Appendix H-7

TEMMP Report

NUQSANA GOLDER
ENGINEERING AND ENVIRONMENTAL INC.

REPORT

Agnico Eagle Mines Limited - Meliadine Division

2019 Terrestrial Effects Monitoring and Mitigation Program Annual Report

Submitted to:

Agnico Eagle Mines Limited
Attention: Sara Savoie / Terry Ternes / Jessica Huza

Submitted by:

Nuqsana Golder Engineering and Environmental Inc.
1931 Robertson Road, Ottawa, Ontario, K2H 5B7, Canada

+1 613 592 9600

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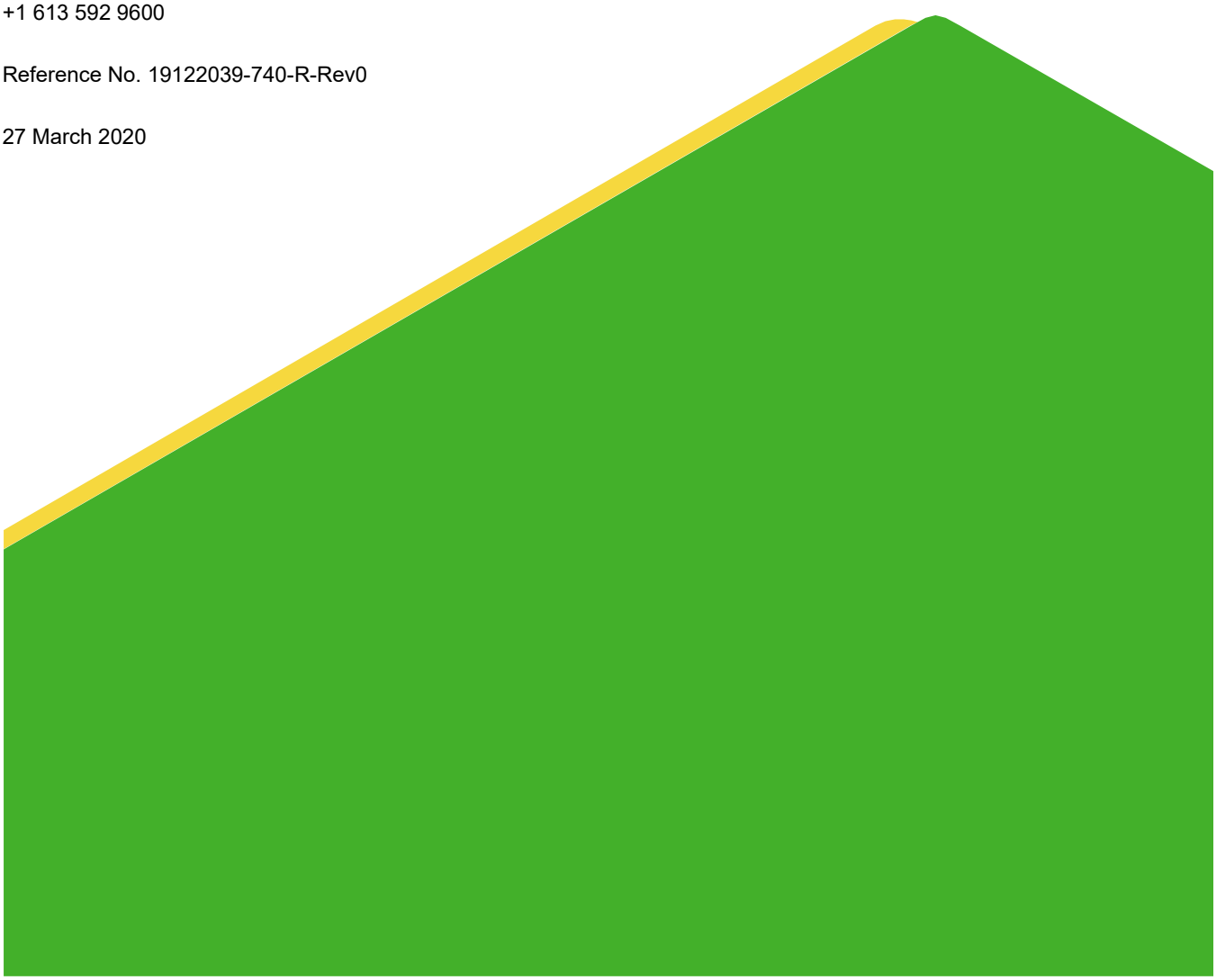
27 March 2020



Distribution List

Electronic Copy - Agnico Eagle Mines Limited

Electronic Copy - Nuqsana Golder

Study Limitations

On behalf of Agnico Eagle Mines Limited (Agnico Eagle), Nuqsana Golder Engineering and Environmental Consulting Inc. (Nuqsana Golder) has prepared this Terrestrial Environment Management and Monitoring Annual Report for the 2019 Monitoring Period for the Meliadine Gold Mine in Rankin Inlet, Nunavut.

This report was prepared, based in part, on information obtained from Agnico Eagle, Arctic Raptors Inc. and other external information sources. In preparing the report, Nuqsana Golder has relied in good faith on the information provided. We accept no responsibility for any deficiency or inaccuracy contained in this report because of our reliance on the aforementioned information.

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

With respect to regulatory compliance issues, regulatory statutes are subject to interpretation. These interpretations may change over time and should be reviewed regularly.

If new information is discovered during future work, the conclusions of this report should be re-evaluated, and the report amended, as required, prior to any reliance upon the information presented herein.

Executive Summary

The Agnico Eagle Mines Limited (Agnico Eagle) Meliadine Gold Mine (the Project), received a Project Certificate (No. 006) from the Nunavut Impact Review Board (NIRB) in February 2015, and amended (Amendment No. 001) in February 2019. A Terrestrial Environment Management and Monitoring Plan (TEMMP) for the Project was prepared for submission with the Project Final Environmental Impact Statement (FEIS; 2015) and forms a component of the documentation series produced in accordance with the Project. This report addresses requirements of the Terms and Conditions of the NIRB Project Certificate (No. 006), as relevant to the TEMMP.

The objectives of the Annual TEMMP Report are to summarize annual data collected from wildlife and vegetation monitoring programs, and to describe natural variation and potential Project-related impacts to wildlife populations within and adjacent to the Project. The data was collected according to procedures and sampling or monitoring intervals outlined in the Project's Standard Operating Procedures and the TEMMP. The 2019 annual report describes monitoring objectives and methodology, 2019 annual results, mitigation activities, and management recommendations based on 2019 monitoring results. The following summary documents results collected for the 2019 TEMMP for the Meliadine Project located in the Kivalliq Region of Nunavut.

Incorporation of Inuit Qaujimajatuqangit

- When possible, field programs in 2019 were guided by Inuit Qaujimajatuqangit (IQ), including the assistance of local field assistants. Annual contributions from Inuit to the monitoring programs are presented in Section 3.0.

Direct Habitat Loss

- Direct habitat loss is assessed every three years and was not assessed in 2019 as the Project footprint is unchanged from that assessed in 2018 (next assessment in 2021).

Indirect Habitat Loss

- Indirect habitat loss for caribou and wildlife habitat (soils and vegetation) is assessed every three years and was not assessed in 2019 (next assessment in 2022, tied to the Vegetation Health Program).

Wildlife Observations

- Between 1 January and 7 December 2019, there were 244 incidental wildlife observations among 17 different species.

Wildlife Track Surveys

- On-site wildlife track surveys were conducted on various days between 6 January and 28 December 2019. A total of 322 individual tracks were recorded, including a cluster of 50 tracks of an unidentified species.
- Observations were largely limited to goose (Canada goose, Snow goose and unidentified goose tracks – 33.5%), Arctic hare (23%) and Arctic fox (31%) tracks. Three individual caribou tracks were recorded within the Meliadine Mine site (1%).

Bird Nests

- A total of 9 bird nests were observed in the Project footprint during the 2019 nesting season in July.
- No nests or eggs were disturbed, and none needed to be relocated.

Incidents and Mortalities

- A total of 17 wildlife mortalities were recorded in 2019 – a decline of 41% compared to 2018 mortalities.
- Only 29% of the total wildlife mortalities were Project-related and 71% of the total wildlife mortalities were Arctic foxes trapped by the Government of Nunavut (GN) Department of Environment (DoE) (i.e., not Project-related).

Wildlife Deterrents

- A bird deterrent canon was initially deployed in Saline Pond 2 (SP2) in accordance with Agnico Eagle's Project Certificate No.006 Term and Condition 74 on 6 June 2019, but was not used.
- Deterrent bird kites were deployed at several Collection Ponds at the Mine site and a snowy owl effigy was placed atop the fuel tanks to dissuade birds from nesting in these areas. No use of chemical deterrents against predatory mammals (i.e., bear sprays) were reported for 2019.

Barren-ground Caribou

Caribou Behavior

- Caribou behavior observations were completed by Agnico Eagle staff from 26 to 28 June and 1, 3 and 4 of July 2019 on 12 groups of caribou. Observations showed no obvious behavioral response to mine activity, including consideration of observations made between 2017 and 2019.
- An underground blast was undertaken on 3 July 2019. The on-site Agnico Eagle staff monitored a group of caribou approximately 3-4 km from the blast center-point to assess their behaviour. Though the monitors could hear and feel the rumble of the blast, the caribou showed no obvious behavioural response and did not flee the area.
- From 1993 to 2019, Qamanirjuaq collared caribou have been present in the Regional Study Area (RSA) in 13 of 27 years and alternate between periods of presence and absence through time. Collared caribou have typically entered the RSA in mid to late April, with exits varying from late April to October. When present, collared caribou spend about one to three weeks in the RSA and over all years are present for an average of 6 days.
- For the Local Study Area (LSA) over the same period, Qamanirjuaq collared caribou have been present in 10 of 27 years. Collared caribou from this herd typically enter the LSA in mid-July and leave within a couple of days. Over all years, collared caribou spend less than half a day inside the LSA.

Caribou Advisory

- Mass migration through the Mine site and All-weather Access Road (AWAR) took place between 26 June and 6 July 2019.
- In total there was a complete work stoppage for 240 hours (~10 days) for the AWAR, and restricted duties for both the Mine site and AWAR for 222 hours (~9.25 days).

Hunter Harvest

- A Memorandum of Understanding (MOU) was signed, in principal, by Agnico Eagle and the Kivalliq Hunters and Trappers Organization (KHTO) in March 2019.
- Agnico Eagle is currently in working on a calendar for the Hunter Harvest Survey with the KHTO for data collection from the local community.

Birds

Shoreline Surveys

- All waterbodies within 200 m of mining related infrastructure (excluding the AWAR) were surveyed on foot by trained biologists to locate and identify nesting waterbirds from 10 to 20 June 2019.
- A total of nine different species were observed, including a Peregrine falcon nest (*Falco peregrinus anatum/tundrius*; listed as Special Concern under Schedule 1 of the Species at Risk Act). Due to the timing of surveys, no nestlings or fledglings were observed – nests were in the nest-building stage or with eggs. A total of 26 nests were recorded – eggs were confirmed for 77% of the nests which were observable (72 eggs in total).
- Fewer nests were observed compared to 2018, but significantly more eggs were observed per nest in 2019. The differences are likely attributable to timing of the survey between years and observer nest-finding ability.

Point Counts

- In 2019, a total of 6 transects were completed for a total of 72 point count surveys between 10 and 20 June 2019.
- In total, seven passerine (i.e., songbird) species were recorded. The most abundant species was horned lark (*Eremophila alpestris*) and the least abundant species was American robin (*Turdus migratorius*).
- Density of each species varied between 2018-2019 in nearly all habitat types, but was largely comparable on average. Mean density of passerine birds was significantly different among habitat types. Species richness and diversity were not significantly different among habitat types.
- Modelling results for differences between years, habitat type and distance indicate that bird density may increase with increasing distance from the AWAR, but there was no change in overall bird density between 2018 and 2019.

PRISM

- Agnico Eagle contributed to the Environment and Climate Change Canada (ECCC) PRISM surveys in 2018 and 2019 and will continue to do so every five years. Ten 12 ha plots were surveyed from 19 to 21 June 2018, and 16 plots from 14 to 18 June 2019.
- A total of 14 breeding bird species were observed in both years combined. The most common bird species observed in the plots were Lapland longspur (*Calcarius lapponicus*), and Savannah sparrow (*Passerculus sandwichensis*).
- A total of 243 non-breeding bird species were observed in both years combined.
- One species-at-risk was observed – a single short-eared owl (*Asio flammeus)*; but sex was undetermined, and this species is listed as Special Concern under Schedule 1 of the Species at Risk Act. Breeding evidence of two species of shorebirds was found during the surveys - Dunlin (*Calidris alpina*) in 2018, and Semipalmated plover (*Charadrius semipalmatus*) in both 2018 and 2019.

Raptors

- The 2019 annual report of the Arctic Raptors Research Program is included in Appendix B.
- For the period of 2013 to 2019, two nesting sites are confirmed within the footprint of the mine infrastructure, three are within 600 m of the AWAR and another four are within 1.5 km of the AWAR. Mean distance from known occupied nesting sites to the Meliadine Lease footprint was 12.48 km (range of 0 – 29 km).
- Nest occupancy rates for Peregrine falcons (*Falco peregrinus tundrius)* have been stable between 2013 and 2019, while Rough-legged hawk (*Buteo lagopus)* nest occupancy rates have been more variable over the same period. Gyrfalcons (*Falco rusticolus*) have not been recorded.

Soil and Vegetation Monitoring

- A field program was carried out by a vegetation ecologist from 19 to 24 July 2019. No dustfall was visually observed at the treatment and reference locations. However, dustfall on vegetation was observed at some of the locations along the AWAR. Agnico Eagle will continue inspecting vegetation visually to assess possible impacts of dustfall on vegetation.
- Overall there was no significant difference between the soil and vegetation metal concentration results from 2017 (Golder 2018) and 2019. Despite some elevated soil parameter concentrations for arsenic and high variability in soil pH observed, these are comparable to baseline measurements (Golder 2014a) and the vegetation analysis supports that there is no stress to vegetation.

Non-native Plants

- Non-native plant surveys were completed along the AWAR and Project footprint on 20-21 July 2019.
- A non-native plant species, Common dandelion (*Taraxacum officinale*), listed under the Non-Native and Invasive Species in Nunavut (CESCC 2010; Appendix G), was identified at two monitoring locations along the AWAR. These were manually pulled and removed for appropriate disposal by Agnico Eagle staff.

Environmental Variables

- The maximum annual temperature of 21.8°C was recorded on 23 July, 2019 and the minimum annual temperature -45.4°C was recorded on 26 January, 2019. Snowmelt began 6 June, 2019 when the average daily air temperature exceeded 0°C.
- Environmental variables will continue to be monitored on an on-going basis.

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1.0 INTRODUCTION

1.1 Background

The Agnico Eagle Mines Limited (Agnico Eagle) Meliadine Gold Mine (the Project), located in the Kivalliq Region of Nunavut (Figure 1), received a Project Certificate (No. 006) from the Nunavut Impact Review Board (NIRB) in February 2015 (with Amendment 001 in February 2019). The subsequent Water Licence and leases, allowed for the construction of a gold mine and ancillary facilities including an All-weather Access Road (AWAR), barge unloading facilities, lay-down area, and a fuel tank farm in Rankin Inlet. A conceptual Terrestrial Environment Management and Monitoring Plan (TEMMP) for the Project was prepared for submission with the Project Final Environmental Impact Statement (FEIS) and forms a component of the documentation series produced in accordance with the Project. The TEMMP will be reviewed and updated on an as-needed basis as the Project proceeds from detailed design and construction through operations, closure and post-closure.

This report addresses requirements of Project Certificate No. 006, which were included in the 2017 Annual TEMMP Report (Golder 2018). The 2019 annual report (this document) is the third of a series of annual TEMMP summary reports for the Project. The purpose of this report is to summarize the 2019 data collected from wildlife and vegetation monitoring programs, and to describe natural variation and potential Project-related changes in wildlife populations within and adjacent to the Project. The 2019 annual report describes monitoring objectives and methodology, 2019 annual results, mitigation activities, and management recommendations based on 2019 monitoring results. It should be noted that 2019 is the first year of operations for the Project, and is anticipated to be operational and in production through to 2027, with closure and post-closure activities continuing until 2037.

LEGEND

- MINE FOOTPRINT
- MINE INFRASTRUCTURE
- ALL-WEATHER ACCESS ROAD (AWAR)
- RANKIN INLET
- WATERCOURSE
- WATERBODY
- TERRITORIAL PARK

0 2,500 5,000

1:125,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE LIMITED.
2. DATUM: NAD83 PROJECTION: UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

PROJECT

MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PROJECT LOCATION

CONSULTANT

GOLDER

YYYY-MM-DD	2020-01-21
DESIGNED	KB/CLT
PREPARED	CDB
REVIEWED	CLT/CD
APPROVED	CLT

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1.2 Project Description

The Project is located approximately 25 kilometers (km) north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson Bay, the Project site is located on a peninsula between the east, south, and west basins of Meliadine Lake (63°1’23.8’’ N, 92°13’6.42"W), on Inuit Owned Lands (IOL).

The scope of the TEMMP annual report is to report on terrestrial monitoring activities for the Project throughout its various phases of development. This report includes data collected in 2019, reflecting the end of construction activities and the start of operations. Project site facilities include a plant site and accommodation buildings, a water management system that includes collection ponds, water diversion channels, retention dikes/berms, and water treatment plants. Project components include two ore stockpiles, a temporary overburden stockpile, a tailings storage facility, three waste rock storage facilities, a landfarm, incinerator, and landfill.

Environmental baseline studies were completed in the Project area prior to Project approval and integrated into the current project design according to the 2015 TEMMP (Golder 2015). Vegetation and wildlife Valued Ecosystem Components (VECs) were identified in consultation with regulatory agencies, the Kivalliq Inuit Association (KivIA) and the Rankin Inlet Hunters and Trappers Organization (HTO). Vegetation VECs include plant populations and communities, listed (rare) plant species, and traditional use plant species. Wildlife VECs include ungulates (caribou and muskox), carnivores (grey wolf and polar bear), raptors, waterbirds, and upland birds (including migratory birds). Further details on VEC selection can be found in the FEIS (Golder 2014a) and the TEMMP (Golder 2015).

1.2.1 Concordance with Terms of Reference

The NIRB Project Certificate (No. 006) for the Meliadine Gold Mine was issued on 26 February 2015, and Amendment 001 was issued 26 February 2019 . This third iteration of the TEMMP annual report addresses the Terms and Conditions of Project Certificate No.006 as they relate to the TEMMP. Concordance as reflected in Table 1.

NIRB recommends the following related to standardization of data for monitoring programs:

> *“all monitoring plans should be designed so that results from these programs can be coordinated with ongoing regional initiatives or programs with relevant government organizations, or regional authorities.” NIRB guidelines, Section 9.3, page 78-79.*
>
> *“When designing data collection or baseline studies, it is recommended that the Proponent coordinate with ongoing programs with relevant developments, government organizations, regional authorities, and researchers. This recommendation applies to data collected for the Nunavut General Monitoring Program (NGMP), as per Article 12 of the NLCA, the Proponent’s project-specific monitoring programs, as well as any regional monitoring initiatives in which the Proponent will participate. The Proponent is expected to coordinate on any initiatives undertaken by government organizations in respect to the NGMP and to liaise with the NGMP Secretariat whenever possible.” NIRB guidelines, Section 7.7.1, page 40-41.*

Agnico Eagle will comply with these principles and has already established several programs that involve collaborations with regional initiatives and contribute to monitoring cumulative effects. These include:

- **Caribou Collar Program:** Supporting the Government of Nunavut's (GN) caribou satellite-collaring program for the Qamanirjuaq herd (and other herds in the Kivalliq Region), facilitating monitoring of cumulative effects at the herd level (Golder 2015; Section 3.4, page 12).
- **Regional Muskoxen Surveys:** Agnico Eagle has provided the GN Department of Environment (DoE) with in-kind contributions and support for previous muskoxen surveys and will continue to do so when requested.
- **Hunter Harvest Program:** Agnico Eagle has signed a memorandum of Understanding (MOU) with the Kivalliq Hunters and Trappers Organization (KHTO) in March 2019 to develop and implement a methodology to document caribou harvesting around the Meliadine Mine, and to participate in Mine site studies and monitoring (Golder 2015; Section 3.5, page 13). This will contribute to an understanding of cumulative effects by increasing understanding of the regional distribution and seasonality of hunting.
- **Raptor Monitoring Program:** Agnico Eagle, in collaboration with the Arctic Raptor Project, has developed and implemented the raptor monitoring program (Golder 2015; Section 3.6, page 14). This will directly align monitoring efforts at Meliadine with this long-term regional research program which already involves government, non-government, Indigenous communities, and academic partnerships.
- **Waterfowl and Shorebird Monitoring:** Agnico Eagle, in collaboration with Environment and Climate Change Canada (ECCC), have agreed to implement the Program for Regional and International Shorebird Monitoring (PRISM) (Golder 2015; Section 4.11, page 39). This will directly align monitoring efforts at Meliadine with other Agnico Eagle properties for waterfowl and shorebirds.
- **Wildlife Surveys:** Agnico Eagle, in collaboration with the KHTO, will conduct wildlife surveys along the All-Weather Access Road (AWAR) and with environment technicians around the Mine site. This will contribute to an understanding of cumulative effects by collecting routine wildlife survey data (including caribou) and assist in anticipating large herd migrations, communicating with the KHTO and managing mine activities during migration events.

Table 1: Concordance Table with NIRB Project Certificate No. 006 Terms and Conditions

Term	Condition	Section
37	The Proponent shall incorporate protocols for monitoring for the potential introduction of invasive vegetation species (e.g. surveys of plant populations in previously disturbed areas) into its Terrestrial Environment and Monitoring Plan. Any introductions of non-indigenous plant species must be promptly reported to the Government of Nunavut Department of Environment.	12.1
38	The Proponent shall conduct sampling to determine baseline levels for metals in soils found in areas with berry-producing plants near the Project area and shall update relevant vegetation sections within the Terrestrial Management and Monitoring Plan to incorporate ongoing monitoring of these parameters prior to commencing operations.	11.0, 12.0
39	The Proponent shall develop and establish an on-going monitoring program to determine the distribution, abundance, and health of vegetation species used as caribou forage (such as lichens) near Project areas, prior to commencing operations.	11.0, 12.0
40	The Proponent shall review, on an annual basis, all monitoring information and the vegetation mitigation and management plans developed under its Environmental Management Plan and Terrestrial Environment and Monitoring Plan (TEMMP) and adjust such plans as may be required to effectively prevent or reduce the potential for significant adverse project effects on vegetation abundance, diversity and health, taking into account lessons learned at other northern mining developments where appropriate.	11.0, 12.0
45	The Proponent shall demonstrate consideration for cooperating with existing and planned regional and/or community-based monitoring initiatives associated with terrestrial wildlife and wildlife habitat that produce information pertinent to mitigating project-induced impacts. The Proponent shall give special consideration for supporting regional studies of population health and harvest programs for Qamanirjuaq caribou which help address areas of uncertainty for Project impact predictions.	1.2.1 and 8.0
46	The Proponent shall update its Terrestrial Environment Management and Monitoring Plan (TEMMP) for the Project to include a detailed harvest study prepared in consultation with the Government of Nunavut (GN) and other affected parties. The design of the harvest study should demonstrate consideration for the following: a. Hiring of a dedicated local survey coordinator through local Hunters and Trappers Organizations (HTOs) and provision of adequate resources for the HTOs to run the program; b. The potential effects on caribou populations and on caribou behaviour resulting from increased human access caused by the all-weather access road and associated roads and trails; and, c. Increasing local knowledge of the project development areas, including establishing baseline harvesting levels prior to unrestricted public access on the all-weather access road.	9.0
47	The Proponent shall share information with the Government of Nunavut (GN) relating to the migration of caribou and include the GN as a party respecting caribou monitoring and movement through Project development areas, including the all-weather access road and associated roads and trails.	6.1, 8.1.1, 8.2.1 and 8.2.2
52	The Proponent shall undertake periodic surveys and a habitat assessment for muskoxen in the regional study area by partnering with, or complementing, the existing regional muskox monitoring programs.	6.0
55	In consultation with the Government of Nunavut (GN) and other affected parties, the Proponent shall set thresholds for direct mortality of wolf, grizzly bear, polar bear, wolverine, and fox to ensure monitoring and mitigation for the Project is responsive to undesirable rates of mortality. The Proponent shall reach an agreement with the appropriate Designated Inuit Organization regarding compensation or any direct mortality of wildlife resulting from the Project.	6.5
56	The Proponent shall report annually to the NIRB regarding its terrestrial environment monitoring efforts, with inclusion of the following information: a. Description of all updates to terrestrial ecosystem baseline data; b. A description of the involvement of Inuit in its monitoring programs; c. A detailed presentation and analysis of the distribution relative to Project infrastructure and activities for caribou and other terrestrial mammals observed during surveys and incidental sightings; d. Results of the annual monitoring program, including field methodologies and statistical approaches used to support conclusions drawn; and, e. An assessment and presentation of annual environmental conditions including timing of snowmelt, green-up, as well as standard weather summaries.	4.1.2 and 5.0
57	Within its annual report to the NIRB, the Proponent shall incorporate a review section which includes: a. An examination for trends in the measured natural variability of Valued Ecosystem Components in the region relative to the baseline reporting; b. A detailed analysis of wildlife responses to operations with emphasis on wildlife behaviour, mortalities and displacements (if any), and responses to operations of the all-weather access road and associated access roads/trails; c. A demonstration and description of how the monitoring results, including the all-weather access road and associated access roads/trails contribute to cumulative effects of the project; and, d. Any proposed changes to the monitoring survey methodologies, statistical approaches or proposed adaptive management stemming from the results of the monitoring program.	6.3
59	If Species at Risk or their nests and eggs are encountered during Project activities or monitoring programs, the primary mitigation measure must be avoidance. The Proponent shall establish clear zones of avoidance based on the species-specific nest setback distances outlined in the Terrestrial Environment Management and Monitoring Plan.	6.2
61	Prior to bird breeding season, the Proponent shall either conduct clearing activities or identify and install nesting deterrents (e.g., flagging) to discourage birds from nesting in areas likely to be disturbed by construction/clearing activities. If clearing is to take place during the nesting season, a nest survey should take place to identify nests and any identified nests must remain undisturbed until the young have fledged or left the nest. Any nests identified shall be included as part of the annual reporting for the Terrestrial Environmental Mitigation and Monitoring Plan (TEMMP).	6.2, 10.1.2 and 10.3.2
62	The Proponent shall protect any nests found (or indicated nests) with a buffer zone determined by the setback distances outlined in its Terrestrial Environment Mitigation and Monitoring Plan (TEMMP), until the young have fledged. If it is determined that observance of these setbacks is not feasible, the Proponent will develop nest-specific guidelines and procedures to ensure bird's nests and their young are protected.	6.2, 10.1.2 and 10.3.2
71	The Proponent shall develop detailed and robust mitigation and monitoring plans for migratory birds, reflecting input from relevant agencies, the Kivalliq Inuit Association and communities.	10.0
72	The Proponent shall continue to develop and update relevant monitoring and management plans for migratory birds under the Proponent's Environmental Protection Plan and Terrestrial Environment Mitigation and Monitoring Plan (TEMMP) prior to construction. The key indicators for follow up monitoring under this plan will include upland birds (including migratory birds), waterbirds, raptors, and seabirds including migration and wintering.	10.0
73	The Proponent's monitoring program shall assess and report, on annual basis, the extent of terrestrial habitat loss due to the Project to verify impact predictions and provide updated estimates of the total Project footprint.	4.1, 11.0
105	The Proponent is strongly encouraged to consider incorporating information obtained from local outfitting and guiding businesses into its Hunter Harvest Survey where possible, and to include these organizations as potential respondents to surveys undertaken.	9.0
118	The Proponent shall include in an updated Terrestrial Wildlife Management and Monitoring Plan (TEMMP), plans for increased caribou monitoring efforts including weekly winter track surveying and summer and fall surveys undertaken on foot twice per month. These results shall be reported to the NIRB with the Proponent's annual reporting requirements.	6.1, 8.1, 8.2 and 8.3
119	The Proponent shall include within its updated Terrestrial Wildlife Management and Monitoring Plan, a commitment to establishing deterrents along the AWAR at any areas where it is observed that caribou are attracted to the AWAR and their presence may present a risk of collisions with traffic along the AWAR (such as areas where caribou are utilizing the AWAR to facilitate movement, areas where caribou may be licking minerals/road salt from the road, areas where caribou are gathering to avoid insects, etc.).	TEMMP (Golder 2015) Appendix 3 – Wildlife Protection and Response Plan

1.3 Study Area Boundaries

The Local Study Area (LSA) includes a 500 meter (m) radius buffer centered on the Project footprint and includes 1,000 m buffer on the AWAR, Discovery Access Road and the Rankin Inlet Bypass Road. The total area of the LSA is 10,598 hectares (ha) (Figure 2).

The Regional Study Area (RSA) encompasses an area that includes a 28 km radius area centered around the Project, including Rankin Inlet for a total area of 246,300 ha (Figure 3).

Further details on the justification for study area sizes can be found in the FEIS (Golder 2014a) and the TEMMP (Golder 2015).

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540000
550000
560000
6990000
6980000
6970000

Lake

Parallel Lake

Meliadine Lake

Tiriganiaq Deposit

Manned Gate

All-weather Access Road

Little Meliadine Lake (LML)

Iqalugaarjuup Nunanga Park

Meliadine River

Unmanned Gate

Char River Bridge

Meliadine River Bridge

Municipal Road

Prairie Bay

Rankin Inlet Bypass Road

Rankin Inlet

Hudson Bay

LEGEND

- MINE FOOTPRINT
- MINE INFRASTRUCTURE
- APPROVED PROPOSED TERRESTRIAL LOCAL STUDY AREA (LSA)
- ALL-WEATHER ACCESS ROAD (AWAR)
- RANKIN INLET
- WATERCOURSE
- WATERBODY
- TERRITORIAL PARK

0 2,500 5,000

1:125,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE LIMITED.
2. DATUM: NAD83 PROJECTION: UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PROJECT LOCAL STUDY AREA

CONSULTANT

GOLDER

YYYY-MM-DD	2020-01-21
DESIGNED	KB/CLT
PREPARED	CDB
REVIEWED	CLT/CD
APPROVED	CLT

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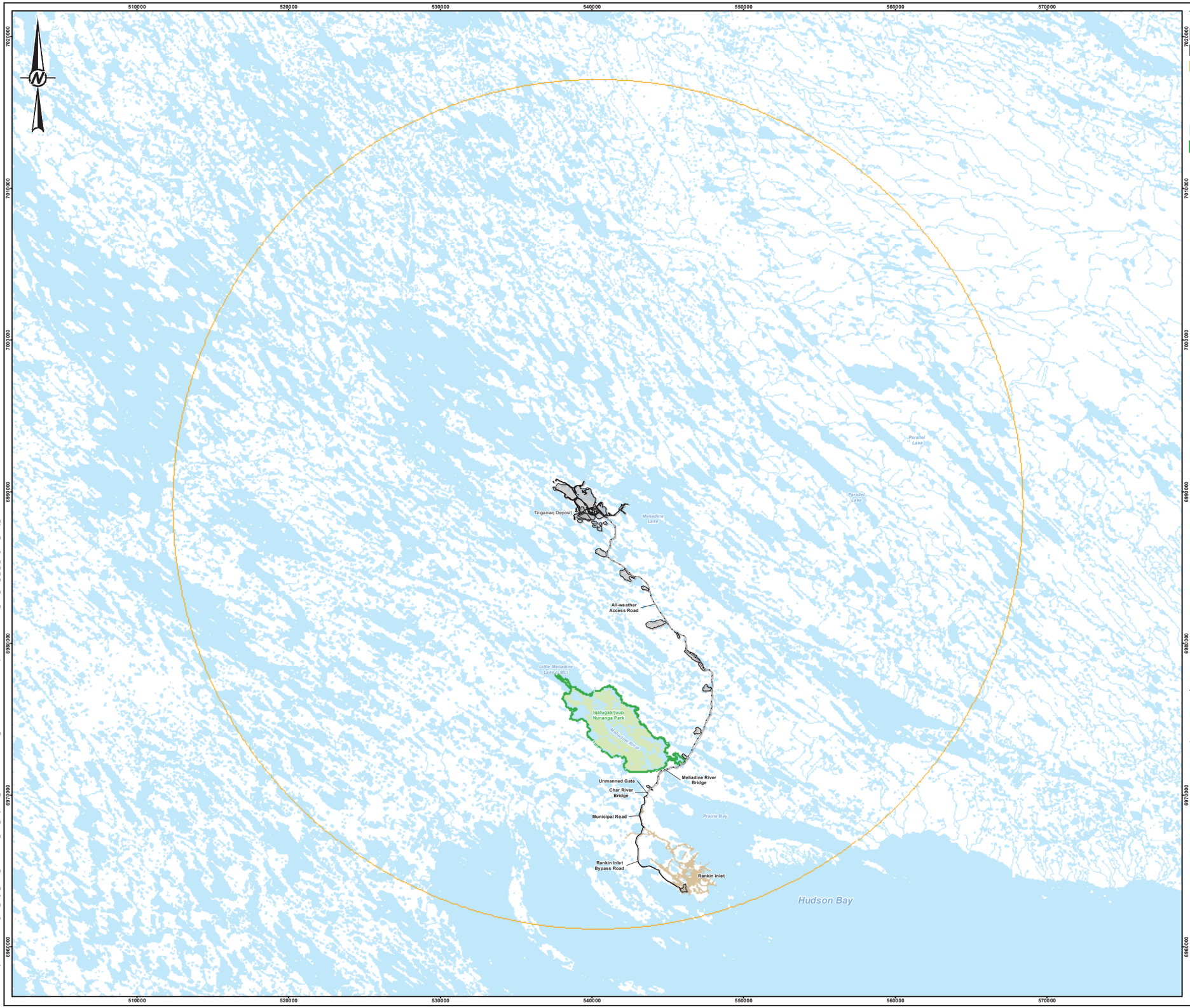

LEGEND

- MINE FOOTPRINT
- MINE INFRASTRUCTURE
- REGIONAL STUDY AREA (RSA)
- ALL-WEATHER ACCESS ROAD (AWAR)
- RANKIN INLET
- WATERCOURSE
- WATERBODY
- TERRITORIAL PARK

0 5 10

1:250,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE LIMITED.
2. DATUM: NAD83 PROJECTION: UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PROJECT REGIONAL STUDY AREA

CONSULTANT

GOLDER

YYYY-MM-DD	2020-01-21
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PREPARED	CDB
REVIEWED	CLT/CD
APPROVED	CLT

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1.4 Monitoring Approach

Wildlife monitoring is an essential tool in protecting and maintaining wildlife in the vicinity of the Project. A comprehensive monitoring strategy has been implemented and, as required, is adapted to meet the objectives of the management strategy and methods set out in the TEMMP (Golder 2015). Monitoring programs evaluate the effectiveness of mitigation measures and assess Project-related impact predictions. For all wildlife monitoring programs there is a certain level of uncertainty or unpredictability; therefore, residual effects identified during monitoring may require implementation of adaptive management strategies.

To effectively evaluate the accuracy of impact predictions, a series of quantitative monitoring indicators, which are within the broad categories of habitat distribution, wildlife distribution, wildlife richness, wildlife diversity, wildlife abundance, and environmental health, have been developed. 2019 is the third year of overall monitoring per the TEMMP, and also the first year under operations for the Project. Previous monitoring was conducted during the construction phase for the Project. Consequently, some of the objectives below may not be answered at this time or will be addressed qualitatively.

1.5 Objectives

The primary objectives of the 2019 Annual Report include:

- Collect information that will assist Agnico Eagle to determine if there are effects on wildlife and if these effects were accurately predicted in the FEIS.
- Reporting the results of the 2019 wildlife monitoring programs.
- Summarizing the monitoring strategy implemented over the course of the year.
- Evaluating the function and validity of implemented monitoring strategies.
- Summarizing adaptive management strategies.
- Providing management recommendations for 2019.
- Allowing regulators to contribute advice for improving wildlife management.

1.6 Report Organization

Within each section of this report, data is presented that will be tracked over the life of the Project. Recommendations for enhancement to the TEMMP is presented at the end of each section for consideration and may be incorporated into the TEMMP for subsequent years. The TEMMP is an evolving program that will reflect recommendations during previous years, as well as advances in Project development. Changes will be captured in future revisions of the TEMMP as needed.

2.0 REVIEW OF IMPACT PREDICTIONS

A summary of the impact predictions proposed in the TEMMP (Golder 2015) is provided in Table 2. Adaptive management will be implemented if the Project impacts exceed the predictions. The corresponding sections of this annual report, where monitoring indicators are discussed, are also listed.

Table 2: Summary of Predicted Effects, and Accuracy of Impact Predictions

Monitoring Indicator	Proposed thresholds	Surveyed in 2019?	Exceeded in 2019?	Monitoring Methods	Frequency of Data Collection	Section Reference
Vegetation (Wildlife Habitat)						
Habitat Loss	Terrestrial – 2,951 ha Aquatic – 515 ha	Yes	No	Ground Surveys, Mapping, GIS Analysis	Annually	4.0 & 11.4
Habitat Degradation by Contamination	No effects to plant health from dust deposition SLRA – TBD	Yes	No	Vegetation and Soil Samples	Every 3 Years	11.4
Habitat Reclamation following Mine Closure	NA	No	-	Ground Surveys, Vegetation Plots, Mapping	Once pre-construction baseline (2017) and 3 times Post-Closure	11.4
Habitat Degradation by Contamination	No non-native plant species established	Yes	Yes	Invasive Plant Survey of AWAR and Project site	Annually	12.4
Ungulates						
Habitat Loss and Degradation	No greater than 2,951 ha of terrestrial habitat loss	Yes	No	Ground Surveys, Mapping, GIS Analysis	Annually	11.4
Sensory Disturbance	<10% caribou deflections from AWAR	Yes	No	Ground Surveys	Daily/Weekly	8.1
Vehicle Collisions	1 individual	Yes	No	Ground Surveys	Daily	6.3
Hunting by Rankin Inlet Residents	After 3 years of data collection, in collaboration with GN, establish a threshold level	No	-	Hunter Harvest Study	Collected throughout the year and reported annually	9.0
Other Project-related Mortality	1 Individual	Yes	No	Ground Surveys	Daily	6.3
Exposure to Contaminated Water or Vegetation	SLRA - TBD	No	-	Vegetation and Soil Samples	Every 3 Years	11.4
Predatory Mammals						
Project-related Mortality	1 Arctic Fox	Yes	Yes	Ground Surveys, Cameras in attractant areas	Daily	6.3
Raptors						
Disturbance of Nesting Raptors	To be determined in consultation with GN and Alastair Franke, related to occupancy and productivity.	Yes (Appendix B)	No	Active Nest Monitoring	Nests within 200 m – Daily Nests from 200-1000 m – Weekly	10.4
Project-related Mortality	To be determined in consultation with GN and Alastair Franke	Yes (Appendix B)	No	Ground Surveys, Collision Reporting System	Mine Site-Daily AWAR – 2x/Week	10.4
Waterbirds						
Habitat Loss and Degradation	515 ha of Aquatic Habitat	Yes	No	Ground Surveys, Mapping, GIS Analysis	Annually	11.4
Disturbance of Nesting Waterfowl	TBD once NRV is established through consultation with ECCC and GN	Yes	No	Shoreline Surveys	Annually	10.5
Exposure to Contaminated Water or Vegetation	SLRA - TBD	No	-	Vegetation and Soil Samples	Every 3 Years	11.4
Project-related Mortality	1 Individual	Yes	No	Ground Surveys, Collision Reporting System	Mine Site-Daily AWAR - 2x/Week	6.3
Other Breeding Birds						
Habitat Loss and Degradation	No greater than 2,951 ha of terrestrial habitat loss	Yes	No	Ground Surveys, Mapping, GIS Analysis	Annually	11.4
Exposure to Contaminated Water or Vegetation	SLRA - TBD	No	-	Vegetation and Soil Samples	Every 3 Years	11.4
Changes in Breeding Bird Populations	TBD once NRV is established through consultation with ECCC	Yes	No	Breeding Bird Plots and Transects, PRISM	Every 3 Years PRISM – Plots surveyed over 2 years every 5 Years	10.5

Notes: AWAR = All-Weather Access Road; ECCC = Environment and Climate Change Canada; GN = Government of Nunavut Department of Environment; NRV = Natural Range of Variability; PRISM – Program for Regional and International Shorebird Monitoring; SLRA = Screening Level Risk Assessment; TEMMP = Terrestrial Environment Management and Monitoring Plan (Golder 2015).
NA = Not Applicable; TBD = To Be Determined.

3.0 INCORPORATION OF INUIT QAUJIMAJATUQANGIT

Field programs were guided by Inuit Qaujimajatuqangit (IQ), including the assistance of local field assistants. Annual contributions from Inuit to the monitoring programs are presented below (Table 3).

Table 3: IQ Field Contributions from Inuit to Monitoring Programs

Name	Date(s) Worked on Site	Total Days	Programs Contributed To
Octave John Papak	■ June 9-19 2019	10	■ Breeding bird surveys ■ PRISM surveys ■ Shoreline surveys
Tommy Tugak	■ June 9-19 2019	10	■ Breeding bird surveys ■ PRISM surveys ■ Shoreline surveys
Leo Kaludjak	■ July 16-21 2019	6	■ Melvin Bay water/sediment quality sampling and benthic sampling
Simeon Dion	■ July 16-21 2019	6	■ Melvin Bay water/sediment quality sampling and benthic sampling
Aarib Angidlik	■ June 27 2019	1	■ Water/sediment quality sampling ■ Caribou monitoring
Margo Simiky	■ June 27 2019	1	■ Water/sediment quality sampling ■ Caribou monitoring
Clayton Tartak	■ June 27-July 7 2019 ■ July 16 2019 ■ July 24 2019 ■ July 27 2019 ■ August 13 2019 ■ September 25 2019	16	■ Water/sediment quality sampling ■ Melvin Bay water/sediment quality sampling and benthic sampling ■ Caribou monitoring/ATV trail identification

PRISM – Program for Regional and International Shorebird Monitoring

4.0 DIRECT HABITAT LOSS

The vegetation component of the TEMMP (Golder 2015) outlines the means by which Agnico Eagle plans to reduce Project-related effects to vegetation populations and communities, and consequently wildlife habitat. The monitoring plan includes both environmental and follow-up monitoring. The objective of this component of the annual report is to determine if direct vegetation/habitat loss due to the Project footprint stays within impact predictions of 2,950 ha (Golder 2014a).

The Project footprint was analyzed and reported in the 2018 TEMMP Annual Report (Agnico Eagle 2019), which included all developments being completed as part of the construction phase into early 2019.

Although the Project footprint is currently 29% of the total predicted Project footprint, follow up monitoring should continue at 3 year intervals (i.e., next assessment against the Project footprint in 2021), as monitoring studies are used to provide feedback to Project operations to determine if the goals and objectives are being met.

5.0 INDIRECT HABITAT LOSS

Indirect effects to wildlife are associated with changes in habitat that can alter the movement and behavior of individuals in the vicinity of the Project as a result of sensory disturbance. Indirect effects are addressed through several of the monitoring programs per the TEMMP.

Caribou behaviour monitoring and analysis of collared caribou data (presence/absence) are presented in Section 8.0 of this report. For nesting birds, site-specific nest management plans may be required if birds are within the Project footprint or adjacent to Project components. For the 2019 monitoring period, indirect Project effects on nesting birds are addressed in Section 10. Indirect Project effects such as dust deposition on vegetation communities and presence of heavy metals on vegetation tissue and soils are presented in Section 11.0.

Indirect Project effects are assessed every three years, to align sampling years with the first year of construction in 2017 (i.e., next assessment in 2022).

6.0 WILDLIFE OBSERVATIONS

Environmental technicians conduct site surveillance monitoring and road surveillance monitoring regularly of the AWAR and the Project. In addition to planned surveys, all supervisors ask their employees to report wildlife sightings; Wildlife logs are posted throughout the Project and easily accessible to employees to facilitate wildlife reporting before, during, and after work shifts.

In 2019, there were 226 recorded incidental wildlife observations around the Mine site (including the camp area) and the AWAR (Table 4), representing observations of 17 species. Incidental wildlife observations were recorded between 1 January and 7 December 2019, and do not include mortalities.

Table 4: Incidental Wildlife Observations, 1 January to 7 December 2019

Species	Observations	Individuals
Arctic hare	23	34
Arctic fox	60	67
Bald Eagle	0	0
Canada Goose	21	145
Caribou	37	86
Common Raven	3	5
Duck sp.	5	17
Rough-legged Hawk	9	9
Muskox	0	0
Peregrine Falcon	3	4
Polar bear	2	2
Ptarmigan sp.	3	8
Sandhill Crane	22	68
Seagull sp.	8	18
Sik sik (Arctic ground squirrel)	8	10
Snow Goose	20	340
Snowy Owl	0	0
Tundra Swan	9	21
Greater White-fronted Goose	9	44
Wolf	2	2
Wolverine	0	0

Notes:
Specific GPS locations were not recorded for incidental wildlife observations in 2019.
Wildlife mortality counts are not included.

Incidental wildlife observation in 2019 were largely comparable to 2017 and 2018 observations in number of species, incidental observations and individuals observed. Notable differences included:

- Fewer caribou incidentally observed in 2019 compared to previous years. This is attributed to inclusion of observations made during the migratory periods during both 2017 and 2018, whereas 2019 excluded observations of caribou during migration to avoid duplication with Section 8.0 of this report.
- Increase in incidental observations and number of individuals by more than 100% of various breeding bird species, including Canada goose, Sandhill, Snow goose, Greater White-fronted goose, Tundra swan, Common raven and seagull species.
- Decrease in terrestrial predator observations and individuals observed in 2019, particularly for Arctic fox where the number of individuals incidentally observed decreased by approximately 27% and 36% compared to 2017 and 2018, respectively.
- Decrease in previous raptor species but with new raptors incidentally observed in greater numbers: No Bald eagle or Snowy owls were incidentally observed in 2019. Rough-legged hawks and Peregrine falcons were incidentally observed and in greater numbers compared to Bald eagles and Snowy owls in 2017-2018.

The following figure (Figure 5) illustrates differences in reported individuals incidentally observed per species from 2017 to 2019.

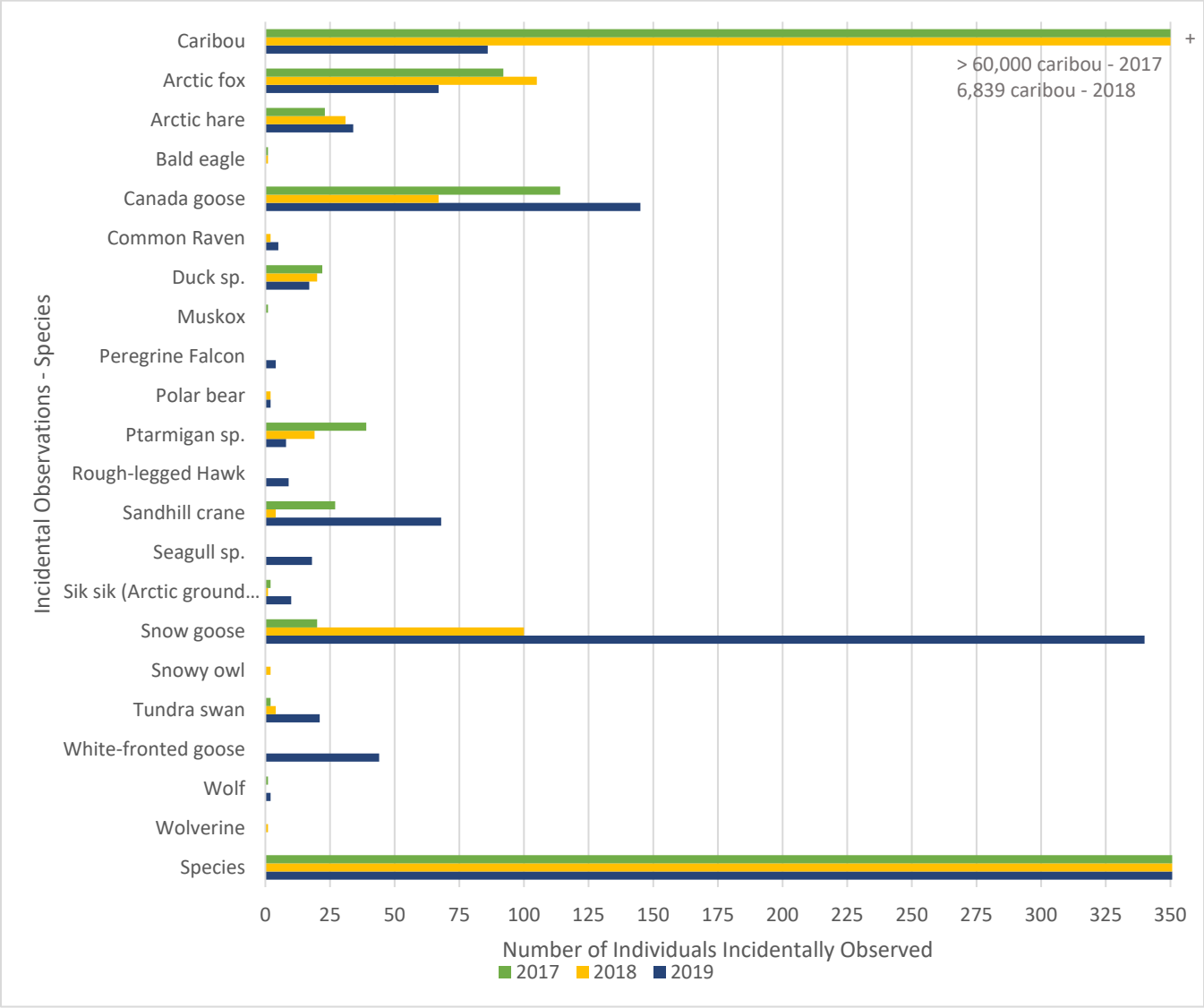


Figure 4: Incidental Wildlife Observations – Individuals Observed per Species from 2017 to 2019

Some of the differences in incidental observations recorded may be attributed to seasonal variation, as well as identification skills and/or reporting effort by on-site staff and wildlife monitors. However, differences may also be attributable to mitigation and protection measures in place to protect wildlife and/or on-site personnel, per the TEMMP, some of which may be favouring certain species (e.g., by affording them protection from predators near the Mine site). The objective of recording incidental observations is to examine the increasing presence or decreasing presence of species over time, and to record observations of species at risk.

6.1 Wildlife Track Surveys

On-site wildlife track surveys were conducted on 6 and 19 January, 6, 11 and 28 February, 8 and 26 March, 5, 13 and 21 April, 26 May, 17 July, 24 August, 12 and 16 September, 4, 12, 17 and 31 October, 13, 22 and 29 November, and 6 and 28 December 2019. A total of 322 individual tracks were recorded, including a cluster of 50 tracks of an unidentified species (excluded from percentage estimates).

Observations were largely limited to geese, Arctic hare and fox tracks, though tracks for other species were recorded when observed. Tracks for goose comprised 33.5%, Arctic hare 23% and Arctic fox 31% of all identified tracks observed in 2019. Other tracks observed included other avian species (11%), caribou (1% - 3 individual tracks) and sik (Arctic ground squirrel – 1 individual track, 0.5%). These track numbers are largely comparable to 2018 in locations and number of tracks observed (track data was not collected in 2017).

6.2 Bird Nests

Several incidental bird nests were observed in the Project footprint during the nesting season in 2019. The observed nests are presented in Table 6, and additional information is described below.

Table 5: Incidental Bird Nests 2019

Date Nest First Observed	Bird Species	Location	Approximate GPS Coordinates - Nests		Notes
			Northing	Easting	
6 June	Peregrine Falcon	Saline Pond 2 (SP2, south of CP1)	-	-	100 m buffer in effect
6 June	Rough-Legged Hawk	SP2	-	-	100 m buffer in effect
14 June	Herring Gull	Collection Pond 1 (CP1)	539906	6989619	Vacated nest due to water levels, 2019-06-21
15 June	Canada Goose	H15 Hummock (adjacent to the Tailings Storage Facility)	538876	6990059	-
18 June	Canada Goose	Near Channel 1	539874	6989569	-
22 June	Raven	Effluent Water Treatment Plant (EWTP)	539638	6989914	-
23 June	Unknown - Small brown bird	Tundra	541540	6988418	5 brown speckled eggs in nest
23 June	Sandhill Crane	Tundra	541639	6988301	-
12 July	Snow Bunting	Sea can – Itivia Fuel Storage Facility	546139	6963947	3 fledglings in nest; buffer in effect

A herring gull was observed to be nesting in Collection Pond 1 (CP1) at the Mine site in June 2019. This was observed after freshet inflows. Consultation with Environment and Climate Change Canada (ECCC) was initiated as discharge from CP1 was scheduled to commence in early July. The herring gull left the nest on June 19, 2019 and was not observed over the next few days; as such, no further action or mitigation was required.

Other incidental nests observed in June 2019 within the Project footprint, as listed in Table 6. As these nests were away from active work areas, they did not require any specific mitigation measures beyond recommendations in the TEMMP and per Project Certificate No.006 Terms and Conditions.

A pair of Peregrine falcons were showing nest interest in the rock walls of Saline Pond 2 (SP2, south of CP1) on June 2, 2019 – the pond had been constructed earlier in the year during winter per the approved Mine plan. The first observation of the potential nest was on June 6 - the GN DoE was immediately informed, including proposed management measures should the nest become established, in line with the TEMMP and applicable Project Certificate No.006 Terms and Conditions. A deterrent kite had been installed at SP2 on June 3 and a propane cannon was installed on June 6 but were consequently removed when the Peregrine falcon nest was confirmed. A pair of Rough-legged hawks were also observed on the opposite rock wall during this time and a nest was confirmed on June 12, 2019. The nests were approximately 46 m apart and a 100 m buffer around each was put in effect. Planned works in and around SP2 were put on hold or moved to other areas where practicable. As the nests were on the SP2 rock walls and due to safety considerations, it was not possible to confirm the presence of eggs or fledglings but no fledglings were observed at any time. By August 3, 2019, the raptors had not been seen for a few days and were no longer observed in the area thereafter.

An active Snow bunting nest was observed on July 12, 2019 on one of the sea cans located at the Itivia Fuel Storage Facility in Rankin Inlet. The nest was observed to have 3 fledglings in the nest and a buffer was placed around the area and disturbance avoided – ECCC was informed, and no additional measures were recommended. The nest was passively monitored and observed to be empty on July 20, 2019. The birds (adults or fledglings) were not seen in the area in the days that followed, and the sea cans were then moved from the area.

6.3 Incidents and Mortalities

Mortalities can occur as wildlife become habituated to mining activities resulting from efforts to locate food or shelter (DDMI 1998). Diligent waste management, employee and environmental awareness, and immediate reporting of wildlife sightings in and around Project infrastructure can limit the mortality of wildlife.

6.3.1 Methods

Project-related incidents and mortalities are reported to the Environment Department for documentation in a detailed incident investigation for immediate follow-up. All incidental wildlife mortalities are reported immediately to the Government of Nunavut Department of Environment (GN DoE), and the GN DoE is consulted for follow-up mitigation and disposal procedures. In addition, the KivIA will also immediately be notified of wildlife mortalities and the events and circumstances around that mortality. If wildlife had to be deterred to reduce the risk of a wildlife-human incident, then all efforts are made by the environmental technicians to start with the least intrusive method available, and all deterrent actions are recorded.

6.3.2 Results

The following wildlife incidents listed in Table 6 were reported at the Project in 2019. Project related mortalities are defined as those caused as a direct result of Project activities and exclude those resulting from trapping conducted by regulatory organizations.

Table 6: Wildlife Mortality Incidents Recorded at Meliadine (Including AWAR) in 2019

Date	Species	Number	Location	Comments
10 January	Arctic fox	1	Landfill	Trapped and put down by the GN, disposed of by the GN
11 January	Arctic fox	1	Landfill	Trapped and put down by the GN, disposed of in the on-site incinerator
25 January	Arctic fox	1	Under main kitchen	
29 January	Arctic fox	2	Under main kitchen	
31 January	Arctic fox	1	Under main kitchen	Trapped and put down by the GN, disposed of by the GN
8 June	Small bird	1	Dustfall jar	Unidentifiable – likely landed inside the dustfall jar, died and dissolved. Reported and disposed of in the on-site incinerator
9 June	Snow goose	1	Portal 2	Deceased when found (broken neck and wing) – may have been struck by a vehicle. Reported and disposed of in the on-site incinerator
13 June	Arctic fox	1	Under main camp	Deceased when found – possibly a fox detected earlier in the season displaying signs of rabies. Reported and disposed of in the on-site incinerator
27 August	Arctic fox	1	AWAR KM 12	Fox ran at loaded truck and was crushed. Reported and disposed of in the on-site incinerator
20 September	Arctic fox	1	Mine site	Trapped on site
25 September	Arctic fox	1	AWAR KM 12	Deceased when found, possibly due to collision during night-shift. Reported and disposed of in the on-site incinerator
11 October	Arctic fox	1	Main Camp	Trapped and put down by the GN, disposed of by the GN
16 October	Arctic fox	1	Dome 1	Trapped and put down by the GN, disposed of by the GN
17 October	Arctic fox	1	Main Camp – kitchen door	Trapped and put down by the GN, disposed of at Rankin Dump
31 October	Arctic fox	1	Under main kitchen	Trapped and put down by the GN, disposed of at Rankin Dump
1 November	Arctic fox	1	Under main kitchen	Trapped and put down by the GN, disposed of at Rankin Dump

Notes: All trapping and associated disposals were completed by the Government of Nunavut Department of Environment (GN DoE), unless otherwise stated.

Following initial guidance from the GN DoE in response to incidents and observations of Arctic foxes in and around the Mine site in 2017, traps for Arctic foxes were placed around the Project starting 19 September 2017. These mortalities (not Project-related) were reported to the GN DoE, and they collected several deceased animals for disposal. Some animals were disposed of in the on-site incinerator, as indicated in the table above.

The number of wildlife mortalities declined in 2019 (17 total wildlife mortalities) compared to 2018 (29 mortalities) by 41%. Only 29% of the total wildlife mortalities were Project-related and 71% of the total wildlife mortalities were Arctic foxes trapped by the GN DoE (i.e., not Project-related). Of the 2018 wildlife mortalities, 96% were Arctic foxes and several were trapped by the GN DoE or found deceased on the Project footprint; this results in a decline of total Arctic fox mortalities of 25% between 2018 and 2019.

Declines in mortalities in 2019 since 2018 may be attributable to the implementation of management and prevention measures to deter wildlife from the Project footprint during and at the end of construction, particularly the camp area (e.g., skirting under buildings), and waste management measures (e.g., careful disposal of food wastes to avoid attracting wildlife).

6.4 Recommendations

Employees of the Environment Department continue to hold toolbox meetings with various departments and contractors, stressing that any disrespect of wildlife or of Meliadine's wildlife policy is unacceptable and against company rules. Management and mitigation measures, including reporting of incidents, will be continued.

An internal awareness memo was issued to the Mine crew following the Snow goose mortality reported at Portal 2. Several of the underground equipment and vehicles operating around Portal 2 have many blind spots and may require more vigilance or spotting upon entering or exiting the portal to avoid potential incidents with wildlife.

The declines in mortalities reported in 2019 suggest that mitigation and management measures in place are being effective, and Agnico Eagle will continue to consider improvements as possible and practicable, including establishment of an Environmental Working Group on site (in early 2020) with an aim to improve waste management protocols at Meliadine.

6.5 Accuracy of Impact Predictions

A summary of the impact predictions proposed in the TEMMP (Golder 2015) is provided in Table 2. Through systematically recording the presence of all wildlife within and around the Project footprint, Environmental staff will remain appraised of current and emerging issues and will be able to manage issues as they arise. To use a common example, surveillance monitoring may detect that wildlife has gained access and is taking shelter beneath a building.

The thresholds presented in Table 7 have been employed for the Project to date for consideration of any adaptive management for the TEMMP (Golder 2015), continued on from the 2017 TEMMP Annual Report (Golder 2018). Refinement of these thresholds may be considered, in collaboration with the GN, as appropriate, as more data is collected and analysed over time.

Table 7: Accuracy of Impact Predictions – Wildlife Incidents 2019

Monitoring Indicator	Preliminary Threshold	Exceeded in 2019?	Adaptive Management	Monitoring Method	TEMMP[(a)] Section
Vehicle Collisions	No more than 1 ungulate/year	No	Not currently identified	Wildlife Sightings Log, Site Surveillance Monitoring, AWAR Road Surveillance, Road Surveillance	4.4.2
Project Related Mortality[(b)]	No more than 1 ungulate/year	No	Not currently identified	Wildlife Sightings Log, Site Surveillance Monitoring	4.4.2
Project Related Mortality	No more than 1 Arctic fox/year	Yes	On-going waste management and, regular toolbox meetings reiterating that any disrespect of wildlife or of Meliadine's wildlife policy is unacceptable and against company rules	Wildlife Sightings Log, Site Surveillance Monitoring, with particular emphasis around waste management areas	4.4.2
Project Related Mortality	No more than 1 raptor/year	No	Not currently identified	Wildlife Sightings Log, Site Surveillance Monitoring	4.9
Project Related Mortality	No more than 1 waterbird/year	No	On-going and regular toolbox meetings on awareness of blind-spots, particularly for large vehicles and equipment	Wildlife Sightings Log, Site Surveillance Monitoring	4.10

Notes:

(a) TEMMP = Terrestrial Environment Management and Monitoring Plan (Golder 2015) – section relevant to respective monitoring indicator.
(b) Project related Mortality = A death that can be directly linked to the mine or mining activity.

7.0 WILDLIFE DETERRENTS

A bird deterrent cannon was initially setup in Saline Pond 2 (SP2) in accordance with Agnico Eagle licence requirements - Project Certificate No.006 Term and Condition 74 on 6 June 2019, which states that "the Proponent's Terrestrial Management and Monitoring Plan (TEMMP) shall include mitigation measures implemented to prevent the use of water attenuation ponds by waterfowl and waterbirds and monitoring that assesses whether the mitigation measures are working or revised or further deterrent measures are required". Inuit workers have previously raised concerns (verbally) about the potential impact of cannons on caribou and other wildlife (as reported in the 2018 TEMMP Annual Report; Agnico Eagle 2019). However, the cannon was not deployed due to the confirmed Peregrine falcon nest (refer to Section 6.2 of this report).

A deterrent bird kite was deployed at a collection pond at the Mine site and Snowy owl decoys were installed at other site facilities. No use of chemical deterrents against predatory mammals (i.e., bear sprays) were reported for 2019.

8.0 BARREN-GROUND CARIBOU

Barren-ground caribou (including Lorillard and Qamanirjuaq herds) currently have a federal status of 'Threatened' (COSEWIC 2018), but are not listed under the *Species at Risk Act (*SARA 2018) and are considered 'Apparently Secure' in Nunavut by the Canadian Endangered Species Conservation Council (CESCC 2016). Annual home ranges mapped by GN DoE show that the Project is within the annual home range of the Qamanirjuaq (Kaminuriak) Caribou Herd (Campbell et al. 2014; Campbell et al. 2012). The Lorillard caribou are migratory (Campbell et al. 2014) and generally distributed north of Chesterfield Inlet, based on radio-telemetry data collected by the GN DoE and the location of their historical calving grounds (Campbell et al. 2012). The likelihood of animals from the Lorillard Herd occurring in the Regional Study Area (RSA) for the Project, as defined in the FEIS (Golder 2014a), is very low. Baseline survey data documenting the distribution of barren-ground caribou

during early winter, spring migration and calving, and post-calving through fall migration and rut periods suggest that the RSA is within the seasonal range of the Qamanirjuaq barren-ground caribou herd (Jalkotzy 1999, 2000a, 2000b). Data provided by the GN in 2018 indicates that the core of the Qamanirjuaq herds calving range is approximately 57 km from the nearest point of the Project footprint. The annual range of the Qamanirjuaq herd occupies an area from northern Manitoba and Saskatchewan in the south, to southwestern NU and southeastern NT (BQCMB 1999; Campbell et al. 2012). Barren-ground caribou are migratory, and movements and range use varies annually (Wakelyn 1999). The annual distribution and life history of this population has been previously documented (Banfield 1954; Kelsall 1968; Thomas 1969; Parker 1972; Heard 1983). The Qamanirjuaq herd calves approximately 57 km to the west-northwest of the Project and after calving the herd aggregates into a post-calving movement, generally moving east towards the coast and then back to the west and southwest of the Project where their summer movement and distribution patterns commence. During the post-calving movements to the coast, thousands of caribou can come through the Meliadine Project site and reside within and around the Project area for approximately 5 to 10 days. For additional discussion on the Qamanirjuaq herd please refer to the FEIS (Golder 2014a).

8.1 Caribou Behavior Monitoring

The TEMMP indicates that once 50 caribou are observed within 5 km of the Project footprint boundary (visual detection or based on collar data provided by the GN), a stop work procedure commences on site. Understanding how caribou interact with the Project infrastructure including roads (i.e., crossing, deflection, walking parallel) and other Project infrastructure, documenting behaviour through activity budgets may better inform appropriate adaptive management and distance triggers and thresholds in the future. Over time, a long-term dataset will be used to evaluate obvious response or lack of obvious response of caribou to mining based on behaviour.

Activity budgets (i.e., time spent feeding, resting, walking, running) of caribou exposed to disturbances from the Project and AWAR will be used to provide inputs for assessing the impact to the energy balance of caribou (Section 4.5.2 of the TEMMP (Golder 2015) for additional discussion). The immediate effect of specific stressors (e.g., aircraft, vehicles, other wildlife) on caribou behavior will also provide general insight into the relative effect of natural versus road stressors on caribou behavior. Essentially this data will contribute to a larger data set from information collected at other mine sites to help determine a weight of evidence of caribou behavioral response to stressors on the Project site and from the AWAR. Consequently, opportunistic surveys should be completed when appropriate to do so during the caribou post-calving migration, without causing additional stress to caribou (based on surveyor opinion).

The objectives of this component of the monitoring program are to:

- determine the effect of the Project AWAR on caribou activity budgets
- determine the effect of other mining activities (e.g., blasting, human presence, light truck traffic) that may elicit a response in caribou
- determine which stressors associated with the Project have the greatest influence on caribou behavior, and the variation in caribou behavior from these stressors

8.1.1 Methods

Ground-based behavioral observations, or scan sampling, are conducted to provide data on changes in caribou behavior as a function of distance from the Project. Two different, but complementary approaches have been used to record the activity budget of caribou around the Project and AWAR. See the TEMMP (Golder 2015) for additional details on the behavior scan method.

In addition, an inventory of Qamanirjuaq collared caribou data, from 1993 to 2019 as provided by the GN DoE, was undertaken to understand alternating periods of presence and absence of caribou in and near the Project area.

8.1.2 Results

8.1.2.1 Caribou Behaviour Observations

Caribou behavior observations were completed by Agnico Eagle staff from 26 to 28 June and 1, 3 and 4 of July 2019 on 12 groups of caribou. A summary of caribou behavior observation and number of animals seen in 2019 is presented in Table 8.

Table 8: Caribou Behavior Observations (2019)

Date of Observation	Location	Approximate Number of Caribou	Behavior(s) Observed
26 June 2019	AWAR KM 19	3	Feeding, Standing, Walking
27 June 2019	AWAR KM 19	27	Feeding, Standing/Resting, Walking
	AWAR KM 22	9	Feeding, Standing, Walking
	AWAR KM 23	27	Feeding, Standing/Resting, Walking, later Running
	AWAR KM 24	13	Feeding, Standing/Resting, Walking
28 June 2019	AWAR KM 26	3,500 (in groups of 50, 200 and ~1,000)	Feeding, Standing/Resting, Walking Several on, adjacent to or crossing the road
	AWAR KM 27	1,353 (in groups of <10, 50, 200 and ~1,000)	Feeding, Standing/Resting, Walking Several on, adjacent to or crossing the road
	AWAR KM 28	20	Feeding, Standing/Resting, Walking
29 June 2019	AWAR KM 25	Unknown (group)	Walking, crossing the road
1 July 2019	AWAR KM 16	5	Feeding, Standing, Walking
	AWAR KM 22	6	Feeding, Standing, Walking
2 July 2019	AWAR KM 16	Unknown (group)	Walking
3 July 2019	AWAR KM 27	8	Feeding, Standing, Walking
4 July 2019	AWAR KM 19	2	Feeding, Standing, Walking

Caribou behaviour surveys in mid-July 2017 were at the end of the migration period and cannot be compared, though group numbers observed in 2017 (three groups of 15, 50 and 150 animals) are comparable to those observed on 28 June 2019. Similar group sizes were reported in 2018 during mid to late July. Observations showed no obvious behavioral response to mine activity over the three years of monitoring.

An underground blast was undertaken on 3 July 2019, after confirming that a group of caribou (small group, number of individuals not recorded) was located at approximately 3.8-4 km from the underground blast centerpoint. The caribou were observed by Agnico Eagle staff prior to, during, and after the blast to observe if any behavioural changes occurred. The staff reported that though they could hear and feel the rumble of the blast, the caribou showed no obvious behavioural response – prior to the blast they were grazing, walking and resting, and continued to do so through and after the blast.

8.1.2.2 Collared Caribou Inventory

From 1993 to 2019, Qamanirjuaq collared caribou have been present in the RSA (including baseline) in 13 of 27 years and alternate between periods of presence and absence through time (Table 10). Alternating periods of presence and absence of caribou in the RSA has been noted by IQ (Golder 2014a). Collared caribou have typically entered the RSA in mid to late April. Annual exits from the RSA have been more variable ranging from late April to October (Table 10). Evidence from collared caribou support that a portion of the Qamanirjuaq herd may pass through the RSA in summer but on occasion may in some years linger from late October through March (Hubert and Associates 2007; Table 10).When present, collared caribou spend about one to three weeks in the RSA and over all years are present for an average of 6 days.

For the Local Study Area (LSA; Golder 2014a), Qamanirjuaq collared caribou have been present in 10 of 27 years (Table 10). Collared caribou from this herd typically enter the LSA in early to mid-July and leave within a couple of days. Over all years, collared caribou spend less than half a day inside the LSA.

In consideration of these results, impacts to the Qamanirjuaq herd due to the Project have the potential for limited transboundary effects. The collar data also support that caribou are spending very little time in the areas immediately adjacent to the Project.

Table 9: Annual Timing of Qamanirjuaq Collared Caribou Presence and Duration in the Regional Study Area and Local Study Area, 1993 to 2019

Year	Total Number of Collared Caribou	Mean Date of RSA Entry	Mean Date of RSA Exit	Mean Number of Days in RSA	Number of Collared Caribou in RSA	Mean Date of LSA Entry	Mean Date of LSA Exit	Mean Number of Days in LSA	Number of Collared Caribou in LSA
1993	5	-	-	0	0	-	-	0	0
1994	4	-	-	0	0	-	-	0	0
1995	4	-	-	0	0	-	-	0	0
1996	7	-	-	0	0	-	-	0	0
1997	2	-	-	0	0	-	-	0	0
1998	7	-	-	0	0	-	-	0	0
1999	6	-	-	0	0	-	-	0	0
2000	3	Apr-11	Apr-21	10.0	1	Dec-29	Dec-30	1.0	1
2001	8	-	-	0	0	-	-	0	0
2002	4	-	-	0	0	-	-	0	0
2003	4	-	-	0	0	-	-	0	0
2004	15	-	-	0	0	-	-	0	0
2005	8	-	-	0	0	-	-	0	0
2006	24	Apr-12	Oct-06	19.0	2	-	-	0	0
2007	16	Apr-13	May-28	42.5	2	Feb-15	Feb-15	0.0	1
2008	32	Apr-14	Jul-14	0.0	1	-	-	0	0
2009	13	-	-	0	0	-	-	0	0
2010	10	-	-	0	0	-	-	0	0
2011	32	Apr-15	Aug-02	0.0	2	-	-	0	0
2012	14	Apr-16	Jul-19	3.6	5	Jul-17	Jul-17	0.0	1
2013	42	Apr-17	Jul-14	3.8	12	Jul-13	Jul-13	0.0	2
2014	27	Apr-18	Aug-01	22.7	7	Jul-08	Jul-09	1.0	3
2015	38	Apr-19	Jul-28	14.3	36	Jul-16	Jul-16	0.6	24
2016	46	Apr-20	Jul-15	17.8	37	Jul-12	Jul-13	1.7	23
2017	75	Apr-21	Jul-11	5.0	69	Jul-09	Jul-09	0.6	33
2018	53	Apr-22	Jul-17	13.4	50	Jul-12	Jul-14	1.9	35
2019	44	Apr-23	Jun-29	7.8	38	Jun-27	Jun-28	1.1	11

Notes: RSA = Regional Study Area; LSA = Local Study Area (per the FEIS, Golder 2014a).

8.2 Caribou Advisory

The objective of the Caribou Advisory Monitoring program is ensuring workers are aware of the approximate numbers of caribou on, and in close proximity to, the Project, which is related to the potential for interactions between caribou and mining activities. This raises general awareness so that employees are alert to the likelihood that mitigation could be triggered, and what mitigation entails. The number of animals near the Project and in specific areas dictates the type of mitigation practices that will be undertaken (e.g., haul road closure, closing specific areas on the Project site, speed reduction).

8.2.1 Methods

Agnico Eagle, in collaboration with the GN and KivIA and including participation of the Rankin Inlet HTO, undertake the implementation of a caribou monitoring and work suspension protocol during caribou migration to minimize sensory disturbance at the Project site and along the AWAR. HTO and KivIA members assist Agnico Eagle staff conducting surveys during caribou migration. KivIA and HTO members, assisted by the GN staff worked with Agnico Eagle staff to monitor caribou from 21 June to 11 July 2019 during the caribou migration period. Communication protocols built into the work suspensions are designed to be broadcast swiftly and broadly among all departments in real time. The environmental department monitored caribou presence as per the caribou migration protocol (TEMMP Appendix IV; Golder 2015) including the use of collar data and regular surveys, and issued caribou advisories. Regular surveys for caribou, were completed by on site environmental technicians, and consisted of ground surveys at multiple locations, at regular intervals throughout the day (i.e., 06:00, 12:00, 18:00) during caribou migration. The results of the surveys were communicated to all Project Departments, including the KivIA and HTO, indicating if any work stoppages or restrictions are required and the affected work areas.

8.2.2 Results

Large numbers of caribou migrated through the Project and AWAR between 26 June and 6 July 2019. In 2017 caribou migration through the Project and AWAR occurred between 7 and 19 July, and in 2018 between 5 and 22 July. The times of caribou migration varied between these years, however, the duration of caribou interacting with the Project RSA and LSA between 2017 and 2019 was comparable (Table 10). At the Project, the caribou work suspension protocol (complete work stoppage) was in effect for periods of 27 June to 4 and 6 July, and closure and restrictions on AWAR took place on 26 June to 5 and 6 July (Table 10 and 11). In total there was a complete work stoppage for 240 hours (~10 days) for the AWAR, and restricted duties for both the Project and AWAR for 222 hours (~9.25 days).

Table 10: Caribou Advisories Meliadine - Mine Site 2019

Date	Hours	Mitigation
21 June	6	Site operational
22 June	24	Site operational
23 June	24	Site operational
24 June	24	Site operational
25 June	24	Site operational
26 June	24	Site operational
27 June	24	Site operational, full stoppage at exploration camp
28 June	24	Site operational, full stoppage at UG portal 1 and exploration camp
29 June	24	Site operational
30 June	24	Site operational
1 July	12	Site operational, full stoppage at UG portal 1 and exploration camp
1 July	12	Site operational, full stoppage exploration camp
2 July	6	Site operational, full stoppage exploration camp
2 July	18	Site operational, full stoppage at industrial site, UG portal 1 and exploration camp
3 July	24	Site operational, full stoppage at industrial site, UG portal 1 and exploration camp
4 July	24	Site operational, full stoppage at industrial site, UG portal 1 and exploration camp
5 July	24	Site operational
6 July	24	Site operational, full stoppage at industrial site, UG portal 1 and exploration camp
7 July	24	Site operational
8 July	24	Site operational
9 July	24	Site operational
10 July	24	Site operational
11 July	24	Site operational

Notes: (a) Mine includes Site vehicle traffic, UG operations, UG Portals, Exploration Camp and Industrial Pad.

Table 11: Caribou Advisories Meliadine - AWAR, 2019

Date	Hours	Mitigation
21 June	6	Road open
22 June	24	Road open
23 June	24	Road open
24 June	24	Road open
25 June	24	Road open
26 June	24	Closed - complete work stoppage
27 June	24	Closed - complete work stoppage
28 June	24	Closed - complete work stoppage
29 June	24	Closed - complete work stoppage
30 June	24	Closed - complete work stoppage
1 July	24	Closed - complete work stoppage
2 July	24	Closed - complete work stoppage
3 July	24	Closed - complete work stoppage
4 July	24	Closed - complete work stoppage
5 July	24	Speed limit restricted to 30 km/hr
6 July	24	Closed - complete work stoppage
7 July	24	Speed limit restricted to 30 km/hr
8 July	6	Speed limit restricted to 30 km/hr
8 July	18	Road Open
9 July	24	Road open
10 July	24	Road open
11 July	24	Road open

8.3 Accuracy of Impact Predictions

A summary of the impact predictions proposed in the TEMMP (Golder 2015) is provided in Table 2. Though not fully developed, the following thresholds are suggested as a starting point for adaptive management and TEMMP (Golder 2015) refinement and is tested against the results of the 2019 observational data (Table 12).

Table 12: Accuracy of Impact Predictions - Caribou

Monitoring Indicator	Preliminary Threshold	Exceeded in 2019?	Adaptive Management	Monitoring Method	TEMMP* Section
Hunting by Rankin Inlet Residents	After 3 years of data collection in collaboration with GN, establish a threshold level	Not assessed in 2019	Not Currently Identified	Hunter Harvest Survey, Collected throughout the year and reported annually	4.8
Sensory Disturbance	<10% caribou deflections from AWAR	No	Not Currently Identified	Ground Surveys	4.7
Vehicle Collisions	No more than 1 ungulate/year	No	Not Currently Identified	Wildlife Sightings Log, Site Surveillance Monitoring, AWAR Road Surveillance, Road Surveillance	4.4.2
Project Related Mortality	No more than 1 ungulate/year	No	Not Currently Identified	Wildlife Sightings Log, Site Surveillance Monitoring	4.4.2

Notes:
AWAR = All-Weather Access Road
GN = Government of Nunavut Department of Environment
*TEMMP = Terrestrial Environment Management and Monitoring Plan (Golder 2015)

8.4 Recommendations

Agnico Eagle will continue to focus monitoring on caribou activity near the Project and AWAR while continuing to support GN DoE-led caribou monitoring and/or research where possible. Discussions on determining effects from mining development on caribou and the data collection requirements is ongoing.

9.0 HUNTER HARVEST INFORMATION

Agnico Eagle signed a Memorandum of Understanding (MOU), in principal, with the Kivalliq Hunters and Trappers Organization (KHTO) in March 2019, in line with the Project Certificate No.006 Term and Condition 46 and 48, for the development and execution of a Hunter Harvest Survey (HHS).

Agnico Eagle is collaborating together with the KHTO, developing a calendar for the HHS with a focus on data collection by the KHTO from hunters and outfitters in the local community. Once the information is collected, Agnico Eagle and the KHTO will review the success of the program and consider any relevant changes to optimize the HHS.

10.0 BIRDS

Three survey methods were employed in 2019 for monitoring waterfowl, waterbirds, upland birds and shorebirds, including: shoreline surveys, point counts, and Program for Regional and International Shorebird Monitoring (PRISM) surveys. These surveys are designed to measure mining-related effects on upland bird (i.e., songbirds, raptors, and gamebirds), waterfowl, and shorebird species richness, diversity, and relative abundance. Specifically, the intent is to measure these parameters in response to mining development and increased traffic along the AWAR.

Shoreline surveys are designed to determine nesting distribution along shorelines within 200 m of the Project footprint, which is considered to be the approximate zone of influence from sensory disturbance in the FEIS, of mining and Project-related infrastructure (e.g., AWAR). The program will attempt to determine mated pair distribution and nesting success in ponds, wetlands, and lake shorelines within 200 m of Project infrastructure.

Point counts are a method for detecting birds in habitat space (i.e., defined area of 100 m radius plot), primarily songbirds during the breeding season. Point count data is used worldwide to estimate spatial distributions, habitat relationships, and population trends of birds. PRISM surveys are a globally standardized survey method for monitoring breeding population size, describing the distribution, abundance, and habitat relationships of Arctic-nesting shorebirds (Bart et al. 2005). PRISM surveys document all birds encountered and can be applied for monitoring upland birds. The PRISM survey methods (CWS 2008) and point count methods utilized are standardized with those used across North America so data can be compared against baseline and monitoring programs across the continent.

10.1 Shoreline Surveys

The shoreline survey program is designed to determine the nesting distribution of waterfowl and waterbirds on waterbodies within 200 m of mining related infrastructure including the AWAR. The shorelines of all waterbodies within this search area were surveyed on foot by trained biologists to locate and identify nesting waterbirds. If a waterbody partially intersected the 200 m buffer, only the extent of shoreline that occurred within the buffer was surveyed.

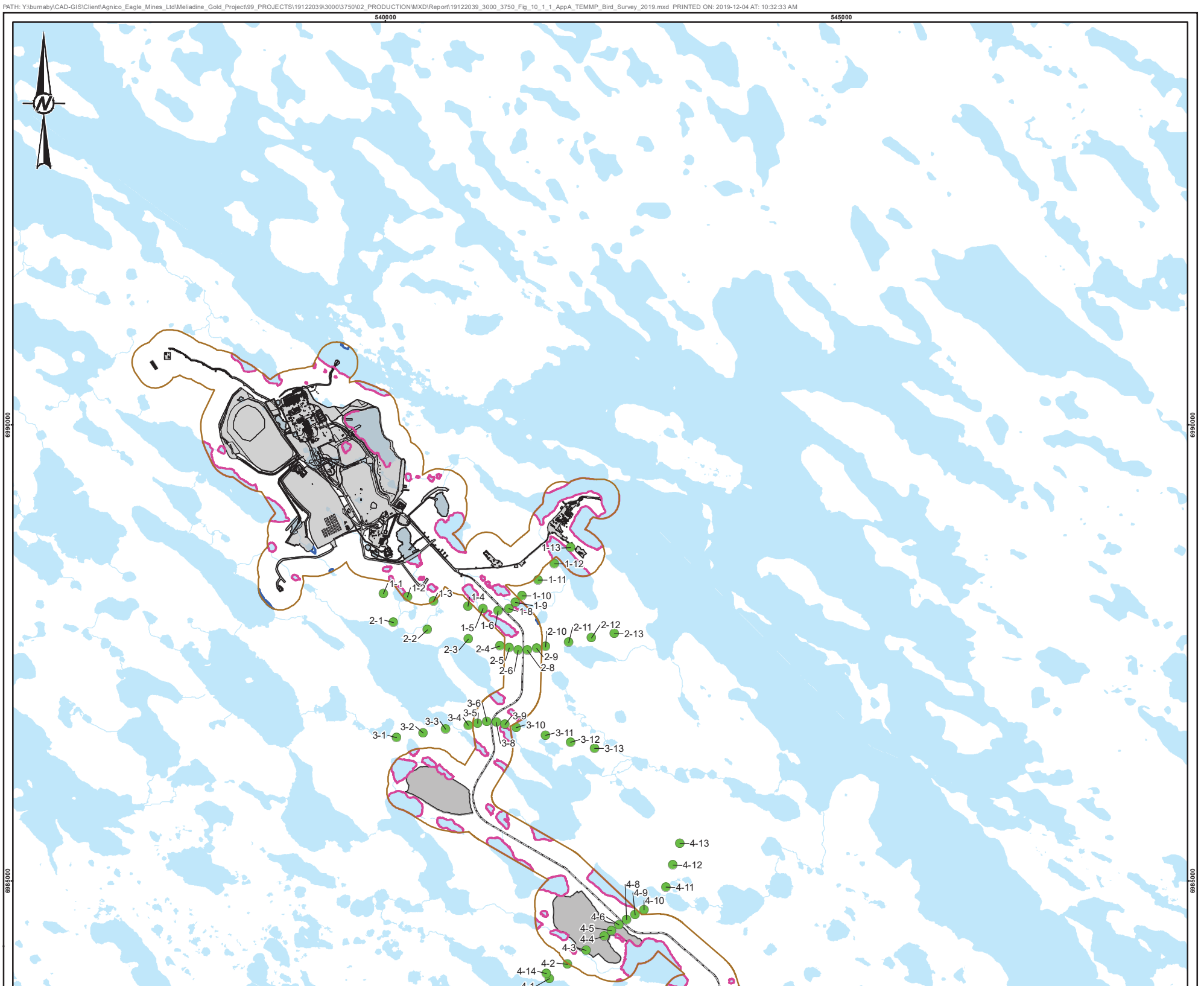
10.1.1 Methods

All waterbody shorelines within 200 m of the Project, excluding the AWAR, were surveyed between 10 to 21 June 2019 (Figure 5). Surveys involved two observers walking the edge of the waterbody with the intent of flushing any breeding waterfowl or waterbirds nesting on the shore. One observer walked 5 m from the water's edge, while the second observer walked approximately 15 m from the water's edge. If a nest was found, the biologist approached the nest to determine nest stage (i.e. egg laying, incubating, nestlings) and nest productivity (i.e. number of offspring). If there was a bird on nest that showed signs of distress, the biologist did not approach to prevent nest abandonment. Survey methods are described in more detail in the TEMMP (Golder 2015). A deviation from the prescribed survey protocol under the TEMMP was required for the 2017 survey period, and no nests were recorded (Golder 2018). As such, only 2018 and 2019 data were analyzed for this report.

10.1.2 Results

A total of nine species were observed while conducting shoreline surveys in 2019 (Table 13). One species, the Peregrine falcon (*Falco peregrinus anatum/tundrius*) is federally listed as Special Concern under Schedule 1 of the *Species at Risk Act*; no other species identified are federally listed. Due to the timing of surveys, no nestlings or fledglings were observed; all nests were either still in the nest-building stage or with eggs. A total of 26 nests were discovered, of which the number of eggs was determined for 20 (77%), and 72 eggs in total were counted (3.6 eggs per nest on average). Egg counts could not be confirmed for 6 nests due to access limitations (i.e. floating island) or apparent risk to nesting birds. Canada goose (*Branta canadensis*) was the most commonly observed species with 14 nests recorded and a total of 39 eggs.

Compared with 2018 surveys, fewer nests overall were discovered in 2019 despite a greater overall area being surveyed. This difference could be due to differences in observer nest-finding ability as well as time of year effects; however, significantly more eggs were found per nest in 2019 (3.6 eggs per nest in 2019 compared to 1.7 eggs per nest in 2018), suggesting on average surveys occurred later in the breeding season in 2019 and therefore more nests should have been active. Furthermore, most declines in nests found in 2019 were from willow ptarmigan, shorebirds, and songbirds which have nests that are more difficult to detect; whereas Canada and cackling goose nests, which are relatively conspicuous and easy to locate, did not decrease. This result supports the hypothesis that declines in 2019 were likely due to observer nest-finding ability. Statistical analyses in the future can be used to differentiate observer effects from actual annual changes in nest abundance within the 200 meter buffer.



LEGEND

- BREEDING BIRD SURVEY
- MINE FOOTPRINT
- MINE INFRASTRUCTURE
- 200 m BUFFER OF MINE FOOTPRINT
- 2019 SHORELINE SURVEYED
- SHORELINE WITHIN 200 m OF INFRASTRUCTURE
- ALL-WEATHER ACCESS ROAD (AWAR)
- WATERBODY
- WATERCOURSE

NOTE(S)

1. TSF, WRSF1, WRSF2, CP1 ARE THE MAXIMUM EXTENT UNDER THE APPROVED MINE PLAN AND DO NOT REPRESENT SIZE IN 2018.
2. BORROW PIT B1A IS EXCLUDED AND IS NOT ILLUSTRATED IN THE CURRENT FOOTPRINT.
3.. THE PROPOSED MINE PLAN INCLUDES TIRIGANIAQ PIT 1, TIRIGANIAQ PIT 2, AND WASTE ROCK STORAGE FACILITY 3 (WRSF3) AND ASSOCIATED INFRASTRUCTURE; THESE ITEMS HAVE NOT BEEN CONSTRUCTED YET (AS OF THE END OF 2018) AND THEREFORE WERE NOT INCLUDED ON THIS MAP.

0 1 2

1:50,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED AND NATURAL RESOURCES CANADA.
DATUM: NAD 83 PROJECTION: UTM ZONE 15

CLIENT
AGNICO EAGLE MINES LIMITED

PROJECT
MELIADINE GOLD PROJECT
NUNAVUT

CONSULTANT
GOLDER

YYYY-MM-DD	2019-12-04
DESIGNED	KB
PREPARED	MH/CDB
REVIEWED	CLT
APPROVED	CLT

TITLE
2019 SURVEYED SHORELINES AND BREEDING BIRD SURVEY LOCATIONS

PROJECT NO.	CONTROL	REV.	FIGURE
19122039	3000/3750	0	5

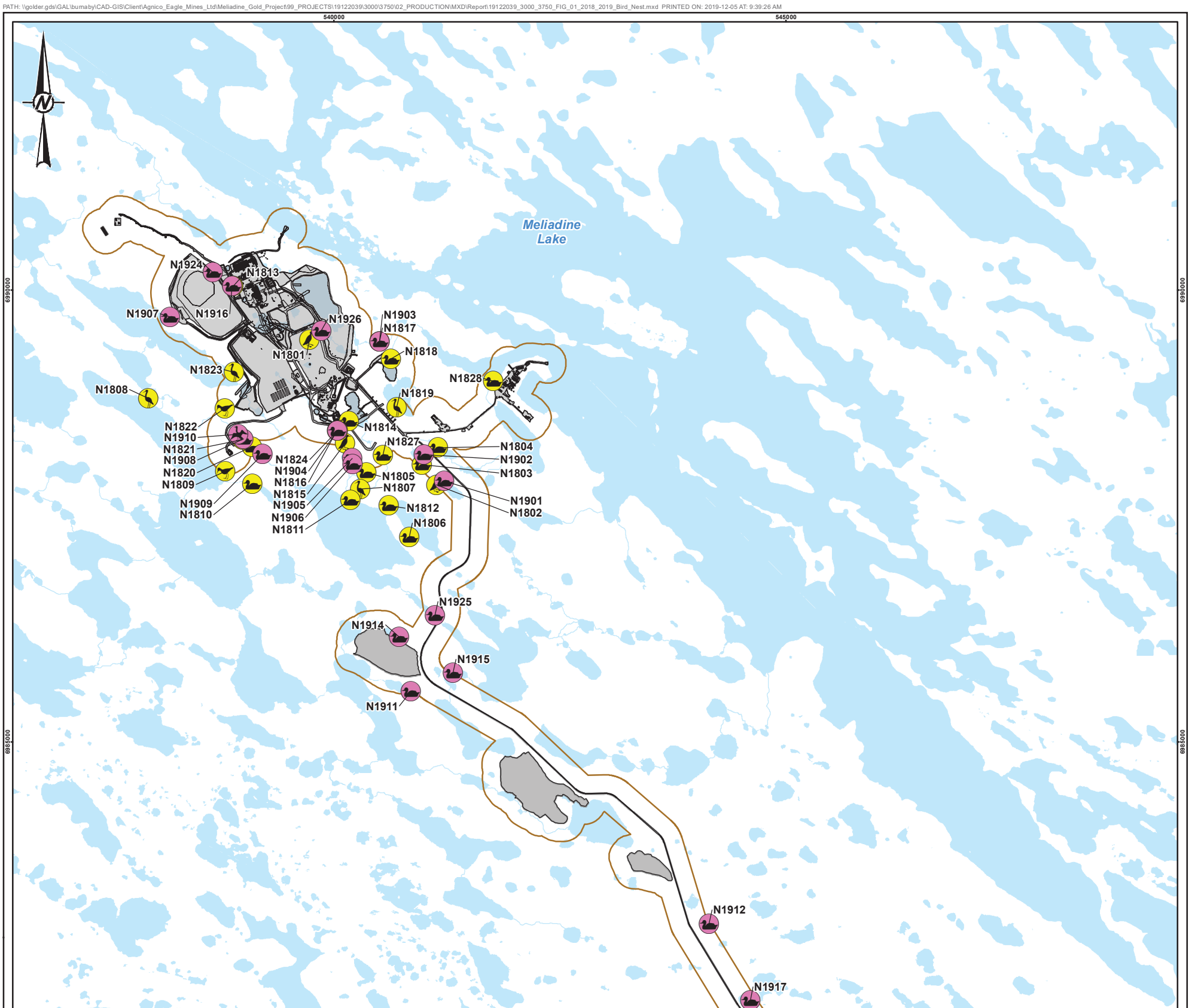
Table 13: Summary of Nests and Eggs Observed during Shoreline Surveys, 2018-2019

Common Name	Scientific Name	2018		2019	
		Number of Eggs[(a)]	Number of Nests	Number of Eggs[(a)]	Number of Nests
Cackling Goose	*Branta hutchinsii*	4	3	18	4
Canada Goose	*Branta canadensis*	18	16	39	14
Greater White-fronted Goose	*Anser albifrons*	0	0	3	1
Herring Gull	*Larus argentatus*	0	0	0	1
Horned Lark	*Eremophilia alpestris*	4	1	0	0
Lapland Longspur	*Calcarius lapponicus*	2	4	5	1
Least Sandpiper	*Calidris minutilla*	0	2	0	0
Peregrine Falcon	*Falco peregrinus*	0	2	0	1
Sandhill Crane	*Grus canadensis*	0	0	2	2
Semipalmated Plover	*Charadrius semipalmatus*	0	0	4	1
Tundra Swan	*Cygnus columbianus*	2	1	0	0
Willow Ptarmigan	*Lagopus*	0	5	1	1
Total		**30**	**34 (20)***	**72**	**26 (20)***

Notes:

(a) Eggs were counted to observers' best ability while minimizing disturbance to nests

* = number in parentheses refers to the number of nests for which an egg count could be determined



LEGEND

BIRD GROUP
- GAMEBIRD
- GULL
- PASSERINE
- RAPTOR
- SHOREBIRD
- WATERBIRD
- WATERFOWL

YEAR
- 2019
- 2018
- MINE FOOTPRINT
- MINE INFRASTRUCTURE
- 200 m BUFFER OF MINE FOOTPRINT
- WATERBODY
- WATERCOURSE

NOTE(S)
1. TSF, WRSF1, WRSF2, CP1 ARE THE MAXIMUM EXTENT UNDER THE APPROVED MINE PLAN AND DO NOT REPRESENT SIZE IN 2018.
2. BORROW PIT B1A IS EXCLUDED AND IS NOT ILLUSTRATED IN THE CURRENT FOOTPRINT.
3.. THE PROPOSED MINE PLAN INCLUDES TIRIGANIAQ PIT 1, TIRIGANIAQ PIT 2, AND WASTE ROCK STORAGE FACILITY 3 (WRSF3) AND ASSOCIATED INFRASTRUCTURE; THESE ITEMS HAVE NOT BEEN CONSTRUCTED YET (AS OF THE END OF 2018) AND THEREFORE WERE NOT INCLUDED ON THIS MAP.

0 1 2
1:50,000 KILOMETRES

REFERENCE(S)
1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED AND NATURAL RESOURCES CANADA.
DATUM: NAD 83 PROJECTION: UTM ZONE 15

CLIENT
AGNICO EAGLE MINES LIMITED

PROJECT
MELIADINE GOLD PROJECT
NUNAVUT

CONSULTANT
GOLDER

YYYY-MM-DD	2019-12-05
DESIGNED	KB
PREPARED	MH/CDB
REVIEWED	CLT
APPROVED	CLT

TITLE
2018 AND 2019 BIRD NEST LOCATIONS

PROJECT NO.	CONTROL	REV.	FIGURE
19122039	3000/3750	0	6

10.2 Point Counts

Upland bird plots, or point counts, were distributed along transects on either side of the AWAR. The objective of the point count surveys was to estimate the effects of increased traffic along the AWAR on the density, species richness, and distribution of upland breeding birds along the AWAR and how these effects might diminish with increasing distance from the road (TEMMP 2015). In future years, trend analysis can be conducted to measure how these responses change with increasing activity at the mine.

No upland breeding bird surveys were completed in 2017 as the fieldwork did not commence until July and there were confirmed sightings of fledglings. As such, the field crew decided that territorial singing displays had likely ceased and little data would have been collected using point count survey methods. However, surveys were completed in 2018 and 2019.

10.2.1 Methods

A total of 72 point count plots across 8 habitat types were surveyed in both 2018 and 2019 (between 10 and 21 June 2019) (shown on Figure 6 and presented in Table 14). Surveys did not target specific habitats and occurred in eight habitat types assessed in the field and in the office using site photos.

Point count plots were located within 1 kilometre (km) on either side of the AWAR (2 km in total) with the first point count occurring at 50 metres (m) from the road edge and each subsequent plot spaced 100 m from the center of the preceding plot. Six transects consisting of 12 plots each were surveyed both years for a total of 72 point count surveys. Point counts were 5 minutes in duration and all species detected by sight or sound within 50 m and between 50-100 m of the observer were recorded; observations beyond 100 m were recorded at the observer's discretion as incidentals. The survey method is described in more detail in the TEMMP (Golder 2015).

10.2.2 Analysis

Data from point counts completed by Golder biologists in 2018 and 2019 were pooled for analysis. Trend effects were not assessed as two years of data is insufficient to begin testing for mine-related changes in breeding bird abundance and distribution. These data are pooled to establish habitat associations with density and richness estimates along the AWAR as these surveys were not conducted in 2017. All passerines (i.e., Family Passeriformes) detected within 100 metres (m) of the observer were included in analysis. We omitted non-passerines from this analysis because our surveys did not adequately sample non-passerine upland birds (approximately 8.8% of observations). One explanation for this deficiency is that approximately 70% of all detections during point counts are auditory (Simons et al. 2007), therefore these surveys are most appropriate to apply to songbirds (i.e., passerines) which are vocally conspicuous. Non-passerines or birds observed outside of 100 m were reported as incidental observations.

10.2.2.1 Individual Species Analysis

A species-level analysis calculated the mean density of individual passerine species among each habitat type. Density was calculated as the number of individuals of each species per hectare detected at each point count, averaged across point counts within each habitat type. Changes in the average density of each species within habitat types from 2018 to 2019 were calculated to illustrate measured differences between the two years (Table 14).

10.2.2.2 Community Analysis

A community-level analysis examined the total density, species richness and an index of species diversity of all passerine species combined among each habitat type. Density was calculated as the number of individuals per hectare (summed across species) detected at each point count, averaged across point counts within each habitat type. Species richness was calculated as alpha richness, or a count of the number of species detected at a point count. Diversity was calculated as the Shannon's H index using the 'vegan' package in R (Oksanen et al. 2019).

A one-way analysis of variance (ANOVA) was calculated in R (version 3.5.2; R Project for Statistical Computing 2018) to determine if density, species richness, or species diversity at the point count level differed across habitat types.

10.2.2.3 Generalized Linear Models

Generalized linear models (GLMs) assuming a Gaussian distribution were estimated for the effects of year ('Year'), habitat type ('Habitat'), and the distance of the point count from the AWAR ('Distance') on the density of passerines detected at each point count. Akaike's Information Criterion (AIC) was used to assess the best fit among all candidate models, and all models within ΔAIC of 2.0 of the top model were considered equally viable models. A scaled variable for distance fit between 0 and 1 was used to generate coefficient estimates rather than using raw meters.

10.2.3 Results

10.2.3.1 Individual Species Results

Seven passerine breeding bird species were observed within 100 m of observers during point count surveys in 2018 and 2019 (Table 14). An additional 20 bird species were incidentally recorded during the breeding bird point count surveys, including upland breeding birds outside of 100 m from observers, shorebirds, waterbirds, and raptors (Appendix A).

No upland breeding bird species at risk (SARA 2019) were recorded during the upland breeding bird surveys in 2018 and 2019. The highest density of American pipits (*Anthus rubescens*) was recorded in heath/boulders habitat, while Savannah sparrow (*Passerculus sandwichensis*) density was highest in heath tundra habitat. Horned lark (*Eremophilia alpestris*) and Lapland longspur (*Calcarius lapponicus*) densities were highest in heath tundra habitat. Common redpolls (*Acanthis flammea*) were only recorded at one plot in tussock-hummock habitat. Overall, density of each species varied between years in nearly all habitat types, but was highly conserved on average. Three species had no measurable change in overall average density from 2018 to 2019: American pipit, American robin, and Common redpoll. Lapland longspur, Savannah sparrow, and White-crowned sparrow all showed small declines in density in 2019, while Horned lark increased in density.

Table 14: Mean (± 1SD) Density (individuals per hectare) of Passerine Breeding Bird Species among Habitats along the AWAR, 2018 and 2019 combined with annual rate of change in density ([2019 density] – [2018 density]).

Common Name	Scientific Name	Habitat Type								Average Rate of Change in Density
		Esker Complex (N = 2)	Gravel (N = 4)	Heath/ Bedrock (N = 12)	Heath/Boulders (N = 33)	Heath Tundra (N = 50)	Low Shrub (N = 6)	Sedge Wetland (N = 6)	Tussock-Hummock (N = 30)	
American Pipit	*Anthus rubescens*	0	0.08 ± 0.16 (-0.16)	0.11 ± 0.22 (-0.11)	0.12 ± 0.23 (+0.07)	0.1 ± 0.20 (+0.08)	0	0.21 ± 0.26 (+0.21)	0.12 ± 0.22 (-0.06)	0
American Robin	*Turdis migratorius*	0	0	0	0	0.01 ± 0.05 (-0.01)	0	0	0	0
Common Redpoll	*Acanthis flammea*	0	0	0	0.02 ± 0.11 (+0.04)	0.01 ± 0.05 (-0.01)	0	0	0.03 ± 0.18 (-0.06)	0
Horned Lark	*Eremophilia alpestris*	0	0.56 ± 0.48 (+0.80)	0.21 ± 0.25 (0)	0.41 ± 0.33 (-0.24)	0.29 ± 0.29 (+0.08)	0.27 ± 0.24 (-0.32)	0.32 ± 0.49 (0.42)	0.24 ± 0.35 (0.02)	0.1
Lapland Longspur	*Calcarius lapponicus*	0.48 ± 0.23 (-0.32)	0	0.11 ± 0.22 (0)	0.31 ± 0.33 (+0.21)	0.25 ± 0.28 (-0.01)	0.64 ± 0.40 (+0.42)	0.32 ± 0.28 (-0.42)	0.18 ± 0.22 (0.06)	-0.01
Savannah Sparrow	*Passerculus sandwichensis*	0.32 ± 0.45 (-0.64)	0	0.11 ± 0.16 (-0.11)	0.09 ± 0.19 (-0.14)	0.04 ± 0.11 (-0.06)	0.32 ± 0.64 (+0.42)	0.11 ± (0.16)	0.14 ± 0.22 (0.06)	-0.06
White-crowned Sparrow	*Zonotrichia leucophrys*	0	0	0.03 ± 0.10 (-0.05)	0	0.01 ± 0.05 (-0.01)	0	0	0	-0.01

10.2.3.2 Community Results

Heath/boulders, low shrub, and sedge wetland habitat had the highest mean density of birds, while gravel and heath/bedrock habitats had the lowest mean relative abundance of birds (Table 15; Figure 7). The highest density of individuals in a point count was recorded in low shrub habitat. A one-way ANOVA test found that the mean density of passerine birds was significantly different among habitat types ($F_{7,135}$ = 2.188, P = 0.04).

Species richness at the point count level varied from 0 to 3 species detected. Point counts with zero passerine species detected occurred in half the habitat types, while a maximum of three species were recorded in all but two habitats (Figure 8). A one-way ANOVA test found that species richness was not significantly different among habitat types ($F_{7,135}$ = 0.95, P = 0.47).

Species diversity at the point count level varied from 0 to 1.10, and the mean diversity was highest for the sedge wetland habitat (0.56 ± 0.19), although differences in species diversity were not significant ($F_{7,135}$ = 0.95, p = 0.47; Figure 9).

Table 15: Mean Density and Observed Species Richness of Upland Breeding Birds for Habitats in the Local Study Area, 2018 and 2019

Habitat	Number of Survey Plots	Density (birds/ha)[(a)]		Species Richness		Diversity Index[(b)]	
		Mean ± SED	Min – Max	Mean ± SE	Min – Max	Mean ± SE	Min - Max
Esker Complex	2	0.80 ± 0.48	0.32 – 1.27	1.50 ± 0.50	1 – 2	0.35 ± 0.35	0 – 0.69
Gravel	4	0.64 ± 0.18	0.32 – 0.96	1.00 ± 0.00	1 – 1	0.00 ± 0.00	0 – 0
Heath/Bedrock	12	0.56 ± 0.10	0 – 0.96	1.42 ± 0.26	0 – 3	0.37 ± 0.12	0 – 1.10
Heath/Boulders	33	0.95 ± 0.08	0 – 1.91	1.82 ± 0.14	0 – 3	0.49 ± 0.07	0 – 1.04
Heath Tundra	50	0.71 ± 0.07	0 – 1.91	1.66 ± 0.12	0 – 3	0.42 ± 0.06	0 – 1.10
Low Shrub	6	1.22 ± 0.31	0.32 – 2.55	1.83 ± 0.31	1 – 3	0.47 ± 0.17	0 – 1.04
Sedge Wetland	6	0.96 ± 0.27	0.32 – 2.23	2.00 ± 0.37	1 – 3	0.56 ± 0.19	0 – 1.10
Tussock-Hummock	30	0.71 ± 0.07	0 – 1.59	1.60 ± 0.13	0 – 3	0.41 ± 0.07	0 – 1.10
Total	**143**	**0.82 ± 0.52**	**0 – 2.55**	**1.60 ± 0.23**	**0 – 3**	**0.43 ± 0.03**	**0 – 1.10**

Notes:
ha = hectares; SE = standard error; Min = minimum; Max = maximum.
(a) mean density of passerines only, not total density of birds detected at plots within each habitat type.
(b) Shannon diversity index.

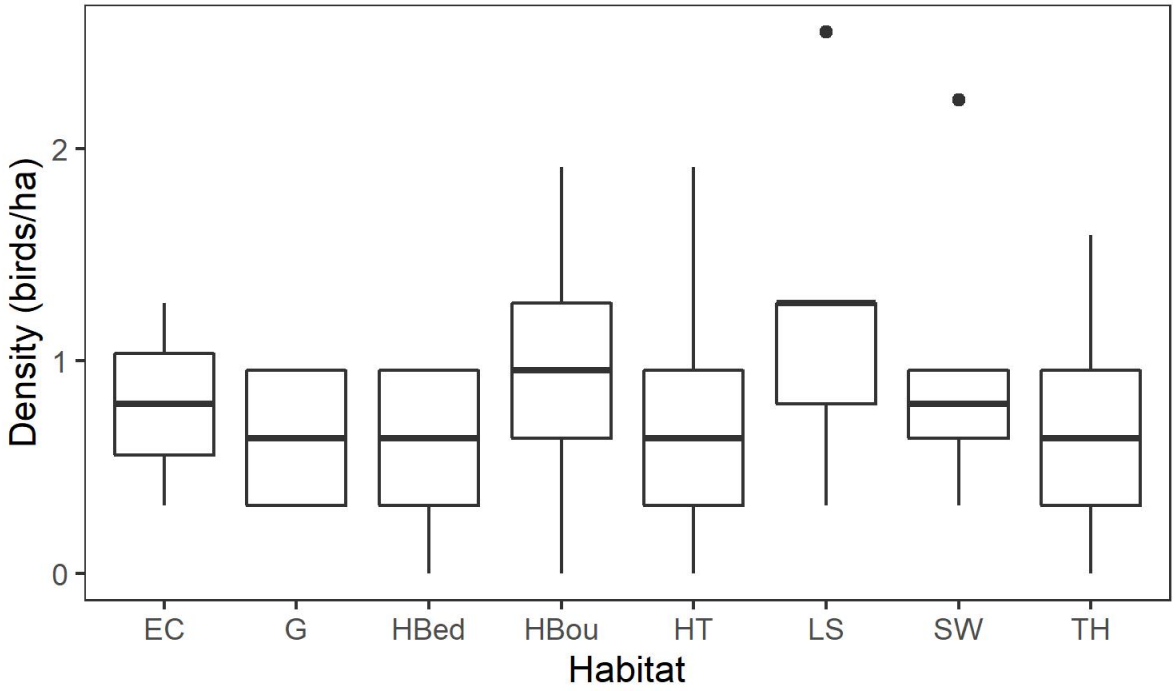


Figure 7: Boxplot of Avian Density Across Habitat Types. EC = Esker Complex, G = Gravel, HBed = Heath/Bedrock, HBou = Heath/Boulders, HT = Heath Tundra, LS = Low Shrub, SW = Sedge Wetland, TH = Tussock-Hummock

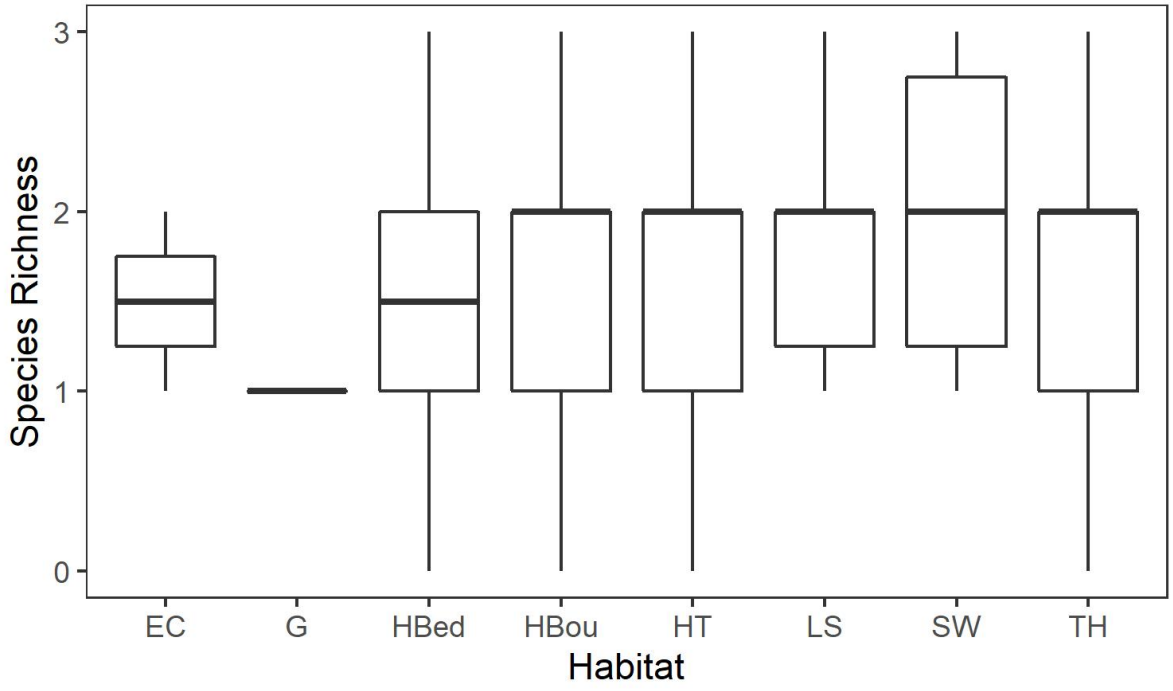


Figure 8: Boxplot of Species Richness Across Habitat Types. EC = Esker Complex, G = Gravel, HBed = Heath/Bedrock, HBou = Heath/Boulders, HT = Heath Tundra, LS = Low Shrub, SW = Sedge Wetland, TH = Tussock-Hummock

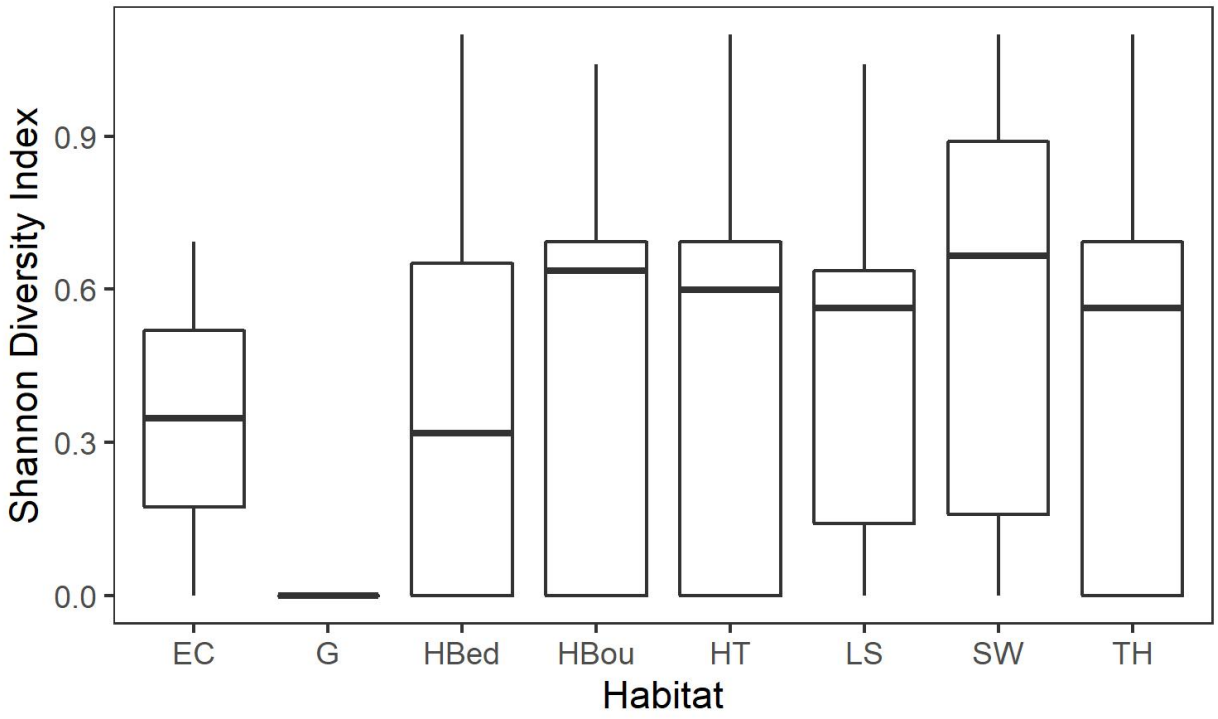


Figure 9: Boxplot of Shannon Diversity Index Across Habitat Types. EC = Esker Complex, G = Gravel, HBed = Heath/Bedrock, HBou = Heath/Boulders, HT = Heath Tundra, LS = Low Shrub, SW = Sedge Wetland, TH = Tussock-Hummock

10.2.3.3 Generalized Linear Model Results

Three models were equally well supported using at ΔAIC < 2.0; the Habitat only model, the null model, and the Distance + Habitat model (Table 16). The intercept in all models ranged between 0.70 and 0.80, indicating that the expected density of a point count is approximately 0.70 – 0.80 birds per hectare. The null model was supported as a top model which indicates none of the variables tested significantly affected bird density along the AWAR. However, Habitat and Distance were both included in top models, and may show a stronger effect with more data. Distance had a slight positive effect, indicating bird density may increase with increasing distance from the AWAR. Previous research has supported the negative relationship between distance to roads and the density of breeding birds (e.g., Summers et al. 2011), and that this relationship is driven primarily by traffic noise (McClure et al. 2013).Year effects were absent in the top three models, which indicates there was no change in bird density between 2018 and 2019.

Table 16: Coefficients and Akaike's Information Criterion Ranking for Candidate Generalized Linear Models for Passerine Density, 2018 and 2019

Model	Coefficients										Model Selection	
	Intercept	*Distance from Road*[e]	*Year*[a]	*Gravel Habitat*[b]	*Heath/ Bedrock Habitat*[b]	*Heath/ Boulders Habitat*[b]	*Heath Tundra Habitat*[b]	*Low Shrub/ Riparian Tall Shrub Habitat*[b]	*Sedge Wetland Habitat*[b]	*Tussock-Hummock Habitat*[b]	*AIC*[c]	*ΔAIC*[d]
Habitat	0.80	-	-	-0.16	-0.24	0.15	-0.09	0.42	0.16	-0.08	197.9	0
Null	0.78	-	-	-	-	-	-	-	-	-	199.3	1.4
Distance + Habitat	0.71	0.08	-	-0.10	-0.21	0.19	-0.05	0.49	0.19	-0.04	199.4	1.5
Year + Habitat	0.79	-	0.02	-0.16	-0.24	0.15	-0.09	0.42	0.16	-0.08	199.9	2.0
Year	0.77	-	0.02	-	-	-	-	-	-	-	201.2	3.3
Distance	0.77	0.02	-	-	-	-	-	-	-	-	201.3	3.3
Year + Habitat + Distance	0.70	0.08	0.02	-0.10	-0.21	0.19	-0.05	0.49	0.19	-0.04	201.3	3.4
Year + Distance	0.76	0.02	0.02	-	-	-	-	-	-	-	203.2	5.3

Notes:

(a) Year is a categorical variable that includes two levels. The coefficient compares 2019 density to the reference year 2018.

(b) Habitat is a categorical variable that includes eight levels. The coefficient is comparing habitat to the reference condition 'esker complex' habitat.

(c) Akaike's Information Criterion.

(d) Change in AIC between the given model and the top model. Top model sets are determined using a threshold of ΔAIC <2. Models included in the top model set are denoted in green.

(e) Distance between the point count and the AWAR, with positive values representing a larger distance. Variable is scaled between 0 and 1.

10.3 PRISM

The Program for Regional and International Shorebird Monitoring (PRISM) is a standardized method for monitoring shorebirds. PRISM surveys are designed to document population numbers of Arctic breeding shorebirds, describe the distribution and habitat associations of shorebirds, and monitor trends in population size (Bart et al. 2005). The PRISM surveys conducted as part of this monitoring program will contribute to regional knowledge in an effort to set population targets and assist with management and conservation of these species (EC 2012). All PRISM data will be submitted to ECCC for inclusion in their regional database.

PRISM surveys were not conducted in 2017 because plot locations were not generated in time for the field season (Golder 2018). Following three years of survey data, a full analysis will be conducted to determine the effectiveness of the monitoring program and the frequency of monitoring thereafter (Golder 2015).

10.3.1 Methods

PRISM survey methods adhered to standard techniques for surveying shorebirds (CWS 2008). For each PRISM survey, plot locations were randomly chosen *a priori* by ECCC within 50 km of the Project footprint. Ground-based rapid assessment surveys (i.e., Tier 1 PRISM surveys) of sixteen 12 ha plots were completed from 14 to 18 June 2019, and ten plots were surveyed in 2018 from 19 to 21 June 2018 (Figure 10). Each PRISM survey was conducted by one Golder biologist field lead and one field technician from the local community. PRISM plots generally took 2 – 3 hours to complete, and observers recorded all species encountered, estimated their breeding status, and recorded habitat conditions for each plot. When a suspected breeding bird was encountered, the biologist attempted to determine the approximate location of the nest based on behavioural cues, but a search for the physical nest was not conducted due to time constraints.

10.3.2 Results

A total of ten species with evidence of breeding were detected in 2018 and nine were detected in 2019 (Table 17). Breeding birds were considered with verified nests, probable nests according to behavioural cues, and paired birds suspected of being on territory. A total of fourteen breeding bird species were observed in both years combined. The most common breeding bird species observed in the plots was Lapland longspur (*Calcarius lapponicus*).

Table 17: Breeding Pairs Detected during 2018-2019 PRISM Surveys

Common Name	Scientific Name	2018			2019		
		Nests	Probable Nests	Pairs	Nests	Probable Nests	Pairs
American Pipit	*Anthus rubescens*	0	0	0	0	0	2
American Tree Sparrow	*Spizella arborea*	0	0	1	0	0	0
Common Goldeneye	*Bucephala clangula*	0	0	0	0	0	1
Common Redpoll	*Acanthis flammea*	0	0	1	0	0	0
Dunlin	*Calidris alpina*	0	1	0	0	0	0
Greater White-fronted Goose	*Anser albifrons*	0	1	0	1	0	0
Horned Lark	*Eremophila alpestris*	0	3	2	0	0	5
Lapland Longspur	*Calcarius lapponicus*	6	2	4	1	1	17
Long-tailed Duck	*Clangula hyemalis*	0	0	2	0	0	0
Rock Ptarmigan	*Lagopus muta*	0	0	0	0	0	1
Sandhill Crane	*Grus canadensis*	1	0	0	1	0	0
Savannah Sparrow	*Passerculus sandwichensis*	0	5	4	0	0	0
Semipalmated Plover	*Charadrius semipalmatus*	0	1	0	0	0	2
Willow Ptarmigan	*Lagopus*	0	0	0	1	0	0
Totals		**7**	**13**	**14**	**4**	**1**	**28**

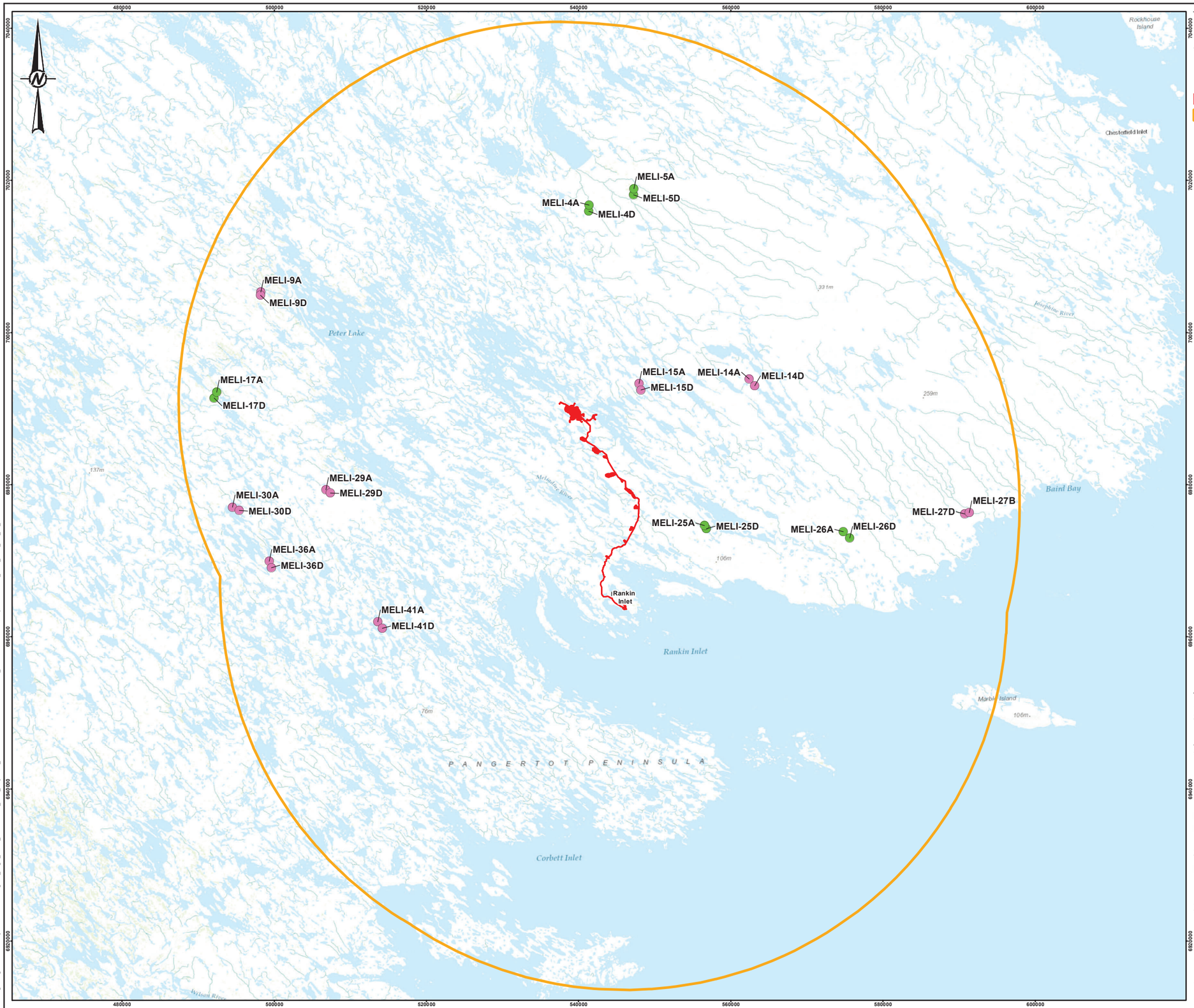
A total of eighteen non-breeding species were detected in 2018, and sixteen species were detected in 2019, for a cumulative total of twenty-three non-breeding species (Table 18). Non-breeders were defined as individual males or females showing no behavioural evidence of breeding, flocks of birds, and flyover incidentals. The timing of these surveys may have contributed to the high proportion of non-breeding birds detected, as surveys were conducted in early-mid June during spring breakup conditions.

One species-at-risk was observed on survey plots – a single Short-eared owl of unknown sex was observed at plot 30D. The Short-eared owl (*Asio flammeus*) is federally listed as a species of Special Concern under Schedule 1 of the *Species at Risk Act* (Government of Canada 2019). Breeding evidence for two species of shorebirds was found during the surveys: Dunlin (*Calidris alpina*) in 2018, and Semipalmated plover (*Charadrius semipalmatus*) in both 2018 and 2019.

Table 18: Non-breeding Birds Detected during 2018-2019 PRISM Surveys

Common Name	Scientific Name	Non-breeding birds detected (2018)	Non-breeding birds detected (2019)
American Pipit	*Anthus rubescens*	0	5
American Tree Sparrow	*Spizella arborea*	1	0
Cackling Goose	*Branta hutchinsii*	18	2
Canada Goose	*Branta canadensis*	211	105
Common Goldeneye	*Bucephala clangula*	0	2
Common Raven	*Corvus corax*	0	1
Common Redpoll	*Acanthis flammea*	10	8
Dunlin	*Calidris alpina*	0	1
Greater White-fronted Goose	*Anser albifrons*	25	13
Herring Gull	*Larus argentatus*	9	1
Horned Lark	*Eremophila alpestris*	2	23
Lapland Longspur	*Calcarius lapponicus*	26	91
Least Sandpiper	*Calidris minutilla*	1	0
Long-tailed Duck	*Clangula hyemalis*	2	6
Northern Pintail	*Anas acuta*	0	1
Northern Wheatear	*Oenanthe*	1	0
Red-throated Loon	*Gavia stellata*	0	2
Rock Ptarmigan	*Lagopus muta*	0	5
Rough-legged Hawk	*Buteo lagopus*	1	0
Sandhill Crane	*Grus canadensis*	13	22
Savannah Sparrow	*Passerculus sandwichensis*	24	18
Semipalmated Plover	*Charadrius semipalmatus*	0	5
Short-eared Owl	*Asio flammeus*	0	1
Snow Goose	*Chen caerulescens*	122	47
Tundra Swan	*Cygnus columbianus*	3	0
White-crowned Sparrow	*Zonotrichia leucophrys*	1	5
Willow Ptarmigan	*Lagopus*	4	3
Totals		**474**	**367**

Notes: Bold species are federally listed under the *Species at Risk Act.*



LEGEND

PRISM PLOT

YEAR

- 2018
- 2019

MINE INFRASTRUCTURE

MINE INFRASTRUCTURE BUFFER 50km

0 10 20

1:500,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. TOPOGRAPHIC MAP © ESRI AND ITS LICENSORS. USED UNDER LICENSE, ALL RIGHTS RESERVED.
DATUM: NAD 83 PROJECTION: UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PRISM PLOTS SURVEYED IN 2018 AND 2019

CONSULTANT

GOLDER

YYYY-MM-DD	2019-12-05
DESIGNED	CC
PREPARED	MH
REVIEWED	CLT
APPROVED	CLT

PROJECT NO.	CONTROL	REV.	FIGURE
19122039	3000/3750	0	10

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10.4 Raptor Monitoring

Agnico Eagle has engaged the Arctic Raptors Research Program (www.arcticraptors.ca) to develop and implement the raptor monitoring program (Franke 2012). The 2019 annual report of the Arctic Raptors Research Program is included in Appendix B. A summary of the report is presented here.

Monitoring for breeding raptors has occurred each year for the area associated with the Meliadine Mine since 2013, per the methods outlined in the arctic raptor's annual report (refer to Appendix B).

A total of 43 unique raptor nesting sites have been confirmed through surveys conducted between 2013 and 2019 in the general area associated with the Meliadine Mine, with documented nests for Peregrine falcons and Rough-legged hawks over the years. Gyrfalcons have not been documented in the area over the same period. Two nesting sites are within the Project footprint (candidates for site-specific management plans, as reported in Appendix B), three nesting sites are within 600 m of the AWAR and another four nesting sites are within 1.5 km of the AWAR. Mean distance from known occupied nesting sites to the Meliadine Lease footprint was 12.48 km (range of 0 – 29 km).

Analysis of the data indicates that nest occupancy rates for Peregrine falcons has been stable between 2013 and 2019 (mean of 0.61), while Rough-legged hawk nest occupancy rates have been more variable (mean of 0.34, with peaks of 0.57 and 0.52 in 2013 and 2016, respectively). This variation is well-known for small mammal specialists in response to microtine rodent cycles.

10.5 Accuracy of Impact Predictions

A summary of the impact predictions proposed in the TEMMP (Golder 2015) is provided in Table 2. The primary objective of the waterfowl and waterbird monitoring program is to determine the effects, if any, of sensory disturbance from mining activities, including access along the AWAR on breeding success or changes in the distribution of mated pairs (Table 19).

Threshold triggers for additional mitigation or evaluation of mitigation will be determined through discussions with appropriate ECCC and GN personnel. These thresholds are difficult to initially establish due to low bird densities and high variability. However, thresholds will likely be based on habitat loss (i.e., 515 ha of aquatic habitat) with no additional habitat loss than FEIS predictions. After initial data collection (first 3 years of operations) and a range of natural variability is determined, breeding and productivity thresholds will be determined.

Table 19: Accuracy of Impact Predictions – Waterfowl, Waterbirds, Upland Birds and Shorebirds

Monitoring Indicator	Threshold	Exceeded in 2019?	Adaptive Management	Monitoring Method	TEMMP* Section
Habitat Loss and Degradation	515 ha of Aquatic Habitat	To be assessed after first 3 years of operations	Not Currently Identified	Shoreline Surveys, PRISM	4.10.2
Disturbance of Nesting Waterfowl	TBD once NRV is established through consultation with ECCC and GN	No	Not Currently Identified	Shoreline Surveys	4.10
Project-related Mortality	1 Individual Waterbird	No	Not Currently Identified	Wildlife Sightings Log, Site Surveillance Monitoring, AWAR Road Surveillance, Road Surveillance	4.10
Changes in Breeding Bird Populations	TBD once NRV is established through consultation with ECCC	No	Not Currently Identified	Point counts and transects	4.11

Notes:
NRV = Natural Range of Variability
ECCC = Environment and Climate Change Canada
GN = Government of Nunavut Department of Environment
PRISM = Program for Regional and International Shorebird Monitoring
*TEMMP = Terrestrial Environment Management and Monitoring Plan (Golder 2015)

10.6 Recommendations

It is recommended that Agnico Eagle continue to monitor birds through shoreline surveys, breeding bird point counts and PRISM. The timing of the field programs in 2019 were similar to those in 2018 to capture breeding activity and avoid overlap with the Qamanirjuaq herd migration through the area. Consultation with our field crews supported the timing of the survey window in reference to the caribou herd migration, as the caribou were reported to be approaching site during the final day of the field program. Nesting and breeding bird evidence continues to be low, likely due to the surveys being conducted when birds were just arriving on site and prior to establishing nests.

11.0 SOIL AND VEGETATION MONITORING

The scope of the landscape component of the TEMMP Annual Report is to report on baseline levels of metals in berry producing plants, sedges, lichen, and soil chemistry potentially affected by the Mine. 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. Vegetation and soil Annual monitoring was conducted in 2017 to inform the baseline conditions.. Monitoring programs will be completed at three-year intervals starting in 2019 (first year of operations). This section provides the results for soil and vegetation monitoring completed in 2019.

Local vegetation cover is predominantly characterized by heath tundra, and lichen-heath communities. Low-lying areas between the drumlins and eskers are dominated by sedge wetlands, shallow ponds, and various shallow and deep-water lakes. The main change from the Mine on the landscape is direct disturbance, which will be a long-term effect as the recovery of vegetation is slow in arctic environments (Burt 1997).

The objectives of this component of the TEMMP Annual Report is to:

- To monitor levels of metals in soils collected at the Mine site area, AWAR, and Reference Areas (10 to 15 km from the site infrastructure).
- To monitor level of metals in lichen tissue and vascular plants within the Mine site area, AWAR, and Reference Areas (10 to 15 km from the site infrastructure).

Lichens were chosen because they are estimated to account for 87 to 90% of the diet for caribou (Thomas 1998). Lichens 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.

Berry-producing plants were included in the assessment because human consumption of berries in the Project infrastructure and AWAR was raised as a concern by local communities.

11.1 Methods

11.1.1 Sampling Locations

A field program was carried out by a Golder Vegetation Ecologist from 19 to 24 July 2019 to monitor the existing conditions of soil and vegetation quality. All sampling locations selected in 2017 as part of the TEMMP were revisited in 2019 (Figure 8). Due to disturbance of some sites in 2018 due to advancing Mine development, some sites were not able to be re-sampled. New sites were created to replace these locations (Table 20). The program included the collection of soil and vegetation samples, and analysis of the samples for concentrations of metals. These concentrations in soil and vegetation will be used to provide context to the predicted changes to environmental quality as a result of the Project.

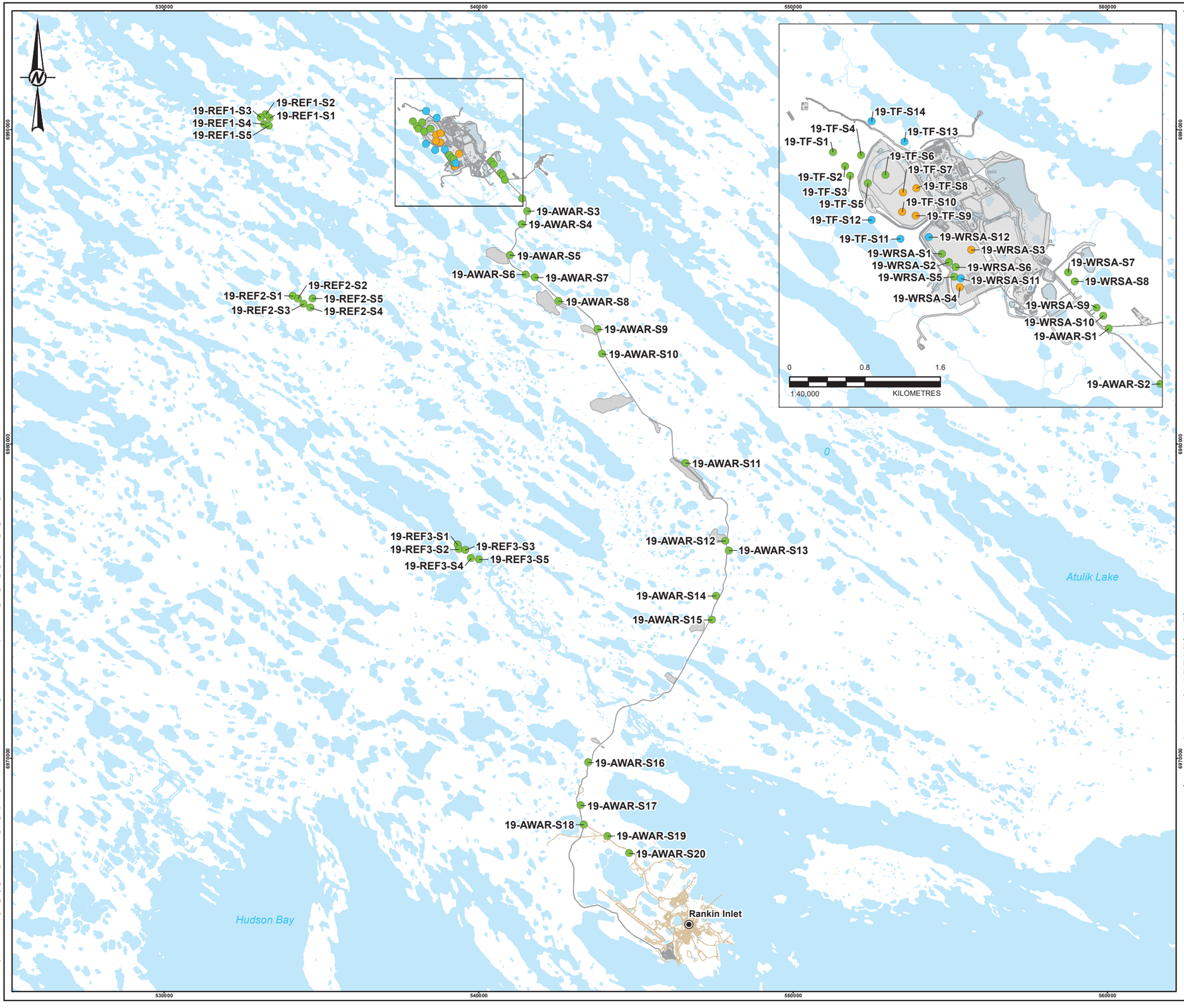
The soil and vegetation sampling program were designed to include the collection of vegetation samples of interest (i.e., berries, sedges, and lichens) and co-located soil samples, while taking spatial distribution into account. Vegetation types selected for sampling were identified based on their importance as food for human consumption (e.g., berries) and primary forage type for wildlife considered in the assessment of human and ecological health risk (e.g., lichens). Soil and vegetation were sampled at following locations in the Mine site (Treatment Sites) outside of the Mine site (Reference Area):

- AWAR – 20 samples (20 sample sites, 10 at each side of the road)
- Waste Rock Storage Area – 10 samples
- Tailings Facility – 10 samples
- Reference Area – 15 samples (3 sample sites, 5 samples at each site)

Three external reference areas and three treatment areas were sampled (Figure 11). Reference areas were selected southwest and west of the Project area, upwind from mine related activities (Ref 1 to Ref 3). Treatment areas, Waste Rock Storage Area, Tailings Facility, and AWAR were selected to represent wind distribution of contaminants from mining related activities. Ten sample sites were selected in the Waste Rock facilities, ten in the tailings facility and 20 along the AWAR at least 150 apart, when possible. Within each reference area, five sample sites (S1 to S5) were selected within a 200 to 300 m radius, at least 150 m apart from one another. In each

sample site, composite tissue and soil samples are collected within a 10 to 30 m radius, depending on tissue (particularly berry) availability.

Permanent reference sample locations were established west of site and along the AWAR. Reference locations were determined in the field and were located 10-15 km from Site infrastructure, the AWAR and Rankin Inlet. Specific sampling locations established during 2017 field surveys and revisited in 2019 are shown in Table 20 and Figure 11. Dominant plant species and any incidental observations of non-native and listed plant species were recorded at each sampling location.



LEGEND

SAMPLING LOCATION

- SITE
- REPLACEMENT SITE
- SITE NO LONGER EXISTS
- MINE INFRASTRUCTURE
- MINE FOOTPRINT
- ALL-WEATHER ACCESS ROAD (AWAR)
- RANKIN INLET
- WATERCOURSE
- WATERBODY

0 3 6

1:120,000 KILOMETRES

NOTES(S)

1. TSF, WRSF1, WRSF2, CP1 ARE THE MAXIMUM EXTENT UNDER THE APPROVED MINE PLAN AND DO NOT REPRESENT SIZE IN 2018.
2. BORROW PIT B1A IS EXCLUDED AND IS NOT ILLUSTRATED IN THE CURRENT FOOTPRINT.
3.. THE PROPOSED MINE PLAN INCLUDES TIRIGANIAQ PIT 1, TIRIGANIAQ PIT 2, AND WASTE ROCK STORAGE FACILITY 3 (WRSF3) AND ASSOCIATED INFRASTRUCTURE; THESE ITEMS HAVE NOT BEEN CONSTRUCTED YET (AS OF THE END OF 2018) AND THEREFORE WERE NOT INCLUDED ON THIS MAP.

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

MELIADINE GOLD PROJECT
NUNAVUT

TITLE

2019 VEGETATION AND SOIL MONITORING

CONSULTANT

GOLDER

YYYY-MM-DD	2019-11-21
DESIGNED	AZ
PREPARED	CDB
REVIEWED	CLT
APPROVED	CLT

PROJECT NO.	CONTROL	REV.	FIGURE
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Table 20: Soils and Vegetation Tissue Sampling Locations

Sampling Area	Site #	Sampling Location Name	Easting	Northing
Tailings facility	Site 1	19-TF-S1	537910	6990267
	Site 2	19-TF-S2	538039	6990117
	Site 3	19-TF-S3	538095	6990018
	Site 4	19-TF-S4	538208	6990235
	Site 5	19-TF-S5	538279	6989936
	Site 6	19-TF-S6	538465	6990025
	Site 7	19-TF-S7 *	538653	6989839
	Site 8	19-TF-S8 *	538796	6989882
	Site 9	19-TF-S9 *	538787	6989592
	Site 10	19-TF-S10 *	538644	6989631
	Site 11	19-TF-S11 **	538625	6989349
	Site 12	19-TF-S12 **	538322	6989547
	Site 13	19-TF-S13 **	538670	6990378
	Site 14	19-TF-S14 **	538322	6990593
Waste Rock Storage Area	Site 1	19-WRSA-S1	539064	6989189
	Site 2	19-WRSA-S2	539140	6989102
	Site 3	19-WRSA-S3 *	539378	6989231
	Site 4	19-WRSA-S4 *	539254	6988834
	Site 5	19-WRSA-S5	539196	6988944
	Site 6	19-WRSA-S6	539212	6989047
	Site 7	19-WRSA-S7	540404	6988993
	Site 8	19-WRSA-S8	540475	6988895
	Site 9	19-WRSA-S9	540705	6988617
	Site 10	19-WRSA-S10	540777	6988533
	Site 11	19-WRSA-S11 **	539266	6988927
	Site 12	19-WRSA-S12 **	538927	6989364
AWAR	Site 1	19-AWAR-S1	540835	6988397
	Site 2	19-AWAR-S2	541381	6987810
	Site 3	19-AWAR-S3	541546	6987401
	Site 4	19-AWAR-S4	541370	6986990
	Site 5	19-AWAR-S5	541002	6986008
	Site 6	19-AWAR-S6	541494	6985390
	Site 7	19-AWAR-S7	541787	6985299
	Site 8	19-AWAR-S8	542546	6984543
	Site 9	19-AWAR-S9	543777	6983654
	Site 10	19-AWAR-S10	543923	6982864
	Site 11	19-AWAR-S11	546575	6979391
	Site 12	19-AWAR-S12	547841	6976918
	Site 13	19-AWAR-S13	547955	6976614
	Site 14	19-AWAR-S14	547547	6975167

Table 20: Soils and Vegetation Tissue Sampling Locations

Sampling Area	Site #	Sampling Location Name	Easting	Northing
	Site 15	19-AWAR-S15	547420	6974405
	Site 16	19-AWAR-S16	543485	6969872
	Site 17	19-AWAR-S17	543242	6968514
	Site 18	19-AWAR-S18	543343	6967889
	Site 19	19-AWAR-S19	544097	6967527
	Site 20	19-AWAR-S20	544783	6966983
Reference 1	Site 1	19-REF1-S1	533352	6990369
	Site 2	19-REF1-S2	533221	6990483
	Site 3	19-REF1-S3	533071	6990384
	Site 4	19-REF1-S4	533183	6990165
	Site 5	19-REF1-S5	533325	6990118
Reference 2	Site 1	19-REF2-S1	534088	6984708
	Site 2	19-REF2-S2	534255	6984626
	Site 3	19-REF2-S3	534431	6984456
	Site 4	19-REF2-S4	534648	6984332
	Site 5	19-REF2-S5	534723	6984630
Reference 3	Site 1	19-REF3-S1	539333	6976792
	Site 2	19-REF3-S2	539377	6976651
	Site 3	19-REF3-S3	539579	6976630
	Site 4	19-REF3-S4	539756	6976362
	Site 5	19-REF3-S5	540010	6976323

Notes:

* Sites not revisited due to existing disturbance.

** Sites established in 2019 to replace disturbed sites.

Upon arriving at a suitable sampling site, Universal Transverse Mercator (UTM) coordinates were marked with a Garmin GPSMAP62s Global Positioning System device. Several photographs were taken at each sampling location to document the physical characteristics and habitat present. Close-up photographs were taken of each sample showing the corresponding sample ID and sample condition. Representative photos of each sampling location are presented in Appendix C.

11.1.1.1 Lichen and Vascular Plant Sampling

Lichens and vascular plants (vegetation tissue samples) were collected for chemical analysis at the locations listed in Table 20. Due to the cold winter/spring berries were not ready at this time of year in all sampling locations, for those locations where berries were not available, vegetation samples were collected from other plants such as Labrador tea, lichen species, birch and sedge were collected. Clean sampling protocols were implemented so that samples were not contaminated by external sources. The species of plant was identified and general notes regarding the plant's health and vigour were recorded. Unhealthy plants were only collected when there was insufficient healthy plant material available. Plant material that was dropped during collection was not included in the sample. Vegetation was inspected visually at each sample location to assess possible impacts of dustfall on vegetation. When berries were available for sampling they were hand-picked and care was taken to avoid removing dust from their surface. They were collected from a minimum of three plants. Effort was made to pick ripe berries that someone would consider edible. Graminoids (sedge) were collected by cutting the base of the aboveground growth with clean, titanium blade, non-stick coated scissors and folding the stems gently.

Powderless nitrile gloves were used for all contact with lichens and vascular plants. 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. The samples collected at each plot were recorded, and each plot was photographed. A selection of photographs taken during the vegetation sample program is presented in Appendix D.

At least 10 g of each vegetation type was collected and placed in a plastic sample bag. Once the sample was collected, the air was squeezed out of the bag and the bag was sealed closed. Sample bags were labelled with the date, location, time, and sample identification, and then placed inside a second plastic bag. The second bag was labelled with the same information as the first bag and sealed closed.

11.1.1.2 Soil Sampling

Soil samples were collected at each location where berries, graminoids [sedge], or lichen samples were collected. Before collecting the samples, leaves and debris were cleared from the ground or water surface. Soils samples were collected using a composite sampling method at each site. Representative grab samples were collected from five separate test pits (no greater than 5.0 m^2) per sample site using a stainless steel trowel. The organic layer (which ranges from 0 to 5 cm below surface) was removed and discarded. Mineral soil was collected from the upper soil horizons to a maximum depth of 15 to 20 cm and placed it in a Ziploc bag and homogenized. Soil was collected in pre-labelled Ziploc bags and kept cool until it could be transported to the laboratory for analysis. All samples were recorded on an electronic chain-of-custody form, which was submitted to the analytical laboratory through the laboratory portal.

11.1.1.3 Soils and Vegetation Tissue Analysis

Laboratory analyses on vegetation and soil samples were performed by Bureau Veritas Laboratories in Nepean, Ontario. Total extractable metals in soil and vegetation were analyzed using inductively coupled plasma mass spectrometry and inductively coupled plasma triple quad tandem mass spectrometry. The laboratory certificates of analyses are provided in Appendix E and results are presented in Appendix F. Samples were analyzed for the following suite of parameters:

- moisture content (soils and plant tissue)
- pH (soil only)
- total metals (plant tissue and soil unless otherwise indicated) included: aluminium (plant tissue only), antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, selenium, silver, sodium (plant tissue only), tin (soil samples only), and zinc.

Concentrations of metals on lichen, vascular plants, and soil samples were screened against the CCME Canadian Soil Quality Guidelines for the Protection of Environment and Human Health (CCME 2012) for residential land use.

11.1.1.4 Quality Assurance and Quality Control

Sample duplicates were randomly selected at the laboratory for Quality Assurance and Quality Control (QA/QC) purposes. Duplicates provide an indication of natural sample variation and the reproducibility of the laboratory test methods.

The results of the duplicate pair were expressed as a Relative Percent Difference (RPD). The RPD is an indicator of laboratory precision and sample heterogeneity. Lower RPD numbers indicate better precision in laboratory analysis and sample homogeneity. The formula for computing the RPD is given in the equation below:

$$RPD = \frac{|Sample - Duplicate|}{Mean} \times 100$$

Where:

RPD = relative percent difference (%)
Sample = concentration in original sample (µg/g)
Duplicate = concentration in duplicate sample (µg/g)
Mean = average of the original sample and the duplicate sample (µg/g)

Relative percent differences were not calculated if concentrations were not detected in one or both of the duplicate samples. The calculated relative percent difference (RPDs) were compared to the CCME Canadian Soil Quality Guidelines for the Protection of Environment and Human Health (CCME 2012) for residential land use.

11.2 Soil and Vegetation Results

The results of the soil sampling program are presented in Appendix F (Tables 1 and 2).Non-native plants are discussed in Section 12.0 of this report. No dustfall was visually observed at the treatment and reference locations. However, dustfall on vegetation was observed at some of the locations, between 0 to 30 m approximately, along the AWAR,. Dust generation from Project vehicles along the AWAR and mine roads is expected, but loads to overall dust accumulation in the area was considered negligible (Golder 2014a). Agnico Eagle will continue inspecting vegetation visually within 3 years when the next surveys are scheduled to assess possible impacts of dustfall on vegetation.

Soil samples collected around vegetation had concentrations of antimony, barium, beryllium, cobalt, lead, mercury, molybdenum, silver, thallium, uranium, vanadium and zinc less than residential limits (Appendix F, Table 1). Arsenic, copper, nickel and selenium exceed the residential limits in more than one sample and chromium in one sample, similar to the baseline condition results reported from 2014 for the FEIS (Volume 5, Section 5.2) where copper and selenium exceed the agricultural limits in two and one sampling locations from 2008, respectively. Arsenic exceeded the residential limits in 25 samples; of those, 12 samples were double the residential limit. In both 2018 and 2019 concentrations of silver were less than detection limits in all samples collected. This is comparable to baseline conditions per results reported in the 2017 TEMMP Annual Report (Golder 2018). Results from 2014 for the FEIS (Volume 5 and 6, Sections 5.2 and 6.4 respectively; Golder 2014a) indicate there are areas where naturally occurring arsenic concentrations are high and above the CCME Soil Quality Guidelines (2012) within the Project footprint, including the AWAR.

The CCME (2012) does not include residential, commercial and industrial limits for boron, however, this metal exceeded the agricultural limits in 10 samples by more than double the limits. Baseline values for boron are not available, however, boron values would be tested and assessed as part of the upcoming monitoring surveys in 2021.The minimum and maximum concentrations for most metals in all samples are within an order of magnitude of each other, indicating that there was little variability overall in the metal concentrations between soils samples. Both the soil pH and moisture content varied widely, ranging from 2.95 to 7.71 and from 5.8 to 84%, respectively (Appendix F - Table 2). This variability in pH is comparable to results reported in 2017 (Golder 2018).

The results of the vegetation tissue sampling program are presented in Appendix F (Tables 4 to 6). Vegetation samples had concentrations of most metals sampled, except for levels of antimony, beryllium, bismuth, selenium, silver and tin which were below laboratory detection limits in all samples collected (Appendix F - Table 4). Concentrations of sodium, cadmium, chromium, mercury, molybdenum, thalium and uranium were below the detection limit in most of the samples (Appendix F - Table 4). Two sites within the waste rock storage area had arsenic concentrations above the CCME guidelines (2012). Moisture content for vascular plants and lichen tissue varied widely, ranging from 9.0% to 80.0% (Appendix F - Table 5). The pH for vascular plants and lichen tissue ranged from 3 to 7 (Appendix F - Table 5). The difference between the minimum and maximum concentrations vegetation tissue samples were more than one order of magnitude for all metals except antimony, beryllium, bismuth, cadmium, molybdenum, phosphorous, potassium, selenium, silver, sodium and tin.

Overall there was no significant difference between the soil and vegetation metal concentration results from 2017 (Golder 2018) and 2019. Despite some elevated soil parameter concentrations for arsenic and high variability in soil pH observed, these are comparable to baseline measurements and the vegetation analysis supports that there is no stress to vegetation. Respective mitigation and management measures employed at site to minimize effects of dustfall on soils and vegetation continue to be employed per the Project Dust Management and Road Management Plans.

11.3 Quality Assurance and Quality Control

The RPDs for duplicates for metal concentrations in soil are presented in Appendix F (Table 3). The RPDs for the soil duplicates were within the 30% criterion for all metals analyzed.

The RPDs for the vegetation tissue sample duplicates are presented in Appendix F (Table 6) and all are within the 30% criterion for all metal parameters except for selenium which is above in the lichen duplicate.

Duplicate samples which have larger variation indicate high sample variability, which can be attributed to laboratory analysis, sampling technique or natural sample heterogeneity. The results of the laboratory QA/QC analyses performed by Bureau Veritas on both soil and vegetation fell within acceptable control limits for most samples, suggesting laboratory analyses would not be a large source of variability for either of these media.

For soils, the majority of the variability observed is likely attributed to the natural heterogeneity of soils. Almost all natural soils are highly variable and rarely homogeneous. Soil heterogeneity can be classified into two main categories. The first is lithological heterogeneity, which can be manifested in the form of different lithology within a more uniform soil mass. The second source of heterogeneity can be attributed to inherent spatial soil variability, which is the variation of soil properties from one point to another in space due to different deposition conditions.

11.4 Accuracy of Impact Predictions

A summary of the impact predictions proposed in the TEMMP (Golder 2015) is provided in Table 2. Specific thresholds for vegetation and wildlife habitat monitoring are outlined in Table 21.

Table 21: Accuracy of impact Predictions - Vegetation

Monitoring Indicators	Threshold	Exceeded in 2019?	Adaptive Management	Monitoring Method	TEMMP Section
Wildlife Habitat Loss	Terrestrial – 2,951 ha Aquatic – 515 ha	No	Not Currently Identified	Ground Surveys, Mapping, GIS Analysis	4.0
Habitat Degradation by Contamination	No effects to plant health from dust deposition	No	Not Currently Identified	Vegetation and Soil Samples	13.0
Habitat Reclamation following Mine Closure	Not applicable	No	Not Currently Identified	Ground Surveys, Vegetation Plots, Mapping	4.0

The 2017 TEMMP Annual Report (Golder 2018) presented the baseline levels of metals in berry producing plants, sedges, lichen, and soil chemistry 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. Vegetation (i.e., berries, sedges, and lichens) and soil sampling occurred in 2019, when Mine operations commenced. Soil characteristics per monitoring at three-year intervals (starting in 2019) will be compared to baseline conditions from 2017 to determine whether there is an accumulation of metals or change in nutrient composition. If there are indications of vegetation stress, poor vigour, or plant die-back, soil sampling will be implemented (as required), to determine whether changes in the growth media is influencing plant health and/or establishment.

11.5 Recommendations

Soil sampling will be conducted in future assessments and soil characteristics will be compared to baseline conditions to determine whether there is an accumulation of metals or change in nutrient composition. A comparison of the assessed metals will be presented in 3 years when the next surveys are scheduled to be completed (in 2022). If there are indications of vegetation stress, poor vigour, or plant die-back during non-native plant species surveys, which are completed annually, soil sampling will be implemented prior to the 3-year sampling period, as required, to determine whether changes in the growth media is influencing plant health and/or establishment.

12.0 NON-NATIVE PLANT SURVEYS

The spread of non-native species across the landscape is a concern for the Inuit. Construction equipment and operation activities can result in the introduction of, or spread of, non-native vegetation species. Thus, Project Certificate No. 006 includes Term and Condition 36 and 37 to prevent and minimize the introduction of non-native plants during pre-construction, construction, operations, temporary closure and maintenance, closure and post closure. Pre-construction surveys were completed during the baseline studies completed during 1998, 2008 and 2009 surveys (Volume 6, SD 6-2; Golder 2014a).

This section includes the methods, results and mitigation measures to minimize the spread of non-native invasive plant species as a result of Project construction. 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). Any introductions of non-native plant species must be promptly reported to the GN Department of Environment. Non-native plant monitoring surveys occurred in 2018 prior to Project operations initiation and in 2019, when Project operations commenced. Subsequent surveys will be completed annually as per the TEMMP (Golder 2015).

12.1 Methods

A desktop search for non-native plants in Nunavut was completed prior to 2019 field surveys. A list of potential non-native plants was obtained from the Canadian Endangered Species Conservation Council List (CESCC 2010; Appendix G). Non-native plant surveys were completed on 20-21 July 2019 by a Golder Terrestrial Ecologist. Surveys targeted areas with a high potential of occurrence such as along the AWAR, Project footprint, and Bypass Road (Figure 12). In addition, the accommodations area within the Project footprint and the Agnico Eagle ship loading area in Rankin Inlet were surveyed. Where invasive plant species were observed, a GPS point and photograph was taken and the size of occurrence was recorded.

12.2 Results

A non-native plant species was identified during the surveys; Common dandelion (*Taraxacum officinale*), listed under the Non-Native and Invasive Species in Nunavut (CESCC 2010; Appendix G). Two occurrences of Common dandelion were recorded along the AWAR in 2019 (Figure 13). Common dandelion was not observed along the Bypass Road, Project footprint or Agnico Eagle ship loading area in Rankin Inlet.

Negligible changes in abundance and distribution of non-native plant species relative to baseline conditions is expected due to the advancement of the Project but controlled through the implementation of mitigation and environmental design features (Volume 6, Section 6.5; Golder 2014a). The 2019 results show that non-native plant species are currently limited to disturbed areas, but prevention and control measures as outlined in the TEMMP (Golder 2015) need to continue to be implemented.

LEGEND

- NON-NATIVE PLANT MONITORING LOCATIONS
- MINE INFRASTRUCTURE
- MINE FOOTPRINT
- ALL-WEATHER ACCESS ROAD (AWAR)
- RANKIN INLET
- WATERCOURSE
- WATERBODY

0 3 6

1:120,000 KILOMETRES

NOTES(S)

1. TSF, WRSF1, WRSF2, CP1 ARE THE MAXIMUM EXTENT UNDER THE APPROVED MINE PLAN AND DO NOT REPRESENT SIZE IN 2018.
2. BORROW PIT B1A IS EXCLUDED AND IS NOT ILLUSTRATED IN THE CURRENT FOOTPRINT.
3.. THE PROPOSED MINE PLAN INCLUDES TIRIGANIAQ PIT 1, TIRIGANIAQ PIT 2, AND WASTE ROCK STORAGE FACILITY 3 (WRSF3) AND ASSOCIATED INFRASTRUCTURE; THESE ITEMS HAVE NOT BEEN CONSTRUCTED YET (AS OF THE END OF 2018) AND THEREFORE WERE NOT INCLUDED ON THIS MAP.

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

MELIADINE GOLD PROJECT
NUNAVUT

TITLE

2019 NON-NATIVE PLANT MONITORING LOCATIONS

CONSULTANT

GOLDER

YYYY-MM-DD	2020-01-21
DESIGNED	AZ
PREPARED	CDB
REVIEWED	CLT
APPROVED	CLT

PROJECT NO.	CONTROL	REV.	FIGURE
19122039	3000/3550	0	12

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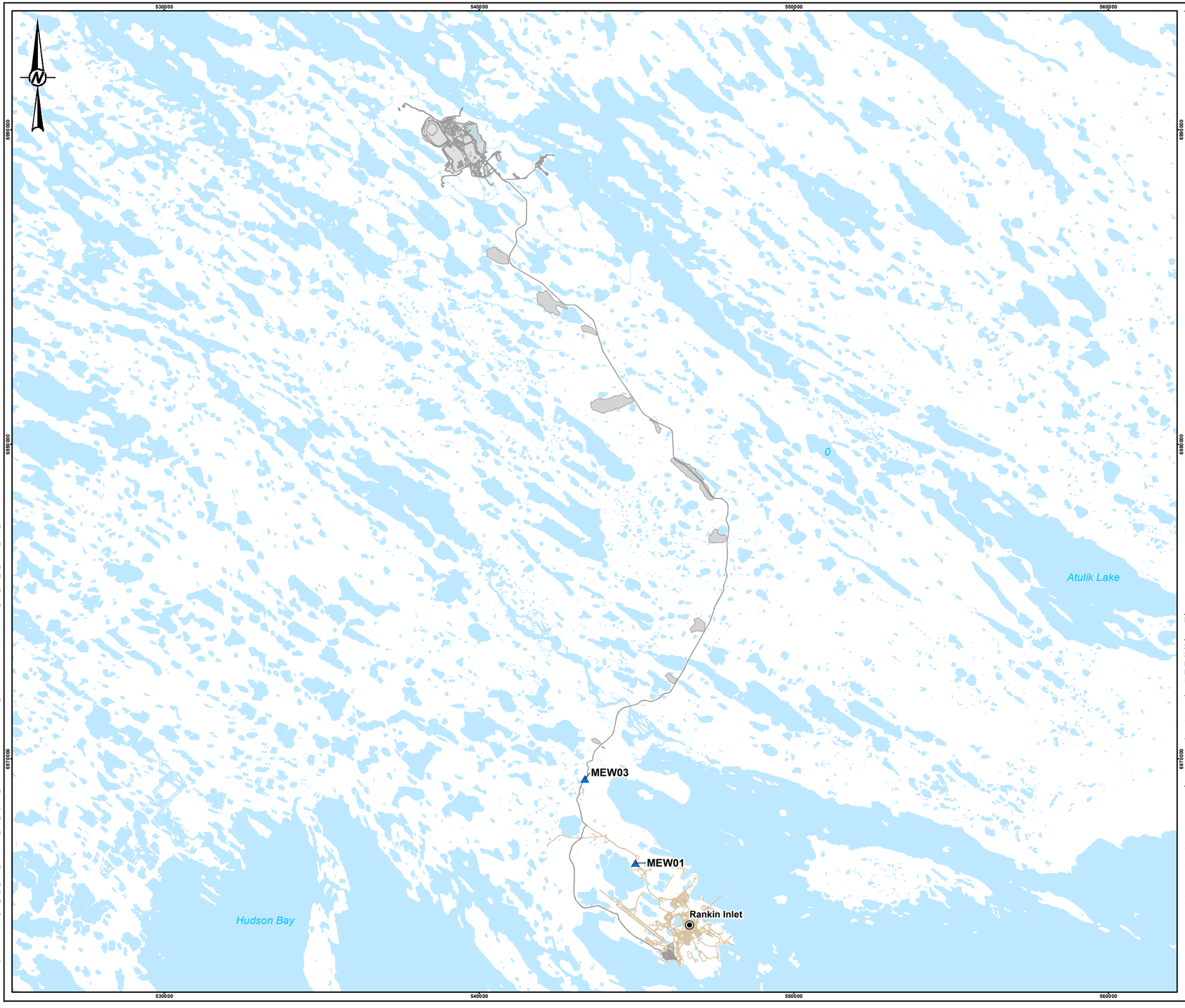

LEGEND

WEED SPECIES NAME

- COMMON DANDELION (TARAXACUM OFFICINALE)
- MINE INFRASTRUCTURE
- MINE FOOTPRINT
- ALL-WEATHER ACCESS ROAD (AWAR)
- RANKIN INLET
- WATERCOURSE
- WATERBODY

0 3 6

1:120,000 KILOMETRES

NOTES(S)

1. TSF, WRSF1, WRSF2, CP1 ARE THE MAXIMUM EXTENT UNDER THE APPROVED MINE PLAN AND DO NOT REPRESENT SIZE IN 2018.
2. BORROW PIT B1A IS EXCLUDED AND IS NOT ILLUSTRATED IN THE CURRENT FOOTPRINT.
3.. THE PROPOSED MINE PLAN INCLUDES TIRIGANIAQ PIT 1, TIRIGANIAQ PIT 2, AND WASTE ROCK STORAGE FACILITY 3 (WRSF3) AND ASSOCIATED INFRASTRUCTURE; THESE ITEMS HAVE NOT BEEN CONSTRUCTED YET (AS OF THE END OF 2018) AND THEREFORE WERE NOT INCLUDED ON THIS MAP.

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

MELIADINE GOLD PROJECT
NUNAVUT

TITLE

2019 NON-NATIVE PLANT SPECIES - DANDELION

CONSULTANT

GOLDER

YYYY-MM-DD	2019-11-21
DESIGNED	AZ
PREPARED	CDB
REVIEWED	CLT
APPROVED	CLT

PROJECT NO.	CONTROL	REV.	FIGURE
19122039	3000/3550	0	13

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

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12.3 Mitigation

The early detection of non-native plant species is important, as preventing these species from becoming established is the most effective mitigation that can be employed. Invasive plants identified as a concern by the GN DoE will be reported to the GN, including location of the species (i.e., GPS coordinated and map), species identification and photographs of the species in question.

In addition, to the early detection of non-native invasive species the following mitigation measures have been implemented by Agnico Eagle during Project operation, per the TEMMP (Golder 2015):

- Where possible, utilize existing access trails and roads.
- Limit the width of access roads and the size of workspaces.
- Inspect and clean new equipment arriving to site from the ship loading area prior to entering the Project Area.
- Complete non-native invasive plant monitoring surveys every year during operations to identify problem areas. Surveys should be targeted for areas with a high potential of occurrence such as along the AWAR, Project footprint, and ship loading areas.

12.4 Accuracy of Impact Predictions

Non-Native plant species were observed in disturbed areas (i.e., along AWAR and around operations camp area). A summary of the impact predictions proposed in the TEMMP (Golder 2015) is provided in Table 2. Specific thresholds for vegetation and wildlife habitat monitoring are outlined in Table 22.

Table 22: Accuracy of impact Predictions - Vegetation

Monitoring Indicators	Threshold	Exceeded in 2019?	Adaptive Management	Monitoring Method	TEMMP* Section
Habitat Degradation by Contamination	No non-native plant species established	Yes	See Section 12.3	Non-native Plant Survey of AWAR, Bypass Road, and Project site	13.0
Habitat Reclamation following Project Closure	NA	No	Not Currently Identified	Ground Surveys, Vegetation Plots, Mapping	4.0

Notes: *TEMMP = Terrestrial Environment Management and Monitoring Plan (Golder 2015)

12.5 Recommendations

For the dandelion occurrences found during 2019 surveys, mechanical control such as mowing or hand pulling is recommended, as practicable for the terrain on site.

- If hand pulling with a shovel, the plant material should be collected in bags and disposed of at an offsite location.
- Mowing is a viable option if the following conditions are met: there is access for a mowing unit or hand held trimmer, the terrain is not too steep or hazardous, or if the phenology of the plant stage is not at risk for greater seed dispersal (consult with a vegetation ecologist prior to mowing or trimming).

The CESCC (2010; Appendix G) has developed posters that show Non-Native species and invasive species in Nunavut. These can easily be displayed at the Project site and incorporated into on-boarding materials. Chemical herbicide treatments are not recommended to be used at this point as the native vegetation/habits in the tundra are very sensitive to impacts.

13.0 ENVIRONMENTAL VARIABLES

A summary of climate conditions collected on site in 2019 are presented in Table 23. Data was collected from 1 January to 31 December 2019 through the on-site meteorological station and rain gauges.

Table 23: Climate Conditions Recorded in the Project Area - 2019

ENVIRONMENTAL VARIABLE	YEAR[(a)]
	2019
TEMPERATURE (°C)	
Mean Annual Temperature	-10.2
Max. Annual Temperature	21.8
Min. Annual Temperature	-45.4
PRECIPITATION	
Total Annual Rainfall (mm)	104.9
Total Annual Snowfall (mm)	239.7

Notes: All values reported were collected via on-site meteorological station, with the exception of snowfall which was collected by AE staff

The maximum annual temperature of 21.8°C was recorded on 23 July, 2019 and the minimum annual temperature -45.4°C was recorded on 26 January, 2019. Snowmelt began 6 June, 2019 when the average daily air temperature exceeded 0°C. Environmental variables will continue to be monitored on an on-going basis.

14.0 CLOSURE

We trust the above meets your present requirements. If you have any questions or require additional information, please contact the undersigned.

Nuqsana Golder

Original signed ***Original signed***

Carolina Leseigneur Torres, M.Sc.
Project Manager, ESIA Specialist and Biologist

Corey De la Mare, P.Biol
Principal, Senior Wildlife Biologist

CC/LD/AO/DC/CLT/CDLM/lc/sg
https://golderassociates.sharepoint.com/sites/111100/project files/5 technical work/3550-3750_2019 temmp annual report/3600_annual report/rev 0_final/19122039-740-r-mel-2019temmpannual_27mar20_rev0.docx

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APPENDIX A

Supplemental Bird Data Analysis

Table A1: List of Species Observed Incidentally during Point Count Surveys

Common Name	Scientific Name	Common Name	Scientific Name
American pipit	*Anthus rubescens*	Pacific loon	*Gavia pacifica*
American robin	*Turdus migratorius*	peregrine falcon	*Falco peregrinus*
cackling goose	*Branta hutchinsii*	red-breasted merganser	*Mergus serrator*
Canada goose	*Branta canadensis*	red-throated loon	*Gavia stellata*
common loon	*Gavia immer*	Ross's goose	*Chen rossii*
common redpoll	*Acanthis flammea*	rough-legged hawk	*Buteo lagopus*
greater white-fronted goose	*Anser albifrons*	sandhill crane	*Grus canadensis*
green-winged teal	*Anas crecca*	savannah sparrow	*Passerculus sandwichensis*
herring gull	*Larus argentatus*	semi-palmated plover	*Charadrius semipalmatus*
horned lark	*Eremophilia alpestris*	snow goose	*Chen caerulescens*
Lapland longspur	*Calcarius lapponicus*	white-crowned sparrow	*Zonotrichia leucophrys*
least sandpiper	*Calidris minutilla*	willow ptarmigan	*Lagopus lagopus*
long-tailed duck	*Clangula hyemalis*		
northern pintail	*Anas acuta*		
northern shoveler	*Anas clypeata*		

Table A2: List of All Nests Identified in the Vicinity of Mine Infrastructure. Reference table to Figure 7

Nest ID	Year Identified	Nest Species	Nest Stage	Nest Productivity
N1801	2018	Willow ptarmigan	Nest Building	None
N1802	2018	Willow ptarmigan	Nest building	None
N1803	2018	Canada goose	Laying	>1
N1804	2018	Canada goose	Laying	1
N1805	2018	Canada goose	Laying	2
N1806	2018	Tundra swan	Laying	2
N1807	2018	Lapland longspur	Nest building	0
N1808	2018	Horned lark	Nest building	0
N1809	2018	Least sandpiper	Laying	0
N1810	2018	Canada goose	Laying	2
N1811	2018	Canada goose	Laying	3
N1812	2018	Canada goose	Laying	3
N1813	2018	Canada goose	Female on nest	Unknown
N1814	2018	Canada goose	Female on nest	Unknown
N1815	2018	Willow ptarmigan	Female on nest	Unknown
N1816	2018	Cackling goose	Laying	2
N1817	2018	Canada goose	Laying	3
N1818	2018	Cackling goose	Laying	2
N1819	2018	Lapland longspur	Laying	2
N1820	2018	Canada goose	Laying	1
N1821	2018	Canada goose	Female on nest	Unknown

Table A2: List of All Nests Identified in the Vicinity of Mine Infrastructure. Reference table to Figure 7

Nest ID	Year Identified	Nest Species	Nest Stage	Nest Productivity
N1822	2018	Least sandpiper	Unknown	Unknown
N1823	2018	Lapland longspur	Nest building	Unknown
N1824	2018	Canada goose	Female on nest	0
N1825	2018	Peregrine falcon	Nest building	0
N1826	2018	Horned lark	Eggs	4
N1827	2018	Canada goose	Female on nest	Unknown
N1828	2018	Canada goose	Laying	3
N1901	2019	Canada goose	Eggs	5
N1902	2019	Canada goose	Eggs	5
N1903	2019	Canada goose	Eggs	4
N1904	2019	Canada goose	Eggs	4
N1905	2019	Canada goose	Eggs	4
N1906	2019	Canada goose	Eggs	4
N1907	2019	Canada goose	Eggs	2
N1908	2019	Canada goose	Nest building	0
N1909	2019	Canada goose	Nest building	0
N1910	2019	Sandhill crane	Eggs	1
N1911	2019	Canada goose	Laying	3
N1912	2019	Cackling goose	Eggs	4
N1913	2019	Herring gull	Unknown	Unknown
N1914	2019	Canada goose	Unknown	Unknown

Table A2: List of All Nests Identified in the Vicinity of Mine Infrastructure. Reference table to Figure 7

Nest ID	Year Identified	Nest Species	Nest Stage	Nest Productivity
N1915	2019	Canada goose	Eggs	>2
N1916	2019	Canada goose	Eggs	Unknown
N1917	2019	Canada goose	Eggs	6
N1918	2019	Peregrine falcon	Unknown	Unknown
N1919	2019	Greater white-fronted goose	Eggs	3
N1920	2019	Lapland longspur	Eggs	5
N1921	2019	Sandhill crane	Eggs	1
N1922	2019	Willow ptarmigan	Laying	1
N1923	2019	Semi-palmated plover	Eggs	4
N1924	2019	Cackling goose	Eggs	4
N1925	2019	Cackling goose	Eggs	5
N1926	2019	Cackling goose	Eggs	5

APPENDIX B

Arctic Raptor Research Program, 2019

Prepared For:
Jessica Huza, Environment Superintendent
Terry Ternes, General Supervisor Environment
Sara Savoie, Compliance Coordinator
sara.savoie@agnicoeagle.com
Agnico Eagle Mines Limited
11600, rue Louis-Bisson
Mirabel, QC
J7N 1G9

Prepared By:
Arctic Raptors Inc.
170 52260 RR223
Sherwood Park, Alberta
T8C 1J3

Contact:
Alastair Franke, PhD
alastair.franke@ualberta.ca
780-292-2072

Background

Terms and conditions related to management and mitigation for birds and bird habitat (including raptorial species) are outlined in Nunavut Impact Review Board Project Certificate for the Meliadine Gold Mine Project Certificate (NIRB 2019), as follows:

- *Term and Condition 59; Species at Risk — If Species at Risk or their nests and eggs are encountered during Project activities or monitoring programs, the primary mitigation measure must be avoidance. The Proponent shall establish clear zones of avoidance based on the species-specific nest setback distances outlined in the Terrestrial Environment Management and Monitoring Plan.*
- *Term and Condition 60;* Species at Risk *— The Proponent shall ensure that the mitigation and monitoring strategies developed for Species at Risk are updated as necessary to maintain consistency with any applicable status reports, recovery strategies, action plans and management plans that may become available during the duration of the Project.*
- *Term and Condition 61; Construction/clearing activities — Prior to bird breeding season, the Proponent shall either conduct clearing activities or identify and install nesting deterrents (e.g., flagging) to discourage birds from nesting in areas likely to be disturbed by construction/clearing activities. If clearing is to take place during the nesting season, a nest survey should take place to identify nests and any identified nests must remain undisturbed until the young have fledged or left the nest. Any nests identified shall be included as part of the annual reporting for the Terrestrial Environmental Mitigation and Monitoring Plan (TEMMP).*
- *Term and Condition 62; Construction/clearing activities — The Proponent shall protect any nests found (or indicated nests) with a buffer zone determined by the setback distances outlined in its Terrestrial Environment Mitigation and Monitoring Plan (TEMMP), until the young have fledged. If it is determined that observance of these setbacks is not feasible, the Proponent will develop nest-specific guidelines and procedures to ensure bird's nests and their young are protected.*
- *Term and Condition 71; Monitoring — The Proponent shall develop detailed and robust mitigation and monitoring plans for migratory birds, reflecting input from relevant agencies, the Kivalliq Inuit Association and communities.*
- *Term and Condition 72; Monitoring — The Proponent shall continue to develop and update relevant monitoring and management plans for migratory birds under the Proponent's Environmental Protection Plan and Terrestrial Environment Mitigation and Monitoring Plan (TEMMP) prior to construction. The key indicators for follow up monitoring under this plan will include upland birds (including migratory birds), waterbirds, raptors, and seabirds including migration and wintering.*

Monitoring indicators for nesting raptors are outlined in the Agnico Eagle Meliadine Division Terrestrial Environment Mitigation and Management Plan (see Appendix H6), as follows:

- *Monitoring Indicator 1; Disturbance of nesting raptors — To be determined in consultation with GN and Alastair Franke, related to occupancy and productivity.*
- *Monitoring Indicator 2; Projected-related mortality — To be determined in consultation with GN and* Arctic Raptors Inc.

Species Descriptions

Peregrine Falcon (*Falco peregrinus tundrius*)

The Arctic peregrine falcon (PEFA; Figure 1) is medium- to large-sized falcon. It has a dark hood and face with distinct dark malar stripe, cream to white throat, slate-grey back; barred belly, legs, and tail. Long pointed wings, stocky body. Plumage of immature birds brown rather than grey, and the breast is streaked rather than barred. In adults, the cere and orbital ring are yellow, and bluish in immature birds. Compared with gyrfalcons, the peregrine is smaller and less stocky. In flight, the wings of peregrines appear narrower and more pointed. In peregrine falcons, wing tips extend to bottom of the tail when perched, while in gyrfalcons, wing tips extend two-thirds down the length of tail.

F. p. tundrius breeds mainly north of the treeline from Alaska east throughout northern Canada to Greenland. It breeds throughout the taiga and tundra wherever suitable nesting habitat and sufficient prey are present. In Nunavut, peregrines appear to have their highest densities in the Kivalliq and Kitikmeot regions. Highest breeding density on record is on the western shores of Hudson Bay in the Kivalliq Region.

F. p. tundrius is a long-distance migrant, wintering mainly throughout South and Central America, but also in southern United States and Mexico. Northern-breeding American and Arctic peregrines are highly migratory (Yates et al. 1988, Schmutz et al. 1991, Fuller et al. 1998), and although fall migration occurs over a broad geographic range (Fuller et al. 1998), Yates et al. (1988) indicated that “separate and distinct autumn migratory populations pass through the east and Gulf coasts” of the United States.

Peregrine falcons usually nests on cliffs and rocky outcrops, but also nest on hilltops, river canyons, rock screes, and on occasion directly on the ground (Court et al. 1988, Ratcliffe 1993). They prefer nesting in locations close to water in south-facing, rugged terrain. Hunting habitat includes rugged coastline areas and rolling tundra that consists of raised beaches, dry tundra, sedge meadows, wetlands, and lakes that are inhabited by a diversity of breeding songbirds and shorebirds.

Peregrine Falcons do not build a nest but make a depression (called a scrape) in the substrate on a cliff ledge. Scrapes are usually approximately 20 cm in diameter and 4 cm deep. Females usually do the majority of incubation, and brooding of small young. Males provision incubating females and provide most of the prey when nestlings are small. Thereafter, females do most of the feeding, beginning to hunt after young are large enough to thermoregulate on their own. Clutch size is typically 3 or 4 eggs in Nunavut. In Rankin Inlet and Igloolik, the median incubation period of the first egg was 36 days, and decreased 1 day for each additional egg. The incubation period of the 4th egg (33 days) was similar to what has been reported elsewhere (Burnham 1983).

The Arctic peregrine falcon is a generalist predator with a diverse diet that includes passerines, shorebirds , ducks , gulls, terns, jaegers, black guillemots, and, when available, collared lemmings, brown lemmings, and Arctic ground squirrels. Bradley and Oliphant (1991) indicated that, around Rankin Inlet, small birds (64% of prey items) represented the greatest portion of prey items, followed by microtine rodents (25%), large birds (8%), and Arctic ground squirrels (4%). The most important prey measured by percent biomass were large birds (43%), followed by small birds (25%), microtine rodents (18%), and Arctic ground squirrels (15%).

In Nunavut, the earliest documented arrival for Peregrine Falcons is 10 May at a known breeding site near Rankin Inlet. Although arrival timing varies with spring conditions, the majority of sites are

occupied during the 3rd week of May. Median laying date in Rankin Inlet (9 June) is typically earlier than Igloolik (15 June) and northern Baffin Island (16 June). Median date of hatching ranges from 14 July at Rankin Inlet to 18 July on northern Baffin Island and 20 July at Igloolik (Jaffre et al. 2015). Birds depart the breeding grounds from mid-September through early October, arriving on the wintering grounds throughout Central and South America in November.

Figure 1. Adult male peregrine falcon. Note the dark hood and face with distinct dark malar stripe, white throat, slate-grey back, and barred belly, legs, and tail. Wing are long and pointed. Note the yellow legs, cere and eye ring.

Gyrfalcon (*Falco rusticolus*)

The gyrfalcon (GYRF; Figure 2) is large with pointed wings, but more rounded and broader than the wings of other falcon species. The tail is relatively long. When perched, wings extend 2/3 down the tail. The body is thick and powerful, particularly in females. Adults have yellow ceres, eye-rings and legs. As in all falcons, the eyes appear black. Three main color morphs occur: black, grey and white. White adults have almost pure white breasts and bellies, with dark wingtips (dipped-in-ink appearance). Grey adults have slate-colored back, with white underparts mottled with gray arrowhead-shaped markings. Dark adults are dark-grey overall above and dark-streaked breasts and belly. There is extreme reverse sex dimorphism, with males being approximately 2/3 the size of females (Ferguson-Lees et al. 2001).

Gyrfalcons distribution extends throughout the circumpolar Arctic. Most of the breeding range occurs north of 60°N, but breeding pairs are known to exist as far south as 55°N, mainly along sea coasts in eastern Canada. Many adults remain within the breeding range throughout the year, but some disperse southwards in winter, small numbers reaching the northern United States (Cade 1982, Poole 1987). Immature birds are much more likely to winter south of breeding range, and females are thought to disperse more widely, with many males remaining relatively close to breeding territories throughout the year.

Ptarmigan are often cited as the most important prey species by biomass, but Arctic ground squirrel and Arctic hare are also important, as well as small mammals (mice and voles) and other birds (ducks, sparrows, buntings). In central Nunavut, Poole and Boag (1988) identified eleven species of birds and five species of mammals among the prey. Birds accounted for three quarters of the diet, and adult rock ptarmigan were the most common. Arctic ground squirrel and arctic hare, made up the bulk of mammalian prey.

Males occupy and defend nesting territories as early as the end of January, with females arriving in mid-March. In Nunavut, laying typically begin in the first week of May with most pairs laying by the end of the second week in May. Nestlings typically hatch in mid-June but hatching can occur throughout June. Nestlings fledge in late July or early August after 7 weeks in the nest. In Nunavut, gyrfalcon usually nest on cliff ledges, ideally beneath sheltering overhang; sometimes nests in trees or on man-made structures. Nests are generally on rock ledges or abandoned rough-legged hawk or common raven nests. Use of alternate nest sites is not uncommon. Pairs do not necessarily attempt breeding every year, depending on food supply. Typical clutch size is 3-4 eggs (Booms et al. 2008) that are incubated for 34-36 days mostly by the female (ca. 80%). The North American population including Nunavut is considered to be stable (Clum and Cade 1994, Kirk and Hyslop 1998). Although low spring temperatures are associated with later arrival at nesting territories in Nunavut (Poole and Bromley 1988), there was no effect on laying dates. However, (Poole and Bromley 1988) indicated that increased spring precipitation (snow) reduced reproductive success.

Figure 2. Adult female gyrfalcon. Wings are more rounded and broader than the peregrine falcon. The tail is relatively long. When perched, wings extend 2/3 down the tail. The body is thick and powerful, particularly in females. Adults have yellow ceres

Rough-legged Hawk (*Buteo lagopus)*

The rough-legged hawk (RLHA; Figure 3) is a medium-large bird of prey, with a fairly small beak, predominantly brown in colour and often mottled. Plumage is highly variable with recognized light and dark morphs. Extensive field experience is required to distinguish between males and females, and between adults and juveniles based on plumage alone. A broad chest band is evident in most plumage variations, and in flight, a dark carpal patch is characteristic in light morph individuals. One or more dark terminal bands appear on the tail. The wing tips are long enough to reach or extend past the tail when the animal is perched. Legs are feathered to feet (Ferguson-Lees et al. 2005).

Widespread throughout North America, breeding from the Aleutian Islands, the interior of Alaska, Yukon, northern Mackenzie, and across Nunavut to northern Labrador and Newfoundland and south to Manitoba and southeastern Quebec. In Nunavut, rough-legged hawks are present over most of the territory except for islands without lemmings (Bechard and Swem 2002).

Regularly hovers, or “kites” while facing into the wind scanning for prey. Soars with wings raised in a slight dihedral (V-shape). It is a diurnal raptor that still-hunts from prominent perching structure on both breeding and wintering grounds. Prey is captured on the ground. Courtship involves soaring and calling, with the male engaged in a flight display of repeated undulating stoops rising upward to mid-air stall. It is gregarious on migration, often travelling in large flocks, but small groups or individuals are not uncommon.

During the summer, breeding pairs prefer rugged terrain areas with steeper slopes in areas associated with primary production (i.e., vegetation), and were most likely to nest in large, productive valleys surrounded by high-elevation plateaus (Galipeau et al. 2016). It is widely distributed in winter, usually found in open habitat resembling the tundra such as prairies, plains, coastal marshes, agricultural fields, and airports (Johnsgard and Johnsgard 1990). More common in wintering areas typified by short growing seasons and low precipitation, with highest densities in the northern United States, Great Basin area, and the western shortgrass prairies (Bock and Lepthien 1976, Bock et al. 1977).

The rough-legged hawk is a small mammal specialist; thus, its breeding activity is generally associated with local abundance of ground squirrels, voles, or lemmings (Hanski 1991, Potapov 1997). It will prey on birds when small mammals are scarce, particularly juvenile passerines and shorebirds, and will resort to consuming carrion opportunistically (Watson 1986). Usually reproductively mature at 2 years of age. Stick-nests are built soon after arrival on territory, typically on cliffs, on bluffs, or on the ground. Clutch sizes are variable (1-7 eggs), depending on food availability, but 3-5 eggs are usual and laid in May. Incubation is 31-33 days, provided almost entirely by the female. Nestling period is 35-40 days, and fledglings remain dependent on adults for another 2 weeks. The male provisions the young and the female, which feeds the young. Pairs show nest site fidelity, and in locations where ground squirrels are entirely absent, they may forgo breeding or have small broods when lemmings are low, in contrast to Snowy Owls, which are truly nomadic (Bechard and Swem 2002). Bechard and Swem (2002) indicated that egg-laying date was associated with spring temperatures and snow-free ledges, but Potapov (1997) reported no effect of snow melting date or spring/summer temperatures on number of nesting pairs.

Figure 3. Adult male rough-legged hawk. Note predominantly brown in colour and mottled. A broad chest band is evident, and dark carpal patches (not evident here) are characteristic in light morph individuals. One or more dark terminal bands appear on the tail. Wing tips are long enough to reach or extend past the tail when perched. Note that legs are feathered to feet.

Methods

Terminology

The terminology used throughout this report follows (Franke et al. 2017). The following terms are highlighted in an effort to clarify terminology used in this report, and/or to distinguish terms used from similar terms that have distinct meaning:

nest — The structure made or the place used by birds for laying their eggs and sheltering their young (Steenhof and Newton 2007) regardless of whether eggs are laid in the nest in a given year or in any year (Millsap et al. 2015, Steenhof et al. 2017), see Scrape for Gyrfalcons.

nesting site — The substrate which supports the nest or the specific location of the nest on the landscape (Ritchie and Curatolo 1982, Millsap et al. 2015, Steenhof et al. 2017).

alternative nesting site — One of potentially several nests within a nesting territory that is not a used nest in the current year (Millsap et al. 2015).

nesting territory — An area that contains, or historically contained, one or more nests within the home range of a mated pair: a confined locality where nests are found, usually in successive years, and where no more than one pair is known to have bred at one time (Newton and Marquiss 1984, Steenhoff and Newton 2007). Note that a nesting territory may or may not be defended (Postupalsky 1974), and

probably does not include all of a pair's foraging habitat (Newton and Marquiss 1984, Steenhoff and Newton 2007).

occupancy — The quotient of the count of occupied nesting territories and the count of known nesting territories that were fully surveyed in a given breeding season (Franke et al. 2017).

brood size — The actual number of young hatched from a single nesting attempt by a pair of birds. For studies in which mortality that occurs between hatching and the first observation of the brood is unknown, it is appropriate to report brood size (i.e., number hatched) only for broods equal to, or less than 10 days of age. For broods older than 10 days of age, see Brood Size ≥10 days. Report mean and standard error, or standard deviation.

brood size ≥ 10 days — The number of young hatched from a single nesting attempt by a pair of birds. For studies in which mortality that occurs between hatching and the first observation of the brood is unknown, and nestlings are equal to, or greater than 10 days of age, but less than Minimum Acceptable Age for Assessing Success. Report mean and standard error, or standard deviation.

minimum acceptable age for assessing success — A standard nestling age at which a nest can be considered successful. An age when young are well grown but not old enough to fly and after which mortality is minimal until actual fledging. Typically 80% of the age that young of a species normally leave the nest of their own volition for many species, but lower (65–75%) for species in which age at fledging varies considerably or for species that are more likely to leave the nest prematurely when checked (Steenhof and Newton 2007).

nest survival — The probability that a nesting attempt survives over the complete nesting period. When Daily Survival Rate (DSR; Dinsmore et al. 2002) is assumed to be constant over time and E is the nesting period (usually expressed in days), nest survival is DSR^E; otherwise nest survival is the product of each estimated DSR. For raptors, nest survival is the equivalent of nesting success for egg-laying pairs (Steenhof et al. 2017).

productivity — The number of young that reach the minimum acceptable age for assessing success; usually reported as the number of young produced per territorial pair or per occupied territory in a particular year (Steenhoff and Newton 2007, Steenhof et al. 2017).

total production — The total number of young detected.

Field Surveys

Structured surveys were conducted from 2013 – 2019. The focus of these surveys was to search known nesting sites for the presence of cliff-nesting raptors (Figure 4). In addition to the structured surveys, favourable habitat was searched opportunistically when ferrying between known sites, camps or other mine infrastructure and when raptors or signs of site use (e.g., whitewash, orange-colored lichen, and unused nests) were observed. Sites were considered occupied if one or more adults displayed territorial or reproductive behavior (e.g., vocalization and/or flight behavior associated with defense of breeding territory or presence of nest building, nest, or eggs). Locations with partially built or unused nests without detection of breeding aged adults were noted as such (e.g., old stick nest; no birds detected). Raptor monitoring in 2019 involved weekly nest monitoring of accessible territories, one boat survey on Meliadine Lake (July 19), and one helicopter survey (August 7).

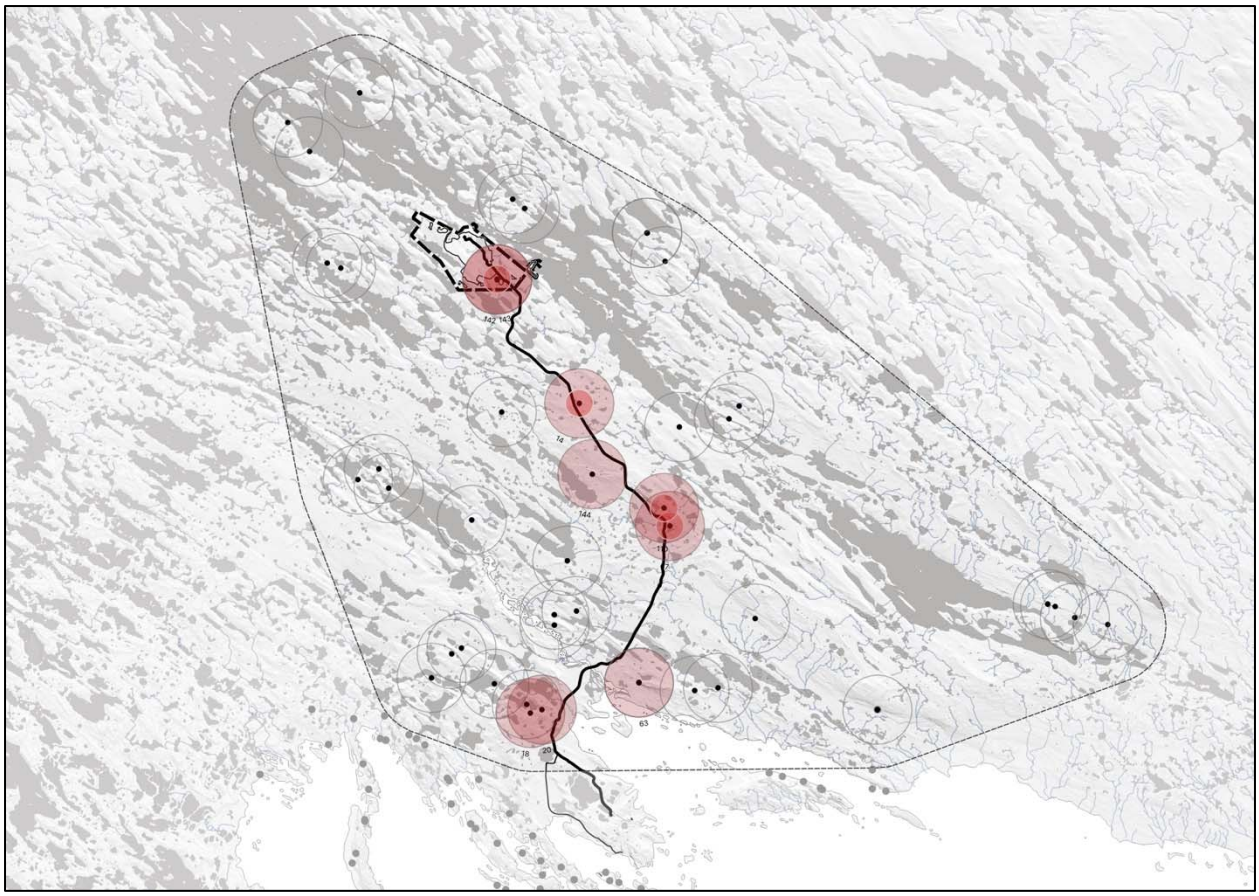


Figure 4. Location of raptor territories within an area surrounding the Meliadine Project. Buffers of 1.5 km and 600 m are drawn around each territory. Territories that are located within 1.5 km of Meliadine infrastructure are coloured with light red, and territories that are located within 600 m of Meliadine infrastructure are coloured with dark red.

Data Exploration

Nearest Neighbour Distances

Nearest neighbour distances (NND) were calculated in R (R Development Core Team 2017) using the sp, rgeos, and geosphere packages to transform nesting site locations into spatial objects, calculate pairwise distances, and identify the shortest distance between known neighbouring nesting site locations.

Distance to disturbance

Spatial objects (lines and polygons) describing the project footprint were acquired from Agnico Eagle. Euclidean distances from nesting sites to the nearest spatial object were calculated in R (R Development Core Team 2017) using the sp, rgeos, and geosphere packages. Summary data were generated using the hist, boxplot and summary functions in R. The Government of Nunavut currently refers to species-specific disturbance guidelines outlined in Government of British Columbia (2013), and this report follows those recommendations.

Assigning Nesting Sites to Nesting Territories

In the absence of marked individuals, it can be challenging to definitively identify alternative nesting sites. Failure to account for alternative nesting sites can lead to underestimating demographic parameters such as annual productivity. To address this problem, a rule-based approach was used to estimate the number of alternative nesting sites within the study area (Figure 5):

- If two species-specific nesting sites were separated by a distance of ≤ 1 km they were considered alternative nesting sites in a single nesting territory.
- If two nesting sites within 1 km of each other were occupied by the same species in a given year, they were considered separate territories.
- If multiple species-specific nesting sites were within 1 km of one another, discrete geographic landforms or discontinuities in cliff structure were used to separate or combine sites into territories.

Temporal patterns of multi-species occupancy were used to assess the plausibility of decisions based on the application of the three rules listed above. For example, if two nesting sites were located within 1 km of each other and were occupied by two different species in alternating years, these nesting sites were identified as distinct alternative nesting sites for each species.

Assigning Identification Numbers (ID) to Nesting Territories was conducted according to the following rule set:

- Nesting Territory IDs were assigned within species only (e.g., Nesting Territory IDs for PEFA and RLHA were never shared).
- Nesting Territory IDs were assigned using the Identification Number of one of the Nesting Sites in the cluster according to the following rule set, in order of priority:

    i. Length of tenure (i.e., nesting sites with the longest tenure)

    ii. First tenure (i.e., nesting sites with the first tenure in the event length of tenure was equal).

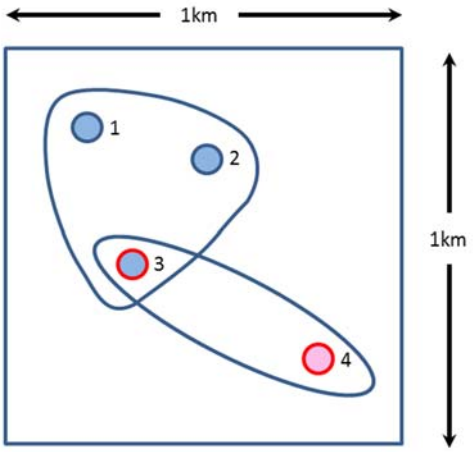
Occupancy

For each species separately, we first tallied the total count of known nesting sites across all surveys combined. We then adjusted the year-specific count of known nesting sites to account for nesting sites that were not known in that year (i.e., had not been found). Using the methods to assign nesting sites to nesting territories described in the previous section, we tallied the number year-specific nesting territories. We then calculated the year-specific proportion of known nesting territories that were occupied as a proportion of the known nesting territories that were surveyed. For visualization purposes only (i.e., no statistical assessment of trend was attempted), we then used Loess Regression to smoothen the available time series.

Results

Data Exploration

A total of 43 confirmed unique raptor nesting sites have resulted from surveys conducted near the Meliadine Project between 2013 and 2019 (see Table 1). Peregrine falcons have been documented at 29 nesting sites, rough-legged hawks at 25 nesting sites, and gyrfalcons have not yet been documented in the area. Among occupied nesting sites, the mean distance to the nearest territory was 1.44 km. The mean nearest neighbour distance (i.e., occupied sites only) was 1.15 km (range = 0.27– 6.6 km). Mean distance from known occupied nesting sites to the haul road was 4.70 km (range = 0.2 – 19.5 km). A



NS ID	PEFA NT ID	RLHA NT ID	2011	2012	2103	2014	2015	2016	2017
1	1	-	PEFA	PEFA	NBD	NBD	NBD	PEFA	PEFA
2	1	-	NBD	NBD	PEFA	NBD	PEFA	NBD	NBD
3	1	4	NBD	NBD	NBD	PEFA	RLHA	RLHA	NBD
4	-	4	RLHA	RLHA	NBD	RLHA	NBD	NBD	RLHA

Figure 5. Rule-based approach used to assign nesting sites to nesting territories. A cluster of four nesting sites within 1 km of one another that exhibit a site occupancy history among seven years for two species (PEFA and RLHA). Nesting Sites 1 and 2 (blue circles with blue borders) have been occupied solely by PEFA. Nesting Site 4 (red circle with red border) has been occupied solely by RLHA. Nesting Site 3 (blue circle with red border) has been occupied by both PEFA and RLHA. In this example, Nesting Sites 1, 2 and 3 are grouped into a single PEFA Nesting Territory and assigned Nesting Territory ID 1 based on PEFA–specific tenure length (Nesting Site 1 has the longest tenure) and first tenure. Nesting Sites 3 and 4 are grouped into a single RLHA Territory and assigned Nesting Territory ID 4 based on RLHA–specific tenure length (Nesting Site 4 has the longest tenure) and first tenure. Unique nesting locations are ultimately defined by a Nesting Territory ID and a Nesting Site ID (E.g., NT ID 1, NS ID 2). NBD = no birds detected.

total of three sites fall within 600m (see Government of British Columbia 2013) of the haul road, and four nesting sites within 1.5 km of the Haul Road (see management plans below. Mean distance from known occupied sites to the Meliadine Lease footprint was 12.48 km (range 0 – 29 km). Two nesting sites are located within the Meliadine footprint, and are considered candidates for development of a site-specific management plan (see Management Plans section of this document). However, neither are with the 600m limit identified.

After applying the rule-based approach to assign nesting sites to nesting territories, we assessed one cluster of sites that have been occupied by both rough-legged hawks and peregrine falcons. Sites 18, 20, and 37 are all within 1000m of each other, however they have been simultaneously occupied within years and we therefore regard them as distinct territories. In summary, surveys conducted from 2013 to 2019 have identified a total of 29 unique peregrine falcon and 25 unique rough-legged hawk territories in the study area.

Point estimates for occupancy indicate that peregrine falcons (mean = 0.61) have been stable (Table 2, Figure 6). For rough-legged hawks, mean occupancy was equal to 0.34, however, data indicate that a peak occurred in 2013 (0.57), and 2016 (0.52). Such high variation in occupancy is a well-known for small-mammal specialists which respond to microtine rodent cycles (Gilg et al. 2006).

Table 1. Geographic coordinates (decimal degrees), distance to nearest neighbour (D2NN), distance to road (D2RD), and distance to footprint (D2FP) for 43 occupied nesting sites surveyed between 2013 and 2019. Territories that are within 600 m of Meliadine infrastructure (road, or footprint) are highlighted in dark yellow, while territories that are within 1.5 km of infrastructure are highlighted in light yellow. All remaining territories are located outside of the buffer zone suggested by the TEMMP, and therefore require no management plan.

site	latitude	longitude	D2NN (km)	D2RD (km)	D2FP (km)	Mgt. Plan
1	62.86836	-92.25605	1.4	5.73	16.9	no
14	62.97506	-92.12968	3.1	0.23	5.8	yes
18	62.85464	-92.17156	0.4	1.17	18.6	yes
20	62.85597	-92.16164	0.5	0.78	18.5	yes
37	62.85801	-92.17464	0.4	1.46	18.2	yes
46	63.07264	-92.36035	1.6	7.66	6.1	no
61	62.91391	-92.13992	2.2	4.07	12.3	no
63	62.86641	-92.07864	2.4	1.37	18.1	yes
67	62.92745	-92.05219	0.8	0.26	12.2	yes
77	62.86449	-92.01107	1.0	4.31	19.5	no
79	62.87997	-92.23043	0.5	5.05	15.6	no
81	62.86605	-92.20228	1.7	3.12	17.2	no
84	63.02948	-92.28385	2.5	3.05	2	no
85	62.85595	-91.87472	6.6	10.86	23.9	no
88	62.88890	-92.15097	0.4	2.34	14.9	no
89	62.92978	-92.22168	3.9	6.40	10	no
95	62.96907	-92.00168	0.7	4.99	10.4	no
96	62.94216	-92.29262	0.9	8.18	9.3	no
98	62.94964	-92.30101	0.9	7.86	8.7	no
103	63.08382	-92.37894	1.6	9.10	7.5	no
107	62.86341	-92.03104	1.0	3.49	19.2	no
109	63.02752	-92.33361	2.5	5.52	4.2	no
110	62.93445	-92.05718	0.8	0.41	11.4	yes
112	62.87769	-92.23878	0.5	5.33	15.8	no
113	62.89293	-92.15108	0.4	2.73	14.5	no
114	62.97403	-91.99301	0.7	5.62	10.4	no
115	62.97170	-92.19602	3.4	2.61	5.5	no
116	62.94549	-92.31899	1.0	8.84	9.5	no
117	63.05057	-92.17638	0.7	2.57	2	no
121	62.89437	-92.13210	1.0	2.51	14.5	no
127	62.89143	-91.97929	3.4	4.39	17.6	no
129	63.04116	-92.07213	1.5	6.11	5	no
131	62.89614	-91.72274	0.3	17.10	26.7	no
134	63.09531	-92.31744	3.3	7.70	6.4	no
135	63.05417	-92.18661	0.7	2.51	2.1	no
136	63.03012	-92.05630	1.5	6.46	5.6	no
138	62.96590	-92.04414	2.2	2.92	9	no
139	62.89179	-91.70596	1.0	18.00	27.6	no
140	62.89705	-91.72914	0.3	16.77	26.3	no
141	62.88911	-91.67776	1.5	19.46	29	no
142	63.02298	-92.19985	0.0	0.23	0	yes
143	63.02323	-92.19994	0.0	0.23	0	yes
144	62.94755	-92.11851	3.1	1.04	8.9	yes

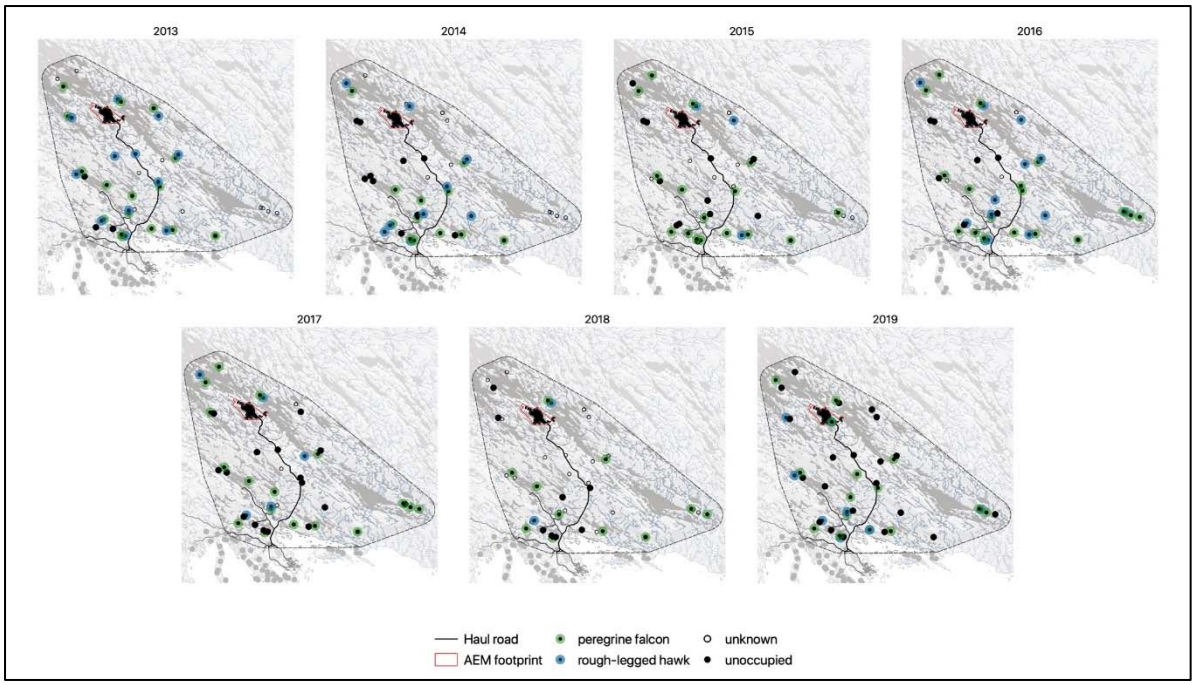


Figure 6. Distribution (2013 – 2019) of peregrine falcon and rough-legged hawk nesting sites. Black circles indicate nesting sites that were checked within the given year, and determined to be unoccupied. Open circles indicate nesting sites that were unknown or unchecked in the given year, and coloured circles represent respective species occupying a given territory (green = peregrine falcon, and blue = rough-legged hawk). The Haul Road (black line), Meliadine footprint (black polygon), and regional study area (black line) are shown relative to the distribution of nesting sites.

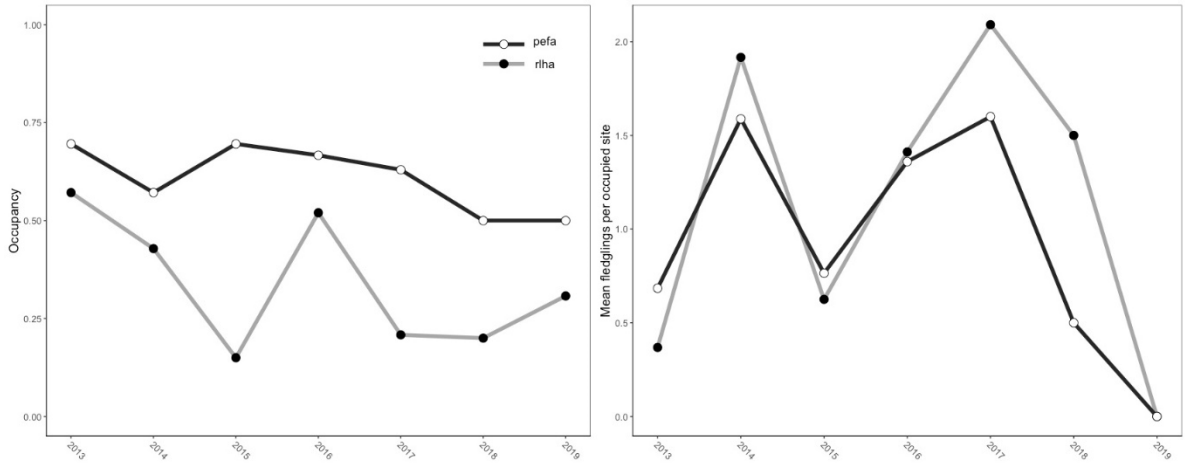


Figure 7. Trend (visualizations purposes only) in occupancy and productivity for peregrine falcons (black line), and rough-legged hawks (grey line), from 2013 – 2019. Annual occupancy point estimates for each survey year are also presented (see Table 1 for details).

Discussion

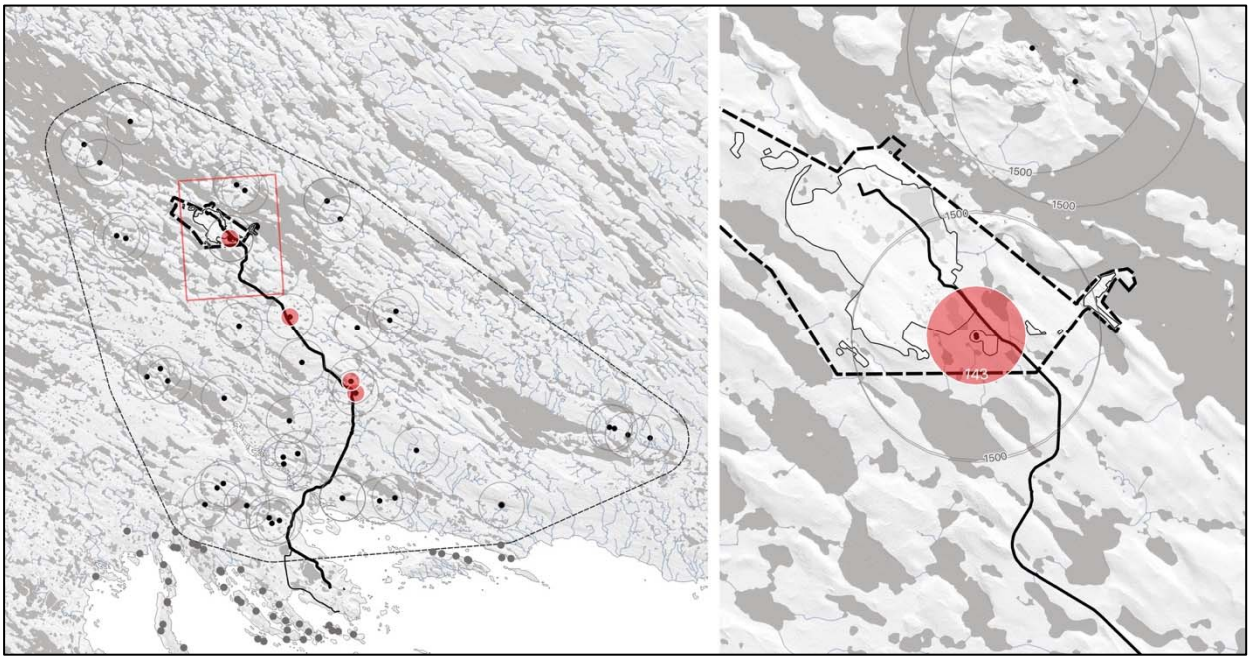
Monitoring for breeding raptors has occurred consistently in the area associated with Meliadine Project infrastructure since 2013, and surveys have focused on searching for, documenting, and mapping nesting sites for three raptor species (peregrine falcons, rough-legged hawks, and gyrfalcons). Study design has included at least two surveys – one to assess the location of occupied territories during the

pre-incubation and incubation periods, and one to assess site productivity during the late brood rearing period.

Mitigation and management outlined in the TEMMP requires the protection of species at risk during the breeding season (Term and Condition 59), and requires that disturbance to birds is minimized through consistent monitoring (Term and Condition 59), including nest-specific mitigation where necessary (Terms and Conditions 61, 62, and 75). It should be noted that peregrine falcons were assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in November of 2017, and were ranked "Not at Risk". However, the responsible Minister has not yet rendered a decision on the recommendation made by COSEWIC, and peregrine falcons are currently listed on Schedule 1 of the Species at Risk Act (SARA 2002, as amended), and are considered to be "Special Concern". This report meets the Terms and Conditions outlined by NIRB by documenting and mapping raptor nesting sites, and presenting site-specific management plans for nests within 1.5km of the project infrastructure, including minimum "no disturbance" buffers, including requirements for SARA-listed species.

Management Plans (Terms and Conditions 61)

Nesting Sites 142 and 143 - <200 m to disturbance

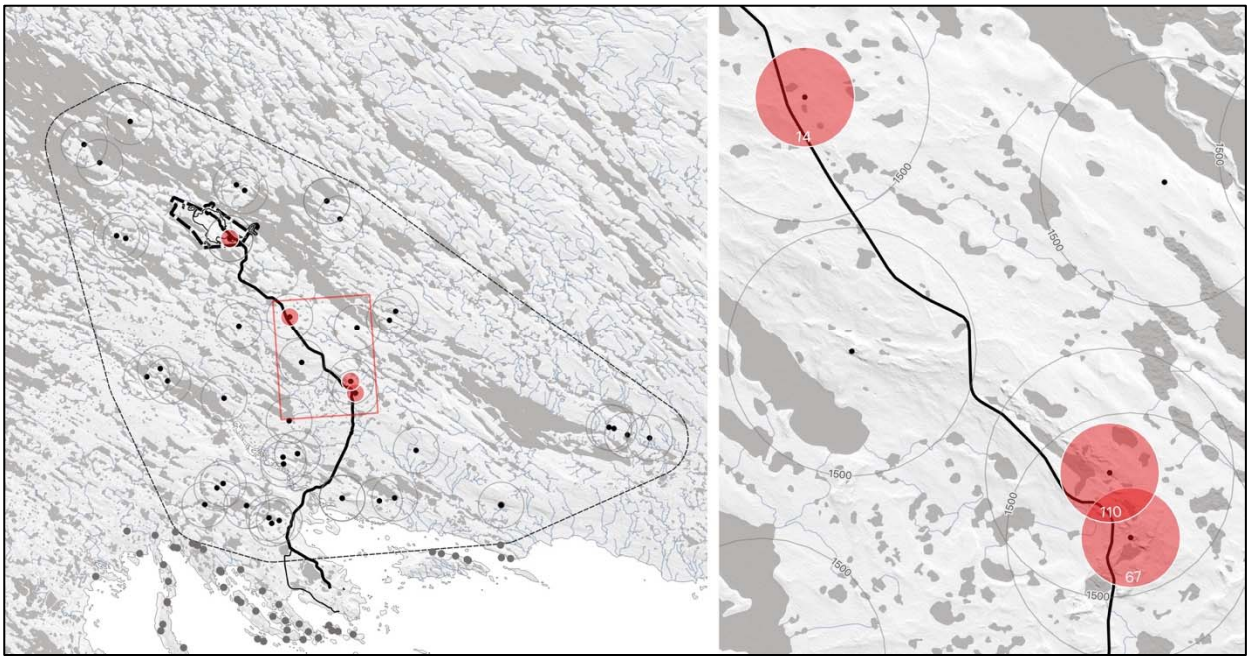


Site	*Dist.*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*
142	(0m)	unoccupied	unoccupied	unoccupied	unoccupied	unoccupied	unoccupied	PEFA
143	(0m)	unoccupied	unoccupied	unoccupied	unoccupied	unoccupied	unoccupied	RLHA

On June 6, 2019, M. Theriault (Agnico Eagle) contacted A. Franke (Arctic Raptors Inc.) to discuss the presence of pair of rough-legged hawks and a pair of peregrine falcons that had each established a nest on the side wall of a saline pond located within the Meliadine lease area. Given the high likelihood that both pairs had already initiated egg-laying, A. Franke advised against the use of deterrents. A buffer of 100m was established for all foot-traffic, on-going work (installation of a pump within the pond and construction of a crusher pad) was postponed, and a drone was deployed to pinpoint the exact locations of the nests on the side wall. Once the nests were located, site engineers indicated that both nests were

not within line-of-site due the height of the safety berm surrounding the pond and the distance of both nests below grade. A. Franke advised Agnico Eagle Environmental staff to avoid pump installation until the 3rd week of June to ensure that birds had completed egg-laying, and to avoid the hatching period between July 5 – 15, and to conduct work only on good weather days. Work on the crusher pad was not performed. A water pipe was positioned at grade as far as possible away from the nests, but the pump was not installed. Agnico Eagle Environmental staff conducted routine water-level monitoring within the pond on July 7, and simultaneously surveyed the nest location for activity of adult birds. Adults birds were observed flying, and were also observed landing on the side-walls of the pond once the water-level monitoring had been completed. Subsequent monitoring by Agnico Eagle Environment staff indicated that both nests failed in the second week of July. Although not directly observed, the cause of failure was likely precipitation and cold weather as multiple failures associated with inclement weather are known to have occurred among the majority of raptor nests throughout the region at this time. The Government of Nunavut was notified of actions recommended by A. Franke. Although these nest failures were almost certainly associated with natural factors, it is recommended that deterrents are installed in the spring of 2020 prior to the arrival of raptors (prior to 01 May), to reduce the likelihood of occupancy. However, both sites will be monitored regularly in the spring to assess territory status. If deterrents are successful, no further mitigation will be necessary. In the event that deterrents are not successful, nest-specific mitigation measures will be taken on the basis of circumstances (e.g., species, location of nest, proposed activity) encountered at the time, as recommended by Arctic Raptors Inc.

Nesting Sites 14, 110, and 67 – 200 to 600 m to disturbance

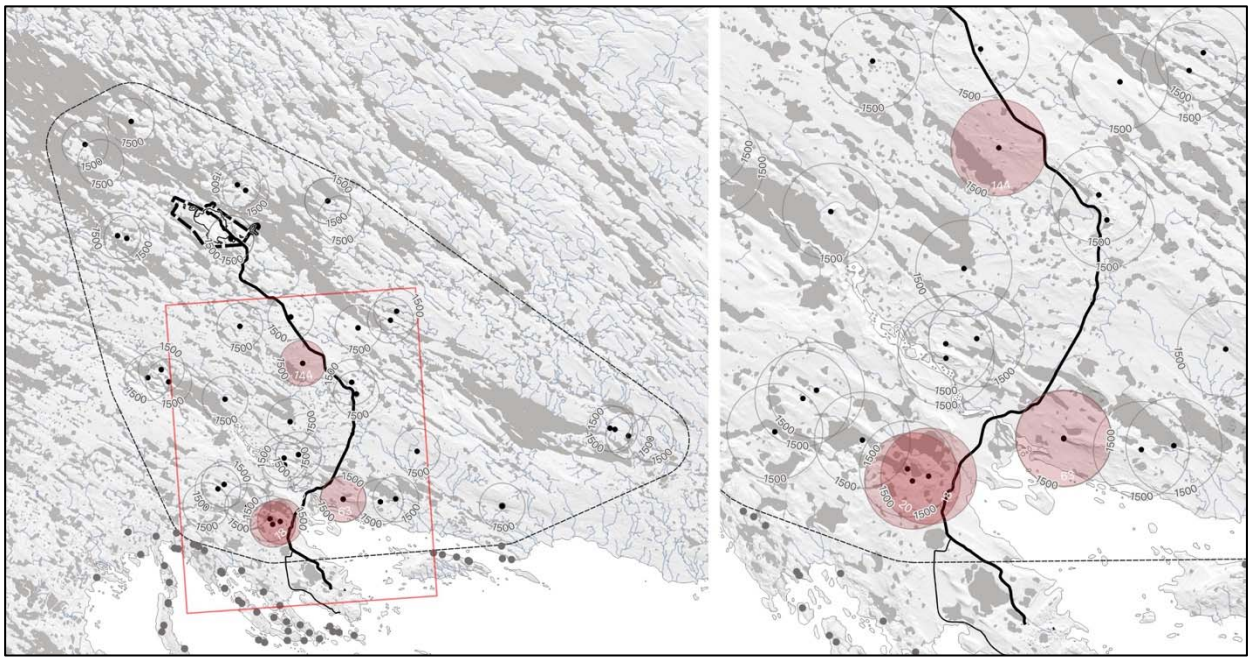


site	*Dist.*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*
14	(230m)	RLHA	unoccupied	unoccupied	unoccupied	unoccupied	unoccupied	unoccupied
110	(410m)	RLHA	unoccupied	unoccupied	unoccupied	unoccupied	unoccupied	unoccupied
67	(260m)	PEFA	PEFA	PEFA	PEFA	unoccupied	unoccupied	PEFA

A total of three raptor territories are within 600 meters of the all-weather road between the Meliadine mine and the community of Rankin Inlet. Sites 14 and 110 were occupied by rough-legged hawks in

2013, and site 67 has been occupied five out of the seven years by peregrine falcons. Sites 14 and 110 will continue to be checked for occupancy each spring, but due to the lack of occupancy in the last 5 years, a management plan is not needed. During the years in which site 67 was occupied, a mean of 1.4 nestlings were fledged per year (2013 = 3, 2014 = 3, 2015 = 1, 2016 = 0, 2019 = 0) – an average that is 0.52 nestlings greater than all peregrines within the study area during the same time period. Given the consistent occupancy and relative success of site 67, a management plan beyond consistent monitoring is not necessary.

Nesting Sites 18, 20, 63, and 144 – within 1.5 km to disturbance



site	*Dist.*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*
18	(1170m)	PEFA	RLHA	unoccupied	RLHA	PEFA	PEFA	RLHA
20	(780m)	RLHA	PEFA	PEFA	RLHA	unoccupied	unoccupied	unoccupied
63	(1370m)	PEFA	PEFA	PEFA	PEFA	unoccupied	unoccupied	PEFA/RLHA
144	(1040m)	unknown	unknown	unknown	unknown	unknown	unknown	PEFA

A total of four territories are located within 1.5 km of the all-weather road. Site 144 was discovered documented by Golder staff in 2019. One adult bird was observed, and although Golder staff documented the presence of a nest, no eggs were documented, and there is no known history of raptors occupying this location. This location will be monitored for the presence of breeding raptors in future years.

Sites 18, 20, and 63 have all been occupied by both peregrine falcons and rough-legged hawks, 6, 4, and 5 out of the 7 years respectively. All sites are located beyond the 600m recommended buffer (Government of British Columbia 2013). Furthermore, there is no line of sight between the road and any of the nest sites, and disturbance from traffic is therefore minimal. All sites will be monitored annually, but a management plan is not considered necessary.

Table 2. Occupancy for peregrine falcons, rough-legged hawks and gyrfalcon breeding near the Meliadine Project, Nunavut from 2013 – 2019.

Occupancy metrics

Year	2013			2014			2015			2016			2017			2018			2019		
	occupied	known	occupancy	occupied	known	occupancy	occupied	known	occupancy	occupied	known	occupancy	occupied	known	occupancy	occupied	known	occupancy	occupied	known	occupancy
PEFA	16	23	0.70	12	21	0.57	16	23	0.70	18	27	0.67	17	27	0.63	11	22	0.5	15	30	0.5
RLHA	12	21	0.57	9	21	0.43	3	20	0.15	13	25	0.52	5	24	0.21	2	10	0.2	8	26	0.31

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APPENDIX C

Vegetation and Soil Sampling Location Photographs

Photo 1: 19-TF-S1, Sampling Site Overview (15V Easting: 0537910, Northing:6990271)

Photo 2: 19-TF-S1, Soil Pit (15V Easting: 0537910, Northing:6990271)

Photo 3: 19-TF-S1, Soil sampling and Rubus chamaemorus berries

Photo 4: 19-AWAR-S15 , Sampling Site Overview (15 V Easting: 0547419, Northing: 6974403)

Photo 5: 19-AWAR-S15 , Soil Pit (15 V Easting: 0547419, Northing: 6974403)

Photo 5: 19-AWAR-S15 , Sedge (left) and soil (right) samples

Photo 6: 19-REF1-S4, Sampling site (15V Easting 053185, Northing: 69901690

Photo 7: 19-REF1-S4, Soil Pit

Photo 8: 19-REF1-S4, Soil sample and Birch Leaves

Photo 9: 19-REF2- S1, Sampling site (15V Easting: 0534088, Northing: 6984707)

Photo 10: 19-REF2- S1, Soil Pit

Photo 11: 19-REF2- S1, Soil sample and Rhododendron groenlandicum leaves

Photo 12: 19-REF3-S3, Sampling site (15V Easting:0539583, Northing: 6976634)

Photo 13: 19-REF3-S3, Soil pit

Photo 14: 19-REF3-S3, lichen (left) and soil (right) samples

APPENDIX D

Photographs of Non-Native Plant Occurrences

Photo 1: Common Dandelion at MEW003

Photo 2: Common Dandelion Infestation at MEW001

APPENDIX E

Vegetation and Soil Laboratory Results Certificates

Your Project #: Veg and Soil Health Assessment
Your C.O.C. #: 96931

Attention: Andrea Ortega

Golder Associates
102, 2535 - 3rd Avenue S.E.
Calgary, AB
Canada T2A 7W5

Report Date: 2019/09/03
Report #: R5864380
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9K9920
Received: 2019/07/29, 12:00

Sample Matrix: Soil
Samples Received: 51

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Mercury in Vegetation by CVAA (1)	1	2019/08/06	2019/08/13	CAM SOP-00453	Health Canada Method
Strong Acid Leachable Metals by ICPMS (1)	1	2019/08/01	2019/08/01	CAM SOP-00447	EPA 6020B m
Strong Acid Leachable Metals by ICPMS (1)	12	2019/08/01	2019/08/02	CAM SOP-00447	EPA 6020B m
Strong Acid Leachable Metals by ICPMS (1)	34	2019/08/01	2019/08/08	CAM SOP-00447	EPA 6020B m
Strong Acid Leachable Metals by ICPMS (1)	2	2019/08/01	2019/08/09	CAM SOP-00447	EPA 6020B m
Strong Acid Leachable Metals by ICPMS (1)	1	2019/08/13	2019/08/14	CAM SOP-00447	EPA 6020B m
Metals in Vegetation by ICPMS (1)	1	N/A	2019/08/29	CAM SOP-00447	EPA 6020/200.3 m
Moisture (1)	16	N/A	2019/07/31	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture (1)	34	N/A	2019/08/01	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture (1)	1	N/A	2019/08/02	CAM SOP-00445	Carter 2nd ed 51.2 m
pH CaCl2 EXTRACT (1)	19	2019/08/01	2019/08/01	CAM SOP-00413	EPA 9045 D m
pH CaCl2 EXTRACT (1)	18	2019/08/02	2019/08/02	CAM SOP-00413	EPA 9045 D m
pH CaCl2 EXTRACT (1)	13	2019/08/17	2019/08/19	CAM SOP-00413	EPA 9045 D m
PH (1)	1	2019/08/16	2019/08/19	CAM SOP-00413	EPA 9045D

Sample Matrix: Solid
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Strong Acid Leachable Metals by ICPMS (1)	1	2019/08/01	2019/08/02	CAM SOP-00447	EPA 6020B m
Strong Acid Leachable Metals by ICPMS (1)	3	2019/08/01	2019/08/08	CAM SOP-00447	EPA 6020B m
Moisture (1)	1	N/A	2019/07/31	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture (1)	3	N/A	2019/08/01	CAM SOP-00445	Carter 2nd ed 51.2 m
pH CaCl2 EXTRACT (1)	1	2019/08/01	2019/08/01	CAM SOP-00413	EPA 9045 D m
pH CaCl2 EXTRACT (1)	2	2019/08/02	2019/08/02	CAM SOP-00413	EPA 9045 D m
pH CaCl2 EXTRACT (1)	1	2019/08/17	2019/08/19	CAM SOP-00413	EPA 9045 D m

Sample Matrix: Tissue
Samples Received: 55

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Mercury in Vegetation by CVAA (1)	34	2019/08/06	2019/08/13	CAM SOP-00453	Health Canada Method
Mercury in Vegetation by CVAA (1)	20	2019/08/07	2019/08/13	CAM SOP-00453	Health Canada Method
Strong Acid Leachable Metals by ICPMS (1)	1	2019/08/01	2019/08/02	CAM SOP-00447	EPA 6020B m

Your Project #: Veg and Soil Health Assessment
Your C.O.C. #: 96931

Attention: Andrea Ortega

Golder Associates
102, 2535 - 3rd Avenue S.E.
Calgary, AB
Canada T2A 7W5

Report Date: 2019/09/03
Report #: R5864380
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9K9920
Received: 2019/07/29, 12:00

Sample Matrix: Tissue
Samples Received: 55

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Metals in Vegetation by ICPMS (1)	39	N/A	2019/08/29	CAM SOP-00447	EPA 6020/200.3 m
Metals in Vegetation by ICPMS (1)	15	N/A	2019/08/30	CAM SOP-00447	EPA 6020/200.3 m
Moisture (1)	1	N/A	2019/08/01	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture (1)	40	N/A	2019/08/02	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture (1)	12	N/A	2019/08/06	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture (1)	2	N/A	2019/08/07	CAM SOP-00445	Carter 2nd ed 51.2 m
pH CaCl2 EXTRACT (1)	1	2019/08/17	2019/08/19	CAM SOP-00413	EPA 9045 D m
PH (1)	20	2019/08/08	2019/08/08	CAM SOP-00413	EPA 9045D
PH (1)	2	2019/08/09	2019/08/19	CAM SOP-00413	EPA 9045D
PH (1)	32	2019/08/16	2019/08/19	CAM SOP-00413	EPA 9045D

Remarks:

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

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

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

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

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Laboratories Mississauga

Your Project #: Veg and Soil Health Assessment
Your C.O.C. #: 96931

Attention: Andrea Ortega

Golder Associates
102, 2535 - 3rd Avenue S.E.
Calgary, AB
Canada T2A 7W5

Report Date: 2019/09/03
Report #: R5864380
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9K9920
Received: 2019/07/29, 12:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alisha Williamson, Project Manager
Email: Alisha.Williamson@bvlabs.com
Phone# (613)274-0573
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJX957		KJX959		KJX961		
Sampling Date		2019/07/20 17:30		2019/07/20 16:55		2019/07/20 16:35		
COC Number		96931		96931		96931		
	UNITS	19-AWAR-S1-s	QC Batch	19-AWAR-S2-S	QC Batch	19-AWAR-S3-S	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	6259117	<0.20	6259179	<0.20	0.20	6259117
Acid Extractable Arsenic (As)	ug/g	19	6259117	10	6259179	28	1.0	6259117
Acid Extractable Barium (Ba)	ug/g	43	6259117	83	6259179	31	0.50	6259117
Acid Extractable Beryllium (Be)	ug/g	<0.20	6259117	<0.20	6259179	<0.20	0.20	6259117
Acid Extractable Boron (B)	ug/g	<5.0	6259117	6.9	6259179	<5.0	5.0	6259117
Acid Extractable Cadmium (Cd)	ug/g	0.24	6259117	0.11	6259179	<0.10	0.10	6259117
Acid Extractable Chromium (Cr)	ug/g	6.7	6259117	7.4	6259179	22	1.0	6259117
Acid Extractable Cobalt (Co)	ug/g	4.3	6259117	2.3	6259179	9.8	0.10	6259117
Acid Extractable Copper (Cu)	ug/g	43	6259117	34	6259179	23	0.50	6259117
Acid Extractable Lead (Pb)	ug/g	3.0	6259117	2.2	6259179	6.9	1.0	6259117
Acid Extractable Molybdenum (Mo)	ug/g	0.95	6259117	0.64	6259179	<0.50	0.50	6259117
Acid Extractable Nickel (Ni)	ug/g	20	6259117	13	6259179	24	0.50	6259117
Acid Extractable Selenium (Se)	ug/g	<0.50	6259117	<0.50	6259179	<0.50	0.50	6259117
Acid Extractable Silver (Ag)	ug/g	<0.20	6259117	<0.20	6259179	<0.20	0.20	6259117
Acid Extractable Thallium (Tl)	ug/g	<0.050	6259117	0.072	6259179	0.063	0.050	6259117
Acid Extractable Uranium (U)	ug/g	2.8	6259117	0.72	6259179	0.64	0.050	6259117
Acid Extractable Vanadium (V)	ug/g	6.1	6259117	7.7	6259179	18	5.0	6259117
Acid Extractable Zinc (Zn)	ug/g	19	6259117	13	6259179	26	5.0	6259117
Acid Extractable Mercury (Hg)	ug/g	0.084	6259117	0.058	6259179	<0.050	0.050	6259117

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJX963		KJX965	KJX967	KJX969		
Sampling Date		2019/07/20 16:00		2019/07/20 15:40	2019/07/20 15:05	2019/07/20 14:40		
COC Number		96931		96931	96931	96931		
	UNITS	19-AWAR-S4-S	QC Batch	19-AWAR-S5-S	19-AWAR-S6-S	19-AWAR-S7-S	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	0.24	6259106	<0.20	<0.20	0.38	0.20	6259179
Acid Extractable Arsenic (As)	ug/g	16	6259106	25	13	55	1.0	6259179
Acid Extractable Barium (Ba)	ug/g	72	6259106	25	89	260	0.50	6259179
Acid Extractable Beryllium (Be)	ug/g	<0.20	6259106	<0.20	<0.20	<0.20	0.20	6259179
Acid Extractable Boron (B)	ug/g	7.9	6259106	<5.0	6.3	8.8	5.0	6259179
Acid Extractable Cadmium (Cd)	ug/g	0.18	6259106	<0.10	0.11	0.49	0.10	6259179
Acid Extractable Chromium (Cr)	ug/g	8.5	6259106	27	6.0	7.0	1.0	6259179
Acid Extractable Cobalt (Co)	ug/g	5.1	6259106	8.2	2.0	18	0.10	6259179
Acid Extractable Copper (Cu)	ug/g	160	6259106	30	79	90	0.50	6259179
Acid Extractable Lead (Pb)	ug/g	2.6	6259106	4.0	1.3	2.3	1.0	6259179
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	6259106	<0.50	<0.50	6.8	0.50	6259179
Acid Extractable Nickel (Ni)	ug/g	36	6259106	22	17	53	0.50	6259179
Acid Extractable Selenium (Se)	ug/g	1.0	6259106	<0.50	0.97	1.8	0.50	6259179
Acid Extractable Silver (Ag)	ug/g	<0.20	6259106	<0.20	<0.20	<0.20	0.20	6259179
Acid Extractable Thallium (Tl)	ug/g	0.067	6259106	0.062	0.056	0.24	0.050	6259179
Acid Extractable Uranium (U)	ug/g	5.1	6259106	0.45	0.95	6.8	0.050	6259179
Acid Extractable Vanadium (V)	ug/g	14	6259106	23	<5.0	13	5.0	6259179
Acid Extractable Zinc (Zn)	ug/g	24	6259106	24	8.3	18	5.0	6259179
Acid Extractable Mercury (Hg)	ug/g	0.083	6259106	<0.050	0.12	0.11	0.050	6259179

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJX971		KJX975		KJX977	KJX979		
Sampling Date		2019/07/20 14:00		2019/07/20 00:50		2019/07/20 00:01	2019/07/20 11:30		
COC Number		96931		96931		96931	96931		
	UNITS	19-AWAR-S8-S	QC Batch	19-AWAR-S10-S	QC Batch	19-AWAR-S11-S	19-AWAR-S12-S	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	6259117	<0.20	6259106	<0.20	<0.20	0.20	6259179
Acid Extractable Arsenic (As)	ug/g	34	6259117	2.0	6259106	<1.0	1.2	1.0	6259179
Acid Extractable Barium (Ba)	ug/g	42	6259117	140	6259106	150	38	0.50	6259179
Acid Extractable Beryllium (Be)	ug/g	<0.20	6259117	<0.20	6259106	<0.20	<0.20	0.20	6259179
Acid Extractable Boron (B)	ug/g	<5.0	6259117	<5.0	6259106	5.2	<5.0	5.0	6259179
Acid Extractable Cadmium (Cd)	ug/g	<0.10	6259117	0.12	6259106	0.69	1.4	0.10	6259179
Acid Extractable Chromium (Cr)	ug/g	30	6259117	10	6259106	7.7	2.1	1.0	6259179
Acid Extractable Cobalt (Co)	ug/g	9.6	6259117	8.1	6259106	3.0	1.9	0.10	6259179
Acid Extractable Copper (Cu)	ug/g	33	6259117	69	6259106	16	4.6	0.50	6259179
Acid Extractable Lead (Pb)	ug/g	4.8	6259117	1.9	6259106	2.4	<1.0	1.0	6259179
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	6259117	0.65	6259106	<0.50	0.58	0.50	6259179
Acid Extractable Nickel (Ni)	ug/g	25	6259117	16	6259106	8.9	6.1	0.50	6259179
Acid Extractable Selenium (Se)	ug/g	<0.50	6259117	0.60	6259106	0.73	<0.50	0.50	6259179
Acid Extractable Silver (Ag)	ug/g	<0.20	6259117	<0.20	6259106	<0.20	<0.20	0.20	6259179
Acid Extractable Thallium (Tl)	ug/g	0.089	6259117	0.23	6259106	<0.050	<0.050	0.050	6259179
Acid Extractable Uranium (U)	ug/g	0.61	6259117	0.91	6259106	0.60	0.31	0.050	6259179
Acid Extractable Vanadium (V)	ug/g	25	6259117	21	6259106	6.3	<5.0	5.0	6259179
Acid Extractable Zinc (Zn)	ug/g	28	6259117	18	6259106	22	17	5.0	6259179
Acid Extractable Mercury (Hg)	ug/g	<0.050	6259117	0.086	6259106	0.15	0.14	0.050	6259179

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJX981	KJX983		KJX985		
Sampling Date		2019/07/19 16:15	2019/07/19 15:30		2019/07/19 15:05		
COC Number		96931	96931		96931		
	UNITS	19-AWAR-S13-S	19-AWAR-S14-S	QC Batch	19-AWAR-S15-S	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	6259117	<0.20	0.20	6259106
Acid Extractable Arsenic (As)	ug/g	<1.0	1.1	6259117	<1.0	1.0	6259106
Acid Extractable Barium (Ba)	ug/g	140	82	6259117	7.1	0.50	6259106
Acid Extractable Beryllium (Be)	ug/g	<0.20	<0.20	6259117	<0.20	0.20	6259106
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	6259117	<5.0	5.0	6259106
Acid Extractable Cadmium (Cd)	ug/g	0.22	0.14	6259117	<0.10	0.10	6259106
Acid Extractable Chromium (Cr)	ug/g	5.6	20	6259117	4.4	1.0	6259106
Acid Extractable Cobalt (Co)	ug/g	1.9	7.3	6259117	0.84	0.10	6259106
Acid Extractable Copper (Cu)	ug/g	24	26	6259117	<0.50	0.50	6259106
Acid Extractable Lead (Pb)	ug/g	2.3	3.7	6259117	1.1	1.0	6259106
Acid Extractable Molybdenum (Mo)	ug/g	0.60	0.99	6259117	<0.50	0.50	6259106
Acid Extractable Nickel (Ni)	ug/g	6.4	12	6259117	2.3	0.50	6259106
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	6259117	<0.50	0.50	6259106
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	6259117	<0.20	0.20	6259106
Acid Extractable Thallium (Tl)	ug/g	0.065	0.16	6259117	<0.050	0.050	6259106
Acid Extractable Uranium (U)	ug/g	1.1	1.4	6259117	0.24	0.050	6259106
Acid Extractable Vanadium (V)	ug/g	5.3	27	6259117	5.2	5.0	6259106
Acid Extractable Zinc (Zn)	ug/g	18	16	6259117	6.7	5.0	6259106
Acid Extractable Mercury (Hg)	ug/g	0.15	<0.050	6259117	<0.050	0.050	6259106

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJX987		KJX989	KJX991		
Sampling Date		2019/07/19 14:05		2019/07/19 00:10	2019/07/19 11:40		
COC Number		96931		96931	96931		
	UNITS	19-AWAR-S16-S	QC Batch	19-AWAR-S17-S	19-AWAR-S18-S	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	<0.20	6259179	0.40	<0.20	0.20	6259106
Acid Extractable Arsenic (As)	ug/g	1.4	6259179	5.2	1.7	1.0	6259106
Acid Extractable Barium (Ba)	ug/g	24	6259179	73	13	0.50	6259106
Acid Extractable Beryllium (Be)	ug/g	<0.20	6259179	<0.20	<0.20	0.20	6259106
Acid Extractable Boron (B)	ug/g	<5.0	6259179	6.8	<5.0	5.0	6259106
Acid Extractable Cadmium (Cd)	ug/g	<0.10	6259179	0.22	<0.10	0.10	6259106
Acid Extractable Chromium (Cr)	ug/g	15	6259179	14	27	1.0	6259106
Acid Extractable Cobalt (Co)	ug/g	2.8	6259179	6.5	4.3	0.10	6259106
Acid Extractable Copper (Cu)	ug/g	2.7	6259179	77	2.2	0.50	6259106
Acid Extractable Lead (Pb)	ug/g	2.1	6259179	2.3	2.8	1.0	6259106
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	6259179	0.65	<0.50	0.50	6259106
Acid Extractable Nickel (Ni)	ug/g	6.7	6259179	17	8.1	0.50	6259106
Acid Extractable Selenium (Se)	ug/g	<0.50	6259179	0.68	<0.50	0.50	6259106
Acid Extractable Silver (Ag)	ug/g	<0.20	6259179	<0.20	<0.20	0.20	6259106
Acid Extractable Thallium (Tl)	ug/g	<0.050	6259179	0.082	<0.050	0.050	6259106
Acid Extractable Uranium (U)	ug/g	0.45	6259179	1.4	0.40	0.050	6259106
Acid Extractable Vanadium (V)	ug/g	17	6259179	8.9	23	5.0	6259106
Acid Extractable Zinc (Zn)	ug/g	14	6259179	30	11	5.0	6259106
Acid Extractable Mercury (Hg)	ug/g	<0.050	6259179	0.083	<0.050	0.050	6259106

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJX993	KJX995		KJX997		KJX999		
Sampling Date		2019/07/19 13:40	2019/07/19 13:15		2019/07/21 08:10		2019/07/21 20:40		
COC Number		96931	96931		96931		96931		
	UNITS	19-AWAR-S19-S	19-AWAR-S20-S	QC Batch	19-REF1-S1-S	QC Batch	19-REF1-S2-S	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	6259117	<0.20	6259106	<0.20	0.20	6259117
Acid Extractable Arsenic (As)	ug/g	6.0	1.5	6259117	9.0	6259106	32	1.0	6259117
Acid Extractable Barium (Ba)	ug/g	110	120	6259117	34	6259106	63	0.50	6259117
Acid Extractable Beryllium (Be)	ug/g	<0.20	<0.20	6259117	<0.20	6259106	<0.20	0.20	6259117
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	6259117	<5.0	6259106	<5.0	5.0	6259117
Acid Extractable Cadmium (Cd)	ug/g	0.17	<0.10	6259117	<0.10	6259106	<0.10	0.10	6259117
Acid Extractable Chromium (Cr)	ug/g	56	68	6259117	26	6259106	30	1.0	6259117
Acid Extractable Cobalt (Co)	ug/g	15	7.6	6259117	6.5	6259106	16	0.10	6259117
Acid Extractable Copper (Cu)	ug/g	31	60	6259117	21	6259106	54	0.50	6259117
Acid Extractable Lead (Pb)	ug/g	5.1	1.5	6259117	3.0	6259106	6.8	1.0	6259117
Acid Extractable Molybdenum (Mo)	ug/g	0.51	0.79	6259117	<0.50	6259106	1.3	0.50	6259117
Acid Extractable Nickel (Ni)	ug/g	30	27	6259117	19	6259106	35	0.50	6259117
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	6259117	<0.50	6259106	<0.50	0.50	6259117
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	6259117	<0.20	6259106	<0.20	0.20	6259117
Acid Extractable Thallium (Tl)	ug/g	0.21	0.089	6259117	0.10	6259106	0.082	0.050	6259117
Acid Extractable Uranium (U)	ug/g	1.2	1.3	6259117	0.97	6259106	1.4	0.050	6259117
Acid Extractable Vanadium (V)	ug/g	41	35	6259117	23	6259106	41	5.0	6259117
Acid Extractable Zinc (Zn)	ug/g	49	41	6259117	24	6259106	48	5.0	6259117
Acid Extractable Mercury (Hg)	ug/g	0.086	0.063	6259117	<0.050	6259106	<0.050	0.050	6259117

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJY001		KJY003	KJY005		KJY009		
Sampling Date		2019/07/21 09:25		2019/07/21 10:15	2019/07/21 22:45		2019/07/21 00:35		
COC Number		96931		96931	96931		96931		
	UNITS	19-REF1-S3-S	QC Batch	19-REF1-S4-S	19-REF1-S5-S	QC Batch	19-REF2-S2-S	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	6259117	<0.20	<0.20	6259106	<0.20	0.20	6259475
Acid Extractable Arsenic (As)	ug/g	1.1	6259117	7.4	20	6259106	4.5	1.0	6259475
Acid Extractable Barium (Ba)	ug/g	37	6259117	51	45	6259106	99	0.50	6259475
Acid Extractable Beryllium (Be)	ug/g	<0.20	6259117	<0.20	<0.20	6259106	<0.20	0.20	6259475
Acid Extractable Boron (B)	ug/g	<5.0	6259117	<5.0	<5.0	6259106	<5.0	5.0	6259475
Acid Extractable Cadmium (Cd)	ug/g	0.11	6259117	<0.10	<0.10	6259106	0.50	0.10	6259475
Acid Extractable Chromium (Cr)	ug/g	3.3	6259117	19	25	6259106	19	1.0	6259475
Acid Extractable Cobalt (Co)	ug/g	1.9	6259117	6.7	8.9	6259106	5.8	0.10	6259475
Acid Extractable Copper (Cu)	ug/g	10	6259117	16	24	6259106	67	0.50	6259475
Acid Extractable Lead (Pb)	ug/g	<1.0	6259117	3.3	4.8	6259106	3.3	1.0	6259475
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	6259117	0.60	0.69	6259106	2.3	0.50	6259475
Acid Extractable Nickel (Ni)	ug/g	6.8	6259117	15	20	6259106	32	0.50	6259475
Acid Extractable Selenium (Se)	ug/g	<0.50	6259117	<0.50	<0.50	6259106	0.94	0.50	6259475
Acid Extractable Silver (Ag)	ug/g	<0.20	6259117	<0.20	<0.20	6259106	<0.20	0.20	6259475
Acid Extractable Thallium (Tl)	ug/g	<0.050	6259117	0.075	0.096	6259106	0.14	0.050	6259475
Acid Extractable Uranium (U)	ug/g	0.21	6259117	0.46	0.64	6259106	3.0	0.050	6259475
Acid Extractable Vanadium (V)	ug/g	<5.0	6259117	18	29	6259106	19	5.0	6259475
Acid Extractable Zinc (Zn)	ug/g	8.6	6259117	22	29	6259106	18	5.0	6259475
Acid Extractable Mercury (Hg)	ug/g	0.083	6259117	<0.050	<0.050	6259106	<0.050	0.050	6259475

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJY011	KJY011		KJY013		KJY015		
Sampling Date		2019/07/21 13:20	2019/07/21 13:20		2019/07/21 13:40		2019/07/21 14:00		
COC Number		96931	96931		96931		96931		
	UNITS	19-REF2-S3-S	19-REF2-S3-S Lab-Dup	QC Batch	19-REF2-S4-S	QC Batch	19-REF2-S5-S	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	6259179	<0.20	6259117	<0.20	0.20	6259106
Acid Extractable Arsenic (As)	ug/g	3.9	4.1	6259179	3.0	6259117	16	1.0	6259106
Acid Extractable Barium (Ba)	ug/g	31	32	6259179	40	6259117	52	0.50	6259106
Acid Extractable Beryllium (Be)	ug/g	<0.20	<0.20	6259179	<0.20	6259117	<0.20	0.20	6259106
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	6259179	<5.0	6259117	<5.0	5.0	6259106
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	6259179	<0.10	6259117	<0.10	0.10	6259106
Acid Extractable Chromium (Cr)	ug/g	20	20	6259179	24	6259117	36	1.0	6259106
Acid Extractable Cobalt (Co)	ug/g	5.4	5.5	6259179	4.8	6259117	14	0.10	6259106
Acid Extractable Copper (Cu)	ug/g	16	16	6259179	13	6259117	41	0.50	6259106
Acid Extractable Lead (Pb)	ug/g	2.7	2.8	6259179	2.8	6259117	3.7	1.0	6259106
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	6259179	<0.50	6259117	<0.50	0.50	6259106
Acid Extractable Nickel (Ni)	ug/g	14	14	6259179	12	6259117	36	0.50	6259106
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	6259179	<0.50	6259117	<0.50	0.50	6259106
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	6259179	<0.20	6259117	<0.20	0.20	6259106
Acid Extractable Thallium (Tl)	ug/g	0.072	0.070	6259179	0.086	6259117	0.11	0.050	6259106
Acid Extractable Uranium (U)	ug/g	0.56	0.58	6259179	0.67	6259117	0.73	0.050	6259106
Acid Extractable Vanadium (V)	ug/g	18	18	6259179	21	6259117	31	5.0	6259106
Acid Extractable Zinc (Zn)	ug/g	16	17	6259179	19	6259117	31	5.0	6259106
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	6259179	<0.050	6259117	<0.050	0.050	6259106

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

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJY017	KJY017		KJY019	KJY021		
Sampling Date		2019/07/21 16:30	2019/07/21 16:30		2019/07/21 16:50	2019/07/21 16:00		
COC Number		96931	96931		96931	96931		
	UNITS	19-REF3-S1-S	19-REF3-S1-S Lab-Dup	QC Batch	19-REF3-S2-S	19-REF3-S3-S	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	6259117	<0.20	<0.20	0.20	6259106
Acid Extractable Arsenic (As)	ug/g	8.3	8.9	6259117	<1.0	2.3	1.0	6259106
Acid Extractable Barium (Ba)	ug/g	50	54	6259117	260	69	0.50	6259106
Acid Extractable Beryllium (Be)	ug/g	<0.20	<0.20	6259117	0.20	0.22	0.20	6259106
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	6259117	<5.0	6.7	5.0	6259106
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	6259117	0.20	<0.10	0.10	6259106
Acid Extractable Chromium (Cr)	ug/g	24	25	6259117	27	32	1.0	6259106
Acid Extractable Cobalt (Co)	ug/g	5.5	5.8	6259117	5.6	6.0	0.10	6259106
Acid Extractable Copper (Cu)	ug/g	15	17	6259117	30	14	0.50	6259106
Acid Extractable Lead (Pb)	ug/g	2.9	3.2	6259117	3.8	4.0	1.0	6259106
Acid Extractable Molybdenum (Mo)	ug/g	0.69	0.71	6259117	<0.50	0.56	0.50	6259106
Acid Extractable Nickel (Ni)	ug/g	14	15	6259117	22	16	0.50	6259106
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	6259117	<0.50	<0.50	0.50	6259106
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	6259117	<0.20	<0.20	0.20	6259106
Acid Extractable Thallium (Tl)	ug/g	0.13	0.13	6259117	0.18	0.16	0.050	6259106
Acid Extractable Uranium (U)	ug/g	0.66	0.74	6259117	1.3	0.94	0.050	6259106
Acid Extractable Vanadium (V)	ug/g	27	28	6259117	23	34	5.0	6259106
Acid Extractable Zinc (Zn)	ug/g	21	22	6259117	42	32	5.0	6259106
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	6259117	0.17	<0.050	0.050	6259106

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

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJY023	KJY025	KJY029	KJY031		KJY035		
Sampling Date		2019/07/21 15:14	2019/07/21 15:35	2019/07/22 13:15	2019/07/22 11:40		2019/07/22 11:10		
COC Number		96931	96931	96931	96931		96931		
	UNITS	19-REF3-S4-S	19-REF3-S5-S	19-TF-S2-S	19-TF-S3-S	QC Batch	19-TF-S5-S	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	6259117	<0.20	0.20	6259179
Acid Extractable Arsenic (As)	ug/g	3.0	5.2	15	9.9	6259117	23	1.0	6259179
Acid Extractable Barium (Ba)	ug/g	60	170	33	27	6259117	38	0.50	6259179
Acid Extractable Beryllium (Be)	ug/g	0.25	<0.20	<0.20	<0.20	6259117	<0.20	0.20	6259179
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	<5.0	6259117	<5.0	5.0	6259179
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.16	<0.10	<0.10	6259117	<0.10	0.10	6259179
Acid Extractable Chromium (Cr)	ug/g	32	52	23	16	6259117	22	1.0	6259179
Acid Extractable Cobalt (Co)	ug/g	5.4	17	6.5	5.3	6259117	8.2	0.10	6259179
Acid Extractable Copper (Cu)	ug/g	44	34	18	9.5	6259117	27	0.50	6259179
Acid Extractable Lead (Pb)	ug/g	6.5	4.4	3.8	2.8	6259117	5.0	1.0	6259179
Acid Extractable Molybdenum (Mo)	ug/g	0.93	1.7	<0.50	1.8	6259117	<0.50	0.50	6259179
Acid Extractable Nickel (Ni)	ug/g	15	47	16	12	6259117	21	0.50	6259179
Acid Extractable Selenium (Se)	ug/g	<0.50	0.72	<0.50	<0.50	6259117	<0.50	0.50	6259179
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	6259117	<0.20	0.20	6259179
Acid Extractable Thallium (Tl)	ug/g	0.12	0.35	0.10	0.12	6259117	0.12	0.050	6259179
Acid Extractable Uranium (U)	ug/g	1.5	2.4	0.53	1.0	6259117	0.61	0.050	6259179
Acid Extractable Vanadium (V)	ug/g	35	45	20	19	6259117	23	5.0	6259179
Acid Extractable Zinc (Zn)	ug/g	24	34	25	19	6259117	29	5.0	6259179
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.13	<0.050	<0.050	6259117	<0.050	0.050	6259179

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJY037		KJY039	KJY041		KJY045		
Sampling Date		2019/07/22 10:36		2019/07/22 08:25	2019/07/22 09:35		2019/07/23 00:30		
COC Number		96931		96931	96931		96931		
	UNITS	19-TF-S6-S	QC Batch	19-TF-S11-S	19-TF-S12-S	QC Batch	19-WRSA-S1-S	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	0.27	6259106	0.29	<0.20	6259179	<0.20	0.20	6259117
Acid Extractable Arsenic (As)	ug/g	31	6259106	21	9.3	6259179	83	1.0	6259117
Acid Extractable Barium (Ba)	ug/g	87	6259106	140	30	6259179	50	0.50	6259117
Acid Extractable Beryllium (Be)	ug/g	<0.20	6259106	<0.20	<0.20	6259179	<0.20	0.20	6259117
Acid Extractable Boron (B)	ug/g	7.6	6259106	8.3	<5.0	6259179	<5.0	5.0	6259117
Acid Extractable Cadmium (Cd)	ug/g	0.27	6259106	0.27	<0.10	6259179	<0.10	0.10	6259117
Acid Extractable Chromium (Cr)	ug/g	7.7	6259106	10	28	6259179	19	1.0	6259117
Acid Extractable Cobalt (Co)	ug/g	3.0	6259106	5.7	7.6	6259179	12	0.10	6259117
Acid Extractable Copper (Cu)	ug/g	50	6259106	120	15	6259179	37	0.50	6259117
Acid Extractable Lead (Pb)	ug/g	2.8	6259106	4.8	4.8	6259179	5.7	1.0	6259117
Acid Extractable Molybdenum (Mo)	ug/g	4.0	6259106	1.1	0.52	6259179	0.56	0.50	6259117
Acid Extractable Nickel (Ni)	ug/g	42	6259106	44	18	6259179	29	0.50	6259117
Acid Extractable Selenium (Se)	ug/g	0.87	6259106	1.7	<0.50	6259179	<0.50	0.50	6259117
Acid Extractable Silver (Ag)	ug/g	<0.20	6259106	0.21	<0.20	6259179	<0.20	0.20	6259117
Acid Extractable Thallium (Tl)	ug/g	0.069	6259106	0.11	0.084	6259179	0.073	0.050	6259117
Acid Extractable Uranium (U)	ug/g	1.1	6259106	8.1	0.64	6259179	0.82	0.050	6259117
Acid Extractable Vanadium (V)	ug/g	10	6259106	7.2	24	6259179	16	5.0	6259117
Acid Extractable Zinc (Zn)	ug/g	13	6259106	7.9	26	6259179	28	5.0	6259117
Acid Extractable Mercury (Hg)	ug/g	0.079	6259106	0.13	<0.050	6259179	0.055	0.050	6259117

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJY047		KJY049		KJY051	KJY053		
Sampling Date		2019/07/23 10:30		2019/07/23 09:30		2019/07/23 09:55	2019/07/23 08:20		
COC Number		96931		96931		96931	96931		
	UNITS	19-WRSA-S2-S	QC Batch	19-WRSA-S5-S	QC Batch	19-WRSA-S6-S	19-WRSA-S7-S	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	6259106	<0.20	6259117	<0.20	<0.20	0.20	6259106
Acid Extractable Arsenic (As)	ug/g	82	6259106	55	6259117	40	19	1.0	6259106
Acid Extractable Barium (Ba)	ug/g	37	6259106	35	6259117	30	24	0.50	6259106
Acid Extractable Beryllium (Be)	ug/g	<0.20	6259106	<0.20	6259117	<0.20	<0.20	0.20	6259106
Acid Extractable Boron (B)	ug/g	<5.0	6259106	<5.0	6259117	<5.0	<5.0	5.0	6259106
Acid Extractable Cadmium (Cd)	ug/g	<0.10	6259106	<0.10	6259117	<0.10	<0.10	0.10	6259106
Acid Extractable Chromium (Cr)	ug/g	23	6259106	23	6259117	18	26	1.0	6259106
Acid Extractable Cobalt (Co)	ug/g	11	6259106	8.9	6259117	8.3	5.8	0.10	6259106
Acid Extractable Copper (Cu)	ug/g	27	6259106	22	6259117	21	11	0.50	6259106
Acid Extractable Lead (Pb)	ug/g	6.7	6259106	6.9	6259117	4.6	2.6	1.0	6259106
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	6259106	<0.50	6259117	<0.50	2.3	0.50	6259106
Acid Extractable Nickel (Ni)	ug/g	28	6259106	23	6259117	20	18	0.50	6259106
Acid Extractable Selenium (Se)	ug/g	<0.50	6259106	<0.50	6259117	<0.50	<0.50	0.50	6259106
Acid Extractable Silver (Ag)	ug/g	<0.20	6259106	<0.20	6259117	<0.20	<0.20	0.20	6259106
Acid Extractable Thallium (Tl)	ug/g	0.078	6259106	0.077	6259117	0.051	0.087	0.050	6259106
Acid Extractable Uranium (U)	ug/g	0.88	6259106	0.63	6259117	0.66	0.70	0.050	6259106
Acid Extractable Vanadium (V)	ug/g	22	6259106	21	6259117	18	30	5.0	6259106
Acid Extractable Zinc (Zn)	ug/g	28	6259106	29	6259117	21	24	5.0	6259106
Acid Extractable Mercury (Hg)	ug/g	<0.050	6259106	<0.050	6259117	<0.050	<0.050	0.050	6259106

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJY053	KJY055		KJY057	KJY059		
Sampling Date		2019/07/23 08:20	2019/07/24 08:05		2019/07/23 14:55	2019/07/23 14:05		
COC Number		96931	96931		96931	96931		
	UNITS	19-WRSA-S7-S Lab-Dup	19-WRSA-S8-S	QC Batch	19-WRSA-S9-S	19-WRSA-S10-S	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	6259106	<0.20	<0.20	0.20	6259117
Acid Extractable Arsenic (As)	ug/g	17	6.8	6259106	23	16	1.0	6259117
Acid Extractable Barium (Ba)	ug/g	20	22	6259106	36	31	0.50	6259117
Acid Extractable Beryllium (Be)	ug/g	<0.20	<0.20	6259106	<0.20	<0.20	0.20	6259117
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	6259106	<5.0	<5.0	5.0	6259117
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	6259106	<0.10	<0.10	0.10	6259117
Acid Extractable Chromium (Cr)	ug/g	23	15	6259106	21	20	1.0	6259117
Acid Extractable Cobalt (Co)	ug/g	5.1	3.1	6259106	11	7.5	0.10	6259117
Acid Extractable Copper (Cu)	ug/g	9.6	13	6259106	15	20	0.50	6259117
Acid Extractable Lead (Pb)	ug/g	2.3	3.1	6259106	5.8	4.4	1.0	6259117
Acid Extractable Molybdenum (Mo)	ug/g	2.1	0.52	6259106	<0.50	<0.50	0.50	6259117
Acid Extractable Nickel (Ni)	ug/g	15	9.7	6259106	21	19	0.50	6259117
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	6259106	<0.50	<0.50	0.50	6259117
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	6259106	<0.20	<0.20	0.20	6259117
Acid Extractable Thallium (Tl)	ug/g	0.072	0.068	6259106	0.080	0.067	0.050	6259117
Acid Extractable Uranium (U)	ug/g	0.70	0.60	6259106	0.60	0.70	0.050	6259117
Acid Extractable Vanadium (V)	ug/g	26	22	6259106	21	20	5.0	6259117
Acid Extractable Zinc (Zn)	ug/g	22	15	6259106	26	22	5.0	6259117
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	6259106	<0.050	<0.050	0.050	6259117

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

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJY061		KJY063		KJY065		
Sampling Date		2019/07/23 08:50		2019/07/23 13:20		2019/07/23 08:00		
COC Number		96931		96931		96931		
	UNITS	19-WRSA-S11-S	QC Batch	19-WRSA-S12-S	QC Batch	19-TF-S14-S	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	6259106	<0.20	6259179	<0.20	0.20	6276635
Acid Extractable Arsenic (As)	ug/g	70	6259106	89	6259179	1.2	1.0	6276635
Acid Extractable Barium (Ba)	ug/g	37	6259106	28	6259179	67	0.50	6276635
Acid Extractable Beryllium (Be)	ug/g	<0.20	6259106	<0.20	6259179	<0.20	0.20	6276635
Acid Extractable Boron (B)	ug/g	<5.0	6259106	<5.0	6259179	<5.0	5.0	6276635
Acid Extractable Cadmium (Cd)	ug/g	<0.10	6259106	<0.10	6259179	0.17	0.10	6276635
Acid Extractable Chromium (Cr)	ug/g	26	6259106	18	6259179	18	1.0	6276635
Acid Extractable Cobalt (Co)	ug/g	12	6259106	8.8	6259179	2.5	0.10	6276635
Acid Extractable Copper (Cu)	ug/g	27	6259106	14	6259179	94	0.50	6276635
Acid Extractable Lead (Pb)	ug/g	6.9	6259106	6.1	6259179	1.7	1.0	6276635
Acid Extractable Molybdenum (Mo)	ug/g	0.55	6259106	<0.50	6259179	0.57	0.50	6276635
Acid Extractable Nickel (Ni)	ug/g	27	6259106	19	6259179	21	0.50	6276635
Acid Extractable Selenium (Se)	ug/g	<0.50	6259106	<0.50	6259179	0.58	0.50	6276635
Acid Extractable Silver (Ag)	ug/g	<0.20	6259106	<0.20	6259179	<0.20	0.20	6276635
Acid Extractable Thallium (Tl)	ug/g	0.069	6259106	0.064	6259179	0.17	0.050	6276635
Acid Extractable Uranium (U)	ug/g	0.78	6259106	0.58	6259179	2.3	0.050	6276635
Acid Extractable Vanadium (V)	ug/g	22	6259106	17	6259179	11	5.0	6276635
Acid Extractable Zinc (Zn)	ug/g	33	6259106	25	6259179	23	5.0	6276635
Acid Extractable Mercury (Hg)	ug/g	<0.050	6259106	<0.050	6259179	<0.050	0.050	6276635

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJX973		KJY007	KJY027		KJY033		
Sampling Date		2019/07/20 13:30		2019/07/21 11:55	2019/07/22 13:50		2019/07/22 15:00		
COC Number		96931		96931	96931		96931		
	UNITS	19-AWAR-S9-S	QC Batch	19-REF2-S1-S	19-TF-S1-S	QC Batch	19-TF-S4-S	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	6259179	<0.20	0.46	6259106	<0.20	0.20	6259117
Acid Extractable Arsenic (As)	ug/g	3.8	6259179	3.1	29	6259106	9.1	1.0	6259117
Acid Extractable Barium (Ba)	ug/g	8.2	6259179	27	130	6259106	110	0.50	6259117
Acid Extractable Beryllium (Be)	ug/g	<0.20	6259179	<0.20	0.21	6259106	<0.20	0.20	6259117
Acid Extractable Boron (B)	ug/g	<5.0	6259179	<5.0	11	6259106	<5.0	5.0	6259117
Acid Extractable Cadmium (Cd)	ug/g	<0.10	6259179	<0.10	0.36	6259106	0.21	0.10	6259117
Acid Extractable Chromium (Cr)	ug/g	13	6259179	16	7.7	6259106	9.2	1.0	6259117
Acid Extractable Cobalt (Co)	ug/g	2.6	6259179	4.1	4.6	6259106	5.5	0.10	6259117
Acid Extractable Copper (Cu)	ug/g	1.2	6259179	8.4	160	6259106	55	0.50	6259117
Acid Extractable Lead (Pb)	ug/g	2.6	6259179	2.3	3.7	6259106	1.7	1.0	6259117
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	6259179	<0.50	1.4	6259106	1.7	0.50	6259117
Acid Extractable Nickel (Ni)	ug/g	5.4	6259179	8.5	56	6259106	26	0.50	6259117
Acid Extractable Selenium (Se)	ug/g	<0.50	6259179	<0.50	1.7	6259106	0.80	0.50	6259117
Acid Extractable Silver (Ag)	ug/g	<0.20	6259179	<0.20	<0.20	6259106	<0.20	0.20	6259117
Acid Extractable Thallium (Tl)	ug/g	<0.050	6259179	<0.050	0.083	6259106	0.15	0.050	6259117
Acid Extractable Uranium (U)	ug/g	0.26	6259179	0.44	11	6259106	4.4	0.050	6259117
Acid Extractable Vanadium (V)	ug/g	16	6259179	17	5.8	6259106	8.4	5.0	6259117
Acid Extractable Zinc (Zn)	ug/g	11	6259179	15	35	6259106	5.9	5.0	6259117
Acid Extractable Mercury (Hg)	ug/g	<0.050	6259179	<0.050	0.14	6259106	0.057	0.050	6259117

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 ICPMS METALS & MERCURY (SOIL)

BV Labs ID		KJY043		
Sampling Date		2019/07/22 15:46		
COC Number		96931		
	UNITS	19-TF-S13-S	RDL	QC Batch
Metals				
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	6259179
Acid Extractable Arsenic (As)	ug/g	31	1.0	6259179
Acid Extractable Barium (Ba)	ug/g	31	0.50	6259179
Acid Extractable Beryllium (Be)	ug/g	<0.20	0.20	6259179
Acid Extractable Boron (B)	ug/g	<5.0	5.0	6259179
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	6259179
Acid Extractable Chromium (Cr)	ug/g	22	1.0	6259179
Acid Extractable Cobalt (Co)	ug/g	10	0.10	6259179
Acid Extractable Copper (Cu)	ug/g	14	0.50	6259179
Acid Extractable Lead (Pb)	ug/g	6.4	1.0	6259179
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.50	6259179
Acid Extractable Nickel (Ni)	ug/g	19	0.50	6259179
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	6259179
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	6259179
Acid Extractable Thallium (Tl)	ug/g	0.070	0.050	6259179
Acid Extractable Uranium (U)	ug/g	0.48	0.050	6259179
Acid Extractable Vanadium (V)	ug/g	19	5.0	6259179
Acid Extractable Zinc (Zn)	ug/g	26	5.0	6259179
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	6259179

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

BV Labs ID		KJX957		KJX959		KJX961	KJX963		
Sampling Date		2019/07/20 17:30		2019/07/20 16:55		2019/07/20 16:35	2019/07/20 16:00		
COC Number		96931		96931		96931	96931		
	UNITS	19-AWAR-S1-s	QC Batch	19-AWAR-S2-S	QC Batch	19-AWAR-S3-S	19-AWAR-S4-S	RDL	QC Batch
Inorganics									
Moisture	%	77	6259182	72	6259045	13	63	1.0	6259182
Available (CaCl2) pH	pH	3.87	6259531	6.21	6259531	4.50	6.29		6259531

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJX965		KJX965		KJX967		KJX969		
Sampling Date		2019/07/20 15:40		2019/07/20 15:40		2019/07/20 15:05		2019/07/20 14:40		
COC Number		96931		96931		96931		96931		
	UNITS	19-AWAR-S5-S	QC Batch	19-AWAR-S5-S Lab-Dup	QC Batch	19-AWAR-S6-S	QC Batch	19-AWAR-S7-S	RDL	QC Batch
Inorganics										
Moisture	%	17	6259045	17	6259045	77	6259182	80	1.0	6259045
Available (CaCl2) pH	pH	5.07	6259531			5.82	6259531	5.57		6259531

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

BV Labs ID		KJX971	KJX975		KJX977	KJX979		
Sampling Date		2019/07/20 14:00	2019/07/20 00:50		2019/07/20 00:01	2019/07/20 11:30		
COC Number		96931	96931		96931	96931		
	UNITS	19-AWAR-S8-S	19-AWAR-S10-S	QC Batch	19-AWAR-S11-S	19-AWAR-S12-S	RDL	QC Batch
Inorganics								
Moisture	%	12	57	6259182	78	84	1.0	6259045
Available (CaCl2) pH	pH	5.45	5.44	6259531	3.98	2.95		6259531

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJX981		KJX983		KJX985		
Sampling Date		2019/07/19 16:15		2019/07/19 15:30		2019/07/19 15:05		
COC Number		96931		96931		96931		
	UNITS	19-AWAR-S13-S	QC Batch	19-AWAR-S14-S	QC Batch	19-AWAR-S15-S	RDL	QC Batch
Inorganics								
Moisture	%	73	6259182	34	6259182	27	1.0	6259045
Available (CaCl2) pH	pH	4.01	6259531	5.11	6261442	3.86		6259531

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

BV Labs ID		KJX987			KJX987		KJX989	KJX991		
Sampling Date		2019/07/19 14:05			2019/07/19 14:05		2019/07/19 00:10	2019/07/19 11:40		
COC Number		96931			96931		96931	96931		
	UNITS	19-AWAR-S16-S	RDL	QC Batch	19-AWAR-S16-S Lab-Dup	QC Batch	19-AWAR-S17-S	19-AWAR-S18-S	RDL	QC Batch
Inorganics										
Moisture	%	5.8	1.0	6259182			70	5.9	1.0	6259182
Available (CaCl2) pH	pH	4.33		6285945	4.29	6285945	5.77	3.97		6259531

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

BV Labs ID		KJX993		KJX995		KJX995		KJX997		
Sampling Date		2019/07/19 13:40		2019/07/19 13:15		2019/07/19 13:15		2019/07/21 08:10		
COC Number		96931		96931		96931		96931		
	UNITS	19-AWAR-S19-S	QC Batch	19-AWAR-S20-S	QC Batch	19-AWAR-S20-S Lab-Dup	QC Batch	19-REF1-S1-S	RDL	QC Batch
Inorganics										
Moisture	%	9.5	6259182	67	6258329	72	6258329	17	1.0	6259182
Available (CaCl2) pH	pH	5.41	6261442	5.94	6261442			6.46		6259531

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

BV Labs ID		KJX999	KJY001		KJY003	KJY005		KJY009		
Sampling Date		2019/07/21 20:40	2019/07/21 09:25		2019/07/21 10:15	2019/07/21 22:45		2019/07/21 00:35		
COC Number		96931	96931		96931	96931		96931		
	UNITS	19-REF1-S2-S	19-REF1-S3-S	QC Batch	19-REF1-S4-S	19-REF1-S5-S	QC Batch	19-REF2-S2-S	RDL	QC Batch
Inorganics										
Moisture	%	39	72	6258329	30	29	6259045	72	1.0	6258329
Available (CaCl2) pH	pH	5.98	4.33	6261442	5.78	5.80	6259531	4.69		6261442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY011		KJY013		KJY015		KJY017		
Sampling Date		2019/07/21 13:20		2019/07/21 13:40		2019/07/21 14:00		2019/07/21 16:30		
COC Number		96931		96931		96931		96931		
	UNITS	19-REF2-S3-S	QC Batch	19-REF2-S4-S	QC Batch	19-REF2-S5-S	QC Batch	19-REF3-S1-S	RDL	QC Batch
Inorganics										
Moisture	%	12	6259045	18	6258329	13	6259045	17	1.0	6259182
Available (CaCl2) pH	pH	4.55	6285945	4.95	6261442	7.71	6285945	4.67		6259531

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

BV Labs ID		KJY019	KJY021		KJY023	KJY025	KJY029	KJY031		
Sampling Date		2019/07/21 16:50	2019/07/21 16:00		2019/07/21 15:14	2019/07/21 15:35	2019/07/22 13:15	2019/07/22 11:40		
COC Number		96931	96931		96931	96931	96931	96931		
	UNITS	19-REF3-S2-S	19-REF3-S3-S	QC Batch	19-REF3-S4-S	19-REF3-S5-S	19-TF-S2-S	19-TF-S3-S	RDL	QC Batch
Inorganics										
Moisture	%	69	17	6259045	25	62	17	18	1.0	6258329
Available (CaCl2) pH	pH	3.92	7.26	6285945	4.92	5.16	5.96	6.43		6261442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY031		KJY035		KJY037	KJY039		KJY041		
Sampling Date		2019/07/22 11:40		2019/07/22 11:10		2019/07/22 10:36	2019/07/22 08:25		2019/07/22 09:35		
COC Number		96931		96931		96931	96931		96931		
	UNITS	19-TF-S3-S Lab-Dup	QC Batch	19-TF-S5-S	QC Batch	19-TF-S6-S	19-TF-S11-S	QC Batch	19-TF-S12-S	RDL	QC Batch
Inorganics											
Moisture	%			11	6259045	74	76	6259182	18	1.0	6259045
Available (CaCl2) pH	pH	6.45	6261442	5.18	6285945	5.82	5.88	6285945	6.38		6285945

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

BV Labs ID		KJY044		KJY045		KJY047		KJY049		
Sampling Date		2019/07/22 15:50		2019/07/23 00:30		2019/07/23 10:30		2019/07/23 09:30		
COC Number		96931		96931		96931		96931		
	UNITS	19-TF-S13-Cr	QC Batch	19-WRSA-S1-S	QC Batch	19-WRSA-S2-S	QC Batch	19-WRSA-S5-S	RDL	QC Batch
Inorganics										
Moisture	%	79	6265634	31	6258329	11	6259045	13	1.0	6258329
pH	pH	4.92	6284449							
Available (CaCl2) pH	pH			5.65	6261442	5.88	6285945	4.57		6261442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

BV Labs ID		KJY051		KJY053	KJY055		KJY057		
Sampling Date		2019/07/23 09:55		2019/07/23 08:20	2019/07/24 08:05		2019/07/23 14:55		
COC Number		96931		96931	96931		96931		
	UNITS	19-WRSA-S6-S	QC Batch	19-WRSA-S7-S	19-WRSA-S8-S	QC Batch	19-WRSA-S9-S	RDL	QC Batch
Inorganics									
Moisture	%	9.8	6258329	14	19	6259045	9.7	1.0	6258329
Available (CaCl2) pH	pH	5.47	6261442	6.95	5.51	6285945	5.52		6261442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY059	KJY061		KJY063		KJY065		
Sampling Date		2019/07/23 14:05	2019/07/23 08:50		2019/07/23 13:20		2019/07/23 08:00		
COC Number		96931	96931		96931		96931		
	UNITS	19-WRSA-S10-S	19-WRSA-S11-S	QC Batch	19-WRSA-S12-S	QC Batch	19-TF-S14-S	RDL	QC Batch
Inorganics									
Moisture	%	12	9.4	6258329	10	6259182	66	1.0	6258329
Available (CaCl2) pH	pH	5.66	4.61	6261442	5.70	6285945	4.83		6261442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (SOIL)

BV Labs ID		KJY044		
Sampling Date		2019/07/22 15:50		
COC Number		96931		
	UNITS	19-TF-S13-Cr	RDL	QC Batch
Metals				
Antimony (Sb)	ug/g	<0.05	0.05	6266648
Arsenic (As)	ug/g	0.6	0.1	6266648
Barium (Ba)	ug/g	1.2	0.3	6266648
Beryllium (Be)	ug/g	<0.05	0.05	6266648
Bismuth (Bi)	ug/g	<0.05	0.05	6266648
Boron (B)	ug/g	2.2	0.5	6266648
Cadmium (Cd)	ug/g	<0.01	0.01	6266648
Calcium (Ca)	ug/g	268	50	6266648
Chromium (Cr)	ug/g	<0.3	0.3	6266648
Cobalt (Co)	ug/g	0.016	0.005	6266648
Copper (Cu)	ug/g	1.9	0.5	6266648
Iron (Fe)	ug/g	23	3	6266648
Lead (Pb)	ug/g	<0.03	0.03	6266648
Magnesium (Mg)	ug/g	147	100	6266648
Manganese (Mn)	ug/g	11.0	0.3	6266648
Molybdenum (Mo)	ug/g	<0.05	0.05	6266648
Nickel (Ni)	ug/g	0.26	0.05	6266648
Phosphorus (P)	ug/g	330	50	6266648
Potassium (K)	ug/g	1860	100	6266648
Selenium (Se)	ug/g	<0.1	0.1	6266648
Silver (Ag)	ug/g	<0.05	0.05	6266648
Sodium (Na)	ug/g	<50	50	6266648
Strontium (Sr)	ug/g	<0.5	0.5	6266648
Thallium (Tl)	ug/g	<0.003	0.003	6266648
Tin (Sn)	ug/g	<0.3	0.3	6266648
Titanium (Ti)	ug/g	0.7	0.5	6266648
Uranium (U)	ug/g	<0.005	0.005	6266648
Vanadium (V)	ug/g	<0.05	0.05	6266648
Zinc (Zn)	ug/g	3	2	6266648

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

BV Labs ID		KJY044		
Sampling Date		2019/07/22 15:50		
COC Number		96931		
	UNITS	19-TF-S13-Cr	RDL	QC Batch
Metals				
Mercury (Hg)	ug/g	<0.01	0.01	6265319

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOLID

BV Labs ID		KJX973			KJX973		KJY007		KJY027		
Sampling Date		2019/07/20 13:30			2019/07/20 13:30		2019/07/21 11:55		2019/07/22 13:50		
COC Number		96931			96931		96931		96931		
	UNITS	19-AWAR-S9-S	RDL	QC Batch	19-AWAR-S9-S Lab-Dup	QC Batch	19-REF2-S1-S	QC Batch	19-TF-S1-S	RDL	QC Batch
Inorganics											
Moisture	%	11	1.0	6259045			19	6259182	72	1.0	6259045
Available (CaCl2) pH	pH	3.91		6259531	3.88	6259531	4.62	6261442	6.30		6285945

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

BV Labs ID		KJY033		
Sampling Date		2019/07/22 15:00		
COC Number		96931		
	UNITS	19-TF-S4-S	RDL	QC Batch
Inorganics				
Moisture	%	76	1.0	6258204
Available (CaCl2) pH	pH	5.19		6261442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KJX958		KJX960		KJX962		
Sampling Date		2019/07/20 17:25		2019/07/20 17:00		2019/07/20 16:30		
COC Number		96931		96931		96931		
	UNITS	19-AWAR-S1-Sd	QC Batch	19-AWAR-S2-Li	QC Batch	19-AWAR-S3-Li	RDL	QC Batch
Inorganics								
Moisture	%	62	6265147	15	6265147	16	1.0	6265141
pH	pH	4.76	6284449	4.20	6284295	4.24		6284449

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJX964		KJX966		KJX968	KJX970		
Sampling Date		2019/07/20 16:05		2019/07/20 15:45		2019/07/20 15:10	2019/07/20 14:45		
COC Number		96931		96931		96931	96931		
	UNITS	19-AWAR-S4-Br	QC Batch	19-AWAR-S5-Sd	QC Batch	19-AWAR-S6-Li	19-AWAR-S7-Sd	RDL	QC Batch
Inorganics									
Moisture	%	60	6265147	47	6265147	16	49	1.0	6265141
pH	pH	3.29	6284295	6.57	6284449	4.91	5.57		6269503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJX972	KJX974		KJX976		KJX978		
Sampling Date		2019/07/20 14:05	2019/07/20 13:35		2019/07/20 00:55		2019/07/20 00:10		
COC Number		96931	96931		96931		96931		
	UNITS	19-AWAR-S8-Br	19-AWAR-S9-Lt	QC Batch	19-AWAR-S10-Li	QC Batch	19-AWAR-S11-Li	RDL	QC Batch
Inorganics									
Moisture	%	61	62	6265147	14	6265634	15	1.0	6265147
pH	pH	4.07	4.70	6284295	4.12	6269503	4.42		6284295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJX980		KJX982		KJX984		
Sampling Date		2019/07/20 23:35		2019/07/19 16:15		2019/07/19 15:35		
COC Number		96931		96931		96931		
	UNITS	19-AWAR-S12-Lt	QC Batch	19-AWAR-S13-Li	QC Batch	19-AWAR-S14-Sd	RDL	QC Batch
Inorganics								
Moisture	%	54	6265634	11	6265141	62	1.0	6265147
pH	pH	4.81	6269503	4.31	6269503	4.62		6284295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KJX986		KJX988		KJX990	KJX992		
Sampling Date		2019/07/19 15:10		2019/07/19 14:10		2019/07/19 00:15	2019/07/19 11:45		
COC Number		96931		96931		96931	96931		
	UNITS	19-AWAR-S15-Sd	QC Batch	19-AWAR-S16-Cr	QC Batch	19-AWAR-S17-Li	19-AWAR-S18-Li	RDL	QC Batch
Inorganics									
Moisture	%	44	6265141	79	6265634	13	12	1.0	6265141
pH	pH	5.08	6269503	3.50	6284295	4.64	4.75		6269503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJX994		KJX996		KJX998		KJY000		
Sampling Date		2019/07/19 13:45		2019/07/19 13:20		2019/07/21 08:05		2019/07/21 20:35		
COC Number		96931		96931		96931		96931		
	UNITS	19-AWAR-S19-Li	QC Batch	19-AWAR-S20-Li	QC Batch	19-REF1-S1-Sd	QC Batch	19-REF1-S2-Li	RDL	QC Batch
Inorganics										
Moisture	%	17	6265141	19	6265634	46	6265147	18	1.0	6265147
pH	pH	4.91	6269503	4.64	6269503	5.34	6284449	3.84		6284295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY002		KJY004		KJY006	KJY008		
Sampling Date		2019/07/21 09:20		2019/07/21 10:10		2019/07/21 22:40	2019/07/21 11:50		
COC Number		96931		96931		96931	96931		
	UNITS	19-REF1-S3-LT	QC Batch	19-REF1-S4-Br	QC Batch	19-REF1-S5-Sd	19-REF2-S1-LT	RDL	QC Batch
Inorganics									
Moisture	%	55	6265147	61	6265141	58	57	1.0	6265147
pH	pH	4.60	6284449	4.35	6269503	5.56	4.63		6284449

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY008		KJY010		KJY012		KJY014		
Sampling Date		2019/07/21 11:50		2019/07/21 00:30		2019/07/21 13:15		2019/07/21 13:35		
COC Number		96931		96931		96931		96931		
	UNITS	19-REF2-S1-LT Lab-Dup	QC Batch	19-REF2-S2-Br	QC Batch	19-REF2-S3-Li	QC Batch	19-REF2-S4-Sd	RDL	QC Batch
Inorganics										
Moisture	%			61	6265141	10	6265634	50	1.0	6265634
pH	pH	4.62	6284449	4.65	6269503	3.96	6269503	6.20		6284449

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

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RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KJY016	KJY018		KJY020		KJY022		
Sampling Date		2019/07/21 14:05	2019/07/21 16:35		2019/07/21 16:45		2019/07/21 16:05		
COC Number		96931	96931		96931		96931		
	UNITS	19-REF2-S5-Br	19-REF3-S1-Li	QC Batch	19-REF3-S2-Li	QC Batch	19-REF3-S3-Li	RDL	QC Batch
Inorganics									
Moisture	%	60	12	6265141	13	6265147	11	1.0	6265634
pH	pH	4.70	4.00	6269503	4.12	6284295	3.93		6284295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY024		KJY026		KJY028	KJY030		
Sampling Date		2019/07/21 15:30		2019/07/21 15:40		2019/07/22 13:55	2019/07/22 13:20		
COC Number		96931		96931		96931	96931		
	UNITS	19-REF3-S4-Li	QC Batch	19-REF3-S5-Sd	QC Batch	19-TF-S1-Cr	19-TF-S2-Li	RDL	QC Batch
Inorganics									
Moisture	%	9.3	6265141	60	6265634	79	10	1.0	6265634
pH	pH	4.15	6284295	6.13	6284449	3.66	4.16		6284295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY032		KJY034			KJY034		KJY036		
Sampling Date		2019/07/22 23:45		2019/07/22 15:05			2019/07/22 15:05		2019/07/22 11:15		
COC Number		96931		96931			96931		96931		
	UNITS	19-TF-S3-Sd	QC Batch	19-TF-S4-LT	RDL	QC Batch	19-TF-S4-LT Lab-Dup	QC Batch	19-TF-S5-Li	RDL	QC Batch
Inorganics											
Moisture	%	59	6265147	53	1.0	6265141			9.7	1.0	6265634
pH	pH	6.47	6284449	4.66		6269503	4.66	6269503	4.34		6284295

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

BV Labs ID		KJY038			KJY038		KJY040		KJY042		
Sampling Date		2019/07/22 10:30			2019/07/22 10:30		2019/07/22 08:30		2019/07/22 09:40		
COC Number		96931			96931		96931		96931		
	UNITS	19-TF-S6-LT	RDL	QC Batch	19-TF-S6-LT Lab-Dup	QC Batch	19-TF-S11-Br	QC Batch	19-TF-S12-Sd	RDL	QC Batch
Inorganics											
Moisture	%	54	1.0	6265634			61	6265141	45	1.0	6265141
pH	pH	4.64		6284295	4.64	6284295	4.62	6269503	6.52		6284449

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

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RESULTS OF ANALYSES OF TISSUE

BV Labs ID		KJY043		KJY046		KJY048		KJY050		
Sampling Date		2019/07/22 15:46		2019/07/23 00:25		2019/07/23 10:35		2019/07/23 09:30		
COC Number		96931		96931		96931		96931		
	UNITS	19-TF-S13-S	QC Batch	19-WRSA-S1-LT	QC Batch	19-WRSA-S2-Sd	QC Batch	19-WRSA-S5-Li	RDL	QC Batch
Inorganics										
Moisture	%	11	6259045	54	6265147	60	6265147	17	1.0	6265141
pH	pH			4.63	6284295	6.82	6284449	4.43		6269503
Available (CaCl2) pH	pH	4.67	6285945							

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY052	KJY054		KJY056	KJY058	KJY060		
Sampling Date		2019/07/23 10:00	2019/07/23 08:25		2019/07/24 08:00	2019/07/23 14:50	2019/07/23 14:00		
COC Number		96931	96931		96931	96931	96931		
	UNITS	19-WRSA-S6-Br	19-WRSA-S7-Li	QC Batch	19-WRSA-S8-Br	19-WRSA-S9-Cr	19-WRSA-S10-Cr	RDL	QC Batch
Inorganics									
Moisture	%	62	20	6265147	64	79	80	1.0	6265634
pH	pH	3.69	4.33	6284449	4.54	6.23	3.44		6284295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY062	KJY064		KJY066		
Sampling Date		2019/07/23 08:55	2019/07/23 13:15		2019/07/23 07:55		
COC Number		96931	96931		96931		
	UNITS	19-WRSA-S11-Br	19-WRSA-S12-Li	QC Batch	19-TF-S14-Li	RDL	QC Batch
Inorganics							
Moisture	%	63	11	6265141	22	1.0	6265634
pH	pH	4.58	4.36	6269503	4.24		6284295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJX958			KJX960		KJX962		
Sampling Date		2019/07/20 17:25			2019/07/20 17:00		2019/07/20 16:30		
COC Number		96931			96931		96931		
	UNITS	19-AWAR-S1-Sd	RDL	QC Batch	19-AWAR-S2-Li	QC Batch	19-AWAR-S3-Li	RDL	QC Batch
Metals									
Antimony (Sb)	ug/g	<0.05	0.05	6266652	<0.05	6267071	<0.05	0.05	6266652
Arsenic (As)	ug/g	1.5	0.1	6266652	5.5	6267071	5.1	0.1	6266652
Barium (Ba)	ug/g	11.4	0.3	6266652	21.7	6267071	23.2	0.3	6266652
Beryllium (Be)	ug/g	<0.05	0.05	6266652	<0.05	6267071	<0.05	0.05	6266652
Bismuth (Bi)	ug/g	<0.05	0.05	6266652	<0.05	6267071	<0.05	0.05	6266652
Boron (B)	ug/g	2.7	0.5	6266652	1.2	6267071	1.8	0.5	6266652
Cadmium (Cd)	ug/g	0.01	0.01	6266652	0.08	6267071	0.09	0.01	6266652
Calcium (Ca)	ug/g	2550	50	6266652	8600	6267071	8400	50	6266652
Chromium (Cr)	ug/g	2.7	0.3	6266652	7.0	6267071	6.6	0.3	6266652
Cobalt (Co)	ug/g	0.647	0.005	6266652	1.79	6267071	1.71	0.005	6266652
Copper (Cu)	ug/g	3.7	0.5	6266652	6.5	6267071	7.0	0.5	6266652
Iron (Fe)	ug/g	657	3	6266652	3130	6267071	2930	3	6266652
Lead (Pb)	ug/g	0.27	0.03	6266652	2.26	6267071	2.05	0.03	6266652
Magnesium (Mg)	ug/g	590	100	6266652	1470	6267071	1300	100	6266652
Manganese (Mn)	ug/g	190	0.3	6266652	124	6267071	125	0.3	6266652
Molybdenum (Mo)	ug/g	0.41	0.05	6266652	0.28	6267071	0.24	0.05	6266652
Nickel (Ni)	ug/g	1.57	0.05	6266652	4.36	6267071	4.16	0.05	6266652
Phosphorus (P)	ug/g	589	50	6266652	403	6267071	372	50	6266652
Potassium (K)	ug/g	5550	100	6266652	1590	6267071	1260	100	6266652
Selenium (Se)	ug/g	<0.1	0.1	6266652	0.1	6267071	0.2	0.1	6266652
Silver (Ag)	ug/g	<0.05	0.05	6266652	<0.05	6267071	<0.05	0.05	6266652
Sodium (Na)	ug/g	117	50	6266652	150	6267071	72	50	6266652
Strontium (Sr)	ug/g	16.7	0.5	6266652	34.2	6267071	35.6	0.5	6266652
Thallium (Tl)	ug/g	0.005	0.003	6266652	0.018	6267071	0.015	0.003	6266652
Tin (Sn)	ug/g	<0.3	0.3	6266652	<0.3	6267071	<0.3	0.3	6266652
Titanium (Ti)	ug/g	17.7	0.5	6266652	58	6267071	60	3	6266652
Uranium (U)	ug/g	0.071	0.005	6266652	0.088	6267071	0.097	0.005	6266652
Vanadium (V)	ug/g	1.00	0.05	6266652	4.64	6267071	4.07	0.05	6266652
Zinc (Zn)	ug/g	16	2	6266652	26	6267071	21	2	6266652

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJX964	KJX966			KJX968		
Sampling Date		2019/07/20 16:05	2019/07/20 15:45			2019/07/20 15:10		
COC Number		96931	96931			96931		
	UNITS	19-AWAR-S4-Br	19-AWAR-S5-Sd	RDL	QC Batch	19-AWAR-S6-Li	RDL	QC Batch
Metals								
Antimony (Sb)	ug/g	<0.05	<0.05	0.05	6266652	<0.05	0.05	6267071
Arsenic (As)	ug/g	0.4	3.6	0.1	6266652	13.8	0.1	6267071
Barium (Ba)	ug/g	6.4	17.7	0.3	6266652	22.9	0.3	6267071
Beryllium (Be)	ug/g	<0.05	<0.05	0.05	6266652	<0.05	0.05	6267071
Bismuth (Bi)	ug/g	<0.05	<0.05	0.05	6266652	<0.05	0.05	6267071
Boron (B)	ug/g	7.2	3.0	0.5	6266652	2.5	0.5	6267071
Cadmium (Cd)	ug/g	0.01	0.02	0.01	6266652	0.11	0.01	6267071
Calcium (Ca)	ug/g	2780	3760	50	6266652	15000	50	6267071
Chromium (Cr)	ug/g	<0.3	1.8	0.3	6266652	11.6	0.3	6267071
Cobalt (Co)	ug/g	0.163	0.411	0.005	6266652	2.24	0.005	6267071
Copper (Cu)	ug/g	2.8	4.8	0.5	6266652	8.9	0.5	6267071
Iron (Fe)	ug/g	103	631	3	6266652	4250	3	6267071
Lead (Pb)	ug/g	0.05	0.42	0.03	6266652	3.51	0.03	6267071
Magnesium (Mg)	ug/g	704	619	100	6266652	1780	100	6267071
Manganese (Mn)	ug/g	71.2	67.0	0.3	6266652	107	0.3	6267071
Molybdenum (Mo)	ug/g	0.18	0.32	0.05	6266652	0.51	0.05	6267071
Nickel (Ni)	ug/g	1.09	2.28	0.05	6266652	6.00	0.05	6267071
Phosphorus (P)	ug/g	661	402	50	6266652	325	50	6267071
Potassium (K)	ug/g	3290	4490	100	6266652	998	100	6267071
Selenium (Se)	ug/g	<0.1	<0.1	0.1	6266652	<0.1	0.1	6267071
Silver (Ag)	ug/g	<0.05	<0.05	0.05	6266652	<0.05	0.05	6267071
Sodium (Na)	ug/g	<50	85	50	6266652	101	50	6267071
Strontium (Sr)	ug/g	8.3	18.5	0.5	6266652	42.6	0.5	6267071
Thallium (Tl)	ug/g	<0.003	<0.003	0.003	6266652	0.018	0.003	6267071
Tin (Sn)	ug/g	<0.3	<0.3	0.3	6266652	<0.3	0.3	6267071
Titanium (Ti)	ug/g	2.4	11.3	0.5	6266652	83	3	6267071
Uranium (U)	ug/g	<0.005	0.028	0.005	6266652	0.140	0.005	6267071
Vanadium (V)	ug/g	0.14	1.01	0.05	6266652	5.86	0.05	6267071
Zinc (Zn)	ug/g	106	12	2	6266652	23	2	6267071

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJX970	KJX972		KJX974			KJX976		
Sampling Date		2019/07/20 14:45	2019/07/20 14:05		2019/07/20 13:35			2019/07/20 00:55		
COC Number		96931	96931		96931			96931		
	UNITS	19-AWAR-S7-Sd	19-AWAR-S8-Br	QC Batch	19-AWAR-S9-Lt	RDL	QC Batch	19-AWAR-S10-Li	RDL	QC Batch
Metals										
Antimony (Sb)	ug/g	<0.05	<0.05	6266652	<0.05	0.05	6266648	<0.05	0.05	6266652
Arsenic (As)	ug/g	4.3	0.1	6266652	0.2	0.1	6266648	0.8	0.1	6266652
Barium (Ba)	ug/g	12.8	11.2	6266652	24.2	0.3	6266648	20.1	0.3	6266652
Beryllium (Be)	ug/g	<0.05	<0.05	6266652	<0.05	0.05	6266648	<0.05	0.05	6266652
Bismuth (Bi)	ug/g	<0.05	<0.05	6266652	<0.05	0.05	6266648	<0.05	0.05	6266652
Boron (B)	ug/g	2.4	6.2	6266652	8.1	0.5	6266648	1.0	0.5	6266652
Cadmium (Cd)	ug/g	0.02	0.03	6266652	<0.01	0.01	6266648	0.11	0.01	6266652
Calcium (Ca)	ug/g	3550	2370	6266652	1880	50	6266648	2100	50	6266652
Chromium (Cr)	ug/g	2.2	<0.3	6266652	0.8	0.3	6266648	23.5	0.3	6266652
Cobalt (Co)	ug/g	0.590	0.215	6266652	0.132	0.005	6266648	1.02	0.005	6266652
Copper (Cu)	ug/g	4.2	2.8	6266652	2.4	0.5	6266648	3.7	0.5	6266652
Iron (Fe)	ug/g	778	82	6266652	217	3	6266648	1060	3	6266652
Lead (Pb)	ug/g	0.83	<0.03	6266652	0.09	0.03	6266648	1.56	0.03	6266652
Magnesium (Mg)	ug/g	662	871	6266652	576	100	6266648	584	100	6266652
Manganese (Mn)	ug/g	214	136	6266652	369	0.3	6266648	52.6	0.3	6266652
Molybdenum (Mo)	ug/g	0.31	<0.05	6266652	<0.05	0.05	6266648	2.69	0.05	6266652
Nickel (Ni)	ug/g	1.76	1.70	6266652	0.55	0.05	6266648	15.4	0.05	6266652
Phosphorus (P)	ug/g	545	680	6266652	438	50	6266648	276	50	6266652
Potassium (K)	ug/g	5140	2970	6266652	2370	100	6266648	1240	100	6266652
Selenium (Se)	ug/g	<0.1	<0.1	6266652	<0.1	0.1	6266648	0.2	0.1	6266652
Silver (Ag)	ug/g	<0.05	<0.05	6266652	<0.05	0.05	6266648	<0.05	0.05	6266652
Sodium (Na)	ug/g	89	<50	6266652	<50	50	6266648	<50	50	6266652
Strontium (Sr)	ug/g	18.3	5.0	6266652	6.1	0.5	6266648	12.5	0.5	6266652
Thallium (Tl)	ug/g	0.004	<0.003	6266652	0.056	0.003	6266648	0.010	0.003	6266652
Tin (Sn)	ug/g	<0.3	<0.3	6266652	<0.3	0.3	6266648	<0.3	0.3	6266652
Titanium (Ti)	ug/g	18.4	2.8	6266652	9.0	0.5	6266648	36	3	6266652
Uranium (U)	ug/g	0.075	<0.005	6266652	0.010	0.005	6266648	0.056	0.005	6266652
Vanadium (V)	ug/g	1.15	0.11	6266652	0.36	0.05	6266648	1.50	0.05	6266652
Zinc (Zn)	ug/g	26	82	6266652	14	2	6266648	17	2	6266652

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJX976		KJX978			KJX980		
Sampling Date		2019/07/20 00:55		2019/07/20 00:10			2019/07/20 23:35		
COC Number		96931		96931			96931		
	UNITS	19-AWAR-S10-Li Lab-Dup	QC Batch	19-AWAR-S11-Li	RDL	QC Batch	19-AWAR-S12-Lt	RDL	QC Batch
Metals									
Antimony (Sb)	ug/g	<0.05	6266652	<0.05	0.05	6267071	<0.05	0.05	6266652
Arsenic (As)	ug/g	0.8	6266652	1.2	0.1	6267071	0.2	0.1	6266652
Barium (Ba)	ug/g	20.6	6266652	25.9	0.3	6267071	26.0	0.3	6266652
Beryllium (Be)	ug/g	<0.05	6266652	<0.05	0.05	6267071	<0.05	0.05	6266652
Bismuth (Bi)	ug/g	<0.05	6266652	<0.05	0.05	6267071	<0.05	0.05	6266652
Boron (B)	ug/g	1.0	6266652	0.9	0.5	6267071	9.6	0.5	6266652
Cadmium (Cd)	ug/g	0.11	6266652	0.06	0.01	6267071	<0.01	0.01	6266652
Calcium (Ca)	ug/g	2110	6266652	2100	50	6267071	2430	50	6266652
Chromium (Cr)	ug/g	23.0	6266652	4.8	0.3	6267071	1.1	0.3	6266652
Cobalt (Co)	ug/g	1.00	6266652	1.01	0.005	6267071	0.143	0.005	6266652
Copper (Cu)	ug/g	3.6	6266652	4.4	0.5	6267071	2.5	0.5	6266652
Iron (Fe)	ug/g	1010	6266652	1940	3	6267071	274	3	6266652
Lead (Pb)	ug/g	1.54	6266652	1.05	0.03	6267071	0.09	0.03	6266652
Magnesium (Mg)	ug/g	562	6266652	998	100	6267071	829	100	6266652
Manganese (Mn)	ug/g	56.7	6266652	73.5	0.3	6267071	273	0.3	6266652
Molybdenum (Mo)	ug/g	2.71	6266652	0.19	0.05	6267071	0.07	0.05	6266652
Nickel (Ni)	ug/g	15.0	6266652	2.72	0.05	6267071	0.55	0.05	6266652
Phosphorus (P)	ug/g	264	6266652	444	50	6267071	520	50	6266652
Potassium (K)	ug/g	1190	6266652	2230	100	6267071	2640	100	6266652
Selenium (Se)	ug/g	0.1	6266652	0.1	0.1	6267071	<0.1	0.1	6266652
Silver (Ag)	ug/g	<0.05	6266652	<0.05	0.05	6267071	<0.05	0.05	6266652
Sodium (Na)	ug/g	<50	6266652	111	50	6267071	<50	50	6266652
Strontium (Sr)	ug/g	12.5	6266652	26.8	0.5	6267071	9.2	0.5	6266652
Thallium (Tl)	ug/g	0.010	6266652	0.023	0.003	6267071	0.031	0.003	6266652
Tin (Sn)	ug/g	<0.3	6266652	<0.3	0.3	6267071	<0.3	0.3	6266652
Titanium (Ti)	ug/g	34	6266652	68	3	6267071	10.8	0.5	6266652
Uranium (U)	ug/g	0.055	6266652	0.102	0.005	6267071	0.016	0.005	6266652
Vanadium (V)	ug/g	1.39	6266652	2.94	0.05	6267071	0.45	0.05	6266652
Zinc (Zn)	ug/g	17	6266652	22	2	6267071	13	2	6266652

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

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJX982			KJX984		KJX986		
Sampling Date		2019/07/19 16:15			2019/07/19 15:35		2019/07/19 15:10		
COC Number		96931			96931		96931		
	UNITS	19-AWAR-S13-Li	RDL	QC Batch	19-AWAR-S14-Sd	QC Batch	19-AWAR-S15-Sd	RDL	QC Batch
Metals									
Antimony (Sb)	ug/g	<0.05	0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Arsenic (As)	ug/g	0.7	0.1	6267071	0.1	6266652	0.8	0.1	6266648
Barium (Ba)	ug/g	32.8	0.3	6267071	12.0	6266652	20.4	0.3	6266648
Beryllium (Be)	ug/g	<0.05	0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Bismuth (Bi)	ug/g	<0.05	0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Boron (B)	ug/g	0.9	0.5	6267071	1.8	6266652	3.3	0.5	6266648
Cadmium (Cd)	ug/g	0.13	0.01	6267071	0.09	6266652	0.04	0.01	6266648
Calcium (Ca)	ug/g	1980	50	6267071	1420	6266652	2350	50	6266648
Chromium (Cr)	ug/g	4.9	0.3	6267071	0.6	6266652	1.5	0.3	6266648
Cobalt (Co)	ug/g	1.07	0.005	6267071	0.107	6266652	0.589	0.005	6266648
Copper (Cu)	ug/g	4.7	0.5	6267071	3.4	6266652	4.7	0.5	6266648
Iron (Fe)	ug/g	1910	3	6267071	190	6266652	809	3	6266648
Lead (Pb)	ug/g	3.32	0.03	6267071	0.08	6266652	0.40	0.03	6266648
Magnesium (Mg)	ug/g	878	100	6267071	321	6266652	593	100	6266648
Manganese (Mn)	ug/g	41.0	0.3	6267071	112	6266652	46.0	0.3	6266648
Molybdenum (Mo)	ug/g	0.20	0.05	6267071	0.17	6266652	0.45	0.05	6266648
Nickel (Ni)	ug/g	2.95	0.05	6267071	1.64	6266652	1.49	0.05	6266648
Phosphorus (P)	ug/g	283	50	6267071	336	6266652	378	50	6266648
Potassium (K)	ug/g	1330	100	6267071	3140	6266652	3310	100	6266648
Selenium (Se)	ug/g	0.2	0.1	6267071	<0.1	6266652	<0.1	0.1	6266648
Silver (Ag)	ug/g	<0.05	0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Sodium (Na)	ug/g	<50	50	6267071	<50	6266652	<50	50	6266648
Strontium (Sr)	ug/g	19.4	0.5	6267071	5.1	6266652	17.4	0.5	6266648
Thallium (Tl)	ug/g	0.019	0.003	6267071	<0.003	6266652	0.006	0.003	6266648
Tin (Sn)	ug/g	<0.3	0.3	6267071	<0.3	6266652	<0.3	0.3	6266648
Titanium (Ti)	ug/g	65	3	6267071	7.1	6266652	20.6	0.5	6266648
Uranium (U)	ug/g	0.099	0.005	6267071	0.019	6266652	0.048	0.005	6266648
Vanadium (V)	ug/g	2.85	0.05	6267071	0.28	6266652	1.04	0.05	6266648
Zinc (Zn)	ug/g	20	2	6267071	13	6266652	24	2	6266648

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJX988			KJX990		KJX992		
Sampling Date		2019/07/19 14:10			2019/07/19 00:15		2019/07/19 11:45		
COC Number		96931			96931		96931		
	UNITS	19-AWAR-S16-Cr	RDL	QC Batch	19-AWAR-S17-Li	QC Batch	19-AWAR-S18-Li	RDL	QC Batch
Metals									
Antimony (Sb)	ug/g	<0.05	0.05	6266648	<0.05	6266652	<0.05	0.05	6266648
Arsenic (As)	ug/g	<0.1	0.1	6266648	0.9	6266652	0.7	0.1	6266648
Barium (Ba)	ug/g	2.2	0.3	6266648	24.0	6266652	28.9	0.3	6266648
Beryllium (Be)	ug/g	<0.05	0.05	6266648	<0.05	6266652	<0.05	0.05	6266648
Bismuth (Bi)	ug/g	<0.05	0.05	6266648	0.06	6266652	0.08	0.05	6266648
Boron (B)	ug/g	2.0	0.5	6266648	1.1	6266652	0.7	0.5	6266648
Cadmium (Cd)	ug/g	<0.01	0.01	6266648	0.08	6266652	0.06	0.01	6266648
Calcium (Ca)	ug/g	299	50	6266648	5170	6266652	4440	50	6266648
Chromium (Cr)	ug/g	<0.3	0.3	6266648	6.0	6266652	12.4	0.3	6266648
Cobalt (Co)	ug/g	0.039	0.005	6266648	1.09	6266652	1.18	0.005	6266648
Copper (Cu)	ug/g	1.3	0.5	6266648	5.3	6266652	5.7	0.5	6266648
Iron (Fe)	ug/g	77	3	6266648	1880	6266652	1620	3	6266648
Lead (Pb)	ug/g	<0.03	0.03	6266648	1.26	6266652	1.87	0.03	6266648
Magnesium (Mg)	ug/g	156	100	6266648	966	6266652	770	100	6266648
Manganese (Mn)	ug/g	7.7	0.3	6266648	35.6	6266652	41.1	0.3	6266648
Molybdenum (Mo)	ug/g	<0.05	0.05	6266648	0.10	6266652	1.03	0.05	6266648
Nickel (Ni)	ug/g	0.30	0.05	6266648	2.55	6266652	7.17	0.05	6266648
Phosphorus (P)	ug/g	269	50	6266648	341	6266652	440	50	6266648
Potassium (K)	ug/g	1610	100	6266648	1300	6266652	1470	100	6266648
Selenium (Se)	ug/g	<0.1	0.1	6266648	0.2	6266652	0.2	0.1	6266648
Silver (Ag)	ug/g	<0.05	0.05	6266648	<0.05	6266652	<0.05	0.05	6266648
Sodium (Na)	ug/g	<50	50	6266648	<50	6266652	52	50	6266648
Strontium (Sr)	ug/g	0.9	0.5	6266648	27.2	6266652	26.4	0.5	6266648
Thallium (Tl)	ug/g	<0.003	0.003	6266648	0.024	6266652	0.022	0.003	6266648
Tin (Sn)	ug/g	<0.3	0.3	6266648	<0.3	6266652	<0.3	0.3	6266648
Titanium (Ti)	ug/g	3.0	0.5	6266648	74	6266652	71	3	6266648
Uranium (U)	ug/g	<0.005	0.005	6266648	0.129	6266652	0.125	0.005	6266648
Vanadium (V)	ug/g	0.13	0.05	6266648	2.83	6266652	2.33	0.05	6266648
Zinc (Zn)	ug/g	2	2	6266648	18	6266652	13	2	6266648

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJX994			KJX996			KJX998		
Sampling Date		2019/07/19 13:45			2019/07/19 13:20			2019/07/21 08:05		
COC Number		96931			96931			96931		
	UNITS	19-AWAR-S19-Li	RDL	QC Batch	19-AWAR-S20-Li	RDL	QC Batch	19-REF1-S1-Sd	RDL	QC Batch
Metals										
Antimony (Sb)	ug/g	<0.05	0.05	6267071	<0.05	0.05	6266648	<0.05	0.05	6267071
Arsenic (As)	ug/g	2.4	0.1	6267071	1.3	0.1	6266648	0.3	0.1	6267071
Barium (Ba)	ug/g	52.1	0.3	6267071	25.0	0.3	6266648	6.1	0.3	6267071
Beryllium (Be)	ug/g	0.06	0.05	6267071	<0.05	0.05	6266648	<0.05	0.05	6267071
Bismuth (Bi)	ug/g	0.07	0.05	6267071	<0.05	0.05	6266648	<0.05	0.05	6267071
Boron (B)	ug/g	1.8	0.5	6267071	1.0	0.5	6266648	1.9	0.5	6267071
Cadmium (Cd)	ug/g	0.10	0.01	6267071	0.06	0.01	6266648	0.01	0.01	6267071
Calcium (Ca)	ug/g	8090	50	6267071	15600	50	6266648	2810	50	6267071
Chromium (Cr)	ug/g	31.4	0.3	6267071	60	3	6266648	<0.3	0.3	6267071
Cobalt (Co)	ug/g	4.56	0.005	6267071	2.54	0.005	6266648	0.077	0.005	6267071
Copper (Cu)	ug/g	16.4	0.5	6267071	8.4	0.5	6266648	2.0	0.5	6267071
Iron (Fe)	ug/g	8060	30	6267071	3620	3	6266648	60	3	6267071
Lead (Pb)	ug/g	2.53	0.03	6267071	1.52	0.03	6266648	0.07	0.03	6267071
Magnesium (Mg)	ug/g	3660	100	6267071	1890	100	6266648	263	100	6267071
Manganese (Mn)	ug/g	131	0.3	6267071	62.5	0.3	6266648	107	0.3	6267071
Molybdenum (Mo)	ug/g	0.21	0.05	6267071	5.69	0.05	6266648	0.17	0.05	6267071
Nickel (Ni)	ug/g	12.2	0.05	6267071	33.7	0.05	6266648	0.51	0.05	6267071
Phosphorus (P)	ug/g	415	50	6267071	448	50	6266648	510	50	6267071
Potassium (K)	ug/g	1400	100	6267071	2120	100	6266648	4350	100	6267071
Selenium (Se)	ug/g	0.2	0.1	6267071	<0.1	0.1	6266648	<0.1	0.1	6267071
Silver (Ag)	ug/g	<0.05	0.05	6267071	<0.05	0.05	6266648	<0.05	0.05	6267071
Sodium (Na)	ug/g	65	50	6267071	141	50	6266648	<50	50	6267071
Strontium (Sr)	ug/g	29.3	0.5	6267071	34.3	0.5	6266648	12.4	0.5	6267071
Thallium (Tl)	ug/g	0.056	0.003	6267071	0.029	0.003	6266648	<0.003	0.003	6267071
Tin (Sn)	ug/g	<0.3	0.3	6267071	<0.3	0.3	6266648	<0.3	0.3	6267071
Titanium (Ti)	ug/g	342	30	6267071	154	5	6266648	1.2	0.5	6267071
Uranium (U)	ug/g	0.255	0.005	6267071	0.143	0.005	6266648	0.014	0.005	6267071
Vanadium (V)	ug/g	13.1	0.05	6267071	6.19	0.05	6266648	<0.05	0.05	6267071
Zinc (Zn)	ug/g	25	2	6267071	20	2	6266648	16	2	6267071

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJY000	KJY002	KJY004	KJY006			KJY008		
Sampling Date		2019/07/21 20:35	2019/07/21 09:20	2019/07/21 10:10	2019/07/21 22:40			2019/07/21 11:50		
COC Number		96931	96931	96931	96931			96931		
	UNITS	19-REF1-S2-Li	19-REF1-S3-LT	19-REF1-S4-Br	19-REF1-S5-Sd	RDL	QC Batch	19-REF2-S1-LT	RDL	QC Batch
Metals										
Antimony (Sb)	ug/g	<0.05	<0.05	<0.05	<0.05	0.05	6266652	<0.05	0.05	6267071
Arsenic (As)	ug/g	0.4	<0.1	<0.1	0.4	0.1	6266652	<0.1	0.1	6267071
Barium (Ba)	ug/g	9.2	30.8	5.8	6.6	0.3	6266652	31.0	0.3	6267071
Beryllium (Be)	ug/g	<0.05	<0.05	<0.05	<0.05	0.05	6266652	<0.05	0.05	6267071
Bismuth (Bi)	ug/g	<0.05	<0.05	<0.05	<0.05	0.05	6266652	<0.05	0.05	6267071
Boron (B)	ug/g	0.7	7.1	7.8	1.4	0.5	6266652	7.5	0.5	6267071
Cadmium (Cd)	ug/g	0.07	<0.01	0.01	<0.01	0.01	6266652	<0.01	0.01	6267071
Calcium (Ca)	ug/g	2100	2170	1990	2030	50	6266652	2140	50	6267071
Chromium (Cr)	ug/g	<0.3	<0.3	<0.3	0.6	0.3	6266652	<0.3	0.3	6267071
Cobalt (Co)	ug/g	0.374	0.057	0.076	0.110	0.005	6266652	0.021	0.005	6267071
Copper (Cu)	ug/g	1.3	1.9	2.6	2.3	0.5	6266652	2.2	0.5	6267071
Iron (Fe)	ug/g	129	15	14	106	3	6266652	17	3	6267071
Lead (Pb)	ug/g	1.54	<0.03	<0.03	0.05	0.03	6266652	<0.03	0.03	6267071
Magnesium (Mg)	ug/g	406	576	824	327	100	6266652	523	100	6267071
Manganese (Mn)	ug/g	86.1	448	54.8	115	0.3	6266652	524	2	6267071
Molybdenum (Mo)	ug/g	<0.05	<0.05	<0.05	0.26	0.05	6266652	<0.05	0.05	6267071
Nickel (Ni)	ug/g	0.56	0.42	1.38	0.77	0.05	6266652	0.37	0.05	6267071
Phosphorus (P)	ug/g	254	519	676	582	50	6266652	534	50	6267071
Potassium (K)	ug/g	1040	2440	3100	5410	100	6266652	2490	100	6267071
Selenium (Se)	ug/g	0.1	<0.1	<0.1	<0.1	0.1	6266652	<0.1	0.1	6267071
Silver (Ag)	ug/g	<0.05	<0.05	<0.05	<0.05	0.05	6266652	<0.05	0.05	6267071
Sodium (Na)	ug/g	<50	<50	<50	<50	50	6266652	<50	50	6267071
Strontium (Sr)	ug/g	7.5	2.4	6.2	8.8	0.5	6266652	2.8	0.5	6267071
Thallium (Tl)	ug/g	<0.003	0.087	<0.003	<0.003	0.003	6266652	0.128	0.003	6267071
Tin (Sn)	ug/g	<0.3	<0.3	<0.3	<0.3	0.3	6266652	<0.3	0.3	6267071
Titanium (Ti)	ug/g	3.4	0.8	0.9	0.9	0.5	6266652	1.0	0.5	6267071
Uranium (U)	ug/g	0.748	<0.005	<0.005	0.005	0.005	6266652	<0.005	0.005	6267071
Vanadium (V)	ug/g	0.15	<0.05	<0.05	<0.05	0.05	6266652	<0.05	0.05	6267071
Zinc (Zn)	ug/g	14	13	91	12	2	6266652	15	2	6267071

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJY008			KJY010		KJY012		
Sampling Date		2019/07/21 11:50			2019/07/21 00:30		2019/07/21 13:15		
COC Number		96931			96931		96931		
	UNITS	19-REF2-S1-LT Lab-Dup	RDL	QC Batch	19-REF2-S2-Br	QC Batch	19-REF2-S3-Li	RDL	QC Batch
Metals									
Antimony (Sb)	ug/g	<0.05	0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Arsenic (As)	ug/g	<0.1	0.1	6267071	<0.1	6266652	0.2	0.1	6266648
Barium (Ba)	ug/g	30.6	0.3	6267071	15.0	6266652	8.8	0.3	6266648
Beryllium (Be)	ug/g	<0.05	0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Bismuth (Bi)	ug/g	<0.05	0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Boron (B)	ug/g	7.7	0.5	6267071	3.7	6266652	1.0	0.5	6266648
Cadmium (Cd)	ug/g	<0.01	0.01	6267071	0.06	6266652	0.07	0.01	6266648
Calcium (Ca)	ug/g	2180	50	6267071	1470	6266652	1210	50	6266648
Chromium (Cr)	ug/g	<0.3	0.3	6267071	<0.3	6266652	<0.3	0.3	6266648
Cobalt (Co)	ug/g	0.022	0.005	6267071	0.337	6266652	0.234	0.005	6266648
Copper (Cu)	ug/g	2.2	0.5	6267071	2.8	6266652	1.7	0.5	6266648
Iron (Fe)	ug/g	17	3	6267071	21	6266652	88	3	6266648
Lead (Pb)	ug/g	<0.03	0.03	6267071	<0.03	6266652	0.34	0.03	6266648
Magnesium (Mg)	ug/g	525	100	6267071	847	6266652	402	100	6266648
Manganese (Mn)	ug/g	553	2	6267071	445	6266652	222	0.3	6266648
Molybdenum (Mo)	ug/g	<0.05	0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Nickel (Ni)	ug/g	0.37	0.05	6267071	2.04	6266652	0.72	0.05	6266648
Phosphorus (P)	ug/g	543	50	6267071	663	6266652	338	50	6266648
Potassium (K)	ug/g	2550	100	6267071	2440	6266652	1290	100	6266648
Selenium (Se)	ug/g	<0.1	0.1	6267071	<0.1	6266652	0.1	0.1	6266648
Silver (Ag)	ug/g	<0.05	0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Sodium (Na)	ug/g	<50	50	6267071	<50	6266652	<50	50	6266648
Strontium (Sr)	ug/g	2.8	0.5	6267071	4.4	6266652	3.9	0.5	6266648
Thallium (Tl)	ug/g	0.130	0.003	6267071	<0.003	6266652	<0.003	0.003	6266648
Tin (Sn)	ug/g	<0.3	0.3	6267071	<0.3	6266652	<0.3	0.3	6266648
Titanium (Ti)	ug/g	0.9	0.5	6267071	0.8	6266652	2.8	0.5	6266648
Uranium (U)	ug/g	<0.005	0.005	6267071	<0.005	6266652	0.007	0.005	6266648
Vanadium (V)	ug/g	<0.05	0.05	6267071	<0.05	6266652	0.13	0.05	6266648
Zinc (Zn)	ug/g	15	2	6267071	63	6266652	24	2	6266648

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

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJY014	KJY016		KJY018		KJY020		
Sampling Date		2019/07/21 13:35	2019/07/21 14:05		2019/07/21 16:35		2019/07/21 16:45		
COC Number		96931	96931		96931		96931		
	UNITS	19-REF2-S4-Sd	19-REF2-S5-Br	QC Batch	19-REF3-S1-Li	QC Batch	19-REF3-S2-Li	RDL	QC Batch
Metals									
Antimony (Sb)	ug/g	<0.05	<0.05	6267071	<0.05	6266648	<0.05	0.05	6267071
Arsenic (As)	ug/g	<0.1	<0.1	6267071	0.1	6266648	0.1	0.1	6267071
Barium (Ba)	ug/g	16.0	17.5	6267071	3.6	6266648	7.5	0.3	6267071
Beryllium (Be)	ug/g	<0.05	<0.05	6267071	<0.05	6266648	<0.05	0.05	6267071
Bismuth (Bi)	ug/g	<0.05	<0.05	6267071	<0.05	6266648	<0.05	0.05	6267071
Boron (B)	ug/g	2.5	3.5	6267071	<0.5	6266648	<0.5	0.5	6267071
Cadmium (Cd)	ug/g	0.02	0.05	6267071	0.11	6266648	0.08	0.01	6267071
Calcium (Ca)	ug/g	2650	1510	6267071	641	6266648	711	50	6267071
Chromium (Cr)	ug/g	0.6	<0.3	6267071	1.2	6266648	1.8	0.3	6267071
Cobalt (Co)	ug/g	0.158	0.402	6267071	0.076	6266648	0.170	0.005	6267071
Copper (Cu)	ug/g	4.6	2.7	6267071	1.1	6266648	1.1	0.5	6267071
Iron (Fe)	ug/g	91	25	6267071	98	6266648	183	3	6267071
Lead (Pb)	ug/g	0.03	<0.03	6267071	0.46	6266648	0.70	0.03	6267071
Magnesium (Mg)	ug/g	429	885	6267071	312	6266648	365	100	6267071
Manganese (Mn)	ug/g	57.0	466	6267071	40.2	6266648	54.3	0.3	6267071
Molybdenum (Mo)	ug/g	0.51	<0.05	6267071	0.13	6266648	0.18	0.05	6267071
Nickel (Ni)	ug/g	1.74	2.92	6267071	0.84	6266648	1.36	0.05	6267071
Phosphorus (P)	ug/g	397	841	6267071	352	6266648	291	50	6267071
Potassium (K)	ug/g	3860	2880	6267071	1180	6266648	1220	100	6267071
Selenium (Se)	ug/g	<0.1	<0.1	6267071	0.1	6266648	0.2	0.1	6267071
Silver (Ag)	ug/g	<0.05	<0.05	6267071	<0.05	6266648	<0.05	0.05	6267071
Sodium (Na)	ug/g	<50	<50	6267071	82	6266648	<50	50	6267071
Strontium (Sr)	ug/g	9.1	3.9	6267071	3.0	6266648	3.6	0.5	6267071
Thallium (Tl)	ug/g	<0.003	<0.003	6267071	0.005	6266648	0.008	0.003	6267071
Tin (Sn)	ug/g	<0.3	<0.3	6267071	<0.3	6266648	<0.3	0.3	6267071
Titanium (Ti)	ug/g	1.1	1.0	6267071	3.3	6266648	5.9	0.5	6267071
Uranium (U)	ug/g	<0.005	<0.005	6267071	0.008	6266648	0.013	0.005	6267071
Vanadium (V)	ug/g	0.06	<0.05	6267071	0.15	6266648	0.26	0.05	6267071
Zinc (Zn)	ug/g	13	21	6267071	8	6266648	12	2	6267071

RDL = Reportable Detection Limit
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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJY022		KJY024		KJY026		KJY028		
Sampling Date		2019/07/21 16:05		2019/07/21 15:30		2019/07/21 15:40		2019/07/22 13:55		
COC Number		96931		96931		96931		96931		
	UNITS	19-REF3-S3-Li	QC Batch	19-REF3-S4-Li	QC Batch	19-REF3-S5-Sd	QC Batch	19-TF-S1-Cr	RDL	QC Batch
Metals										
Antimony (Sb)	ug/g	<0.05	6266648	<0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Arsenic (As)	ug/g	0.1	6266648	0.7	6267071	<0.1	6266652	0.4	0.1	6266648
Barium (Ba)	ug/g	7.3	6266648	15.1	6267071	7.3	6266652	1.5	0.3	6266648
Beryllium (Be)	ug/g	<0.05	6266648	<0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Bismuth (Bi)	ug/g	<0.05	6266648	<0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Boron (B)	ug/g	<0.5	6266648	1.1	6267071	3.0	6266652	2.3	0.5	6266648
Cadmium (Cd)	ug/g	0.06	6266648	0.12	6267071	0.03	6266652	<0.01	0.01	6266648
Calcium (Ca)	ug/g	1950	6266648	2320	6267071	2070	6266652	291	50	6266648
Chromium (Cr)	ug/g	0.6	6266648	3.4	6267071	0.5	6266652	<0.3	0.3	6266648
Cobalt (Co)	ug/g	0.096	6266648	0.268	6267071	0.203	6266652	0.006	0.005	6266648
Copper (Cu)	ug/g	1.0	6266648	2.0	6267071	4.9	6266652	2.1	0.5	6266648
Iron (Fe)	ug/g	149	6266648	516	6267071	54	6266652	10	3	6266648
Lead (Pb)	ug/g	0.77	6266648	1.07	6267071	0.03	6266652	<0.03	0.03	6266648
Magnesium (Mg)	ug/g	436	6266648	588	6267071	369	6266652	133	100	6266648
Manganese (Mn)	ug/g	37.9	6266648	42.8	6267071	87.7	6266652	7.2	0.3	6266648
Molybdenum (Mo)	ug/g	<0.05	6266648	0.33	6267071	0.59	6266652	<0.05	0.05	6266648
Nickel (Ni)	ug/g	0.30	6266648	2.14	6267071	2.54	6266652	0.10	0.05	6266648
Phosphorus (P)	ug/g	326	6266648	657	6267071	480	6266652	236	50	6266648
Potassium (K)	ug/g	1250	6266648	2030	6267071	5650	6266652	1930	100	6266648
Selenium (Se)	ug/g	0.1	6266648	0.1	6267071	<0.1	6266652	<0.1	0.1	6266648
Silver (Ag)	ug/g	<0.05	6266648	<0.05	6267071	<0.05	6266652	<0.05	0.05	6266648
Sodium (Na)	ug/g	168	6266648	129	6267071	121	6266652	<50	50	6266648
Strontium (Sr)	ug/g	7.1	6266648	8.1	6267071	8.5	6266652	<0.5	0.5	6266648
Thallium (Tl)	ug/g	0.007	6266648	0.010	6267071	<0.003	6266652	<0.003	0.003	6266648
Tin (Sn)	ug/g	<0.3	6266648	<0.3	6267071	<0.3	6266652	<0.3	0.3	6266648
Titanium (Ti)	ug/g	5.3	6266648	19.7	6267071	1.2	6266652	<0.5	0.5	6266648
Uranium (U)	ug/g	0.010	6266648	0.060	6267071	0.038	6266652	<0.005	0.005	6266648
Vanadium (V)	ug/g	0.24	6266648	0.75	6267071	0.05	6266652	<0.05	0.05	6266648
Zinc (Zn)	ug/g	14	6266648	29	6267071	17	6266652	3	2	6266648

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJY030		KJY032			KJY034		
Sampling Date		2019/07/22 13:20		2019/07/22 23:45			2019/07/22 15:05		
COC Number		96931		96931			96931		
	UNITS	19-TF-S2-Li	QC Batch	19-TF-S3-Sd	RDL	QC Batch	19-TF-S4-LT	RDL	QC Batch
Metals									
Antimony (Sb)	ug/g	<0.05	6266648	<0.05	0.05	6267071	<0.05	0.05	6266652
Arsenic (As)	ug/g	15.6	6266648	12.0	0.1	6267071	4.2	0.1	6266652
Barium (Ba)	ug/g	24.1	6266648	13.4	0.3	6267071	41.3	0.3	6266652
Beryllium (Be)	ug/g	<0.05	6266648	<0.05	0.05	6267071	<0.05	0.05	6266652
Bismuth (Bi)	ug/g	<0.05	6266648	<0.05	0.05	6267071	<0.05	0.05	6266652
Boron (B)	ug/g	1.8	6266648	2.5	0.5	6267071	9.0	0.5	6266652
Cadmium (Cd)	ug/g	0.13	6266648	0.01	0.01	6267071	<0.01	0.01	6266652
Calcium (Ca)	ug/g	11900	6266648	3130	50	6267071	2910	50	6266652
Chromium (Cr)	ug/g	1.1	6266648	1.3	0.3	6267071	0.4	0.3	6266652
Cobalt (Co)	ug/g	0.379	6266648	0.073	0.005	6267071	0.058	0.005	6266652
Copper (Cu)	ug/g	2.5	6266648	3.9	0.5	6267071	2.2	0.5	6266652
Iron (Fe)	ug/g	599	6266648	176	3	6267071	111	3	6266652
Lead (Pb)	ug/g	2.66	6266648	0.90	0.03	6267071	0.35	0.03	6266652
Magnesium (Mg)	ug/g	736	6266648	351	100	6267071	601	100	6266652
Manganese (Mn)	ug/g	67.7	6266648	55.4	0.3	6267071	776	2	6266652
Molybdenum (Mo)	ug/g	0.14	6266648	0.52	0.05	6267071	0.06	0.05	6266652
Nickel (Ni)	ug/g	1.18	6266648	1.13	0.05	6267071	0.43	0.05	6266652
Phosphorus (P)	ug/g	270	6266648	388	50	6267071	471	50	6266652
Potassium (K)	ug/g	989	6266648	5560	100	6267071	2250	100	6266652
Selenium (Se)	ug/g	0.1	6266648	<0.1	0.1	6267071	<0.1	0.1	6266652
Silver (Ag)	ug/g	<0.05	6266648	<0.05	0.05	6267071	<0.05	0.05	6266652
Sodium (Na)	ug/g	105	6266648	<50	50	6267071	<50	50	6266652
Strontium (Sr)	ug/g	36.2	6266648	15.2	0.5	6267071	6.2	0.5	6266652
Thallium (Tl)	ug/g	0.006	6266648	<0.003	0.003	6267071	0.155	0.003	6266652
Tin (Sn)	ug/g	<0.3	6266648	<0.3	0.3	6267071	<0.3	0.3	6266652
Titanium (Ti)	ug/g	12.3	6266648	2.0	0.5	6267071	2.0	0.5	6266652
Uranium (U)	ug/g	0.039	6266648	0.014	0.005	6267071	<0.005	0.005	6266652
Vanadium (V)	ug/g	0.66	6266648	0.10	0.05	6267071	0.09	0.05	6266652
Zinc (Zn)	ug/g	31	6266648	12	2	6267071	19	2	6266652

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJY036	KJY038	KJY040	KJY040	KJY042	KJY046		
Sampling Date		2019/07/22 11:15	2019/07/22 10:30	2019/07/22 08:30	2019/07/22 08:30	2019/07/22 09:40	2019/07/23 00:25		
COC Number		96931	96931	96931	96931	96931	96931		
	UNITS	19-TF-S5-Li	19-TF-S6-LT	19-TF-S11-Br	19-TF-S11-Br Lab-Dup	19-TF-S12-Sd	19-WRSA-S1-LT	RDL	QC Batch
Metals									
Antimony (Sb)	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	6266648
Arsenic (As)	ug/g	24.4	11.8	7.1	7.3	4.8	14.1	0.1	6266648
Barium (Ba)	ug/g	12.4	25.6	8.4	8.5	16.7	27.5	0.3	6266648
Beryllium (Be)	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	6266648
Bismuth (Bi)	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	6266648
Boron (B)	ug/g	1.6	10.4	5.8	5.6	2.4	8.7	0.5	6266648
Cadmium (Cd)	ug/g	0.10	<0.01	0.02	0.02	0.01	<0.01	0.01	6266648
Calcium (Ca)	ug/g	2550	2380	1630	1600	2740	2890	50	6266648
Chromium (Cr)	ug/g	1.1	0.4	<0.3	<0.3	0.4	0.8	0.3	6266648
Cobalt (Co)	ug/g	0.331	0.070	0.085	0.085	0.116	0.104	0.005	6266648
Copper (Cu)	ug/g	3.6	2.7	3.1	3.1	3.3	2.3	0.5	6266648
Iron (Fe)	ug/g	670	161	108	108	185	266	3	6266648
Lead (Pb)	ug/g	3.89	0.83	0.34	0.38	0.62	0.97	0.03	6266648
Magnesium (Mg)	ug/g	573	578	939	940	260	711	100	6266648
Manganese (Mn)	ug/g	116	247	73.9	71.6	81.7	356	0.3	6266648
Molybdenum (Mo)	ug/g	0.13	0.05	<0.05	<0.05	0.43	0.10	0.05	6266648
Nickel (Ni)	ug/g	1.23	0.47	1.50	1.50	0.67	0.46	0.05	6266648
Phosphorus (P)	ug/g	575	431	583	541	400	465	50	6266648
Potassium (K)	ug/g	1500	2690	2540	2500	5480	2620	100	6266648
Selenium (Se)	ug/g	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	6266648
Silver (Ag)	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	6266648
Sodium (Na)	ug/g	164	<50	<50	<50	<50	<50	50	6266648
Strontium (Sr)	ug/g	10.4	3.7	6.4	6.3	25.2	5.9	0.5	6266648
Thallium (Tl)	ug/g	0.004	0.120	<0.003	<0.003	<0.003	0.025	0.003	6266648
Tin (Sn)	ug/g	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.3	6266648
Titanium (Ti)	ug/g	7.8	1.8	1.6	1.8	2.8	2.9	0.5	6266648
Uranium (U)	ug/g	0.026	<0.005	<0.005	<0.005	0.011	<0.005	0.005	6266648
Vanadium (V)	ug/g	0.52	0.10	0.08	0.08	0.15	0.22	0.05	6266648
Zinc (Zn)	ug/g	20	15	54	54	17	15	2	6266648

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

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJY048			KJY050			KJY052		
Sampling Date		2019/07/23 10:35			2019/07/23 09:30			2019/07/23 10:00		
COC Number		96931			96931			96931		
	UNITS	19-WRSA-S2-Sd	RDL	QC Batch	19-WRSA-S5-Li	RDL	QC Batch	19-WRSA-S6-Br	RDL	QC Batch
Metals										
Antimony (Sb)	ug/g	<0.05	0.05	6267071	0.06	0.05	6266652	<0.05	0.05	6266648
Arsenic (As)	ug/g	12.9	0.1	6267071	99.0	0.5	6266652	4.3	0.1	6266648
Barium (Ba)	ug/g	13.6	0.3	6267071	13.6	0.3	6266652	9.7	0.3	6266648
Beryllium (Be)	ug/g	<0.05	0.05	6267071	<0.05	0.05	6266652	<0.05	0.05	6266648
Bismuth (Bi)	ug/g	<0.05	0.05	6267071	<0.05	0.05	6266652	<0.05	0.05	6266648
Boron (B)	ug/g	2.7	0.5	6267071	1.7	0.5	6266652	4.0	0.5	6266648
Cadmium (Cd)	ug/g	<0.01	0.01	6267071	0.11	0.01	6266652	0.03	0.01	6266648
Calcium (Ca)	ug/g	3310	50	6267071	7440	50	6266652	1720	50	6266648
Chromium (Cr)	ug/g	0.5	0.3	6267071	3.7	0.3	6266652	<0.3	0.3	6266648
Cobalt (Co)	ug/g	0.182	0.005	6267071	1.08	0.005	6266652	0.439	0.005	6266648
Copper (Cu)	ug/g	3.6	0.5	6267071	6.5	0.5	6266652	2.7	0.5	6266648
Iron (Fe)	ug/g	275	3	6267071	2360	3	6266652	141	3	6266648
Lead (Pb)	ug/g	1.10	0.03	6267071	6.35	0.03	6266652	0.30	0.03	6266648
Magnesium (Mg)	ug/g	419	100	6267071	993	100	6266652	956	100	6266648
Manganese (Mn)	ug/g	33.5	0.3	6267071	68.1	0.3	6266652	170	0.3	6266648
Molybdenum (Mo)	ug/g	0.35	0.05	6267071	0.35	0.05	6266652	<0.05	0.05	6266648
Nickel (Ni)	ug/g	1.58	0.05	6267071	3.37	0.05	6266652	1.85	0.05	6266648
Phosphorus (P)	ug/g	374	50	6267071	392	50	6266652	818	50	6266648
Potassium (K)	ug/g	5580	100	6267071	1090	100	6266652	3070	100	6266648
Selenium (Se)	ug/g	<0.1	0.1	6267071	0.1	0.1	6266652	<0.1	0.1	6266648
Silver (Ag)	ug/g	<0.05	0.05	6267071	<0.05	0.05	6266652	<0.05	0.05	6266648
Sodium (Na)	ug/g	<50	50	6267071	77	50	6266652	<50	50	6266648
Strontium (Sr)	ug/g	16.7	0.5	6267071	29.0	0.5	6266652	5.7	0.5	6266648
Thallium (Tl)	ug/g	<0.003	0.003	6267071	0.010	0.003	6266652	<0.003	0.003	6266648
Tin (Sn)	ug/g	<0.3	0.3	6267071	<0.3	0.3	6266652	<0.3	0.3	6266648
Titanium (Ti)	ug/g	3.7	0.5	6267071	38	3	6266652	2.4	0.5	6266648
Uranium (U)	ug/g	0.010	0.005	6267071	0.083	0.005	6266652	<0.005	0.005	6266648
Vanadium (V)	ug/g	0.26	0.05	6267071	2.23	0.05	6266652	0.13	0.05	6266648
Zinc (Zn)	ug/g	10	2	6267071	26	2	6266652	67	2	6266648

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJY054			KJY056		KJY058	KJY060		
Sampling Date		2019/07/23 08:25			2019/07/24 08:00		2019/07/23 14:50	2019/07/23 14:00		
COC Number		96931			96931		96931	96931		
	UNITS	19-WRSA-S7-Li	RDL	QC Batch	19-WRSA-S8-Br	QC Batch	19-WRSA-S9-Cr	19-WRSA-S10-Cr	RDL	QC Batch
Metals										
Antimony (Sb)	ug/g	<0.05	0.05	6266648	<0.05	6266652	<0.05	<0.05	0.05	6266648
Arsenic (As)	ug/g	8.1	0.1	6266648	0.3	6266652	<0.1	<0.1	0.1	6266648
Barium (Ba)	ug/g	20.4	0.3	6266648	10.7	6266652	1.2	1.2	0.3	6266648
Beryllium (Be)	ug/g	<0.05	0.05	6266648	<0.05	6266652	<0.05	<0.05	0.05	6266648
Bismuth (Bi)	ug/g	0.07	0.05	6266648	<0.05	6266652	<0.05	<0.05	0.05	6266648
Boron (B)	ug/g	2.0	0.5	6266648	4.8	6266652	1.4	1.2	0.5	6266648
Cadmium (Cd)	ug/g	0.09	0.01	6266648	0.02	6266652	<0.01	<0.01	0.01	6266648
Calcium (Ca)	ug/g	9220	50	6266648	1820	6266652	223	242	50	6266648
Chromium (Cr)	ug/g	7.8	0.3	6266648	<0.3	6266652	<0.3	<0.3	0.3	6266648
Cobalt (Co)	ug/g	1.37	0.005	6266648	0.170	6266652	0.034	0.017	0.005	6266648
Copper (Cu)	ug/g	5.6	0.5	6266648	2.6	6266652	1.4	1.5	0.5	6266648
Iron (Fe)	ug/g	2960	3	6266648	97	6266652	18	23	3	6266648
Lead (Pb)	ug/g	2.62	0.03	6266648	0.07	6266652	<0.03	<0.03	0.03	6266648
Magnesium (Mg)	ug/g	1490	100	6266648	895	6266652	128	129	100	6266648
Manganese (Mn)	ug/g	91.5	0.3	6266648	55.7	6266652	11.8	9.4	0.3	6266648
Molybdenum (Mo)	ug/g	0.40	0.05	6266648	<0.05	6266652	<0.05	<0.05	0.05	6266648
Nickel (Ni)	ug/g	4.29	0.05	6266648	1.67	6266652	0.35	0.19	0.05	6266648
Phosphorus (P)	ug/g	324	50	6266648	646	6266652	259	247	50	6266648
Potassium (K)	ug/g	1040	100	6266648	2730	6266652	1760	1770	100	6266648
Selenium (Se)	ug/g	0.1	0.1	6266648	<0.1	6266652	<0.1	<0.1	0.1	6266648
Silver (Ag)	ug/g	<0.05	0.05	6266648	<0.05	6266652	<0.05	<0.05	0.05	6266648
Sodium (Na)	ug/g	341	50	6266648	192	6266652	<50	<50	50	6266648
Strontium (Sr)	ug/g	52.3	0.5	6266648	9.5	6266652	0.6	0.6	0.5	6266648
Thallium (Tl)	ug/g	0.013	0.003	6266648	<0.003	6266652	<0.003	<0.003	0.003	6266648
Tin (Sn)	ug/g	<0.3	0.3	6266648	<0.3	6266652	<0.3	<0.3	0.3	6266648
Titanium (Ti)	ug/g	52	3	6266648	2.2	6266652	0.7	0.8	0.5	6266648
Uranium (U)	ug/g	0.076	0.005	6266648	<0.005	6266652	<0.005	<0.005	0.005	6266648
Vanadium (V)	ug/g	3.95	0.05	6266648	0.12	6266652	<0.05	<0.05	0.05	6266648
Zinc (Zn)	ug/g	28	2	6266648	47	6266652	2	2	2	6266648

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ICP/MS (TISSUE)

BV Labs ID		KJY062		KJY064			KJY066		
Sampling Date		2019/07/23 08:55		2019/07/23 13:15			2019/07/23 07:55		
COC Number		96931		96931			96931		
	UNITS	19-WRSA-S11-Br	RDL	19-WRSA-S12-Li	RDL	QC Batch	19-TF-S14-Li	RDL	QC Batch
Metals									
Antimony (Sb)	ug/g	<0.05	0.05	<0.05	0.05	6267071	<0.05	0.05	6266652
Arsenic (As)	ug/g	6.0	0.1	92.8	0.5	6267071	1.6	0.1	6266652
Barium (Ba)	ug/g	11.6	0.3	12.4	0.3	6267071	8.1	0.3	6266652
Beryllium (Be)	ug/g	<0.05	0.05	<0.05	0.05	6267071	<0.05	0.05	6266652
Bismuth (Bi)	ug/g	<0.05	0.05	<0.05	0.05	6267071	<0.05	0.05	6266652
Boron (B)	ug/g	8.1	0.5	1.1	0.5	6267071	<0.5	0.5	6266652
Cadmium (Cd)	ug/g	0.02	0.01	0.08	0.01	6267071	0.05	0.01	6266652
Calcium (Ca)	ug/g	2220	50	3970	50	6267071	2060	50	6266652
Chromium (Cr)	ug/g	0.6	0.3	5.1	0.3	6267071	14.2	0.3	6266652
Cobalt (Co)	ug/g	0.225	0.005	0.604	0.005	6267071	0.496	0.005	6266652
Copper (Cu)	ug/g	3.0	0.5	5.4	0.5	6267071	2.0	0.5	6266652
Iron (Fe)	ug/g	230	3	1560	3	6267071	465	3	6266652
Lead (Pb)	ug/g	0.31	0.03	15.6	0.03	6267071	0.70	0.03	6266652
Magnesium (Mg)	ug/g	950	100	623	100	6267071	412	100	6266652
Manganese (Mn)	ug/g	91.4	0.3	69.8	0.3	6267071	102	0.3	6266652
Molybdenum (Mo)	ug/g	0.05	0.05	0.25	0.05	6267071	1.76	0.05	6266652
Nickel (Ni)	ug/g	2.92	0.05	3.32	0.05	6267071	9.64	0.05	6266652
Phosphorus (P)	ug/g	641	50	291	50	6267071	290	50	6266652
Potassium (K)	ug/g	2850	100	1140	100	6267071	1120	100	6266652
Selenium (Se)	ug/g	<0.1	0.1	0.1	0.1	6267071	<0.1	0.1	6266652
Silver (Ag)	ug/g	<0.05	0.05	<0.05	0.05	6267071	<0.05	0.05	6266652
Sodium (Na)	ug/g	<50	50	72	50	6267071	<50	50	6266652
Strontium (Sr)	ug/g	7.8	0.5	15.9	0.5	6267071	6.1	0.5	6266652
Thallium (Tl)	ug/g	<0.003	0.003	0.007	0.003	6267071	0.003	0.003	6266652
Tin (Sn)	ug/g	<0.3	0.3	<0.3	0.3	6267071	<0.3	0.3	6266652
Titanium (Ti)	ug/g	4.1	0.5	15.0	0.5	6267071	8.6	0.5	6266652
Uranium (U)	ug/g	0.006	0.005	0.042	0.005	6267071	0.021	0.005	6266652
Vanadium (V)	ug/g	0.22	0.05	0.89	0.05	6267071	0.51	0.05	6266652
Zinc (Zn)	ug/g	79	2	21	2	6267071	14	2	6266652

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		KJX958	KJX960		KJX962	KJX964		
Sampling Date		2019/07/20 17:25	2019/07/20 17:00		2019/07/20 16:30	2019/07/20 16:05		
COC Number		96931	96931		96931	96931		
	UNITS	19-AWAR-S1-Sd	19-AWAR-S2-Li	QC Batch	19-AWAR-S3-Li	19-AWAR-S4-Br	RDL	QC Batch
Metals								
Mercury (Hg)	ug/g	<0.01	0.06	6267575	0.14	<0.01	0.01	6265404

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJX966	KJX968	KJX970	KJX972		KJX974		
Sampling Date		2019/07/20 15:45	2019/07/20 15:10	2019/07/20 14:45	2019/07/20 14:05		2019/07/20 13:35		
COC Number		96931	96931	96931	96931		96931		
	UNITS	19-AWAR-S5-Sd	19-AWAR-S6-Li	19-AWAR-S7-Sd	19-AWAR-S8-Br	QC Batch	19-AWAR-S9-Lt	RDL	QC Batch
Metals									
Mercury (Hg)	ug/g	<0.01	0.05	0.01	<0.01	6267575	<0.01	0.01	6265319

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJX976	KJX976		KJX978		KJX980		
Sampling Date		2019/07/20 00:55	2019/07/20 00:55		2019/07/20 00:10		2019/07/20 23:35		
COC Number		96931	96931		96931		96931		
	UNITS	19-AWAR-S10-Li	19-AWAR-S10-Li Lab-Dup	QC Batch	19-AWAR-S11-Li	QC Batch	19-AWAR-S12-Lt	RDL	QC Batch
Metals									
Mercury (Hg)	ug/g	0.18	0.18	6265319	0.06	6267575	<0.01	0.01	6265404

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

BV Labs ID		KJX982		KJX984		KJX986	KJX988		
Sampling Date		2019/07/19 16:15		2019/07/19 15:35		2019/07/19 15:10	2019/07/19 14:10		
COC Number		96931		96931		96931	96931		
	UNITS	19-AWAR-S13-Li	QC Batch	19-AWAR-S14-Sd	QC Batch	19-AWAR-S15-Sd	19-AWAR-S16-Cr	RDL	QC Batch
Metals									
Mercury (Hg)	ug/g	0.25	6267575	<0.01	6265404	0.02	<0.01	0.01	6265319

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		KJX990		KJX992		KJX994		
Sampling Date		2019/07/19 00:15		2019/07/19 11:45		2019/07/19 13:45		
COC Number		96931		96931		96931		
	UNITS	19-AWAR-S17-Li	QC Batch	19-AWAR-S18-Li	QC Batch	19-AWAR-S19-Li	RDL	QC Batch
Metals								
Mercury (Hg)	ug/g	0.16	6265404	0.11	6265319	0.15	0.01	6267575

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJX996		KJX998		KJY000	KJY002		
Sampling Date		2019/07/19 13:20		2019/07/21 08:05		2019/07/21 20:35	2019/07/21 09:20		
COC Number		96931		96931		96931	96931		
	UNITS	19-AWAR-S20-Li	QC Batch	19-REF1-S1-Sd	QC Batch	19-REF1-S2-Li	19-REF1-S3-LT	RDL	QC Batch
Metals									
Mercury (Hg)	ug/g	0.03	6265319	<0.01	6267575	0.17	<0.01	0.01	6265404

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY004		KJY006	KJY008	KJY008		
Sampling Date		2019/07/21 10:10		2019/07/21 22:40	2019/07/21 11:50	2019/07/21 11:50		
COC Number		96931		96931	96931	96931		
	UNITS	19-REF1-S4-Br	QC Batch	19-REF1-S5-Sd	19-REF2-S1-LT	19-REF2-S1-LT Lab-Dup	RDL	QC Batch
Metals								
Mercury (Hg)	ug/g	<0.01	6265404	<0.01	<0.01	0.01	0.01	6267575

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

BV Labs ID		KJY010		KJY012		KJY014	KJY016		
Sampling Date		2019/07/21 00:30		2019/07/21 13:15		2019/07/21 13:35	2019/07/21 14:05		
COC Number		96931		96931		96931	96931		
	UNITS	19-REF2-S2-Br	QC Batch	19-REF2-S3-Li	QC Batch	19-REF2-S4-Sd	19-REF2-S5-Br	RDL	QC Batch
Metals									
Mercury (Hg)	ug/g	<0.01	6265404	0.11	6265319	<0.01	<0.01	0.01	6267575

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		KJY018		KJY020		KJY022		KJY024		
Sampling Date		2019/07/21 16:35		2019/07/21 16:45		2019/07/21 16:05		2019/07/21 15:30		
COC Number		96931		96931		96931		96931		
	UNITS	19-REF3-S1-Li	QC Batch	19-REF3-S2-Li	QC Batch	19-REF3-S3-Li	QC Batch	19-REF3-S4-Li	RDL	QC Batch
Metals										
Mercury (Hg)	ug/g	0.11	6265319	0.12	6267575	0.10	6265319	0.07	0.01	6267575

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY026		KJY028	KJY030		KJY032		
Sampling Date		2019/07/21 15:40		2019/07/22 13:55	2019/07/22 13:20		2019/07/22 23:45		
COC Number		96931		96931	96931		96931		
	UNITS	19-REF3-S5-Sd	QC Batch	19-TF-S1-Cr	19-TF-S2-Li	QC Batch	19-TF-S3-Sd	RDL	QC Batch
Metals									
Mercury (Hg)	ug/g	<0.01	6265404	<0.01	0.11	6265319	<0.01	0.01	6267575

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY034	KJY034			KJY036		KJY038		
Sampling Date		2019/07/22 15:05	2019/07/22 15:05			2019/07/22 11:15		2019/07/22 10:30		
COC Number		96931	96931			96931		96931		
	UNITS	19-TF-S4-LT	19-TF-S4-LT Lab-Dup	RDL	QC Batch	19-TF-S5-Li	RDL	19-TF-S6-LT	RDL	QC Batch
Metals										
Mercury (Hg)	ug/g	<0.01	0.01	0.01	6265404	0.29	0.05	<0.01	0.01	6265319

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

BV Labs ID		KJY040		KJY042	KJY046		KJY048		
Sampling Date		2019/07/22 08:30		2019/07/22 09:40	2019/07/23 00:25		2019/07/23 10:35		
COC Number		96931		96931	96931		96931		
	UNITS	19-TF-S11-Br	QC Batch	19-TF-S12-Sd	19-WRSA-S1-LT	QC Batch	19-WRSA-S2-Sd	RDL	QC Batch
Metals									
Mercury (Hg)	ug/g	<0.01	6265404	0.01	<0.01	6265319	<0.01	0.01	6267575

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		KJY050		KJY052	KJY054		KJY056		
Sampling Date		2019/07/23 09:30		2019/07/23 10:00	2019/07/23 08:25		2019/07/24 08:00		
COC Number		96931		96931	96931		96931		
	UNITS	19-WRSA-S5-Li	QC Batch	19-WRSA-S6-Br	19-WRSA-S7-Li	QC Batch	19-WRSA-S8-Br	RDL	QC Batch
Metals									
Mercury (Hg)	ug/g	0.09	6265404	<0.01	0.12	6265319	<0.01	0.01	6265404

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY058	KJY060		KJY062	KJY064		
Sampling Date		2019/07/23 14:50	2019/07/23 14:00		2019/07/23 08:55	2019/07/23 13:15		
COC Number		96931	96931		96931	96931		
	UNITS	19-WRSA-S9-Cr	19-WRSA-S10-Cr	QC Batch	19-WRSA-S11-Br	19-WRSA-S12-Li	RDL	QC Batch
Metals								
Mercury (Hg)	ug/g	<0.01	<0.01	6265319	<0.01	0.08	0.01	6267575

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KJY066		
Sampling Date		2019/07/23 07:55		
COC Number		96931		
	UNITS	19-TF-S14-Li	RDL	QC Batch
Metals				
Mercury (Hg)	ug/g	0.07	0.01	6265404

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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TEST SUMMARY

BV Labs ID: KJX957 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S1-s **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/09	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX958 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S1-Sd **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/07	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJX959 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S2-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX960 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S2-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/06	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJX961 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S3-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/09	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

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TEST SUMMARY

BV Labs ID: KJX962 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S3-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJX963 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S4-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX964 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S4-Br **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJX965 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S5-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX965 Dup **Collected:** 2019/07/20
Sample ID: 19-AWAR-S5-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur

BV Labs ID: KJX966 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S5-Sd **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti

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TEST SUMMARY

BV Labs ID: KJX966 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S5-Sd **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	6265147	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJX967 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S6-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX968 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S6-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJX969 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S7-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX970 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S7-Sd **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJX971 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S8-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu

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TEST SUMMARY

BV Labs ID: KJX971 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S8-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX972 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S8-Br **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJX973 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S9-S **Shipped:**
Matrix: Solid **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX973 Dup **Collected:** 2019/07/20
Sample ID: 19-AWAR-S9-S **Shipped:**
Matrix: Solid **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX974 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S9-Lt **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJX975 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S10-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

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TEST SUMMARY

BV Labs ID: KJX976 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S10-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/07	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJX976 Dup **Collected:** 2019/07/20
Sample ID: 19-AWAR-S10-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti

BV Labs ID: KJX977 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S11-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX978 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S11-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/06	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJX979 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S12-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX980 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S12-Lt **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison

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TEST SUMMARY

BV Labs ID: KJX980 **Collected:** 2019/07/20
Sample ID: 19-AWAR-S12-Lt **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJX981 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S13-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX982 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S13-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJX983 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S14-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJX984 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S14-Sd **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

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TEST SUMMARY

BV Labs ID: KJX985 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S15-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX986 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S15-Sd **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJX987 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S16-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJX987 Dup **Collected:** 2019/07/19
Sample ID: 19-AWAR-S16-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJX988 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S16-Cr **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJX989 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S17-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur

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TEST SUMMARY

BV Labs ID: KJX989 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S17-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX990 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S17-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJX991 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S18-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX992 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S18-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJX993 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S19-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJX994 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S19-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti

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TEST SUMMARY

BV Labs ID: KJX994 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S19-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJX995 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S20-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJX995 Dup **Collected:** 2019/07/19
Sample ID: 19-AWAR-S20-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal

BV Labs ID: KJX996 **Collected:** 2019/07/19
Sample ID: 19-AWAR-S20-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJX997 **Collected:** 2019/07/21
Sample ID: 19-REF1-S1-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJX998 **Collected:** 2019/07/21
Sample ID: 19-REF1-S1-Sd **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/06	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

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TEST SUMMARY

BV Labs ID: KJX999 **Collected:** 2019/07/21
Sample ID: 19-REF1-S2-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY000 **Collected:** 2019/07/21
Sample ID: 19-REF1-S2-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/06	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY001 **Collected:** 2019/07/21
Sample ID: 19-REF1-S3-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY002 **Collected:** 2019/07/21
Sample ID: 19-REF1-S3-LT **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/06	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY003 **Collected:** 2019/07/21
Sample ID: 19-REF1-S4-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

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TEST SUMMARY

BV Labs ID: KJY004 **Collected:** 2019/07/21
Sample ID: 19-REF1-S4-Br **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJY005 **Collected:** 2019/07/21
Sample ID: 19-REF1-S5-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJY006 **Collected:** 2019/07/21
Sample ID: 19-REF1-S5-Sd **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY007 **Collected:** 2019/07/21
Sample ID: 19-REF2-S1-S **Shipped:**
Matrix: Solid **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY008 **Collected:** 2019/07/21
Sample ID: 19-REF2-S1-LT **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/06	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

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TEST SUMMARY

BV Labs ID: KJY008 Dup
Sample ID: 19-REF2-S1-LT
Matrix: Tissue

Collected: 2019/07/21
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY009
Sample ID: 19-REF2-S2-S
Matrix: Soil

Collected: 2019/07/21
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259475	2019/08/01	2019/08/01	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY010
Sample ID: 19-REF2-S2-Br
Matrix: Tissue

Collected: 2019/07/21
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJY011
Sample ID: 19-REF2-S3-S
Matrix: Soil

Collected: 2019/07/21
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJY011 Dup
Sample ID: 19-REF2-S3-S
Matrix: Soil

Collected: 2019/07/21
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu

BV Labs ID: KJY012
Sample ID: 19-REF2-S3-Li
Matrix: Tissue

Collected: 2019/07/21
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan

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TEST SUMMARY

BV Labs ID: KJY012 **Collected:** 2019/07/21
Sample ID: 19-REF2-S3-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJY013 **Collected:** 2019/07/21
Sample ID: 19-REF2-S4-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY014 **Collected:** 2019/07/21
Sample ID: 19-REF2-S4-Sd **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY015 **Collected:** 2019/07/21
Sample ID: 19-REF2-S5-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJY016 **Collected:** 2019/07/21
Sample ID: 19-REF2-S5-Br **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJY017 **Collected:** 2019/07/21
Sample ID: 19-REF3-S1-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur

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TEST SUMMARY

BV Labs ID: KJY017 **Collected:** 2019/07/21
Sample ID: 19-REF3-S1-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	6259531	2019/08/01	2019/08/01	Kazzandra Adeva

BV Labs ID: KJY017 Dup **Collected:** 2019/07/21
Sample ID: 19-REF3-S1-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu

BV Labs ID: KJY018 **Collected:** 2019/07/21
Sample ID: 19-REF3-S1-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJY019 **Collected:** 2019/07/21
Sample ID: 19-REF3-S2-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJY020 **Collected:** 2019/07/21
Sample ID: 19-REF3-S2-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/06	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY021 **Collected:** 2019/07/21
Sample ID: 19-REF3-S3-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

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TEST SUMMARY

BV Labs ID: KJY022 **Collected:** 2019/07/21
Sample ID: 19-REF3-S3-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/09	2019/08/19	Neil Dassanayake

BV Labs ID: KJY023 **Collected:** 2019/07/21
Sample ID: 19-REF3-S4-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY024 **Collected:** 2019/07/21
Sample ID: 19-REF3-S4-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY025 **Collected:** 2019/07/21
Sample ID: 19-REF3-S5-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY026 **Collected:** 2019/07/21
Sample ID: 19-REF3-S5-Sd **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

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TEST SUMMARY

BV Labs ID: KJY027 **Collected:** 2019/07/22
Sample ID: 19-TF-S1-S **Shipped:**
Matrix: Solid **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJY028 **Collected:** 2019/07/22
Sample ID: 19-TF-S1-Cr **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/09	2019/08/19	Neil Dassanayake

BV Labs ID: KJY029 **Collected:** 2019/07/22
Sample ID: 19-TF-S2-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY030 **Collected:** 2019/07/22
Sample ID: 19-TF-S2-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY031 **Collected:** 2019/07/22
Sample ID: 19-TF-S3-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

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TEST SUMMARY

BV Labs ID: KJY031 Dup
Sample ID: 19-TF-S3-S
Matrix: Soil

Collected: 2019/07/22
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY032
Sample ID: 19-TF-S3-Sd
Matrix: Tissue

Collected: 2019/07/22
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/06	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY033
Sample ID: 19-TF-S4-S
Matrix: Solid

Collected: 2019/07/22
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258204	N/A	2019/07/31	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY034
Sample ID: 19-TF-S4-LT
Matrix: Tissue

Collected: 2019/07/22
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJY034 Dup
Sample ID: 19-TF-S4-LT
Matrix: Tissue

Collected: 2019/07/22
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJY035
Sample ID: 19-TF-S5-S
Matrix: Soil

Collected: 2019/07/22
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

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TEST SUMMARY

BV Labs ID: KJY036 **Collected:** 2019/07/22
Sample ID: 19-TF-S5-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY037 **Collected:** 2019/07/22
Sample ID: 19-TF-S6-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJY038 **Collected:** 2019/07/22
Sample ID: 19-TF-S6-LT **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY038 Dup **Collected:** 2019/07/22
Sample ID: 19-TF-S6-LT **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY039 **Collected:** 2019/07/22
Sample ID: 19-TF-S11-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJY040 **Collected:** 2019/07/22
Sample ID: 19-TF-S11-Br **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti

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TEST SUMMARY

BV Labs ID: KJY040 **Collected:** 2019/07/22
Sample ID: 19-TF-S11-Br **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJY040 Dup **Collected:** 2019/07/22
Sample ID: 19-TF-S11-Br **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti

BV Labs ID: KJY041 **Collected:** 2019/07/22
Sample ID: 19-TF-S12-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJY042 **Collected:** 2019/07/22
Sample ID: 19-TF-S12-Sd **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY043 **Collected:** 2019/07/22
Sample ID: 19-TF-S13-S **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJY044 **Collected:** 2019/07/22
Sample ID: 19-TF-S13-Cr **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

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TEST SUMMARY

BV Labs ID: KJY045 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S1-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY046 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S1-LT **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/06	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY047 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S2-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJY048 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S2-Sd **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/06	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY049 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S5-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

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TEST SUMMARY

BV Labs ID: KJY050 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S5-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJY051 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S6-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY052 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S6-Br **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265147	N/A	2019/08/06	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY053 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S7-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJY053 Dup **Collected:** 2019/07/23
Sample ID: 19-WRSA-S7-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu

BV Labs ID: KJY054 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S7-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti

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TEST SUMMARY

BV Labs ID: KJY054 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S7-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	6265147	N/A	2019/08/06	Mithunaa Sasitheepan
PH	AT	6284449	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY055 **Collected:** 2019/07/24
Sample ID: 19-WRSA-S8-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6259045	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJY056 **Collected:** 2019/07/24
Sample ID: 19-WRSA-S8-Br **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY057 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S9-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY058 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S9-Cr **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY059 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S10-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259117	2019/08/01	2019/08/08	Daniel Teclu

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TEST SUMMARY

BV Labs ID: KJY059 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S10-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY060 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S10-Cr **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265319	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266648	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

BV Labs ID: KJY061 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S11-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259106	2019/08/01	2019/08/08	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY062 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S11-Br **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJY063 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S12-S **Shipped:**
Matrix: Soil **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6259179	2019/08/01	2019/08/02	Daniel Teclu
Moisture	BAL	6259182	N/A	2019/08/01	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	6285945	2019/08/17	2019/08/19	Surinder Rai

BV Labs ID: KJY064 **Collected:** 2019/07/23
Sample ID: 19-WRSA-S12-Li **Shipped:**
Matrix: Tissue **Received:** 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6267575	2019/08/07	2019/08/13	Ron Morrison

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TEST SUMMARY

BV Labs ID: KJY064
Sample ID: 19-WRSA-S12-Li
Matrix: Tissue

Collected: 2019/07/23
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Vegetation by ICPMS	ICP1/MS	6267071	N/A	2019/08/30	Prempal Bhatti
Moisture	BAL	6265141	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6269503	2019/08/08	2019/08/08	Kazzandra Adeva

BV Labs ID: KJY065
Sample ID: 19-TF-S14-S
Matrix: Soil

Collected: 2019/07/23
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6276635	2019/08/13	2019/08/14	Daniel Teclu
Moisture	BAL	6258329	N/A	2019/07/31	Prgya Panchal
pH CaCl2 EXTRACT	AT	6261442	2019/08/02	2019/08/02	Kazzandra Adeva

BV Labs ID: KJY066
Sample ID: 19-TF-S14-Li
Matrix: Tissue

Collected: 2019/07/23
Shipped:
Received: 2019/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6265404	2019/08/06	2019/08/13	Ron Morrison
Metals in Vegetation by ICPMS	ICP1/MS	6266652	N/A	2019/08/29	Prempal Bhatti
Moisture	BAL	6265634	N/A	2019/08/02	Mithunaa Sasitheepan
PH	AT	6284295	2019/08/16	2019/08/19	Neil Dassanayake

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GENERAL COMMENTS

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

Package 1	25.0°C
Package 2	24.3°C
Package 3	30.3°C
Package 4	25.7°C
Package 5	25.0°C

All the Samples entirely absorbed the extraction fluid when 1:2 ratio was used. Due to the absorbent nature of the samples, RODI ratio was changed to 1:6. Please view results with discretion.

Results relate only to the items tested.

Bureau Veritas Laboratories 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.bvlabs.com

QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6258204	Moisture	2019/07/31							4.4	20		
6258329	Moisture	2019/07/31							7.2	20		
6259045	Moisture	2019/08/01							3.5	20		
6259106	Acid Extractable Antimony (Sb)	2019/08/08	101	75 - 125	105	80 - 120	<0.20	ug/g	NC	30		
6259106	Acid Extractable Arsenic (As)	2019/08/08	106	75 - 125	101	80 - 120	<1.0	ug/g	11	30		
6259106	Acid Extractable Barium (Ba)	2019/08/08	103	75 - 125	103	80 - 120	<0.50	ug/g	16	30		
6259106	Acid Extractable Beryllium (Be)	2019/08/08	103	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		
6259106	Acid Extractable Boron (B)	2019/08/08	102	75 - 125	102	80 - 120	<5.0	ug/g	NC	30		
6259106	Acid Extractable Cadmium (Cd)	2019/08/08	104	75 - 125	102	80 - 120	<0.10	ug/g	NC	30		
6259106	Acid Extractable Chromium (Cr)	2019/08/08	NC	75 - 125	100	80 - 120	<1.0	ug/g	13	30		
6259106	Acid Extractable Cobalt (Co)	2019/08/08	102	75 - 125	100	80 - 120	<0.10	ug/g	14	30		
6259106	Acid Extractable Copper (Cu)	2019/08/08	102	75 - 125	101	80 - 120	<0.50	ug/g	11	30		
6259106	Acid Extractable Lead (Pb)	2019/08/08	109	75 - 125	105	80 - 120	<1.0	ug/g	11	30		
6259106	Acid Extractable Mercury (Hg)	2019/08/08	100	75 - 125	96	80 - 120	<0.050	ug/g	NC	30		
6259106	Acid Extractable Molybdenum (Mo)	2019/08/08	103	75 - 125	100	80 - 120	<0.50	ug/g	10	30		
6259106	Acid Extractable Nickel (Ni)	2019/08/08	103	75 - 125	101	80 - 120	<0.50	ug/g	17	30		
6259106	Acid Extractable Selenium (Se)	2019/08/08	110	75 - 125	108	80 - 120	<0.50	ug/g	NC	30		
6259106	Acid Extractable Silver (Ag)	2019/08/08	106	75 - 125	104	80 - 120	<0.20	ug/g	NC	30		
6259106	Acid Extractable Thallium (Tl)	2019/08/08	108	75 - 125	104	80 - 120	<0.050	ug/g	19	30		
6259106	Acid Extractable Uranium (U)	2019/08/08	107	75 - 125	103	80 - 120	<0.050	ug/g	0.16	30		
6259106	Acid Extractable Vanadium (V)	2019/08/08	NC	75 - 125	101	80 - 120	<5.0	ug/g	14	30		
6259106	Acid Extractable Zinc (Zn)	2019/08/08	106	75 - 125	102	80 - 120	<5.0	ug/g	8.7	30		
6259117	Acid Extractable Antimony (Sb)	2019/08/08	99	75 - 125	107	80 - 120	<0.20	ug/g	NC	30		
6259117	Acid Extractable Arsenic (As)	2019/08/08	113	75 - 125	104	80 - 120	<1.0	ug/g	7.4	30		
6259117	Acid Extractable Barium (Ba)	2019/08/08	NC	75 - 125	99	80 - 120	<0.50	ug/g	6.2	30		
6259117	Acid Extractable Beryllium (Be)	2019/08/08	102	75 - 125	99	80 - 120	<0.20	ug/g	NC	30		
6259117	Acid Extractable Boron (B)	2019/08/08	104	75 - 125	100	80 - 120	<5.0	ug/g	NC	30		
6259117	Acid Extractable Cadmium (Cd)	2019/08/08	103	75 - 125	103	80 - 120	<0.10	ug/g	NC	30		
6259117	Acid Extractable Chromium (Cr)	2019/08/08	118	75 - 125	99	80 - 120	<1.0	ug/g	2.9	30		
6259117	Acid Extractable Cobalt (Co)	2019/08/08	107	75 - 125	101	80 - 120	<0.10	ug/g	4.1	30		
6259117	Acid Extractable Copper (Cu)	2019/08/08	110	75 - 125	98	80 - 120	<0.50	ug/g	7.4	30		
6259117	Acid Extractable Lead (Pb)	2019/08/08	108	75 - 125	106	80 - 120	<1.0	ug/g	8.5	30		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6259117	Acid Extractable Mercury (Hg)	2019/08/08	94	75 - 125	94	80 - 120	<0.050	ug/g	NC	30		
6259117	Acid Extractable Molybdenum (Mo)	2019/08/08	104	75 - 125	101	80 - 120	<0.50	ug/g	2.4	30		
6259117	Acid Extractable Nickel (Ni)	2019/08/08	116	75 - 125	104	80 - 120	<0.50	ug/g	5.9	30		
6259117	Acid Extractable Selenium (Se)	2019/08/08	108	75 - 125	108	80 - 120	<0.50	ug/g	NC	30		
6259117	Acid Extractable Silver (Ag)	2019/08/08	103	75 - 125	103	80 - 120	<0.20	ug/g	NC	30		
6259117	Acid Extractable Thallium (Tl)	2019/08/08	106	75 - 125	105	80 - 120	<0.050	ug/g	3.1	30		
6259117	Acid Extractable Uranium (U)	2019/08/08	107	75 - 125	104	80 - 120	<0.050	ug/g	11	30		
6259117	Acid Extractable Vanadium (V)	2019/08/08	NC	75 - 125	100	80 - 120	<5.0	ug/g	3.0	30		
6259117	Acid Extractable Zinc (Zn)	2019/08/08	117	75 - 125	104	80 - 120	<5.0	ug/g	4.5	30		
6259179	Acid Extractable Antimony (Sb)	2019/08/02	94	75 - 125	103	80 - 120	<0.20	ug/g	NC	30		
6259179	Acid Extractable Arsenic (As)	2019/08/02	98	75 - 125	102	80 - 120	<1.0	ug/g	5.0	30		
6259179	Acid Extractable Barium (Ba)	2019/08/02	NC	75 - 125	98	80 - 120	<0.50	ug/g	2.4	30		
6259179	Acid Extractable Beryllium (Be)	2019/08/02	97	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
6259179	Acid Extractable Boron (B)	2019/08/02	96	75 - 125	101	80 - 120	<5.0	ug/g	NC	30		
6259179	Acid Extractable Cadmium (Cd)	2019/08/02	97	75 - 125	102	80 - 120	<0.10	ug/g	NC	30		
6259179	Acid Extractable Chromium (Cr)	2019/08/02	101	75 - 125	102	80 - 120	<1.0	ug/g	4.1	30		
6259179	Acid Extractable Cobalt (Co)	2019/08/02	98	75 - 125	101	80 - 120	<0.10	ug/g	2.7	30		
6259179	Acid Extractable Copper (Cu)	2019/08/02	94	75 - 125	100	80 - 120	<0.50	ug/g	0.27	30		
6259179	Acid Extractable Lead (Pb)	2019/08/02	97	75 - 125	103	80 - 120	<1.0	ug/g	3.1	30		
6259179	Acid Extractable Mercury (Hg)	2019/08/02	89	75 - 125	99	80 - 120	<0.050	ug/g	NC	30		
6259179	Acid Extractable Molybdenum (Mo)	2019/08/02	96	75 - 125	99	80 - 120	<0.50	ug/g	NC	30		
6259179	Acid Extractable Nickel (Ni)	2019/08/02	99	75 - 125	102	80 - 120	<0.50	ug/g	3.2	30		
6259179	Acid Extractable Selenium (Se)	2019/08/02	98	75 - 125	106	80 - 120	<0.50	ug/g	NC	30		
6259179	Acid Extractable Silver (Ag)	2019/08/02	99	75 - 125	105	80 - 120	<0.20	ug/g	NC	30		
6259179	Acid Extractable Thallium (Tl)	2019/08/02	97	75 - 125	102	80 - 120	<0.050	ug/g	3.5	30		
6259179	Acid Extractable Uranium (U)	2019/08/02	99	75 - 125	103	80 - 120	<0.050	ug/g	2.8	30		
6259179	Acid Extractable Vanadium (V)	2019/08/02	98	75 - 125	100	80 - 120	<5.0	ug/g	2.7	30		
6259179	Acid Extractable Zinc (Zn)	2019/08/02	100	75 - 125	102	80 - 120	<5.0	ug/g	4.5	30		
6259182	Moisture	2019/08/01							0	20		
6259475	Acid Extractable Antimony (Sb)	2019/08/01	107	75 - 125	103	80 - 120	<0.20	ug/g	5.2	30		
6259475	Acid Extractable Arsenic (As)	2019/08/01	102	75 - 125	101	80 - 120	<1.0	ug/g	7.9	30		
6259475	Acid Extractable Barium (Ba)	2019/08/01	115	75 - 125	103	80 - 120	<0.50	ug/g	2.9	30		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6259475	Acid Extractable Beryllium (Be)	2019/08/01	105	75 - 125	101	80 - 120	<0.20	ug/g	4.1	30		
6259475	Acid Extractable Boron (B)	2019/08/01	108	75 - 125	103	80 - 120	<5.0	ug/g	12	30		
6259475	Acid Extractable Cadmium (Cd)	2019/08/01	105	75 - 125	101	80 - 120	<0.10	ug/g	8.3	30		
6259475	Acid Extractable Chromium (Cr)	2019/08/01	103	75 - 125	99	80 - 120	<1.0	ug/g	0.70	30		
6259475	Acid Extractable Cobalt (Co)	2019/08/01	100	75 - 125	100	80 - 120	<0.10	ug/g	0.68	30		
6259475	Acid Extractable Copper (Cu)	2019/08/01	101	75 - 125	100	80 - 120	<0.50	ug/g	1.8	30		
6259475	Acid Extractable Lead (Pb)	2019/08/01	99	75 - 125	99	80 - 120	<1.0	ug/g	0.39	30		
6259475	Acid Extractable Mercury (Hg)	2019/08/01	91	75 - 125	91	80 - 120	<0.050	ug/g	NC	30		
6259475	Acid Extractable Molybdenum (Mo)	2019/08/01	108	75 - 125	101	80 - 120	<0.50	ug/g	13	30		
6259475	Acid Extractable Nickel (Ni)	2019/08/01	99	75 - 125	99	80 - 120	<0.50	ug/g	2.3	30		
6259475	Acid Extractable Selenium (Se)	2019/08/01	107	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
6259475	Acid Extractable Silver (Ag)	2019/08/01	104	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
6259475	Acid Extractable Thallium (Tl)	2019/08/01	101	75 - 125	101	80 - 120	<0.050	ug/g	13	30		
6259475	Acid Extractable Uranium (U)	2019/08/01	104	75 - 125	101	80 - 120	<0.050	ug/g	0.061	30		
6259475	Acid Extractable Vanadium (V)	2019/08/01	103	75 - 125	100	80 - 120	<5.0	ug/g	6.3	30		
6259475	Acid Extractable Zinc (Zn)	2019/08/01	NC	75 - 125	104	80 - 120	<5.0	ug/g	1.7	30		
6259531	Available (CaCl2) pH	2019/08/01			100	97 - 103			0.87	N/A		
6261442	Available (CaCl2) pH	2019/08/02			100	97 - 103			0.30	N/A		
6265141	Moisture	2019/08/02							1.5	20		
6265147	Moisture	2019/08/06							4.3	20		
6265319	Mercury (Hg)	2019/08/13	NC	75 - 125			<0.01	ug/g	0.51	35	82	70 - 130
6265404	Mercury (Hg)	2019/08/13	79	75 - 125			<0.01	ug/g	28	35	84	70 - 130
6265634	Moisture	2019/08/02							8.0	20		
6266648	Antimony (Sb)	2019/08/29	94	75 - 125	99	80 - 120	<0.05	ug/g	NC	20		
6266648	Arsenic (As)	2019/08/29	104	75 - 125	99	80 - 120	<0.1	ug/g	3.0	20	92	70 - 130
6266648	Barium (Ba)	2019/08/29	94	75 - 125	98	80 - 120	<0.3	ug/g	0.95	20		
6266648	Beryllium (Be)	2019/08/29	90	75 - 125	99	80 - 120	<0.05	ug/g	NC	20		
6266648	Bismuth (Bi)	2019/08/29	100	75 - 125	102	80 - 120	<0.05	ug/g	NC	20		
6266648	Boron (B)	2019/08/29	84	75 - 125	98	80 - 120	<0.5	ug/g	2.9	20	89	70 - 130
6266648	Cadmium (Cd)	2019/08/29	96	75 - 125	99	80 - 120	<0.01	ug/g	0.91	20	92	70 - 130
6266648	Calcium (Ca)	2019/08/29	97	75 - 125	101	80 - 120	<50	ug/g	2.0	20	99	70 - 130
6266648	Chromium (Cr)	2019/08/29	94	75 - 125	97	80 - 120	<0.3	ug/g	NC	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6266648	Cobalt (Co)	2019/08/29	96	75 - 125	98	80 - 120	<0.005	ug/g	0.59	20	86	70 - 130
6266648	Copper (Cu)	2019/08/29	95	75 - 125	97	80 - 120	<0.5	ug/g	1.5	20	90	70 - 130
6266648	Iron (Fe)	2019/08/29	99	75 - 125	102	80 - 120	<3	ug/g	0.58	20		
6266648	Lead (Pb)	2019/08/29	94	75 - 125	98	80 - 120	<0.03	ug/g	11	20	92	70 - 130
6266648	Magnesium (Mg)	2019/08/29	100	75 - 125	105	80 - 120	<100	ug/g	0.17	20	98	70 - 130
6266648	Manganese (Mn)	2019/08/29	114	75 - 125	99	80 - 120	<0.3	ug/g	3.2	20	93	70 - 130
6266648	Molybdenum (Mo)	2019/08/29	94	75 - 125	98	80 - 120	<0.05	ug/g	NC	20		
6266648	Nickel (Ni)	2019/08/29	97	75 - 125	99	80 - 120	<0.05	ug/g	0.26	20	67	42 - 78
6266648	Phosphorus (P)	2019/08/29					<50	ug/g	7.6	20		
6266648	Potassium (K)	2019/08/29	95	75 - 125	102	80 - 120	<100	ug/g	1.4	20	99	70 - 130
6266648	Selenium (Se)	2019/08/29	98	75 - 125	100	80 - 120	<0.1	ug/g	NC	20		
6266648	Silver (Ag)	2019/08/29	95	75 - 125	100	80 - 120	<0.05	ug/g	NC	20		
6266648	Sodium (Na)	2019/08/29	101	75 - 125	103	80 - 120	<50	ug/g	NC	20	79	70 - 130
6266648	Strontium (Sr)	2019/08/29	94	75 - 125	96	80 - 120	<0.5	ug/g	1.6	20	94	70 - 130
6266648	Thallium (Tl)	2019/08/29	92	75 - 125	96	80 - 120	<0.003	ug/g	NC	20	97	70 - 130
6266648	Tin (Sn)	2019/08/29	94	75 - 125	100	80 - 120	<0.3	ug/g	NC	20		
6266648	Titanium (Ti)	2019/08/29	102	75 - 125	100	80 - 120	<0.5	ug/g	7.4	20		
6266648	Uranium (U)	2019/08/29					<0.005	ug/g	NC	20	39	23 - 40
6266648	Vanadium (V)	2019/08/29	94	75 - 125	96	80 - 120	<0.05	ug/g	1.2	20	40	28 - 52
6266648	Zinc (Zn)	2019/08/29	105	75 - 125	99	80 - 120	<2	ug/g	0.58	20	88	70 - 130
6266652	Antimony (Sb)	2019/08/29	99	75 - 125	98	80 - 120	<0.05	ug/g	NC	20		
6266652	Arsenic (As)	2019/08/29	101	75 - 125	100	80 - 120	<0.1	ug/g	1.4	20	93	70 - 130
6266652	Barium (Ba)	2019/08/29	104	75 - 125	95	80 - 120	<0.3	ug/g	2.7	20		
6266652	Beryllium (Be)	2019/08/29	92	75 - 125	94	80 - 120	<0.05	ug/g	NC	20		
6266652	Bismuth (Bi)	2019/08/29	103	75 - 125	102	80 - 120	<0.05	ug/g	NC	20		
6266652	Boron (B)	2019/08/29	90	75 - 125	94	80 - 120	<0.5	ug/g	4.8	20	93	70 - 130
6266652	Cadmium (Cd)	2019/08/29	100	75 - 125	98	80 - 120	<0.01	ug/g	0.66	20	95	70 - 130
6266652	Calcium (Ca)	2019/08/29	93	75 - 125	99	80 - 120	<50	ug/g	0.57	20	97	70 - 130
6266652	Chromium (Cr)	2019/08/29	NC	75 - 125	96	80 - 120	<0.3	ug/g	2.2	20		
6266652	Cobalt (Co)	2019/08/29	99	75 - 125	98	80 - 120	<0.005	ug/g	1.6	20	89	70 - 130
6266652	Copper (Cu)	2019/08/29	97	75 - 125	95	80 - 120	<0.5	ug/g	1.9	20	92	70 - 130
6266652	Iron (Fe)	2019/08/29	101	75 - 125	101	80 - 120	<3	ug/g	4.6	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6266652	Lead (Pb)	2019/08/29	98	75 - 125	100	80 - 120	<0.03	ug/g	1.2	20	99	70 - 130
6266652	Magnesium (Mg)	2019/08/29	102	75 - 125	104	80 - 120	<100	ug/g	3.8	20	102	70 - 130
6266652	Manganese (Mn)	2019/08/29	NC	75 - 125	99	80 - 120	<0.3	ug/g	7.6	20	95	70 - 130
6266652	Molybdenum (Mo)	2019/08/29	99	75 - 125	97	80 - 120	<0.05	ug/g	0.95	20		
6266652	Nickel (Ni)	2019/08/29	102	75 - 125	99	80 - 120	<0.05	ug/g	2.2	20	72	42 - 78
6266652	Phosphorus (P)	2019/08/29					<50	ug/g	4.5	20		
6266652	Potassium (K)	2019/08/29	103	75 - 125	101	80 - 120	<100	ug/g	3.8	20	98	70 - 130
6266652	Selenium (Se)	2019/08/29	100	75 - 125	101	80 - 120	<0.1	ug/g	1.9	20		
6266652	Silver (Ag)	2019/08/29	98	75 - 125	99	80 - 120	<0.05	ug/g	NC	20		
6266652	Sodium (Na)	2019/08/29	105	75 - 125	103	80 - 120	<50	ug/g	NC	20	83	70 - 130
6266652	Strontium (Sr)	2019/08/29	99	75 - 125	95	80 - 120	<0.5	ug/g	0.39	20	95	70 - 130
6266652	Thallium (Tl)	2019/08/29	94	75 - 125	96	80 - 120	<0.003	ug/g	2.0	20	99	70 - 130
6266652	Tin (Sn)	2019/08/29	96	75 - 125	98	80 - 120	<0.3	ug/g	NC	20		
6266652	Titanium (Ti)	2019/08/29	NC	75 - 125	98	80 - 120	<0.5	ug/g	4.0	20		
6266652	Uranium (U)	2019/08/29					<0.005	ug/g	0.72	20	39	23 - 40
6266652	Vanadium (V)	2019/08/29	99	75 - 125	96	80 - 120	<0.05	ug/g	7.2	20	42	28 - 52
6266652	Zinc (Zn)	2019/08/29	102	75 - 125	98	80 - 120	<2	ug/g	0.43	20	90	70 - 130
6267071	Antimony (Sb)	2019/08/30	97	75 - 125	98	80 - 120	<0.05	ug/g	NC	20		
6267071	Arsenic (As)	2019/08/30	100	75 - 125	99	80 - 120	<0.1	ug/g	NC	20	96	70 - 130
6267071	Barium (Ba)	2019/08/30	NC	75 - 125	96	80 - 120	<0.3	ug/g	1.3	20		
6267071	Beryllium (Be)	2019/08/30	99	75 - 125	95	80 - 120	<0.05	ug/g	NC	20		
6267071	Bismuth (Bi)	2019/08/30	101	75 - 125	101	80 - 120	<0.05	ug/g	NC	20		
6267071	Boron (B)	2019/08/30	98	75 - 125	94	80 - 120	<0.5	ug/g	1.9	20	95	70 - 130
6267071	Cadmium (Cd)	2019/08/30	98	75 - 125	97	80 - 120	<0.01	ug/g	NC	20	93	70 - 130
6267071	Calcium (Ca)	2019/08/30	NC	75 - 125	101	80 - 120	<50	ug/g	1.8	20	97	70 - 130
6267071	Chromium (Cr)	2019/08/30	94	75 - 125	94	80 - 120	<0.3	ug/g	NC	20		
6267071	Cobalt (Co)	2019/08/30	96	75 - 125	95	80 - 120	<0.005	ug/g	1.5	20	87	70 - 130
6267071	Copper (Cu)	2019/08/30	93	75 - 125	93	80 - 120	<0.5	ug/g	0.18	20	89	70 - 130
6267071	Iron (Fe)	2019/08/30	101	75 - 125	102	80 - 120	<3	ug/g	0.23	20		
6267071	Lead (Pb)	2019/08/30	96	75 - 125	97	80 - 120	<0.03	ug/g	NC	20	96	70 - 130
6267071	Magnesium (Mg)	2019/08/30	102	75 - 125	105	80 - 120	<100	ug/g	0.26	20	100	70 - 130
6267071	Manganese (Mn)	2019/08/30	NC	75 - 125	94	80 - 120	<0.3	ug/g	5.5	20	91	70 - 130

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6267071	Molybdenum (Mo)	2019/08/30	96	75 - 125	95	80 - 120	<0.05	ug/g	NC	20		
6267071	Nickel (Ni)	2019/08/30	99	75 - 125	98	80 - 120	<0.05	ug/g	1.0	20	67	42 - 78
6267071	Phosphorus (P)	2019/08/30					<50	ug/g	1.7	20		
6267071	Potassium (K)	2019/08/30	NC	75 - 125	104	80 - 120	<100	ug/g	2.2	20	98	70 - 130
6267071	Selenium (Se)	2019/08/30	98	75 - 125	98	80 - 120	<0.1	ug/g	NC	20		
6267071	Silver (Ag)	2019/08/30	97	75 - 125	98	80 - 120	<0.05	ug/g	NC	20		
6267071	Sodium (Na)	2019/08/30	102	75 - 125	102	80 - 120	<50	ug/g	NC	20	82	70 - 130
6267071	Strontium (Sr)	2019/08/30	95	75 - 125	93	80 - 120	<0.5	ug/g	0.22	20	94	70 - 130
6267071	Thallium (Tl)	2019/08/30	96	75 - 125	95	80 - 120	<0.003	ug/g	1.5	20	99	70 - 130
6267071	Tin (Sn)	2019/08/30	93	75 - 125	96	80 - 120	<0.3	ug/g	NC	20		
6267071	Titanium (Ti)	2019/08/30	97	75 - 125	102	80 - 120	<0.5	ug/g	10	20		
6267071	Uranium (U)	2019/08/30					<0.005	ug/g	NC	20	35	23 - 40
6267071	Vanadium (V)	2019/08/30	96	75 - 125	95	80 - 120	<0.05	ug/g	NC	20	39	28 - 52
6267071	Zinc (Zn)	2019/08/30	NC	75 - 125	97	80 - 120	<2	ug/g	0.51	20	90	70 - 130
6267575	Mercury (Hg)	2019/08/13	81	75 - 125			<0.01	ug/g	3.6	35	90	70 - 130
6269503	pH	2019/08/08			101	97 - 103			0.064	N/A	101	97 - 103
6276635	Acid Extractable Antimony (Sb)	2019/08/14	83	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		
6276635	Acid Extractable Arsenic (As)	2019/08/14	91	75 - 125	102	80 - 120	<1.0	ug/g	2.1	30		
6276635	Acid Extractable Barium (Ba)	2019/08/14	NC	75 - 125	97	80 - 120	<0.50	ug/g	7.8	30		
6276635	Acid Extractable Beryllium (Be)	2019/08/14	89	75 - 125	96	80 - 120	<0.20	ug/g	11	30		
6276635	Acid Extractable Boron (B)	2019/08/14	83	75 - 125	94	80 - 120	<5.0	ug/g	0.94	30		
6276635	Acid Extractable Cadmium (Cd)	2019/08/14	92	75 - 125	101	80 - 120	<0.10	ug/g	5.1	30		
6276635	Acid Extractable Chromium (Cr)	2019/08/14	90	75 - 125	99	80 - 120	<1.0	ug/g	8.1	30		
6276635	Acid Extractable Cobalt (Co)	2019/08/14	88	75 - 125	100	80 - 120	<0.10	ug/g	11	30		
6276635	Acid Extractable Copper (Cu)	2019/08/14	88	75 - 125	98	80 - 120	<0.50	ug/g	10	30		
6276635	Acid Extractable Lead (Pb)	2019/08/14	87	75 - 125	103	80 - 120	<1.0	ug/g	11	30		
6276635	Acid Extractable Mercury (Hg)	2019/08/14	81	75 - 125	92	80 - 120	<0.050	ug/g				
6276635	Acid Extractable Molybdenum (Mo)	2019/08/14	93	75 - 125	99	80 - 120	<0.50	ug/g	NC	30		
6276635	Acid Extractable Nickel (Ni)	2019/08/14	90	75 - 125	100	80 - 120	<0.50	ug/g	9.0	30		
6276635	Acid Extractable Selenium (Se)	2019/08/14	94	75 - 125	103	80 - 120	<0.50	ug/g	NC	30		
6276635	Acid Extractable Silver (Ag)	2019/08/14	93	75 - 125	103	80 - 120	<0.20	ug/g	NC	30		
6276635	Acid Extractable Thallium (Tl)	2019/08/14	93	75 - 125	103	80 - 120	<0.050	ug/g	12	30		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6276635	Acid Extractable Uranium (U)	2019/08/14	95	75 - 125	105	80 - 120	<0.050	ug/g	0.31	30		
6276635	Acid Extractable Vanadium (V)	2019/08/14	90	75 - 125	98	80 - 120	<5.0	ug/g	4.6	30		
6276635	Acid Extractable Zinc (Zn)	2019/08/14	NC	75 - 125	104	80 - 120	<5.0	ug/g	9.2	30		
6284295	pH	2019/08/19			100	97 - 103			0.022	N/A		
6284449	pH	2019/08/19			100	97 - 103			0.091	N/A	103	97 - 103
6285945	Available (CaCl2) pH	2019/08/19			100	97 - 103			1.1	N/A		

N/A = Not Applicable

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

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

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

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

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

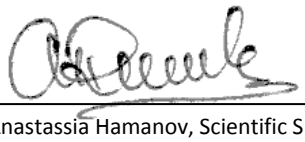
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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

Bureau Veritas Laboratories 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.bvlabs.com

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist

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

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APPENDIX F

Soil and Vegetation Samples Laboratory Results

SOIL METALS AND MERCURY (ICP/MS)

				Sample Location		TF-S1	TF-S2	TF-S3	TF-S4	TF-S5	TF-S6	TF-S11	TF-S12	TF-S13	TF-S14	WRSA-S1
				Sample Name		19-TF-S1-S	19-TF-S2-S	19-TF-S3-S	19-TF-S4-S	19-TF-S5-S	19-TF-S6-S	19-TF-S11-S	19-TF-S12-S	19-TF-S13-S	19-TF-S14-S	19-WRSA-S1-S
				Sampling Date		22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	23-Jul-19	23-Jul-19
Parameter	**Units**	**Agr**	**Res**	**Com**	**Ind**											
Antimony (Sb)	mg/kg	20	20	40	40	0.46	<0.20	<0.20	<0.20	<0.20	0.27	0.29	<0.20	<0.20	<0.20	<0.20
Arsenic (As)	mg/kg	12	12	12	12	**29**	15	9.9	9.1	23	**31**	21	9.3	31	1.2	**83**
Barium (Ba)	mg/kg	750	500	2000	2000	130	33	27	110	38	87	140	30	31	67	50
Beryllium (Be)	mg/kg	4	4	8	8	0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)***	mg/kg	2	NA	NA	NA	11	<5.0	<5.0	<5.0	<5.0	7.6	8.3	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd)	mg/kg	1.4	10	22	22	0.36	<0.10	<0.10	0.21	<0.10	0.27	0.27	<0.10	<0.10	0.17	<0.10
Chromium (Cr)	mg/kg	64	64	87	87	7.7	23	16	9.2	22	7.7	10	28	22	18	19
Cobalt (Co)	mg/kg	40	50	300	300	4.6	6.5	5.3	5.5	8.2	3.0	5.7	7.6	10	2.5	12
Copper (Cu)	mg/kg	63	63	91	91	160	18	9.5	55	27	50	120	15	14	94	37
Lead (Pb)	mg/kg	70	140	260	600	3.7	3.8	2.8	1.7	5.0	2.8	4.8	4.8	6.4	1.7	5.7
Mercury (Hg)	mg/kg	6.6	6.6	24	50	0.14	<0.050	<0.050	0.057	<0.050	0.079	0.13	<0.050	<0.050	<0.050	0.055
Molybdenum (Mo)	mg/kg	5	10	40	40	1.4	<0.50	1.8	1.7	<0.50	4.0	1.1	0.52	<0.50	0.57	0.56
Nickel (Ni)	mg/kg	45	45	89	89	56	16	12	26	21	42	44	18	19	21	29
Selenium (Se)	mg/kg	1	1	2.9	2.9	1.7	<0.50	<0.50	0.80	<0.50	0.87	1.7	<0.50	<0.50	0.58	<0.50
Silver (Ag)	mg/kg	20	20	40	40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.21	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	mg/kg	1	1	1	1	0.083	0.10	0.12	0.15	0.12	0.069	0.11	0.084	0.070	0.17	0.073
Uranium (U)	mg/kg	23	23	33	300	11	0.53	1.0	4.4	0.61	1.1	8.1	0.64	0.48	2.3	0.82
Vanadium (V)	mg/kg	130	130	130	130	5.8	20	19	8.4	23	10	7.2	24	19	11	16
Zinc (Zn)	mg/kg	250	250	410	410	35	25	19	5.9	29	13	7.9	26	26	23	28

Notes:
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
NA = Not Available
Lab Dup = Laboratory Duplicate

SOIL METALS AND MERCURY (ICP/MS)

		WRSA-S2	WRSA-S5	WRSA-S6	WRSA-S7	WRSA-S7	WRSA-S8	WRSA-S9	WRSA-S10	WRSA-S11	WRSA-S12
		19-WRSA-S2-S	19-WRSA-S5-S	19-WRSA-S6-S	19-WRSA-S7-S	19-WRSA-S7-S Lab-Dup	19-WRSA-S8-S	19-WRSA-S9-S	19-WRSA-S10-S	19-WRSA-S11-S	19-WRSA-S12-S
		23-Jul-19	23-Jul-19	23-Jul-19	24-Jul-19	24-Jul-19	24-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19
Parameter	**Units**										
Antimony (Sb)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic (As)	mg/kg	**82**	**55**	**40**	19	17	6.8	23	16	**70**	**89**
Barium (Ba)	mg/kg	37	35	30	24	20	22	36	31	37	28
Beryllium (Be)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)***	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium (Cr)	mg/kg	23	23	18	26	23	15	21	20	26	18
Cobalt (Co)	mg/kg	11	8.9	8.3	5.8	5.1	3.1	11	7.5	12	8.8
Copper (Cu)	mg/kg	27	22	21	11	9.6	13	15	20	27	14
Lead (Pb)	mg/kg	6.7	6.9	4.6	2.6	2.3	3.1	5.8	4.4	6.9	6.1
Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum (Mo)	mg/kg	<0.50	<0.50	<0.50	2.3	2.1	0.52	<0.50	<0.50	0.55	<0.50
Nickel (Ni)	mg/kg	28	23	20	18	15	9.7	21	19	27	19
Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver (Ag)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	mg/kg	0.078	0.077	0.051	0.087	0.072	0.068	0.080	0.067	0.069	0.064
Uranium (U)	mg/kg	0.88	0.63	0.66	0.70	0.70	0.60	0.60	0.70	0.78	0.58
Vanadium (V)	mg/kg	22	21	18	30	26	22	21	20	22	17
Zinc (Zn)	mg/kg	28	29	21	24	22	15	26	22	33	25

Notes:
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
NA = Not Available
Lab Dup = Laboratory Duplicate

SOIL METALS AND MERCURY (ICP/MS)

		AWAR-S1	AWAR-S2	AWAR-S3	AWAR-S4	AWAR-S5	AWAR-S6	AWAR-S7	AWAR-S8	AWAR-S9	AWAR-S10	AWAR-S11
		19-AWAR-S1-S	19-AWAR-S2-S	19-AWAR-S3-S	19-AWAR-S4-S	19-AWAR-S5-S	19-AWAR-S6-S	19-AWAR-S7-S	19-AWAR-S8-S	19-AWAR-S9-S	19-AWAR-S10-S	19-AWAR-S11-S
		20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19
Parameter	**Units**											
Antimony (Sb)	mg/kg	<0.20	<0.20	<0.20	0.24	<0.20	<0.20	0.38	<0.20	<0.20	<0.20	<0.20
Arsenic (As)	mg/kg	19	10	28	16	**25**	13	**55**	**34**	3.8	2.0	<1.0
Barium (Ba)	mg/kg	43	83	31	72	25	89	260	42	8.2	140	150
Beryllium (Be)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)***	mg/kg	<5.0	6.9	<5.0	7.9	<5.0	6.3	8.8	<5.0	<5.0	<5.0	5.2
Cadmium (Cd)	mg/kg	0.24	0.11	<0.10	0.18	<0.10	0.11	0.49	<0.10	<0.10	0.12	0.69
Chromium (Cr)	mg/kg	6.7	7.4	22	8.5	27	6.0	7.0	30	13	10	7.7
Cobalt (Co)	mg/kg	4.3	2.3	9.8	5.1	8.2	2.0	18	9.6	2.6	8.1	3.0
Copper (Cu)	mg/kg	43	34	23	160	30	79	90	33	1.2	69	16
Lead (Pb)	mg/kg	3.0	2.2	6.9	2.6	4.0	1.3	2.3	4.8	2.6	1.9	2.4
Mercury (Hg)	mg/kg	0.084	0.058	<0.050	0.083	<0.050	0.12	0.11	<0.050	<0.050	0.086	0.15
Molybdenum (Mo)	mg/kg	0.95	0.64	<0.50	<0.50	<0.50	<0.50	6.8	<0.50	<0.50	0.65	<0.50
Nickel (Ni)	mg/kg	20	13	24	36	22	17	53	25	5.4	16	8.9
Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	1.0	<0.50	0.97	1.8	<0.50	<0.50	0.60	0.73
Silver (Ag)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	mg/kg	<0.050	0.072	0.063	0.067	0.062	0.056	0.24	0.089	<0.050	0.23	<0.050
Uranium (U)	mg/kg	2.8	0.72	0.64	5.1	0.45	0.95	6.8	0.61	0.26	0.91	0.60
Vanadium (V)	mg/kg	6.1	7.7	18	14	23	<5.0	13	25	16	21	6.3
Zinc (Zn)	mg/kg	19	13	26	24	24	8.3	18	28	11	18	22

Notes:
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
NA = Not Available
Lab Dup = Laboratory Duplicate

SOIL METALS AND MERCURY (ICP/MS)

		AWAR-S12	AWAR-S13	AWAR-S14	AWAR-S15	AWAR-S16	AWAR-S17	AWAR-S18	AWAR-S19	AWAR-S20	REF1-S1
		19-AWAR-S12-S	19-AWAR-S13-S	19-AWAR-S14-S	19-AWAR-S15-S	19-AWAR-S16-S	19-AWAR-S17-S	19-AWAR-S18-S	19-AWAR-S19-S	19-AWAR-S20-S	19-REF1-S1-S
		20-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	21-Jul-19
Parameter	**Units**										
Antimony (Sb)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.20	<0.20	<0.20	<0.20
Arsenic (As)	mg/kg	1.2	<1.0	1.1	<1.0	1.4	5.2	1.7	6.0	1.5	9.0
Barium (Ba)	mg/kg	38	140	82	7.1	24	73	13	110	120	34
Beryllium (Be)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)***	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	6.8	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd)	mg/kg	1.4	0.22	0.14	<0.10	<0.10	0.22	<0.10	0.17	<0.10	<0.10
Chromium (Cr)	mg/kg	2.1	5.6	20	4.4	15	14	27	56	68	26
Cobalt (Co)	mg/kg	1.9	1.9	7.3	0.84	2.8	6.5	4.3	15	7.6	6.5
Copper (Cu)	mg/kg	4.6	24	26	<0.50	2.7	77	2.2	31	60	21
Lead (Pb)	mg/kg	<1.0	2.3	3.7	1.1	2.1	2.3	2.8	5.1	1.5	3.0
Mercury (Hg)	mg/kg	0.14	0.15	<0.050	<0.050	<0.050	0.083	<0.050	0.086	0.063	<0.050
Molybdenum (Mo)	mg/kg	0.58	0.60	0.99	<0.50	<0.50	0.65	<0.50	0.51	0.79	<0.50
Nickel (Ni)	mg/kg	6.1	6.4	12	2.3	6.7	17	8.1	30	27	19
Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.68	<0.50	<0.50	<0.50	<0.50
Silver (Ag)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	mg/kg	<0.050	0.065	0.16	<0.050	<0.050	0.082	<0.050	0.21	0.089	0.10
Uranium (U)	mg/kg	0.31	1.1	1.4	0.24	0.45	1.4	0.40	1.2	1.3	0.97
Vanadium (V)	mg/kg	<5.0	5.3	27	5.2	17	8.9	23	41	35	23
Zinc (Zn)	mg/kg	17	18	16	6.7	14	30	11	49	41	24

Notes:
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
NA = Not Available
Lab Dup = Laboratory Duplicate

SOIL METALS AND MERCURY (ICP/MS)

		REF1-S2	REF1-S3	REF1-S4	REF1-S5	REF2-S1	REF2-S2	REF2-S3	REF2-S3	REF2-S4	REF2-S5	REF3-S1
		19-REF1-S2-S	19-REF1-S3-S	19-REF1-S4-S	19-REF1-S5-S	19-REF2-S1-S	19-REF2-S2-S	19-REF2-S3-S	19-REF2-S3-S Lab-Dup	19-REF2-S4-S	19-REF2-S5-S	19-REF3-S1-S
		21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19
Parameter	**Units**											
Antimony (Sb)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic (As)	mg/kg	**32**	1.1	7.4	20	3.1	4.5	3.9	4.1	3.0	16	8.3
Barium (Ba)	mg/kg	63	37	51	45	27	99	31	32	40	52	50
Beryllium (Be)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)***	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd)	mg/kg	<0.10	0.11	<0.10	<0.10	<0.10	0.50	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium (Cr)	mg/kg	30	3.3	19	25	16	19	20	20	24	36	24
Cobalt (Co)	mg/kg	16	1.9	6.7	8.9	4.1	5.8	5.4	5.5	4.8	14	5.5
Copper (Cu)	mg/kg	54	10	16	24	8.4	67	16	16	13	41	15
Lead (Pb)	mg/kg	6.8	<1.0	3.3	4.8	2.3	3.3	2.7	2.8	2.8	3.7	2.9
Mercury (Hg)	mg/kg	<0.050	0.083	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum (Mo)	mg/kg	1.3	<0.50	0.60	0.69	<0.50	2.3	<0.50	<0.50	<0.50	<0.50	0.69
Nickel (Ni)	mg/kg	35	6.8	15	20	8.5	32	14	14	12	36	14
Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.94	<0.50	<0.50	<0.50	<0.50	<0.50
Silver (Ag)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	mg/kg	0.082	<0.050	0.075	0.096	<0.050	0.14	0.072	0.070	0.086	0.11	0.13
Uranium (U)	mg/kg	1.4	0.21	0.46	0.64	0.44	3.0	0.56	0.58	0.67	0.73	0.66
Vanadium (V)	mg/kg	41	<5.0	18	29	17	19	18	18	21	31	27
Zinc (Zn)	mg/kg	48	8.6	22	29	15	18	16	17	19	31	21

Notes:
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
NA = Not Available
Lab Dup = Laboratory Duplicate

SOIL METALS AND MERCURY (ICP/MS)

		REF3-S1	REF3-S2	REF3-S3	REF3-S4	REF3-S5	
		19-REF3-S1-S Lab-Dup	19-REF3-S2-S	19-REF3-S3-S	19-REF3-S4-S	19-REF3-S5-S	
		21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	RDL
Parameter	**Units**						
Antimony (Sb)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	0.20
Arsenic (As)	mg/kg	8.9	<1.0	2.3	3.0	5.2	1.0
Barium (Ba)	mg/kg	54	260	69	60	170	0.50
Beryllium (Be)	mg/kg	<0.20	0.20	0.22	0.25	<0.20	0.20
Boron (B)***	mg/kg	<5.0	<5.0	6.7	<5.0	<5.0	5.0
Cadmium (Cd)	mg/kg	<0.10	0.20	<0.10	<0.10	0.16	0.10
Chromium (Cr)	mg/kg	25	27	32	32	52	1.0
Cobalt (Co)	mg/kg	5.8	5.6	6.0	5.4	17	0.10
Copper (Cu)	mg/kg	17	30	14	44	34	0.50
Lead (Pb)	mg/kg	3.2	3.8	4.0	6.5	4.4	1.0
Mercury (Hg)	mg/kg	<0.050	0.17	<0.050	<0.050	0.13	0.50
Molybdenum (Mo)	mg/kg	0.71	<0.50	0.56	0.93	1.7	0.50
Nickel (Ni)	mg/kg	15	22	16	15	47	0.50
Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.72	0.20
Silver (Ag)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	0.050
Thallium (Tl)	mg/kg	0.13	0.18	0.16	0.12	0.35	0.050
Uranium (U)	mg/kg	0.74	1.3	0.94	1.5	2.4	5.0
Vanadium (V)	mg/kg	28	23	34	35	45	5.0
Zinc (Zn)	mg/kg	22	42	32	24	34	0.050

Notes:
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
NA = Not Available
Lab Dup = Laboratory Duplicate

SOIL PERCENT MOISTURE AND pH

Sample Location		TF-S1	TF-S2	TF-S3	TF-S4	TF-S5	TF-S6	TF-S11	TF-S12	TF-S13	TF-S14	WRSA-S1	WRSA-S2
Sample Name		19-TF-S1-S	19-TF-S2-S	19-TF-S3-S	19-TF-S4-S	19-TF-S5-S	19-TF-S6-S	19-TF-S11-S	19-TF-S12-S	19-TF-S13-S	19-TF-S14-S	19-WRSA-S1-S	19-WRSA-S2-S
Sampling Date		22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19
Parameter	**Units**												
% Moisture	%	72	17	18	76	11	74	76	18	11	66	31	11
pH *	pH	6.3	5.96	6.43	5.19	5.18	5.82	5.88	6.38	4.67	4.83	5.65	5.88

Notes:
* pH tested by available CaCl2
Lab Dup=Laboratory Duplicate

SOIL PERCENT MOISTURE AND pH

Sample Location		WRSA-S5	WRSA-S6	WRSA-S7	WRSA-S8	WRSA-S9	WRSA-S10	WRSA-S11	WRSA-S12	AWAR-S1	AWAR-S2
Sample Name		19-WRSA-S5-S	19-WRSA-S6-S	19-WRSA-S7-S	19-WRSA-S8-S	19-WRSA-S9-S	19-WRSA-S10-S	19-WRSA-S11-S	19-WRSA-S12-S	19-AWAR-S1-S	19-AWAR-S2-S
Sampling Date		23-Jul-19	23-Jul-19	24-Jul-19	24-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19	20-Jul-19	20-Jul-19
Parameter	Units										
% Moisture	%	13	9.8	14	19	9.7	12	9.4	10	77	72
pH *	pH	4.57	5.47	6.95	5.51	5.52	5.66	4.61	5.70	3.87	6.21

Notes:
* pH tested by available CaCl2
Lab Dup=Laboratory Duplicate

SOIL PERCENT MOISTURE AND pH

Sample Location		AWAR-S3	AWAR-S4	AWAR-S5	AWAR-S6	AWAR-S7	AWAR-S8	AWAR-S9	AWAR-S9	AWAR-S10	AWAR-S11
Sample Name		19-AWAR-S3-S	19-AWAR-S4-S	19-AWAR-S5-S	19-AWAR-S6-S	19-AWAR-S7-S	19-AWAR-S8-S	19-AWAR-S9-S	AWAR-S9-S-Lab-	19-AWAR-S10-S	19-AWAR-S11
Sampling Date		20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19
Parameter	Units										
% Moisture	%	13	63	17	77	80	12	11		57	78
pH *	pH	4.50	6.29	5.07	5.82	5.57	5.45	3.91	3.88	5.44	3.98

Notes:
* pH tested by available CaCl2
Lab Dup=Laboratory Duplicate

SOIL PERCENT MOISTURE AND pH

Sample Location		AWAR-S12	AWAR-S13	AWAR-S14	AWAR-S15	AWAR-S16	AWAR-S17	AWAR-S18	AWAR-S19	AWAR-S20
Sample Name		19-AWAR-S12-S	19-AWAR-S13-S	19-AWAR-S14-S	19-AWAR-S15-S	19-AWAR-S16-S	19-AWAR-S17-S	19-AWAR-S18-S	19-AWAR-S19-S	19-AWAR-S20-S
Sampling Date		20-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19
Parameter	Units									
% Moisture	%	84	73	34	27	5.8	70	5.9	9.5	67
pH *	pH	2.95	4.01	5.11	3.86	4.33	5.77	3.97	5.41	5.94

Notes:
* pH tested by available CaCl2
Lab Dup=Laboratory Duplicate

SOIL PERCENT MOISTURE AND pH

Sample Location		REF1-S1	REF1-S2	REF1-S3	REF1-S4	REF1-S5	REF2-S1	REF2-S2	REF2-S3	REF2-S4	REF2-S5	REF3-S1
Sample Name		19-REF1-S1-S	19-REF1-S2-S	19-REF1-S3-S	19-REF1-S4-S	19-REF1-S5-S	19-REF2-S1-S	19-REF2-S2-S	19-REF2-S3-S	19-REF2-S4-S	19-REF2-S5-S	19-REF3-S1-S
Sampling Date		21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19
Parameter	**Units**											
% Moisture	%	17	39	72	30	29	19	72	12	18	13	17
pH *	pH	6.46	5.98	4.33	5.78	5.80	4.62	4.69	4.55	4.95	7.71	4.67

Notes:
* pH tested by available CaCl2
Lab Dup=Laboratory Duplicate

SOIL PERCENT MOISTURE AND pH

Sample Location		REF3-S2	REF3-S3	REF3-S4	REF3-S5		
Sample Name		19-REF3-S2-S	19-REF3-S3-S	19-REF3-S4-S	19-REF3-S5-S		
Sampling Date		21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19		
Parameter	**Units**					**Min**	**Max**
% Moisture	%	69	17	25	62	5.8	84
pH *	pH	3.92	7.26	4.92	5.16	2.95	7.71

Notes:
* pH tested by available CaCl2
Lab Dup=Laboratory Duplicate

SOIL RELATIVE PERCENT DIFFERENCE

Sample Location		WRSA-S7	WRSA-S7	RPD (%)	REF2-S3	REF2-S3	RPD (%)	REF3-S1	REF3-S1	RPD (%)
Sample Name		19-WRSA-S7-S	19-WRSA-S7-S Lab-Dup		19-REF2-S3-S	19-REF2-S3-S Lab-Dup		19-REF3-S1-S	19-REF3-S1-S Lab-Dup	
Sampling Date		24-Jul-19	24-Jul-19		21-Jul-19	21-Jul-19		21-Jul-19	21-Jul-19	
Parameter	**Units**									
Antimony (Sb)	mg/kg	<0.20	<0.20	-	<0.20	<0.20	-	<0.20	<0.20	-
Arsenic (As)	mg/kg	3.90	4.10	5.0	3.90	4.10	5.0	8.30	8.90	7.0
Barium (Ba)	mg/kg	31.00	32.00	3.2	31.00	32.00	3.2	50.00	54.00	7.7
Beryllium (Be)	mg/kg	<0.20	<0.20	-	<0.20	<0.20	-	<0.20	<0.20	-
Boron (B)	mg/kg	<5.0	<5.0	-	<5.0	<5.0	-	<5.0	<5.0	-
Cadmium (Cd)	mg/kg	<0.10	<0.10	-	<0.10	<0.10	-	<0.10	<0.10	-
Chromium (Cr)	mg/kg	20.00	20.00	0.0	20.00	20.00	0.0	24.00	25.00	4.1
Cobalt (Co)	mg/kg	5.40	5.50	1.8	5.40	5.50	1.8	5.50	5.80	5.3
Copper (Cu)	mg/kg	16.00	16.00	0.0	16.00	16.00	0.0	15.00	17.00	12.5
Lead (Pb)	mg/kg	2.70	2.80	3.6	2.70	2.80	3.6	2.90	3.20	9.8
Mercury (Hg)	mg/kg	<0.050	<0.050	-	<0.050	<0.050	-	<0.050	<0.050	-
Molybdenum (Mo)	mg/kg	<0.50	<0.50	-	<0.50	<0.50	-	0.69	0.71	2.9
Nickel (Ni)	mg/kg	14.00	14.00	0.0	14.00	14.00	0.0	14.00	15.00	6.9
Selenium (Se)	mg/kg	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-
Silver (Ag)	mg/kg	<0.20	<0.20	-	<0.20	<0.20	-	<0.20	<0.20	-
Thallium (Tl)	mg/kg	0.07	0.07	2.8	0.07	0.07	2.8	0.13	0.13	0.0
Uranium (U)	mg/kg	0.56	0.58	3.5	0.56	0.58	3.5	0.66	0.74	11.4
Vanadium (V)	mg/kg	18.00	18.00	0.0	18.00	18.00	0.0	27.00	28.00	3.6
Zinc (Zn)	mg/kg	16.00	17.00	6.1	16.00	17.00	6.1	21.00	22.00	4.7

Notes:

RPD = relative percent difference

Lab Dup = Laboratory Duplicate

All concentrations in milligrams per kilogram (mg/kg)

"<" = less than laboratory method detection limit

"- "= not calculated because one or both concentrations were below the laboratory method detection limit

**VEGETATION TISSUE METALS (ICP/MS)
AND MERCURY (AS)**

Sample Location		TF-S1	TF-S2	TF-S3	TF-S4	TF-S5	TF-S6	TF-S11	TF-S11
Sample Name		19-TF-S1-Cr	19-TF-S2-Li	19-TF-S3-Sd	19-TF-S4-LT	19-TF-S5-Li	19-TF-S6-LT	19-TF-S11-Br	19-TF-S11-Br- Lab-Dup
Sampling Date		22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19
METALS	**Units**								
Antimony (Sb)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic (As)	mg/kg	0.4	15.6	12.0	4.2	24.4	11.8	7.1	7.3
Barium (Ba)	mg/kg	1.5	24.1	13.4	41.3	12.4	25.6	8.4	8.5
Beryllium (Be)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth (Bi)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron (B)	mg/kg	2.3	1.8	2.5	9.0	1.6	10.4	5.8	5.6
Cadmium (Cd)	mg/kg	<0.01	0.13	0.01	<0.01	0.10	<0.01	0.02	0.02
Calcium (Ca)	mg/kg	291	11900	3130	2910	2550	2380	1630	1600
Chromium (Cr)	mg/kg	<0.3	1.1	1.3	0.4	1.1	0.4	<0.3	<0.3
Cobalt (Co)	mg/kg	0.006	0.379	0.073	0.058	0.331	0.070	0.085	0.085
Copper (Cu)	mg/kg	2.1	2.5	3.9	2.2	3.6	2.7	3.1	3.1
Iron (Fe)	mg/kg	10	599	176	111	670	161	108	108
Lead (Pb)	mg/kg	<0.03	2.66	0.90	0.35	3.89	0.83	0.34	0.38
Magnesium (Mg)	mg/kg	133	736	351	601	573	578	939	940
Manganese (Mn)	mg/kg	7.2	67.7	55.4	776	116	247	73.9	71.6
Mercury (Hg)	mg/kg	<0.01	0.11	<0.01	<0.01	0.29	<0.01	<0.01	(*)
Molybdenum (Mo)	mg/kg	<0.05	0.14	0.52	0.06	0.13	0.05	<0.05	<0.05
Nickel (Ni)	mg/kg	0.10	1.18	1.13	0.43	1.23	0.47	1.50	1.50
Phosphorus (P)	mg/kg	236	270	388	471	575	431	583	541
Potassium (K)	mg/kg	1930	989	5560	2250	1500	2690	2540	2500
Selenium (Se)	mg/kg	<0.1	0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
Silver (Ag)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium (Na)	mg/kg	<50	105	<50	<50	164	<50	<50	<50
Strontium (Sr)	mg/kg	<0.5	36.2	15.2	6.2	10.4	3.7	6.4	6.3
Thallium (Tl)	mg/kg	<0.003	0.006	<0.003	0.155	0.004	0.120	<0.003	<0.003
Tin (Sn)	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	mg/kg	<0.5	12.3	2.0	2.0	7.8	1.8	1.6	1.8
Uranium (U)	mg/kg	<0.005	0.039	0.014	<0.005	0.026	<0.005	<0.005	<0.005
Vanadium (V)	mg/kg	<0.05	0.66	0.10	0.09	0.52	0.10	0.08	0.08
Zinc (Zn)	mg/kg	3	31	12	19	20	15	54	54

Notes:
(*) lab duplicate analysis was not performed for mercury
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
N/A = Not Applicable
Lab Dup = Laboratory Duplicate

**VEGETATION TISSUE METALS (ICP/MS)
AND MERCURY (AS)**

Sample Location		TF-S12	TF-S13	TF-S14	WRSA-S1	WRSA-S2	WRSA-S5	WRSA-S6	WRSA-S7
Sample Name		19-TF-S12-Sd	19-TF-S13-Cr	19-TF-S14-Li	19-WRSA-S1-LT	19-WRSA-S2-Sd	19-WRSA-S5-Li	19-WRSA-S6-Br	19-WRSA-S7-Li
Sampling Date		22-Jul-19	22-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19	24-Jul-19
METALS	**Units**								
Antimony (Sb)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05
Arsenic (As)	mg/kg	4.8	0.6	1.6	14.1	12.9	99.0	4.3	8.1
Barium (Ba)	mg/kg	16.7	1.2	8.1	27.5	13.6	13.6	9.7	20.4
Beryllium (Be)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth (Bi)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07
Boron (B)	mg/kg	2.4	2.2	<0.5	8.7	2.7	1.7	4.0	2.0
Cadmium (Cd)	mg/kg	0.01	<0.01	0.05	<0.01	<0.01	0.11	0.03	0.09
Calcium (Ca)	mg/kg	2740	268	2060	2890	3310	7440	1720	9220
Chromium (Cr)	mg/kg	0.4	<0.3	14.2	0.8	0.5	3.7	<0.3	7.8
Cobalt (Co)	mg/kg	0.116	0.016	0.496	0.104	0.182	1.08	0.439	1.37
Copper (Cu)	mg/kg	3.3	1.9	2.0	2.3	3.6	6.5	2.7	5.6
Iron (Fe)	mg/kg	185	23	465	266	275	2360	141	2960
Lead (Pb)	mg/kg	0.62	<0.03	0.70	0.97	1.10	6.35	0.30	2.62
Magnesium (Mg)	mg/kg	260	147	412	711	419	993	956	1490
Manganese (Mn)	mg/kg	81.7	11.0	102	356	33.5	68.1	170	91.5
Mercury (Hg)	mg/kg	0.01	<0.01	0.07	<0.01	<0.01	0.09	<0.01	0.12
Molybdenum (Mo)	mg/kg	0.43	<0.05	1.76	0.10	0.35	0.35	<0.05	0.40
Nickel (Ni)	mg/kg	0.67	0.26	9.64	0.46	1.58	3.37	1.85	4.29
Phosphorus (P)	mg/kg	400	330	290	465	374	392	818	324
Potassium (K)	mg/kg	5480	1860	1120	2620	5580	1090	3070	1040
Selenium (Se)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1
Silver (Ag)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium (Na)	mg/kg	<50	<50	<50	<50	<50	77	<50	341
Strontium (Sr)	mg/kg	25.2	<0.5	6.1	5.9	16.7	29.0	5.7	52.3
Thallium (Tl)	mg/kg	<0.003	<0.003	0.003	0.025	<0.003	0.010	<0.003	0.013
Tin (Sn)	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	mg/kg	2.8	0.7	8.6	2.9	3.7	38	2.4	52
Uranium (U)	mg/kg	0.011	<0.005	0.021	<0.005	0.010	0.083	<0.005	0.076
Vanadium (V)	mg/kg	0.15	<0.05	0.51	0.22	0.26	2.23	0.13	3.95
Zinc (Zn)	mg/kg	17	3	14	15	10	26	67	28

Notes:
(*) lab duplicate analysis was not performed for mercury
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
N/A = Not Applicable
Lab Dup = Laboratory Duplicate

**VEGETATION TISSUE METALS (ICP/MS)
AND MERCURY (AS)**

Sample Location		WRSA-S8	WRSA-S9	WRSA-S10	WRSA-S11	WRSA-S12	AWAR-S1	AWAR-S2
Sample Name		19-WRSA-S8-Br	19-WRSA-S9-Cr	19-WRSA-S10-Cr	19-WRSA-S11-Br	19-WRSA-S12-Li	19-AWAR-S1-Sd	19-AWAR-S2-Li
Sampling Date		24-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19	20-Jul-19	20-Jul-19
METALS	**Units**							
Antimony (Sb)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic (As)	mg/kg	0.3	<0.1	<0.1	6.0	92.8	1.5	5.5
Barium (Ba)	mg/kg	10.7	1.2	1.2	11.6	12.4	11.4	21.7
Beryllium (Be)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth (Bi)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron (B)	mg/kg	4.8	1.4	1.2	8.1	1.1	2.7	1.2
Cadmium (Cd)	mg/kg	0.02	<0.01	<0.01	0.02	0.08	0.01	0.08
Calcium (Ca)	mg/kg	1820	223	242	2220	3970	2550	8600
Chromium (Cr)	mg/kg	<0.3	<0.3	<0.3	0.6	5.1	2.7	7.0
Cobalt (Co)	mg/kg	0.170	0.034	0.017	0.225	0.604	0.647	1.79
Copper (Cu)	mg/kg	2.6	1.4	1.5	3.0	5.4	3.7	6.5
Iron (Fe)	mg/kg	97	18	23	230	1560	657	3130
Lead (Pb)	mg/kg	0.07	<0.03	<0.03	0.31	15.6	0.27	2.26
Magnesium (Mg)	mg/kg	895	128	129	950	623	590	1470
Manganese (Mn)	mg/kg	55.7	11.8	9.4	91.4	69.8	190	124
Mercury (Hg)	mg/kg	<0.01	<0.01	<0.01	<0.01	0.08	<0.01	0.06
Molybdenum (Mo)	mg/kg	<0.05	<0.05	<0.05	0.05	0.25	0.41	0.28
Nickel (Ni)	mg/kg	1.67	0.35	0.19	2.92	3.32	1.57	4.36
Phosphorus (P)	mg/kg	646	259	247	641	291	589	403
Potassium (K)	mg/kg	2730	1760	1770	2850	1140	5550	1590
Selenium (Se)	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1
Silver (Ag)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium (Na)	mg/kg	192	<50	<50	<50	72	117	150
Strontium (Sr)	mg/kg	9.5	0.6	0.6	7.8	15.9	16.7	34.2
Thallium (Tl)	mg/kg	<0.003	<0.003	<0.003	<0.003	0.007	0.005	0.018
Tin (Sn)	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	mg/kg	2.2	0.7	0.8	4.1	15.0	17.7	58
Uranium (U)	mg/kg	<0.005	<0.005	<0.005	0.006	0.042	0.071	0.088
Vanadium (V)	mg/kg	0.12	<0.05	<0.05	0.22	0.89	1.00	4.64
Zinc (Zn)	mg/kg	47	2	2	79	21	16	26

Notes:
(*) lab duplicate analysis was not performed for mercury
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
N/A = Not Applicable
Lab Dup = Laboratory Duplicate

**VEGETATION TISSUE METALS (ICP/MS)
AND MERCURY (AS)**

Sample Location		AWAR-S3	AWAR-S4	AWAR-S5	AWAR-S6	AWAR-S7	AWAR-S8	AWAR-S9
Sample Name		19-AWAR-S3-Li	19-AWAR-S4-Br	19-AWAR-S5-Sd	19-AWAR-S6-Li	19-AWAR-S7-Sd	19-AWAR-S8-Br	19-AWAR-S9-Lt
Sampling Date		20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19
METALS	**Units**							
Antimony (Sb)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic (As)	mg/kg	5.1	0.4	3.6	13.8	4.3	0.1	0.2
Barium (Ba)	mg/kg	23.2	6.4	17.7	22.9	12.8	11.2	24.2
Beryllium (Be)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth (Bi)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron (B)	mg/kg	1.8	7.2	3.0	2.5	2.4	6.2	8.1
Cadmium (Cd)	mg/kg	0.09	0.01	0.02	0.11	0.02	0.03	<0.01
Calcium (Ca)	mg/kg	8400	2780	3760	15000	3550	2370	1880
Chromium (Cr)	mg/kg	6.6	<0.3	1.8	11.6	2.2	<0.3	0.8
Cobalt (Co)	mg/kg	1.71	0.163	0.411	2.24	0.590	0.215	0.132
Copper (Cu)	mg/kg	7.0	2.8	4.8	8.9	4.2	2.8	2.4
Iron (Fe)	mg/kg	2930	103	631	4250	778	82	217
Lead (Pb)	mg/kg	2.05	0.05	0.42	3.51	0.83	<0.03	0.09
Magnesium (Mg)	mg/kg	1300	704	619	1780	662	871	576
Manganese (Mn)	mg/kg	125	71.2	67.0	107	214	136	369
Mercury (Hg)	mg/kg	0.14	<0.01	<0.01	0.05	0.01	<0.01	<0.01
Molybdenum (Mo)	mg/kg	0.24	0.18	0.32	0.51	0.31	<0.05	<0.05
Nickel (Ni)	mg/kg	4.16	1.09	2.28	6.00	1.76	1.70	0.55
Phosphorus (P)	mg/kg	372	661	402	325	545	680	438
Potassium (K)	mg/kg	1260	3290	4490	998	5140	2970	2370
Selenium (Se)	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Silver (Ag)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium (Na)	mg/kg	72	<50	85	101	89	<50	<50
Strontium (Sr)	mg/kg	35.6	8.3	18.5	42.6	18.3	5.0	6.1
Thallium (Tl)	mg/kg	0.015	<0.003	<0.003	0.018	0.004	<0.003	0.056
Tin (Sn)	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	mg/kg	60	2.4	11.3	83	18.4	2.8	9.0
Uranium (U)	mg/kg	0.097	<0.005	0.028	0.140	0.075	<0.005	0.010
Vanadium (V)	mg/kg	4.07	0.14	1.01	5.86	1.15	0.11	0.36
Zinc (Zn)	mg/kg	21	106	12	23	26	82	14

Notes:
(*) lab duplicate analysis was not performed for mercury
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
N/A = Not Applicable
Lab Dup = Laboratory Duplicate

**VEGETATION TISSUE METALS (ICP/MS)
AND MERCURY (AS)**

Sample Location		AWAR-S10	AWAR-S10	AWAR-S11	AWAR-S12	AWAR-S13	AWAR-S14
Sample Name		19-AWAR-S10-Li	19-AWAR-S10-Li-Lab-Dup	19-AWAR-S11-Li	19-AWAR-S12-Lt	19-AWAR-S13-Li	19-AWAR-S14-Sd
Sampling Date		20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	19-Jul-19	19-Jul-19
METALS	**Units**						
Antimony (Sb)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic (As)	mg/kg	0.8	0.8	1.2	0.2	0.7	0.1
Barium (Ba)	mg/kg	20.1	20.6	25.9	26.0	32.8	12.0
Beryllium (Be)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth (Bi)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron (B)	mg/kg	1.0	1.0	0.9	9.6	0.9	1.8
Cadmium (Cd)	mg/kg	0.11	0.11	0.06	<0.01	0.13	0.09
Calcium (Ca)	mg/kg	2100	2110	2100	2430	1980	1420
Chromium (Cr)	mg/kg	23.5	23.0	4.8	1.1	4.9	0.6
Cobalt (Co)	mg/kg	1.02	1.00	1.01	0.143	1.07	0.107
Copper (Cu)	mg/kg	3.7	3.6	4.4	2.5	4.7	3.4
Iron (Fe)	mg/kg	1060	1010	1940	274	1910	190
Lead (Pb)	mg/kg	1.56	1.54	1.05	0.09	3.32	0.08
Magnesium (Mg)	mg/kg	584	562	998	829	878	321
Manganese (Mn)	mg/kg	52.6	56.7	73.5	273	41.0	112
Mercury (Hg)	mg/kg	0.18	0.18	0.06	<0.01	0.25	<0.01
Molybdenum (Mo)	mg/kg	2.69	2.71	0.19	0.07	0.20	0.17
Nickel (Ni)	mg/kg	15.4	15.0	2.72	0.55	2.95	1.64
Phosphorus (P)	mg/kg	276	264	444	520	283	336
Potassium (K)	mg/kg	1240	1190	2230	2640	1330	3140
Selenium (Se)	mg/kg	0.2	0.1	0.1	<0.1	0.2	<0.1
Silver (Ag)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium (Na)	mg/kg	<50	<50	111	<50	<50	<50
Strontium (Sr)	mg/kg	12.5	12.5	26.8	9.2	19.4	5.1
Thallium (Tl)	mg/kg	0.010	0.010	0.023	0.031	0.019	<0.003
Tin (Sn)	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	mg/kg	36	34	68	10.8	65	7.1
Uranium (U)	mg/kg	0.056	0.055	0.102	0.016	0.099	0.019
Vanadium (V)	mg/kg	1.50	1.39	2.94	0.45	2.85	0.28
Zinc (Zn)	mg/kg	17	17	22	13	20	13

Notes:
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mg/kg = milligram per kilogram
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**VEGETATION TISSUE METALS (ICP/MS)
AND MERCURY (AS)**

Sample Location		AWAR-S15	AWAR-S16	AWAR-S17	AWAR-S18	AWAR-S19	AWAR-S20	REF1-S1
Sample Name		19-AWAR-S15-Sd	19-AWAR-S16-Cr	19-AWAR-S17-Li	19-AWAR-S18-Li	19-AWAR-S19-Li	19-AWAR-S20-Li	19-REF1-S1-Sd
Sampling Date		19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	21-Jul-19
METALS	**Units**							
Antimony (Sb)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic (As)	mg/kg	0.8	<0.1	0.9	0.7	2.4	1.3	0.3
Barium (Ba)	mg/kg	20.4	2.2	24.0	28.9	52.1	25.0	6.1
Beryllium (Be)	mg/kg	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05
Bismuth (Bi)	mg/kg	<0.05	<0.05	0.06	0.08	0.07	<0.05	<0.05
Boron (B)	mg/kg	3.3	2.0	1.1	0.7	1.8	1.0	1.9
Cadmium (Cd)	mg/kg	0.04	<0.01	0.08	0.06	0.10	0.06	0.01
Calcium (Ca)	mg/kg	2350	299	5170	4440	8090	15600	2810
Chromium (Cr)	mg/kg	1.5	<0.3	6.0	12.4	31.4	60	<0.3
Cobalt (Co)	mg/kg	0.589	0.039	1.09	1.18	4.56	2.54	0.077
Copper (Cu)	mg/kg	4.7	1.3	5.3	5.7	16.4	8.4	2.0
Iron (Fe)	mg/kg	809	77	1880	1620	8060	3620	60
Lead (Pb)	mg/kg	0.40	<0.03	1.26	1.87	2.53	1.52	0.07
Magnesium (Mg)	mg/kg	593	156	966	770	3660	1890	263
Manganese (Mn)	mg/kg	46.0	7.7	35.6	41.1	131	62.5	107
Mercury (Hg)	mg/kg	0.02	<0.01	0.16	0.11	0.15	0.03	<0.01
Molybdenum (Mo)	mg/kg	0.45	<0.05	0.10	1.03	0.21	5.69	0.17
Nickel (Ni)	mg/kg	1.49	0.30	2.55	7.17	12.2	33.7	0.51
Phosphorus (P)	mg/kg	378	269	341	440	415	448	510
Potassium (K)	mg/kg	3310	1610	1300	1470	1400	2120	4350
Selenium (Se)	mg/kg	<0.1	<0.1	0.2	0.2	0.2	<0.1	<0.1
Silver (Ag)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium (Na)	mg/kg	<50	<50	<50	52	65	141	<50
Strontium (Sr)	mg/kg	17.4	0.9	27.2	26.4	29.3	34.3	12.4
Thallium (Tl)	mg/kg	0.006	<0.003	0.024	0.022	0.056	0.029	<0.003
Tin (Sn)	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	mg/kg	20.6	3.0	74	71	342	154	1.2
Uranium (U)	mg/kg	0.048	<0.005	0.129	0.125	0.255	0.143	0.014
Vanadium (V)	mg/kg	1.04	0.13	2.83	2.33	13.1	6.19	<0.05
Zinc (Zn)	mg/kg	24	2	18	13	25	20	16

Notes:
(*) lab duplicate analysis was not performed for mercury
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
N/A = Not Applicable
Lab Dup = Laboratory Duplicate

**VEGETATION TISSUE METALS (ICP/MS)
AND MERCURY (AS)**

Sample Location		REF1-S2	REF1-S3	REF1-S4	REF1-S5	REF2-S1	REF2-S1	REF2-S2
Sample Name		19-REF1-S2-Li	19-REF1-S3-LT	19-REF1-S4-Br	19-REF1-S5-Sd	19-REF2-S1-LT	19-REF2-S1-LT - Lab-Dup	19-REF2-S2-Br
Sampling Date		21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19
METALS	**Units**							
Antimony (Sb)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic (As)	mg/kg	0.4	<0.1	<0.1	0.4	<0.1	<0.1	<0.1
Barium (Ba)	mg/kg	9.2	30.8	5.8	6.6	31.0	30.6	15.0
Beryllium (Be)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth (Bi)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron (B)	mg/kg	0.7	7.1	7.8	1.4	7.5	7.7	3.7
Cadmium (Cd)	mg/kg	0.07	<0.01	0.01	<0.01	<0.01	<0.01	0.06
Calcium (Ca)	mg/kg	2100	2170	1990	2030	2140	2180	1470
Chromium (Cr)	mg/kg	<0.3	<0.3	<0.3	0.6	<0.3	<0.3	<0.3
Cobalt (Co)	mg/kg	0.374	0.057	0.076	0.110	0.021	0.022	0.337
Copper (Cu)	mg/kg	1.3	1.9	2.6	2.3	2.2	2.2	2.8
Iron (Fe)	mg/kg	129	15	14	106	17	17	21
Lead (Pb)	mg/kg	1.54	<0.03	<0.03	0.05	<0.03	<0.03	<0.03
Magnesium (Mg)	mg/kg	406	576	824	327	523	525	847
Manganese (Mn)	mg/kg	86.1	448	54.8	115	524	553	445
Mercury (Hg)	mg/kg	0.17	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
Molybdenum (Mo)	mg/kg	<0.05	<0.05	<0.05	0.26	<0.05	<0.05	<0.05
Nickel (Ni)	mg/kg	0.56	0.42	1.38	0.77	0.37	0.37	2.04
Phosphorus (P)	mg/kg	254	519	676	582	534	543	663
Potassium (K)	mg/kg	1040	2440	3100	5410	2490	2550	2440
Selenium (Se)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Silver (Ag)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium (Na)	mg/kg	<50	<50	<50	<50	<50	<50	<50
Strontium (Sr)	mg/kg	7.5	2.4	6.2	8.8	2.8	2.8	4.4
Thallium (Tl)	mg/kg	<0.003	0.087	<0.003	<0.003	0.128	0.130	<0.003
Tin (Sn)	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	mg/kg	3.4	0.8	0.9	0.9	1.0	0.9	0.8
Uranium (U)	mg/kg	0.748	<0.005	<0.005	0.005	<0.005	<0.005	<0.005
Vanadium (V)	mg/kg	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc (Zn)	mg/kg	14	13	91	12	15	15	63

Notes:
(*) lab duplicate analysis was not performed for mercury
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
N/A = Not Applicable
Lab Dup = Laboratory Duplicate

**VEGETATION TISSUE METALS (ICP/MS)
AND MERCURY (AS)**

Sample Location		REF2-S3	REF2-S4	REF2-S5	REF3-S1	REF3-S2	REF3-S3	REF3-S4	REF3-S5
Sample Name		19-REF2-S3-Li	19-REF2-S4-Sd	19-REF2-S5-Br	19-REF3-S1-Li	19-REF3-S2-Li	19-REF3-S3-Li	19-REF3-S4-Li	19-REF3-S5-Sd
Sampling Date		21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19
METALS	**Units**								
Antimony (Sb)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic (As)	mg/kg	0.2	<0.1	<0.1	0.1	0.1	0.1	0.7	<0.1
Barium (Ba)	mg/kg	8.8	16.0	17.5	3.6	7.5	7.3	15.1	7.3
Beryllium (Be)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth (Bi)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron (B)	mg/kg	1.0	2.5	3.5	<0.5	<0.5	<0.5	1.1	3.0
Cadmium (Cd)	mg/kg	0.07	0.02	0.05	0.11	0.08	0.06	0.12	0.03
Calcium (Ca)	mg/kg	1210	2650	1510	641	711	1950	2320	2070
Chromium (Cr)	mg/kg	<0.3	0.6	<0.3	1.2	1.8	0.6	3.4	0.5
Cobalt (Co)	mg/kg	0.234	0.158	0.402	0.076	0.170	0.096	0.268	0.203
Copper (Cu)	mg/kg	1.7	4.6	2.7	1.1	1.1	1.0	2.0	4.9
Iron (Fe)	mg/kg	88	91	25	98	183	149	516	54
Lead (Pb)	mg/kg	0.34	0.03	<0.03	0.46	0.70	0.77	1.07	0.03
Magnesium (Mg)	mg/kg	402	429	885	312	365	436	588	369
Manganese (Mn)	mg/kg	222	57.0	466	40.2	54.3	37.9	42.8	87.7
Mercury (Hg)	mg/kg	0.11	<0.01	<0.01	0.11	0.12	0.10	0.07	<0.01
Molybdenum (Mo)	mg/kg	<0.05	0.51	<0.05	0.13	0.18	<0.05	0.33	0.59
Nickel (Ni)	mg/kg	0.72	1.74	2.92	0.84	1.36	0.30	2.14	2.54
Phosphorus (P)	mg/kg	338	397	841	352	291	326	657	480
Potassium (K)	mg/kg	1290	3860	2880	1180	1220	1250	2030	5650
Selenium (Se)	mg/kg	0.1	<0.1	<0.1	0.1	0.2	0.1	0.1	<0.1
Silver (Ag)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium (Na)	mg/kg	<50	<50	<50	82	<50	168	129	121
Strontium (Sr)	mg/kg	3.9	9.1	3.9	3.0	3.6	7.1	8.1	8.5
Thallium (Tl)	mg/kg	<0.003	<0.003	<0.003	0.005	0.008	0.007	0.010	<0.003
Tin (Sn)	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	mg/kg	2.8	1.1	1.0	3.3	5.9	5.3	19.7	1.2
Uranium (U)	mg/kg	0.007	<0.005	<0.005	0.008	0.013	0.010	0.060	0.038
Vanadium (V)	mg/kg	0.13	0.06	<0.05	0.15	0.26	0.24	0.75	0.05
Zinc (Zn)	mg/kg	24	13	21	8	12	14	29	17

Notes:
(*) lab duplicate analysis was not performed for mercury
mg/kg = milligram per kilogram
< = less than laboratory method detection limit
RDL = Reportable Detection Limit
N/A = Not Applicable
Lab Dup = Laboratory Duplicate

VEGETATION TISSUE PERCENT MOISTURE

Sample Location		TF-S1	TF-S2	TF-S3	TF-S4	TF-S11	TF-S5	TF-S6
Sample Name		19-TF-S1-Cr	19-TF-S2-Li	19-TF-S3-Sd	19-TF-S4-LT	19-TF-S4-LT- Lab-Dup	19-TF-S5-Li	19-TF-S6-LT
Sampling Date		22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19
Parameter	**Units**							
% Moisture	%	79	10	59	53	-	9.7	54
pH	pH	3.66	4.16	6.47	4.66	4.66	4.34	4.64

Notes:
"-"= Data no available
Lab Dup=Laboratory Duplicate

VEGETATION TISSUE PERCENT MOISTURE

Sample Location		TF-S11	TF-S11	TF-S12	TF-S13	TF-S14	WRSA-S1	WRSA-S2	WRSA-S5
Sample Name		19-TF-S6-LT- Lab-Dup	19-TF-S11-Br	19-TF-S12-Sd	19-TF-S13-Cr	19-TF-S14-Li	19-WRSA-S1-LT	19-WRSA-S2-Sd	19-WRSA-S5-Li
Sampling Date		22-Jul-19	22-Jul-19	22-Jul-19	22-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19
Parameter	**Units**								
% Moisture	%	-	61	45	79	22	54	60	17
pH	pH	4.64	4.62	6.52	4.92	4.24	4.63	6.82	4.43

Notes:
"-"= Data no available
Lab Dup=Laboratory Duplicate

VEGETATION TISSUE PERCENT MOISTURE

Sample Location		WRSA-S6	WRSA-S7	WRSA-S8	WRSA-S9	WRSA-S10	WRSA-S11	WRSA-S12	AWAR-S1
Sample Name		19-WRSA-S6-Br	19-WRSA-S7-Li	19-WRSA-S8-Br	19-WRSA-S9-Cr	19-WRSA-S10-Cr	19-WRSA-S11-Br	19-WRSA-S12-Li	19-AWAR-S1-Sd
Sampling Date		23-Jul-19	24-Jul-19	24-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19	23-Jul-19	20-Jul-19
Parameter	**Units**								
% Moisture	%	62	20	64	79	80	63	11	62
pH	pH	3.69	4.33	4.54	6.23	3.44	4.58	4.36	4.76

Notes:
"-"= Data no available
Lab Dup=Laboratory Duplicate

VEGETATION TISSUE PERCENT MOISTURE

Sample Location		AWAR-S2	AWAR-S3	AWAR-S4	AWAR-S5	AWAR-S6	AWAR-S7	AWAR-S8	AWAR-S9
Sample Name		19-AWAR-S2-Li	19-AWAR-S3-Li	19-AWAR-S4-Br	19-AWAR-S5-Sd	19-AWAR-S6-Li	19-AWAR-S7-Sd	19-AWAR-S8-Br	19-AWAR-S9-Lt
Sampling Date		20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19	20-Jul-19
Parameter	**Units**								
% Moisture	%	15	16	60	47	16	49	61	62
pH	pH	4.20	4.24	3.29	6.57	4.91	5.57	4.07	4.70

Notes:
"-"= Data no available
Lab Dup=Laboratory Duplicate

VEGETATION TISSUE PERCENT MOISTURE

Sample Location		AWAR-S10	AWAR-S11	AWAR-S12	AWAR-S13	AWAR-S14	AWAR-S15	AWAR-S16	AWAR-S17
Sample Name		19-AWAR-S10-Li	19-AWAR-S11-Li	19-AWAR-S12-Lt	19-AWAR-S13-Li	19-AWAR-S14-Sd	19-AWAR-S15-Sd	19-AWAR-S16-Cr	19-AWAR-S17-Li
Sampling Date		20-Jul-19	20-Jul-19	20-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19	19-Jul-19
Parameter	**Units**								
% Moisture	%	14	15	54	11	62	44	79	13
pH	pH	4.12	4.42	4.81	4.31	4.62	5.08	3.50	4.64

Notes:
"-"= Data no available
Lab Dup=Laboratory Duplicate

VEGETATION TISSUE PERCENT MOISTURE

Sample Location		AWAR-S18	AWAR-S19	AWAR-S20	REF1-S1	REF1-S2	REF1-S3	REF1-S4	REF1-S5
Sample Name		19-AWAR-S18-Li	19-AWAR-S19-Li	19-AWAR-S20-Li	19-REF1-S1-Sd	19-REF1-S2-Li	19-REF1-S3-LT	19-REF1-S4-Br	19-REF1-S5-Sd
Sampling Date		19-Jul-19	19-Jul-19	19-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19
Parameter	**Units**								
% Moisture	%	12	17	19	46	18	55	61	57
pH	pH	4.75	4.91	4.64	5.34	3.84	4.60	4.35	4.63

Notes:
"-"= Data no available
Lab Dup=Laboratory Duplicate

VEGETATION TISSUE PERCENT MOISTURE

Sample Location		REF2-S1	REF2-S1	REF2-S2	REF2-S3	REF2-S4	REF2-S5	REF3-S1	REF3-S2
Sample Name		19-REF2-S1-LT	19-REF2-S1-LT - Lab Dup	19-REF2-S2-Br	19-REF2-S3-Li	19-REF2-S4-Sd	19-REF2-S5-Br	19-REF3-S1-Li	19-REF3-S2-Li
Sampling Date		21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19	21-Jul-19
Parameter	**Units**								
% Moisture	%	57		61	10	50	60	12	13
pH	pH	4.63	4.62	4.65	3.96	6.20	4.70	4.00	4.12

Notes:
"-"= Data no available
Lab Dup=Laboratory Duplicate

VEGETATION TISSUE PERCENT MOISTURE

Sample Location		REF3-S3	REF3-S4	REF3-S5
Sample Name		19-REF3-S3-Li	19-REF3-S4-Li	19-REF3-S5-Sd
Sampling Date		21-Jul-19	21-Jul-19	21-Jul-19
Parameter	**Units**			
% Moisture	%	11	9.3	60
pH	pH	3.93	4.15	6.13

Notes:
"-"= Data no available
Lab Dup=Laboratory Duplicate

VEGETATION TISSUE RELATIVE PERCENT DIFFERENCE

Vegetation type		Birch			Labrador Tea Leaves			Lichen		
Sample Location		TF-S11	TF-S11	RPD (%)	REF2-S1	REF2-S1	RPD (%)	AWAR-S10	AWAR-S10	RPD (%)
Sample Name		19-TF-S11-Br	19-TF-S11-Br- Lab-Dup		19-REF2-S1-LT	19-REF2-S1-LT - Lab-Dup		19-AWAR-S10-Li	19-AWAR-S10-Li-Lab-Dup	
Sampling Date		22-Jul-19	22-Jul-19		21-Jul-19	21-Jul-19		20-Jul-19	20-Jul-19	
METALS	**Units**									
Antimony (Sb)	mg/kg	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	-
Arsenic (As)	mg/kg	7.1	7.3	2.8	<0.1	<0.1	-	0.8	0.8	0.0
Barium (Ba)	mg/kg	8.4	8.5	1.2	31.0	30.6	1.3	20.1	20.6	2.5
Beryllium (Be)	mg/kg	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	-
Bismuth (Bi)	mg/kg	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	-
Boron (B)	mg/kg	5.8	5.6	3.5	7.5	7.7	2.6	1.0	1.0	0.0
Cadmium (Cd)	mg/kg	0.02	0.02	0.0	<0.01	<0.01	-	0.11	0.11	0.0
Calcium (Ca)	mg/kg	1630	1600	1.9	2140	2180	1.9	2100	2110	0.5
Chromium (Cr)	mg/kg	<0.3	<0.3	-	<0.3	<0.3	-	23.5	23.0	2.2
Cobalt (Co)	mg/kg	0.085	0.085	0.0	0.021	0.022	4.7	1.02	1.00	2.0
Copper (Cu)	mg/kg	3.1	3.1	0.0	2.2	2.2	0.0	3.7	3.6	2.7
Iron (Fe)	mg/kg	108	108	0.0	17	17	0.0	1060	1010	4.8
Lead (Pb)	mg/kg	0.34	0.38	11.1	<0.03	<0.03	-	1.56	1.54	1.3
Magnesium (Mg)	mg/kg	939	940	0.1	523	525	0.4	584	562	3.8
Manganese (Mn)	mg/kg	73.9	71.6	3.2	524	553	5.4	52.6	56.7	7.5
Mercury (Hg)	mg/kg	<0.01	*	-	<0.01	0.01	-	0.18	0.18	0.0
Molybdenum (Mo)	mg/kg	<0.05	<0.05	-	<0.05	<0.05	-	2.69	2.71	0.7
Nickel (Ni)	mg/kg	1.50	1.50	0.0	0.37	0.37	0.0	15.4	15.0	2.6
Phosphorus (P)	mg/kg	583	541	7.5	534	543	1.7	276	264	4.4
Potassium (K)	mg/kg	2540	2500	1.6	2490	2550	2.4	1240	1190	4.1
Selenium (Se)	mg/kg	<0.1	<0.1	-	<0.1	<0.1	-	0.2	0.1	66.7
Silver (Ag)	mg/kg	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	-
Sodium (Na)	mg/kg	<50	<50	-	<50	<50	-	<50	<50	-
Strontium (Sr)	mg/kg	6.4	6.3	1.6	2.8	2.8	0.0	12.5	12.5	0.0
Thallium (Tl)	mg/kg	<0.003	<0.003	-	0.128	0.130	1.6	0.010	0.010	0.0
Tin (Sn)	mg/kg	<0.3	<0.3	-	<0.3	<0.3	-	<0.3	<0.3	-
Titanium (Ti)	mg/kg	1.6	1.8	11.8	1.0	0.9	10.5	36	34	5.7
Uranium (U)	mg/kg	<0.005	<0.005	-	<0.005	<0.005	-	0.056	0.055	-
Vanadium (V)	mg/kg	0.08	0.08	0.0	<0.05	<0.05	-	1.50	1.39	7.6
Zinc (Zn)	mg/kg	54	54	0.0	15	15	0.0	17	17	0.0

Notes:

"* " = lab duplicate analysis was not performed for mercury

RPD = relative percent difference

Lab Dup = Laboratory Duplicate

All concentrations in milligrams per kilogram (mg/kg)

< = less than laboratory method detection limit

- = not calculated because one or both concentrations were below the laboratory method detection limit

APPENDIX G

CESCC-Non-Native and Invasive Species in Nunavut

Non-Native & Invasive species
In Nunavut

In 2010 the Canadian Endangered Species Conservation Council (CESCC) identified 17 species not normally found in Nunavut.

These are called "non-native species". Some of these plants and animals can become an "invasive species", which represents a potential major concern for the future health of the Arctic.

What is a non-native species?

A non-native species is defined as an organism that is not normally found in a region. They are introduced by human activities, which can be intentional (e.g. species introduced to control a pest species), accidental (e.g. shipping and ballast water exchange), or environmental (e.g. changes in climate leading to wildlife movements). An example of a non-native species in Nunavut is the European Starling *(Sturnus vulgaris)*, which was introduced to North America from Europe intentionally by humans.

What is an invasive species?

Not all non-native species are considered invasive. This term is reserved for species that do so well in their new habitat that they end up causing harm to the environment, other species, human health, or economic activity (ISAC, 2006). An example of an invasive species in southern Canada is the Zebra Mussel *(Dreissena polymorpha)*, which was introduced to North America by ships releasing their ballast water. The Zebra mussel reproduces quickly and establishes large colonies on any hard surface. In this way they take over habitat occupied by native species, reducing the availability of food for other species, and also attaching themselves in great numbers to boats and other infrastructure in the water. (Benson and Raikow, 2010).

Why should you be concerned about invasive species?

When invasive species are introduced and survive, their populations can increase rapidly because there are no natural predators. Invasive species may feed on native species, compete for food and space, as well as expose native species to new parasites and disease. Invasive species are now widely recognized as a leading cause of endangerment and/or extinction of native species (Lassuy and Lewis, 2010).

***** *There are currently no known species in Nunavut that can be classified as aquatic or terrestrial invasive species.*

Species: Field Sow Thistle *(Sonchus arvensis)*

Impact: The Field Sow Thistle grows quickly, easily and when there are many of them they can reduce the water resources available to other plants. They have the potential to decrease native plant diversity by competing for space and water.

Introduction pathway: Accidently introduced from Europe into North America in a containment of agricultural crop seed. This plant has been able to spread long distances across Canada because the seeds can travel far in the wind.

Species: The European Starling *(Sturnus vulgaris)*

Impact: The European Starling can displace native bird species by taking over nesting sites and competing for food.

Introduction pathway: Introduced intentionally to North America from Europe. These birds then dispersed naturally into Canada through migration.

Non-Native Species in Nunavut

As of 2011, there are 17 species known to be non-native in Nunavut, these are listed below and are all terrestrial species. Please note that it is not currently known what the potential is for any of these species to become invasive and to what extent. Two species, the starling and the sow thistle are described in more detail below.

SCIENTIFIC NAME	COMMON NAME	ORGANISM TYPE
Carum carvi	Wild Caraway	Flowering Plant
Taraxacum officinale	Common Dandelion	Flowering Plant
Sonchus arvensis	Field Sow Thistle	Flowering Plant
Leucanthemum vulgare	Oxeye Daisy	Flowering Plant
Thlaspi arvense	Field Pennycress	Flowering Plant
Capsella bursa-pastoris	Shepherd's Purse	Flowering Plant
Barbarea vulgaris	Yellow Rocket	Flowering Plant
Amaranthus retroflexus	Green Amaranth	Flowering Plant
Hordeum vulgare	Common Barley	Flowering Plant
Puccinellia distans	Spreading Alkali Grass	Flowering Plant
Vicia cracca	Tufted Vetch	Flowering Plant
Papaver somniferum	Opium Poppy	Flowering Plant
Plantago major	Common Plantain	Flowering Plant
Polygonum aviculare	Prostrate Knotweed	Flowering Plant
Pieris rapae	Cabbage White	Butterfly
Sturnus vulgaris	European Starling	Passerine Bird
Passer domesticus	House Sparrow	Passerine Bird

*Species photo references available upon request. Images are not to scale.

How might invasive species get into Nunavut?

Species are transported throughout the world by human activities, like shipping, which allows species to move further distances and over barriers that they could not do on their own. Nunavut remains very remote compared to the rest of Canada and so the lack of major road systems, infrequent shipping and cold climate has limited their introduction and survival.

However, as climate change alters Arctic ecosystems, it creates conditions that are more favorable to the survival and reproduction of non-native species. It also enables greater human activity and development, which gives potential invasive species more opportunities to establish themselves. (Lassuy and Lewis, 2010).

Pathways of introduction for invasive species into Nunavut

Hull fouling occurs when organisms attach themselves to the outside of a ship's hull where they can then be transported around the world.

* Ballast water exchange and hull fouling have the greatest potential for introducing invasive species into the aquatic ecosystems of Nunavut. Ballast water is used to stabilize ships. It is pumped aboard ships from different ports around the world and often exchanged far from the region it was obtained. This water can contain species that are not native, and may establish themselves locally.
* Seeds, insects and even small mammals can be transported around the world through the shipping of grocery produce, lumber, construction supplies, and packing materials, even dirt from someone's footwear can contain plant seeds (IASC, 2010).
* As climate continues to change in the Arctic, many terrestrial and aquatic plants and animals will move further north looking for the food and habitat they desire. These wildlife movements are not a threat when it comes to invasive species, but it is important to note that some species, (especially rare or threatened ones) may not survive the transition. Others may do well, like flying insects, which are already increasing in number in some areas of Nunavut. (IASC, 2010).

Wildlife movements are often referred to as "range extensions" where a species expands the area they can live in when the habitat and climate is favorable for them.

The Migratory Grasshopper *(Melanoplus sanguinipes)* is a winged insect that is widely distributed across Canada and is one example of a species that may expand its range into Nunavut.

Potential Invasive Species in Nunavut

As trade and shipping continues to increase, some aquatic invasive species known to commonly foul ship hulls and ballast waters, like the Chinese Mitten Crab, are more likely to arrive at ports around Nunavut.

A recent report commissioned by Fisheries and Oceans Canada identified a number of potential aquatic invasive species, mainly for the Hudson Bay region. The table below lists only those species considered as "High Risk" to Nunavut and they are found in freshwater & marine environments.

SCIENTIFIC NAME	COMMON NAME	ORGANISM TYPE
Osmerus mordax	Rainbow Smelt	Fish
Gymnocephalus cernuus	Ruffe	Fish
Caprella mutica	Skeleton Shrimp	Crustacean
Chelicorophium curvispinum	Data unavailable	Crustacean
Dikerogammarus villosus	Killer Shrimp	Crustacean
Gmelinoides fasciatus	Data unavailable	Crustacean
Pontogammarus robustoides	Data unavailable	Crustacean
Eriocheir sinensis	Chinese Mitten Crab	Crustacean
Hemimysis anomala	Data unavailable	Crustacean
Balanus improvisus	Acorn Barnacle	Crustacean
Corbicula fluminea	Asian Clam	Mollusc
Dreissena bugensi	Quagga Mussel	Mollusc
Bythotrephes longimanus	Spiny Water Flea	Zooplankton
Cercopagis pengo	Fishhook Water Flea	Zooplankton
Eubosmina maritima	Data unavailable	Zooplankton
Marenzelleria cf. viridis	Data unavailable	Worm
Marenzelleria cf. wireni	Data unavailable	Worm
Cordylophora caspia	Freshwater Hydroid	Hydrozoa
Coscinodiscus wailesii	Data unavailable	Phytoplankton
Odontella sinensi	Data unavailable	Phytoplankton
Prorocentrum minimum	Data unavailable	Phytoplankton
Codium fragile ssp. tomentosoides	Oyster Thief	Algae
Glugea hertwigi	Data unavailable	Protozoa
Amphilina foliacea	Data unavailable	Parasite

*Species photo references available upon request. Images are not to scale.

How can you help?

Report

Have you seen a different plant, animal or insect in Nunavut?

You help identifying these species is important. Report the **location** where you observed the species (GPS Coordinates are very helpful) and provide a **detailed description** of the plant, animal, or insect. If possible **take a photo**.

Remember that not all non-native species are considered invasive. If you see an unknown plant or animal, it is very important to report it.

Do not take any extreme actions; the first step is reporting the species so that territorial and federal agencies can respond appropriately. We will report our findings back to you and information about the species you have observed.

Share

Keep yourself informed and educate others about non-native and invasive species. Let them know what to do if they see an unknown or uncommon species.

Report a species to your local Conservation Officer.

For More Information or if your CO is not available please contact:

Janelle Kennedy
Sr. Science Advisor (Aquatic)
Department of Environment,
Fisheries and Sealing Division
Box 1000 Station 1310, Iqaluit, Nunavut, X0A 0H0
Phone: (867) 975-7706, Fax: (867) 975-7754
Email: jkennedy1@gov.nu.ca

Matthew Fredlund
Legislation and Management Wildlife Technicain
Department of Environment, Wildlife Divison
Iglulik, Nunavut
Phone: (867) 934-2178
Email: mfredlund@gov.nu.ca

Kimberly Howland
Research Scientist, Arctic Stock Assessment
Fisheries and Oceans Canada
501 University Crescent, Winnipeg,
Manitoba R3T 2N6
Phone: (204)-984-4227, Fax: (204)-984-2403
Email: kimberly.howland@dfo-mpo.gc.ca

Nunavut

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