULTS

5.1 Vegetation Monitoring

The 2024 vegetation surveys were completed between July 3 and 10, 2024, and 36 vascular plants in the Project area were identified. A total of 24 non-vascular plants (6 bryophytes and 18 lichens) were identified during 2024 field surveys. This is very similar to 2021 results where 36 vascular plants and 24 non-vascular (5 bryophytes and 19 lichens) were observed. Appendix A provides a complete list of the vascular and non-vascular species that were recorded during field surveys, including graminoid and lichen species important for wildlife forage. The most common and widespread vascular species found were alpine blueberry (*Vaccinium uliginosum*), rock cranberry (*Vaccinium vitis-idaea*), northern Labrador-tea (*Rhododendron tomentosum*), and arctic dwarf birch (*Betula nana*), which were observed respectively in 32, 35, 37 and 39 of the 40 plots surveyed. Appendix B provides representative photographs of each vegetation type observed in each Project Area. Appendix C provides detailed vegetation plot information, including plot location, date surveyed, structural stage, moisture and nutrient regimes.

Average height by vegetation strata were calculated based on vegetation association and treatment (Table 5).

Table 5: Average Vegetation Height by Strata

Vegetation Type and Distance from PDA Boundary	Average Height (cm)				
	Shrub	Forb	Graminoid	Bryophyte	Lichen
Goose Property					
Dry Sparse Tundra (TH)					
0 m	3.4	-	9.3	1.2	2.5
150 m	5.3	8.0	12.3	1.0	2.7
500 m	4.2	4.0	13.0	1.5	2.2
1 km	6.3	-	20.0	1.5	3.3
5 km	4.3	-	9.0	1.7	2.9
10 to 20 km	3.5	-	10.3	1.0	3.5
Mesic Dwarf Tundra (TL)					
0 m	5.0	12.0	4.0	2.0	2.7
1 km	5.5	-	8.5	1.0	2.6
MLA					
Dry Sparse Tundra (TH)					
0 m	5.4	8.5	13.3	1.3	2.8
Mesic Dwarf Tundra (TL)					
150 m	10.4	6.4	17.0	2.0	2.4
TOTALS					
0 m	4.5	8.7	10.1	1.3	2.6
150 m	7.3	6.7	14.8	1.9	2.6
500 m	4.2	4.0	13.0	1.5	2.2
1 km	6.1	-	15.4	1.3	3.1
5 km	4.3	-	9.0	1.7	2.9
10 to 20 km	3.5	-	10.3	1.0	2.4

Shrub and graminoid cover constitute the tallest vegetation strata, but the average vegetation height is under 15 cm for most vegetation types, which is consistent with results in 2021 (Appendix D). Overall average heights of shrub, graminoid, bryophyte and lichen strata appear to be similar regardless of vegetation type. Distance from the PDA and the associated potential influence of dust deposition do not appear to affect vegetation height at this time in the Project's development.

Percent cover of the surface substrate was summarized by the vegetation association present at the MLA and Goose Property for the vegetation monitoring plots (Table 6).

Table 6: Average Surface Substrate Percentage by Vegetation Association

Vegetation Type and Distance from PDA Boundary	Average Surface Substrate Percentage (%) by Vegetation Association							
	Lichen	Moss	Vegetation	Bare Ground	Bedrock	Cobbles	Litter	Animal Pellets
Goose Property								
Dry Sparse Tundra								
0 m	34.9	11.4	94.8	0.0	0.6	0.0	3.8	0.8
150 m	54.4	0.5	91.5	0.0	1.8	0.4	5.9	0.2
500 m	33.7	2.4	83.4	1.8	3.1	1.2	10.1	0.2
1 km	42.7	2.8	94.6	0.5	0.0	0.2	4.4	0.3
5 km	35.4	1.6	88.7	0.0	3.2	0.2	6.7	0.6
10 to 20 km	38.5	2.4	89.4	0.2	1.0	0.0	9.1	0.2
Mesic Dwarf Tundra								
0 m	21.0	5.0	85.0	4.0	0.0	6.0	4.0	1.0
1 km	50.0	12.0	96.0	0.0	0.0	0.0	4.0	0.0
Marine Laydown Area								
Dry Sparse Tundra								
0 m	14.8	6.7	84.2	0.0	0.0	0.0	14.5	0.6
Mesic Dwarf Tundra								
150 m	12.8	8.5	85.3	0.9	0.0	0.0	13.9	0.0

PDA = Potential Development Area.

Overall, differences in surface substrate with increasing distance from the PDA appear minor and likely due to natural variability between plots. The results of surface substrate cover are similar to those observed during 2021 vegetation monitoring (Appendix D).

Species richness by distance from the PDA and by vegetation association is presented in Table 7.

Table 7: Average Species Richness Per VMP Plot by Vegetation Type by Distance from PDA Boundary

Project Area and Vegetation Type	Average Species Richness					
	0 m	150 m	500 m	1 km	5 km	10-20 km
Goose Property						
Dry Sparse Tundra (TH)	15.2	16.4	15.8	13.8	14	15.4
Mesic Dwarf Tundra (TL)	16	-	-	15	-	-
Marine Laydown Area						
Dry Sparse Tundra (TH)	17.8	-	-	-	-	-
Mesic Dwarf Tundra (TL)	-	14	-	-	-	-
Total Species Observed	49	51	28	28	27	26

Note: Totals may not equal sums as totals only consider unique species.

PDA = Potential Development Area; "-" = no plot data.

Comparing the overall (i.e., all layers or strata present within plots) species richness at the various distances from the PDA to plots within the PDA does not reveal a pattern in species richness across the distance gradient from the Project.

At the MLA, the highest average species richness of 17.8 was observed at 0 m from the PDA, while an average of 14 species was observed at 150 m from the PDA.

At the Goose Property, the highest average species richness of 16.4 was observed at 150 m from the PDA, while the lowest of 14 species was observed at 5 km from the PDA.

When looking at the total number of species observed, the highest species diversity of 51 was observed at 150 m from the PDAs and the lowest of 26 species was observed at 10 to 20 km from the PDA at the Goose Property. Overall, the species observed are very similar to those observed in 2021 (Appendix D). The highest species richness in 2021 was 48 species observed at 0 m from the PDAs, and the lowest species richness was 24 species at 500 m from the PDA at the Goose Property.

The abundance of vascular and non-vascular plants at each distance from PDA and vegetation type is provided in Table 8.

Table 8: Abundance of Vascular and Non-Vascular Species by Project Area, Vegetation Type and Distance from PDA Boundary, 2024

Vegetation Type and Distance from PDA Boundary	Abundance of Vascular and Non-Vascular Species											
	0 m		150 m		500 m		1 km		5 km		10 to 20 km	
	Vascular (%)	Non-Vascular (%)	Vascular (%)	Non-Vascular (%)	Vascular (%)	Non-Vascular (%)	Vascular (%)	Non-Vascular (%)	Vascular (%)	Non-Vascular (%)	Vascular (%)	Non-Vascular (%)
Goose Property												
Dry Sparse Tundra (TH)	12	15	15	15	12	16	11	14	12	15	14	12
Mesic Dwarf Tundra (TL)	9	7	-	-	-	-	6	9	-	-	-	-
Marine Laydown Area												
Dry Sparse Tundra (TH)	25	12	-	-	-	-	-	-	-	-	-	-
Mesic Dwarf Tundra (TL)	-	-	21	14	-	-	-	-	-	-	-	-
Total	29	20	27	24	12	16	12	16	12	15	14	12

Note: Abundance is defined by the relative mean plant species cover; PDA = Potential Development Area.

The overall findings of vascular plant richness indicate that most of the areas surveyed consist of low species richness in vascular plant communities, with species richness averaging 15 species per plot, which is the same species richness as observed in 2021 (Appendix D). The highest abundance of vascular plants (25) was seen at the vegetation plots at 0 m from the PDA at the MLA, while the highest number of non-vascular species (16) was observed at the vegetation plots at 500 m from the PDA at the Goose Property. In general, the mesic dwarf tundra vegetation types had lower species abundance than the dry sparse tundra vegetation type. These results are consistent with those results observed in 2021, with the highest number of vascular species (21) observed at 0 m from the PDA at the MLA and the highest number of non-vascular species (14) was observed at the 0 m from the PDA at the Goose Property (Appendix D).

The average vigour across species at each distance from PDA and vegetation type is presented in Table 9.

Table 9: Average Vigour of Observed Species by Project Area, Vegetation Type and Distance from PDA Boundary

Vegetation Type	Average Vigour ^(a)					
	0 m	150 m	500 m	1 km	5 km	10-20 km
Goose Property						
Dry Sparse Tundra (TH)	4	3.9	3.9	3.9	3.9	3.9
Mesic Dwarf Tundra (TL)	3.8	-	-	3.9	-	-
MLA						
Dry Sparse Tundra (TH)	4	-	-	-	-	-
Mesic Dwarf Tundra (TL)	-	3.9	-	-	-	-

Note:

(a) Average vigour is calculated by assessing the vigour of each species and averaging across plots based on the scale: poor = 1, fair = 2, good = 3, excellent = 4.

PDA = Potential Development Area.

The average vigour across each distance from the PDA and vegetation type was generally excellent. There was no noticeable difference in plant vigour across the distance gradients from the PDAs. These results are similar to those observed in 2021 where the average vigour ranged from 3.3 to 4.0 with no observable trends in distances from the PDAs.

5.1.1 Treated Effluent Release Area

Vegetation monitoring of the treated effluent release area was conducted on July 10, 2024.

Table 10 provides general information about the four established plots.

Table 10: Treated Effluent Release Area Vegetation Monitoring Results

Plot Name	Plot Type	Location (13V)		Vegetation Type	Average Species Vigour	Species Richness		Dominant Species
		Easting	Northing			Vascular	Non-Vascular	
EFF-01E	Exposure	430800	7269279	Dry-sparse tundra	3.9	7	7	<i>Flavocetraria cucullata</i> , <i>Flavocetraria nivalis</i> , <i>Rhododendron tomentosum</i> , <i>Cassiope tetragona</i>
EFF-02E	Exposure	430768	7269215	Dry-sparse tundra	4.0	10	12	<i>Rhododendron tomentosum</i> , <i>Empetrum nigrum</i> , <i>Vaccinium vitis-idaea</i> , <i>Andromeda polifolia</i>

Table 10: Treated Effluent Release Area Vegetation Monitoring Results

Plot Name	Plot Type	Location (13V)		Vegetation Type	Average Species Vigour	Species Richness		Dominant Species
		Easting	Northing			Vascular	Non-Vascular	
EFF-03E	Exposure	430692	7269226	Tussock meadow	3.9	5	2	<i>Eriophorum vaginatum</i> , <i>Sphagnum angustifolium</i> , <i>Carex vaginata</i> , <i>Betula nana</i>
EFF-04R	Reference	431064	7269118	Tussock meadow	4.0	5	2	<i>Carex aquatilis</i> , <i>Andromeda polifolia</i> , <i>Sphagnum angustifolium</i> , <i>Aulacomnium turgidum</i>

The three plots in the exposure area were either dry-sparse tundra or tussock meadow vegetation type. Although a reference plot was not established in a dry-sparse tundra vegetation type, many vegetation plots established for the VMP are in the dry-sparse tundra vegetation type and can be considered reference sites for the treated effluent affected area. The average vigour of the vegetation species in both the exposure and reference sites was excellent (Table 10). The species richness at the dry-sparse tundra exposure plots varied greatly but was consistent with the species observed at the VMP vegetation plots (Table 10). The tussock meadow vegetation type has much lower species richness however, the exposure plot is comparable to the reference plot in species richness (Table 10).

The surface substrate percent coverages for the treated effluent area plots are provided in Table 11.

Table 11: Treated Effluent Release Area Plot Surface Substrate Percent Cover

Plot Name	Surface Substrate (%)								
	Lichen	Moss	Vegetation	Bare Ground	Bedrock	Bedrock	Cobbles	Litter	Animal Pellets
EFF-01E	52	0	95	1	0	0	2	2	0
EFF-02E	22	10	89	1	0	0	0	10	0
EFF-03E	0	16	63	0	0	0	0	35	2
EFF-04R	0	14	55	0	3	3	0	42	0

There are differences in surface substrate cover between the dry-sparse tundra plots (EFF-01E and EFF-02E) and the tussock meadow plots (EFF-03E and EFF-04R). Although a reference plot was not established in a dry-sparse tundra vegetation type, many of the plots established for the VMP are in the dry-sparse tundra vegetation type and have similar surface substrate cover (Table 6). The surface substrates of the two tussock meadow plots are more similar indicating no observable different between the exposure at reference plots currently. The surface substrates of the dry-sparse tundra plots are very similar to the dry-sparse tundra VMP plots (Table 6). There were no observable effects of the treated effluent on vegetation at the time of monitoring (Appendix B).

The average height by vegetation strata at the treated effluent plots is provided in Table 12.

Table 12: Treated Effluent Area Plot Average Vegetation Height by Strata

Plot Name	Vegetation Type	Average Vegetation Height by Strata				
		Shrub	Forb	Graminoid	Bryophyte	Lichen
EFF-01E	Dry-sparse tundra	4.8	4.0	4.0	-	2.4
EFF-02E	Dry-sparse tundra	3.7	1.0	11.0	1.7	2.3
EFF-03E	Tussock meadow	15.0	-	24.0	5.5	-
EFF-04R	Tussock meadow	10.0	-	25.0	2.5	-

Shrub and graminoid cover constitute the tallest vegetation strata, but the average vegetation height is under 25 cm for each of the plots. The dry sparse tundra plots have overall shorter vegetation than the tussock meadow plots, which are dominated by graminoids

5.2 Non-Native Plant Monitoring

Non-native plant surveys were completed around existing infrastructure at the Goose and MLA properties and along the WIR. No non-native plants, as identified by CESSC (2010), were observed during these surveys. One individual of common yarrow (*Achillea millefolium*) was observed near the MLA camp at 13W 381038E 7394536N. A photo of this observation is provided in Appendix B. While not listed by the CESSC as an invasive plant, common yarrow is not known to exist in Nunavut (NatureServe 2024; CESSC 2022). The species is considered native in some places in North America, but some populations may be introduced (NatureServe 2024). The Flora of North America (FNA 2020) lists common yarrow as distributed across North America, including Nunavut. It is unclear if this species is considered an introduced population because information on its presence in Nunavut is limited.

5.3 Lichen Monitoring

Eighteen unique species of lichen were observed and sampled during the 2024 program (Appendix E). The most abundant species observed were green witches hair (*Alectoria ochroleuca*), arctic butterfingers lichen (*Dactylina arctica*), arctic pretzel lichen (*Bryocaulon divergens*), crinkled snow lichen (*Flavocetraria nivalis*), and curled snow lichen (*Flavocetraria cuculata*), which were observed in 19, 23, 25, 35, and 36 respectively of the total 39 sampling locations. There were no visible signs of dust deposition at any of the vegetation monitoring plots.

The lichen samples for chemical analysis were received by ALS in good condition and within the required holding time. The laboratory certificate of analysis and associated quality control reports are provided in Appendix F. Laboratory quality control samples of method blanks, laboratory control samples, and reference materials met data quality objectives for all parameters. The laboratory also re-analyzed some field samples and calculated RPDs between the original reported concentrations and their duplicate results; all RPDs met the laboratory data quality objective of 40% with the exception of arsenic in one sample from the set collected at 5 km from the PDA at the Goose Property. The RPD for the original concentration and the laboratory duplicate in this sample (i.e., 42%) slightly exceeded the laboratory data quality objective, which can occur due to sample heterogeneity. Table F-1 in Appendix F provides the RPDs for field duplicates. The incidence of RPDs greater than 40% was generally low in the lichen field duplicates, with the exception of the duplicates collected at 150 m and 5 km from the PDA at the Goose Property and at 150 m from the PDA at the MLA. The RPDs in these duplicate sets indicate high variability in metal concentrations within the lichen composites at these three locations.

Appendix G Figure G-1 provides the summary statistics calculated for each area (e.g., mean, standard deviation, standard error, minimum and maximum concentrations) by area (distance from PDA). Graphs comparing the 2024 concentrations to those measured in 2015 (baseline) and 2021 are provided in Figure G-1 in Appendix G.

At both the Goose Property and the MLA, the effects of Project-related dust deposition were obvious at 0 m from the PDAs, with multiple metals having concentrations in lichen higher than baseline and typically higher than 2021. However, the effects were generally limited to 0 m from the PDAs because concentrations in lichen for most metals were generally lower at 150 m from the PDAs and because concentrations at 150 m from the PDA at the Goose Property were similar to those at further distances. Metals with elevated concentrations at 0 m from the PDAs that may be Project-related included:

- at the Goose Property: aluminum, antimony, arsenic, cesium, chromium, copper, iron, lead, magnesium, manganese, molybdenum, uranium, vanadium
- at the MLA: aluminum, antimony, arsenic, barium, boron, cadmium, calcium, cesium, cobalt, copper, iron, lead, magnesium, manganese, mercury, strontium, thallium, uranium, vanadium, zinc

Most metal concentrations in lichen were close to (generally within a factor of two) or below baseline at distances at or greater than 150 m from the PDAs with a few exceptions. Mean barium, manganese, and sodium concentrations in 2024 were more than two times baseline concentrations at all distances from the PDA at Goose Property; however, obvious trends of decreasing concentrations with distance from the PDA were not observed. Mean concentrations of chromium and cobalt at 0 m and 150 from the PDA at the MLA were greater than baseline, but 2024 concentrations were similar at the two distances, which suggest that the higher concentrations were not Project-related. Mean cadmium concentration at 150 m from the PDA at the MLA were more than two times the baseline in both 2021 and 2024, with similar mean concentrations between the years, suggesting no change since 2021. Mean concentrations of molybdenum and nickel at 150 m from the PDA at MLA were more than two times higher than baseline, but were also higher than at 0 m from PDA, suggesting these concentrations were not Project-related.

For many metals, mean concentrations in lichen were higher in 2024 compared to 2021, regardless of distance from the PDAs (e.g., barium, manganese, mercury and thallium at the Goose Property, chromium at the MLA). The reason for these higher concentrations in 2024 is unknown but it is unlikely that they are Project-related given that concentrations were similar and did not decline with distance from the PDAs.

5.4 WIR Photographic Monitoring

The photos of the WIR monitoring plots taken in 2024 are included in Appendix H. The photos from 2019, 2022 and 2023 photographic monitoring are also included for comparison purposes. A summary of the disturbance classes assigned to each plot is provided in Table 13.

Of the 44 WIR monitoring plots, 12 have had aggregate material placed on them and should be replaced with new monitoring plots. Of the remaining 32 WIR monitoring plots, one plot is considered to have high impacts, three plots have moderate impacts, five plots have low impacts and 23 plots have no impacts from the WIR.

Table 13: Summary of Disturbance Classes of WIR Monitoring Plots

Plot Name	Plot Type	Location (13W)		Disturbance Class				Comments
		Easting	Northing	2019	2022	2023	2024	
BRR006Ea	Experimental	404245	7343468	NA	NA	no photo	NA	Plot had aggregate material placed. Not appropriate for future monitoring.
BRR006R	Reference	404243	7343406	NA	NA	no photo	NA	No visible impacts from WIR.
BRR007E	Experimental	404795	7338513	NA	NA	Moderate	Moderate	Moderate impacts from WIR.
BRR007R	Reference	404713	7338489	NA	NA	NA	NA	No visible impacts from WIR.
BRR014E	Experimental	403805	7335398	NA	NA	Low	Low	Low impacts from WIR.
BRR014R	Reference	403765	7335314	NA	NA	NA	NA	No visible impacts from WIR.
BRR015E	Experimental	404124	7335503	Very High	Very High	no photo	Very High	Very high impacts from WIR.
BRR015R	Reference	404242	7335458	NA	NA	no photo	NA	No visible impacts from WIR.
BRR016E	Experimental	400749	7327721	Low	Low	no photo	Very High	Plot had aggregate material placed. Not appropriate for future monitoring.
BRR016R	Reference	400724	7327787	NA	NA	no photo	NA	No visible impacts from WIR.
BRR021E	Experimental	400258	7327474	Moderate	Moderate	Moderate	Moderate	Moderate impacts from WIR.
BRR021R	Reference	400162	7327568	NA	NA	NA	NA	No visible impacts from WIR.
BRR024E	Experimental	401014	7304445	Low	no photo	Low	Low	Low impacts from WIR.
BRR024R	Reference	401091	7304501	NA	no photo	NA	NA	No visible impacts from WIR.
BRR025E	Experimental	400366	7304583	NA	no photo	no photo	Very High	Plot had aggregate material placed. Not appropriate for future monitoring.
BRR025R	Reference	400341	7304601	NA	no photo	no photo	Very High	Road alignment has moved onto reference plot. New reference plot needed
BRR028E	Experimental	399795	7301289	NA	no photo	NA	Low	Low impacts from WIR.
BRR028R	Reference	399869	7301258	NA	no photo	NA	NA	No visible impacts from WIR.
BRR029E	Experimental	399976	7296181	NA	no photo	NA	NA	No visible impacts from WIR.
BRR029R	Reference	399897	7296145	NA	no photo	NA	NA	No visible impacts from WIR.
BRR031E	Experimental	406751	7285212	NA	no photo	Moderate	Moderate	Moderate impacts from WIR.
BRR031R	Reference	406554	7285303	NA	no photo	NA	NA	No visible impacts from WIR.
BRR032Ea	Experimental	410144	7282722	NA	Very High	no photo	Very High	Plot had aggregate material placed. Not appropriate for future monitoring.
BRR032R	Reference	410249	7282768	NA	NA	no photo	NA	No visible impacts from WIR.
BRR033Ea	Experimental	413758	7280230	NA	Very High	no photo	Very High	Plot had aggregate material placed. Not appropriate for future monitoring.
BRR033R	Reference	413587	7280442	NA	NA	no photo	NA	No visible impacts from WIR.

Table 13: Summary of Disturbance Classes of WIR Monitoring Plots

Plot Name	Plot Type	Location (13W)		Disturbance Class				Comments
		Easting	Northing	2019	2022	2023	2024	
BRR034E	Experimental	415641	7279046	NA	Very High	no photo	Very High	Plot had aggregate material placed. Not appropriate for future monitoring.
BRR034Ra	Reference	415602	7278982	NA	NA	NA	NA	No visible impacts from WIR.
BRR035Ea	Experimental	416096	7278371	NA	Very High	no photo	Very High	Plot had aggregate material placed. Not appropriate for future monitoring.
BRR035Ra	Reference	415991	7278319	NA	NA	no photo	NA	No visible impacts from WIR.
BRR036E	Experimental	423724	7274476	NA	no photo	NA	High	High impacts from WIR
BRR036R	Reference	423689	7274472	NA	no photo	NA	NA	No visible impacts from WIR.
BRR038E	Experimental	400723	7357241	NA	Very High	no photo	Very High	Plot had aggregate material placed. Not appropriate for future monitoring.
BRR038R	Reference	400717	7357171	NA	NA	no photo	NA	No visible impacts from WIR.
BRR040E	Experimental	401054	7360005	Low	Very High	no photo	Very High	Plot had aggregate material placed. Not appropriate for future monitoring.
BRR040Ra	Reference	400960	7359988	NA	NA	no photo	NA	No visible impacts from WIR.
BRR041Ea	Experimental	401394	7358187	High	Very High	no photo	Very High	Plot had aggregate material placed. Not appropriate for future monitoring.
BRR041R	Reference	401465	7358268	NA	NA	no photo	NA	No visible impacts from WIR.
BRR042E	Experimental	402608	7317031	NA	no photo	NA	Low	Low impacts from WIR.
BRR042R	Reference	402642	7316865	NA	NA	NA	NA	No visible impacts from WIR.
BRR043E	Experimental	402200	7313457	NA	NA	NA	Low	No visible impacts from WIR.
BRR043R	Reference	402251	7313397	NA	no photo	NA	NA	No visible impacts from WIR.
BRR046E	Experimental	403693	7341827	no photo	Low	Low	Low	Low impacts from WIR.
BRR046R	Reference	403778	7341887	no photo	NA	NA	NA	No visible impacts from WIR.

Note: NA – No visible disturbance.

6 CONCLUSIONS

The 2024 vegetation monitoring program represents the second round of vegetation, non-native species and lichen monitoring following the 2020 update of the VMP and monitoring in 2021. The monitoring plots proposed in the VMP were adequately established, and monitoring for vegetation species, abundance, height and vigour was completed. Changes in species diversity and abundance because of the Project were not observed. Results of vegetation and non-native plant monitoring are comparable to results from 2021, with no noticeable differences or trends. Lichen monitoring results indicate that Project-related dust deposition resulted in higher metal concentrations in lichen at 0 m from the PDAs, but did not appear to affect metal concentrations in lichens at further distances. Metal concentrations were generally higher at all monitoring locations in 2024 than in 2021; the reason for which is unknown.

The next vegetation, non-native plant and lichen monitoring components are scheduled to occur in 2027 as per the monitoring frequency in the VMP. Footprint and photographic monitoring of the WIR will continue to occur annually.

7 CLOSURE

This report was prepared by Shannon O'Dwyer with support from Radka Kelblerova and reviewed by the signatories below.

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APPENDIX A

2024 Vegetation Species Observed

Table A-1: Species Observed During 2024 Field Surveys

Scientific Name	Common Name	CESCC Status ^(a)		NatureServe Status ^(b)	
		Description	Rank ^(c)	Description	Rank ^(c)
Shrubs					
<i>Andromeda polifolia</i>	bog rosemary	Apparently Secure	S4	Secure	S5
<i>Arctous rubra</i>	red bearberry	Apparently Secure	S4	Apparently Secure	S4
<i>Betula nana</i>	arctic dwarf birch	Apparently Secure	S4	Apparently Secure	S4
<i>Cassiope tetragona</i>	white mountain-heather	Secure	S5	Secure	S5
<i>Dryas integrifolia</i>	northern white mountain avens	Secure	S5	Unranked	SNR
<i>Empetrum nigrum</i>	crowberry	Secure	S5	Secure	S5
<i>Kalmia procumbens</i>	northern laurel	Apparently Secure	S4	Apparently Secure	S4
<i>Rhododendron lapponicum</i>	Lapland rose-bay	Apparently Secure	S4	Secure	S5
<i>Rhododendron tomentosum</i>	northern Labrador tea	Apparently Secure	S4	Secure	S5
<i>Salix arctica</i>	arctic willow	Secure	S5	Secure	S5
<i>Salix arctophila</i>	northern willow	Secure	S5	Secure	S5
<i>Salix herbacea</i>	dwarf willow	Secure	S5	Secure	S5
<i>Salix reticulata</i>	net-veined willow	Secure	S5	Secure	S5
<i>Vaccinium uliginosum</i>	bog bilberry	Secure	S5	Secure	S5
<i>Vaccinium vitis-idaea</i>	bog cranberry	Apparently Secure	S4	Secure	S5
Forbs					
<i>Cardamine digitata</i>	saltwater cress	Apparently Secure	S4	Apparently Secure	S4
<i>Huperzia selago</i>	fir clubmoss	Apparently Secure	S4	Unranked	SNR
<i>Lupinus arcticus</i>	arctic lupine	Vulnerable	S3	Vulnerable	S3
<i>Oxytropis arctica</i>	arctic locoweed	Apparently Secure	S4	Apparently Secure	S4
<i>Oxytropis maydelliana</i>	Maydell's locoweed	Apparently Secure	S4	Apparently Secure	S4
<i>Pedicularis labradorica</i>	Labrador lousewort	Apparently Secure	S4	Apparently Secure	S4
<i>Pedicularis lanata</i>	woolly lousewort	Apparently Secure	S4	Apparently Secure	S4
<i>Pedicularis sudetica</i>	sudetan lousewort	Secure	S5	Secure	S5
<i>Pinguicula villosa</i>	hairy butterwort	Apparently Secure	S4	Apparently Secure	S4
<i>Platanthera obtusata</i>	blunt-leaved bog orchid	Apparently Secure	S4	Apparently Secure	S4
<i>Silene acaulis</i>	moss campion	Secure	S5	Secure	S5
<i>Tofieldia pusilla</i>	scotch false asphodel	Apparently Secure	S4	Apparently Secure	S4
Graminoids					
<i>Calamagrostis deschampsoides</i>	circumpolar reed grass	Apparently Secure	S4	Apparently Secure	S4
<i>Carex aquatilis</i>	water sedge	Secure	S5	Secure	S5
<i>Carex bigelowii</i>	Bigelow's sedge	Secure	S5	Unranked	SNR
<i>Carex concinna</i>	beautiful sedge	Vulnerable	S3	Apparently Secure	S4
<i>Carex vaginata</i>	sheathed sedge	Apparently Secure	S4	Apparently Secure	S4
<i>Eriophorum angustifolium</i>	narrowleaf cotton-grass	Secure	S5	Secure	S5
<i>Eriophorum scheuchzeri</i>	one-spike cotton grass	Apparently Secure	S4	Secure	S5
<i>Luzula confusa</i>	northern wood rush	Secure	S5	Secure	S5
<i>Poa arctica</i>	Arctic bluegrass	Secure	S5	Unranked	SNR

Table A-1: Species Observed During 2024 Field Surveys

Scientific Name	Common Name	CESCC Status ^(a)		NatureServe Status ^(b)	
		Description	Rank ^(c)	Description	Rank ^(c)
Bryophytes					
<i>Aulacomnium turgidum</i>	turgid moss	Apparently Secure	S4	Apparently Secure	S4
<i>Dicranum fuscescens</i>	fuscous moss	Vulnerable	S3S4	Vulnerable	S3
<i>Hylocomium splendens</i>	stair-step moss	Apparently Secure	S4	Apparently Secure	S4
<i>Polytrichum strictum</i>	bog haircap moss	Apparently Secure	S4	Apparently Secure	S4
<i>Sphagnum</i> sp.	sphagnum species	N/d	N/d	N/d	N/d
<i>Tomentypnum falcifolium</i>	sickle-leaved golden moss	Apparently Secure	S4	Apparently Secure	S4
Lichen					
<i>Alectoria ochroleuca</i>	green witch's hair	Apparently Secure	S3S5	Secure	S5
<i>Arctocetraria andrejevii</i>	thin-man's Icelandmoss lichen	Apparently Secure	S3S5	Apparently Secure	S4
<i>Bryocaulon divergens</i>	arctic pretzel lichen	Apparently Secure	S3S5	Apparently Secure	S4
<i>Cetraria islandica</i>	true Icelandic lichen	Apparently Secure	S3S5	Secure	S5
<i>Cladonia arbuscula</i>	reindeer lichen	Apparently Secure	S3S5	Unranked	SNR
<i>Cladonia fimbriata</i>	trumpeting pixie lichen	Apparently Secure	S3S5	Vulnerable	S3
<i>Cladonia gracilis</i>	smooth pixie lichen	Apparently Secure	S3S5	Secure	S5
<i>Cladonia rangiferina</i>	gray reindeer lichen	Apparently Secure	S3S5	Secure	S5
<i>Cladonia stellaris</i>	star-nosed reindeer lichen	Apparently Secure	S3S5	Apparently Secure	S4
<i>Cladonia stygia</i>	black-footed reindeer lichen	Apparently Secure	S3S5	Apparently Secure	S4
<i>Cladonia uncialis</i>	thorn pixie lichen	Apparently Secure	S3S5	Secure	S5
<i>Dactylina arctica</i>	arctic butterfingers lichen	Apparently Secure	S3S5	Secure	S5
<i>Flavocetraria cucullata</i>	curled snow lichen	Apparently Secure	S3S5	Secure	S5
<i>Flavocetraria nivalis</i>	crinkled snow lichen	Apparently Secure	S3S5	Secure	S5
<i>Masonhalea richardsonii</i>	arctic tumbleweed lichen	Vulnerable	S3S4	Vulnerable	S3
<i>Peltigera aphthosa</i>	silver-edged freckle pelt lichen	Apparently Secure	S3S5	Secure	S5
<i>Stereocaulon tomentosum</i>	alpine foam lichen	Vulnerable	S3S4	Vulnerable	S3
<i>Thamnolia vermicularis</i>	universal whiteworm lichen	Apparently Secure	S3S5	Secure	S5

Notes;

(a) CESCC 2022

(b) NatureServe 2024

(c) Species ranks are defined as: S3: Vulnerable— At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors; S4: Apparently Secure— At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors; S5: Secure— At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats; SNR: Unranked—National or subnational conservation status not yet assessed. N/d: no data.

APPENDIX B

**2024 Vegetation Monitoring
Representative Plot Photographs**

Goose Property

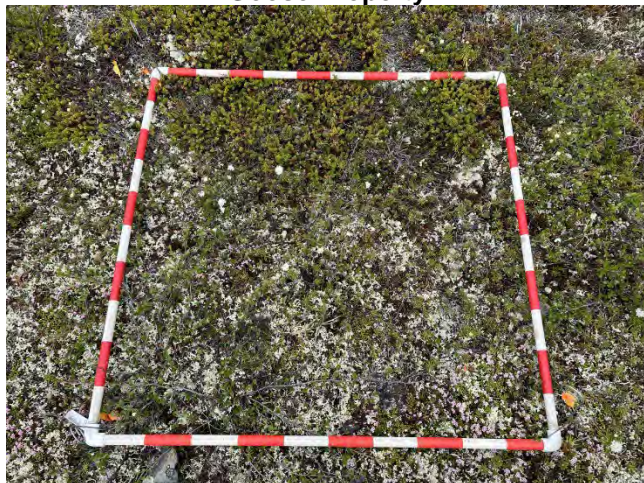


Photo B-1: SG24-1K-04 – dry sparse tundra – July 11, 2024



Photo B-3: SG24-00-05 – mesic dwarf-shrub tundra – July 11, 2024



Photo B-5: EFF-02E – dry sparse tundra, July 10, 2024

MLA

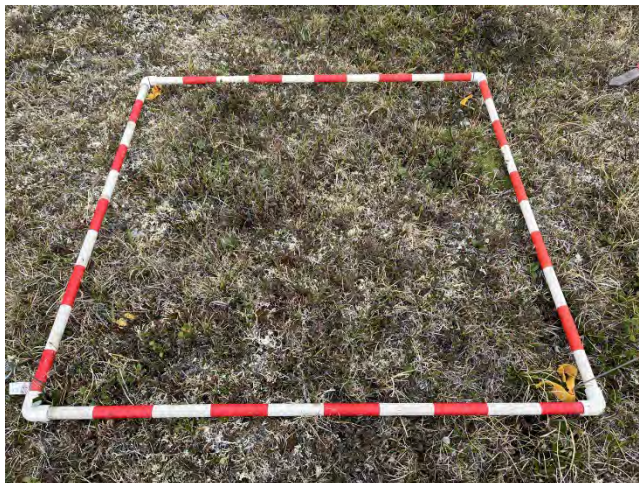


Photo B-2: SM24-00-03 – dry sparse tundra – July 7, 2024



Photo B-4: SM24-150-02 – mesic dwarf-shrub tundra – July 7, 2024



Photo B-5: Common yarrow observed at MLA - July 7, 2024

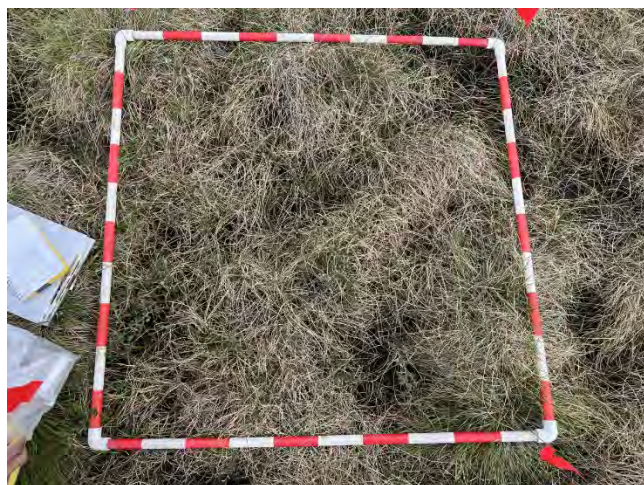


Photo B-7: EFF-03E – tussock meadow, July 10, 2024

APPENDIX C

**2024 Vegetation Monitoring Plot
Information**

Table C-1: 2024 Vegetation Plot Information

Project Area	Plot Name	Distance from PDA (km)	Date Surveyed	Vegetation Type	UTM Location (13W)		Structural Stage	Moisture Regime	Nutrient Regime
					Easting	Northing			
Goose Property	SG24-00-01	0	07-Jul-24	dry-sparse tundra	432372	7269602	dwarf shrub	subxeric	poor
	SG24-00-03	0	07-Jul-24	dry-sparse tundra	433054	7269929	dwarf shrub	submesic	poor
	SG24-00-04	0	04-Jul-24	dry-sparse tundra	433867	7268717	dwarf shrub	subxeric	poor
	SG24-00-05	0	05-Jul-24	mesic dwarf-shrub tundra	431173	7272112	dwarf shrub	submesic	poor
	SG24-00-06	0	07-Jul-24	dry-sparse tundra	434333	7269114	dwarf shrub	subxeric	poor
	SG24-00-07	0	07-Jul-24	dry-sparse tundra	431491	7269541	dwarf shrub	submesic	poor
	SG24-150-01	0.15	05-Jul-24	dry-sparse tundra	436001	7270832	dwarf shrub	submesic	poor
	SG24-150-02	0.15	06-Jul-24	dry-sparse tundra	430015	7269967	lichen dominant	subxeric	poor
	SG24-150-03	0.15	06-Jul-24	dry-sparse tundra	428116	7272898	dwarf shrub	subxeric	poor
	SG24-150-04	0.15	05-Jul-24	dry-sparse tundra	430667	7276028	dwarf shrub	subxeric	poor
	SG24-150-05	0.15	04-Jul-24	dry-sparse tundra	437375	7266237	lichen dominant	xeric	poor
	SG24-1K-01	1	05-Jul-24	mesic dwarf-shrub tundra	437256	7270572	lichen dominant	submesic	poor
	SG24-1K-02	1	06-Jul-24	dry-sparse tundra	430725	7267026	dwarf shrub	subxeric	poor
	SG24-1K-03	1	06-Jul-24	dry-sparse tundra	427165	7273176	dwarf shrub	subxeric	poor
	SG24-1K-04	1	05-Jul-24	dry-sparse tundra	430344	7276895	dwarf shrub	subxeric	poor
	SG24-1K-05	1	04-Jul-24	dry-sparse tundra	437747	7265426	dwarf shrub	submesic	poor
	SG24-500-01	0.5	05-Jul-24	dry-sparse tundra	436595	7270754	lichen dominant	subxeric	poor
	SG24-500-02	0.5	06-Jul-24	dry-sparse tundra	430868	7267504	dwarf shrub	subxeric	poor
	SG24-500-03	0.5	06-Jul-24	dry-sparse tundra	427721	7272768	dwarf shrub	xeric	very poor
	SG24-500-04	0.5	05-Jul-24	dry-sparse tundra	430433	7276392	dwarf shrub	xeric	poor
	SG24-500-05	0.5	04-Jul-24	dry-sparse tundra	437477	7265836	lichen dominant	submesic	poor
	SG24-5K-01	5	04-Jul-24	dry-sparse tundra	430765	7280919	dwarf shrub	subxeric	poor
	SG24-5K-02	5	05-Jul-24	dry-sparse tundra	441047	7272588	dwarf shrub	subxeric	poor
	SG24-5K-03	5	06-Jul-24	dry-sparse tundra	430057	7262469	lichen dominant	xeric	poor
	SG24-5K-04	5	07-Jul-24	dry-sparse tundra	423725	7274478	dwarf shrub	subxeric	poor
	SG24-5K-05	5	04-Jul-24	dry-sparse tundra	441136	7261479	dwarf shrub	subxeric	poor
	SG24-15K-01	15	04-Jul-24	dry-sparse tundra	381058	7394039	dwarf shrub	submesic	poor
	SG24-15K-02	15	04-Jul-24	dry-sparse tundra	447589	7278757	dwarf shrub	subxeric	poor
	SG24-15K-03	15	06-Jul-24	dry-sparse tundra	429137	7256419	dwarf shrub	subxeric	poor
	SG24-15K-04	15	07-Jul-24	dry-sparse tundra	412520	7271898	lichen dominant	subxeric	poor
	SG24-15K-05	15	04-Jul-24	dry-sparse tundra	446653	7253530	dwarf shrub	xeric	poor
Marine Laydown Area	SM24-00-01	0	03-Jul-24	dry-sparse tundra	381182	7394360	dwarf shrub	submesic	poor
	SM24-00-02	0	03-Jul-24	dry-sparse tundra	380809	7394620	dwarf shrub	submesic	poor
	SM24-00-03	0	03-Jul-24	dry-sparse tundra	380594	7394342	dwarf shrub	submesic	poor
	SM24-00-04new	0	07-Jul-24	dry-sparse tundra	381267	7393632	dwarf shrub	subxeric	medium
	SM24-00-05	0	03-Jul-24	dry-sparse tundra	381058	7394039	dwarf shrub	subxeric	poor

Table C-1: 2024 Vegetation Plot Information

Project Area	Plot Name	Distance from PDA (km)	Date Surveyed	Vegetation Type	UTM Location (13W)		Structural Stage	Moisture Regime	Nutrient Regime
					Easting	Northing			
	SM24-150-01	0.15	07-Jul-24	mesic dwarf-shrub tundra	379868	7395551	dwarf shrub	submesic	poor
	SM24-150-02	0.15	07-Jul-24	mesic dwarf-shrub tundra	379548	7395017	dwarf shrub	mesic	poor
	SM24-150-03	0.15	07-Jul-24	mesic dwarf-shrub tundra	379019	7394167	dwarf shrub	submesic	poor
	SM24-150-04	0.15	07-Jul-24	mesic dwarf-shrub tundra	379306	7393162	dwarf shrub	mesic	poor

APPENDIX D

2021 Vegetation Monitoring Results

Table D-1: 2021 Average Vegetation Height by Strata

Vegetation Type and Distance from PDA Boundary	Average Height (cm)				
	Shrub	Forb	Graminoid	Bryophyte	Lichen
Goose Property					
Dry Sparse Tundra (TH)					
0 m	12.0	0	0	2.0	2.0
150 m	12.0	2.9	13.0	0.6	1.9
500 m	13.7	0	14.3	0.5	2.0
1 km	16.0	0	0	1.0	2.0
5 km	12.0	0	7.0	1.0	1.0
10-20 km	9.7	0	21.6	0.9	1.3
Mesic Dwarf Tundra (TL)					
0 m	12.9	3.9	7.8	1.0	1.4
1 km	10.0	0	10.0	2.0	1.0
Undifferentiated Tundra (TU)					
0 m	13.4	0	9.8	1.5	1.7
150 m	9.2	8.4	12.6	0.4	1.5
500 m	10.0	0	13.4	1.0	1.6
1 km	10.5	0	6.0	1.0	1.3
5 km	13.6	0	10.6	1.0	1.8
10-20 km	8.7	0	6.0	0.6	2.0
MLA					
Dry Sparse Tundra (TH)					
0 m	9.9	4.6	1.0	1.6	9.9
Mesic Dwarf Tundra (TL)					
150 m	22.4	4.9	17.8	1.5	1.2
Undifferentiated Tundra (TU)					
0 m	12.0	11.3	6.9	1.7	1.7
TOTALS					
0 m	12.5	7.2	7.9	1.6	1.7
150 m	9.2	8.4	12.6	0.4	1.5
500 m	10.0	0	13.4	1.0	1.6
1 km	10.5	0	6.0	1.0	1.3
5 km	13.6	0	10.6	1.0	1.8
10-20 km	8.7	0	6.0	0.6	2.0

Table D-2: 2021 Average Surface Substrate Percentage by Vegetation Association

Vegetation Type and Distance from PDA Boundary	Average Surface Substrate Percentage (%) by Vegetation Association							
	Saxicolous Lichen	Terricolous Lichen	Vegetation	Moss	Bare Ground	Cobbles	Litter	Animal Pellets
Goose Property								
Dry Sparse Tundra								
0 m	1.0	32.0	56.8	9.0	0	0.1	1.0	0.1
150 m	4.8	54.0	37.6	0.6	0	0.3	2.7	0
500 m	3.8	24.9	63.3	6.0	0	0.5	1.5	0
1 km	0.5	40.5	54.8	0.1	0	0.1	4.0	0
5 km	12.0	47.0	40.0	1.0	0	0	0	0
10-20 km	2.1	35.4	58.5	0.3	0	0	3.3	0.4
Mesic Dwarf Tundra								
0 m	0	31.1	45.8	23.0	0	0	0	0.1
1 km	0	37.0	50.0	13.0	0	0	0	0
Undifferentiated Tundra								
0 m	0.7	32.9	56.5	6.8	0.8	0.4	1.8	0
150 m	0.1	47.4	52.2	0	0	0	0.3	0
500 m	1.9	48.5	47.4	0.5	0	0.3	2.0	0
1 km	0	40.9	53.4	5.0	0	0	0.7	0
5 km	1.3	39.2	54.3	2.7	0	0	2.2	0.3
10-20 km	0	39.6	51.8	7.7	0	0	0.9	0
MLA								
Dry Sparse Tundra								
0 m	0	6.6	71.1	11.3	0	0	10.9	0.1
Mesic Dwarf Tundra								
150 m	0	22.7	64.2	9.0	0	0	3.1	0
Undifferentiated Tundra								
0 m	0	16.5	71.0	7.7	0	0	3.4	0
TOTALS								
0 m	0.3	24.0	60.3	11.3	0.2	0.1	3.4	0
150 m	1.3	39.5	53.0	3.7	0	0.1	2.0	0
500 m	2.7	39.1	53.7	2.7	0	0.4	1.8	0
1 km	0.1	40.1	53.0	5.6	0	0	1.1	0
5 km	3.8	41.0	51.0	2.3	0	0	1.7	0.2
10-20 km	1.3	37.0	56.0	3.1	0	0	2.4	0.2

Table D-3: 2021 Average Species Richness by Vegetation Type by Distance from PDA Boundary

Project Area and Vegetation Type	Distance from PDA					
	0 m	150 m	500 m	1 km	5 km	10-20 km
Goose Property						
Dry Sparse Tundra (TH)	14	18	16	11	17	16
Mesic Dwarf Tundra (TL)	17	-	-	12	-	-
Undifferentiated Tundra (TU)	16	15	16	14	14	15
MLA						
Dry Sparse Tundra (TH)	15	-	-	-	-	-
Mesic Dwarf Tundra (TL)	-	13	-	-	-	-
Undifferentiated Tundra (TU)	17	-	-	-	-	-
Total Species Observed	48	46	24	29	28	28

Note:

Totals may not equal sums as totals only consider unique species; "-" = no plot data

Table D-4: 2021 Abundance of Vascular and Non-Vascular Species

Vegetation Type and Distance from PDA Boundary	Abundance of Vascular and Non-Vascular Species											
	0 m		150 m		500 m		1 km		5 km		10-20 km	
	Vascular (%)	Non-Vascular (%)	Vascular (%)	Non-Vascular (%)	Vascular (%)	Non-Vascular (%)	Vascular (%)	Non-Vascular (%)	Vascular (%)	Non-Vascular (%)	Vascular (%)	Non-Vascular (%)
Goose Property												
Dry Sparse Tundra (TH)	7	7	14	13	9	12	6	5	6	11	13	12
Mesic Dwarf Tundra (TL)	11	14	n/d	n/d	n/d	n/d	5	7	n/d	n/d	n/d	n/d
Undifferentiated Tundra (TU)	15	14	14	11	11	9	10	15	11	13	13	10
MLA												
Dry Sparse Tundra (TH)	13	7	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d
Mesic Dwarf Tundra (TL)	n/d	n/d	18	11	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d
Undifferentiated Tundra (TU)	21	8	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d
TOTALS	26	19	26	21	11	13	11	18	14	15	14	15

Note:

Abundance is defined by the relative mean plant species cover; PDA = Potential Development Area

Table D-5: 2021 Average Vigour

Vegetation Type	Average Vigour					
	0 m	150 m	500 m	1 km	5 km	10-20 km
Goose Property						
Dry Sparse Tundra (TH)	3.8	3.6	4.0	3.3	4.0	3.9
Mesic Dwarf Tundra (TL)	3.9	n/d	n/d	4.0	n/d	n/d
Undifferentiated Tundra (TU)	4.0	4.0	4.0	4.0	3.9	4.0
MLA						
Dry Sparse Tundra (TH)	4.0	n/d	n/d	n/d	n/d	n/d
Mesic Dwarf Tundra (TL)	n/d	3.9	n/d	n/d	n/d	n/d
Undifferentiated Tundra (TU)	4.0	n/d	n/d	n/d	n/d	n/d

APPENDIX E

2024 Lichen Monitoring Plot Information

Table E-1: Lichen Sampling Plot Information

Project Area	Sample Name	Distance from Mine	Lichen Species	Percent Cover	Weather and Site Conditions
Goose	SG24-00-01	0 m	<i>Alecotria ochroleuca</i>	20	Light rain yesterday
			<i>Dactylina arctica</i>	10	
			<i>Flavocetraria nivalis</i>	35	
			<i>Flavocetraria cuculata</i>	35	
	SG24-00-03	0 m	<i>Alecotria ochroleuca</i>	10	Light rain yesterday
			<i>Bryocaulon divergens</i>	10	
			<i>Dactylina arctica</i>	5	
			<i>Flavocetraria nivalis</i>	35	
			<i>Flavocetraria cuculata</i>	35	
			<i>Thamnolia vernicularis</i>	5	
	SG24-00-04	0 m	<i>Alecotria ochroleuca</i>	10	Moderate rain
			<i>Bryocaulon divergens</i>	10	
			<i>Dactylina arctica</i>	5	
			<i>Flavocetraria nivalis</i>	30	
			<i>Flavocetraria cuculata</i>	30	
			<i>Stereocaulon alpinum</i>	10	
			<i>Thamnolia vernicularis</i>	2	
			<i>Cladonia unicalis</i>	3	
	SG24-00-05 ^(a)	0 m	<i>Bryocaulon divergens</i>	10	Light rain in the past hour, lichen is mostly dry to touch.
			<i>Cladonia rangiferina</i>	15	
			<i>Dactylina arctica</i>	20	
			<i>Flavocetraria nivalis</i>	25	
			<i>Flavocetraria cuculata</i>	25	
			<i>Cladonia gracilis</i>	5	
	SG24-00-06	0 m	<i>Bryocaulon divergens</i>	10	light rain yesterday
			<i>Flavocetraria nivalis</i>	10	
			<i>Flavocetraria cuculata</i>	10	
			<i>Stereocaulon sp.</i>	70	
	SG24-00-07	0 m	<i>Alecotria ochroleuca</i>	10	Light rain yesterday
			<i>Bryocaulon divergens</i>	20	
			<i>Dactylina arctica</i>	20	
			<i>Flavocetraria cuculata</i>	40	
			<i>Thamnolia vernicularis</i>	10	
	SG24-150-01	150 m	<i>Alecotria ochroleuca</i>	10	Light rain in past hour, lichen is mostly dry to the touch
			<i>Bryocaulon divergens</i>	20	
			<i>Cetraria islandica</i>	5	
			<i>Dactylina arctica</i>	5	
			<i>Flavocetraria nivalis</i>	30	
			<i>Flavocetraria cuculata</i>	30	
	SG24-150-02	150m	<i>Cladonia rangiferina</i>	10	Light rain
			<i>Dactylina arctica</i>	5	
			<i>Flavocetraria nivalis</i>	40	

Table E-1: Lichen Sampling Plot Information

Project Area	Sample Name	Distance from Mine	Lichen Species	Percent Cover	Weather and Site Conditions
Goose			<i>Flavocetraria cuculata</i>	40	
			<i>Unknown</i>	5	
	SG24-150-03 ^(a)	150 m	<i>Bryocaulon divergens</i>	20	Light rain periodically throughout the day. Duplicated collected here.
			<i>Cladonia mitis</i>	15	
			<i>Dactylina arctica</i>	3	
			<i>Flavocetraria nivalis</i>	30	
			<i>Flavocetraria cuculata</i>	30	
			<i>Masonhalea richardsonii</i>	2	
	SG24-150-04	150 m	<i>Alecotria ochroleuca</i>	10	Light rain earlier in the day, lichen is dry
			<i>Bryocaulon divergens</i>	10	
			<i>Dactylina arctica</i>	5	
			<i>Flavocetraria nivalis</i>	35	
			<i>Flavocetraria cuculata</i>	35	
			<i>Thamnolia vernicularis</i>	5	
	SG24-150-05	150 m	<i>Alecotria ochroleuca</i>	20	Moderate rain
			<i>Bryocaulon divergens</i>	5	
			<i>Cladonia mitis</i>	5	
			<i>Flavocetraria nivalis</i>	30	
			<i>Flavocetraria cuculata</i>	30	
			<i>Masonhalea richardsonii</i>	5	
			<i>Stereocaulon alpinum</i>	3	
			<i>Thamnolia vernicularis</i>	2	
	SG24-500-01	500 m	<i>Alecotria ochroleuca</i>	10	Light rain
			<i>Bryocaulon divergens</i>	10	
			<i>Dactylina arctica</i>	10	
			<i>Flavocetraria nivalis</i>	35	
			<i>Flavocetraria cuculata</i>	35	
	SG24-500-02 ^(a)	500 m	<i>Alecotria ochroleuca</i>	20	Rain overnight, lichen is dry to touch. High winds most of the day. Duplicate collected here.
			<i>Cladonia mitis</i>	3	
			<i>Flavocetraria nivalis</i>	35	
			<i>Flavocetraria cuculata</i>	35	
			<i>Masonhalea richardsonii</i>	5	
			<i>Thamnolia vernicularis</i>	2	
	SG24-500-03	500m	<i>Bryocaulon divergens</i>	5	Light rain
			<i>Cladonia mitis</i>	10	
			<i>Dactylina arctica</i>	5	
			<i>Flavocetraria nivalis</i>	20	
			<i>Flavocetraria cuculata</i>	20	
			<i>Stereocaulon sp.</i>	40	
	SG24-500-04	500 m	<i>Bryocaulon divergens</i>	5	Rain earlier in the day and yesterday. Lichen is dry.
			<i>Dactylina arctica</i>	5	
			<i>Flavocetraria nivalis</i>	10	

Table E-1: Lichen Sampling Plot Information

Project Area	Sample Name	Distance from Mine	Lichen Species	Percent Cover	Weather and Site Conditions
Goose			<i>Flavocetraria cuculata</i>	10	
			<i>Stereocaulon sp.</i>	70	
	SG24-500-05	500 m	<i>Bryocaulon divergens</i>	10	Moderate rain
			<i>Cladonia mitis</i>	5	
			<i>Cladonia stygia</i>	20	
			<i>Dactylina arctica</i>	5	
			<i>Flavocetraria nivalis</i>	30	
			<i>Flavocetraria cuculata</i>	30	
	SG24-1K-01 ^(a)	1 km	<i>Alecotria ochroleuca</i>	10	Rain the day prior to sampling, dry conditions day of sampling.
			<i>Cladonia rangiferina</i>	30	
			<i>Cetraria islandica</i>	5	
			<i>Flavocetraria nivalis</i>	25	
			<i>Flavocetraria cuculata</i>	25	
			<i>Cladonia gracilis</i>	5	
	SG24-1K-02	1 km	<i>Cladonia mitis</i>	5	Rain overnight, lichen dry from wind.
			<i>Flavocetraria nivalis</i>	15	
			<i>Flavocetraria cuculata</i>	10	
			<i>Stereocaulon sp.</i>	70	
	SG24-1K-03	1 km	<i>Cladonia stygia</i>	15	Light rain and high wind. Lichen is mostly dry.
			<i>Dactylina arctica</i>	5	
			<i>Flavocetraria nivalis</i>	20	
			<i>Flavocetraria cuculata</i>	20	
			<i>Thamnolia vernicularis</i>	40	
	SG24-1K-04	1 km	<i>Bryocaulon divergens</i>	5	Rain earlier in the day and yesterday. Lichen is dry.
			<i>Cladonia stellaris</i>	10	
			<i>Cetraria islandica</i>	70	
			<i>Flavocetraria nivalis</i>	5	
			<i>Flavocetraria cuculata</i>	10	
	SG24-1K-05	1 km	<i>Alecotria ochroleuca</i>	5	Light rain
			<i>Bryocaulon divergens</i>	10	
			<i>Dactylina arctica</i>	5	
			<i>Flavocetraria nivalis</i>	35	
			<i>Flavocetraria cuculata</i>	35	
			<i>Masonhalea richardsonii</i>	10	
	SG24-5K-01	5 km	<i>Alecotria ochroleuca</i>	20	Overcast and windy
			<i>Bryocaulon divergens</i>	40	
			<i>Flavocetraria nivalis</i>	20	
			<i>Flavocetraria cuculata</i>	20	
	SG24-5K-02	5 km	<i>Alecotria ochroleuca</i>	10	Rain yesterday
			<i>Bryocaulon divergens</i>	10	
			<i>Flavocetraria nivalis</i>	20	
			<i>Flavocetraria cuculata</i>	10	

Table E-1: Lichen Sampling Plot Information

Project Area	Sample Name	Distance from Mine	Lichen Species	Percent Cover	Weather and Site Conditions
Goose			<i>Stereocaulon alpinum</i>	45	
			<i>Thamnolia vermicularis</i>	5	
	SG24-5K-03	5 km	<i>Bryocaulon divergens</i>	10	Light rain periodically throughout the day.
			<i>Cladonia mitis</i>	10	
			<i>Dactylina arctica</i>	35	
			<i>Flavocetraria nivalis</i>	35	
			<i>Flavocetraria cuculata</i>	35	
	SG24-5K-04 ^(a)	5 km	<i>Bryocaulon divergens</i>	10	Light rain. Duplicate collected here.
			<i>Cladonia rangiferina</i>	30	
			<i>Flavocetraria nivalis</i>	30	
			<i>Flavocetraria cuculata</i>	30	
	SG24-5K-05	5 km	<i>Alecotria ochroleuca</i>	10	Moderate rain
			<i>Bryocaulon divergens</i>	10	
			<i>Dactylina arctica</i>	10	
			<i>Flavocetraria nivalis</i>	30	
			<i>Flavocetraria cuculata</i>	30	
			<i>Masonhalea richardsonii</i>	10	
	SG24-15K-01	15 km	<i>Alecotria ochroleuca</i>	10	Overcast and windy
			<i>Bryocaulon divergens</i>	10	
			<i>Flavocetraria nivalis</i>	20	
			<i>Flavocetraria cuculata</i>	40	
			<i>Masonhalea richardsonii</i>	10	
	SG24-15K-02	15 km	<i>Alecotria ochroleuca</i>	5	Overcast and windy
			<i>Bryocaulon divergens</i>	40	
			<i>Flavocetraria nivalis</i>	10	
			<i>Flavocetraria cuculata</i>	5	
			<i>Stereocaulon alpinum</i>	40	
	SG24-15K-03 ^(a)	15 km	<i>Alecotria ochroleuca</i>	10	Rain overnight, lichen slightly damp.
			<i>Bryocaulon divergens</i>	40	
			<i>Flavocetraria nivalis</i>	5	
			<i>Flavocetraria cuculata</i>	5	
			<i>Stereocaulon sp.</i>	40	
	SG24-15K-04	15km	<i>Alecotria ochroleuca</i>	10	Light rain
			<i>Bryocaulon divergens</i>	20	
			<i>Dactylina arctica</i>	5	
			<i>Flavocetraria nivalis</i>	30	
			<i>Flavocetraria cuculata</i>	30	
			<i>Masonhalea richardsonii</i>	5	
	SG24-15K-05	15 km	<i>Alecotria ochroleuca</i>	5	Overcast with a very light drizzle
			<i>Bryocaulon divergens</i>	5	
			<i>Flavocetraria nivalis</i>	30	
			<i>Flavocetraria cuculata</i>	30	

Table E-1: Lichen Sampling Plot Information

Project Area	Sample Name	Distance from Mine	Lichen Species	Percent Cover	Weather and Site Conditions
Marine Laydown Area	SM24-00-01	0 m	<i>Masonhalea richardsonii</i>	30	Partly cloudy and windy
			<i>Bryocaulon divergens</i>	20	
			<i>Flavocetraria nivalis</i>	20	
			<i>Flavocetraria cuculata</i>	60	
	SM24-00-02	0 m	<i>Dactylina arctica</i>	10	Overcast and windy
			<i>Flavocetraria nivalis</i>	20	
			<i>Flavocetraria cuculata</i>	70	
			<i>Masonhalea richardsonii</i>	10	
	SM24-00-03	0 m	<i>Dactylina arctica</i>	10	Overcast and windy
			<i>Flavocetraria nivalis</i>	20	
			<i>Flavocetraria cuculata</i>	70	
	SM24-00-04NEW ^(a)	0 m	<i>Flavocetraria nivalis</i>	60	Clear skies, windy, dry lichen. New point.
			<i>Masonhalea richardsonii</i>	20	
			<i>Thamnolia vernicularis</i>	20	
	SM24-00-05	0 m	<i>Brocaulon divergens</i>	5	Partly cloudy and windy
			<i>Dactylina arctica</i>	5	
			<i>Flavocetraria nivalis</i>	10	
			<i>Flavocetraria cuculata</i>	80	
	SM24-150-01	150 m	<i>Cetraria andrejevii</i>	50	Clear skies, light wind, and dry lichen.
			<i>Falvocetraria cuculata</i>	50	
	SM24-150-02	150 m	<i>Dactylina arctica</i>	35	clear skies, light wind, and dry lichen.
			<i>Thamnolia vernicularis</i>	30	
			<i>Cladonia gracilis</i>	35	
	SM24-150-03 ^(a)	150 m	<i>Cetraria islandica</i>	30	Clear skies, light wind, dry lichen.
			<i>Dactylina arctica</i>	30	
			<i>Flavocetraria cuculata</i>	2	
			<i>Stereocaulon tomentosum</i>	5	
			<i>Thamnolia vernicularis</i>	3	
			<i>Cladonia gracilis</i>	30	
	SM24-150-04	150 m	<i>Stereocaulon sp.</i>	95	Clear skies, light breeze, and dry lichen.
			<i>Cladonia gracilis</i>	5	

Note:

(a) Indicates field duplicate sample collected at this location.

APPENDIX F

**2024 Lichen Chemistry Laboratory Reports
and Field Duplicate Analysis**

CERTIFICATE OF ANALYSIS

Work Order	: YL2400878		
Client	: WSP Canada Inc.	Laboratory	: ALS Environmental - Vancouver
Contact	: Shannon Landry	Account Manager	: Oliver Gregg
Address	: 189 Mackenzie Blvd Fort McMurray Alberta Canada	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: ----	Date Samples Received	: 11-Jul-2024 13:45
PO	: CA0035158.8381 task 5000.30	Date Analysis Commenced	: 17-Aug-2024
C-O-C number	: ----	Issue Date	: 04-Mar-2025 08:08
Sampler	: Shannon O'Dwyer		
Site	: ----		
Quote number	: Tissue Samples		
No. of samples received	: 48		
No. of samples analysed	: 48		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Ghazaleh Khanmirzaei	Analyst	Metals, Burnaby, British Columbia
Ilnaz Badbezanchi	Supervisor - Metals Prep & Mercury	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia



General Comments

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

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

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

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

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

Unit	Description
%	percent
mg/kg	milligrams per kilogram
mg/kg ww	milligrams per kilogram wet weight

<: less than.

>: greater than.

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

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

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



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SM24-00-03	SM24-00-02	SM24-00-01	SM24-00-05	SG24-15K-01
					Client sampling date / time	03-Jul-2024 11:19	03-Jul-2024 12:22	03-Jul-2024 13:20	03-Jul-2024 14:05	04-Jul-2024 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-001	YL2400878-002	YL2400878-003	YL2400878-004	YL2400878-005	
					Result	Result	Result	Result	Result	
Physical Tests										
Moisture	----	E144/VA	0.50	%	31.7	35.6	26.1	21.7	14.2	
Metals										
Aluminum	7429-90-5	E440A/VA	0.40	mg/kg wwt	98.8	166	743	382	192	
Aluminum	7429-90-5	E440/VA	2.0	mg/kg	145	258	1000	488	224	
Antimony	7440-36-0	E440A/VA	0.0020	mg/kg wwt	0.0094	0.0158	0.159	0.0416	0.0047	
Antimony	7440-36-0	E440/VA	0.010	mg/kg	0.014	0.024	0.215	0.053	<0.010	
Arsenic	7440-38-2	E440A/VA	0.0040	mg/kg wwt	0.0656	0.110	0.308	0.174	0.260	
Arsenic	7440-38-2	E440/VA	0.020	mg/kg	0.096	0.170	0.417	0.222	0.304	
Barium	7440-39-3	E440A/VA	0.010	mg/kg wwt	28.9	23.2	75.7	52.0	26.7	
Barium	7440-39-3	E440/VA	0.050	mg/kg	42.4	36.0	102	66.4	31.1	
Beryllium	7440-41-7	E440A/VA	0.0020	mg/kg wwt	0.0072	0.0094	0.0470	0.0220	0.0107	
Beryllium	7440-41-7	E440/VA	0.010	mg/kg	0.011	0.015	0.064	0.028	0.012	
Bismuth	7440-69-9	E440A/VA	0.0020	mg/kg wwt	0.0030	0.0039	0.0296	0.0064	0.0042	
Bismuth	7440-69-9	E440/VA	0.010	mg/kg	<0.010	<0.010	0.040	<0.010	<0.010	
Boron	7440-42-8	E440A/VA	0.20	mg/kg wwt	2.66	2.44	5.01	4.12	1.40	
Boron	7440-42-8	E440/VA	1.0	mg/kg	3.9	3.8	6.8	5.2	1.6	
Cadmium	7440-43-9	E440A/VA	0.0010	mg/kg wwt	0.0507	0.0706	0.0904	0.0851	0.0829	
Cadmium	7440-43-9	E440/VA	0.0050	mg/kg	0.0743	0.110	0.122	0.109	0.0966	
Calcium	7440-70-2	E440A/VA	4.0	mg/kg wwt	7240	6790	4420	3230	2090	
Calcium	7440-70-2	E440/VA	20	mg/kg	10600	10600	5980	4120	2440	



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SM24-00-03	SM24-00-02	SM24-00-01	SM24-00-05	SG24-15K-01
					Client sampling date / time	03-Jul-2024 11:19	03-Jul-2024 12:22	03-Jul-2024 13:20	03-Jul-2024 14:05	04-Jul-2024 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-001	YL2400878-002	YL2400878-003	YL2400878-004	YL2400878-005	
					Result	Result	Result	Result	Result	
Metals										
Cesium	7440-46-2	E440A/VA	0.0010	mg/kg wwt	0.0190	0.0307	0.141	0.0596	0.0384	
Cesium	7440-46-2	E440/VA	0.0050	mg/kg	0.0278	0.0477	0.190	0.0761	0.0448	
Chromium	7440-47-3	E440A/VA	0.010	mg/kg wwt	0.186	1.02	1.17	0.644	0.344	
Chromium	7440-47-3	E440/VA	0.050	mg/kg	0.272	1.58	1.59	0.823	0.401	
Cobalt	7440-48-4	E440A/VA	0.0040	mg/kg wwt	0.0577	0.103	0.603	0.146	0.709	
Cobalt	7440-48-4	E440/VA	0.020	mg/kg	0.084	0.160	0.815	0.187	0.826	
Copper	7440-50-8	E440A/VA	0.020	mg/kg wwt	1.44	1.48	2.93	2.07	1.83	
Copper	7440-50-8	E440/VA	0.10	mg/kg	2.10	2.31	3.96	2.65	2.13	
Iron	7439-89-6	E440A/VA	0.60	mg/kg wwt	112	170	657	344	248	
Iron	7439-89-6	E440/VA	3.0	mg/kg	164	264	889	440	288	
Lead	7439-92-1	E440A/VA	0.0040	mg/kg wwt	0.191	0.271	0.655	0.498	0.309	
Lead	7439-92-1	E440/VA	0.020	mg/kg	0.279	0.421	0.886	0.636	0.360	
Lithium	7439-93-2	E440A/VA	0.10	mg/kg wwt	<0.10	0.10	0.24	0.18	0.15	
Lithium	7439-93-2	E440/VA	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	
Magnesium	7439-95-4	E440A/VA	0.40	mg/kg wwt	955	1240	963	750	563	
Magnesium	7439-95-4	E440/VA	2.0	mg/kg	1400	1920	1300	958	656	
Manganese	7439-96-5	E440A/VA	0.010	mg/kg wwt	60.4	144	108	263	141	
Manganese	7439-96-5	E440/VA	0.050	mg/kg	88.5	224	147	336	165	
Mercury	7439-97-6	E510A/VA	0.0010	mg/kg wwt	0.0402	0.0396	0.0454	0.0539	0.0616	
Mercury	7439-97-6	E510/VA	0.0050	mg/kg	0.0588	0.0616	0.0614	0.0688	0.0718	



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SM24-00-03	SM24-00-02	SM24-00-01	SM24-00-05	SG24-15K-01
					Client sampling date / time	03-Jul-2024 11:19	03-Jul-2024 12:22	03-Jul-2024 13:20	03-Jul-2024 14:05	04-Jul-2024 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-001	YL2400878-002	YL2400878-003	YL2400878-004	YL2400878-005	
					Result	Result	Result	Result	Result	
Metals										
Molybdenum	7439-98-7	E440A/VA	0.0040	mg/kg wwt	0.0544	0.0745	0.233	0.122	0.0286	
Molybdenum	7439-98-7	E440/VA	0.020	mg/kg	0.080	0.116	0.315	0.155	0.033	
Nickel	7440-02-0	E440A/VA	0.040	mg/kg wwt	0.179	0.459	0.671	0.522	1.31	
Nickel	7440-02-0	E440/VA	0.20	mg/kg	0.26	0.71	0.91	0.67	1.53	
Phosphorus	7723-14-0	E440A/VA	2.0	mg/kg wwt	278	452	446	404	636	
Phosphorus	7723-14-0	E440/VA	10	mg/kg	407	702	603	516	741	
Potassium	7440-09-7	E440A/VA	4.0	mg/kg wwt	874	992	1220	1050	1340	
Potassium	7440-09-7	E440/VA	20	mg/kg	1280	1540	1650	1340	1560	
Rubidium	7440-17-7	E440A/VA	0.010	mg/kg wwt	0.699	0.985	2.06	1.05	3.76	
Rubidium	7440-17-7	E440/VA	0.050	mg/kg	1.02	1.53	2.78	1.34	4.39	
Selenium	7782-49-2	E440A/VA	0.010	mg/kg wwt	0.053	0.046	0.051	0.048	0.048	
Selenium	7782-49-2	E440/VA	0.050	mg/kg	0.077	0.071	0.069	0.061	0.056	
Sodium	7440-23-5	E440A/VA	4.0	mg/kg wwt	200	294	234	213	116	
Sodium	7440-23-5	E440/VA	20	mg/kg	293	457	317	272	136	
Strontium	7440-24-6	E440A/VA	0.010	mg/kg wwt	9.60	19.5	35.0	15.7	6.23	
Strontium	7440-24-6	E440/VA	0.050	mg/kg	14.0	30.3	47.3	20.0	7.26	
Tellurium	13494-80-9	E440A/VA	0.0040	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	
Tellurium	13494-80-9	E440/VA	0.020	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	
Thallium	7440-28-0	E440A/VA	0.00040	mg/kg wwt	0.00199	0.00226	0.00834	0.00436	0.0157	
Thallium	7440-28-0	E440/VA	0.0020	mg/kg	0.0029	0.0035	0.0113	0.0056	0.0183	



Analytical Results

Sub-Matrix: Tissue
 (Matrix: Biota)

					Client sample ID	SM24-00-03	SM24-00-02	SM24-00-01	SM24-00-05	SG24-15K-01
					Client sampling date / time	03-Jul-2024 11:19	03-Jul-2024 12:22	03-Jul-2024 13:20	03-Jul-2024 14:05	04-Jul-2024 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-001	YL2400878-002	YL2400878-003	YL2400878-004	YL2400878-005
						Result	Result	Result	Result	Result
Metals										
Tin	7440-31-5	E440A/VA	0.020	mg/kg wwt		<0.020	<0.020	0.057	0.027	<0.020
Tin	7440-31-5	E440/VA	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Uranium	7440-61-1	E440A/VA	0.00040	mg/kg wwt		0.0140	0.0210	0.116	0.0606	0.0159
Uranium	7440-61-1	E440/VA	0.0020	mg/kg		0.0206	0.0327	0.157	0.0774	0.0185
Vanadium	7440-62-2	E440A/VA	0.020	mg/kg wwt		0.152	0.300	0.748	0.434	0.442
Vanadium	7440-62-2	E440/VA	0.10	mg/kg		0.22	0.46	1.01	0.55	0.52
Zinc	7440-66-6	E440A/VA	0.10	mg/kg wwt		25.2	28.0	33.4	25.8	28.2
Zinc	7440-66-6	E440/VA	0.50	mg/kg		36.9	43.5	45.1	32.9	32.8
Zirconium	7440-67-7	E440A/VA	0.040	mg/kg wwt		0.238	0.356	1.97	0.976	0.118
Zirconium	7440-67-7	E440/VA	0.20	mg/kg		0.35	0.55	2.66	1.25	<0.20

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

Analytical Results

Sub-Matrix: Tissue
 (Matrix: Biota)

					Client sample ID	SG24-5K-01	SG24-15K-02	SG24-15K-05	SG24-1K-05	SG24-500-05
					Client sampling date / time	04-Jul-2024 09:47	04-Jul-2024 10:43	04-Jul-2024 11:46	04-Jul-2024 12:45	04-Jul-2024 13:19
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-006	YL2400878-007	YL2400878-008	YL2400878-009	YL2400878-010
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.50	%		11.5	11.4	10.2	33.1	56.2
Metals										
Aluminum	7429-90-5	E440A/VA	0.40	mg/kg wwt		382	178	49.8	140	235
Aluminum	7429-90-5	E440/VA	2.0	mg/kg		431	201	55.4	210	537



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

Sub-Matrix: Tissue (Matrix: Biota)					Client sample ID	SG24-5K-01	SG24-15K-02	SG24-15K-05	SG24-1K-05	SG24-500-05
Client sampling date / time					04-Jul-2024 09:47	04-Jul-2024 10:43	04-Jul-2024 11:46	04-Jul-2024 12:45	04-Jul-2024 13:19	
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-006	YL2400878-007	YL2400878-008	YL2400878-009	YL2400878-010	
					Result	Result	Result	Result	Result	
Metals										
Antimony	7440-36-0	E440A/VA	0.0020	mg/kg wwt	0.0051	0.0039	0.0025	0.0070	0.0059	
Antimony	7440-36-0	E440/VA	0.010	mg/kg	<0.010	<0.010	<0.010	0.010	0.014	
Arsenic	7440-38-2	E440A/VA	0.0040	mg/kg wwt	0.191	0.0806	0.0604	0.117	0.114	
Arsenic	7440-38-2	E440/VA	0.020	mg/kg	0.216	0.091	0.067	0.175	0.261	
Barium	7440-39-3	E440A/VA	0.010	mg/kg wwt	22.6	23.6	23.8	31.0	25.3	
Barium	7440-39-3	E440/VA	0.050	mg/kg	25.5	26.7	26.6	46.4	57.7	
Beryllium	7440-41-7	E440A/VA	0.0020	mg/kg wwt	0.0216	0.0115	0.0036	0.0086	0.0119	
Beryllium	7440-41-7	E440/VA	0.010	mg/kg	0.024	0.013	<0.010	0.013	0.027	
Bismuth	7440-69-9	E440A/VA	0.0020	mg/kg wwt	0.0052	0.0024	0.0031	0.0046	0.0049	
Bismuth	7440-69-9	E440/VA	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	0.011	
Boron	7440-42-8	E440A/VA	0.20	mg/kg wwt	0.73	1.25	0.68	1.03	0.77	
Boron	7440-42-8	E440/VA	1.0	mg/kg	<1.0	1.4	<1.0	1.5	1.8	
Cadmium	7440-43-9	E440A/VA	0.0010	mg/kg wwt	0.0912	0.0572	0.0506	0.0647	0.0645	
Cadmium	7440-43-9	E440/VA	0.0050	mg/kg	0.103	0.0645	0.0564	0.0968	0.147	
Calcium	7440-70-2	E440A/VA	4.0	mg/kg wwt	1420	1390	1420	2090	1340	
Calcium	7440-70-2	E440/VA	20	mg/kg	1600	1570	1580	3120	3070	
Cesium	7440-46-2	E440A/VA	0.0010	mg/kg wwt	0.0496	0.0441	0.0354	0.0265	0.0424	
Cesium	7440-46-2	E440/VA	0.0050	mg/kg	0.0560	0.0498	0.0394	0.0397	0.0968	
Chromium	7440-47-3	E440A/VA	0.010	mg/kg wwt	0.552	0.160	0.060	0.252	0.494	
Chromium	7440-47-3	E440/VA	0.050	mg/kg	0.623	0.181	0.067	0.377	1.13	



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-5K-01	SG24-15K-02	SG24-15K-05	SG24-1K-05	SG24-500-05
					Client sampling date / time	04-Jul-2024 09:47	04-Jul-2024 10:43	04-Jul-2024 11:46	04-Jul-2024 12:45	04-Jul-2024 13:19
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-006	YL2400878-007	YL2400878-008	YL2400878-009	YL2400878-010
						Result	Result	Result	Result	Result
Metals										
Cobalt	7440-48-4	E440A/VA	0.0040	mg/kg wwt		0.886	0.223	0.160	0.779	0.475
Cobalt	7440-48-4	E440/VA	0.020	mg/kg		1.00	0.252	0.178	1.16	1.08
Copper	7440-50-8	E440A/VA	0.020	mg/kg wwt		1.77	1.81	1.04	1.63	1.43
Copper	7440-50-8	E440/VA	0.10	mg/kg		2.00	2.04	1.16	2.44	3.27
Iron	7439-89-6	E440A/VA	0.60	mg/kg wwt		379	190	62.8	196	298
Iron	7439-89-6	E440/VA	3.0	mg/kg		428	215	70.0	294	681
Lead	7439-92-1	E440A/VA	0.0040	mg/kg wwt		0.495	0.240	0.235	0.491	0.486
Lead	7439-92-1	E440/VA	0.020	mg/kg		0.559	0.270	0.262	0.734	1.11
Lithium	7439-93-2	E440A/VA	0.10	mg/kg wwt		0.33	<0.10	<0.10	<0.10	0.20
Lithium	7439-93-2	E440/VA	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Magnesium	7439-95-4	E440A/VA	0.40	mg/kg wwt		485	423	354	426	340
Magnesium	7439-95-4	E440/VA	2.0	mg/kg		548	477	394	637	776
Manganese	7439-96-5	E440A/VA	0.010	mg/kg wwt		63.8	64.3	74.8	172	83.6
Manganese	7439-96-5	E440/VA	0.050	mg/kg		72.0	72.5	83.3	257	191
Mercury	7439-97-6	E510A/VA	0.0010	mg/kg wwt		0.0688	0.0626	0.0413	0.0751	0.0490
Mercury	7439-97-6	E510/VA	0.0050	mg/kg		0.0777	0.0706	0.0460	0.112	0.112
Molybdenum	7439-98-7	E440A/VA	0.0040	mg/kg wwt		0.0280	0.0279	0.0141	0.0329	0.0209
Molybdenum	7439-98-7	E440/VA	0.020	mg/kg		0.032	0.032	<0.020	0.049	0.048
Nickel	7440-02-0	E440A/VA	0.040	mg/kg wwt		1.95	0.695	0.458	1.04	1.23
Nickel	7440-02-0	E440/VA	0.20	mg/kg		2.20	0.78	0.51	1.55	2.82



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

Sub-Matrix: Tissue (Matrix: Biota)					Client sample ID	SG24-5K-01	SG24-15K-02	SG24-15K-05	SG24-1K-05	SG24-500-05
Client sampling date / time					04-Jul-2024 09:47	04-Jul-2024 10:43	04-Jul-2024 11:46	04-Jul-2024 12:45	04-Jul-2024 13:19	
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-006	YL2400878-007	YL2400878-008	YL2400878-009	YL2400878-010	
					Result	Result	Result	Result	Result	
Metals										
Phosphorus	7723-14-0	E440A/VA	2.0	mg/kg wwt	549	805	684	388	262	
Phosphorus	7723-14-0	E440/VA	10	mg/kg	620	908	762	580	598	
Potassium	7440-09-7	E440A/VA	4.0	mg/kg wwt	1180	1800	1530	967	545	
Potassium	7440-09-7	E440/VA	20	mg/kg	1340	2030	1700	1450	1240	
Rubidium	7440-17-7	E440A/VA	0.010	mg/kg wwt	4.35	6.57	4.65	2.48	1.74	
Rubidium	7440-17-7	E440/VA	0.050	mg/kg	4.91	7.41	5.18	3.72	3.97	
Selenium	7782-49-2	E440A/VA	0.010	mg/kg wwt	0.070	0.061	0.044	0.051	0.036	
Selenium	7782-49-2	E440/VA	0.050	mg/kg	0.079	0.069	<0.050	0.076	0.082	
Sodium	7440-23-5	E440A/VA	4.0	mg/kg wwt	81.8	88.4	131	68.3	52.2	
Sodium	7440-23-5	E440/VA	20	mg/kg	92	100	146	102	119	
Strontium	7440-24-6	E440A/VA	0.010	mg/kg wwt	6.52	6.77	4.13	6.56	5.52	
Strontium	7440-24-6	E440/VA	0.050	mg/kg	7.37	7.64	4.60	9.82	12.6	
Tellurium	13494-80-9	E440A/VA	0.0040	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	
Tellurium	13494-80-9	E440/VA	0.020	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	
Thallium	7440-28-0	E440A/VA	0.00040	mg/kg wwt	0.00486	0.00817	0.00392	0.00665	0.00727	
Thallium	7440-28-0	E440/VA	0.0020	mg/kg	0.0055	0.0092	0.0044	0.0099	0.0166	
Tin	7440-31-5	E440A/VA	0.020	mg/kg wwt	<0.020	<0.020	<0.020	<0.020	<0.020	
Tin	7440-31-5	E440/VA	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	
Uranium	7440-61-1	E440A/VA	0.00040	mg/kg wwt	0.0176	0.0174	0.00477	0.0125	0.0110	
Uranium	7440-61-1	E440/VA	0.0020	mg/kg	0.0199	0.0196	0.0053	0.0186	0.0252	



Analytical Results

Sub-Matrix: Tissue
 (Matrix: Biota)

					Client sample ID	SG24-5K-01	SG24-15K-02	SG24-15K-05	SG24-1K-05	SG24-500-05
					Client sampling date / time	04-Jul-2024 09:47	04-Jul-2024 10:43	04-Jul-2024 11:46	04-Jul-2024 12:45	04-Jul-2024 13:19
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-006	YL2400878-007	YL2400878-008	YL2400878-009	YL2400878-010
						Result	Result	Result	Result	Result
Metals										
Vanadium	7440-62-2	E440A/VA	0.020	mg/kg wwt		0.568	0.318	0.092	0.292	0.562
Vanadium	7440-62-2	E440/VA	0.10	mg/kg		0.64	0.36	0.10	0.44	1.28
Zinc	7440-66-6	E440A/VA	0.10	mg/kg wwt		26.6	35.8	28.8	21.2	22.1
Zinc	7440-66-6	E440/VA	0.50	mg/kg		30.1	40.4	32.0	31.6	50.6
Zirconium	7440-67-7	E440A/VA	0.040	mg/kg wwt		0.176	0.061	<0.040	0.122	0.186
Zirconium	7440-67-7	E440/VA	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	0.42

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

Analytical Results

Sub-Matrix: Tissue
 (Matrix: Biota)

					Client sample ID	SG24-150-05	SG24-5K-05	SG24-00-04	SG24-5K-02	SG24-1K-01
					Client sampling date / time	04-Jul-2024 14:10	04-Jul-2024 15:00	04-Jul-2024 15:45	05-Jul-2024 08:46	05-Jul-2024 09:45
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-011	YL2400878-012	YL2400878-013	YL2400878-014	YL2400878-015
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.50	%		58.1	71.0	65.6	51.5	38.0
Metals										
Aluminum	7429-90-5	E440A/VA	0.40	mg/kg wwt		78.8	45.3	311	271	93.4
Aluminum	7429-90-5	E440/VA	2.0	mg/kg		188	156	905	559	151
Antimony	7440-36-0	E440A/VA	0.0020	mg/kg wwt		0.0037	0.0027	0.0106	0.0029	0.0058
Antimony	7440-36-0	E440/VA	0.010	mg/kg		<0.010	<0.010	0.031	<0.010	<0.010
Arsenic	7440-38-2	E440A/VA	0.0040	mg/kg wwt		0.0654	0.0317	0.536	0.150	0.0992
Arsenic	7440-38-2	E440/VA	0.020	mg/kg		0.156	0.109	1.56	0.310	0.160



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

Sub-Matrix: Tissue (Matrix: Biota)					Client sample ID	SG24-150-05	SG24-5K-05	SG24-00-04	SG24-5K-02	SG24-1K-01
Client sampling date / time					04-Jul-2024 14:10	04-Jul-2024 15:00	04-Jul-2024 15:45	05-Jul-2024 08:46	05-Jul-2024 09:45	
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-011	YL2400878-012	YL2400878-013	YL2400878-014	YL2400878-015	
					Result	Result	Result	Result	Result	
Metals										
Barium	7440-39-3	E440A/VA	0.010	mg/kg wwt	20.2	15.5	16.8	12.2	21.8	
Barium	7440-39-3	E440/VA	0.050	mg/kg	48.3	53.3	49.0	25.3	35.1	
Beryllium	7440-41-7	E440A/VA	0.0020	mg/kg wwt	0.0062	0.0035	0.0124	0.0120	0.0048	
Beryllium	7440-41-7	E440/VA	0.010	mg/kg	0.015	0.012	0.036	0.025	<0.010	
Bismuth	7440-69-9	E440A/VA	0.0020	mg/kg wwt	0.0029	<0.0020	0.0057	<0.0020	0.0025	
Bismuth	7440-69-9	E440/VA	0.010	mg/kg	<0.010	<0.010	0.016	<0.010	<0.010	
Boron	7440-42-8	E440A/VA	0.20	mg/kg wwt	0.70	0.61	0.63	0.40	0.98	
Boron	7440-42-8	E440/VA	1.0	mg/kg	1.7	2.1	1.8	<1.0	1.6	
Cadmium	7440-43-9	E440A/VA	0.0010	mg/kg wwt	0.0307	0.0432	0.0350	0.0177	0.0420	
Cadmium	7440-43-9	E440/VA	0.0050	mg/kg	0.0733	0.149	0.102	0.0366	0.0678	
Calcium	7440-70-2	E440A/VA	4.0	mg/kg wwt	1170	1070	891	429	1660	
Calcium	7440-70-2	E440/VA	20	mg/kg	2800	3690	2590	886	2690	
Cesium	7440-46-2	E440A/VA	0.0010	mg/kg wwt	0.0229	0.0195	0.0324	0.0385	0.0303	
Cesium	7440-46-2	E440/VA	0.0050	mg/kg	0.0548	0.0671	0.0942	0.0794	0.0489	
Chromium	7440-47-3	E440A/VA	0.010	mg/kg wwt	0.118	0.066	0.782	0.216	0.197	
Chromium	7440-47-3	E440/VA	0.050	mg/kg	0.283	0.227	2.28	0.446	0.318	
Cobalt	7440-48-4	E440A/VA	0.0040	mg/kg wwt	0.254	0.354	0.556	0.223	0.284	
Cobalt	7440-48-4	E440/VA	0.020	mg/kg	0.606	1.22	1.62	0.461	0.458	
Copper	7440-50-8	E440A/VA	0.020	mg/kg wwt	0.820	0.898	1.76	1.48	1.15	
Copper	7440-50-8	E440/VA	0.10	mg/kg	1.96	3.09	5.12	3.05	1.86	



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

Sub-Matrix: Tissue (Matrix: Biota)					Client sample ID	SG24-150-05	SG24-5K-05	SG24-00-04	SG24-5K-02	SG24-1K-01
Client sampling date / time					04-Jul-2024 14:10	04-Jul-2024 15:00	04-Jul-2024 15:45	05-Jul-2024 08:46	05-Jul-2024 09:45	
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-011	YL2400878-012	YL2400878-013	YL2400878-014	YL2400878-015	
					Result	Result	Result	Result	Result	
Metals										
Iron	7439-89-6	E440A/VA	0.60	mg/kg wwt	86.9	52.3	474	846	130	
Iron	7439-89-6	E440/VA	3.0	mg/kg	207	180	1380	1750	210	
Lead	7439-92-1	E440A/VA	0.0040	mg/kg wwt	0.286	0.191	0.428	0.126	0.225	
Lead	7439-92-1	E440/VA	0.020	mg/kg	0.684	0.656	1.25	0.259	0.363	
Lithium	7439-93-2	E440A/VA	0.10	mg/kg wwt	<0.10	<0.10	0.45	<0.10	<0.10	
Lithium	7439-93-2	E440/VA	0.50	mg/kg	<0.50	<0.50	1.30	<0.50	<0.50	
Magnesium	7439-95-4	E440A/VA	0.40	mg/kg wwt	254	194	318	165	400	
Magnesium	7439-95-4	E440/VA	2.0	mg/kg	607	669	925	341	645	
Manganese	7439-96-5	E440A/VA	0.010	mg/kg wwt	59.6	51.9	53.9	9.44	104	
Manganese	7439-96-5	E440/VA	0.050	mg/kg	142	179	157	19.5	167	
Mercury	7439-97-6	E510A/VA	0.0010	mg/kg wwt	0.0293	0.0201	0.0434	0.0260	0.0427	
Mercury	7439-97-6	E510/VA	0.0050	mg/kg	0.0699	0.0691	0.126	0.0536	0.0689	
Molybdenum	7439-98-7	E440A/VA	0.0040	mg/kg wwt	0.0192	0.0102	0.0371	0.0397	0.0225	
Molybdenum	7439-98-7	E440/VA	0.020	mg/kg	0.046	0.035	0.108	0.082	0.036	
Nickel	7440-02-0	E440A/VA	0.040	mg/kg wwt	0.608	1.09	1.57	0.952	0.520	
Nickel	7440-02-0	E440/VA	0.20	mg/kg	1.45	3.74	4.58	1.96	0.84	
Phosphorus	7723-14-0	E440A/VA	2.0	mg/kg wwt	180	213	182	313	294	
Phosphorus	7723-14-0	E440/VA	10	mg/kg	431	735	532	646	475	
Potassium	7440-09-7	E440A/VA	4.0	mg/kg wwt	507	432	425	896	828	
Potassium	7440-09-7	E440/VA	20	mg/kg	1210	1490	1240	1850	1340	



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

Sub-Matrix: Tissue (Matrix: Biota)					Client sample ID	SG24-150-05	SG24-5K-05	SG24-00-04	SG24-5K-02	SG24-1K-01
Client sampling date / time					04-Jul-2024 14:10	04-Jul-2024 15:00	04-Jul-2024 15:45	05-Jul-2024 08:46	05-Jul-2024 09:45	
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-011	YL2400878-012	YL2400878-013	YL2400878-014	YL2400878-015	
					Result	Result	Result	Result	Result	
Metals										
Rubidium	7440-17-7	E440A/VA	0.010	mg/kg wwt	1.79	1.45	1.57	3.55	2.49	
Rubidium	7440-17-7	E440/VA	0.050	mg/kg	4.28	4.99	4.58	7.33	4.02	
Selenium	7782-49-2	E440A/VA	0.010	mg/kg wwt	0.027	0.016	0.030	0.034	0.033	
Selenium	7782-49-2	E440/VA	0.050	mg/kg	0.065	0.055	0.087	0.070	0.053	
Sodium	7440-23-5	E440A/VA	4.0	mg/kg wwt	41.1	38.5	32.4	22.8	72.1	
Sodium	7440-23-5	E440/VA	20	mg/kg	98	133	94	47	116	
Strontium	7440-24-6	E440A/VA	0.010	mg/kg wwt	4.82	3.47	4.06	3.46	5.99	
Strontium	7440-24-6	E440/VA	0.050	mg/kg	11.5	12.0	11.8	7.15	9.68	
Tellurium	13494-80-9	E440A/VA	0.0040	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	
Tellurium	13494-80-9	E440/VA	0.020	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	
Thallium	7440-28-0	E440A/VA	0.00040	mg/kg wwt	0.00524	0.00542	0.00938	0.00430	0.0128	
Thallium	7440-28-0	E440/VA	0.0020	mg/kg	0.0125	0.0186	0.0273	0.0089	0.0207	
Tin	7440-31-5	E440A/VA	0.020	mg/kg wwt	<0.020	<0.020	<0.020	<0.020	<0.020	
Tin	7440-31-5	E440/VA	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	
Uranium	7440-61-1	E440A/VA	0.00040	mg/kg wwt	0.00479	0.00360	0.0162	0.0113	0.00589	
Uranium	7440-61-1	E440/VA	0.0020	mg/kg	0.0114	0.0124	0.0472	0.0233	0.0095	
Vanadium	7440-62-2	E440A/VA	0.020	mg/kg wwt	0.148	0.088	0.665	0.868	0.248	
Vanadium	7440-62-2	E440/VA	0.10	mg/kg	0.35	0.30	1.94	1.79	0.40	
Zinc	7440-66-6	E440A/VA	0.10	mg/kg wwt	11.1	12.2	10.0	8.34	14.0	
Zinc	7440-66-6	E440/VA	0.50	mg/kg	26.5	41.9	29.2	17.2	22.6	



Analytical Results

Sub-Matrix: Tissue (Matrix: Biota)					Client sample ID	SG24-150-05	SG24-5K-05	SG24-00-04	SG24-5K-02	SG24-1K-01
					Client sampling date / time	04-Jul-2024 14:10	04-Jul-2024 15:00	04-Jul-2024 15:45	05-Jul-2024 08:46	05-Jul-2024 09:45
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-011	YL2400878-012	YL2400878-013	YL2400878-014	YL2400878-015
						Result	Result	Result	Result	Result
Metals										
Zirconium	7440-67-7	E440A/VA	0.040	mg/kg wwt		0.058	<0.040	0.291	0.048	0.087
Zirconium	7440-67-7	E440/VA	0.20	mg/kg		<0.20	<0.20	0.85	<0.20	<0.20

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

Analytical Results

Sub-Matrix: Tissue (Matrix: Biota)					Client sample ID	SG24-1K-01B	SG24-500-01	SG24-150-01	SG24-00-05	SG24-00-05B
					Client sampling date / time	05-Jul-2024 01:00	05-Jul-2024 10:46	05-Jul-2024 11:32	05-Jul-2024 12:27	05-Jul-2024 12:30
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-016	YL2400878-017	YL2400878-018	YL2400878-019	YL2400878-020
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.50	%		44.2	53.5	47.1	39.6	37.1
Metals										
Aluminum	7429-90-5	E440A/VA	0.40	mg/kg wwt		70.4	112	110	292	272
Aluminum	7429-90-5	E440/VA	2.0	mg/kg		126	240	207	483	433
Antimony	7440-36-0	E440A/VA	0.0020	mg/kg wwt		0.0053	0.0089	0.0100	0.0100	0.0077
Antimony	7440-36-0	E440/VA	0.010	mg/kg		<0.010	0.019	0.019	0.016	0.012
Arsenic	7440-38-2	E440A/VA	0.0040	mg/kg wwt		0.0796	0.104	0.136	0.506	0.333
Arsenic	7440-38-2	E440/VA	0.020	mg/kg		0.142	0.223	0.258	0.836	0.530
Barium	7440-39-3	E440A/VA	0.010	mg/kg wwt		20.7	19.4	21.0	25.8	24.4
Barium	7440-39-3	E440/VA	0.050	mg/kg		37.0	41.9	39.8	42.6	38.9
Beryllium	7440-41-7	E440A/VA	0.0020	mg/kg wwt		0.0032	0.0114	0.0072	0.0135	0.0134
Beryllium	7440-41-7	E440/VA	0.010	mg/kg		<0.010	0.025	0.014	0.022	0.021



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-1K-01B	SG24-500-01	SG24-150-01	SG24-00-05	SG24-00-05B
					Client sampling date / time	05-Jul-2024 01:00	05-Jul-2024 10:46	05-Jul-2024 11:32	05-Jul-2024 12:27	05-Jul-2024 12:30
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-016	YL2400878-017	YL2400878-018	YL2400878-019	YL2400878-020	
					Result	Result	Result	Result	Result	
Metals										
Bismuth	7440-69-9	E440A/VA	0.0020	mg/kg wwt	0.0021	0.0028	0.0027	0.0054	0.0042	
Bismuth	7440-69-9	E440/VA	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	
Boron	7440-42-8	E440A/VA	0.20	mg/kg wwt	1.01	0.79	0.68	0.88	1.05	
Boron	7440-42-8	E440/VA	1.0	mg/kg	1.8	1.7	1.3	1.4	1.7	
Cadmium	7440-43-9	E440A/VA	0.0010	mg/kg wwt	0.0360	0.0486	0.0439	0.0515	0.0440	
Cadmium	7440-43-9	E440/VA	0.0050	mg/kg	0.0644	0.104	0.0830	0.0852	0.0701	
Calcium	7440-70-2	E440A/VA	4.0	mg/kg wwt	1310	1420	1240	2360	2130	
Calcium	7440-70-2	E440/VA	20	mg/kg	2340	3060	2350	3900	3380	
Cesium	7440-46-2	E440A/VA	0.0010	mg/kg wwt	0.0300	0.0261	0.0341	0.0280	0.0285	
Cesium	7440-46-2	E440/VA	0.0050	mg/kg	0.0537	0.0562	0.0646	0.0463	0.0454	
Chromium	7440-47-3	E440A/VA	0.010	mg/kg wwt	0.134	0.165	0.188	0.605	0.554	
Chromium	7440-47-3	E440/VA	0.050	mg/kg	0.241	0.356	0.356	1.00	0.882	
Cobalt	7440-48-4	E440A/VA	0.0040	mg/kg wwt	0.178	0.471	0.233	1.24	1.11	
Cobalt	7440-48-4	E440/VA	0.020	mg/kg	0.319	1.01	0.440	2.04	1.77	
Copper	7440-50-8	E440A/VA	0.020	mg/kg wwt	1.04	1.18	1.03	2.54	2.46	
Copper	7440-50-8	E440/VA	0.10	mg/kg	1.87	2.54	1.95	4.20	3.92	
Iron	7439-89-6	E440A/VA	0.60	mg/kg wwt	96.5	145	177	448	412	
Iron	7439-89-6	E440/VA	3.0	mg/kg	173	311	334	741	655	
Lead	7439-92-1	E440A/VA	0.0040	mg/kg wwt	0.180	0.332	0.215	0.513	0.392	
Lead	7439-92-1	E440/VA	0.020	mg/kg	0.322	0.714	0.406	0.849	0.624	



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-1K-01B	SG24-500-01	SG24-150-01	SG24-00-05	SG24-00-05B
					Client sampling date / time	05-Jul-2024 01:00	05-Jul-2024 10:46	05-Jul-2024 11:32	05-Jul-2024 12:27	05-Jul-2024 12:30
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-016	YL2400878-017	YL2400878-018	YL2400878-019	YL2400878-020	
					Result	Result	Result	Result	Result	
Metals										
Lithium	7439-93-2	E440A/VA	0.10	mg/kg wwt	<0.10	<0.10	<0.10	0.22	0.21	
Lithium	7439-93-2	E440/VA	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	
Magnesium	7439-95-4	E440A/VA	0.40	mg/kg wwt	338	333	291	499	508	
Magnesium	7439-95-4	E440/VA	2.0	mg/kg	605	717	550	825	808	
Manganese	7439-96-5	E440A/VA	0.010	mg/kg wwt	79.8	48.6	39.1	91.0	127	
Manganese	7439-96-5	E440/VA	0.050	mg/kg	143	104	73.9	150	202	
Mercury	7439-97-6	E510A/VA	0.0010	mg/kg wwt	0.0392	0.0384	0.0251	0.0586	0.0482	
Mercury	7439-97-6	E510/VA	0.0050	mg/kg	0.0702	0.0827	0.0475	0.0969	0.0766	
Molybdenum	7439-98-7	E440A/VA	0.0040	mg/kg wwt	0.0208	0.0221	0.0216	0.0379	0.0353	
Molybdenum	7439-98-7	E440/VA	0.020	mg/kg	0.037	0.048	0.041	0.063	0.056	
Nickel	7440-02-0	E440A/VA	0.040	mg/kg wwt	0.411	0.958	0.661	1.79	1.70	
Nickel	7440-02-0	E440/VA	0.20	mg/kg	0.74	2.06	1.25	2.96	2.70	
Phosphorus	7723-14-0	E440A/VA	2.0	mg/kg wwt	295	224	242	331	332	
Phosphorus	7723-14-0	E440/VA	10	mg/kg	528	482	458	548	528	
Potassium	7440-09-7	E440A/VA	4.0	mg/kg wwt	700	578	679	752	847	
Potassium	7440-09-7	E440/VA	20	mg/kg	1250	1240	1280	1240	1350	
Rubidium	7440-17-7	E440A/VA	0.010	mg/kg wwt	2.16	1.94	2.03	2.14	2.28	
Rubidium	7440-17-7	E440/VA	0.050	mg/kg	3.87	4.18	3.84	3.55	3.62	
Selenium	7782-49-2	E440A/VA	0.010	mg/kg wwt	0.024	0.030	0.029	0.048	0.043	
Selenium	7782-49-2	E440/VA	0.050	mg/kg	<0.050	0.065	0.055	0.080	0.069	



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-1K-01B	SG24-500-01	SG24-150-01	SG24-00-05	SG24-00-05B
					Client sampling date / time	05-Jul-2024 01:00	05-Jul-2024 10:46	05-Jul-2024 11:32	05-Jul-2024 12:27	05-Jul-2024 12:30
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-016	YL2400878-017	YL2400878-018	YL2400878-019	YL2400878-020	
					Result	Result	Result	Result	Result	
Metals										
Sodium	7440-23-5	E440A/VA	4.0	mg/kg wwt	50.2	59.7	61.9	60.4	65.1	
Sodium	7440-23-5	E440/VA	20	mg/kg	90	128	117	100	104	
Strontium	7440-24-6	E440A/VA	0.010	mg/kg wwt	4.62	7.63	5.73	7.91	7.09	
Strontium	7440-24-6	E440/VA	0.050	mg/kg	8.27	16.4	10.8	13.1	11.3	
Tellurium	13494-80-9	E440A/VA	0.0040	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	
Tellurium	13494-80-9	E440/VA	0.020	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	
Thallium	7440-28-0	E440A/VA	0.00040	mg/kg wwt	0.0105	0.00496	0.00297	0.00764	0.00777	
Thallium	7440-28-0	E440/VA	0.0020	mg/kg	0.0189	0.0107	0.0056	0.0126	0.0124	
Tin	7440-31-5	E440A/VA	0.020	mg/kg wwt	<0.020	<0.020	<0.020	<0.020	<0.020	
Tin	7440-31-5	E440/VA	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	
Uranium	7440-61-1	E440A/VA	0.00040	mg/kg wwt	0.00464	0.00613	0.00565	0.0257	0.0219	
Uranium	7440-61-1	E440/VA	0.0020	mg/kg	0.0083	0.0132	0.0107	0.0425	0.0349	
Vanadium	7440-62-2	E440A/VA	0.020	mg/kg wwt	0.179	0.324	0.275	0.685	0.618	
Vanadium	7440-62-2	E440/VA	0.10	mg/kg	0.32	0.70	0.52	1.13	0.98	
Zinc	7440-66-6	E440A/VA	0.10	mg/kg wwt	18.8	14.9	14.0	14.0	13.8	
Zinc	7440-66-6	E440/VA	0.50	mg/kg	33.7	32.1	26.4	23.2	22.0	
Zirconium	7440-67-7	E440A/VA	0.040	mg/kg wwt	0.306	0.062	0.072	0.370	0.302	
Zirconium	7440-67-7	E440/VA	0.20	mg/kg	0.55	<0.20	<0.20	0.61	0.48	

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



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-1K-04	SG24-500-04	SG24-150-04	SG24-15K-03	SG24-15K-03B
					Client sampling date / time	05-Jul-2024 13:38	05-Jul-2024 14:16	05-Jul-2024 15:09	06-Jul-2024 08:35	06-Jul-2024 11:19
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-021	YL2400878-022	YL2400878-023	YL2400878-024	YL2400878-025	
					Result	Result	Result	Result	Result	
Physical Tests										
Moisture	----	E144/VA	0.50	%	24.9	41.5	37.9	57.8	56.7	
Metals										
Aluminum	7429-90-5	E440A/VA	0.40	mg/kg wwt	117	660	180	77.7	97.1	
Aluminum	7429-90-5	E440/VA	2.0	mg/kg	156	1130	290	184	224	
Antimony	7440-36-0	E440A/VA	0.0020	mg/kg wwt	0.0032	0.0066	0.0046	<0.0020	0.0026	
Antimony	7440-36-0	E440/VA	0.010	mg/kg	<0.010	0.011	<0.010	<0.010	<0.010	
Arsenic	7440-38-2	E440A/VA	0.0040	mg/kg wwt	0.162	0.426	0.220	0.0678	0.0748	
Arsenic	7440-38-2	E440/VA	0.020	mg/kg	0.215	0.729	0.355	0.161	0.173	
Barium	7440-39-3	E440A/VA	0.010	mg/kg wwt	12.4	20.7	17.0	14.2	16.2	
Barium	7440-39-3	E440/VA	0.050	mg/kg	16.5	35.4	27.4	33.6	37.4	
Beryllium	7440-41-7	E440A/VA	0.0020	mg/kg wwt	0.0068	0.0455	0.0124	0.0048	0.0059	
Beryllium	7440-41-7	E440/VA	0.010	mg/kg	<0.010	0.078	0.020	0.011	0.014	
Bismuth	7440-69-9	E440A/VA	0.0020	mg/kg wwt	0.0037	0.0041	0.0033	<0.0020	<0.0020	
Bismuth	7440-69-9	E440/VA	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	
Boron	7440-42-8	E440A/VA	0.20	mg/kg wwt	0.29	1.02	0.65	0.66	0.58	
Boron	7440-42-8	E440/VA	1.0	mg/kg	<1.0	1.8	1.0	1.6	1.3	
Cadmium	7440-43-9	E440A/VA	0.0010	mg/kg wwt	0.0281	0.0483	0.0310	0.0239	0.0309	
Cadmium	7440-43-9	E440/VA	0.0050	mg/kg	0.0374	0.0825	0.0500	0.0567	0.0715	
Calcium	7440-70-2	E440A/VA	4.0	mg/kg wwt	704	904	966	786	917	
Calcium	7440-70-2	E440/VA	20	mg/kg	937	1550	1560	1860	2120	



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-1K-04	SG24-500-04	SG24-150-04	SG24-15K-03	SG24-15K-03B
					Client sampling date / time	05-Jul-2024 13:38	05-Jul-2024 14:16	05-Jul-2024 15:09	06-Jul-2024 08:35	06-Jul-2024 11:19
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-021	YL2400878-022	YL2400878-023	YL2400878-024	YL2400878-025
						Result	Result	Result	Result	Result
Metals										
Cesium	7440-46-2	E440A/VA	0.0010	mg/kg wwt		0.159	0.0272	0.0442	0.0169	0.0175
Cesium	7440-46-2	E440/VA	0.0050	mg/kg		0.212	0.0466	0.0711	0.0402	0.0404
Chromium	7440-47-3	E440A/VA	0.010	mg/kg wwt		0.203	0.273	0.251	0.091	0.082
Chromium	7440-47-3	E440/VA	0.050	mg/kg		0.270	0.466	0.404	0.216	0.190
Cobalt	7440-48-4	E440A/VA	0.0040	mg/kg wwt		0.253	1.90	0.582	0.271	0.396
Cobalt	7440-48-4	E440/VA	0.020	mg/kg		0.338	3.25	0.938	0.643	0.915
Copper	7440-50-8	E440A/VA	0.020	mg/kg wwt		1.02	5.91	1.37	1.03	0.988
Copper	7440-50-8	E440/VA	0.10	mg/kg		1.36	10.1	2.20	2.44	2.28
Iron	7439-89-6	E440A/VA	0.60	mg/kg wwt		164	1010	212	127	137
Iron	7439-89-6	E440/VA	3.0	mg/kg		218	1720	341	300	318
Lead	7439-92-1	E440A/VA	0.0040	mg/kg wwt		0.235	0.842	0.314	0.120	0.146
Lead	7439-92-1	E440/VA	0.020	mg/kg		0.313	1.44	0.505	0.284	0.338
Lithium	7439-93-2	E440A/VA	0.10	mg/kg wwt		<0.10	0.12	0.13	<0.10	<0.10
Lithium	7439-93-2	E440/VA	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Magnesium	7439-95-4	E440A/VA	0.40	mg/kg wwt		314	284	366	191	223
Magnesium	7439-95-4	E440/VA	2.0	mg/kg		418	486	590	453	515
Manganese	7439-96-5	E440A/VA	0.010	mg/kg wwt		32.3	55.9	31.9	47.7	62.3
Manganese	7439-96-5	E440/VA	0.050	mg/kg		43.0	95.6	51.4	113	144
Mercury	7439-97-6	E510A/VA	0.0010	mg/kg wwt		0.0292	0.0473	0.0273	0.0284	0.0291
Mercury	7439-97-6	E510/VA	0.0050	mg/kg		0.0388	0.0809	0.0440	0.0674	0.0671



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-1K-04	SG24-500-04	SG24-150-04	SG24-15K-03	SG24-15K-03B
					Client sampling date / time	05-Jul-2024 13:38	05-Jul-2024 14:16	05-Jul-2024 15:09	06-Jul-2024 08:35	06-Jul-2024 11:19
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-021	YL2400878-022	YL2400878-023	YL2400878-024	YL2400878-025	
					Result	Result	Result	Result	Result	
Metals										
Molybdenum	7439-98-7	E440A/VA	0.0040	mg/kg wwt	0.0176	0.0704	0.0236	0.0126	0.0114	
Molybdenum	7439-98-7	E440/VA	0.020	mg/kg	0.023	0.120	0.038	0.030	0.026	
Nickel	7440-02-0	E440A/VA	0.040	mg/kg wwt	0.771	9.02	1.86	0.596	0.687	
Nickel	7440-02-0	E440/VA	0.20	mg/kg	1.03	15.4	3.00	1.41	1.59	
Phosphorus	7723-14-0	E440A/VA	2.0	mg/kg wwt	591	716	381	274	296	
Phosphorus	7723-14-0	E440/VA	10	mg/kg	787	1220	613	648	683	
Potassium	7440-09-7	E440A/VA	4.0	mg/kg wwt	2010	1070	1180	642	657	
Potassium	7440-09-7	E440/VA	20	mg/kg	2680	1820	1900	1520	1520	
Rubidium	7440-17-7	E440A/VA	0.010	mg/kg wwt	14.1	2.83	4.96	2.25	2.23	
Rubidium	7440-17-7	E440/VA	0.050	mg/kg	18.7	4.84	7.99	5.34	5.16	
Selenium	7782-49-2	E440A/VA	0.010	mg/kg wwt	0.046	0.050	0.041	0.023	0.028	
Selenium	7782-49-2	E440/VA	0.050	mg/kg	0.062	0.085	0.066	0.055	0.064	
Sodium	7440-23-5	E440A/VA	4.0	mg/kg wwt	79.3	24.4	54.6	42.4	30.4	
Sodium	7440-23-5	E440/VA	20	mg/kg	106	42	88	100	70	
Strontium	7440-24-6	E440A/VA	0.010	mg/kg wwt	3.14	6.59	5.41	2.89	3.28	
Strontium	7440-24-6	E440/VA	0.050	mg/kg	4.18	11.3	8.71	6.86	7.57	
Tellurium	13494-80-9	E440A/VA	0.0040	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	
Tellurium	13494-80-9	E440/VA	0.020	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	
Thallium	7440-28-0	E440A/VA	0.00040	mg/kg wwt	0.00785	0.0104	0.00626	0.00669	0.00498	
Thallium	7440-28-0	E440/VA	0.0020	mg/kg	0.0104	0.0178	0.0101	0.0158	0.0115	



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-1K-04	SG24-500-04	SG24-150-04	SG24-15K-03	SG24-15K-03B
					Client sampling date / time	05-Jul-2024 13:38	05-Jul-2024 14:16	05-Jul-2024 15:09	06-Jul-2024 08:35	06-Jul-2024 11:19
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-021	YL2400878-022	YL2400878-023	YL2400878-024	YL2400878-025
						Result	Result	Result	Result	Result
Metals										
Tin	7440-31-5	E440A/VA	0.020	mg/kg wwt		<0.020	<0.020	<0.020	<0.020	<0.020
Tin	7440-31-5	E440/VA	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Uranium	7440-61-1	E440A/VA	0.00040	mg/kg wwt		0.00909	0.0537	0.0136	0.00445	0.00520
Uranium	7440-61-1	E440/VA	0.0020	mg/kg		0.0121	0.0918	0.0218	0.0105	0.0120
Vanadium	7440-62-2	E440A/VA	0.020	mg/kg wwt		0.207	0.296	0.324	0.190	0.177
Vanadium	7440-62-2	E440/VA	0.10	mg/kg		0.28	0.50	0.52	0.45	0.41
Zinc	7440-66-6	E440A/VA	0.10	mg/kg wwt		17.9	21.0	12.8	14.5	15.9
Zinc	7440-66-6	E440/VA	0.50	mg/kg		23.9	35.8	20.6	34.4	36.6
Zirconium	7440-67-7	E440A/VA	0.040	mg/kg wwt		0.085	0.133	0.116	<0.040	<0.040
Zirconium	7440-67-7	E440/VA	0.20	mg/kg		<0.20	0.23	<0.20	<0.20	<0.20

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

Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-5K-03	SG24-1K-02	SG24-500-02	SG24-500-02B	SG24-150-02
					Client sampling date / time	06-Jul-2024 09:32	06-Jul-2024 10:23	06-Jul-2024 11:15	06-Jul-2024 11:20	06-Jul-2024 12:15
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-026	YL2400878-027	YL2400878-028	YL2400878-029	YL2400878-030
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.50	%		51.9	59.8	47.7	55.5	35.0
Metals										
Aluminum	7429-90-5	E440A/VA	0.40	mg/kg wwt		81.6	272	123	96.8	371
Aluminum	7429-90-5	E440/VA	2.0	mg/kg		170	677	236	217	571



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-5K-03	SG24-1K-02	SG24-500-02	SG24-500-02B	SG24-150-02
					Client sampling date / time	06-Jul-2024 09:32	06-Jul-2024 10:23	06-Jul-2024 11:15	06-Jul-2024 11:20	06-Jul-2024 12:15
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-026	YL2400878-027	YL2400878-028	YL2400878-029	YL2400878-030
						Result	Result	Result	Result	Result
Metals										
Antimony	7440-36-0	E440A/VA	0.0020	mg/kg wwt		0.0028	0.0031	0.0036	0.0028	0.0086
Antimony	7440-36-0	E440/VA	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	0.013
Arsenic	7440-38-2	E440A/VA	0.0040	mg/kg wwt		0.0976	0.178	0.201	0.126	0.412
Arsenic	7440-38-2	E440/VA	0.020	mg/kg		0.203	0.444	0.384	0.283	0.635
Barium	7440-39-3	E440A/VA	0.010	mg/kg wwt		17.8	20.0	21.1	16.7	27.9
Barium	7440-39-3	E440/VA	0.050	mg/kg		37.0	49.7	40.3	37.6	42.9
Beryllium	7440-41-7	E440A/VA	0.0020	mg/kg wwt		0.0055	0.0135	0.0055	0.0058	0.0180
Beryllium	7440-41-7	E440/VA	0.010	mg/kg		0.011	0.034	0.010	0.013	0.028
Bismuth	7440-69-9	E440A/VA	0.0020	mg/kg wwt		<0.0020	<0.0020	0.0025	<0.0020	0.0080
Bismuth	7440-69-9	E440/VA	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	0.012
Boron	7440-42-8	E440A/VA	0.20	mg/kg wwt		0.74	0.82	0.88	0.64	0.90
Boron	7440-42-8	E440/VA	1.0	mg/kg		1.5	2.0	1.7	1.4	1.4
Cadmium	7440-43-9	E440A/VA	0.0010	mg/kg wwt		0.0464	0.0222	0.0518	0.0470	0.0579
Cadmium	7440-43-9	E440/VA	0.0050	mg/kg		0.0964	0.0552	0.0990	0.106	0.0891
Calcium	7440-70-2	E440A/VA	4.0	mg/kg wwt		1180	428	1420	1120	1700
Calcium	7440-70-2	E440/VA	20	mg/kg		2450	1060	2720	2520	2620
Cesium	7440-46-2	E440A/VA	0.0010	mg/kg wwt		0.0354	0.0332	0.0400	0.0295	0.0726
Cesium	7440-46-2	E440/VA	0.0050	mg/kg		0.0735	0.0826	0.0764	0.0663	0.112
Chromium	7440-47-3	E440A/VA	0.010	mg/kg wwt		0.112	0.168	0.256	0.182	0.767
Chromium	7440-47-3	E440/VA	0.050	mg/kg		0.233	0.418	0.489	0.410	1.18



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-5K-03	SG24-1K-02	SG24-500-02	SG24-500-02B	SG24-150-02
					Client sampling date / time	06-Jul-2024 09:32	06-Jul-2024 10:23	06-Jul-2024 11:15	06-Jul-2024 11:20	06-Jul-2024 12:15
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-026	YL2400878-027	YL2400878-028	YL2400878-029	YL2400878-030
						Result	Result	Result	Result	Result
Metals										
Cobalt	7440-48-4	E440A/VA	0.0040	mg/kg wwt		0.458	0.367	0.342	0.319	0.701
Cobalt	7440-48-4	E440/VA	0.020	mg/kg		0.953	0.912	0.654	0.717	1.08
Copper	7440-50-8	E440A/VA	0.020	mg/kg wwt		0.964	1.69	1.29	0.950	1.89
Copper	7440-50-8	E440/VA	0.10	mg/kg		2.00	4.20	2.47	2.13	2.91
Iron	7439-89-6	E440A/VA	0.60	mg/kg wwt		93.4	239	168	125	517
Iron	7439-89-6	E440/VA	3.0	mg/kg		194	595	322	281	796
Lead	7439-92-1	E440A/VA	0.0040	mg/kg wwt		0.151	0.173	0.209	0.158	0.754
Lead	7439-92-1	E440/VA	0.020	mg/kg		0.314	0.429	0.400	0.355	1.16
Lithium	7439-93-2	E440A/VA	0.10	mg/kg wwt		<0.10	<0.10	0.14	<0.10	0.38
Lithium	7439-93-2	E440/VA	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	0.58
Magnesium	7439-95-4	E440A/VA	0.40	mg/kg wwt		294	150	374	301	514
Magnesium	7439-95-4	E440/VA	2.0	mg/kg		611	372	715	677	792
Manganese	7439-96-5	E440A/VA	0.010	mg/kg wwt		68.6	9.99	70.4	57.9	96.2
Manganese	7439-96-5	E440/VA	0.050	mg/kg		142	24.8	135	130	148
Mercury	7439-97-6	E510A/VA	0.0010	mg/kg wwt		0.0258	0.0216	0.0265	0.0213	0.0496
Mercury	7439-97-6	E510/VA	0.0050	mg/kg		0.0537	0.0537	0.0506	0.0479	0.0763
Molybdenum	7439-98-7	E440A/VA	0.0040	mg/kg wwt		0.0157	0.0305	0.0307	0.0155	0.0632
Molybdenum	7439-98-7	E440/VA	0.020	mg/kg		0.033	0.076	0.059	0.035	0.097
Nickel	7440-02-0	E440A/VA	0.040	mg/kg wwt		1.10	1.45	1.16	0.885	2.13
Nickel	7440-02-0	E440/VA	0.20	mg/kg		2.28	3.60	2.22	1.99	3.29



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-5K-03	SG24-1K-02	SG24-500-02	SG24-500-02B	SG24-150-02
					Client sampling date / time	06-Jul-2024 09:32	06-Jul-2024 10:23	06-Jul-2024 11:15	06-Jul-2024 11:20	06-Jul-2024 12:15
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-026	YL2400878-027	YL2400878-028	YL2400878-029	YL2400878-030
						Result	Result	Result	Result	Result
Metals										
Phosphorus	7723-14-0	E440A/VA	2.0	mg/kg wwt		308	370	416	361	356
Phosphorus	7723-14-0	E440/VA	10	mg/kg		639	919	796	811	547
Potassium	7440-09-7	E440A/VA	4.0	mg/kg wwt		605	744	858	743	847
Potassium	7440-09-7	E440/VA	20	mg/kg		1260	1850	1640	1670	1300
Rubidium	7440-17-7	E440A/VA	0.010	mg/kg wwt		2.00	3.02	2.78	2.35	3.26
Rubidium	7440-17-7	E440/VA	0.050	mg/kg		4.16	7.51	5.31	5.29	5.03
Selenium	7782-49-2	E440A/VA	0.010	mg/kg wwt		0.024	0.023	0.024	0.018	0.045
Selenium	7782-49-2	E440/VA	0.050	mg/kg		0.050	0.058	<0.050	<0.050	0.069
Sodium	7440-23-5	E440A/VA	4.0	mg/kg wwt		50.6	16.9	73.8	60.5	68.4
Sodium	7440-23-5	E440/VA	20	mg/kg		105	42	141	136	105
Strontium	7440-24-6	E440A/VA	0.010	mg/kg wwt		4.09	4.79	4.72	3.67	6.29
Strontium	7440-24-6	E440/VA	0.050	mg/kg		8.50	11.9	9.04	8.24	9.68
Tellurium	13494-80-9	E440A/VA	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Tellurium	13494-80-9	E440/VA	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Thallium	7440-28-0	E440A/VA	0.00040	mg/kg wwt		0.00675	0.00441	0.0114	0.00814	0.0174
Thallium	7440-28-0	E440/VA	0.0020	mg/kg		0.0140	0.0110	0.0218	0.0183	0.0268
Tin	7440-31-5	E440A/VA	0.020	mg/kg wwt		<0.020	<0.020	<0.020	<0.020	0.020
Tin	7440-31-5	E440/VA	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Uranium	7440-61-1	E440A/VA	0.00040	mg/kg wwt		0.00434	0.0121	0.00776	0.00584	0.0228
Uranium	7440-61-1	E440/VA	0.0020	mg/kg		0.0090	0.0301	0.0148	0.0131	0.0351



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-5K-03	SG24-1K-02	SG24-500-02	SG24-500-02B	SG24-150-02
					Client sampling date / time	06-Jul-2024 09:32	06-Jul-2024 10:23	06-Jul-2024 11:15	06-Jul-2024 11:20	06-Jul-2024 12:15
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-026	YL2400878-027	YL2400878-028	YL2400878-029	YL2400878-030
						Result	Result	Result	Result	Result
Metals										
Vanadium	7440-62-2	E440A/VA	0.020	mg/kg wwt		0.154	0.224	0.237	0.188	0.714
Vanadium	7440-62-2	E440/VA	0.10	mg/kg		0.32	0.56	0.45	0.42	1.10
Zinc	7440-66-6	E440A/VA	0.10	mg/kg wwt		14.8	10.6	18.4	14.8	19.6
Zinc	7440-66-6	E440/VA	0.50	mg/kg		30.7	26.4	35.1	33.2	30.1
Zirconium	7440-67-7	E440A/VA	0.040	mg/kg wwt		<0.040	0.063	0.109	0.076	0.298
Zirconium	7440-67-7	E440/VA	0.20	mg/kg		<0.20	<0.20	0.21	<0.20	0.46

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

Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-1K-03	SG24-500-03	SG24-150-03	SG24-150-03B	SM24-150-01
					Client sampling date / time	06-Jul-2024 13:25	06-Jul-2024 14:23	06-Jul-2024 15:29	06-Jul-2024 15:45	07-Jul-2024 09:50
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-031	YL2400878-032	YL2400878-033	YL2400878-034	YL2400878-035
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.50	%		48.4	43.3	35.5	36.4	20.2
Metals										
Aluminum	7429-90-5	E440A/VA	0.40	mg/kg wwt		175	241	394	190	67.9
Aluminum	7429-90-5	E440/VA	2.0	mg/kg		339	426	610	299	85.1
Antimony	7440-36-0	E440A/VA	0.0020	mg/kg wwt		0.0053	0.0057	0.0093	0.0060	0.0040
Antimony	7440-36-0	E440/VA	0.010	mg/kg		0.010	0.010	0.014	<0.010	<0.010
Arsenic	7440-38-2	E440A/VA	0.0040	mg/kg wwt		0.164	0.224	0.566	0.311	0.0522
Arsenic	7440-38-2	E440/VA	0.020	mg/kg		0.318	0.394	0.877	0.490	0.065



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-1K-03	SG24-500-03	SG24-150-03	SG24-150-03B	SM24-150-01
					Client sampling date / time	06-Jul-2024 13:25	06-Jul-2024 14:23	06-Jul-2024 15:29	06-Jul-2024 15:45	07-Jul-2024 09:50
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-031	YL2400878-032	YL2400878-033	YL2400878-034	YL2400878-035
						Result	Result	Result	Result	Result
Metals										
Barium	7440-39-3	E440A/VA	0.010	mg/kg wwt		16.3	19.4	37.2	18.4	9.02
Barium	7440-39-3	E440/VA	0.050	mg/kg		31.6	34.2	57.6	29.0	11.3
Beryllium	7440-41-7	E440A/VA	0.0020	mg/kg wwt		0.0140	0.0114	0.0165	0.0052	0.0042
Beryllium	7440-41-7	E440/VA	0.010	mg/kg		0.027	0.020	0.026	<0.010	<0.010
Bismuth	7440-69-9	E440A/VA	0.0020	mg/kg wwt		0.0033	0.0034	0.0070	0.0057	0.0024
Bismuth	7440-69-9	E440/VA	0.010	mg/kg		<0.010	<0.010	0.011	<0.010	<0.010
Boron	7440-42-8	E440A/VA	0.20	mg/kg wwt		1.10	0.77	1.08	0.89	1.48
Boron	7440-42-8	E440/VA	1.0	mg/kg		2.1	1.4	1.7	1.4	1.8
Cadmium	7440-43-9	E440A/VA	0.0010	mg/kg wwt		0.0353	0.0488	0.122	0.0322	0.0395
Cadmium	7440-43-9	E440/VA	0.0050	mg/kg		0.0683	0.0861	0.190	0.0506	0.0495
Calcium	7440-70-2	E440A/VA	4.0	mg/kg wwt		1180	1340	2430	1350	3870
Calcium	7440-70-2	E440/VA	20	mg/kg		2280	2360	3770	2120	4860
Cesium	7440-46-2	E440A/VA	0.0010	mg/kg wwt		0.0349	0.0614	0.0553	0.0895	0.0154
Cesium	7440-46-2	E440/VA	0.0050	mg/kg		0.0676	0.108	0.0857	0.141	0.0193
Chromium	7440-47-3	E440A/VA	0.010	mg/kg wwt		0.212	0.435	0.896	0.409	0.133
Chromium	7440-47-3	E440/VA	0.050	mg/kg		0.410	0.767	1.39	0.643	0.166
Cobalt	7440-48-4	E440A/VA	0.0040	mg/kg wwt		0.461	0.480	1.77	0.324	0.0797
Cobalt	7440-48-4	E440/VA	0.020	mg/kg		0.894	0.847	2.75	0.509	0.100
Copper	7440-50-8	E440A/VA	0.020	mg/kg wwt		1.63	2.21	3.32	1.91	1.30
Copper	7440-50-8	E440/VA	0.10	mg/kg		3.16	3.90	5.14	3.00	1.62



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-1K-03	SG24-500-03	SG24-150-03	SG24-150-03B	SM24-150-01
					Client sampling date / time	06-Jul-2024 13:25	06-Jul-2024 14:23	06-Jul-2024 15:29	06-Jul-2024 15:45	07-Jul-2024 09:50
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-031	YL2400878-032	YL2400878-033	YL2400878-034	YL2400878-035	
					Result	Result	Result	Result	Result	
Metals										
Iron	7439-89-6	E440A/VA	0.60	mg/kg wwt	202	330	592	484	84.6	
Iron	7439-89-6	E440/VA	3.0	mg/kg	391	581	917	762	106	
Lead	7439-92-1	E440A/VA	0.0040	mg/kg wwt	0.317	0.310	0.805	0.344	0.168	
Lead	7439-92-1	E440/VA	0.020	mg/kg	0.613	0.546	1.25	0.542	0.210	
Lithium	7439-93-2	E440A/VA	0.10	mg/kg wwt	<0.10	0.21	0.32	0.18	<0.10	
Lithium	7439-93-2	E440/VA	0.50	mg/kg	<0.50	<0.50	0.50	<0.50	<0.50	
Magnesium	7439-95-4	E440A/VA	0.40	mg/kg wwt	270	424	542	353	750	
Magnesium	7439-95-4	E440/VA	2.0	mg/kg	523	749	840	556	940	
Manganese	7439-96-5	E440A/VA	0.010	mg/kg wwt	70.4	45.7	124	101	80.4	
Manganese	7439-96-5	E440/VA	0.050	mg/kg	136	80.7	193	158	101	
Mercury	7439-97-6	E510A/VA	0.0010	mg/kg wwt	0.0346	0.0312	0.0616	0.0658	0.0264	
Mercury	7439-97-6	E510/VA	0.0050	mg/kg	0.0669	0.0550	0.0955	0.104	0.0331	
Molybdenum	7439-98-7	E440A/VA	0.0040	mg/kg wwt	0.0223	0.0308	0.0529	0.0234	0.277	
Molybdenum	7439-98-7	E440/VA	0.020	mg/kg	0.043	0.054	0.082	0.037	0.347	
Nickel	7440-02-0	E440A/VA	0.040	mg/kg wwt	2.05	1.39	4.14	1.22	0.372	
Nickel	7440-02-0	E440/VA	0.20	mg/kg	3.96	2.45	6.41	1.92	0.47	
Phosphorus	7723-14-0	E440A/VA	2.0	mg/kg wwt	303	457	473	365	337	
Phosphorus	7723-14-0	E440/VA	10	mg/kg	588	807	734	574	422	
Potassium	7440-09-7	E440A/VA	4.0	mg/kg wwt	669	969	958	794	1170	
Potassium	7440-09-7	E440/VA	20	mg/kg	1300	1710	1480	1250	1460	



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-1K-03	SG24-500-03	SG24-150-03	SG24-150-03B	SM24-150-01
					Client sampling date / time	06-Jul-2024 13:25	06-Jul-2024 14:23	06-Jul-2024 15:29	06-Jul-2024 15:45	07-Jul-2024 09:50
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-031	YL2400878-032	YL2400878-033	YL2400878-034	YL2400878-035	
					Result	Result	Result	Result	Result	
Metals										
Rubidium	7440-17-7	E440A/VA	0.010	mg/kg wwt	2.04	2.87	2.45	2.23	0.662	
Rubidium	7440-17-7	E440/VA	0.050	mg/kg	3.94	5.07	3.79	3.51	0.830	
Selenium	7782-49-2	E440A/VA	0.010	mg/kg wwt	0.031	0.033	0.053	0.035	0.043	
Selenium	7782-49-2	E440/VA	0.050	mg/kg	0.060	0.059	0.082	0.055	0.053	
Sodium	7440-23-5	E440A/VA	4.0	mg/kg wwt	35.3	83.0	91.3	57.3	237	
Sodium	7440-23-5	E440/VA	20	mg/kg	68	146	142	90	297	
Strontium	7440-24-6	E440A/VA	0.010	mg/kg wwt	4.86	5.17	9.90	3.15	6.68	
Strontium	7440-24-6	E440/VA	0.050	mg/kg	9.41	9.12	15.3	4.96	8.37	
Tellurium	13494-80-9	E440A/VA	0.0040	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	
Tellurium	13494-80-9	E440/VA	0.020	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	
Thallium	7440-28-0	E440A/VA	0.00040	mg/kg wwt	0.00741	0.00851	0.00855	0.0153	0.00134	
Thallium	7440-28-0	E440/VA	0.0020	mg/kg	0.0143	0.0150	0.0132	0.0241	<0.0020	
Tin	7440-31-5	E440A/VA	0.020	mg/kg wwt	<0.020	<0.020	<0.020	<0.020	<0.020	
Tin	7440-31-5	E440/VA	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	
Uranium	7440-61-1	E440A/VA	0.00040	mg/kg wwt	0.0132	0.0146	0.0397	0.0193	0.00766	
Uranium	7440-61-1	E440/VA	0.0020	mg/kg	0.0255	0.0257	0.0616	0.0303	0.0096	
Vanadium	7440-62-2	E440A/VA	0.020	mg/kg wwt	0.307	0.356	0.806	0.370	0.149	
Vanadium	7440-62-2	E440/VA	0.10	mg/kg	0.59	0.63	1.25	0.58	0.19	
Zinc	7440-66-6	E440A/VA	0.10	mg/kg wwt	13.9	17.4	25.4	11.4	21.9	
Zinc	7440-66-6	E440/VA	0.50	mg/kg	26.9	30.8	39.5	18.0	27.4	



Analytical Results

Sub-Matrix: Tissue (Matrix: Biota)					Client sample ID	SG24-1K-03	SG24-500-03	SG24-150-03	SG24-150-03B	SM24-150-01
					Client sampling date / time	06-Jul-2024 13:25	06-Jul-2024 14:23	06-Jul-2024 15:29	06-Jul-2024 15:45	07-Jul-2024 09:50
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-031	YL2400878-032	YL2400878-033	YL2400878-034	YL2400878-035
						Result	Result	Result	Result	Result
Metals										
Zirconium	7440-67-7	E440A/VA	0.040	mg/kg wwt		0.086	0.171	0.363	0.168	0.107
Zirconium	7440-67-7	E440/VA	0.20	mg/kg		<0.20	0.30	0.56	0.26	<0.20

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

Analytical Results

Sub-Matrix: Tissue (Matrix: Biota)					Client sample ID	SM24-150-02	SM24-150-03	SM24-150-03B	SM24-150-04NEW	SM24-150-04NEWB
					Client sampling date / time	07-Jul-2024 10:42	07-Jul-2024 09:50	07-Jul-2024 10:42	07-Jul-2024 11:30	07-Jul-2024 11:40
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-036	YL2400878-037	YL2400878-038	YL2400878-039	YL2400878-040
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.50	%		38.5	31.1	32.0	14.9	12.4
Metals										
Aluminum	7429-90-5	E440A/VA	0.40	mg/kg wwt		72.8	386	96.1	198	248
Aluminum	7429-90-5	E440/VA	2.0	mg/kg		118	560	141	232	284
Antimony	7440-36-0	E440A/VA	0.0020	mg/kg wwt		0.0025	0.0048	0.0026	0.0260	0.0309
Antimony	7440-36-0	E440/VA	0.010	mg/kg		<0.010	<0.010	<0.010	0.030	0.035
Arsenic	7440-38-2	E440A/VA	0.0040	mg/kg wwt		0.0503	0.180	0.0782	0.290	0.394
Arsenic	7440-38-2	E440/VA	0.020	mg/kg		0.082	0.261	0.115	0.341	0.449
Barium	7440-39-3	E440A/VA	0.010	mg/kg wwt		8.35	7.47	7.98	45.7	47.9
Barium	7440-39-3	E440/VA	0.050	mg/kg		13.6	10.8	11.7	53.7	54.7
Beryllium	7440-41-7	E440A/VA	0.0020	mg/kg wwt		0.0033	0.0166	0.0042	0.0156	0.0190
Beryllium	7440-41-7	E440/VA	0.010	mg/kg		<0.010	0.024	<0.010	0.018	0.022



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SM24-150-02	SM24-150-03	SM24-150-03B	SM24-150-04NEW	SM24-150-04NEWB
					Client sampling date / time	07-Jul-2024 10:42	07-Jul-2024 09:50	07-Jul-2024 10:42	07-Jul-2024 11:30	07-Jul-2024 11:40
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-036	YL2400878-037	YL2400878-038	YL2400878-039	YL2400878-040
						Result	Result	Result	Result	Result
Metals										
Bismuth	7440-69-9	E440A/VA	0.0020	mg/kg wwt		<0.0020	0.0060	0.0025	0.0071	0.0070
Bismuth	7440-69-9	E440/VA	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Boron	7440-42-8	E440A/VA	0.20	mg/kg wwt		1.17	1.64	1.57	3.31	3.13
Boron	7440-42-8	E440/VA	1.0	mg/kg		1.9	2.4	2.3	3.9	3.6
Cadmium	7440-43-9	E440A/VA	0.0010	mg/kg wwt		0.0208	0.0194	0.0180	0.0592	0.0449
Cadmium	7440-43-9	E440/VA	0.0050	mg/kg		0.0338	0.0282	0.0265	0.0695	0.0512
Calcium	7440-70-2	E440A/VA	4.0	mg/kg wwt		937	966	1340	3900	3120
Calcium	7440-70-2	E440/VA	20	mg/kg		1520	1400	1980	4580	3560
Cesium	7440-46-2	E440A/VA	0.0010	mg/kg wwt		0.0129	0.0376	0.0141	0.0341	0.0412
Cesium	7440-46-2	E440/VA	0.0050	mg/kg		0.0209	0.0546	0.0208	0.0400	0.0470
Chromium	7440-47-3	E440A/VA	0.010	mg/kg wwt		0.168	0.924	0.220	0.618	0.783
Chromium	7440-47-3	E440/VA	0.050	mg/kg		0.272	1.34	0.324	0.726	0.894
Cobalt	7440-48-4	E440A/VA	0.0040	mg/kg wwt		0.0869	0.240	0.122	0.138	0.222
Cobalt	7440-48-4	E440/VA	0.020	mg/kg		0.141	0.349	0.179	0.162	0.254
Copper	7440-50-8	E440A/VA	0.020	mg/kg wwt		1.05	1.47	1.24	2.32	2.23
Copper	7440-50-8	E440/VA	0.10	mg/kg		1.70	2.14	1.82	2.72	2.55
Iron	7439-89-6	E440A/VA	0.60	mg/kg wwt		96.1	486	125	214	284
Iron	7439-89-6	E440/VA	3.0	mg/kg		156	705	184	252	324
Lead	7439-92-1	E440A/VA	0.0040	mg/kg wwt		0.122	0.250	0.128	0.347	0.536
Lead	7439-92-1	E440/VA	0.020	mg/kg		0.198	0.363	0.188	0.408	0.611



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SM24-150-02	SM24-150-03	SM24-150-03B	SM24-150-04NEW	SM24-150-04NEWB
					Client sampling date / time	07-Jul-2024 10:42	07-Jul-2024 09:50	07-Jul-2024 10:42	07-Jul-2024 11:30	07-Jul-2024 11:40
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-036	YL2400878-037	YL2400878-038	YL2400878-039	YL2400878-040
						Result	Result	Result	Result	Result
Metals										
Lithium	7439-93-2	E440A/VA	0.10	mg/kg wwt		<0.10	0.49	0.10	<0.10	0.11
Lithium	7439-93-2	E440/VA	0.50	mg/kg		<0.50	0.71	<0.50	<0.50	<0.50
Magnesium	7439-95-4	E440A/VA	0.40	mg/kg wwt		463	609	528	846	873
Magnesium	7439-95-4	E440/VA	2.0	mg/kg		754	883	776	994	997
Manganese	7439-96-5	E440A/VA	0.010	mg/kg wwt		110	60.7	84.1	274	286
Manganese	7439-96-5	E440/VA	0.050	mg/kg		179	88.2	124	322	326
Mercury	7439-97-6	E510A/VA	0.0010	mg/kg wwt		0.0442	0.0332	0.0370	0.0557	0.0687
Mercury	7439-97-6	E510/VA	0.0050	mg/kg		0.0720	0.0482	0.0544	0.0654	0.0784
Molybdenum	7439-98-7	E440A/VA	0.0040	mg/kg wwt		0.192	0.0850	0.0811	0.0940	0.0836
Molybdenum	7439-98-7	E440/VA	0.020	mg/kg		0.312	0.123	0.119	0.110	0.095
Nickel	7440-02-0	E440A/VA	0.040	mg/kg wwt		0.466	0.738	0.407	0.436	0.523
Nickel	7440-02-0	E440/VA	0.20	mg/kg		0.76	1.07	0.60	0.51	0.60
Phosphorus	7723-14-0	E440A/VA	2.0	mg/kg wwt		520	479	477	566	586
Phosphorus	7723-14-0	E440/VA	10	mg/kg		846	695	702	666	668
Potassium	7440-09-7	E440A/VA	4.0	mg/kg wwt		1150	1120	1150	1400	1280
Potassium	7440-09-7	E440/VA	20	mg/kg		1880	1620	1700	1650	1460
Rubidium	7440-17-7	E440A/VA	0.010	mg/kg wwt		0.677	1.22	0.901	1.24	1.26
Rubidium	7440-17-7	E440/VA	0.050	mg/kg		1.10	1.78	1.32	1.45	1.44
Selenium	7782-49-2	E440A/VA	0.010	mg/kg wwt		0.031	0.035	0.036	0.062	0.072
Selenium	7782-49-2	E440/VA	0.050	mg/kg		0.050	0.051	0.054	0.073	0.082



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SM24-150-02	SM24-150-03	SM24-150-03B	SM24-150-04NEW	SM24-150-04NEWB
					Client sampling date / time	07-Jul-2024 10:42	07-Jul-2024 09:50	07-Jul-2024 10:42	07-Jul-2024 11:30	07-Jul-2024 11:40
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-036	YL2400878-037	YL2400878-038	YL2400878-039	YL2400878-040
						Result	Result	Result	Result	Result
Metals										
Sodium	7440-23-5	E440A/VA	4.0	mg/kg wwt		98.9	142	112	285	253
Sodium	7440-23-5	E440/VA	20	mg/kg		161	206	165	334	288
Strontium	7440-24-6	E440A/VA	0.010	mg/kg wwt		3.42	4.07	4.20	12.5	13.4
Strontium	7440-24-6	E440/VA	0.050	mg/kg		5.57	5.91	6.18	14.7	15.4
Tellurium	13494-80-9	E440A/VA	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Tellurium	13494-80-9	E440/VA	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Thallium	7440-28-0	E440A/VA	0.00040	mg/kg wwt		0.00190	0.00414	0.00173	0.00511	0.00725
Thallium	7440-28-0	E440/VA	0.0020	mg/kg		0.0031	0.0060	0.0025	0.0060	0.0083
Tin	7440-31-5	E440A/VA	0.020	mg/kg wwt		<0.020	<0.020	<0.020	0.021	0.024
Tin	7440-31-5	E440/VA	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Uranium	7440-61-1	E440A/VA	0.00040	mg/kg wwt		0.00820	0.0415	0.0185	0.0384	0.0426
Uranium	7440-61-1	E440/VA	0.0020	mg/kg		0.0133	0.0602	0.0273	0.0451	0.0486
Vanadium	7440-62-2	E440A/VA	0.020	mg/kg wwt		0.185	1.04	0.280	0.280	0.400
Vanadium	7440-62-2	E440/VA	0.10	mg/kg		0.30	1.51	0.41	0.33	0.46
Zinc	7440-66-6	E440A/VA	0.10	mg/kg wwt		10.8	14.0	16.2	23.1	20.8
Zinc	7440-66-6	E440/VA	0.50	mg/kg		17.6	20.4	23.8	27.1	23.8
Zirconium	7440-67-7	E440A/VA	0.040	mg/kg wwt		0.181	0.933	0.342	0.501	0.534
Zirconium	7440-67-7	E440/VA	0.20	mg/kg		0.29	1.35	0.50	0.59	0.61

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



Analytical Results

Sub-Matrix: Tissue
 (Matrix: Biota)

					Client sample ID	SG24-5K-04	SG24-5K-04B	SG24-15K-04	SG24-00-06	SG24-00-03
					Client sampling date / time	08-Jul-2024 08:43	08-Jul-2024 08:45	08-Jul-2024 09:30	09-Jul-2024 10:00	09-Jul-2024 10:45
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-041	YL2400878-042	YL2400878-043	YL2400878-044	YL2400878-045	
					Result	Result	Result	Result	Result	
Physical Tests										
Moisture	----	E144/VA	0.50	%	29.7	32.4	14.1	42.5	31.7	
Metals										
Aluminum	7429-90-5	E440A/VA	0.40	mg/kg wwt	102	316	315	782	1580	
Aluminum	7429-90-5	E440/VA	2.0	mg/kg	145	467	366	1360	2320	
Antimony	7440-36-0	E440A/VA	0.0020	mg/kg wwt	0.0048	0.0075	0.0069	0.129	0.0274	
Antimony	7440-36-0	E440/VA	0.010	mg/kg	<0.010	0.011	<0.010	0.224	0.040	
Arsenic	7440-38-2	E440A/VA	0.0040	mg/kg wwt	0.215	0.381	0.924	1.68	2.90	
Arsenic	7440-38-2	E440/VA	0.020	mg/kg	0.305	0.563	1.08	2.92	4.25	
Barium	7440-39-3	E440A/VA	0.010	mg/kg wwt	15.9	19.8	43.0	22.0	19.4	
Barium	7440-39-3	E440/VA	0.050	mg/kg	22.6	29.2	50.0	38.3	28.4	
Beryllium	7440-41-7	E440A/VA	0.0020	mg/kg wwt	0.0063	0.0219	0.0211	0.0205	0.0285	
Beryllium	7440-41-7	E440/VA	0.010	mg/kg	<0.010	0.032	0.024	0.036	0.042	
Bismuth	7440-69-9	E440A/VA	0.0020	mg/kg wwt	0.0024	0.0039	0.0059	0.0076	0.0179	
Bismuth	7440-69-9	E440/VA	0.010	mg/kg	<0.010	<0.010	<0.010	0.013	0.026	
Boron	7440-42-8	E440A/VA	0.20	mg/kg wwt	0.87	1.01	1.56	0.84	1.17	
Boron	7440-42-8	E440/VA	1.0	mg/kg	1.2	1.5	1.8	1.5	1.7	
Cadmium	7440-43-9	E440A/VA	0.0010	mg/kg wwt	0.0484	0.0570	0.0905	0.0244	0.0525	
Cadmium	7440-43-9	E440/VA	0.0050	mg/kg	0.0688	0.0843	0.105	0.0424	0.0768	
Calcium	7440-70-2	E440A/VA	4.0	mg/kg wwt	1290	1770	2310	1740	1460	
Calcium	7440-70-2	E440/VA	20	mg/kg	1830	2620	2680	3030	2140	



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

Sub-Matrix: Tissue (Matrix: Biota)					Client sample ID	SG24-5K-04	SG24-5K-04B	SG24-15K-04	SG24-00-06	SG24-00-03
Client sampling date / time					08-Jul-2024 08:43	08-Jul-2024 08:45	08-Jul-2024 09:30	09-Jul-2024 10:00	09-Jul-2024 10:45	
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-041	YL2400878-042	YL2400878-043	YL2400878-044	YL2400878-045	
					Result	Result	Result	Result	Result	
Metals										
Cesium	7440-46-2	E440A/VA	0.0010	mg/kg wwt	0.0414	0.0636	0.125	0.0712	0.152	
Cesium	7440-46-2	E440/VA	0.0050	mg/kg	0.0588	0.0940	0.145	0.124	0.222	
Chromium	7440-47-3	E440A/VA	0.010	mg/kg wwt	0.192	0.313	0.504	1.87	4.68	
Chromium	7440-47-3	E440/VA	0.050	mg/kg	0.273	0.462	0.586	3.25	6.85	
Cobalt	7440-48-4	E440A/VA	0.0040	mg/kg wwt	1.25	2.52	1.13	0.884	1.85	
Cobalt	7440-48-4	E440/VA	0.020	mg/kg	1.77	3.73	1.31	1.54	2.71	
Copper	7440-50-8	E440A/VA	0.020	mg/kg wwt	1.87	4.23	2.46	3.56	6.75	
Copper	7440-50-8	E440/VA	0.10	mg/kg	2.66	6.26	2.87	6.19	9.88	
Iron	7439-89-6	E440A/VA	0.60	mg/kg wwt	141	572	355	1330	2910	
Iron	7439-89-6	E440/VA	3.0	mg/kg	201	846	413	2310	4260	
Lead	7439-92-1	E440A/VA	0.0040	mg/kg wwt	0.211	0.361	0.563	0.387	0.723	
Lead	7439-92-1	E440/VA	0.020	mg/kg	0.300	0.534	0.655	0.673	1.06	
Lithium	7439-93-2	E440A/VA	0.10	mg/kg wwt	<0.10	0.10	0.16	1.12	2.79	
Lithium	7439-93-2	E440/VA	0.50	mg/kg	<0.50	<0.50	<0.50	1.95	4.08	
Magnesium	7439-95-4	E440A/VA	0.40	mg/kg wwt	348	423	511	607	1250	
Magnesium	7439-95-4	E440/VA	2.0	mg/kg	495	625	594	1050	1820	
Manganese	7439-96-5	E440A/VA	0.010	mg/kg wwt	129	96.2	109	20.5	77.6	
Manganese	7439-96-5	E440/VA	0.050	mg/kg	183	142	127	35.7	114	
Mercury	7439-97-6	E510A/VA	0.0010	mg/kg wwt	0.0497	0.0441	0.0696	0.0235	0.0292	
Mercury	7439-97-6	E510/VA	0.0050	mg/kg	0.0706	0.0653	0.0810	0.0408	0.0428	



Analytical Results

Sub-Matrix: Tissue
 (Matrix: Biota)

					Client sample ID	SG24-5K-04	SG24-5K-04B	SG24-15K-04	SG24-00-06	SG24-00-03
					Client sampling date / time	08-Jul-2024 08:43	08-Jul-2024 08:45	08-Jul-2024 09:30	09-Jul-2024 10:00	09-Jul-2024 10:45
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-041	YL2400878-042	YL2400878-043	YL2400878-044	YL2400878-045	
					Result	Result	Result	Result	Result	
Metals										
Molybdenum	7439-98-7	E440A/VA	0.0040	mg/kg wwt	0.0476	0.0722	0.0455	0.115	0.210	
Molybdenum	7439-98-7	E440/VA	0.020	mg/kg	0.068	0.107	0.053	0.200	0.307	
Nickel	7440-02-0	E440A/VA	0.040	mg/kg wwt	2.05	4.76	4.16	2.83	5.09	
Nickel	7440-02-0	E440/VA	0.20	mg/kg	2.92	7.03	4.84	4.93	7.45	
Phosphorus	7723-14-0	E440A/VA	2.0	mg/kg wwt	278	270	588	274	382	
Phosphorus	7723-14-0	E440/VA	10	mg/kg	395	398	685	476	559	
Potassium	7440-09-7	E440A/VA	4.0	mg/kg wwt	698	567	1180	757	1150	
Potassium	7440-09-7	E440/VA	20	mg/kg	993	838	1370	1320	1680	
Rubidium	7440-17-7	E440A/VA	0.010	mg/kg wwt	1.94	1.74	4.73	3.28	4.45	
Rubidium	7440-17-7	E440/VA	0.050	mg/kg	2.75	2.57	5.51	5.70	6.51	
Selenium	7782-49-2	E440A/VA	0.010	mg/kg wwt	0.035	0.043	0.053	0.035	0.052	
Selenium	7782-49-2	E440/VA	0.050	mg/kg	0.050	0.064	0.062	0.060	0.076	
Sodium	7440-23-5	E440A/VA	4.0	mg/kg wwt	37.9	47.7	88.3	29.9	70.5	
Sodium	7440-23-5	E440/VA	20	mg/kg	54	70	103	52	103	
Strontium	7440-24-6	E440A/VA	0.010	mg/kg wwt	4.28	7.09	10.6	8.64	6.20	
Strontium	7440-24-6	E440/VA	0.050	mg/kg	6.08	10.5	12.4	15.0	9.08	
Tellurium	13494-80-9	E440A/VA	0.0040	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	
Tellurium	13494-80-9	E440/VA	0.020	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	
Thallium	7440-28-0	E440A/VA	0.00040	mg/kg wwt	0.0108	0.00878	0.0262	0.00602	0.0118	
Thallium	7440-28-0	E440/VA	0.0020	mg/kg	0.0153	0.0130	0.0305	0.0104	0.0173	



Analytical Results

Sub-Matrix: Tissue
(Matrix: Biota)

					Client sample ID	SG24-5K-04	SG24-5K-04B	SG24-15K-04	SG24-00-06	SG24-00-03
					Client sampling date / time	08-Jul-2024 08:43	08-Jul-2024 08:45	08-Jul-2024 09:30	09-Jul-2024 10:00	09-Jul-2024 10:45
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-041	YL2400878-042	YL2400878-043	YL2400878-044	YL2400878-045
						Result	Result	Result	Result	Result
Metals										
Tin	7440-31-5	E440A/VA	0.020	mg/kg wwt		<0.020	<0.020	<0.020	0.030	0.040
Tin	7440-31-5	E440/VA	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Uranium	7440-61-1	E440A/VA	0.00040	mg/kg wwt		0.0115	0.0529	0.0187	0.0397	0.0853
Uranium	7440-61-1	E440/VA	0.0020	mg/kg		0.0163	0.0782	0.0218	0.0690	0.125
Vanadium	7440-62-2	E440A/VA	0.020	mg/kg wwt		0.196	0.311	0.582	1.63	3.80
Vanadium	7440-62-2	E440/VA	0.10	mg/kg		0.28	0.46	0.68	2.83	5.56
Zinc	7440-66-6	E440A/VA	0.10	mg/kg wwt		15.0	13.8	28.2	16.1	19.4
Zinc	7440-66-6	E440/VA	0.50	mg/kg		21.4	20.5	32.8	28.0	28.4
Zirconium	7440-67-7	E440A/VA	0.040	mg/kg wwt		0.097	0.184	0.186	0.780	2.05
Zirconium	7440-67-7	E440/VA	0.20	mg/kg		<0.20	0.27	0.22	1.36	3.00

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

Analytical Results

Sub-Matrix: Tissue
(Matrix: Biota)

					Client sample ID	SG24-00-01	SG24-00-07	SM24-150-04	----	----
					Client sampling date / time	09-Jul-2024 11:32	09-Jul-2024 13:16	07-Jul-2024 00:00	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400878-046	YL2400878-047	YL2400878-048	----	----
						Result	Result	Result	----	----
Physical Tests										
Moisture	----	E144/VA	0.50	%		24.1	15.9	32.9	----	----
Metals										
Aluminum	7429-90-5	E440A/VA	0.40	mg/kg wwt		1430	1100	115	----	----
Aluminum	7429-90-5	E440/VA	2.0	mg/kg		1880	1310	171	----	----



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-00-01	SG24-00-07	SM24-150-04	----	----
					Client sampling date / time	09-Jul-2024 11:32	09-Jul-2024 13:16	07-Jul-2024 00:00	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-046	YL2400878-047	YL2400878-048	----	----	----
					Result	Result	Result	----	----	----
Metals										
Antimony	7440-36-0	E440A/VA	0.0020	mg/kg wwt	0.0184	0.0099	0.0138	----	----	----
Antimony	7440-36-0	E440/VA	0.010	mg/kg	0.024	0.012	0.021	----	----	----
Arsenic	7440-38-2	E440A/VA	0.0040	mg/kg wwt	3.15	2.05	0.113	----	----	----
Arsenic	7440-38-2	E440/VA	0.020	mg/kg	4.15	2.44	0.169	----	----	----
Barium	7440-39-3	E440A/VA	0.010	mg/kg wwt	27.8	18.5	3.66	----	----	----
Barium	7440-39-3	E440/VA	0.050	mg/kg	36.6	22.0	5.45	----	----	----
Beryllium	7440-41-7	E440A/VA	0.0020	mg/kg wwt	0.0287	0.0248	0.0046	----	----	----
Beryllium	7440-41-7	E440/VA	0.010	mg/kg	0.038	0.029	<0.010	----	----	----
Bismuth	7440-69-9	E440A/VA	0.0020	mg/kg wwt	0.0213	0.0164	0.0025	----	----	----
Bismuth	7440-69-9	E440/VA	0.010	mg/kg	0.028	0.020	<0.010	----	----	----
Boron	7440-42-8	E440A/VA	0.20	mg/kg wwt	1.75	1.30	3.85	----	----	----
Boron	7440-42-8	E440/VA	1.0	mg/kg	2.3	1.5	5.7	----	----	----
Cadmium	7440-43-9	E440A/VA	0.0010	mg/kg wwt	0.0708	0.0738	0.0335	----	----	----
Cadmium	7440-43-9	E440/VA	0.0050	mg/kg	0.0933	0.0878	0.0499	----	----	----
Calcium	7440-70-2	E440A/VA	4.0	mg/kg wwt	2350	2160	1590	----	----	----
Calcium	7440-70-2	E440/VA	20	mg/kg	3090	2570	2370	----	----	----
Cesium	7440-46-2	E440A/VA	0.0010	mg/kg wwt	0.166	0.0924	0.0116	----	----	----
Cesium	7440-46-2	E440/VA	0.0050	mg/kg	0.219	0.110	0.0174	----	----	----
Chromium	7440-47-3	E440A/VA	0.010	mg/kg wwt	4.52	3.44	1.64	----	----	----
Chromium	7440-47-3	E440/VA	0.050	mg/kg	5.95	4.10	2.45	----	----	----



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

Sub-Matrix: Tissue (Matrix: Biota)					Client sample ID	SG24-00-01	SG24-00-07	SM24-150-04	----	----
Client sampling date / time					09-Jul-2024 11:32	09-Jul-2024 13:16	07-Jul-2024 00:00	----	----	
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-046	YL2400878-047	YL2400878-048	----	----	
					Result	Result	Result	----	----	
Metals										
Cobalt	7440-48-4	E440A/VA	0.0040	mg/kg wwt	1.96	1.62	0.233	----	----	
Cobalt	7440-48-4	E440/VA	0.020	mg/kg	2.58	1.93	0.347	----	----	
Copper	7440-50-8	E440A/VA	0.020	mg/kg wwt	5.91	4.36	1.95	----	----	
Copper	7440-50-8	E440/VA	0.10	mg/kg	7.79	5.19	2.90	----	----	
Iron	7439-89-6	E440A/VA	0.60	mg/kg wwt	2430	1860	146	----	----	
Iron	7439-89-6	E440/VA	3.0	mg/kg	3210	2210	217	----	----	
Lead	7439-92-1	E440A/VA	0.0040	mg/kg wwt	1.04	0.970	0.0770	----	----	
Lead	7439-92-1	E440/VA	0.020	mg/kg	1.37	1.15	0.115	----	----	
Lithium	7439-93-2	E440A/VA	0.10	mg/kg wwt	2.76	2.26	0.13	----	----	
Lithium	7439-93-2	E440/VA	0.50	mg/kg	3.64	2.68	<0.50	----	----	
Magnesium	7439-95-4	E440A/VA	0.40	mg/kg wwt	1400	1180	772	----	----	
Magnesium	7439-95-4	E440/VA	2.0	mg/kg	1850	1400	1150	----	----	
Manganese	7439-96-5	E440A/VA	0.010	mg/kg wwt	133	256	61.0	----	----	
Manganese	7439-96-5	E440/VA	0.050	mg/kg	175	305	90.9	----	----	
Mercury	7439-97-6	E510A/VA	0.0010	mg/kg wwt	0.0533	0.0440	0.0260	----	----	
Mercury	7439-97-6	E510/VA	0.0050	mg/kg	0.0702	0.0523	0.0387	----	----	
Molybdenum	7439-98-7	E440A/VA	0.0040	mg/kg wwt	0.194	0.142	0.216	----	----	
Molybdenum	7439-98-7	E440/VA	0.020	mg/kg	0.256	0.168	0.322	----	----	
Nickel	7440-02-0	E440A/VA	0.040	mg/kg wwt	5.50	4.26	4.29	----	----	
Nickel	7440-02-0	E440/VA	0.20	mg/kg	7.24	5.06	6.40	----	----	



Analytical Results

Sub-Matrix: Tissue

(Matrix: Biota)

					Client sample ID	SG24-00-01	SG24-00-07	SM24-150-04	----	----
					Client sampling date / time	09-Jul-2024 11:32	09-Jul-2024 13:16	07-Jul-2024 00:00	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-046	YL2400878-047	YL2400878-048	----	----	----
					Result	Result	Result	----	----	----
Metals										
Phosphorus	7723-14-0	E440A/VA	2.0	mg/kg wwt	641	474	649	----	----	----
Phosphorus	7723-14-0	E440/VA	10	mg/kg	844	564	968	----	----	----
Potassium	7440-09-7	E440A/VA	4.0	mg/kg wwt	1440	1500	1580	----	----	----
Potassium	7440-09-7	E440/VA	20	mg/kg	1890	1780	2360	----	----	----
Rubidium	7440-17-7	E440A/VA	0.010	mg/kg wwt	5.04	3.82	0.759	----	----	----
Rubidium	7440-17-7	E440/VA	0.050	mg/kg	6.64	4.54	1.13	----	----	----
Selenium	7782-49-2	E440A/VA	0.010	mg/kg wwt	0.047	0.042	0.035	----	----	----
Selenium	7782-49-2	E440/VA	0.050	mg/kg	0.062	<0.050	0.052	----	----	----
Sodium	7440-23-5	E440A/VA	4.0	mg/kg wwt	133	152	125	----	----	----
Sodium	7440-23-5	E440/VA	20	mg/kg	176	180	187	----	----	----
Strontium	7440-24-6	E440A/VA	0.010	mg/kg wwt	8.12	8.80	6.83	----	----	----
Strontium	7440-24-6	E440/VA	0.050	mg/kg	10.7	10.5	10.2	----	----	----
Tellurium	13494-80-9	E440A/VA	0.0040	mg/kg wwt	<0.0040	<0.0040	<0.0040	----	----	----
Tellurium	13494-80-9	E440/VA	0.020	mg/kg	<0.020	<0.020	<0.020	----	----	----
Thallium	7440-28-0	E440A/VA	0.00040	mg/kg wwt	0.0238	0.0115	0.00111	----	----	----
Thallium	7440-28-0	E440/VA	0.0020	mg/kg	0.0314	0.0137	<0.0020	----	----	----
Tin	7440-31-5	E440A/VA	0.020	mg/kg wwt	0.026	<0.020	<0.020	----	----	----
Tin	7440-31-5	E440/VA	0.10	mg/kg	<0.10	<0.10	<0.10	----	----	----
Uranium	7440-61-1	E440A/VA	0.00040	mg/kg wwt	0.0970	0.0721	0.0213	----	----	----
Uranium	7440-61-1	E440/VA	0.0020	mg/kg	0.128	0.0857	0.0318	----	----	----



Analytical Results

Sub-Matrix: Tissue
 (Matrix: Biota)

					Client sample ID	SG24-00-01	SG24-00-07	SM24-150-04	----	----
					Client sampling date / time	09-Jul-2024 11:32	09-Jul-2024 13:16	07-Jul-2024 00:00	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	YL2400878-046	YL2400878-047	YL2400878-048	----	----	----
					Result	Result	Result	----	----	----
Metals										
Vanadium	7440-62-2	E440A/VA	0.020	mg/kg wwt	2.88	1.99	0.229	----	----	----
Vanadium	7440-62-2	E440/VA	0.10	mg/kg	3.79	2.36	0.34	----	----	----
Zinc	7440-66-6	E440A/VA	0.10	mg/kg wwt	30.6	25.2	27.7	----	----	----
Zinc	7440-66-6	E440/VA	0.50	mg/kg	40.3	29.9	41.2	----	----	----
Zirconium	7440-67-7	E440A/VA	0.040	mg/kg wwt	2.28	1.47	0.382	----	----	----
Zirconium	7440-67-7	E440/VA	0.20	mg/kg	3.00	1.74	0.57	----	----	----

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

QUALITY CONTROL REPORT

Work Order	: YL2400878	Page	: 1 of 28
Client	: WSP Canada Inc.	Laboratory	: ALS Environmental - Yellowknife
Contact	: Shannon Landry	Account Manager	: Oliver Gregg
Address	: 189 Mackenzie Blvd Fort McMurray AB Canada	Address	: 102-487 Range Lake Road Yellowknife, Northwest Territories Canada X1A 3R9
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: ----	Date Samples Received	: 11-Jul-2024 13:45
PO	: CA0035158.8381 task 5000.30	Date Analysis Commenced	: 17-Aug-2024
C-O-C number	: ----	Issue Date	: 04-Mar-2025 08:08
Sampler	: Shannon O'Dwyer		
Site	: ----		
Quote number	: Tissue Samples		
No. of samples received	: 48		
No. of samples analysed	: 48		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department
Ghazaleh Khanmirzaei	Analyst	Vancouver Metals, Burnaby, British Columbia
Ilnaz Badbezanchi	Supervisor - Metals Prep	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia

Page : 2 of 28
Work Order : YL2400878
Client : WSP Canada Inc.
Project : ----



General Comments

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

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

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

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1601748)											
YL2400878-001	SM24-00-03	Moisture	----	E144	0.50	%	31.7	36.6	14.2%	20%	----
Physical Tests (QC Lot: 1602162)											
YL2400878-021	SG24-1K-04	Moisture	----	E144	0.50	%	24.9	30.0	18.5%	20%	----
Physical Tests (QC Lot: 1602507)											
YL2400878-036	SM24-150-02	Moisture	----	E144	0.50	%	38.5	40.4	4.62%	20%	----
Metals (QC Lot: 1606751)											
YL2400878-001	SM24-00-03	Mercury	7439-97-6	E510A	0.0024	mg/kg ww	0.0402	0.0373	7.39%	40%	----
Metals (QC Lot: 1606752)											
YL2400878-001	SM24-00-03	Aluminum	7429-90-5	E440A	0.40	mg/kg ww	98.8	89.4	10.00%	40%	----
		Antimony	7440-36-0	E440A	0.0020	mg/kg ww	0.0094	0.0078	0.0017	Diff <2x LOR	----
		Arsenic	7440-38-2	E440A	0.0040	mg/kg ww	0.0656	0.0556	16.6%	40%	----
		Barium	7440-39-3	E440A	0.010	mg/kg ww	28.9	26.4	9.20%	40%	----
		Beryllium	7440-41-7	E440A	0.0020	mg/kg ww	0.0072	0.0063	0.0010	Diff <2x LOR	----
		Bismuth	7440-69-9	E440A	0.0020	mg/kg ww	0.0030	0.0026	0.0004	Diff <2x LOR	----
		Boron	7440-42-8	E440A	0.20	mg/kg ww	2.66	2.52	5.39%	40%	----
		Cadmium	7440-43-9	E440A	0.0010	mg/kg ww	0.0507	0.0463	9.06%	40%	----
		Calcium	7440-70-2	E440A	4.0	mg/kg ww	7240	6420	12.1%	60%	----
		Cesium	7440-46-2	E440A	0.0010	mg/kg ww	0.0190	0.0167	13.0%	40%	----
		Chromium	7440-47-3	E440A	0.010	mg/kg ww	0.186	0.181	2.86%	40%	----
		Cobalt	7440-48-4	E440A	0.0040	mg/kg ww	0.0577	0.0531	8.22%	40%	----
		Copper	7440-50-8	E440A	0.020	mg/kg ww	1.44	1.39	3.06%	40%	----
		Iron	7439-89-6	E440A	0.60	mg/kg ww	112	99.0	12.2%	40%	----
		Lead	7439-92-1	E440A	0.0040	mg/kg ww	0.191	0.173	9.91%	40%	----
		Lithium	7439-93-2	E440A	0.10	mg/kg ww	<0.10	<0.10	0	Diff <2x LOR	----
		Magnesium	7439-95-4	E440A	0.40	mg/kg ww	955	904	5.40%	40%	----
		Manganese	7439-96-5	E440A	0.010	mg/kg ww	60.4	56.4	6.90%	40%	----
		Molybdenum	7439-98-7	E440A	0.0040	mg/kg ww	0.0544	0.0520	4.56%	40%	----
		Nickel	7440-02-0	E440A	0.040	mg/kg ww	0.179	0.168	0.011	Diff <2x LOR	----
		Phosphorus	7723-14-0	E440A	2.0	mg/kg ww	278	274	1.40%	40%	----
		Potassium	7440-09-7	E440A	4.0	mg/kg ww	874	880	0.696%	40%	----



Sub-Matrix: Biota

Sub-Matrix: Biota					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 1606752) - continued											
YL2400878-001	SM24-00-03	Rubidium	7440-17-7	E440A	0.010	mg/kg wwt	0.699	0.686	1.83%	40%	----
		Selenium	7782-49-2	E440A	0.010	mg/kg wwt	0.053	0.049	7.58%	40%	----
		Sodium	7440-23-5	E440A	4.0	mg/kg wwt	200	197	1.69%	40%	----
		Strontium	7440-24-6	E440A	0.010	mg/kg wwt	9.60	8.80	8.67%	60%	----
		Tellurium	13494-80-9	E440A	0.0040	mg/kg wwt	<0.0040	<0.0040	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440A	0.00040	mg/kg wwt	0.00199	0.00154	0.00045	Diff <2x LOR	----
		Tin	7440-31-5	E440A	0.020	mg/kg wwt	<0.020	<0.020	0	Diff <2x LOR	----
		Uranium	7440-61-1	E440A	0.00040	mg/kg wwt	0.0140	0.0126	11.3%	40%	----
		Vanadium	7440-62-2	E440A	0.020	mg/kg wwt	0.152	0.132	14.3%	40%	----
		Zinc	7440-66-6	E440A	0.10	mg/kg wwt	25.2	24.5	2.58%	40%	----
		Zirconium	7440-67-7	E440A	0.040	mg/kg wwt	0.238	0.192	21.2%	40%	----
Metals (QC Lot: 1606753)											
YL2400878-001	SM24-00-03	Aluminum	7429-90-5	E440	2.0	mg/kg	145	131	10.00%	40%	----
		Antimony	7440-36-0	E440	0.010	mg/kg	0.014	0.011	0.002	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.020	mg/kg	0.096	0.081	0.015	Diff <2x LOR	----
		Barium	7440-39-3	E440	0.050	mg/kg	42.4	38.6	9.20%	40%	----
		Beryllium	7440-41-7	E440	0.010	mg/kg	0.011	<0.010	0.0006	Diff <2x LOR	----
		Bismuth	7440-69-9	E440	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Boron	7440-42-8	E440	1.0	mg/kg	3.9	3.7	0.2	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.0050	mg/kg	0.0743	0.0678	9.06%	40%	----
		Calcium	7440-70-2	E440	20	mg/kg	10600	9400	12.1%	60%	----
		Cesium	7440-46-2	E440	0.0050	mg/kg	0.0278	0.0244	13.0%	40%	----
		Chromium	7440-47-3	E440	0.050	mg/kg	0.272	0.265	2.86%	40%	----
		Cobalt	7440-48-4	E440	0.020	mg/kg	0.084	0.078	0.007	Diff <2x LOR	----
		Copper	7440-50-8	E440	0.10	mg/kg	2.10	2.04	3.06%	40%	----
		Iron	7439-89-6	E440	3.0	mg/kg	164	145	12.2%	40%	----
		Lead	7439-92-1	E440	0.020	mg/kg	0.279	0.253	9.91%	40%	----
		Lithium	7439-93-2	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Magnesium	7439-95-4	E440	2.0	mg/kg	1400	1320	5.40%	40%	----
		Manganese	7439-96-5	E440	0.050	mg/kg	88.5	82.6	6.90%	40%	----
		Molybdenum	7439-98-7	E440	0.020	mg/kg	0.080	0.076	0.004	Diff <2x LOR	----
		Nickel	7440-02-0	E440	0.20	mg/kg	0.26	0.25	0.02	Diff <2x LOR	----
		Phosphorus	7723-14-0	E440	10	mg/kg	407	402	1.40%	40%	----
		Potassium	7440-09-7	E440	20	mg/kg	1280	1290	0.696%	40%	----



Sub-Matrix: Biota

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 1606753) - continued											
YL2400878-001	SM24-00-03	Rubidium	7440-17-7	E440	0.050	mg/kg	1.02	1.00	1.83%	40%	----
		Selenium	7782-49-2	E440	0.050	mg/kg	0.077	0.072	0.006	Diff <2x LOR	----
		Sodium	7440-23-5	E440	20	mg/kg	293	288	1.69%	40%	----
		Strontium	7440-24-6	E440	0.050	mg/kg	14.0	12.9	8.67%	60%	----
		Tellurium	13494-80-9	E440	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.0020	mg/kg	0.0029	0.0022	0.0007	Diff <2x LOR	----
		Tin	7440-31-5	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.0020	mg/kg	0.0206	0.0184	11.3%	40%	----
		Vanadium	7440-62-2	E440	0.10	mg/kg	0.22	0.19	0.03	Diff <2x LOR	----
		Zinc	7440-66-6	E440	0.50	mg/kg	36.9	35.9	2.58%	40%	----
		Zirconium	7440-67-7	E440	0.20	mg/kg	0.35	0.28	0.07	Diff <2x LOR	----
Metals (QC Lot: 1606754)											
YL2400878-001	SM24-00-03	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0588	0.0546	7.39%	40%	----
Metals (QC Lot: 1606764)											
YL2400878-019	SG24-00-05	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0969	0.0960	0.907%	40%	----
Metals (QC Lot: 1606765)											
YL2400878-019	SG24-00-05	Mercury	7439-97-6	E510A	0.0017	mg/kg wwt	0.0586	0.0580	0.907%	40%	----
Metals (QC Lot: 1606766)											
YL2400878-019	SG24-00-05	Aluminum	7429-90-5	E440A	0.40	mg/kg wwt	292	281	3.70%	40%	----
		Antimony	7440-36-0	E440A	0.0020	mg/kg wwt	0.0100	0.0086	0.0013	Diff <2x LOR	----
		Arsenic	7440-38-2	E440A	0.0040	mg/kg wwt	0.506	0.330	42.0%	40%	DUP-H
		Barium	7440-39-3	E440A	0.010	mg/kg wwt	25.8	25.5	1.05%	40%	----
		Beryllium	7440-41-7	E440A	0.0020	mg/kg wwt	0.0135	0.0122	10.8%	40%	----
		Bismuth	7440-69-9	E440A	0.0020	mg/kg wwt	0.0054	0.0049	0.0005	Diff <2x LOR	----
		Boron	7440-42-8	E440A	0.20	mg/kg wwt	0.88	0.86	0.01	Diff <2x LOR	----
		Cadmium	7440-43-9	E440A	0.0010	mg/kg wwt	0.0515	0.0493	4.28%	40%	----
		Calcium	7440-70-2	E440A	4.0	mg/kg wwt	2360	2210	6.46%	60%	----
		Cesium	7440-46-2	E440A	0.0010	mg/kg wwt	0.0280	0.0276	1.33%	40%	----
		Chromium	7440-47-3	E440A	0.010	mg/kg wwt	0.605	0.594	1.83%	40%	----
		Cobalt	7440-48-4	E440A	0.0040	mg/kg wwt	1.24	1.20	2.93%	40%	----
		Copper	7440-50-8	E440A	0.020	mg/kg wwt	2.54	2.56	0.750%	40%	----
		Iron	7439-89-6	E440A	0.60	mg/kg wwt	448	444	0.760%	40%	----
		Lead	7439-92-1	E440A	0.0040	mg/kg wwt	0.513	0.491	4.38%	40%	----
		Lithium	7439-93-2	E440A	0.10	mg/kg wwt	0.22	0.20	0.01	Diff <2x LOR	----



Sub-Matrix: Biota

Sub-Matrix: Biota					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 1606766) - continued											
YL2400878-019	SG24-00-05	Magnesium	7439-95-4	E440A	0.40	mg/kg wwt	499	493	1.11%	40%	----
		Manganese	7439-96-5	E440A	0.010	mg/kg wwt	91.0	90.3	0.758%	40%	----
		Molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt	0.0379	0.0488	25.1%	40%	----
		Nickel	7440-02-0	E440A	0.040	mg/kg wwt	1.79	1.76	1.86%	40%	----
		Phosphorus	7723-14-0	E440A	2.0	mg/kg wwt	331	330	0.376%	40%	----
		Potassium	7440-09-7	E440A	4.0	mg/kg wwt	752	766	1.80%	40%	----
		Rubidium	7440-17-7	E440A	0.010	mg/kg wwt	2.14	2.19	2.15%	40%	----
		Selenium	7782-49-2	E440A	0.010	mg/kg wwt	0.048	0.048	0.0001	Diff <2x LOR	----
		Sodium	7440-23-5	E440A	4.0	mg/kg wwt	60.4	69.6	14.0%	40%	----
		Strontium	7440-24-6	E440A	0.010	mg/kg wwt	7.91	7.59	4.06%	60%	----
		Tellurium	13494-80-9	E440A	0.0040	mg/kg wwt	<0.0040	<0.0040	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440A	0.00040	mg/kg wwt	0.00764	0.00756	1.06%	40%	----
		Tin	7440-31-5	E440A	0.020	mg/kg wwt	<0.020	<0.020	0	Diff <2x LOR	----
		Uranium	7440-61-1	E440A	0.00040	mg/kg wwt	0.0257	0.0266	3.64%	40%	----
		Vanadium	7440-62-2	E440A	0.020	mg/kg wwt	0.685	0.676	1.38%	40%	----
		Zinc	7440-66-6	E440A	0.10	mg/kg wwt	14.0	13.8	1.79%	40%	----
		Zirconium	7440-67-7	E440A	0.040	mg/kg wwt	0.370	0.353	4.79%	40%	----
Metals (QC Lot: 1606767)											
YL2400878-019	SG24-00-05	Aluminum	7429-90-5	E440	2.0	mg/kg	483	465	3.70%	40%	----
		Antimony	7440-36-0	E440	0.010	mg/kg	0.016	0.014	0.002	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.020	mg/kg	0.836	0.546	42.0%	40%	DUP-H
		Barium	7440-39-3	E440	0.050	mg/kg	42.6	42.2	1.05%	40%	----
		Beryllium	7440-41-7	E440	0.010	mg/kg	0.022	0.020	0.002	Diff <2x LOR	----
		Bismuth	7440-69-9	E440	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Boron	7440-42-8	E440	1.0	mg/kg	1.4	1.4	0.02	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.0050	mg/kg	0.0852	0.0816	4.28%	40%	----
		Calcium	7440-70-2	E440	20	mg/kg	3900	3650	6.46%	60%	----
		Cesium	7440-46-2	E440	0.0050	mg/kg	0.0463	0.0457	1.33%	40%	----
		Chromium	7440-47-3	E440	0.050	mg/kg	1.00	0.983	1.83%	40%	----
		Cobalt	7440-48-4	E440	0.020	mg/kg	2.04	1.98	2.93%	40%	----
		Copper	7440-50-8	E440	0.10	mg/kg	4.20	4.24	0.750%	40%	----
		Iron	7439-89-6	E440	3.0	mg/kg	741	735	0.760%	40%	----
		Lead	7439-92-1	E440	0.020	mg/kg	0.849	0.813	4.38%	40%	----
		Lithium	7439-93-2	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----



Sub-Matrix: Biota					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 1606767) - continued											
YL2400878-019	SG24-00-05	Magnesium	7439-95-4	E440	2.0	mg/kg	825	816	1.11%	40%	----
		Manganese	7439-96-5	E440	0.050	mg/kg	150	149	0.758%	40%	----
		Molybdenum	7439-98-7	E440	0.020	mg/kg	0.063	0.081	0.018	Diff <2x LOR	----
		Nickel	7440-02-0	E440	0.20	mg/kg	2.96	2.91	1.86%	40%	----
		Phosphorus	7723-14-0	E440	10	mg/kg	548	546	0.376%	40%	----
		Potassium	7440-09-7	E440	20	mg/kg	1240	1270	1.80%	40%	----
		Rubidium	7440-17-7	E440	0.050	mg/kg	3.55	3.63	2.15%	40%	----
		Selenium	7782-49-2	E440	0.050	mg/kg	0.080	0.080	0.0002	Diff <2x LOR	----
		Sodium	7440-23-5	E440	20	mg/kg	100	115	14.0%	40%	----
		Strontium	7440-24-6	E440	0.050	mg/kg	13.1	12.6	4.06%	60%	----
		Tellurium	13494-80-9	E440	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.0020	mg/kg	0.0126	0.0125	1.06%	40%	----
		Tin	7440-31-5	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.0020	mg/kg	0.0425	0.0441	3.64%	40%	----
		Vanadium	7440-62-2	E440	0.10	mg/kg	1.13	1.12	1.38%	40%	----
		Zinc	7440-66-6	E440	0.50	mg/kg	23.2	22.8	1.79%	40%	----
		Zirconium	7440-67-7	E440	0.20	mg/kg	0.61	0.58	0.03	Diff <2x LOR	----
Metals (QC Lot: 1606768)											
YL2400878-034	SG24-150-03B	Mercury	7439-97-6	E510A	0.0017	mg/kg wwt	0.0658	0.0648	1.66%	40%	----
Metals (QC Lot: 1606769)											
YL2400878-034	SG24-150-03B	Mercury	7439-97-6	E510	0.0050	mg/kg	0.104	0.102	1.66%	40%	----
Metals (QC Lot: 1606770)											
YL2400878-034	SG24-150-03B	Aluminum	7429-90-5	E440A	0.40	mg/kg wwt	190	179	5.77%	40%	----
		Antimony	7440-36-0	E440A	0.0020	mg/kg wwt	0.0060	0.0057	0.0003	Diff <2x LOR	----
		Arsenic	7440-38-2	E440A	0.0040	mg/kg wwt	0.311	0.280	10.6%	40%	----
		Barium	7440-39-3	E440A	0.010	mg/kg wwt	18.4	18.3	0.583%	40%	----
		Beryllium	7440-41-7	E440A	0.0020	mg/kg wwt	0.0052	0.0052	0.00007	Diff <2x LOR	----
		Bismuth	7440-69-9	E440A	0.0020	mg/kg wwt	0.0057	0.0052	0.0004	Diff <2x LOR	----
		Boron	7440-42-8	E440A	0.20	mg/kg wwt	0.89	0.90	0.01	Diff <2x LOR	----
		Cadmium	7440-43-9	E440A	0.0010	mg/kg wwt	0.0322	0.0331	2.76%	40%	----
		Calcium	7440-70-2	E440A	4.0	mg/kg wwt	1350	1390	3.16%	60%	----
		Cesium	7440-46-2	E440A	0.0010	mg/kg wwt	0.0895	0.0853	4.81%	40%	----
		Chromium	7440-47-3	E440A	0.010	mg/kg wwt	0.409	0.376	8.45%	40%	----
		Cobalt	7440-48-4	E440A	0.0040	mg/kg wwt	0.324	0.318	1.85%	40%	----



Sub-Matrix: Biota					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 1606770) - continued											
YL2400878-034	SG24-150-03B	Copper	7440-50-8	E440A	0.020	mg/kg wwt	1.91	1.84	3.47%	40%	----
		Iron	7439-89-6	E440A	0.60	mg/kg wwt	484	445	8.40%	40%	----
		Lead	7439-92-1	E440A	0.0040	mg/kg wwt	0.344	0.336	2.43%	40%	----
		Lithium	7439-93-2	E440A	0.10	mg/kg wwt	0.18	0.17	0.009	Diff <2x LOR	----
		Magnesium	7439-95-4	E440A	0.40	mg/kg wwt	353	349	1.31%	40%	----
		Manganese	7439-96-5	E440A	0.010	mg/kg wwt	101	99.8	0.921%	40%	----
		Molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt	0.0234	0.0200	15.6%	40%	----
		Nickel	7440-02-0	E440A	0.040	mg/kg wwt	1.22	1.18	3.10%	40%	----
		Phosphorus	7723-14-0	E440A	2.0	mg/kg wwt	365	344	5.80%	40%	----
		Potassium	7440-09-7	E440A	4.0	mg/kg wwt	794	794	0.00561%	40%	----
		Rubidium	7440-17-7	E440A	0.010	mg/kg wwt	2.23	2.25	1.03%	40%	----
		Selenium	7782-49-2	E440A	0.010	mg/kg wwt	0.035	0.032	0.003	Diff <2x LOR	----
		Sodium	7440-23-5	E440A	4.0	mg/kg wwt	57.3	62.6	8.79%	40%	----
		Strontium	7440-24-6	E440A	0.010	mg/kg wwt	3.15	3.15	0.0244%	60%	----
		Tellurium	13494-80-9	E440A	0.0040	mg/kg wwt	<0.0040	<0.0040	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440A	0.00040	mg/kg wwt	0.0153	0.0156	1.74%	40%	----
		Tin	7440-31-5	E440A	0.020	mg/kg wwt	<0.020	<0.020	0	Diff <2x LOR	----
		Uranium	7440-61-1	E440A	0.00040	mg/kg wwt	0.0193	0.0174	10.1%	40%	----
		Vanadium	7440-62-2	E440A	0.020	mg/kg wwt	0.370	0.341	8.12%	40%	----
		Zinc	7440-66-6	E440A	0.10	mg/kg wwt	11.4	11.6	0.989%	40%	----
		Zirconium	7440-67-7	E440A	0.040	mg/kg wwt	0.168	0.141	0.027	Diff <2x LOR	----
Metals (QC Lot: 1606771)											
YL2400878-034	SG24-150-03B	Aluminum	7429-90-5	E440	2.0	mg/kg	299	282	5.77%	40%	----
		Antimony	7440-36-0	E440	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.020	mg/kg	0.490	0.440	10.6%	40%	----
		Barium	7440-39-3	E440	0.050	mg/kg	29.0	28.8	0.583%	40%	----
		Beryllium	7440-41-7	E440	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Bismuth	7440-69-9	E440	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Boron	7440-42-8	E440	1.0	mg/kg	1.4	1.4	0.02	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.0050	mg/kg	0.0506	0.0520	2.76%	40%	----
		Calcium	7440-70-2	E440	20	mg/kg	2120	2190	3.16%	60%	----
		Cesium	7440-46-2	E440	0.0050	mg/kg	0.141	0.134	4.81%	40%	----
		Chromium	7440-47-3	E440	0.050	mg/kg	0.643	0.591	8.45%	40%	----
		Cobalt	7440-48-4	E440	0.020	mg/kg	0.509	0.500	1.85%	40%	----



Sub-Matrix: Biota					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 1606771) - continued											
YL2400878-034	SG24-150-03B	Copper	7440-50-8	E440	0.10	mg/kg	3.00	2.90	3.47%	40%	----
		Iron	7439-89-6	E440	3.0	mg/kg	762	700	8.40%	40%	----
		Lead	7439-92-1	E440	0.020	mg/kg	0.542	0.528	2.43%	40%	----
		Lithium	7439-93-2	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Magnesium	7439-95-4	E440	2.0	mg/kg	556	548	1.31%	40%	----
		Manganese	7439-96-5	E440	0.050	mg/kg	158	157	0.921%	40%	----
		Molybdenum	7439-98-7	E440	0.020	mg/kg	0.037	0.032	0.005	Diff <2x LOR	----
		Nickel	7440-02-0	E440	0.20	mg/kg	1.92	1.86	3.10%	40%	----
		Phosphorus	7723-14-0	E440	10	mg/kg	574	542	5.80%	40%	----
		Potassium	7440-09-7	E440	20	mg/kg	1250	1250	0.00561%	40%	----
		Rubidium	7440-17-7	E440	0.050	mg/kg	3.51	3.54	1.03%	40%	----
		Selenium	7782-49-2	E440	0.050	mg/kg	0.055	0.051	0.004	Diff <2x LOR	----
		Sodium	7440-23-5	E440	20	mg/kg	90	98	8	Diff <2x LOR	----
		Strontium	7440-24-6	E440	0.050	mg/kg	4.96	4.96	0.0244%	60%	----
		Tellurium	13494-80-9	E440	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.0020	mg/kg	0.0241	0.0246	1.74%	40%	----
		Tin	7440-31-5	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.0020	mg/kg	0.0303	0.0274	10.1%	40%	----
		Vanadium	7440-62-2	E440	0.10	mg/kg	0.58	0.54	8.12%	40%	----
		Zinc	7440-66-6	E440	0.50	mg/kg	18.0	18.2	0.989%	40%	----
		Zirconium	7440-67-7	E440	0.20	mg/kg	0.26	0.22	0.04	Diff <2x LOR	----

Qualifiers

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



Method Blank (MB) Report

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

Sub-Matrix: Biota

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1601748)						
Moisture	----	E144	0.5	%	<0.50	----
Physical Tests (QCLot: 1602162)						
Moisture	----	E144	0.5	%	<0.50	----
Physical Tests (QCLot: 1602507)						
Moisture	----	E144	0.5	%	<0.50	----
Metals (QCLot: 1606751)						
Mercury	7439-97-6	E510A	0.001	mg/kg ww	<0.0010	----
Metals (QCLot: 1606752)						
Aluminum	7429-90-5	E440A	0.4	mg/kg ww	<0.40	----
Antimony	7440-36-0	E440A	0.002	mg/kg ww	<0.0020	----
Arsenic	7440-38-2	E440A	0.004	mg/kg ww	<0.0040	----
Barium	7440-39-3	E440A	0.01	mg/kg ww	<0.010	----
Beryllium	7440-41-7	E440A	0.002	mg/kg ww	<0.0020	----
Bismuth	7440-69-9	E440A	0.002	mg/kg ww	<0.0020	----
Boron	7440-42-8	E440A	0.2	mg/kg ww	<0.20	----
Cadmium	7440-43-9	E440A	0.001	mg/kg ww	<0.0010	----
Calcium	7440-70-2	E440A	4	mg/kg ww	<4.0	----
Cesium	7440-46-2	E440A	0.001	mg/kg ww	<0.0010	----
Chromium	7440-47-3	E440A	0.01	mg/kg ww	<0.010	----
Cobalt	7440-48-4	E440A	0.004	mg/kg ww	<0.0040	----
Copper	7440-50-8	E440A	0.02	mg/kg ww	<0.020	----
Iron	7439-89-6	E440A	0.6	mg/kg ww	<0.60	----
Lead	7439-92-1	E440A	0.004	mg/kg ww	<0.0040	----
Lithium	7439-93-2	E440A	0.1	mg/kg ww	<0.10	----
Magnesium	7439-95-4	E440A	0.4	mg/kg ww	<0.40	----
Manganese	7439-96-5	E440A	0.01	mg/kg ww	<0.010	----
Molybdenum	7439-98-7	E440A	0.004	mg/kg ww	<0.0040	----
Nickel	7440-02-0	E440A	0.04	mg/kg ww	<0.040	----
Phosphorus	7723-14-0	E440A	2	mg/kg ww	<2.0	----
Potassium	7440-09-7	E440A	4	mg/kg ww	<4.0	----
Rubidium	7440-17-7	E440A	0.01	mg/kg ww	<0.010	----
Selenium	7782-49-2	E440A	0.01	mg/kg ww	<0.010	----



Sub-Matrix: Biota

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 1606752) - continued						
Sodium	7440-23-5	E440A	4	mg/kg ww	<4.0	----
Strontium	7440-24-6	E440A	0.01	mg/kg ww	<0.010	----
Tellurium	13494-80-9	E440A	0.004	mg/kg ww	<0.0040	----
Thallium	7440-28-0	E440A	0.0004	mg/kg ww	<0.00040	----
Tin	7440-31-5	E440A	0.02	mg/kg ww	<0.020	----
Uranium	7440-61-1	E440A	0.0004	mg/kg ww	<0.00040	----
Vanadium	7440-62-2	E440A	0.02	mg/kg ww	<0.020	----
Zinc	7440-66-6	E440A	0.1	mg/kg ww	<0.10	----
Zirconium	7440-67-7	E440A	0.04	mg/kg ww	<0.040	----
Metals (QCLot: 1606753)						
Aluminum	7429-90-5	E440	2	mg/kg	<2.0	----
Antimony	7440-36-0	E440	0.01	mg/kg	<0.010	----
Arsenic	7440-38-2	E440	0.02	mg/kg	<0.020	----
Barium	7440-39-3	E440	0.05	mg/kg	<0.050	----
Beryllium	7440-41-7	E440	0.01	mg/kg	<0.010	----
Bismuth	7440-69-9	E440	0.01	mg/kg	<0.010	----
Boron	7440-42-8	E440	1	mg/kg	<1.0	----
Cadmium	7440-43-9	E440	0.005	mg/kg	<0.0050	----
Calcium	7440-70-2	E440	20	mg/kg	<20	----
Cesium	7440-46-2	E440	0.005	mg/kg	<0.0050	----
Chromium	7440-47-3	E440	0.05	mg/kg	<0.050	----
Cobalt	7440-48-4	E440	0.02	mg/kg	<0.020	----
Copper	7440-50-8	E440	0.1	mg/kg	<0.10	----
Iron	7439-89-6	E440	3	mg/kg	<3.0	----
Lead	7439-92-1	E440	0.02	mg/kg	<0.020	----
Lithium	7439-93-2	E440	0.5	mg/kg	<0.50	----
Magnesium	7439-95-4	E440	2	mg/kg	<2.0	----
Manganese	7439-96-5	E440	0.05	mg/kg	<0.050	----
Molybdenum	7439-98-7	E440	0.02	mg/kg	<0.020	----
Nickel	7440-02-0	E440	0.2	mg/kg	<0.20	----
Phosphorus	7723-14-0	E440	10	mg/kg	<10	----
Potassium	7440-09-7	E440	20	mg/kg	<20	----
Rubidium	7440-17-7	E440	0.05	mg/kg	<0.050	----
Selenium	7782-49-2	E440	0.05	mg/kg	<0.050	----
Sodium	7440-23-5	E440	20	mg/kg	<20	----



Sub-Matrix: Biota

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 1606753) - continued						
Strontium	7440-24-6	E440	0.05	mg/kg	<0.050	----
Tellurium	13494-80-9	E440	0.02	mg/kg	<0.020	----
Thallium	7440-28-0	E440	0.002	mg/kg	<0.0020	----
Tin	7440-31-5	E440	0.1	mg/kg	<0.10	----
Uranium	7440-61-1	E440	0.002	mg/kg	<0.0020	----
Vanadium	7440-62-2	E440	0.1	mg/kg	<0.10	----
Zinc	7440-66-6	E440	0.5	mg/kg	<0.50	----
Zirconium	7440-67-7	E440	0.2	mg/kg	<0.20	----
Metals (QCLot: 1606754)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 1606764)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 1606765)						
Mercury	7439-97-6	E510A	0.001	mg/kg ww	<0.0010	----
Metals (QCLot: 1606766)						
Aluminum	7429-90-5	E440A	0.4	mg/kg ww	<0.40	----
Antimony	7440-36-0	E440A	0.002	mg/kg ww	<0.0020	----
Arsenic	7440-38-2	E440A	0.004	mg/kg ww	<0.0040	----
Barium	7440-39-3	E440A	0.01	mg/kg ww	<0.010	----
Beryllium	7440-41-7	E440A	0.002	mg/kg ww	<0.0020	----
Bismuth	7440-69-9	E440A	0.002	mg/kg ww	<0.0020	----
Boron	7440-42-8	E440A	0.2	mg/kg ww	<0.20	----
Cadmium	7440-43-9	E440A	0.001	mg/kg ww	<0.0010	----
Calcium	7440-70-2	E440A	4	mg/kg ww	<4.0	----
Cesium	7440-46-2	E440A	0.001	mg/kg ww	<0.0010	----
Chromium	7440-47-3	E440A	0.01	mg/kg ww	<0.010	----
Cobalt	7440-48-4	E440A	0.004	mg/kg ww	<0.0040	----
Copper	7440-50-8	E440A	0.02	mg/kg ww	<0.020	----
Iron	7439-89-6	E440A	0.6	mg/kg ww	<0.60	----
Lead	7439-92-1	E440A	0.004	mg/kg ww	<0.0040	----
Lithium	7439-93-2	E440A	0.1	mg/kg ww	<0.10	----
Magnesium	7439-95-4	E440A	0.4	mg/kg ww	<0.40	----
Manganese	7439-96-5	E440A	0.01	mg/kg ww	<0.010	----
Molybdenum	7439-98-7	E440A	0.004	mg/kg ww	<0.0040	----
Nickel	7440-02-0	E440A	0.04	mg/kg ww	<0.040	----



Sub-Matrix: Biota

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 1606766) - continued						
Phosphorus	7723-14-0	E440A	2	mg/kg wwt	<2.0	----
Potassium	7440-09-7	E440A	4	mg/kg wwt	<4.0	----
Rubidium	7440-17-7	E440A	0.01	mg/kg wwt	<0.010	----
Selenium	7782-49-2	E440A	0.01	mg/kg wwt	<0.010	----
Sodium	7440-23-5	E440A	4	mg/kg wwt	<4.0	----
Strontium	7440-24-6	E440A	0.01	mg/kg wwt	<0.010	----
Tellurium	13494-80-9	E440A	0.004	mg/kg wwt	<0.0040	----
Thallium	7440-28-0	E440A	0.0004	mg/kg wwt	<0.00040	----
Tin	7440-31-5	E440A	0.02	mg/kg wwt	<0.020	----
Uranium	7440-61-1	E440A	0.0004	mg/kg wwt	<0.00040	----
Vanadium	7440-62-2	E440A	0.02	mg/kg wwt	<0.020	----
Zinc	7440-66-6	E440A	0.1	mg/kg wwt	<0.10	----
Zirconium	7440-67-7	E440A	0.04	mg/kg wwt	<0.040	----
Metals (QCLot: 1606767)						
Aluminum	7429-90-5	E440	2	mg/kg	<2.0	----
Antimony	7440-36-0	E440	0.01	mg/kg	<0.010	----
Arsenic	7440-38-2	E440	0.02	mg/kg	<0.020	----
Barium	7440-39-3	E440	0.05	mg/kg	<0.050	----
Beryllium	7440-41-7	E440	0.01	mg/kg	<0.010	----
Bismuth	7440-69-9	E440	0.01	mg/kg	<0.010	----
Boron	7440-42-8	E440	1	mg/kg	<1.0	----
Cadmium	7440-43-9	E440	0.005	mg/kg	<0.0050	----
Calcium	7440-70-2	E440	20	mg/kg	<20	----
Cesium	7440-46-2	E440	0.005	mg/kg	<0.0050	----
Chromium	7440-47-3	E440	0.05	mg/kg	<0.050	----
Cobalt	7440-48-4	E440	0.02	mg/kg	<0.020	----
Copper	7440-50-8	E440	0.1	mg/kg	<0.10	----
Iron	7439-89-6	E440	3	mg/kg	<3.0	----
Lead	7439-92-1	E440	0.02	mg/kg	<0.020	----
Lithium	7439-93-2	E440	0.5	mg/kg	<0.50	----
Magnesium	7439-95-4	E440	2	mg/kg	<2.0	----
Manganese	7439-96-5	E440	0.05	mg/kg	<0.050	----
Molybdenum	7439-98-7	E440	0.02	mg/kg	<0.020	----
Nickel	7440-02-0	E440	0.2	mg/kg	<0.20	----
Phosphorus	7723-14-0	E440	10	mg/kg	<10	----



Sub-Matrix: Biota

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 1606767) - continued						
Potassium	7440-09-7	E440	20	mg/kg	<20	----
Rubidium	7440-17-7	E440	0.05	mg/kg	<0.050	----
Selenium	7782-49-2	E440	0.05	mg/kg	<0.050	----
Sodium	7440-23-5	E440	20	mg/kg	<20	----
Strontium	7440-24-6	E440	0.05	mg/kg	<0.050	----
Tellurium	13494-80-9	E440	0.02	mg/kg	<0.020	----
Thallium	7440-28-0	E440	0.002	mg/kg	<0.0020	----
Tin	7440-31-5	E440	0.1	mg/kg	<0.10	----
Uranium	7440-61-1	E440	0.002	mg/kg	<0.0020	----
Vanadium	7440-62-2	E440	0.1	mg/kg	<0.10	----
Zinc	7440-66-6	E440	0.5	mg/kg	<0.50	----
Zirconium	7440-67-7	E440	0.2	mg/kg	<0.20	----
Metals (QCLot: 1606768)						
Mercury	7439-97-6	E510A	0.001	mg/kg ww	<0.0010	----
Metals (QCLot: 1606769)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 1606770)						
Aluminum	7429-90-5	E440A	0.4	mg/kg ww	<0.40	----
Antimony	7440-36-0	E440A	0.002	mg/kg ww	<0.0020	----
Arsenic	7440-38-2	E440A	0.004	mg/kg ww	<0.0040	----
Barium	7440-39-3	E440A	0.01	mg/kg ww	<0.010	----
Beryllium	7440-41-7	E440A	0.002	mg/kg ww	<0.0020	----
Bismuth	7440-69-9	E440A	0.002	mg/kg ww	<0.0020	----
Boron	7440-42-8	E440A	0.2	mg/kg ww	<0.20	----
Cadmium	7440-43-9	E440A	0.001	mg/kg ww	<0.0010	----
Calcium	7440-70-2	E440A	4	mg/kg ww	<4.0	----
Cesium	7440-46-2	E440A	0.001	mg/kg ww	<0.0010	----
Chromium	7440-47-3	E440A	0.01	mg/kg ww	<0.010	----
Cobalt	7440-48-4	E440A	0.004	mg/kg ww	<0.0040	----
Copper	7440-50-8	E440A	0.02	mg/kg ww	<0.020	----
Iron	7439-89-6	E440A	0.6	mg/kg ww	<0.60	----
Lead	7439-92-1	E440A	0.004	mg/kg ww	<0.0040	----
Lithium	7439-93-2	E440A	0.1	mg/kg ww	<0.10	----
Magnesium	7439-95-4	E440A	0.4	mg/kg ww	<0.40	----
Manganese	7439-96-5	E440A	0.01	mg/kg ww	<0.010	----



Sub-Matrix: Biota

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 1606770) - continued						
Molybdenum	7439-98-7	E440A	0.004	mg/kg ww	<0.0040	----
Nickel	7440-02-0	E440A	0.04	mg/kg ww	<0.040	----
Phosphorus	7723-14-0	E440A	2	mg/kg ww	<2.0	----
Potassium	7440-09-7	E440A	4	mg/kg ww	<4.0	----
Rubidium	7440-17-7	E440A	0.01	mg/kg ww	<0.010	----
Selenium	7782-49-2	E440A	0.01	mg/kg ww	<0.010	----
Sodium	7440-23-5	E440A	4	mg/kg ww	<4.0	----
Strontium	7440-24-6	E440A	0.01	mg/kg ww	<0.010	----
Tellurium	13494-80-9	E440A	0.004	mg/kg ww	<0.0040	----
Thallium	7440-28-0	E440A	0.0004	mg/kg ww	<0.00040	----
Tin	7440-31-5	E440A	0.02	mg/kg ww	<0.020	----
Uranium	7440-61-1	E440A	0.0004	mg/kg ww	<0.00040	----
Vanadium	7440-62-2	E440A	0.02	mg/kg ww	<0.020	----
Zinc	7440-66-6	E440A	0.1	mg/kg ww	<0.10	----
Zirconium	7440-67-7	E440A	0.04	mg/kg ww	<0.040	----
Metals (QCLot: 1606771)						
Aluminum	7429-90-5	E440	2	mg/kg	<2.0	----
Antimony	7440-36-0	E440	0.01	mg/kg	<0.010	----
Arsenic	7440-38-2	E440	0.02	mg/kg	<0.020	----
Barium	7440-39-3	E440	0.05	mg/kg	<0.050	----
Beryllium	7440-41-7	E440	0.01	mg/kg	<0.010	----
Bismuth	7440-69-9	E440	0.01	mg/kg	<0.010	----
Boron	7440-42-8	E440	1	mg/kg	<1.0	----
Cadmium	7440-43-9	E440	0.005	mg/kg	<0.0050	----
Calcium	7440-70-2	E440	20	mg/kg	<20	----
Cesium	7440-46-2	E440	0.005	mg/kg	<0.0050	----
Chromium	7440-47-3	E440	0.05	mg/kg	<0.050	----
Cobalt	7440-48-4	E440	0.02	mg/kg	<0.020	----
Copper	7440-50-8	E440	0.1	mg/kg	<0.10	----
Iron	7439-89-6	E440	3	mg/kg	<3.0	----
Lead	7439-92-1	E440	0.02	mg/kg	<0.020	----
Lithium	7439-93-2	E440	0.5	mg/kg	<0.50	----
Magnesium	7439-95-4	E440	2	mg/kg	<2.0	----
Manganese	7439-96-5	E440	0.05	mg/kg	<0.050	----
Molybdenum	7439-98-7	E440	0.02	mg/kg	<0.020	----



Sub-Matrix: Biota

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 1606771) - continued						
Nickel	7440-02-0	E440	0.2	mg/kg	<0.20	----
Phosphorus	7723-14-0	E440	10	mg/kg	<10	----
Potassium	7440-09-7	E440	20	mg/kg	<20	----
Rubidium	7440-17-7	E440	0.05	mg/kg	<0.050	----
Selenium	7782-49-2	E440	0.05	mg/kg	<0.050	----
Sodium	7440-23-5	E440	20	mg/kg	<20	----
Strontium	7440-24-6	E440	0.05	mg/kg	<0.050	----
Tellurium	13494-80-9	E440	0.02	mg/kg	<0.020	----
Thallium	7440-28-0	E440	0.002	mg/kg	<0.0020	----
Tin	7440-31-5	E440	0.1	mg/kg	<0.10	----
Uranium	7440-61-1	E440	0.002	mg/kg	<0.0020	----
Vanadium	7440-62-2	E440	0.1	mg/kg	<0.10	----
Zinc	7440-66-6	E440	0.5	mg/kg	<0.50	----
Zirconium	7440-67-7	E440	0.2	mg/kg	<0.20	----



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Biota

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1601748)									
Moisture	----	E144	0.5	%	50 %	101	90.0	110	----
Physical Tests (QCLot: 1602162)									
Moisture	----	E144	0.5	%	50 %	100	90.0	110	----
Physical Tests (QCLot: 1602507)									
Moisture	----	E144	0.5	%	50 %	100	90.0	110	----
Metals (QCLot: 1606751)									
Mercury	7439-97-6	E510A	0.001	mg/kg wwt	0.02 mg/kg wwt	97.5	80.0	120	----
Metals (QCLot: 1606752)									
Aluminum	7429-90-5	E440A	0.4	mg/kg wwt	20 mg/kg wwt	105	80.0	120	----
Antimony	7440-36-0	E440A	0.002	mg/kg wwt	10 mg/kg wwt	98.3	80.0	120	----
Arsenic	7440-38-2	E440A	0.004	mg/kg wwt	10 mg/kg wwt	106	80.0	120	----
Barium	7440-39-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	105	80.0	120	----
Beryllium	7440-41-7	E440A	0.002	mg/kg wwt	1 mg/kg wwt	103	80.0	120	----
Bismuth	7440-69-9	E440A	0.002	mg/kg wwt	10 mg/kg wwt	98.6	80.0	120	----
Boron	7440-42-8	E440A	0.2	mg/kg wwt	10 mg/kg wwt	99.8	80.0	120	----
Cadmium	7440-43-9	E440A	0.001	mg/kg wwt	1 mg/kg wwt	102	80.0	120	----
Calcium	7440-70-2	E440A	4	mg/kg wwt	500 mg/kg wwt	101	80.0	120	----
Cesium	7440-46-2	E440A	0.001	mg/kg wwt	0.5 mg/kg wwt	102	80.0	120	----
Chromium	7440-47-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	102	80.0	120	----
Cobalt	7440-48-4	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	100	80.0	120	----
Copper	7440-50-8	E440A	0.02	mg/kg wwt	2.5 mg/kg wwt	101	80.0	120	----
Iron	7439-89-6	E440A	0.6	mg/kg wwt	10 mg/kg wwt	106	80.0	120	----
Lead	7439-92-1	E440A	0.004	mg/kg wwt	5 mg/kg wwt	98.8	80.0	120	----
Lithium	7439-93-2	E440A	0.1	mg/kg wwt	2.5 mg/kg wwt	103	80.0	120	----
Magnesium	7439-95-4	E440A	0.4	mg/kg wwt	500 mg/kg wwt	102	80.0	120	----
Manganese	7439-96-5	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	99.1	80.0	120	----
Molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----
Nickel	7440-02-0	E440A	0.04	mg/kg wwt	5 mg/kg wwt	100.0	80.0	120	----
Phosphorus	7723-14-0	E440A	2	mg/kg wwt	100 mg/kg wwt	110	80.0	120	----
Potassium	7440-09-7	E440A	4	mg/kg wwt	500 mg/kg wwt	103	80.0	120	----
Rubidium	7440-17-7	E440A	0.01	mg/kg wwt	1 mg/kg wwt	99.1	80.0	120	----
Selenium	7782-49-2	E440A	0.01	mg/kg wwt	10 mg/kg wwt	102	80.0	120	----



Sub-Matrix: Biota

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 1606752) - continued									
Sodium	7440-23-5	E440A	4	mg/kg wwt	500 mg/kg wwt	103	80.0	120	----
Strontium	7440-24-6	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	105	80.0	120	----
Tellurium	13494-80-9	E440A	0.004	mg/kg wwt	1 mg/kg wwt	100	80.0	120	----
Thallium	7440-28-0	E440A	0.0004	mg/kg wwt	10 mg/kg wwt	94.3	80.0	120	----
Tin	7440-31-5	E440A	0.02	mg/kg wwt	5 mg/kg wwt	100	80.0	120	----
Uranium	7440-61-1	E440A	0.0004	mg/kg wwt	0.05 mg/kg wwt	95.1	80.0	120	----
Vanadium	7440-62-2	E440A	0.02	mg/kg wwt	5 mg/kg wwt	100	80.0	120	----
Zinc	7440-66-6	E440A	0.1	mg/kg wwt	5 mg/kg wwt	101	80.0	120	----
Zirconium	7440-67-7	E440A	0.04	mg/kg wwt	1 mg/kg wwt	101	80.0	120	----
Metals (QCLot: 1606753)									
Aluminum	7429-90-5	E440	2	mg/kg	20 mg/kg	105	80.0	120	----
Antimony	7440-36-0	E440	0.01	mg/kg	10 mg/kg	98.3	80.0	120	----
Arsenic	7440-38-2	E440	0.02	mg/kg	10 mg/kg	106	80.0	120	----
Barium	7440-39-3	E440	0.05	mg/kg	2.5 mg/kg	105	80.0	120	----
Beryllium	7440-41-7	E440	0.01	mg/kg	1 mg/kg	103	80.0	120	----
Bismuth	7440-69-9	E440	0.01	mg/kg	10 mg/kg	98.6	80.0	120	----
Boron	7440-42-8	E440	1	mg/kg	10 mg/kg	99.8	80.0	120	----
Cadmium	7440-43-9	E440	0.005	mg/kg	1 mg/kg	102	80.0	120	----
Calcium	7440-70-2	E440	20	mg/kg	500 mg/kg	101	80.0	120	----
Cesium	7440-46-2	E440	0.005	mg/kg	0.5 mg/kg	102	80.0	120	----
Chromium	7440-47-3	E440	0.05	mg/kg	2.5 mg/kg	102	80.0	120	----
Cobalt	7440-48-4	E440	0.02	mg/kg	2.5 mg/kg	100	80.0	120	----
Copper	7440-50-8	E440	0.1	mg/kg	2.5 mg/kg	101	80.0	120	----
Iron	7439-89-6	E440	3	mg/kg	10 mg/kg	106	80.0	120	----
Lead	7439-92-1	E440	0.02	mg/kg	5 mg/kg	98.8	80.0	120	----
Lithium	7439-93-2	E440	0.5	mg/kg	2.5 mg/kg	103	80.0	120	----
Magnesium	7439-95-4	E440	2	mg/kg	500 mg/kg	102	80.0	120	----
Manganese	7439-96-5	E440	0.05	mg/kg	2.5 mg/kg	99.1	80.0	120	----
Molybdenum	7439-98-7	E440	0.02	mg/kg	2.5 mg/kg	104	80.0	120	----
Nickel	7440-02-0	E440	0.2	mg/kg	5 mg/kg	100.0	80.0	120	----
Phosphorus	7723-14-0	E440	10	mg/kg	100 mg/kg	110	80.0	120	----
Potassium	7440-09-7	E440	20	mg/kg	500 mg/kg	103	80.0	120	----
Rubidium	7440-17-7	E440	0.05	mg/kg	1 mg/kg	99.1	80.0	120	----
Selenium	7782-49-2	E440	0.05	mg/kg	10 mg/kg	102	80.0	120	----
Sodium	7440-23-5	E440	20	mg/kg	500 mg/kg	103	80.0	120	----
Strontium	7440-24-6	E440	0.05	mg/kg	2.5 mg/kg	105	80.0	120	----



Sub-Matrix: Biota					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Target Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 1606753) - continued									
Tellurium	13494-80-9	E440	0.02	mg/kg	1 mg/kg	100	80.0	120	----
Thallium	7440-28-0	E440	0.002	mg/kg	10 mg/kg	94.3	80.0	120	----
Tin	7440-31-5	E440	0.1	mg/kg	5 mg/kg	100	80.0	120	----
Uranium	7440-61-1	E440	0.002	mg/kg	0.05 mg/kg	95.1	80.0	120	----
Vanadium	7440-62-2	E440	0.1	mg/kg	5 mg/kg	100	80.0	120	----
Zinc	7440-66-6	E440	0.5	mg/kg	5 mg/kg	101	80.0	120	----
Zirconium	7440-67-7	E440	0.2	mg/kg	1 mg/kg	101	80.0	120	----
Metals (QCLot: 1606754)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.02 mg/kg	97.5	80.0	120	----
Metals (QCLot: 1606764)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.02 mg/kg	98.8	80.0	120	----
Metals (QCLot: 1606765)									
Mercury	7439-97-6	E510A	0.001	mg/kg wwt	0.02 mg/kg wwt	98.8	80.0	120	----
Metals (QCLot: 1606766)									
Aluminum	7429-90-5	E440A	0.4	mg/kg wwt	20 mg/kg wwt	101	80.0	120	----
Antimony	7440-36-0	E440A	0.002	mg/kg wwt	10 mg/kg wwt	96.9	80.0	120	----
Arsenic	7440-38-2	E440A	0.004	mg/kg wwt	10 mg/kg wwt	105	80.0	120	----
Barium	7440-39-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	102	80.0	120	----
Beryllium	7440-41-7	E440A	0.002	mg/kg wwt	1 mg/kg wwt	98.6	80.0	120	----
Bismuth	7440-69-9	E440A	0.002	mg/kg wwt	10 mg/kg wwt	99.6	80.0	120	----
Boron	7440-42-8	E440A	0.2	mg/kg wwt	10 mg/kg wwt	96.9	80.0	120	----
Cadmium	7440-43-9	E440A	0.001	mg/kg wwt	1 mg/kg wwt	100.0	80.0	120	----
Calcium	7440-70-2	E440A	4	mg/kg wwt	500 mg/kg wwt	97.9	80.0	120	----
Cesium	7440-46-2	E440A	0.001	mg/kg wwt	0.5 mg/kg wwt	101	80.0	120	----
Chromium	7440-47-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	100	80.0	120	----
Cobalt	7440-48-4	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	99.8	80.0	120	----
Copper	7440-50-8	E440A	0.02	mg/kg wwt	2.5 mg/kg wwt	98.7	80.0	120	----
Iron	7439-89-6	E440A	0.6	mg/kg wwt	10 mg/kg wwt	103	80.0	120	----
Lead	7439-92-1	E440A	0.004	mg/kg wwt	5 mg/kg wwt	98.0	80.0	120	----
Lithium	7439-93-2	E440A	0.1	mg/kg wwt	2.5 mg/kg wwt	101	80.0	120	----
Magnesium	7439-95-4	E440A	0.4	mg/kg wwt	500 mg/kg wwt	100	80.0	120	----
Manganese	7439-96-5	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	98.8	80.0	120	----
Molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	103	80.0	120	----
Nickel	7440-02-0	E440A	0.04	mg/kg wwt	5 mg/kg wwt	99.5	80.0	120	----
Phosphorus	7723-14-0	E440A	2	mg/kg wwt	100 mg/kg wwt	107	80.0	120	----
Potassium	7440-09-7	E440A	4	mg/kg wwt	500 mg/kg wwt	100	80.0	120	----



Sub-Matrix: Biota

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 1606766) - continued									
Rubidium	7440-17-7	E440A	0.01	mg/kg wwt	1 mg/kg wwt	96.3	80.0	120	----
Selenium	7782-49-2	E440A	0.01	mg/kg wwt	10 mg/kg wwt	98.3	80.0	120	----
Sodium	7440-23-5	E440A	4	mg/kg wwt	500 mg/kg wwt	101	80.0	120	----
Strontium	7440-24-6	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----
Tellurium	13494-80-9	E440A	0.004	mg/kg wwt	1 mg/kg wwt	99.4	80.0	120	----
Thallium	7440-28-0	E440A	0.0004	mg/kg wwt	10 mg/kg wwt	95.1	80.0	120	----
Tin	7440-31-5	E440A	0.02	mg/kg wwt	5 mg/kg wwt	99.0	80.0	120	----
Uranium	7440-61-1	E440A	0.0004	mg/kg wwt	0.05 mg/kg wwt	95.5	80.0	120	----
Vanadium	7440-62-2	E440A	0.02	mg/kg wwt	5 mg/kg wwt	99.4	80.0	120	----
Zinc	7440-66-6	E440A	0.1	mg/kg wwt	5 mg/kg wwt	99.8	80.0	120	----
Zirconium	7440-67-7	E440A	0.04	mg/kg wwt	1 mg/kg wwt	99.8	80.0	120	----
Metals (QCLot: 1606767)									
Aluminum	7429-90-5	E440	2	mg/kg	20 mg/kg	101	80.0	120	----
Antimony	7440-36-0	E440	0.01	mg/kg	10 mg/kg	96.9	80.0	120	----
Arsenic	7440-38-2	E440	0.02	mg/kg	10 mg/kg	105	80.0	120	----
Barium	7440-39-3	E440	0.05	mg/kg	2.5 mg/kg	102	80.0	120	----
Beryllium	7440-41-7	E440	0.01	mg/kg	1 mg/kg	98.6	80.0	120	----
Bismuth	7440-69-9	E440	0.01	mg/kg	10 mg/kg	99.6	80.0	120	----
Boron	7440-42-8	E440	1	mg/kg	10 mg/kg	96.9	80.0	120	----
Cadmium	7440-43-9	E440	0.005	mg/kg	1 mg/kg	100.0	80.0	120	----
Calcium	7440-70-2	E440	20	mg/kg	500 mg/kg	97.9	80.0	120	----
Cesium	7440-46-2	E440	0.005	mg/kg	0.5 mg/kg	101	80.0	120	----
Chromium	7440-47-3	E440	0.05	mg/kg	2.5 mg/kg	100	80.0	120	----
Cobalt	7440-48-4	E440	0.02	mg/kg	2.5 mg/kg	99.8	80.0	120	----
Copper	7440-50-8	E440	0.1	mg/kg	2.5 mg/kg	98.7	80.0	120	----
Iron	7439-89-6	E440	3	mg/kg	10 mg/kg	103	80.0	120	----
Lead	7439-92-1	E440	0.02	mg/kg	5 mg/kg	98.0	80.0	120	----
Lithium	7439-93-2	E440	0.5	mg/kg	2.5 mg/kg	101	80.0	120	----
Magnesium	7439-95-4	E440	2	mg/kg	500 mg/kg	100	80.0	120	----
Manganese	7439-96-5	E440	0.05	mg/kg	2.5 mg/kg	98.8	80.0	120	----
Molybdenum	7439-98-7	E440	0.02	mg/kg	2.5 mg/kg	103	80.0	120	----
Nickel	7440-02-0	E440	0.2	mg/kg	5 mg/kg	99.5	80.0	120	----
Phosphorus	7723-14-0	E440	10	mg/kg	100 mg/kg	107	80.0	120	----
Potassium	7440-09-7	E440	20	mg/kg	500 mg/kg	100	80.0	120	----
Rubidium	7440-17-7	E440	0.05	mg/kg	1 mg/kg	96.3	80.0	120	----
Selenium	7782-49-2	E440	0.05	mg/kg	10 mg/kg	98.3	80.0	120	----



Sub-Matrix: Biota					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Target Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 1606767) - continued									
Sodium	7440-23-5	E440	20	mg/kg	500 mg/kg	101	80.0	120	----
Strontium	7440-24-6	E440	0.05	mg/kg	2.5 mg/kg	104	80.0	120	----
Tellurium	13494-80-9	E440	0.02	mg/kg	1 mg/kg	99.4	80.0	120	----
Thallium	7440-28-0	E440	0.002	mg/kg	10 mg/kg	95.1	80.0	120	----
Tin	7440-31-5	E440	0.1	mg/kg	5 mg/kg	99.0	80.0	120	----
Uranium	7440-61-1	E440	0.002	mg/kg	0.05 mg/kg	95.5	80.0	120	----
Vanadium	7440-62-2	E440	0.1	mg/kg	5 mg/kg	99.4	80.0	120	----
Zinc	7440-66-6	E440	0.5	mg/kg	5 mg/kg	99.8	80.0	120	----
Zirconium	7440-67-7	E440	0.2	mg/kg	1 mg/kg	99.8	80.0	120	----
Metals (QCLot: 1606768)									
Mercury	7439-97-6	E510A	0.001	mg/kg wwt	0.02 mg/kg wwt	93.4	80.0	120	----
Metals (QCLot: 1606769)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.02 mg/kg	93.4	80.0	120	----
Metals (QCLot: 1606770)									
Aluminum	7429-90-5	E440A	0.4	mg/kg wwt	20 mg/kg wwt	104	80.0	120	----
Antimony	7440-36-0	E440A	0.002	mg/kg wwt	10 mg/kg wwt	98.0	80.0	120	----
Arsenic	7440-38-2	E440A	0.004	mg/kg wwt	10 mg/kg wwt	108	80.0	120	----
Barium	7440-39-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	102	80.0	120	----
Beryllium	7440-41-7	E440A	0.002	mg/kg wwt	1 mg/kg wwt	103	80.0	120	----
Bismuth	7440-69-9	E440A	0.002	mg/kg wwt	10 mg/kg wwt	99.3	80.0	120	----
Boron	7440-42-8	E440A	0.2	mg/kg wwt	10 mg/kg wwt	100	80.0	120	----
Cadmium	7440-43-9	E440A	0.001	mg/kg wwt	1 mg/kg wwt	103	80.0	120	----
Calcium	7440-70-2	E440A	4	mg/kg wwt	500 mg/kg wwt	100.0	80.0	120	----
Cesium	7440-46-2	E440A	0.001	mg/kg wwt	0.5 mg/kg wwt	101	80.0	120	----
Chromium	7440-47-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	105	80.0	120	----
Cobalt	7440-48-4	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	103	80.0	120	----
Copper	7440-50-8	E440A	0.02	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----
Iron	7439-89-6	E440A	0.6	mg/kg wwt	10 mg/kg wwt	106	80.0	120	----
Lead	7439-92-1	E440A	0.004	mg/kg wwt	5 mg/kg wwt	99.5	80.0	120	----
Lithium	7439-93-2	E440A	0.1	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----
Magnesium	7439-95-4	E440A	0.4	mg/kg wwt	500 mg/kg wwt	103	80.0	120	----
Manganese	7439-96-5	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	101	80.0	120	----
Molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	103	80.0	120	----
Nickel	7440-02-0	E440A	0.04	mg/kg wwt	5 mg/kg wwt	104	80.0	120	----
Phosphorus	7723-14-0	E440A	2	mg/kg wwt	100 mg/kg wwt	106	80.0	120	----
Potassium	7440-09-7	E440A	4	mg/kg wwt	500 mg/kg wwt	104	80.0	120	----



Sub-Matrix: Biota

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 1606770) - continued									
Rubidium	7440-17-7	E440A	0.01	mg/kg wwt	1 mg/kg wwt	100	80.0	120	----
Selenium	7782-49-2	E440A	0.01	mg/kg wwt	10 mg/kg wwt	101	80.0	120	----
Sodium	7440-23-5	E440A	4	mg/kg wwt	500 mg/kg wwt	105	80.0	120	----
Strontium	7440-24-6	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----
Tellurium	13494-80-9	E440A	0.004	mg/kg wwt	1 mg/kg wwt	100	80.0	120	----
Thallium	7440-28-0	E440A	0.0004	mg/kg wwt	10 mg/kg wwt	95.0	80.0	120	----
Tin	7440-31-5	E440A	0.02	mg/kg wwt	5 mg/kg wwt	102	80.0	120	----
Uranium	7440-61-1	E440A	0.0004	mg/kg wwt	0.05 mg/kg wwt	98.0	80.0	120	----
Vanadium	7440-62-2	E440A	0.02	mg/kg wwt	5 mg/kg wwt	104	80.0	120	----
Zinc	7440-66-6	E440A	0.1	mg/kg wwt	5 mg/kg wwt	104	80.0	120	----
Zirconium	7440-67-7	E440A	0.04	mg/kg wwt	1 mg/kg wwt	101	80.0	120	----
Metals (QCLot: 1606771)									
Aluminum	7429-90-5	E440	2	mg/kg	20 mg/kg	104	80.0	120	----
Antimony	7440-36-0	E440	0.01	mg/kg	10 mg/kg	98.0	80.0	120	----
Arsenic	7440-38-2	E440	0.02	mg/kg	10 mg/kg	108	80.0	120	----
Barium	7440-39-3	E440	0.05	mg/kg	2.5 mg/kg	102	80.0	120	----
Beryllium	7440-41-7	E440	0.01	mg/kg	1 mg/kg	103	80.0	120	----
Bismuth	7440-69-9	E440	0.01	mg/kg	10 mg/kg	99.3	80.0	120	----
Boron	7440-42-8	E440	1	mg/kg	10 mg/kg	100	80.0	120	----
Cadmium	7440-43-9	E440	0.005	mg/kg	1 mg/kg	103	80.0	120	----
Calcium	7440-70-2	E440	20	mg/kg	500 mg/kg	100.0	80.0	120	----
Cesium	7440-46-2	E440	0.005	mg/kg	0.5 mg/kg	101	80.0	120	----
Chromium	7440-47-3	E440	0.05	mg/kg	2.5 mg/kg	105	80.0	120	----
Cobalt	7440-48-4	E440	0.02	mg/kg	2.5 mg/kg	103	80.0	120	----
Copper	7440-50-8	E440	0.1	mg/kg	2.5 mg/kg	104	80.0	120	----
Iron	7439-89-6	E440	3	mg/kg	10 mg/kg	106	80.0	120	----
Lead	7439-92-1	E440	0.02	mg/kg	5 mg/kg	99.5	80.0	120	----
Lithium	7439-93-2	E440	0.5	mg/kg	2.5 mg/kg	104	80.0	120	----
Magnesium	7439-95-4	E440	2	mg/kg	500 mg/kg	103	80.0	120	----
Manganese	7439-96-5	E440	0.05	mg/kg	2.5 mg/kg	101	80.0	120	----
Molybdenum	7439-98-7	E440	0.02	mg/kg	2.5 mg/kg	103	80.0	120	----
Nickel	7440-02-0	E440	0.2	mg/kg	5 mg/kg	104	80.0	120	----
Phosphorus	7723-14-0	E440	10	mg/kg	100 mg/kg	106	80.0	120	----
Potassium	7440-09-7	E440	20	mg/kg	500 mg/kg	104	80.0	120	----
Rubidium	7440-17-7	E440	0.05	mg/kg	1 mg/kg	100	80.0	120	----
Selenium	7782-49-2	E440	0.05	mg/kg	10 mg/kg	101	80.0	120	----



Sub-Matrix: Biota					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 1606771) - continued									
Sodium	7440-23-5	E440	20	mg/kg	500 mg/kg	105	80.0	120	----
Strontium	7440-24-6	E440	0.05	mg/kg	2.5 mg/kg	104	80.0	120	----
Tellurium	13494-80-9	E440	0.02	mg/kg	1 mg/kg	100	80.0	120	----
Thallium	7440-28-0	E440	0.002	mg/kg	10 mg/kg	95.0	80.0	120	----
Tin	7440-31-5	E440	0.1	mg/kg	5 mg/kg	102	80.0	120	----
Uranium	7440-61-1	E440	0.002	mg/kg	0.05 mg/kg	98.0	80.0	120	----
Vanadium	7440-62-2	E440	0.1	mg/kg	5 mg/kg	104	80.0	120	----
Zinc	7440-66-6	E440	0.5	mg/kg	5 mg/kg	104	80.0	120	----
Zirconium	7440-67-7	E440	0.2	mg/kg	1 mg/kg	101	80.0	120	----



Reference Material (RM) Report

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

Sub-Matrix:

Sub-Matrix:					Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method			Low	High	
Metals (QCLot: 1606751)									
QC-1606751-003	RM	Mercury	7439-97-6	E510A	0.281 mg/kg wwt	103	70.0	130	----
Metals (QCLot: 1606752)									
QC-1606752-003	RM	Aluminum	7429-90-5	E440A	147 mg/kg wwt	84.8	70.0	130	----
QC-1606752-003	RM	Arsenic	7440-38-2	E440A	14.5 mg/kg wwt	100	70.0	130	----
QC-1606752-003	RM	Barium	7440-39-3	E440A	0.352 mg/kg wwt	102	70.0	130	----
QC-1606752-003	RM	Boron	7440-42-8	E440A	3.47 mg/kg wwt	96.6	70.0	130	----
QC-1606752-003	RM	Cadmium	7440-43-9	E440A	0.153 mg/kg wwt	102	70.0	130	----
QC-1606752-003	RM	Calcium	7440-70-2	E440A	2010 mg/kg wwt	104	70.0	130	----
QC-1606752-003	RM	Cesium	7440-46-2	E440A	0.089 mg/kg wwt	97.6	70.0	130	----
QC-1606752-003	RM	Chromium	7440-47-3	E440A	0.453 mg/kg wwt	91.7	70.0	130	----
QC-1606752-003	RM	Cobalt	7440-48-4	E440A	0.057 mg/kg wwt	100	65.0	135	----
QC-1606752-003	RM	Copper	7440-50-8	E440A	3.3 mg/kg wwt	102	70.0	130	----
QC-1606752-003	RM	Iron	7439-89-6	E440A	102 mg/kg wwt	96.0	70.0	130	----
QC-1606752-003	RM	Lead	7439-92-1	E440A	0.058 mg/kg wwt	99.1	70.0	130	----
QC-1606752-003	RM	Magnesium	7439-95-4	E440A	899 mg/kg wwt	93.8	70.0	130	----
QC-1606752-003	RM	Manganese	7439-96-5	E440A	0.948 mg/kg wwt	96.2	70.0	130	----
QC-1606752-003	RM	Molybdenum	7439-98-7	E440A	0.134 mg/kg wwt	102	70.0	130	----
QC-1606752-003	RM	Nickel	7440-02-0	E440A	0.33 mg/kg wwt	95.1	40.0	160	----
QC-1606752-003	RM	Phosphorus	7723-14-0	E440A	6700 mg/kg wwt	99.4	70.0	130	----
QC-1606752-003	RM	Potassium	7440-09-7	E440A	11600 mg/kg wwt	104	70.0	130	----
QC-1606752-003	RM	Rubidium	7440-17-7	E440A	2.53 mg/kg wwt	99.1	70.0	130	----
QC-1606752-003	RM	Selenium	7782-49-2	E440A	2.48 mg/kg wwt	104	70.0	130	----
QC-1606752-003	RM	Sodium	7440-23-5	E440A	9620 mg/kg wwt	100	70.0	130	----
QC-1606752-003	RM	Strontium	7440-24-6	E440A	10.6 mg/kg wwt	97.4	70.0	130	----
QC-1606752-003	RM	Vanadium	7440-62-2	E440A	0.269 mg/kg wwt	88.8	70.0	130	----
QC-1606752-003	RM	Zinc	7440-66-6	E440A	28.7 mg/kg wwt	105	70.0	130	----
Metals (QCLot: 1606753)									
QC-1606753-003	RM	Aluminum	7429-90-5	E440	147 mg/kg	84.8	70.0	130	----
QC-1606753-003	RM	Arsenic	7440-38-2	E440	14.5 mg/kg	100	70.0	130	----
QC-1606753-003	RM	Barium	7440-39-3	E440	0.352 mg/kg	102	70.0	130	----
QC-1606753-003	RM	Boron	7440-42-8	E440	3.47 mg/kg	96.6	70.0	130	----
QC-1606753-003	RM	Cadmium	7440-43-9	E440	0.153 mg/kg	102	70.0	130	----
QC-1606753-003	RM	Calcium	7440-70-2	E440	2010 mg/kg	104	70.0	130	----



Sub-Matrix:					Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method					
Metals (QCLot: 1606753) - continued									
QC-1606753-003	RM	Cesium	7440-46-2	E440	0.089 mg/kg	97.6	70.0	130	----
QC-1606753-003	RM	Chromium	7440-47-3	E440	0.453 mg/kg	91.7	70.0	130	----
QC-1606753-003	RM	Cobalt	7440-48-4	E440	0.057 mg/kg	100	65.0	135	----
QC-1606753-003	RM	Copper	7440-50-8	E440	3.3 mg/kg	102	70.0	130	----
QC-1606753-003	RM	Iron	7439-89-6	E440	102 mg/kg	96.0	70.0	130	----
QC-1606753-003	RM	Lead	7439-92-1	E440	0.058 mg/kg	99.1	70.0	130	----
QC-1606753-003	RM	Magnesium	7439-95-4	E440	899 mg/kg	93.8	70.0	130	----
QC-1606753-003	RM	Manganese	7439-96-5	E440	0.948 mg/kg	96.2	70.0	130	----
QC-1606753-003	RM	Molybdenum	7439-98-7	E440	0.134 mg/kg	102	70.0	130	----
QC-1606753-003	RM	Nickel	7440-02-0	E440	0.33 mg/kg	95.1	40.0	160	----
QC-1606753-003	RM	Phosphorus	7723-14-0	E440	6700 mg/kg	99.4	70.0	130	----
QC-1606753-003	RM	Potassium	7440-09-7	E440	11600 mg/kg	104	70.0	130	----
QC-1606753-003	RM	Rubidium	7440-17-7	E440	2.53 mg/kg	99.1	70.0	130	----
QC-1606753-003	RM	Selenium	7782-49-2	E440	2.48 mg/kg	104	70.0	130	----
QC-1606753-003	RM	Sodium	7440-23-5	E440	9620 mg/kg	100	70.0	130	----
QC-1606753-003	RM	Strontium	7440-24-6	E440	10.6 mg/kg	97.4	70.0	130	----
QC-1606753-003	RM	Vanadium	7440-62-2	E440	0.269 mg/kg	88.8	70.0	130	----
QC-1606753-003	RM	Zinc	7440-66-6	E440	28.7 mg/kg	105	70.0	130	----
Metals (QCLot: 1606754)									
QC-1606754-003	RM	Mercury	7439-97-6	E510	0.281 mg/kg	103	70.0	130	----
Metals (QCLot: 1606764)									
QC-1606764-003	RM	Mercury	7439-97-6	E510	0.281 mg/kg	99.1	70.0	130	----
Metals (QCLot: 1606765)									
QC-1606765-003	RM	Mercury	7439-97-6	E510A	0.281 mg/kg wwt	99.1	70.0	130	----
Metals (QCLot: 1606766)									
QC-1606766-003	RM	Aluminum	7429-90-5	E440A	147 mg/kg wwt	94.5	70.0	130	----
QC-1606766-003	RM	Arsenic	7440-38-2	E440A	14.5 mg/kg wwt	97.0	70.0	130	----
QC-1606766-003	RM	Barium	7440-39-3	E440A	0.352 mg/kg wwt	106	70.0	130	----
QC-1606766-003	RM	Boron	7440-42-8	E440A	3.47 mg/kg wwt	94.6	70.0	130	----
QC-1606766-003	RM	Cadmium	7440-43-9	E440A	0.153 mg/kg wwt	100	70.0	130	----
QC-1606766-003	RM	Calcium	7440-70-2	E440A	2010 mg/kg wwt	104	70.0	130	----
QC-1606766-003	RM	Cesium	7440-46-2	E440A	0.089 mg/kg wwt	99.1	70.0	130	----
QC-1606766-003	RM	Chromium	7440-47-3	E440A	0.453 mg/kg wwt	102	70.0	130	----
QC-1606766-003	RM	Cobalt	7440-48-4	E440A	0.057 mg/kg wwt	102	65.0	135	----
QC-1606766-003	RM	Copper	7440-50-8	E440A	3.3 mg/kg wwt	99.6	70.0	130	----
QC-1606766-003	RM	Iron	7439-89-6	E440A	102 mg/kg wwt	98.8	70.0	130	----
QC-1606766-003	RM	Lead	7439-92-1	E440A	0.058 mg/kg wwt	96.1	70.0	130	----



Sub-Matrix:					Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method					
Metals (QCLot: 1606766) - continued									
QC-1606766-003	RM	Magnesium	7439-95-4	E440A	899 mg/kg wwt	95.3	70.0	130	----
QC-1606766-003	RM	Manganese	7439-96-5	E440A	0.948 mg/kg wwt	99.0	70.0	130	----
QC-1606766-003	RM	Molybdenum	7439-98-7	E440A	0.134 mg/kg wwt	98.2	70.0	130	----
QC-1606766-003	RM	Nickel	7440-02-0	E440A	0.33 mg/kg wwt	97.8	40.0	160	----
QC-1606766-003	RM	Phosphorus	7723-14-0	E440A	6700 mg/kg wwt	98.3	70.0	130	----
QC-1606766-003	RM	Potassium	7440-09-7	E440A	11600 mg/kg wwt	99.8	70.0	130	----
QC-1606766-003	RM	Rubidium	7440-17-7	E440A	2.53 mg/kg wwt	96.3	70.0	130	----
QC-1606766-003	RM	Selenium	7782-49-2	E440A	2.48 mg/kg wwt	98.6	70.0	130	----
QC-1606766-003	RM	Sodium	7440-23-5	E440A	9620 mg/kg wwt	98.9	70.0	130	----
QC-1606766-003	RM	Strontium	7440-24-6	E440A	10.6 mg/kg wwt	97.2	70.0	130	----
QC-1606766-003	RM	Vanadium	7440-62-2	E440A	0.269 mg/kg wwt	95.0	70.0	130	----
QC-1606766-003	RM	Zinc	7440-66-6	E440A	28.7 mg/kg wwt	101	70.0	130	----
Metals (QCLot: 1606767)									
QC-1606767-003	RM	Aluminum	7429-90-5	E440	147 mg/kg	94.5	70.0	130	----
QC-1606767-003	RM	Arsenic	7440-38-2	E440	14.5 mg/kg	97.0	70.0	130	----
QC-1606767-003	RM	Barium	7440-39-3	E440	0.352 mg/kg	106	70.0	130	----
QC-1606767-003	RM	Boron	7440-42-8	E440	3.47 mg/kg	94.6	70.0	130	----
QC-1606767-003	RM	Cadmium	7440-43-9	E440	0.153 mg/kg	100	70.0	130	----
QC-1606767-003	RM	Calcium	7440-70-2	E440	2010 mg/kg	104	70.0	130	----
QC-1606767-003	RM	Cesium	7440-46-2	E440	0.089 mg/kg	99.1	70.0	130	----
QC-1606767-003	RM	Chromium	7440-47-3	E440	0.453 mg/kg	102	70.0	130	----
QC-1606767-003	RM	Cobalt	7440-48-4	E440	0.057 mg/kg	102	65.0	135	----
QC-1606767-003	RM	Copper	7440-50-8	E440	3.3 mg/kg	99.6	70.0	130	----
QC-1606767-003	RM	Iron	7439-89-6	E440	102 mg/kg	98.8	70.0	130	----
QC-1606767-003	RM	Lead	7439-92-1	E440	0.058 mg/kg	96.1	70.0	130	----
QC-1606767-003	RM	Magnesium	7439-95-4	E440	899 mg/kg	95.3	70.0	130	----
QC-1606767-003	RM	Manganese	7439-96-5	E440	0.948 mg/kg	99.0	70.0	130	----
QC-1606767-003	RM	Molybdenum	7439-98-7	E440	0.134 mg/kg	98.2	70.0	130	----
QC-1606767-003	RM	Nickel	7440-02-0	E440	0.33 mg/kg	97.8	40.0	160	----
QC-1606767-003	RM	Phosphorus	7723-14-0	E440	6700 mg/kg	98.3	70.0	130	----
QC-1606767-003	RM	Potassium	7440-09-7	E440	11600 mg/kg	99.8	70.0	130	----
QC-1606767-003	RM	Rubidium	7440-17-7	E440	2.53 mg/kg	96.3	70.0	130	----
QC-1606767-003	RM	Selenium	7782-49-2	E440	2.48 mg/kg	98.6	70.0	130	----
QC-1606767-003	RM	Sodium	7440-23-5	E440	9620 mg/kg	98.9	70.0	130	----
QC-1606767-003	RM	Strontium	7440-24-6	E440	10.6 mg/kg	97.2	70.0	130	----
QC-1606767-003	RM	Vanadium	7440-62-2	E440	0.269 mg/kg	95.0	70.0	130	----
QC-1606767-003	RM	Zinc	7440-66-6	E440	28.7 mg/kg	101	70.0	130	----



Sub-Matrix:					Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method					
Metals (QCLot: 1606768)									
QC-1606768-003	RM	Mercury	7439-97-6	E510A	0.281 mg/kg wwt	92.4	70.0	130	----
Metals (QCLot: 1606769)									
QC-1606769-003	RM	Mercury	7439-97-6	E510	0.281 mg/kg	92.4	70.0	130	----
Metals (QCLot: 1606770)									
QC-1606770-003	RM	Aluminum	7429-90-5	E440A	147 mg/kg wwt	83.6	70.0	130	----
QC-1606770-003	RM	Arsenic	7440-38-2	E440A	14.5 mg/kg wwt	98.2	70.0	130	----
QC-1606770-003	RM	Barium	7440-39-3	E440A	0.352 mg/kg wwt	97.9	70.0	130	----
QC-1606770-003	RM	Boron	7440-42-8	E440A	3.47 mg/kg wwt	97.6	70.0	130	----
QC-1606770-003	RM	Cadmium	7440-43-9	E440A	0.153 mg/kg wwt	99.7	70.0	130	----
QC-1606770-003	RM	Calcium	7440-70-2	E440A	2010 mg/kg wwt	96.7	70.0	130	----
QC-1606770-003	RM	Cesium	7440-46-2	E440A	0.089 mg/kg wwt	96.2	70.0	130	----
QC-1606770-003	RM	Chromium	7440-47-3	E440A	0.453 mg/kg wwt	101	70.0	130	----
QC-1606770-003	RM	Cobalt	7440-48-4	E440A	0.057 mg/kg wwt	98.0	65.0	135	----
QC-1606770-003	RM	Copper	7440-50-8	E440A	3.3 mg/kg wwt	102	70.0	130	----
QC-1606770-003	RM	Iron	7439-89-6	E440A	102 mg/kg wwt	92.0	70.0	130	----
QC-1606770-003	RM	Lead	7439-92-1	E440A	0.058 mg/kg wwt	96.3	70.0	130	----
QC-1606770-003	RM	Magnesium	7439-95-4	E440A	899 mg/kg wwt	92.5	70.0	130	----
QC-1606770-003	RM	Manganese	7439-96-5	E440A	0.948 mg/kg wwt	97.8	70.0	130	----
QC-1606770-003	RM	Molybdenum	7439-98-7	E440A	0.134 mg/kg wwt	97.3	70.0	130	----
QC-1606770-003	RM	Nickel	7440-02-0	E440A	0.33 mg/kg wwt	98.7	40.0	160	----
QC-1606770-003	RM	Phosphorus	7723-14-0	E440A	6700 mg/kg wwt	97.0	70.0	130	----
QC-1606770-003	RM	Potassium	7440-09-7	E440A	11600 mg/kg wwt	101	70.0	130	----
QC-1606770-003	RM	Rubidium	7440-17-7	E440A	2.53 mg/kg wwt	95.4	70.0	130	----
QC-1606770-003	RM	Selenium	7782-49-2	E440A	2.48 mg/kg wwt	98.2	70.0	130	----
QC-1606770-003	RM	Sodium	7440-23-5	E440A	9620 mg/kg wwt	102	70.0	130	----
QC-1606770-003	RM	Strontium	7440-24-6	E440A	10.6 mg/kg wwt	96.1	70.0	130	----
QC-1606770-003	RM	Vanadium	7440-62-2	E440A	0.269 mg/kg wwt	86.5	70.0	130	----
QC-1606770-003	RM	Zinc	7440-66-6	E440A	28.7 mg/kg wwt	104	70.0	130	----
Metals (QCLot: 1606771)									
QC-1606771-003	RM	Aluminum	7429-90-5	E440	147 mg/kg	83.6	70.0	130	----
QC-1606771-003	RM	Arsenic	7440-38-2	E440	14.5 mg/kg	98.2	70.0	130	----
QC-1606771-003	RM	Barium	7440-39-3	E440	0.352 mg/kg	97.9	70.0	130	----
QC-1606771-003	RM	Boron	7440-42-8	E440	3.47 mg/kg	97.6	70.0	130	----
QC-1606771-003	RM	Cadmium	7440-43-9	E440	0.153 mg/kg	99.7	70.0	130	----
QC-1606771-003	RM	Calcium	7440-70-2	E440	2010 mg/kg	96.7	70.0	130	----
QC-1606771-003	RM	Cesium	7440-46-2	E440	0.089 mg/kg	96.2	70.0	130	----
QC-1606771-003	RM	Chromium	7440-47-3	E440	0.453 mg/kg	101	70.0	130	----



Sub-Matrix:					Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method					
Metals (QCLot: 1606771) - continued									
QC-1606771-003	RM	Cobalt	7440-48-4	E440	0.057 mg/kg	98.0	65.0	135	----
QC-1606771-003	RM	Copper	7440-50-8	E440	3.3 mg/kg	102	70.0	130	----
QC-1606771-003	RM	Iron	7439-89-6	E440	102 mg/kg	92.0	70.0	130	----
QC-1606771-003	RM	Lead	7439-92-1	E440	0.058 mg/kg	96.3	70.0	130	----
QC-1606771-003	RM	Magnesium	7439-95-4	E440	899 mg/kg	92.5	70.0	130	----
QC-1606771-003	RM	Manganese	7439-96-5	E440	0.948 mg/kg	97.8	70.0	130	----
QC-1606771-003	RM	Molybdenum	7439-98-7	E440	0.134 mg/kg	97.3	70.0	130	----
QC-1606771-003	RM	Nickel	7440-02-0	E440	0.33 mg/kg	98.7	40.0	160	----
QC-1606771-003	RM	Phosphorus	7723-14-0	E440	6700 mg/kg	97.0	70.0	130	----
QC-1606771-003	RM	Potassium	7440-09-7	E440	11600 mg/kg	101	70.0	130	----
QC-1606771-003	RM	Rubidium	7440-17-7	E440	2.53 mg/kg	95.4	70.0	130	----
QC-1606771-003	RM	Selenium	7782-49-2	E440	2.48 mg/kg	98.2	70.0	130	----
QC-1606771-003	RM	Sodium	7440-23-5	E440	9620 mg/kg	102	70.0	130	----
QC-1606771-003	RM	Strontium	7440-24-6	E440	10.6 mg/kg	96.1	70.0	130	----
QC-1606771-003	RM	Vanadium	7440-62-2	E440	0.269 mg/kg	86.5	70.0	130	----
QC-1606771-003	RM	Zinc	7440-66-6	E440	28.7 mg/kg	104	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: YL2400878	Page	: 1 of 32
Client	: WSP Canada Inc.	Laboratory	: ALS Environmental - Yellowknife
Contact	: Shannon Landry	Account Manager	: Oliver Gregg
Address	: 189 Mackenzie Blvd Fort McMurray AB Canada	Address	: 102-487 Range Lake Road Yellowknife, Northwest Territories Canada X1A 3R9
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: ----	Date Samples Received	: 11-Jul-2024 13:45
PO	: CA0035158.8381 task 5000.30	Issue Date	: 04-Mar-2025 08:08
C-O-C number	: ----		
Sampler	: Shannon O'Dwyer		
Site	: ----		
Quote number	: Tissue Samples		
No. of samples received	: 48		
No. of samples analysed	: 48		

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples
Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: Biota

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Metals	YL2400878-019	SG24-00-05	Arsenic	7440-38-2	E440	42.0 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	YL2400878-019	SG24-00-05	Arsenic	7440-38-2	E440A	42.0 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.

Result Qualifiers

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



Analysis Holding Time Compliance

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

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

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

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

Matrix: **Biota**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag SG24-00-01	E510	09-Jul-2024	21-Aug-2024	365 days	43 days	✓	27-Aug-2024	365 days	49 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag SG24-00-03	E510	09-Jul-2024	21-Aug-2024	365 days	43 days	✓	27-Aug-2024	365 days	49 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag SG24-00-06	E510	09-Jul-2024	21-Aug-2024	365 days	43 days	✓	27-Aug-2024	365 days	49 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag SG24-00-07	E510	09-Jul-2024	21-Aug-2024	365 days	43 days	✓	27-Aug-2024	365 days	49 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag SG24-15K-04	E510	08-Jul-2024	21-Aug-2024	365 days	44 days	✓	27-Aug-2024	365 days	51 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag SG24-5K-04	E510	08-Jul-2024	21-Aug-2024	365 days	44 days	✓	27-Aug-2024	365 days	51 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag SG24-5K-04B	E510	08-Jul-2024	21-Aug-2024	365 days	44 days	✓	27-Aug-2024	365 days	51 days	✓



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Page : 12 of 32
 Work Order : YL2400878
 Client : WSP Canada Inc.
 Project : ----



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LDPE bag SG24-1K-04	E510A	05-Jul-2024	21-Aug-2024	365 days	47 days	✓	27-Aug-2024	365 days	53 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SG24-500-01	E510A	05-Jul-2024	21-Aug-2024	365 days	47 days	✓	27-Aug-2024	365 days	53 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SG24-500-04	E510A	05-Jul-2024	21-Aug-2024	365 days	47 days	✓	27-Aug-2024	365 days	53 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SG24-5K-02	E510A	05-Jul-2024	21-Aug-2024	365 days	47 days	✓	27-Aug-2024	365 days	53 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SG24-00-04	E510A	04-Jul-2024	21-Aug-2024	365 days	48 days	✓	27-Aug-2024	365 days	53 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SG24-150-05	E510A	04-Jul-2024	21-Aug-2024	365 days	48 days	✓	27-Aug-2024	365 days	53 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SG24-1K-05	E510A	04-Jul-2024	21-Aug-2024	365 days	48 days	✓	27-Aug-2024	365 days	53 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SG24-500-05	E510A	04-Jul-2024	21-Aug-2024	365 days	48 days	✓	27-Aug-2024	365 days	53 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SG24-5K-05	E510A	04-Jul-2024	21-Aug-2024	365 days	48 days	✓	27-Aug-2024	365 days	53 days	✓



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Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SG24-15K-01	E510A	04-Jul-2024	21-Aug-2024	365 days	48 days	✓	27-Aug-2024	365 days	54 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SG24-15K-02	E510A	04-Jul-2024	21-Aug-2024	365 days	48 days	✓	27-Aug-2024	365 days	54 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SG24-15K-05	E510A	04-Jul-2024	21-Aug-2024	365 days	48 days	✓	27-Aug-2024	365 days	54 days	✓
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Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SM24-00-01	E510A	03-Jul-2024	21-Aug-2024	365 days	49 days	✓	27-Aug-2024	365 days	54 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SM24-00-02	E510A	03-Jul-2024	21-Aug-2024	365 days	49 days	✓	27-Aug-2024	365 days	54 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SM24-00-05	E510A	03-Jul-2024	21-Aug-2024	365 days	49 days	✓	27-Aug-2024	365 days	54 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag SM24-00-03	E510A	03-Jul-2024	21-Aug-2024	365 days	49 days	✓	27-Aug-2024	365 days	55 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SG24-00-01	E440	09-Jul-2024	21-Aug-2024	730 days	43 days	✓	26-Aug-2024	730 days	48 days	✓



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				Rec	Actual			Rec	Actual	
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SG24-00-03	E440	09-Jul-2024	21-Aug-2024	730 days	43 days	✓	26-Aug-2024	730 days	48 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SG24-00-06	E440	09-Jul-2024	21-Aug-2024	730 days	43 days	✓	26-Aug-2024	730 days	48 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SG24-00-07	E440	09-Jul-2024	21-Aug-2024	730 days	43 days	✓	26-Aug-2024	730 days	48 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SG24-15K-04	E440	08-Jul-2024	21-Aug-2024	730 days	44 days	✓	26-Aug-2024	730 days	49 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SG24-5K-04	E440	08-Jul-2024	21-Aug-2024	730 days	44 days	✓	26-Aug-2024	730 days	49 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SG24-5K-04B	E440	08-Jul-2024	21-Aug-2024	730 days	44 days	✓	26-Aug-2024	730 days	49 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SM24-150-01	E440	07-Jul-2024	21-Aug-2024	730 days	45 days	✓	26-Aug-2024	730 days	50 days	✓
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LDPE bag SM24-150-02	E440	07-Jul-2024	21-Aug-2024	730 days	45 days	✓	26-Aug-2024	730 days	50 days	✓
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				Rec	Actual			Rec	Actual	
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SM24-150-03B	E440	07-Jul-2024	21-Aug-2024	730 days	45 days	✓	26-Aug-2024	730 days	50 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SM24-150-04	E440	07-Jul-2024	21-Aug-2024	730 days	45 days	✓	26-Aug-2024	730 days	50 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SM24-150-04NEW	E440	07-Jul-2024	21-Aug-2024	730 days	45 days	✓	26-Aug-2024	730 days	50 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SM24-150-04NEWB	E440	07-Jul-2024	21-Aug-2024	730 days	45 days	✓	26-Aug-2024	730 days	50 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SG24-150-02	E440	06-Jul-2024	21-Aug-2024	730 days	46 days	✓	26-Aug-2024	730 days	51 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SG24-150-03	E440	06-Jul-2024	21-Aug-2024	730 days	46 days	✓	26-Aug-2024	730 days	51 days	✓
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			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SG24-1K-02	E440	06-Jul-2024	21-Aug-2024	730 days	46 days	✓	26-Aug-2024	730 days	51 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag SG24-1K-03	E440	06-Jul-2024	21-Aug-2024	730 days	46 days	✓	26-Aug-2024	730 days	51 days	✓
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LDPE bag SG24-500-02B	E440	06-Jul-2024	21-Aug-2024	730 days	46 days	✓	26-Aug-2024	730 days	51 days	✓
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Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-150-01	E440A	05-Jul-2024	21-Aug-2024	730 days	47 days	✓	26-Aug-2024	730 days	52 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-150-04	E440A	05-Jul-2024	21-Aug-2024	730 days	47 days	✓	26-Aug-2024	730 days	52 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-1K-01	E440A	05-Jul-2024	21-Aug-2024	730 days	47 days	✓	26-Aug-2024	730 days	52 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-1K-04	E440A	05-Jul-2024	21-Aug-2024	730 days	47 days	✓	26-Aug-2024	730 days	52 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-500-01	E440A	05-Jul-2024	21-Aug-2024	730 days	47 days	✓	26-Aug-2024	730 days	52 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-500-04	E440A	05-Jul-2024	21-Aug-2024	730 days	47 days	✓	26-Aug-2024	730 days	52 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-5K-02	E440A	05-Jul-2024	21-Aug-2024	730 days	47 days	✓	26-Aug-2024	730 days	52 days	✓



Matrix: **Biota** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-1K-01B	E440A	05-Jul-2024	21-Aug-2024	730 days	47 days	✓	26-Aug-2024	730 days	53 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-00-04	E440A	04-Jul-2024	21-Aug-2024	730 days	48 days	✓	26-Aug-2024	730 days	53 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-150-05	E440A	04-Jul-2024	21-Aug-2024	730 days	48 days	✓	26-Aug-2024	730 days	53 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-15K-01	E440A	04-Jul-2024	21-Aug-2024	730 days	48 days	✓	26-Aug-2024	730 days	53 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-15K-02	E440A	04-Jul-2024	21-Aug-2024	730 days	48 days	✓	26-Aug-2024	730 days	53 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-15K-05	E440A	04-Jul-2024	21-Aug-2024	730 days	48 days	✓	26-Aug-2024	730 days	53 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-1K-05	E440A	04-Jul-2024	21-Aug-2024	730 days	48 days	✓	26-Aug-2024	730 days	53 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-500-05	E440A	04-Jul-2024	21-Aug-2024	730 days	48 days	✓	26-Aug-2024	730 days	53 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-5K-01	E440A	04-Jul-2024	21-Aug-2024	730 days	48 days	✓	26-Aug-2024	730 days	53 days	✓



Matrix: **Biota** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SG24-5K-05	E440A	04-Jul-2024	21-Aug-2024	730 days	48 days	✓	26-Aug-2024	730 days	53 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SM24-00-01	E440A	03-Jul-2024	21-Aug-2024	730 days	49 days	✓	26-Aug-2024	730 days	54 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SM24-00-02	E440A	03-Jul-2024	21-Aug-2024	730 days	49 days	✓	26-Aug-2024	730 days	54 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SM24-00-03	E440A	03-Jul-2024	21-Aug-2024	730 days	49 days	✓	26-Aug-2024	730 days	54 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag SM24-00-05	E440A	03-Jul-2024	21-Aug-2024	730 days	49 days	✓	26-Aug-2024	730 days	54 days	✓
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-00-01	E144	09-Jul-2024	----	----	----		18-Aug-2024	----	40 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-00-03	E144	09-Jul-2024	----	----	----		18-Aug-2024	----	40 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-00-06	E144	09-Jul-2024	----	----	----		18-Aug-2024	----	40 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-00-07	E144	09-Jul-2024	----	----	----		18-Aug-2024	----	40 days	



Matrix: **Biota** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-15K-04	E144	08-Jul-2024	----	----	----		18-Aug-2024	----	41 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-5K-04	E144	08-Jul-2024	----	----	----		18-Aug-2024	----	41 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-5K-04B	E144	08-Jul-2024	----	----	----		18-Aug-2024	----	41 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SM24-150-01	E144	07-Jul-2024	----	----	----		17-Aug-2024	----	41 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-150-02	E144	06-Jul-2024	----	----	----		17-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-150-03	E144	06-Jul-2024	----	----	----		17-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-150-03B	E144	06-Jul-2024	----	----	----		17-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-15K-03	E144	06-Jul-2024	----	----	----		17-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-15K-03B	E144	06-Jul-2024	----	----	----		17-Aug-2024	----	42 days	



Matrix: **Biota** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-1K-02	E144	06-Jul-2024	----	----	----		17-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-1K-03	E144	06-Jul-2024	----	----	----		17-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-500-02	E144	06-Jul-2024	----	----	----		17-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-500-02B	E144	06-Jul-2024	----	----	----		17-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-500-03	E144	06-Jul-2024	----	----	----		17-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-5K-03	E144	06-Jul-2024	----	----	----		17-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SM24-150-02	E144	07-Jul-2024	----	----	----		18-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SM24-150-03	E144	07-Jul-2024	----	----	----		18-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SM24-150-03B	E144	07-Jul-2024	----	----	----		18-Aug-2024	----	42 days	



Matrix: **Biota** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SM24-150-04	E144	07-Jul-2024	----	----	----		18-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SM24-150-04NEW	E144	07-Jul-2024	----	----	----		18-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SM24-150-04NEWB	E144	07-Jul-2024	----	----	----		18-Aug-2024	----	42 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-00-05	E144	05-Jul-2024	----	----	----		17-Aug-2024	----	43 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-00-05B	E144	05-Jul-2024	----	----	----		17-Aug-2024	----	43 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-150-01	E144	05-Jul-2024	----	----	----		17-Aug-2024	----	43 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-150-04	E144	05-Jul-2024	----	----	----		17-Aug-2024	----	43 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-1K-01	E144	05-Jul-2024	----	----	----		17-Aug-2024	----	43 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-1K-01B	E144	05-Jul-2024	----	----	----		17-Aug-2024	----	43 days	



Matrix: **Biota** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-1K-04	E144	05-Jul-2024	----	----	----		17-Aug-2024	----	43 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-500-01	E144	05-Jul-2024	----	----	----		17-Aug-2024	----	43 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-500-04	E144	05-Jul-2024	----	----	----		17-Aug-2024	----	43 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-5K-02	E144	05-Jul-2024	----	----	----		17-Aug-2024	----	43 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-00-04	E144	04-Jul-2024	----	----	----		17-Aug-2024	----	44 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-150-05	E144	04-Jul-2024	----	----	----		17-Aug-2024	----	44 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-15K-01	E144	04-Jul-2024	----	----	----		17-Aug-2024	----	44 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-15K-02	E144	04-Jul-2024	----	----	----		17-Aug-2024	----	44 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-15K-05	E144	04-Jul-2024	----	----	----		17-Aug-2024	----	44 days	

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 Work Order : YL2400878
 Client : WSP Canada Inc.
 Project : ----



Matrix: **Biota** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-1K-05	E144	04-Jul-2024	----	----	----		17-Aug-2024	----	44 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-500-05	E144	04-Jul-2024	----	----	----		17-Aug-2024	----	44 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-5K-01	E144	04-Jul-2024	----	----	----		17-Aug-2024	----	44 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SG24-5K-05	E144	04-Jul-2024	----	----	----		17-Aug-2024	----	44 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SM24-00-01	E144	03-Jul-2024	----	----	----		17-Aug-2024	----	45 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SM24-00-02	E144	03-Jul-2024	----	----	----		17-Aug-2024	----	45 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SM24-00-03	E144	03-Jul-2024	----	----	----		17-Aug-2024	----	45 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag SM24-00-05	E144	03-Jul-2024	----	----	----		17-Aug-2024	----	45 days	

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

Matrix: **Biota**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Moisture Content by Gravimetry	E144	1601748	3	48	6.2	5.0	✔
Metals in Biota by CRC ICPMS (DRY units, Routine)	E440	1606753	3	48	6.2	5.0	✔
Metals in Biota by CRC ICPMS (WET units, Routine)	E440A	1606752	3	48	6.2	5.0	✔
Mercury in Biota by CVAAS (DRY units, Routine)	E510	1606754	3	48	6.2	5.0	✔
Mercury in Biota by CVAAS (WET units, Routine)	E510A	1606751	3	48	6.2	5.0	✔
Laboratory Control Samples (LCS)							
Moisture Content by Gravimetry	E144	1601748	3	48	6.2	5.0	✔
Metals in Biota by CRC ICPMS (DRY units, Routine)	E440	1606753	6	48	12.5	10.0	✔
Metals in Biota by CRC ICPMS (WET units, Routine)	E440A	1606752	6	48	12.5	10.0	✔
Mercury in Biota by CVAAS (DRY units, Routine)	E510	1606754	6	48	12.5	10.0	✔
Mercury in Biota by CVAAS (WET units, Routine)	E510A	1606751	6	48	12.5	10.0	✔
Method Blanks (MB)							
Moisture Content by Gravimetry	E144	1601748	3	48	6.2	5.0	✔
Metals in Biota by CRC ICPMS (DRY units, Routine)	E440	1606753	3	48	6.2	5.0	✔
Metals in Biota by CRC ICPMS (WET units, Routine)	E440A	1606752	3	48	6.2	5.0	✔
Mercury in Biota by CVAAS (DRY units, Routine)	E510	1606754	3	48	6.2	5.0	✔
Mercury in Biota by CVAAS (WET units, Routine)	E510A	1606751	3	48	6.2	5.0	✔



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Moisture Content by Gravimetry	E144 ALS Environmental - Vancouver	Biota	Puget Sound Water Quality Authority/CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Metals in Biota by CRC ICPMS (DRY units, Routine)	E440 ALS Environmental - Vancouver	Biota	EPA 200.3/6020B (mod)	Tissue samples are homogenized and sub-sampled prior to hotblock digestion with HNO ₃ , HCl, and H ₂ O ₂ . Analysis is by Collision/Reaction Cell ICPMS. Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.
Metals in Biota by CRC ICPMS (WET units, Routine)	E440A ALS Environmental - Vancouver	Biota	EPA 200.3/6020B (mod)	Tissue samples are homogenized and sub-sampled prior to hotblock digestion with HNO ₃ , HCl, and H ₂ O ₂ . Analysis is by Collision/Reaction Cell ICPMS. Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.
Mercury in Biota by CVAAS (DRY units, Routine)	E510 ALS Environmental - Vancouver	Biota	EPA 200.3/1631 Appendix (mod)	Samples are homogenized and sub-sampled prior to hotblock digestion with HNO ₃ , HCl, and H ₂ O ₂ . Analysis is by CVAAS.
Mercury in Biota by CVAAS (WET units, Routine)	E510A ALS Environmental - Vancouver	Biota	EPA 200.3/1631 Appendix (mod)	Samples are homogenized and sub-sampled prior to hotblock digestion with HNO ₃ , HCl, and H ₂ O ₂ . Analysis is by CVAAS.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Metals and Mercury Biota Digestion (Routine)	EP440 ALS Environmental - Vancouver	Biota	EPA 200.3	This method uses a heated strong acid digestion with HNO ₃ , HCl, and H ₂ O ₂ and is intended to provide a conservative estimate of bio-available metals.

Table F-1: Summary of Field Duplicate Sample Results, 2024

Parameter	Unit	Detection Limit	SG24-1K-01		RPD	SG24-00-05		RPD	SG24-15K-03		RPD	SG24-500-02		RPD	SG24-150-03		RPD	SM24-150-03		RPD	SM24-00-04NEW		RPD	SG24-5K-04		RPD
			Sample	Duplicate		Sample	Duplicate		Sample	Duplicate		Sample	Duplicate		Sample	Duplicate		Sample	Duplicate		Sample	Duplicate		Sample	Duplicate	
			5-Jul-24	5-Jul-24		5-Jul-24	5-Jul-24		6-Jul-24	6-Jul-24		6-Jul-24	6-Jul-24		6-Jul-24	6-Jul-24		7-Jul-24	7-Jul-24		7-Jul-24	7-Jul-24		8-Jul-24	8-Jul-24	
Moisture	%	0.50	38.0	44.2	15%	39.6	37.1	7%	57.8	56.7	2%	47.7	55.5	15%	35.5	36.4	3%	31.1	32	3%	14.9	12.4	18%	29.7	32.4	9%
Total Metals																										
Aluminum	mg/kg dw	2.0	151	126	18%	483	433	11%	184	224	20%	236	217	8%	610	299	68%	560	141	120%	232	284	20%	145	467	105%
Antimony	mg/kg dw	0.010	<0.010	<0.010	-	0.016	0.012	29%	<0.010	<0.010	-	<0.010	<0.010	-	0.014	<0.010	-	<0.010	<0.010	-	0.03	0.035	15%	<0.010	0.011	-
Arsenic	mg/kg dw	0.020	0.16	0.142	12%	0.836	0.530	45%	0.161	0.173	7%	0.384	0.283	30%	0.877	0.490	57%	0.261	0.115	78%	0.341	0.449	27%	0.305	0.563	59%
Barium	mg/kg dw	0.050	35.1	37	5%	42.6	38.9	9%	33.6	37.4	11%	40.3	37.6	7%	57.6	29.0	66%	10.8	11.7	8%	53.7	54.7	2%	22.6	29.2	25%
Beryllium	mg/kg dw	0.010	<0.010	<0.010	-	0.022	0.021	5%	0.011	0.014	24%	0.01	0.013	26%	0.026	<0.010	-	0.024	<0.010	-	0.018	0.022	20%	<0.010	0.032	-
Bismuth	mg/kg dw	0.010	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	0.011	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-
Boron	mg/kg dw	1.0	1.6	1.8	12%	1.4	1.7	19%	1.6	1.3	21%	1.7	1.4	19%	1.7	1.4	19%	2.4	2.3	4%	3.9	3.6	8%	1.2	1.5	22%
Cadmium	mg/kg dw	0.0050	0.0678	0.0644	5%	0.0852	0.0701	19%	0.0567	0.0715	23%	0.099	0.106	7%	0.190	0.0506	116%	0.0282	0.0265	6%	0.0695	0.0512	30%	0.0688	0.0843	20%
Calcium	mg/kg dw	20	2,690	2,340	14%	3,900	3,380	14%	1,860	2,120	13%	2,720	2,520	8%	3,770	2,120	56%	1,400	1,980	34%	4,580	3,560	25%	1,830	2,620	36%
Cesium	mg/kg dw	0.0050	0.0489	0.0537	9%	0.0463	0.0454	2%	0.0402	0.0404	0%	0.0764	0.0663	14%	0.0857	0.141	49%	0.0546	0.0208	-	0.04	0.047	16%	0.0588	0.094	46%
Chromium	mg/kg dw	0.050	0.318	0.241	28%	1	0.882	13%	0.216	0.19	13%	0.489	0.41	18%	1.39	0.643	73%	1.34	0.324	122%	0.726	0.894	21%	0.273	0.462	51%
Cobalt	mg/kg dw	0.020	0.458	0.319	36%	2.04	1.77	14%	0.643	0.915	35%	0.654	0.717	9%	2.75	0.509	138%	0.349	0.179	64%	0.162	0.254	44%	1.77	3.73	71%
Copper	mg/kg dw	0.10	1.86	1.87	1%	4.2	3.92	7%	2.44	2.28	7%	2.47	2.13	15%	5.14	3.00	53%	2.14	1.82	16%	2.72	2.55	6%	2.66	6.26	81%
Iron	mg/kg dw	3.0	210	173	19%	741	655	12%	300	318	6%	322	281	14%	917	762	18%	705	184	117%	252	324	25%	201	846	123%
Lead	mg/kg dw	0.020	0.363	0.322	12%	0.849	0.624	31%	0.284	0.338	17%	0.4	0.355	12%	1.25	0.542	79%	0.363	0.188	64%	0.408	0.611	40%	0.300	0.534	56%
Lithium	mg/kg dw	0.50	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	0.50	<0.50	-	0.71	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-
Magnesium	mg/kg dw	2.0	645	605	6%	825	808	2%	453	515	13%	715	677	5%	840	556	41%	883	776	13%	994	997	0%	495	625	23%
Manganese	mg/kg dw	0.050	167	143	15%	150	202	30%	113	144	24%	135	130	4%	193	158	20%	88.2	124	34%	322	326	1%	183	142	25%
Mercury	mg/kg dw	0.0050	0.0689	0.0702	2%	0.0969	0.0766	23%	0.0674	0.0671	0%	0.0506	0.0479	5%	0.0955	0.104	9%	0.0482	0.0544	12%	0.0654	0.0784	18%	0.0706	0.0653	8%
Molybdenum	mg/kg dw	0.020	0.036	0.037	3%	0.063	0.056	12%	0.03	0.026	14%	0.059	0.035	-	0.082	0.037	-	0.123	0.119	3%	0.11	0.095	15%	0.068	0.107	-
Nickel	mg/kg dw	0.20	0.84	0.74	13%	2.96	2.7	9%	1.41	1.59	12%	2.22	1.99	11%	6.41	1.92	108%	1.07	0.60	-	0.51	0.60	16%	2.92	7.03	83%
Phosphorus	mg/kg dw	10	475	528	11%	548	528	4%	648	683	5%	796	811	2%	734	574	24%	695	702	1%	666	668	0%	395	398	1%
Potassium	mg/kg dw	20	1340	1250	7%	1240	1350	8%	1520	1520	0%	1640	1670	2%	1480	1250	17%	1620	1700	5%	1650	1460	12%	993	838	17%
Rubidium	mg/kg dw	0.050	4.02	3.87	4%	3.55	3.62	2%	5.34	5.16	3%	5.31	5.29	0%	3.79	3.51	8%	1.78	1.32	30%	1.45	1.44	1%	2.75	2.57	7%
Selenium	mg/kg dw	0.050	0.053	<0.050	-	0.08	0.069	15%	0.055	0.064	15%	<0.050	<0.050	-	0.082	0.055	39%	0.051	0.054	6%	0.073	0.082	12%	0.05	0.064	25%
Sodium	mg/kg dw	20	116	90	25%	100	104	4%	100	70	-	141	136	4%	142	90	-	206	165	22%	334	288	15%	54	70	26%
Strontium	mg/kg dw	0.050	9.68	8.27	16%	13.1	11.3	15%	6.86	7.57	10%	9.04	8.24	9%	15.3	4.96	102%	5.91	6.18	4%	14.7	15.4	5%	6.08	10.5	53%
Tellurium	mg/kg dw	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	-	<0.020	<0.020	-	<0.020	<0.020	-
Thallium	mg/kg dw	0.0020	0.0207	0.0189	9%	0.0126	0.0124	2%	0.0158	0.0115	-	0.0218	0.0183	17%	0.0132	0.0241	58%	0.006	0.0025	-	0.006	0.0083	-	0.0153	0.013	16%
Tin	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	-
Uranium	mg/kg dw	0.0020	0.0095	0.0083	13%	0.0425	0.0349	20%	0.0105	0.012	13%	0.0148	0.0131	12%	0.0616	0.0303	-	0.0602	0.0273	75%	0.0451	0.0486	7%	0.0163	0.0782	131%
Vanadium	mg/kg dw	0.10	0.4	0.32	22%	1.13	0.98	14%	0.45	0.41	9%	0.45	0.42	7%	1.25	0.58	73%	1.51	0.41	-	0.33	0.46	-	0.28	0.46	-
Zinc	mg/kg dw	0.50	22.6	33.7	39%	23.2	22	5%	34.4	36.6	6%	35.1	33.2	6%	39.5	18.0	75%	20.4	23.8	15%	27.1	23.8	13%	21.4	20.5	4%
Zirconium	mg/kg dw	0.20	<0.20	0.55	-	0.61	0.48	24%	<0.20	<0.20	-	0.21	<0.20	-	0.56	0.26	-	1.35	0.50	-	0.59	0.61	3%	<0.20	0.27	-

Notes:

RPDs greater than 30% with concentrations in both samples greater than five times the detection limit are shown in **bold and shaded**.

RPD = relative percent difference; % = percent; mg/kg dw = milligrams per kilogram dry weight.

APPENDIX G

2024 Lichen Chemistry Results

Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results

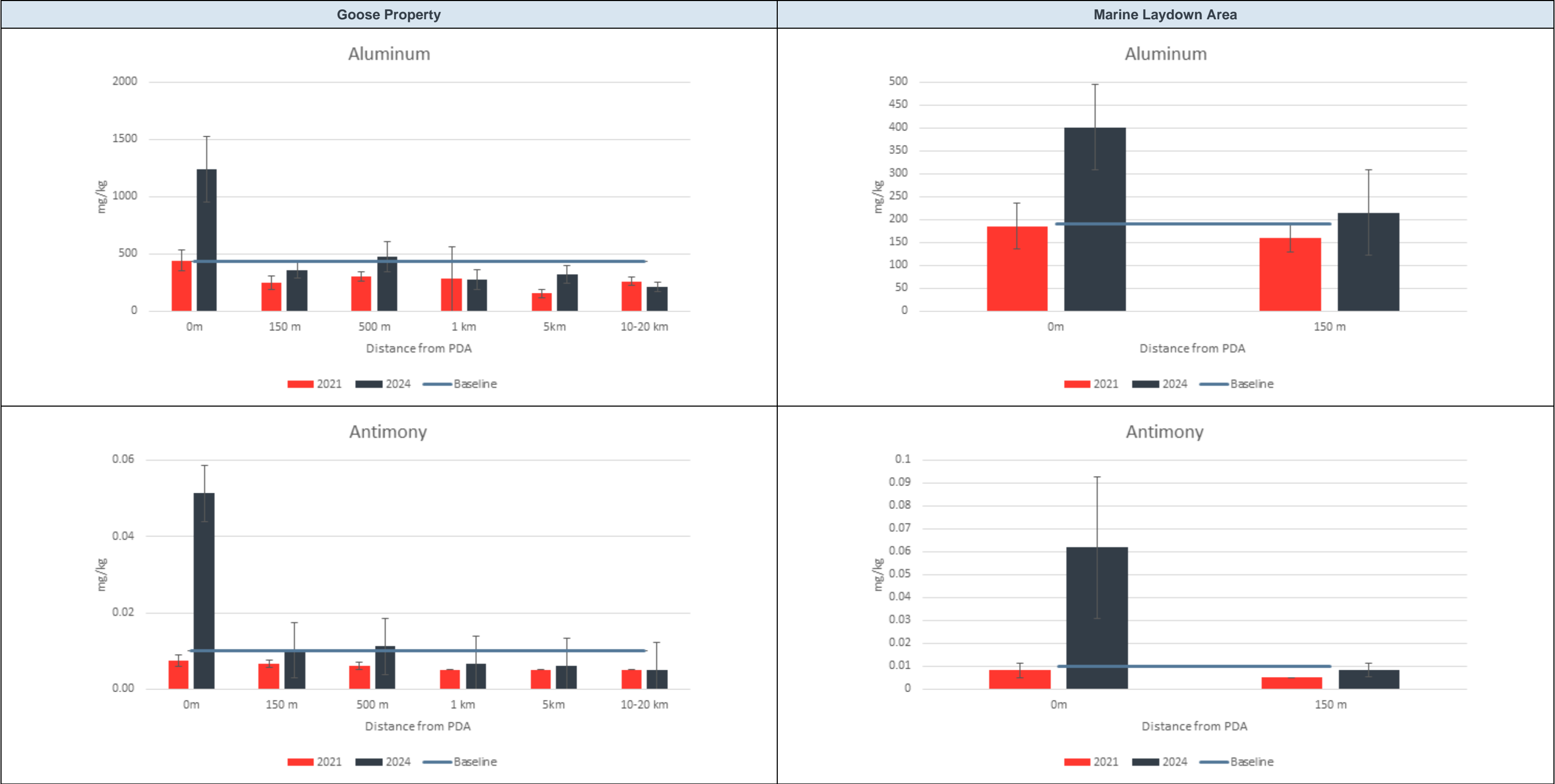


Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results

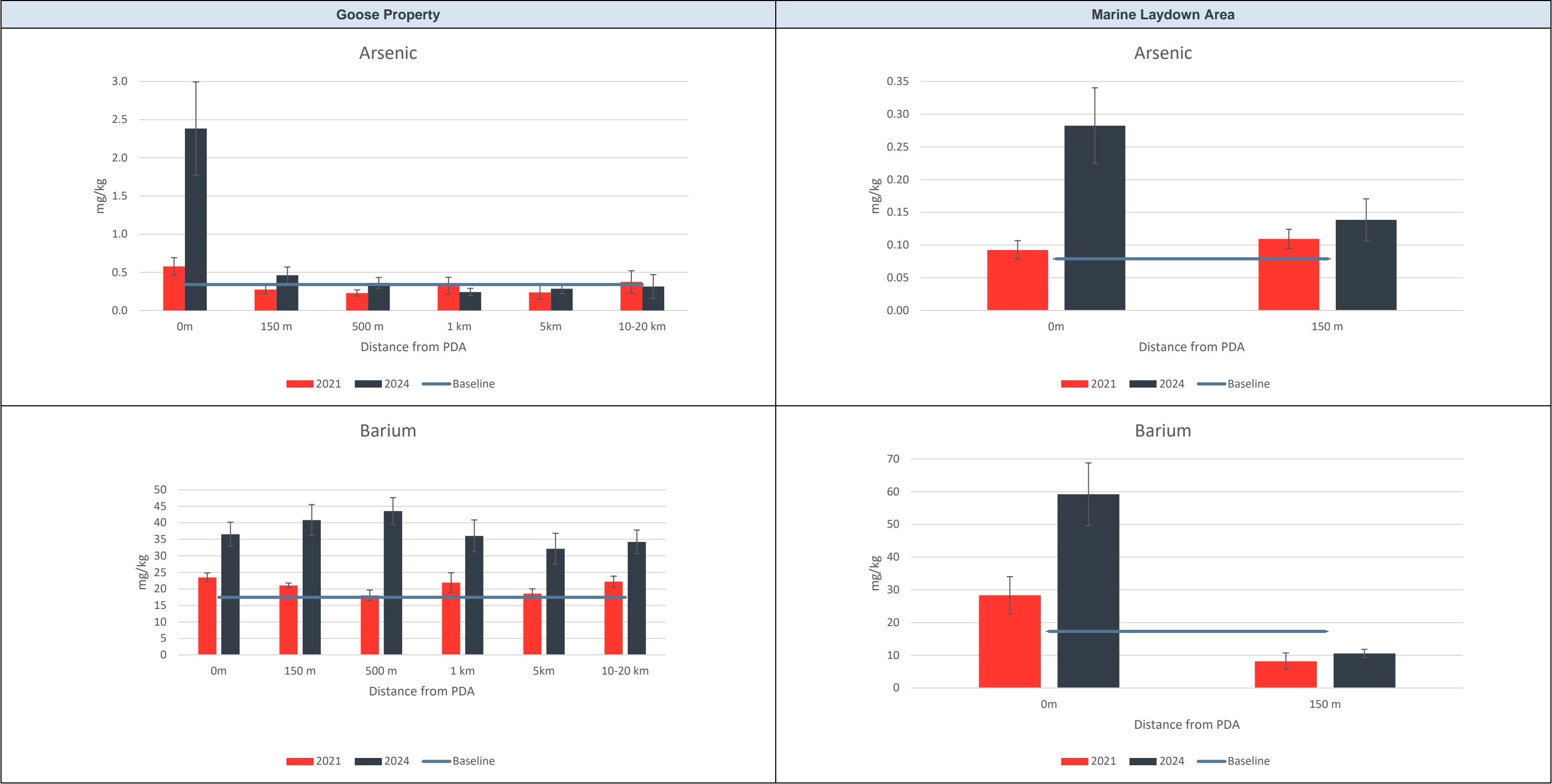


Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results

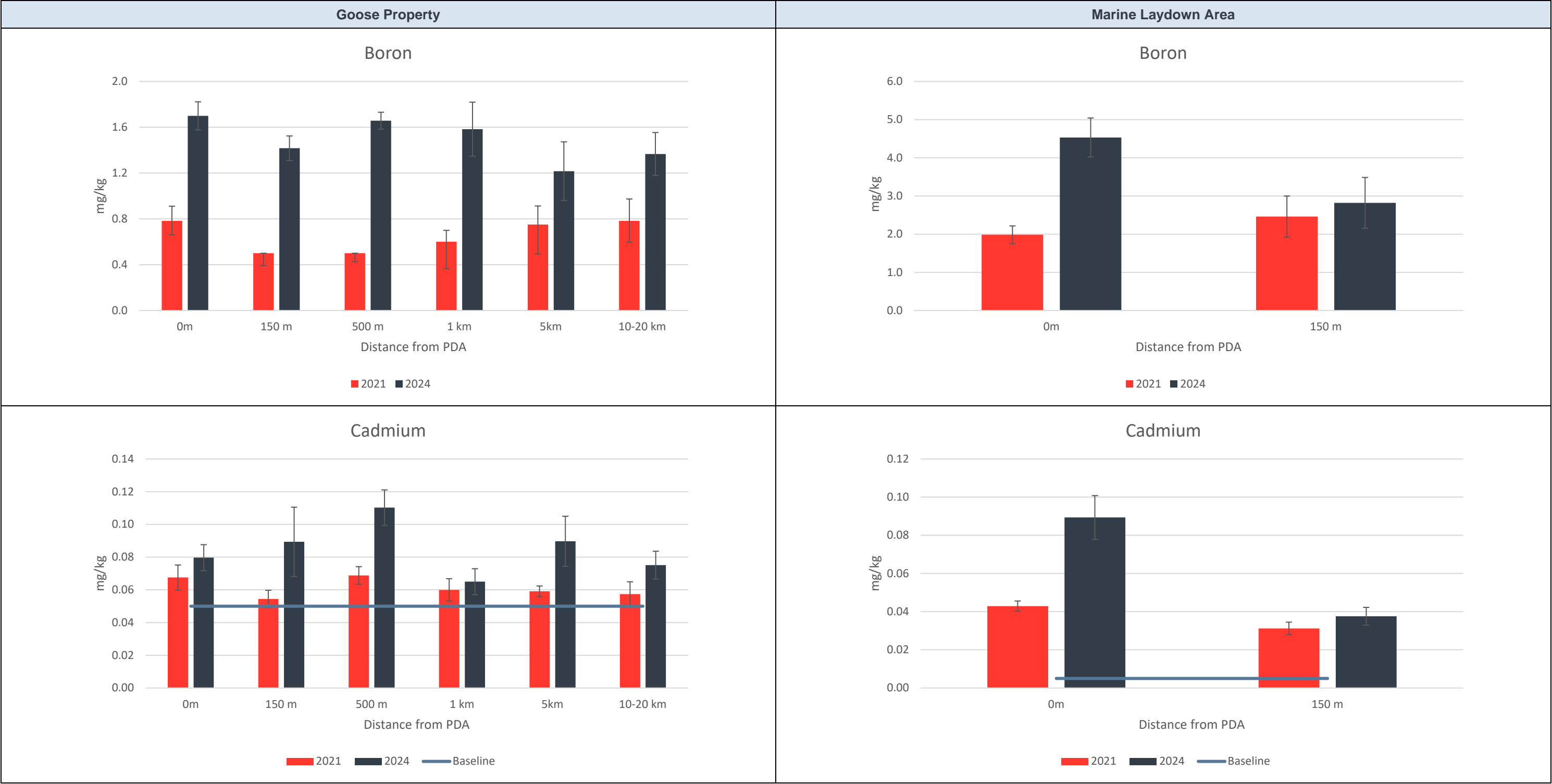


Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results

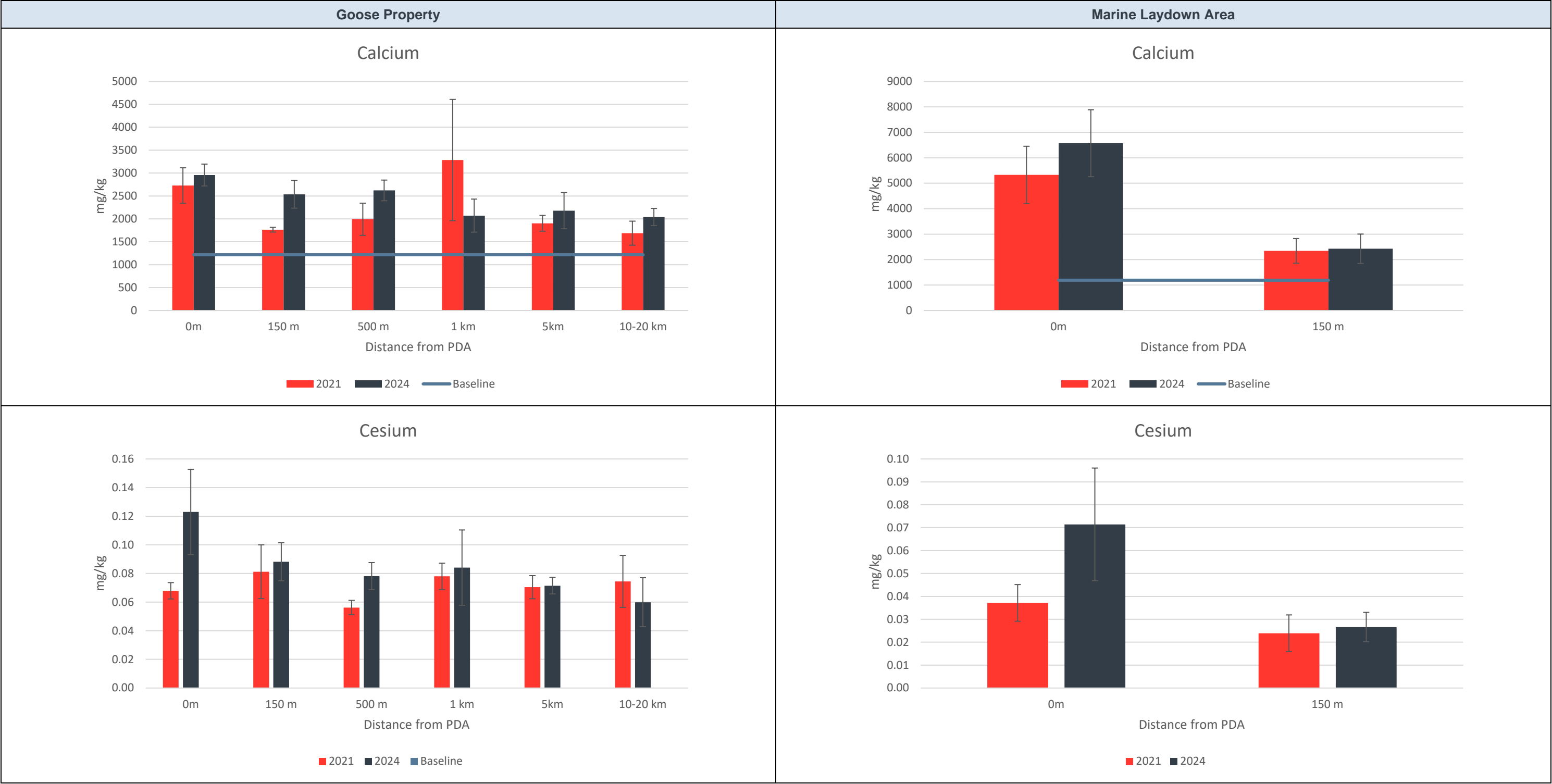


Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results

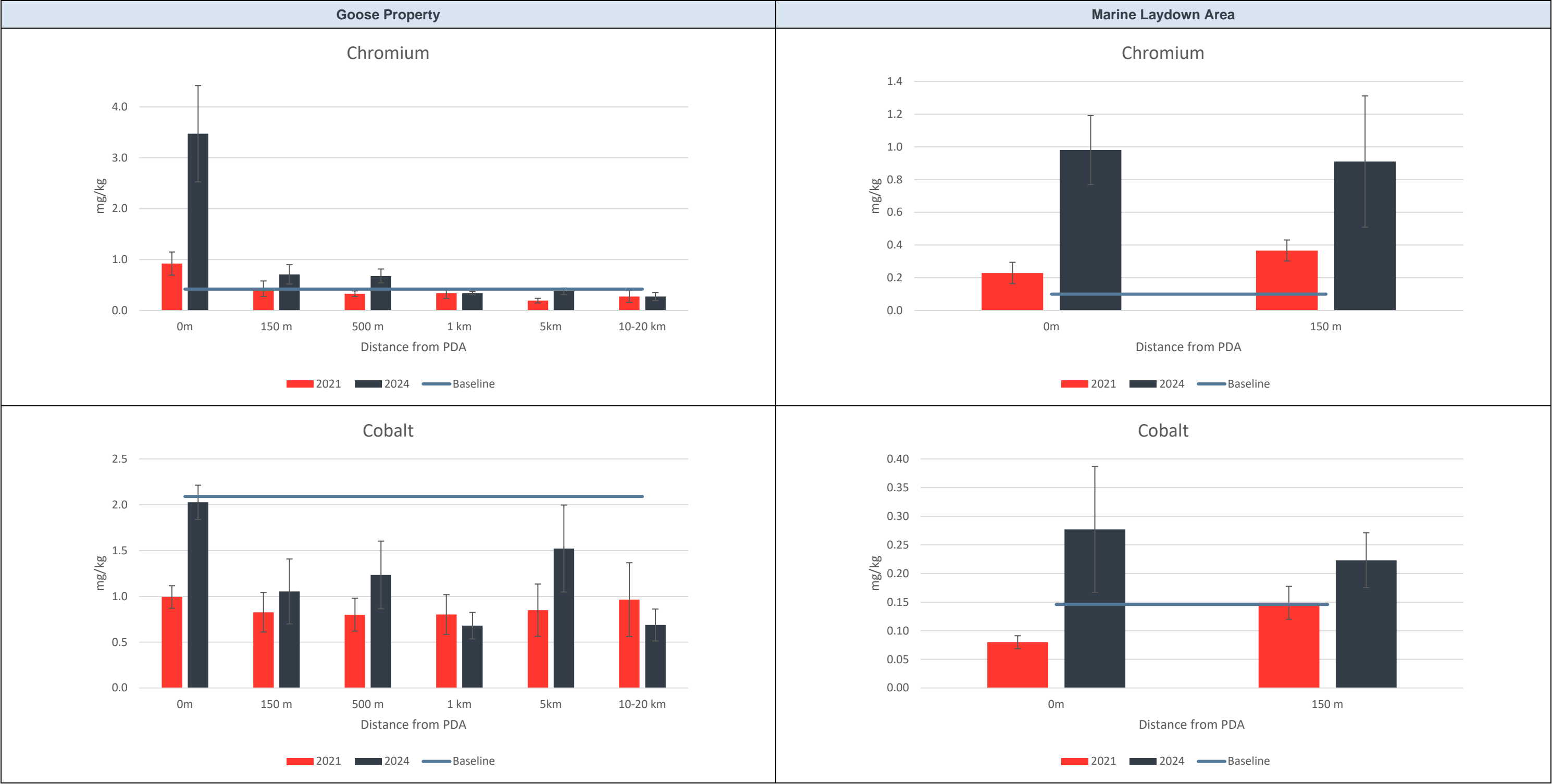


Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results

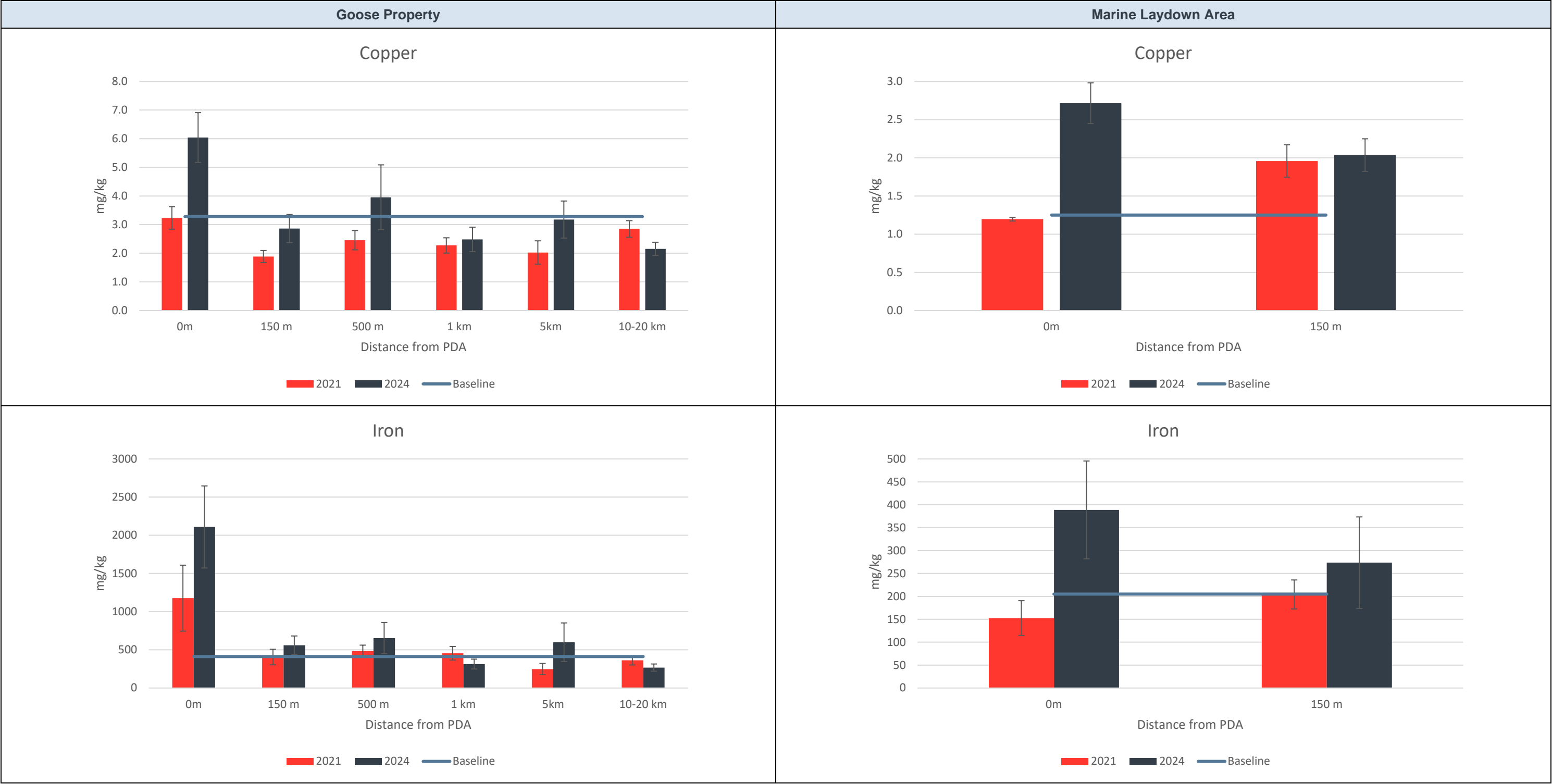


Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results



Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results



Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results

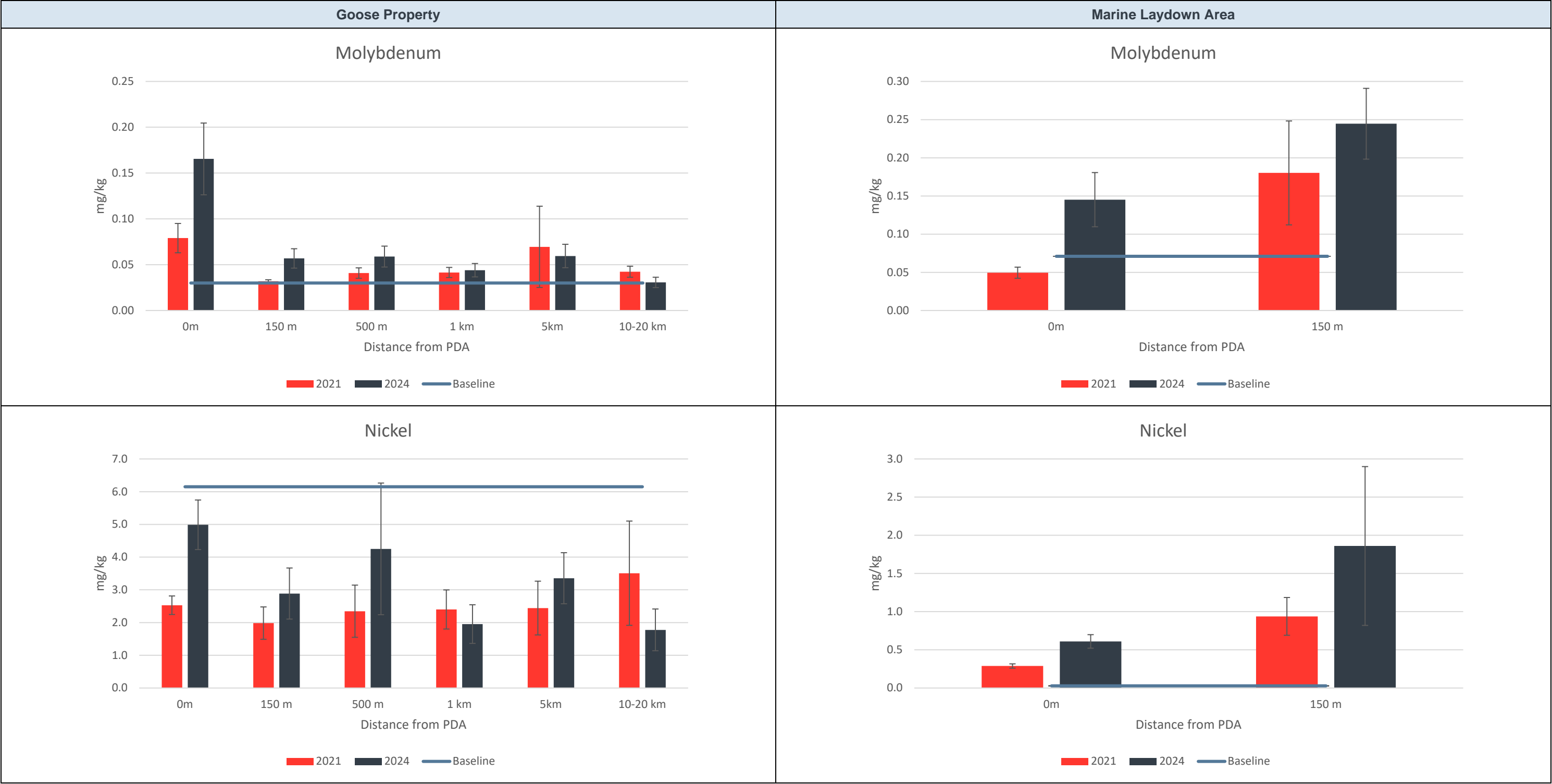


Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results

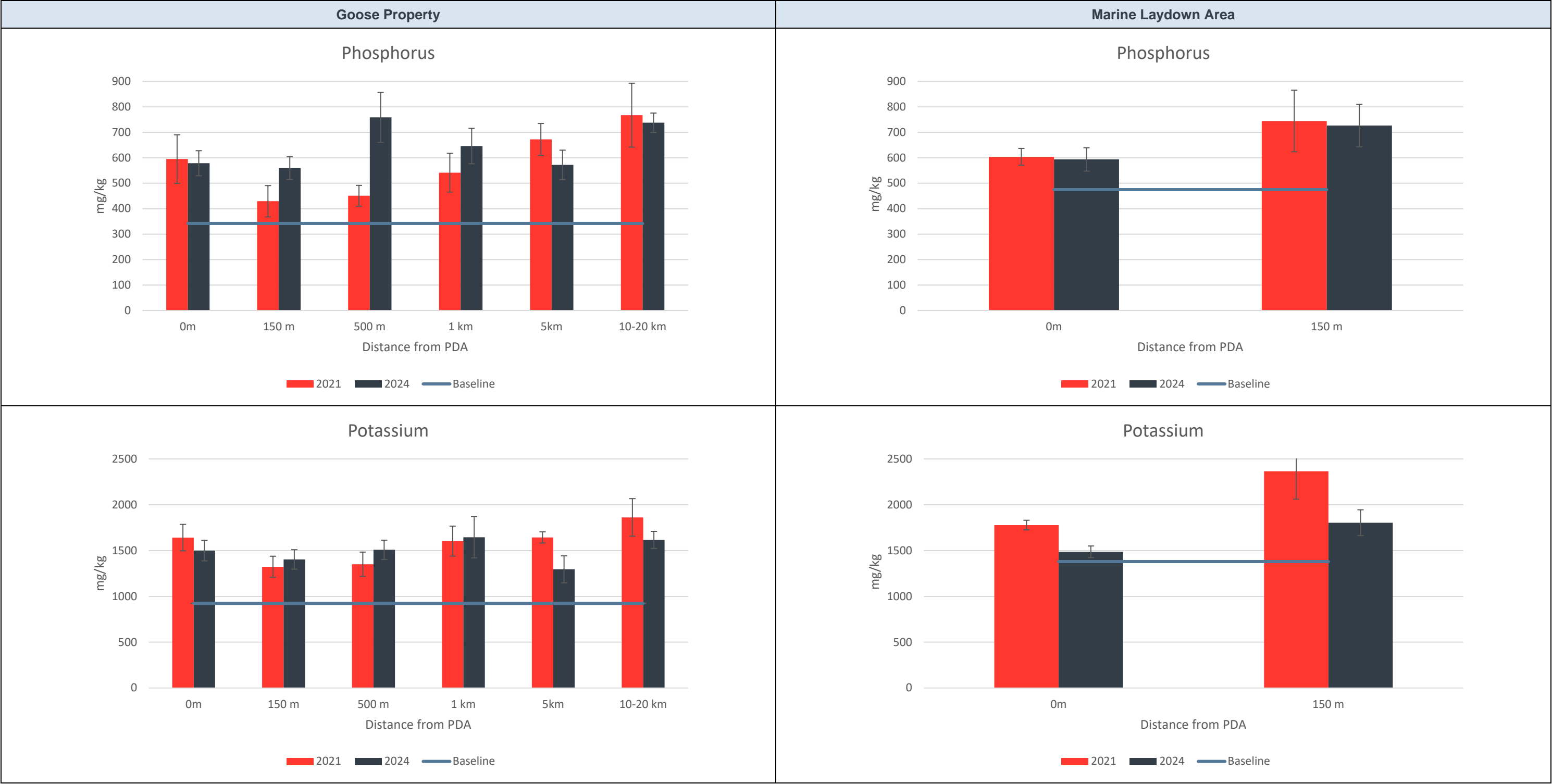


Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results

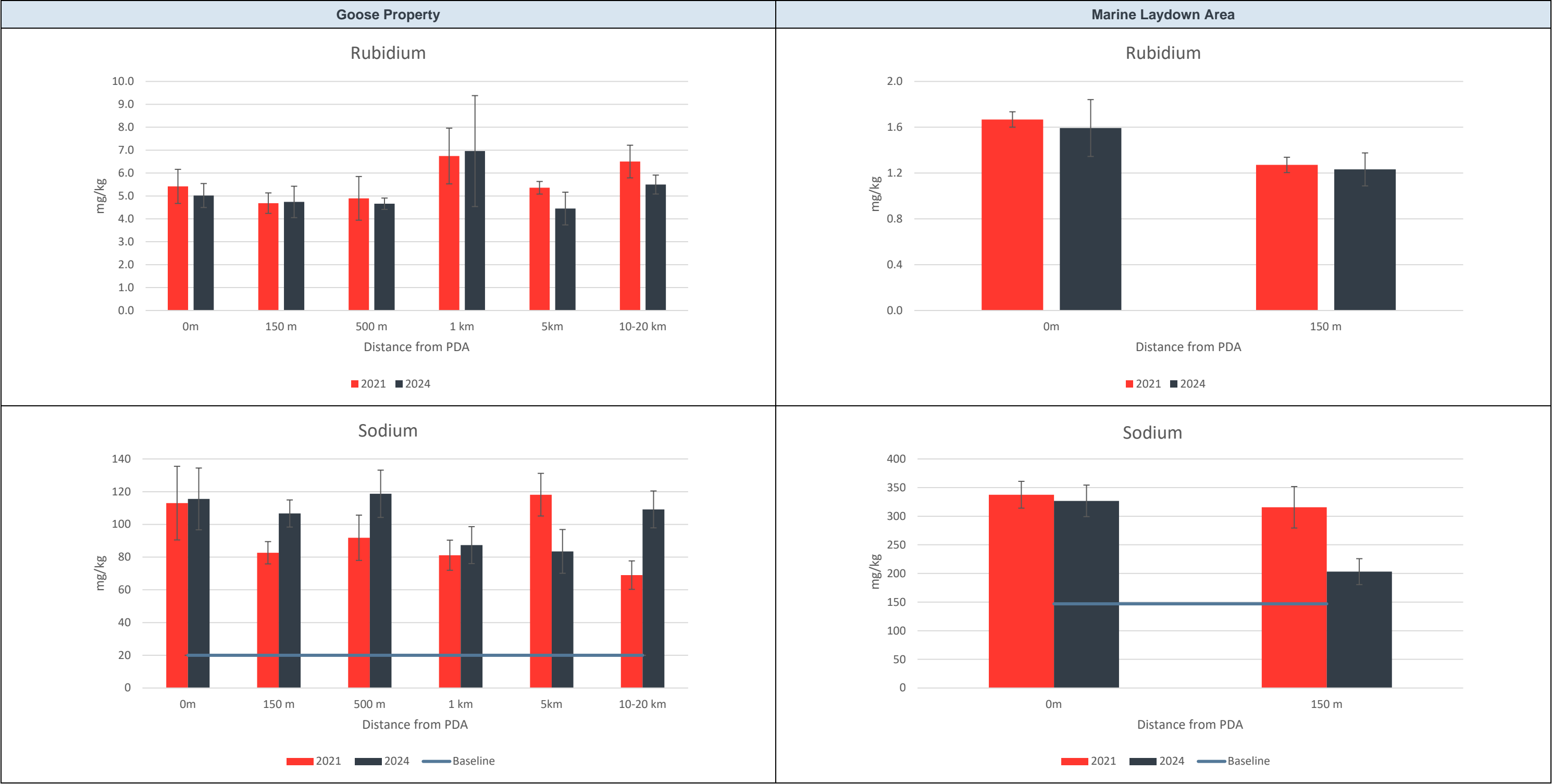


Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results

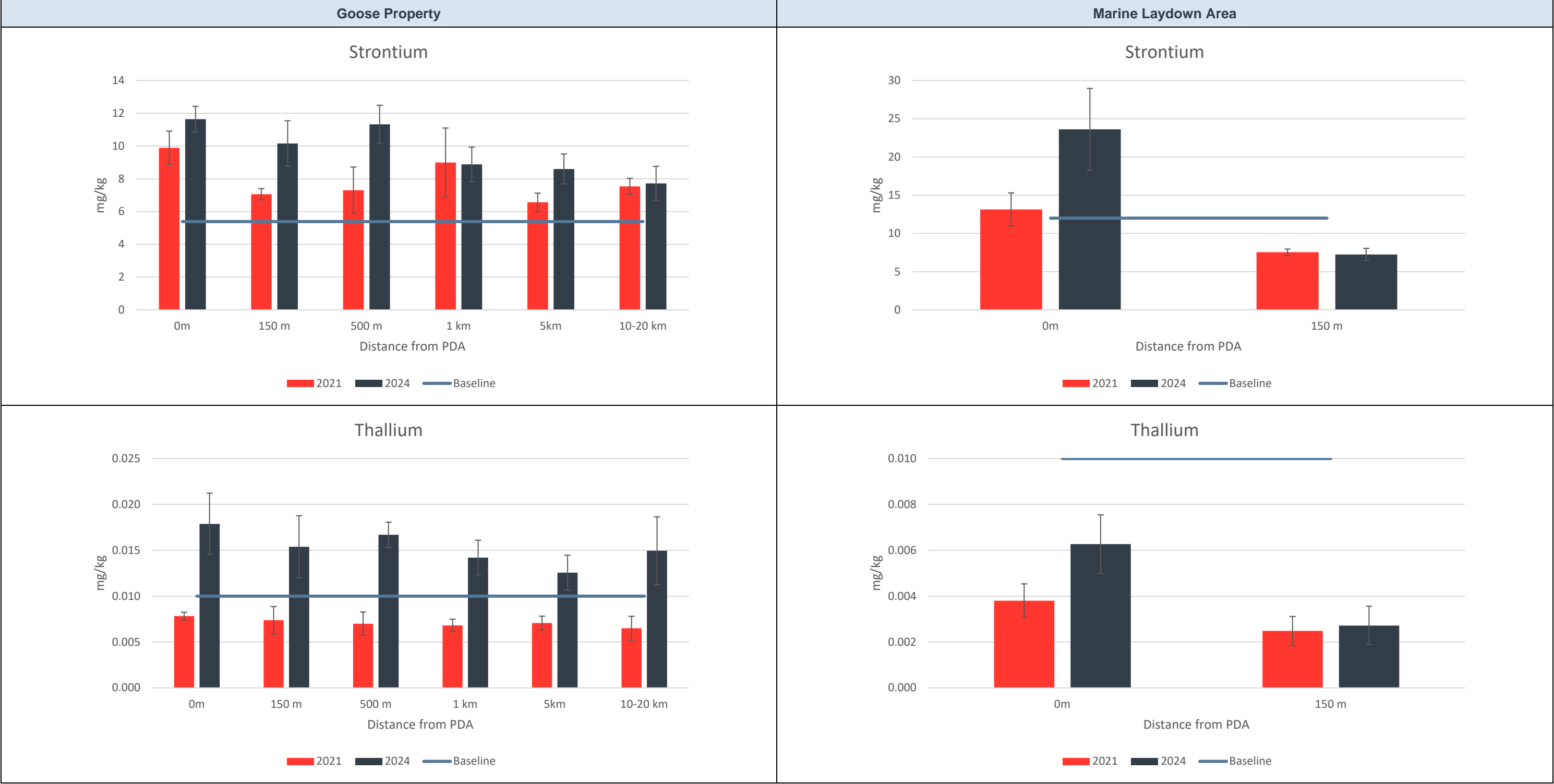


Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results

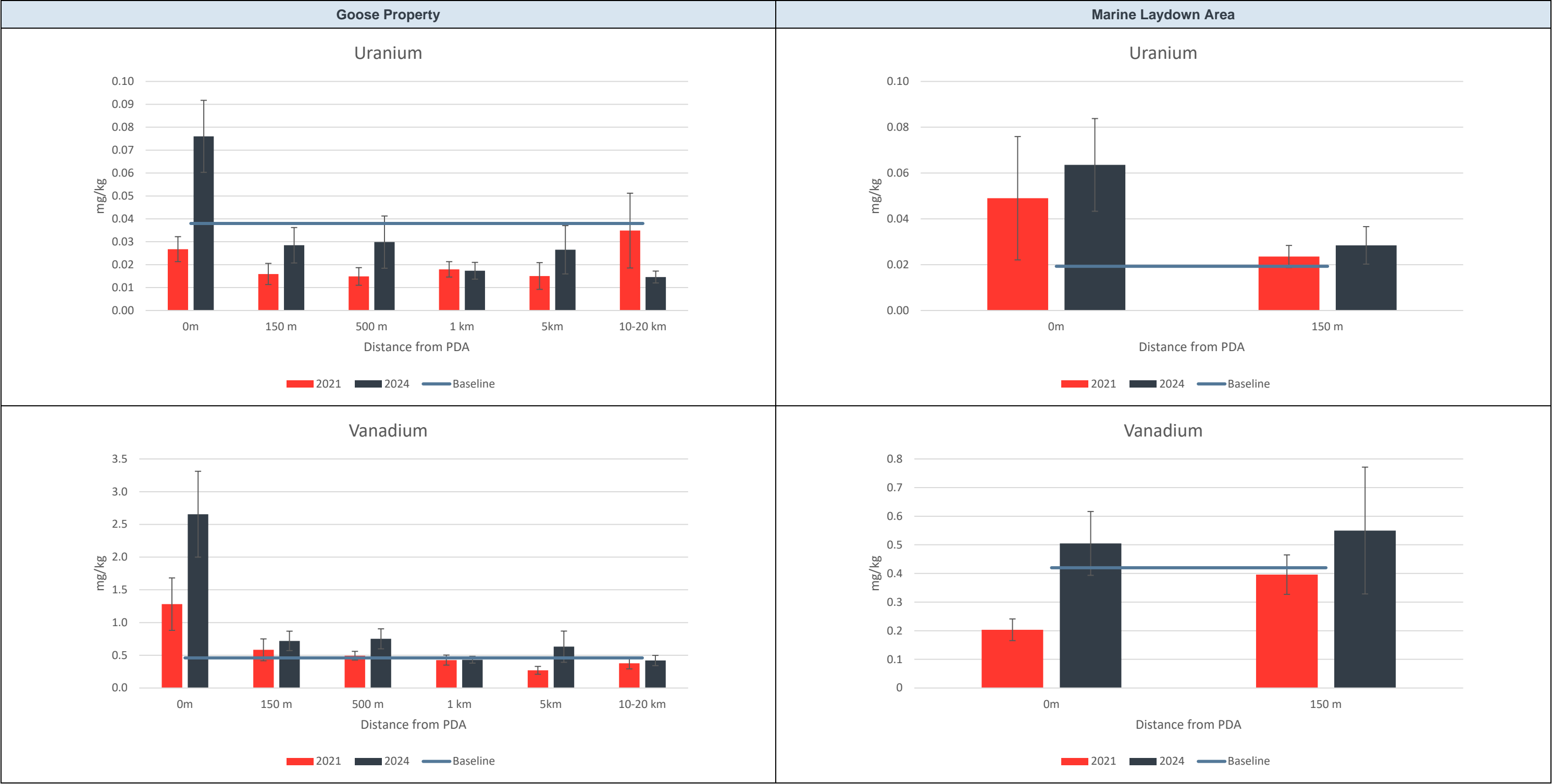
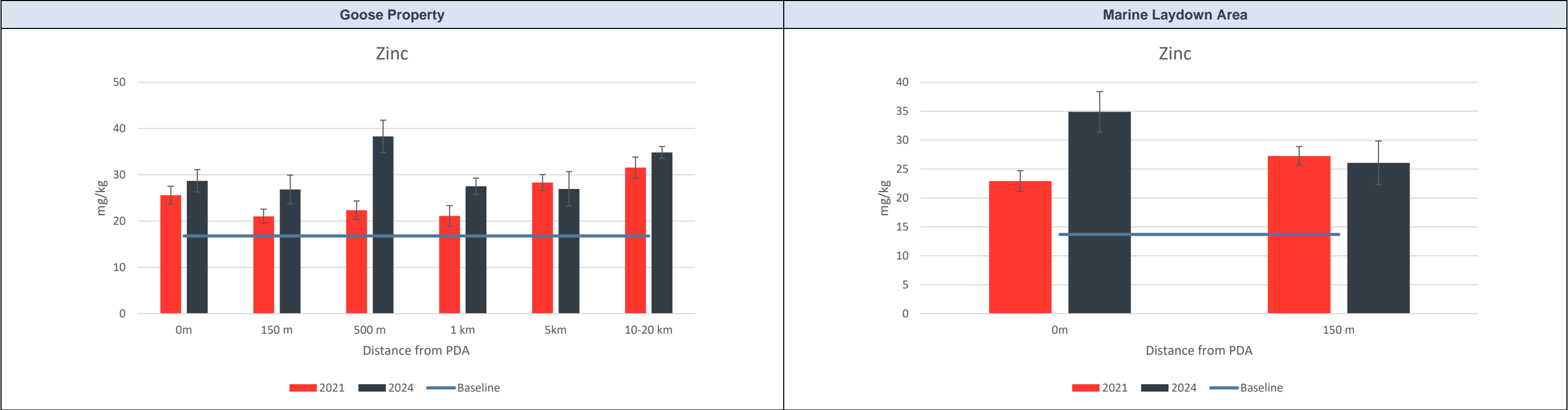


Figure G-1: Goose Property and MLA Lichen Chemistry Results – Mean Concentrations of Metals in Lichens in 2024 compared to 2015 Baseline and 2021 Results



APPENDIX H

**2019-2024 Winter Ice Road
Monitoring Photo Summary**

BRR006Ea



No photo taken

July 8, 2024 – Very high disturbance

August 5, 2023



July 19, 2022 – No disturbance



July 30, 2019 - No disturbance

BRR006R



July 8, 2024 – No disturbance

No photo taken

August 5, 2023



July 19, 2022 – No disturbance



July 30, 2019 - No disturbance

BRR007E



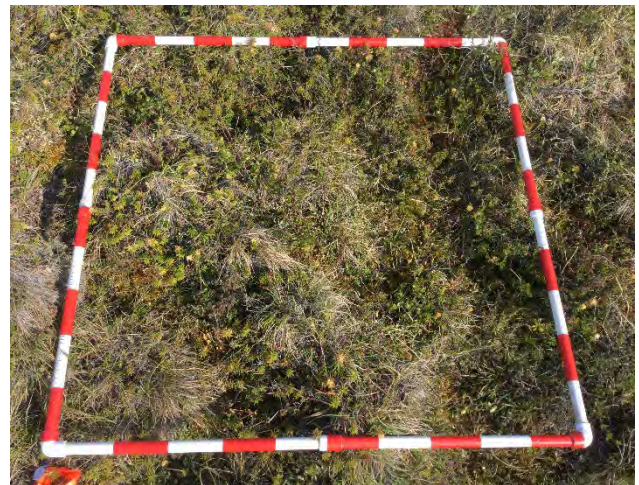
July 8, 2024 – Moderate disturbance



August 5, 2023 - Moderate disturbance



July 21, 2022 – No close-up plot photo available.



July 30, 2019 – No disturbance

BRR007R



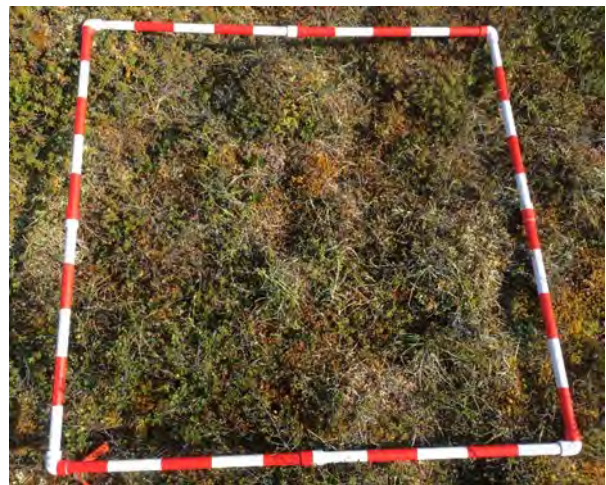
July 8, 2024 - No disturbance



August 5, 2023 - No disturbance



July 21, 2022 – No close-up plot photo available.



July 30, 2019 - No disturbance

BRR014E



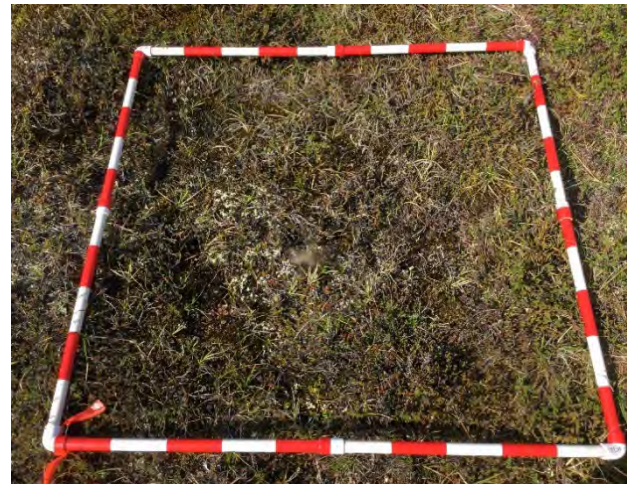
July 8, 2024 – Low disturbance



August 5, 2023 - Low disturbance



July 21, 2022 – No close-up plot photo available.
Low disturbance



July 29, 2019 - No disturbance

BRR014R



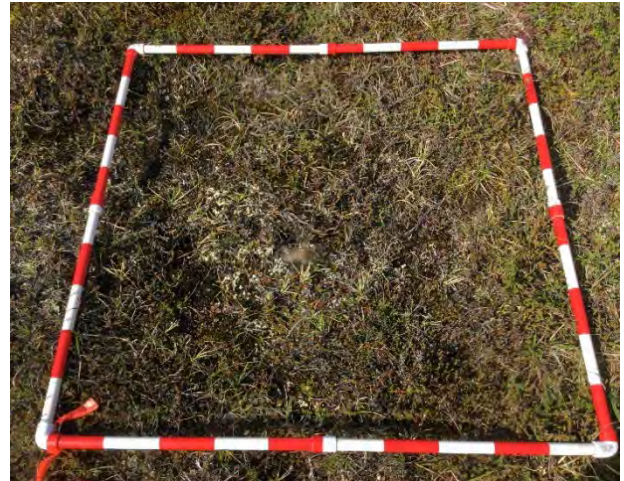
July 8, 2024 - No disturbance



August 5, 2023 - No disturbance



July 21, 2022 – No close-up plot photo available. No disturbance



July 29, 2019 - No disturbance

BRR015E



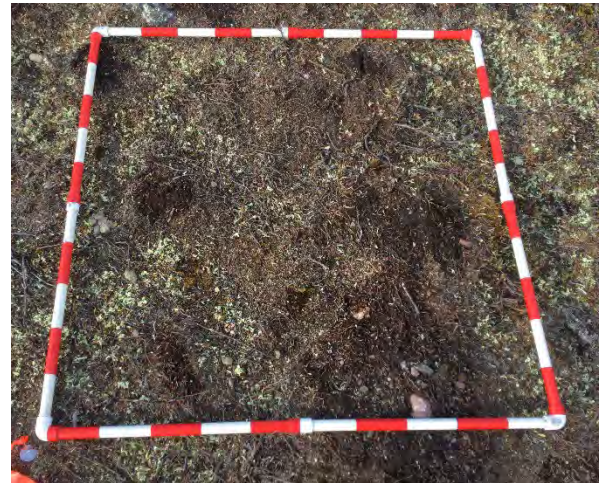
July 8, 2024 – Very High Disturbance

No photo taken

2023



July 21, 2022 – No close-up photo available.



July 29, 2019 - Very high disturbance

BRR015R



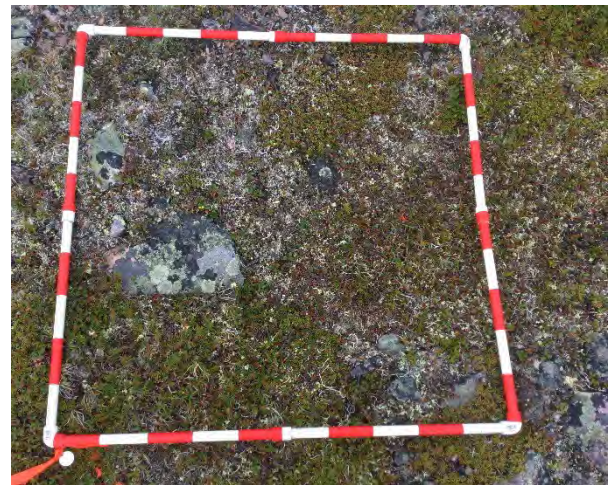
No photo taken

July 8, 2024 – No disturbance

2023



July 21, 2022 – No close-up plot photo available. No disturbance



July 29, 2019 - No disturbance

BRR016E



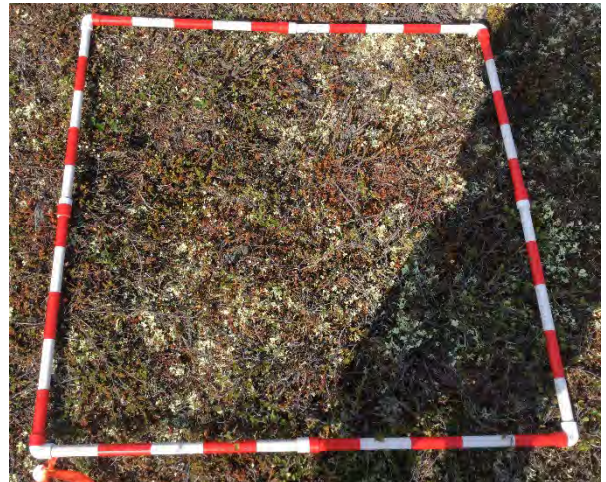
July 8, 2024 – Very high disturbance

No photo taken

2023



July 21, 2022 – No close-up plot photo available.



July 29, 2019 – Low disturbance

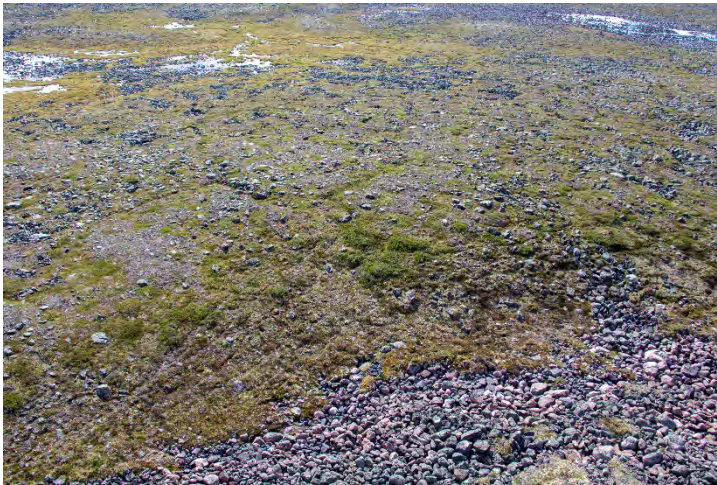
BRR016R



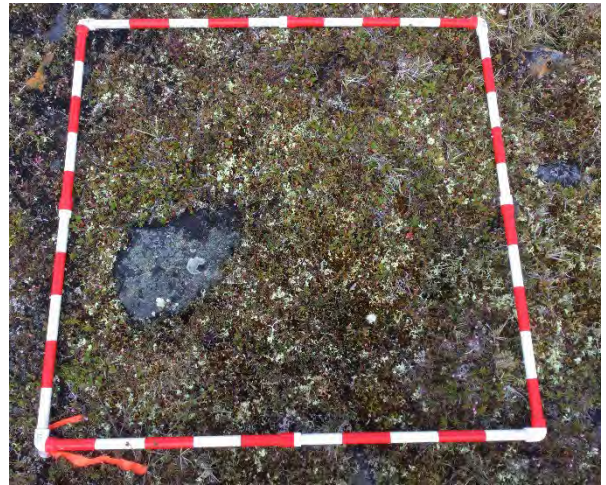
July 8, 2024 – No disturbance

No photo taken

2023



July 21, 2022 – No close-up plot photo available. No disturbance



July 29, 2019 - No disturbance

BRR021E



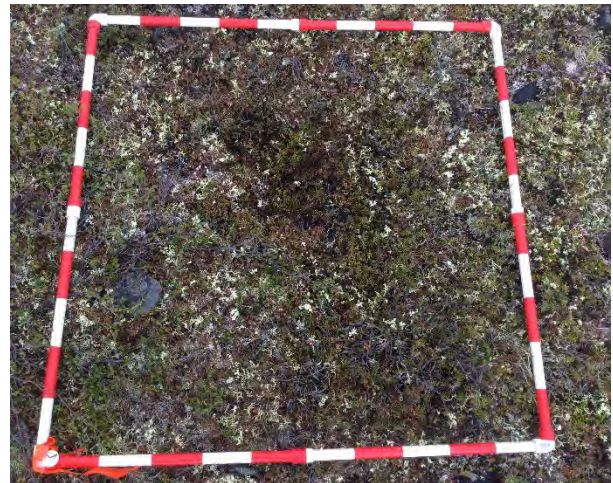
July 8, 2024 - Moderate disturbance



August 5, 2023 - Moderate disturbance

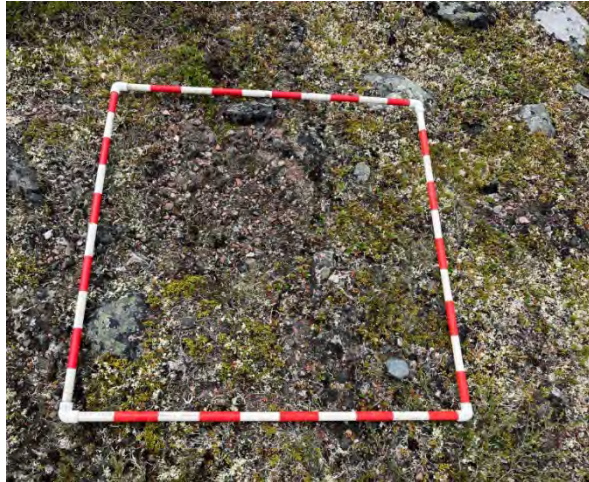


July 21, 2022 - No close-up plot photo available.



July 29, 2019 - Moderate disturbance

BRR021R



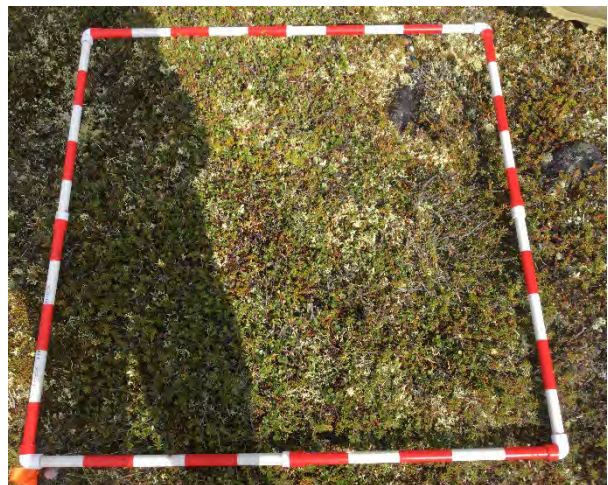
July 8, 2024 – No disturbance



August 5, 2023 – No disturbance



July 21, 2024 – No close-up plot photo available



July 29, 2019 – No disturbance

BRR024E



July 8, 2024 – Low disturbance



August 5, 2023 - Low disturbance

No photo taken



2022

July 26, 2019 - Low disturbance

BRR024R



July 8, 2024 – No disturbance



August 5, 2023 – No disturbance

No photo taken



2022

July 26, 2019 – No disturbance

BRR025E



July 8, 2024 – Very high disturbance

No photo taken

2023

No photo taken

2022



July 26, 2019 – No disturbance

BRR025R



July 8, 2024 – Very high disturbance

No photo taken

2023

No photo taken

2022



July 26, 2019 – No disturbance

BRR028E



July 8, 2024 - Low disturbance



August 5, 2023 – No disturbance

No photo taken



2022

July 26, 2019 – No disturbance

BRR028R



July 8, 2024 – No disturbance



August 5, 2023 – No disturbance

No photo taken

2022



July 26, 2019 – No disturbance

BRR029E



July 8, 2024 – No disturbance



August 5, 2023 – No disturbance

No photo taken



2022

July 26, 2019 – No disturbance

BRR029R



July 8, 2024 – No disturbance



August 5, 2023 – No disturbance

No photo taken



2022

July 26, 2019 – No disturbance

BRR031E



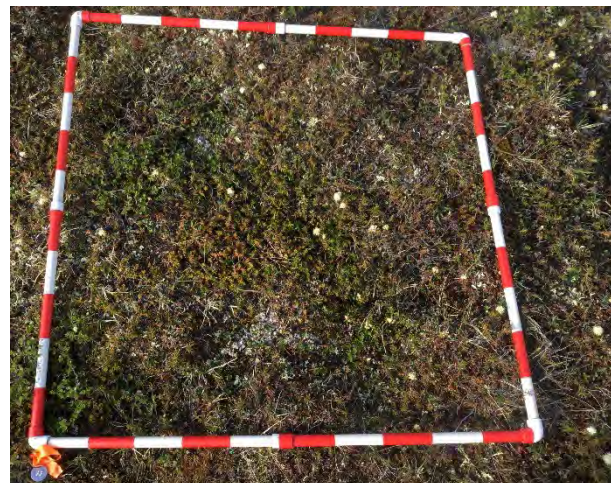
July 8, 2024 – Moderate disturbance



August 5, 2023 – Moderate disturbance

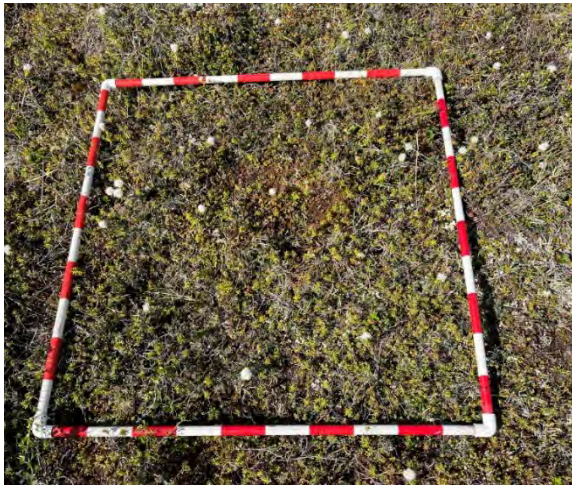
No photo taken

2022



July 25, 2019 – No disturbance

BRR031R



July 8, 2024 – No disturbance



August 5, 2023– No disturbance

No photo taken

2022



July 25, 2019– No disturbance

BRR032Ea



July 8, 2024 – Very high disturbance

No photo taken

2023



July 20, 2022 – Very high disturbance



July 25, 2019 – No disturbance

BRR032R



July 8, 2024 – No disturbance

No photo taken

2023



July 20, 2022 – No disturbance



July 25, 2019 – No disturbance

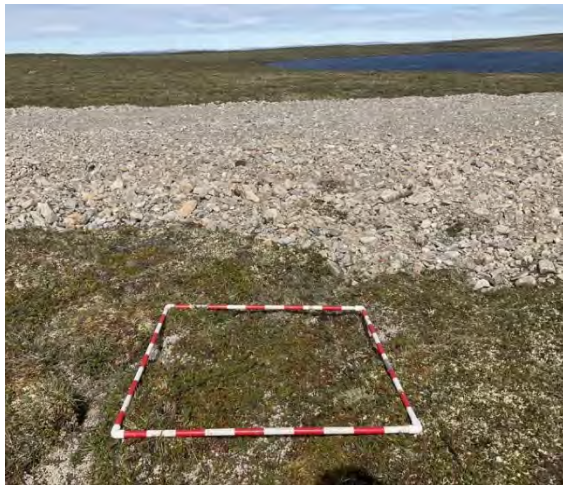
BRR033Ea



No photo taken

July 8, 2024 – Very high disturbance

2023



July 20, 2022 – Very high disturbance



July 25, 2019 – No disturbance

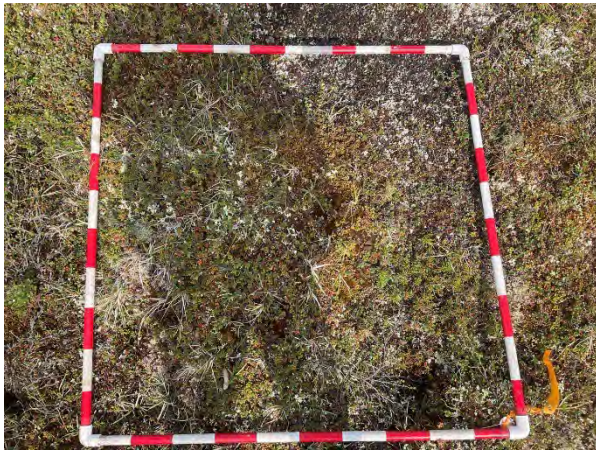
BRR033R



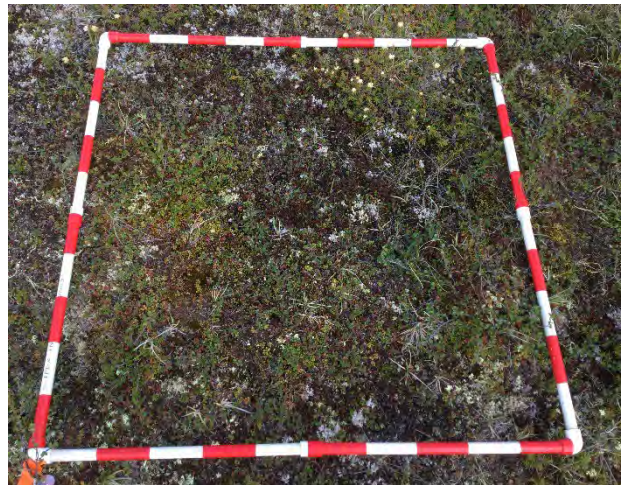
No photo taken

July 8, 2024 – No disturbance

2023



Jul 20, 2022 – No disturbance



July 25, 2019 – No disturbance

BRR034E



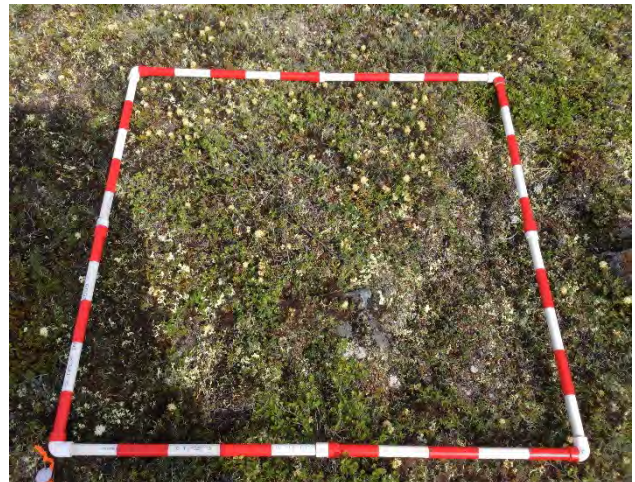
July 8, 2024 – Very high disturbance

No photo taken

2023

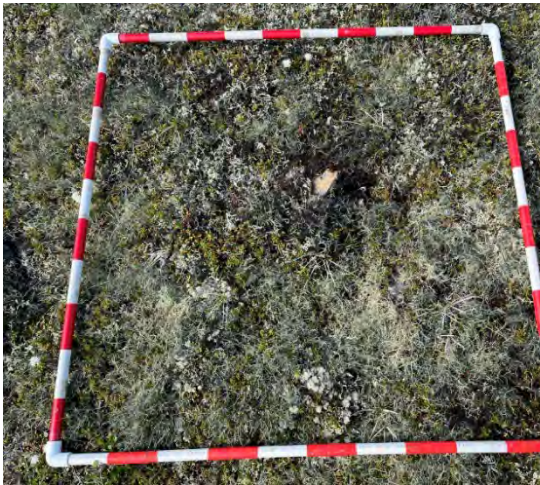


July 20, 2022 – Very high disturbance



July 25, 2019 – No disturbance

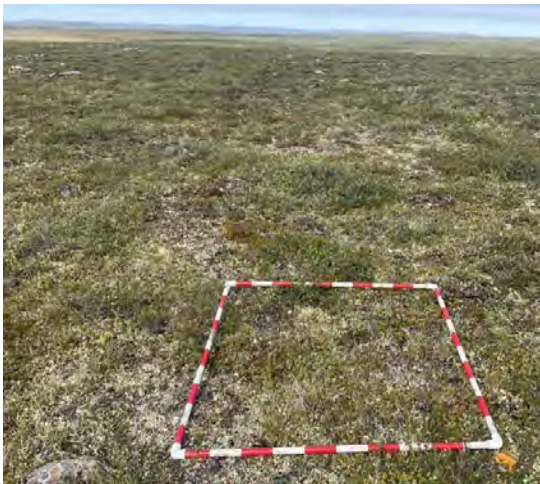
BRR034Ra



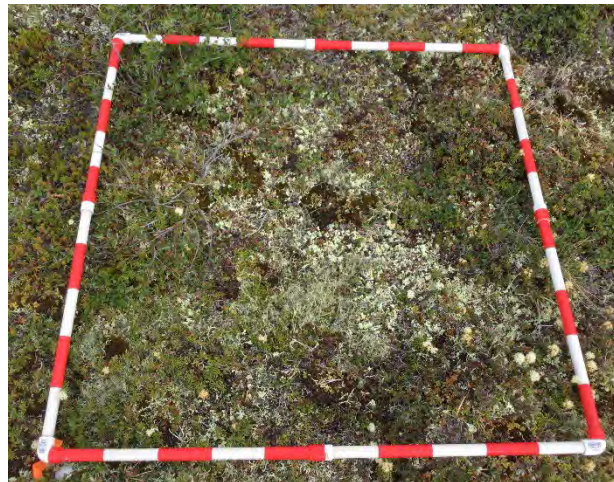
July 8, 2024 – Low disturbance



August 5, 2023 – No disturbance



July 20, 2022 – No disturbance



July 25, 2019 – No disturbance

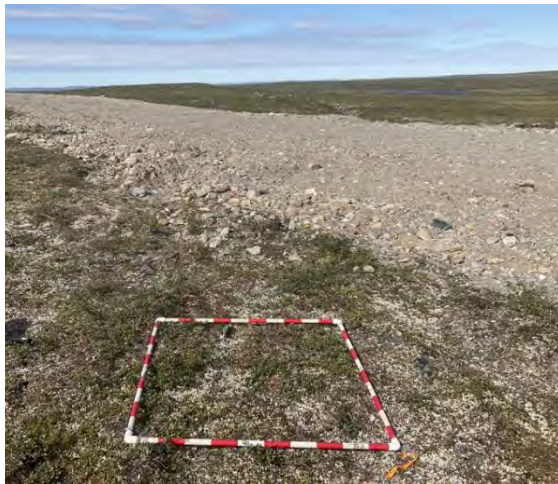
BRR035Ea



No photo taken

July 8, 2024 – Very high disturbance

2023



July 20, 2022 – Very high disturbance



July 24, 2019 – No disturbance

BRR035Ra



July 8, 2024 – No disturbance

No photo taken

2023



July 20, 2022 – No disturbance



July 24, 2019 – No disturbance

BRR036E



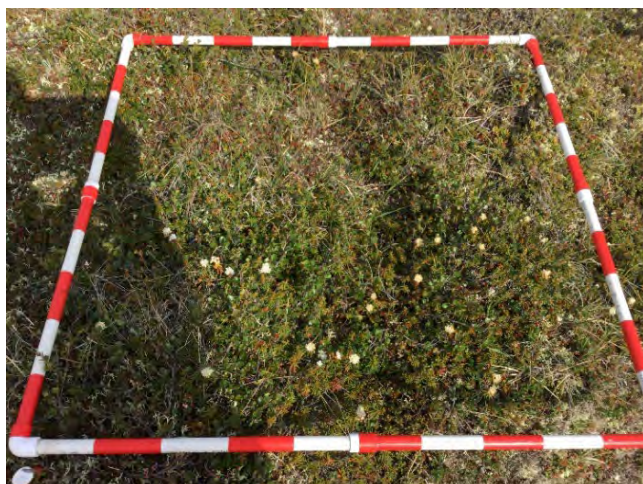
July 8, 2024 - High disturbance



August 5, 2023 – No disturbance

No photo taken

2022



July 27, 2019 – No disturbance

BRR036R



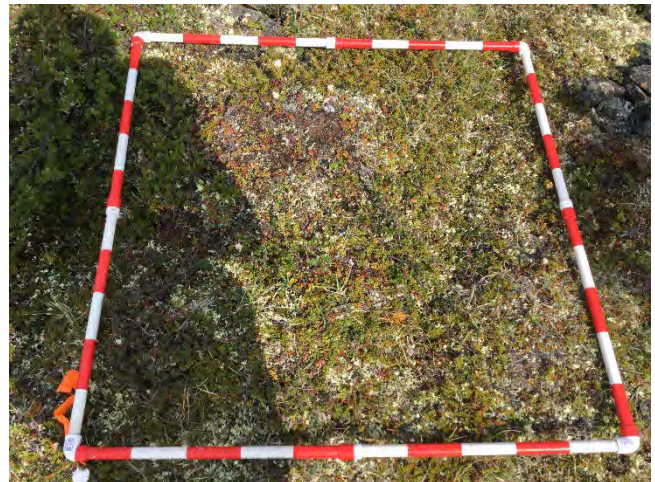
July 8, 2024 – No disturbance



August 5, 2023 – No disturbance

No photo taken

2022



July 27, 2019 – No disturbance

BRR038E



No photo taken

July 8, 2024 – Very high disturbance

2023



July 20, 2022 – No close-up plot photo available. Very high disturbance



July 30, 2019 – No disturbance

BRR038R



No photo taken

July 8, 2024 – No disturbance



July 20, 2022 – No close-up plot photo available

2023



July 30, 2019 – No disturbance

BRR040E



July 8, 2024 – Very high disturbance

No photo taken

2023



July 20, 2022 – Very high disturbance



July 31, 2019 – Low disturbance

BRR040Ra



No photo taken

July 8, 2024 – No disturbance

2023



July 20, 2022 – No disturbance



July 31, 2019 – No disturbance

BRR041Ea



No photo taken

July 8, 2024 – Very high disturbance



July 21, 2022 – Very high disturbance



July 30, 2019 – High disturbance

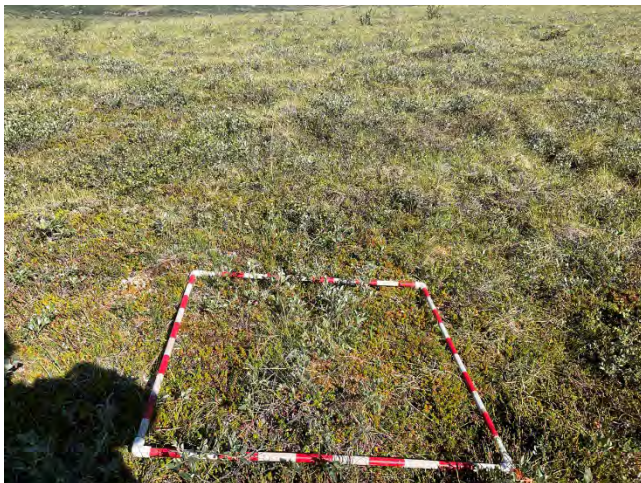
BRR041R



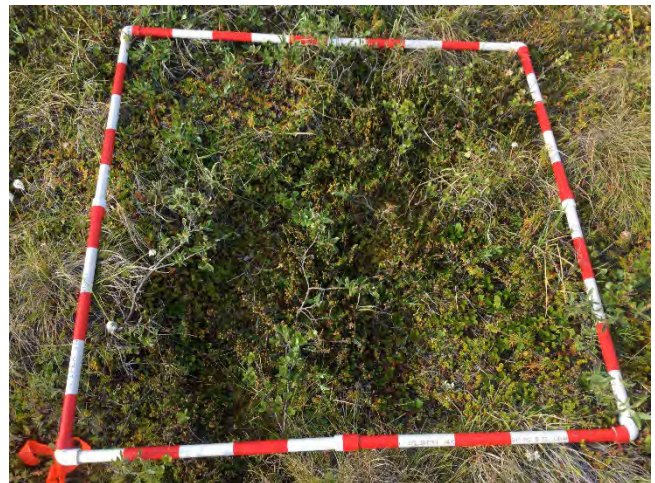
July 8, 2024 – No disturbance

No photo taken

2023



2022 – No disturbance



July 30, 2019 – No disturbance

BRR042E



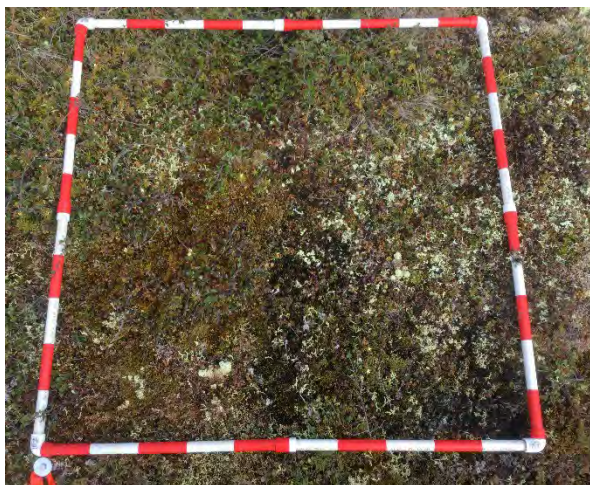
July 8, 2024 – Low disturbance



August 5, 2023 – No disturbance

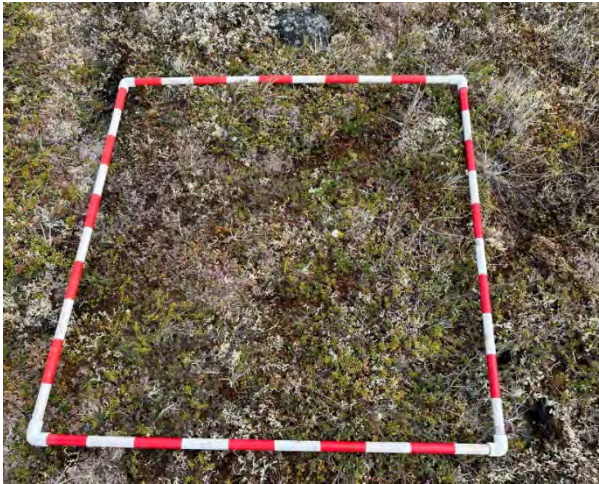
No photo taken

2022



July 29, 2019 – No disturbance

BRR042R



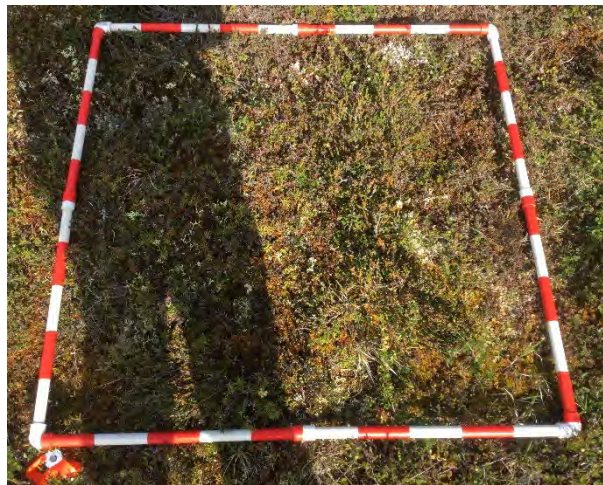
July 8, 2024 – No disturbance



August 5, 2023 – No disturbance

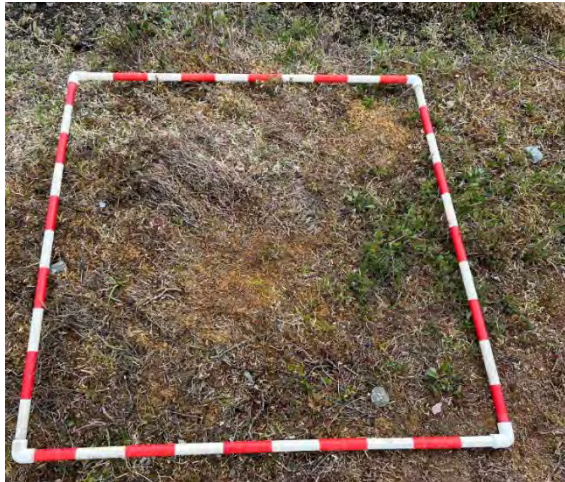


July 20, 2022 – No close-up available. No disturbance



July 29, 2019 – No disturbance

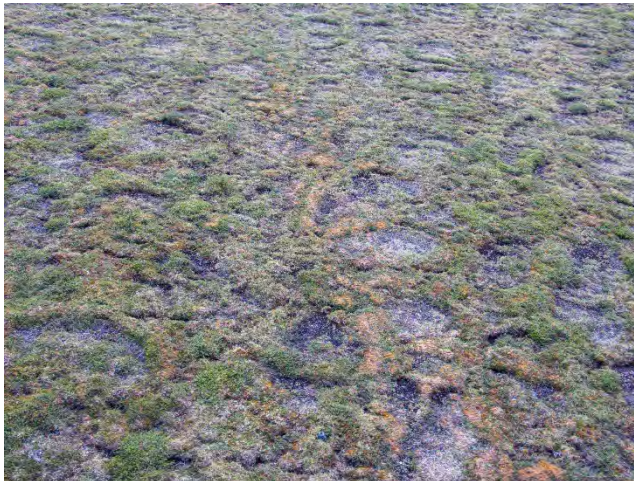
BRR043E



July 8, 2024 – Low disturbance



August 5, 2023 – No disturbance



July 20, 2022 – No close-up photo available – No disturbance



July 27, 2019 – No disturbance

BRR043R



July 8, 2024 – No disturbance



August 5, 2023 – No disturbance

No photo taken



2022

July 27, 2019 – No disturbance

BRR046E



July 8, 2024 – Low disturbance



August 5, 2023 – Low disturbance



July 19, 2022 – No close-up photo available.

No photo taken

2019

BRR046R



July 8, 2024 – No disturbance



August 5, 2023 – No disturbance



July 19, 2022 – No disturbance

No photo taken

2019

wsp

