REPORT

Diavik Diamond Mines (2012) Inc.
2024 Wildlife Monitoring Report

Diavik Diamond Mine

June 17, 2025

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Executive Summary

The Diavik Diamond Mine (Mine) is located on East Island in Lac de Gras, Northwest Territories. As a requirement of the Environmental Agreement, Diavik Diamond Mines (2012) Inc. (DDMI or Diavik) has completed a Wildlife Monitoring Program (WMP) report each year since 2002. In 2019, the Government of the Northwest Territories (GNWT) issued guidelines for the development of a Wildlife Management and Monitoring Plan (WMMP) (GNWT-ENR 2019). A Tier 3 WMMP was conditionally approved by the GNWT-ENR on 15 July 2022 (GNWT-ENR 2022). An updated Tier 3 2022 WMMP was prepared based on reviews by the Government of Northwest Territories, Department of Environment and Natural Resources (GNWT-ENR), now Government of Northwest Territories, Department of Environment and Climate Change (GNWT-ECC), Environmental Monitoring Advisory Board (EMAB), and Environment and Climate Change Canada (ECCC) and submitted to the GNWT-ENR in October 2022 (DDMI 2022). A further updated Tier 3 WMMP was submitted to the GNWT-ECC on 6 Sept 2024, in response to GNWT-ECC's 5 March 2024 approval of the Tier 3 WMMP Condition 6. DDMI is awaiting Ministerial determination at the time of reporting. This Wildlife Management and Monitoring Report (WMMR) aligns with the components and objectives of the 2022 conditionally approved WMMP (Version 1.3, DDMI 2022), which consider wildlife issues of concern identified by communities and regulatory agencies. The WMMR provides the analysis and reporting of data collected using the methods described for wildlife valued ecosystem components and other wildlife in the WMMP (DDMI 2022).

The objective of the WMMR is to collect and analyze information that will assist in determining the accuracy of Mine-related effects predicted in the Environmental Effects Report (EER, DDMI 1998b,c). The WMMR also collects data to determine the effectiveness of site-specific mitigation practices and the need for any modifications through adaptive management. The following report documents the data collected and associated results for 2024. Where helpful, comparisons to the information gathered during the previous monitoring (2000 to 2023) and the pre-construction baseline (June 1995 to August 1997) have been included. The last comprehensive analysis report for the Mine's operations phase will be prepared for the 2025 monitoring year as the closure phase is scheduled to begin in 2026.

General observations for each 2024 program include the following:

Landscape Changes

In 2024, the Mine footprint increased by 0.01 square kilometres (km^2). The total loss of terrestrial and aquatic habitats to date from mining activities (11.62 km^2), which is below that predicted in the EER (12.67 km^2). The current footprint is expected to be at its maximum now for operations. The footprint may expand slightly during progressive reclamation activities.

Barren-Ground Caribou

- The total caribou summer habitat loss to date is 2.88 habitat units (HUs), which remains below the prediction made in the EER (2.965 HUs).
- Thirty-five ground-based caribou group behavioural scanning observations were completed in 2024. Seventeen behavioural scan surveys could not be included in the results due to incomplete survey records. The results from the remaining eighteen behaviour scan surveys were included in the caribou behaviour analysis that is summarized in this report. Observations occurred from March to October, at distances ranging from 0 to 526 m from Mine infrastructure. Diavik agreed to continue group scan behaviour monitoring on caribou visible from the Mine site (i.e., near field) and discontinue far field scans in 2024 following discussion with the GNWT-ECC, EMAB, and Tłı̨chǫ Government:

- There were no Mine-related caribou injuries or mortalities reported in 2024.
- During 2024, the caribou traffic advisory remained at “No Advisory” for the entire year. There was one instance where 100 or more caribou were observed at one time.
- There were two instances where action was required to deter caribou away from Mine infrastructure or out of the 1 km blast exclusion zone at the Waste Rock Storage Area South Country Rock Pile (WRSA-SCRP) immediately prior to blasting operations and no instances for blasting at the A21 open pit.

Grizzly Bear

- The total direct grizzly bear habitat loss to date is 8.41 km^2, which is below the amount predicted in the EER (8.67 km^2).
- In 2024, 113 instances of grizzly bears were recorded on East Island from 15 May to 26 October, with a total of 134 individuals observed. Of these, 77 required deterrent actions and 53 did not require deterrent actions. There were no relocation events or mine-related mortalities in 2024. Two non-Mine-related grizzly bear mortalities occurred in 2024.

Wolverine

- Since 2015, snow track monitoring for wolverine included surveys of 40 transects twice so that detection probability could be estimated and incorporated into analyses of relative presence and distribution in the study area. In 2024, severe weather limited the program to survey a total of 39 transects with 6 transects surveyed twice.
- A total of 57 wolverine tracks were detected at 26 of 39 transects (67% of tracks surveyed) during sampling in 2024. Mean track density index (TDI) was estimated at 0.20 (± 0.09 2SE). The number of days since a recent snowfall or threshold wind speed event had no significant influence on detecting wolverine tracks.
- There were no wolverine relocations or mine-related mortalities in 2024.

Raptors

- In 2024, the GNWT-ECC’s regional raptor nest monitoring surveys were not completed. These surveys are planned to occur every five years, with the next survey scheduled for 2025. The results of the last nest monitoring survey, completed in 2020, are included in a regional database that is managed by the GNWT-ECC.
- A total of 20 Pit Wall/mine infrastructure inspections were completed from 04 May until 07 September to determine use by raptors. During the inspections, two confirmed peregrine falcon nests were recorded in 2024: one on the A21 North Wall and the second on the rockwall behind the site services lineup. Both nests were considered successful when juveniles from both nests were confirmed as fledged. Gyrfalcon nesting activity was recorded at the A21 North Wall in 2024. The nest was confirmed as successful when one juvenile was observed flying over the A21 North and South Walls. Common ravens were confirmed nesting in the Boiler House on the south side of the building near vents.
- Two raptor mortalities of unknown cause occurred at the Mine in 2024. One raptor observation was noted in non-raptor mortalities reported at the Mine in 2024.

Waste Management

- In 2024, waste inspections at the Waste Transfer Area (WTA), Landfill, Underground waste bins, and at A21 were completed twice per week throughout the year. During inspections staff identified and removed any improperly disposed waste and recorded all sign of wildlife and activity. Based on the results of inspections, workers are educated on waste management practices as part of adaptive management.
- Throughout 2024, aluminium and plastic containers were collected and were shipped off the Mine site for recycling. During 2024 a total of 110,000 L of waste oil were collected and burned in waste oil heat-generating boilers.

Study Limitations

WSP Canada Inc. (WSP) prepared this report solely for the use of the intended recipient, Diavik Diamond Mines (2012) Inc. (DDMI), in accordance with the professional services agreement between the parties. In the event a contract has not been executed, the parties agree that the WSP General Terms for Consultant shall govern their business relationship which was provided to you prior to the preparation of this report.

The report is intended to be used in its entirety. No excerpts may be taken to be representative of the findings in the assessment.

The conclusions presented in this report are based on work performed by trained, professional and technical staff, in accordance with their reasonable interpretation of current and accepted engineering and scientific practices at the time the work was performed.

The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation, using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by WSP and other engineering/scientific practitioners working under similar conditions, and subject to the same time, financial and physical constraints applicable to this project.

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This limitations statement is considered an integral part of this report.

Table of Contents

TABLES

FIGURES

APPENDICES

APPENDIX A
Comments on the 2023 Wildlife Management and Monitoring Report

APPENDIX B
Caribou Behavioural Observations Summary 2024

APPENDIX C
General Wildlife Reports 2024

APPENDIX D
Wildlife Mortality Incident Reports 2024

APPENDIX E
Site Wildlife Photographs 2024

APPENDIX F
Caribou Incidental Observations Summary 2024

APPENDIX G
Wildlife Deterrent Action Incident Reports 2024

APPENDIX H
Grizzly Bear Incidental Observations Summary 2024

APPENDIX I
Wolverine Snow Track Survey Results 2024

APPENDIX J
Wolverine Incidental Observations Summary 2024

APPENDIX K
Pit Wall/Mine Infrastructure Raptor Survey Results 2024

APPENDIX L
Camp Population 2024

APPENDIX M
Waste Inspection Summary 2024

APPENDIX N
Vegetation and Lichen Monitoring Report 2024

1.0 INTRODUCTION

1.1 Background

Diavik Diamond Mines (2012) Inc. (DDMI or Diavik) completed wildlife baseline studies from 1995 to 1997. The information was used to describe ecological conditions in the Lac de Gras area in support of the Project Description and Environmental Assessment (DDMI 1998b,c). A Wildlife Monitoring Program (WMP) was developed as part of the Environmental Agreement for the Diavik Diamond Mine (Mine; DDMI 2002). Documents that were used in developing the WMP include the following:

- Comprehensive Study Report, Diavik Diamonds Project (The Canadian Environmental Assessment Act 1999)
- Environmental Assessment Overview, Diavik Diamonds Project (DDMI 1998a)
- Environmental Effects Report (EER), Wildlife, Diavik Diamonds Project (DDMI 1998c)
- Wildlife Baseline Report, Diavik Diamonds Project (Penner 1998)

Monitoring by DDMI during construction and operation of the Mine has been used to test impact predictions in the EER (DDMI 1998b,c), evaluate the effectiveness of mitigation, and provide feedback for adaptive management. In 2019, the Government of the Northwest Territories (GNWT) issued guidelines for the development of a Wildlife Management and Monitoring Plan (WMMP) (GNWT-ENR 2019). Diavik initially prepared and submitted a Tier 3 WMMP to the Government of Northwest Territories, Department of Environment and Natural Resources (GNWT-ENR, now Government of Northwest Territories, Environment and Climate Change [GNWT-ECC]) in July 2020 (DDMI 2020). A revision was subsequently submitted in November 2021 (DDMI 2021) and October 2022 (DDMI 2022) in accordance with these guidelines. Diavik's WMMP was conditionally approved on 15 July 2022 (GNWT-ENR 2022). The WMMP also complies with the Environmental Agreement, and the fundamental aspects of monitoring and mitigation previously established and accepted in the WMP. This Wildlife Management and Monitoring Report (WMMR) aligns with the components and objectives of the WMMP, which consider wildlife issues of concern identified by communities and regulatory agencies. The WMMR provides the analysis and reporting of data collected using the objectives and methods described for wildlife valued ecosystem components (VECs) and other wildlife in the WMMP (DDMI 2022). In July 2024, DDMI proposed changes to the WMMP (DDMI 2024b), which is currently under review.

Based on reviews and discussions among DDMI, communities, and regulators, the WMMR has evolved under the principles of adaptive management since the original design of the WMP in response to trends observed in the data and changes to objectives, study designs, and methods. Rationale for changes were based on the effectiveness of data to test effects predictions, community concerns, adaptive management principles, and the establishment of regional monitoring programs. Further, community site visits occur annually and provide community members an opportunity to observe Mine operations.

Due to the large degree of natural variation inherent in ecosystems, it is often difficult to detect indirect effects with only one or two years of data. Therefore, a more comprehensive analysis and discussion of all data from the WMMR has been completed every three years and submitted as a separate report. Separate reporting began in 2004 following requests for more formal statistical analysis of monitoring data by the Environmental Monitoring Advisory Board (EMAB) (EMAB 2004) and GNWT-ENR (GNWT-ENR 2004).

Since 2010, some WMP and WMMP studies for caribou, grizzly bear, and falcons have been suspended or removed through adaptive management and with consensus among communities, regulators, mine operators, and monitoring agencies after review of these programs at wildlife monitoring workshops (Marshall 2009; Handley

2010). Discontinuation of monitoring through adaptive management precludes the need to complete statistical analyses. In 2014, waterfowl monitoring was discontinued following review and agreement by Environment and Climate Change Canada (EC 2013). The 2021 Diamond Mine Wildlife Monitoring Meetings hosted by the GNWT-ENR on 2 and 3 of February 2021 determined that the grizzly bear and wolverine hair snagging, and caribou behaviour monitoring programs can be discontinued. As such, the grizzly bear and wolverine hair snagging programs were discontinued in 2022 and are not included in this technical report. Although 24 years of monitoring indicated no strong adverse response, in December 2023, DDMI agreed to continue to conduct group scan caribou behaviour monitoring visible from the Mine site (i.e., near field) (GNWT-ECC 2024) and to discontinue far-field scans in 2024 and subsequent years. Of the studies completed in the most recent three comprehensive analysis reports in 2022, 2019, and 2017,the wolverine snow track monitoring is the only program at site that remains active and evaluates regional EER predictions.

In the context of reporting efficiencies, DDMI no longer completes an independent comprehensive analysis report for wildlife. Instead, all comprehensive statistical analyses related to active monitoring programs are included every three years in the annual WMMR. The last comprehensive analysis report was completed for 2022 (WSP 2023a) and included comprehensive analysis for wolverine and caribou to fulfill approved WMMP requirements and commitments. The last comprehensive analysis during the Mine’s operations phase will be prepared following the 2025 monitoring year as mine production is scheduled to conclude in 2026. For the intermediate years, the annual reports present findings from that year and summarize cumulative data collected up to that year. If critical issues become apparent in the shorter term, then a discussion of these issues is presented in annual reports.

1.2 Objectives

The overall objectives of the WMMR are to:

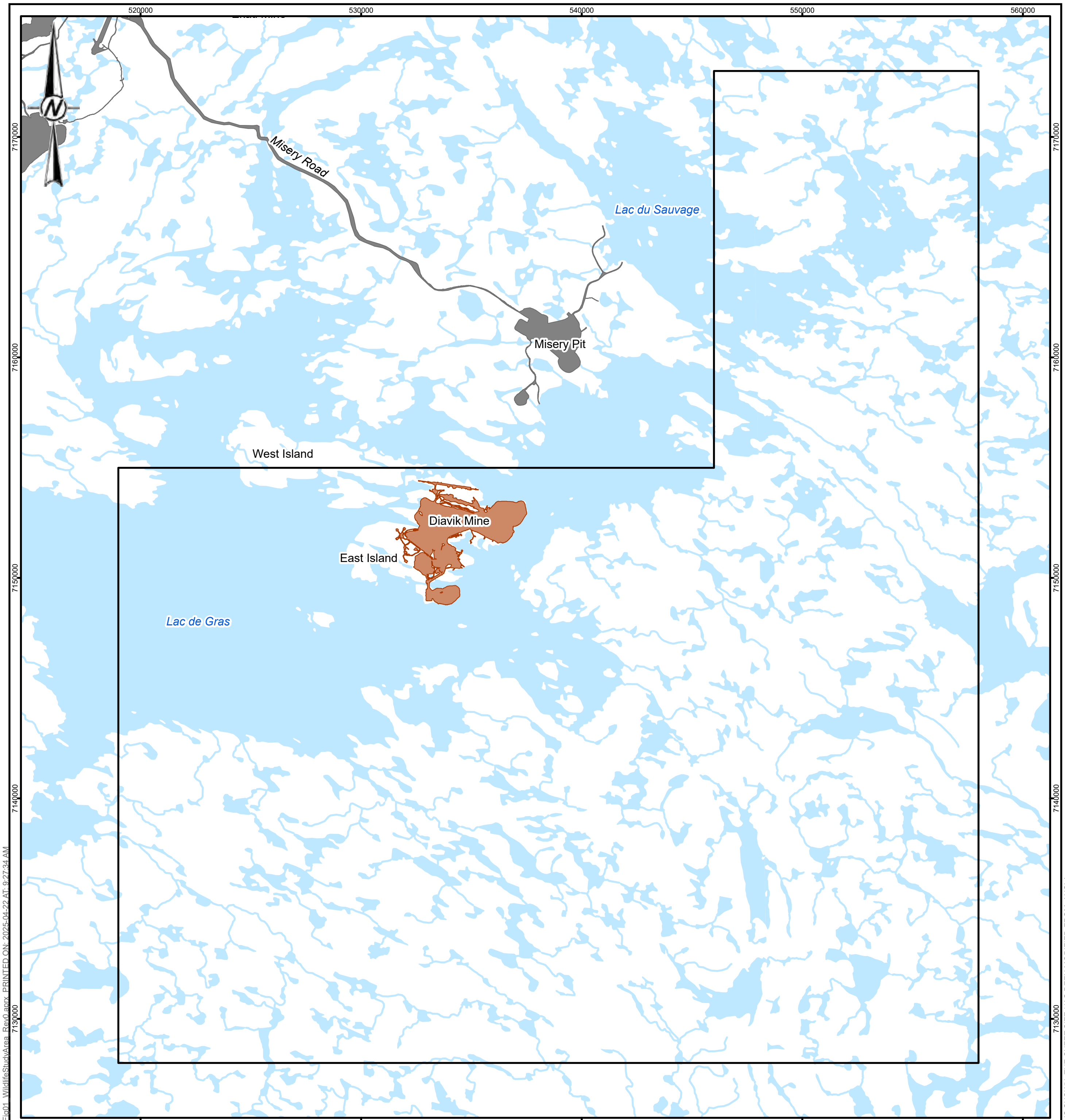
- Collect information that will assist DDMI to determine if there are effects on wildlife and if these effects were accurately predicted in the EER.
- Determine the effectiveness of mitigation practices intended to avoid and limit Mine-related effects on wildlife and whether or not these practices and policies require modification.
- Detect effects that were not predicted in the EER.

Objectives specific to wildlife VECs are presented in the following sections.

1.3 Study Area

The Mine is located on East Island in Lac de Gras (Figure 1). The wildlife study area is 1,200 km^2 and includes the East and West islands, aquatic habitats, many smaller islands in the northeast portion of Lac de Gras, and the mainland along the southern, eastern, and northern shores of Lac de Gras. An extension to the northeast was made to include the Lac du Sauvage narrows, an important caribou migration corridor (Penner 1998). The local study area during baseline studies (Penner 1998) covered approximately 805 km^2.

The Mine includes accommodation facilities, operations buildings, haul roads, an airstrip, country rock piles, the A154, A418, and A21 pits and dikes, and all other infrastructure (Figure 2). In 2012, the Mine was expanded to include a four-turbine wind farm and access roads to the wind farm. The majority of haul roads required for mining activities are complete. The current footprint is expected to be at its maximum now for operations but may expand slightly during progressive reclamation activities.



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- DIAVIK WILDLIFE STUDY AREA BOUNDARY
- DIAVIK FOOTPRINT
- EKATI FOOTPRINT
- WATERCOURSE
- WATERBODY

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REFERENCE(S)

BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
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CLIENT

RioTinto | Diavik

PROJECT

DIAVIK DIAMOND MINES INC.

TITLE

2024 DIAVIK WILDLIFE STUDY AREA

CONSULTANT

wsp

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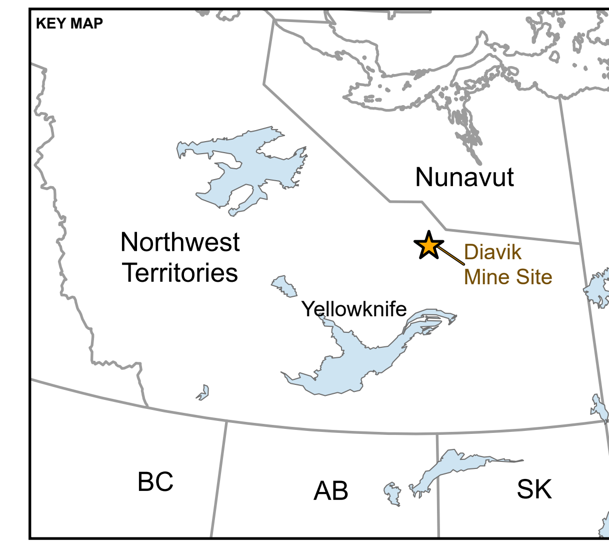

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CONSULTANT

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1.4 Report Organization

In each section of this report, data are presented that will be tracked over the life of the Mine. Recommendations for changes to the WMMR based on adaptive management are presented at the end of each section for consideration and may be incorporated into the WMMR for subsequent years. The WMMP is an evolving management plan that reflects recommendations during previous years, as well as advances in Mine development. Changes will be captured in revisions to the WMMP (DDMI 2022) and future WMMRs.

The EMAB is an arm's length organization that reviews the WMMR annually and provides comments and recommendations to DDMI. DDMI responded to comments on the 2023 WMMR (WSP 2024a) by the EMAB, the GNWT-ECC, the Wek'èezhìı Renewable Resource Board (WRRB), and Environment Climate Change Canada (ECCC) in December 2024 (WSP 2024b; Appendix A). Comments resulting in changes to the WMMR are summarized in Table 1.

Table 1: Comments on the 2023 WMMR Relevant to the 2024 WMMR

Comment Identifier	Topic	Reviewer Comment	Reviewer Recommendation	Proponent Response	WMMR Section
EMAB-WMMR-3	Mine Activity Index Figures (DDMI-WMP-85)	Figures are easier to interpret than tables, is it possible to include summary figures showing annual variation in the amount of waste rock and number of people on site? Currently these data are shown only in tables making it difficult to monitor for trends.	We recommend displaying a summary of annual amounts of waste rock and number of people on site (e.g., Camp Population – Appendix L) in order to more clearly understand interannual variation in these mine activity indices.	DDMI accepts this recommendation and will display this information as both tabulated and in a graph in the 2024 WMMR.	Table 11 and Figure 11 in Section 5.2
EMAB-WMMR-4	Wildlife Mortality Incident Figure (DDMI-WMP-86)	Mortality data for some species (e.g., caribou, grizzly bears) are reported in the WMMR, but Appendix D contains a summary of all morality incident reports over the year. Where or how are these mortality incident reports summarized and compared across years? A high-level review of Appendix D shows there are a number of mortality events for species that are not necessarily discussed in the WMMR. How do the levels of mortality in total and across species vary by year? Have these data been summarized somewhere to allow for examination of any potential trends in mortality events within and across species?	We recommend displaying a summary of all annual wildlife mortality data by species and year to more clearly understand interannual variation in incidental mortality across all species, not just the ones focused on in the annual WMMRs.	The WMMR presents mortality information for Valued Ecosystem Components assessed in the EER (DDMI 1998c). All other wildlife mortalities observed are recorded and reported in an Appendix to the annual WMMR. DDMI commits to including Raptor mortality information across all years in subsequent WMMRs as this would help better understand interannual variation for this valued ecosystem component.	See compiled wildlife mortality reports in Appendix D. See raptor mortalities summarized across years in Section 7.2.
ECCC-WMMR-1	Topic: Migratory Birds Reference: Wildlife Mitigation and Monitoring Plan (WMMP); Appendix A: Standard Operating Procedures The WMMR	Appendix A of the Wildlife Mitigation and Monitoring Plan's (WMMP) contains Standard Operating Procedure (SOP) for Raptor Pit Inspection and Bird Monitoring. This SOP describes methods for reporting occurrences of raptors and migratory birds and outlines the monitoring activities to be completed for these species: "During the nesting season, typically May through August, conduct weekly inspections of site infrastructure to document raptor species and other bird species." The WMMR for 2023 includes a section reporting raptor sightings recorded during this ongoing monitoring. There is no mention of migratory birds in the WMMR. It is unclear if migratory birds were observed or recorded during the monitoring, as no observations were included in the reporting. Monitoring activities with no observations of the target species should be reported.	ECCC recommends that during monitoring events, observations of migratory birds and avian species at risk, including results of no observations, be included in future Wildlife Mitigation and Management Reports.	During Raptor Pit Inspection monitoring May-August, DDMI scans the areas for the at risk migratory birds identified in the WMMP (bank swallow, barn swallow, Harris's swallow, lesser yellowlegs, red-necked phalarope, rusty blackbird and short eared owl). In 2023, there were not observations of these bird species. DDMI will update the table in Appendix K to include a specific column for observations of these listed species in next years report and will provide information in the main body of the report on if any observations were noted.	Section 7.0 and Appendix K
GNWT-ECC-WMMR-1	Section 4.3 - page 25 - Caribou group scans - response to stressors	In ECC's review of the 2022 annual WMMP report it was requested that DDMI report on the response of caribou to stressors that occurred during the 2022 caribou group scans, and that DDMI summarize the results according to the description of variables noted for recording response to stressors in the Methods. ECC notes that this information has again not been provided in the 2023 annual WMMP report.	1) ECC requests that DDMI report on the response of caribou to stressors that occurred during the 2023 caribou group scans, and summarize the results in a similar manner to that as provided in response to ECC's comments on the 2022 annual WMMP report. 2) ECC requests that this information be included as a standard part of reporting in future annual WMMP reports.	1) A total of 28 stressor events during caribou behaviour group scans were recorded in 2023. The most frequent stressor type was light vehicles (68%), followed by humans, helicopters and stressors that were not visible (7% each). If caribou appeared to modify their behaviour in response to a stressor, but a stressor could not be identified, the scanning event was precautionarily recorded to have a stressor that was not visible. Unseen stressors were likely too far away to detect and might have been of natural causes, such as an approaching predator. Heavy vehicles (i.e., haul trucks), grizzly bears, and blasts were not common; each accounting for 4% of the stressor types. Caribou did not respond to 42% of light vehicle stressor events (n = 19) or the single heavy vehicle stressor event (n = 1). Caribou also did not respond to 50% of human stressors (n = 2). Caribou looked towards the direction of the stressor 16% of the time in response to light vehicles (n = 19), and during the single event of blasting (n = 1). Caribou also looked towards human stressors 50% of the time (n = 2), and during 100% of helicopter events (n = 2). Caribou responded by walking away during 42% of light vehicle events (n = 19). Lastly, caribou responded strongly to the presence of a grizzly bear by running away (n =1), and during two instances where a stressor was not visible (n = 2). These results are summarized in Figure 1 presented in the cover letter. 2) DDMI will include caribou response to stressors information and figures in subsequent WMMRs.	Section 4.3.2

DDMI = Diavik Diamond Mines (2012) Inc.; EER = Environmental Effects Report (DDMI 1998c); EMAB = Environmental Monitoring Advisory Board; GNWT-ECC = Government of Northwest Territories, Environment and Climate Change; ECCC = Environment and Climate Change Canada; WMMR = Wildlife Management and Monitoring Report; WMMP = Wildlife Management and Monitoring Plan, % = percent, n = sample size.

2.0 COMMUNITY ENGAGEMENT AND TRADITIONAL KNOWLEDGE

Diavik engages with local Indigenous communities and values community feedback and insights about how Diavik operates the Mine and monitors the environment or may be affecting the environment. As part of their commitment to the environment, Diavik incorporates available Traditional Knowledge in environmental plans and monitoring programs. For Diavik's WMMR, Traditional Knowledge has been incorporated through:

- study design
- wildlife ecology and the interpretation of monitoring results
- community participation with data collection

Incorporation of Traditional Knowledge into study design of monitoring programs has occurred for caribou habitat, grizzly bear, and wolverine. For caribou, Diavik and the Tłı̨chǫ Government carried out a Traditional Knowledge study in the summer of 2013 through a series of workshops and site visits where four participating elders from Tłı̨chǫ and Lutsel K'e shared stories and knowledge about caribou migration, preferred habitats (vegetation communities and landscape features), and traditional land use (Tłı̨chǫ Government 2013). The guidance provided by the elders resulted in selection of specific sampling sites for the vegetation and lichen monitoring program that were appropriate for caribou use. In addition to influencing the study design, Traditional Knowledge shared in this study has also been considered in the interpretation of monitoring results (see Appendix I of Golder 2017). Elders in the 2013 Traditional Knowledge study noted that caribou will avoid using the areas close to the Mine during migration because dust on forage will alter its taste or smell. Traditional Knowledge has also been incorporated into the caribou scan surveys through means of a questionnaire. When elders are present, observed caribou are commented on from an animal health and traditional use perspective.

In 2012, the Diavik and Ekati mines collaborated on a new regional scale grizzly bear monitoring program because past mine-specific monitoring programs yielded inconclusive results from highly variable data (Handley 2010). The regional grizzly bear program involved hair snagging methods and included Traditional Knowledge holders to determine the best locations for hair snagging devices (Section 5.0; ERM 2014). From 2003 to 2006, the study design and data collection for wolverine snow track monitoring was based on the experience of Inuit Qaujimajatuqangit to locate transects and record wolverine snow tracks (Section 6.0).

Diavik's Traditional Knowledge Panel provided recommendations to Diavik. In 2021, the Traditional Knowledge Panel made recommendations to aspects of the caribou monitoring program, which included Rio Tinto Exploration recording caribou numbers, behaviour, and other metrics related to individual health (e.g., size, approximate weight) as well as implementing a wildlife scat collection program in and proximal to the Mine for purposes of dietary analysis (Det'on Cho Environmental 2022). DDMI provided responses to these recommendations in 2022 (Det'on Cho Environmental 2022). Caribou will be monitored to the fullest extent practicable by DDMI Operations; however, it was noted that Rio Tinto Exploration does not have the expertise to assess the requested metrics. DDMI also noted that caribou scat is collected by the GNWT-ECC, and additional scat collection is outside of the scope of the monitoring program outlined in the WMMP (Det'on Cho Environmental 2022).

The last Traditional Knowledge Panel was held in 2022. DDMI is now working towards the establishment of a comprehensive Traditional Knowledge Monitoring Program for the closure and post-closure of the Mine which will include monitoring of fish, caribou, and other wildlife.

Where possible, Diavik tries to include community members in environmental monitoring annually. For example, Earnest Lockhart from Lutsel K'e Dene First Nation participated in wolverine snow track surveys in 2024 (Section 6.3). Communities have participated in a variety of programs over the history of monitoring by Diavik (Golder 2018) and this has been documented in past reports. The WMMR is anticipated to evolve as Diavik receives input through community engagement, regulatory workshops, site visits, and Traditional Knowledge studies.

3.0 LANDSCAPE CHANGES

The scope of the landscape component of the WMMR is to determine if vegetation and surface water loss are within the magnitude or amounts predicted in the EER (DDMI 1998c). East Island vegetation cover is predominantly characterized by heath tundra and tussock / hummock landscape classes, but Mine construction and operation have also resulted in the loss of shallow and deep water. 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).

Diavik conducts ongoing monitoring to determine if dust from the Mine is affecting vegetation communities, and lichen and soil chemistry. Permanent vegetation plots are assessed for plant species cover (relative abundance) and richness at Mine and reference sites. Metals concentrations are analyzed in lichen and soil samples near and far from the Mine. The most recent comprehensive vegetation and lichen analysis report was completed in early 2025 and included up to 2024 monitoring (WSP 2025; Appendix N). As part of the Final Closure and Reclamation Plan Version 1.1, currently in preparation for submission in April 2025, dust, vegetation, and lichen monitoring will be continued during closure and post-closure.

The objective of this component of the WMMR is to determine if direct vegetation/habitat loss due to the Mine footprint exceeds the prediction of 12.67 km^2.

3.1 Methods

A Satellite pour l'Observation de la Terre (SPOT) satellite image with a resolution of 150 cm was obtained and used to update the area of the current Mine footprint. The image was intersected with the Ecological Landscape Classification (ELC) developed by the GNWT-ECC (Matthews et al. 2001). Each ELC type disturbed by the Mine was selected and calculations were made to determine the area (km^2) of each habitat type replaced by the Mine footprint. Values provided for ELC unit loss are estimates based on the predicted Mine extent (DDMI 1998c), the actual Mine footprint, and the ELC classification (Matthews et al. 2001). All analysis was completed in ArcGIS (ESRI 2024), a Geographic Information System (GIS) software.

3.2 Results

As of December 2024, a total area of 11.62 km^2 has been altered since Mine construction in 2000. This represents a relative loss of 91.7% of predicted landscape disturbance (DDMI 1998c). Landcover types at or slightly exceeding the predicted loss include riparian shrub, birch seep and shrub, boulder complex, disturbed, and esker (Table 2). In 2024, the ELC types that changed included heath tundra (<0.01 km^2), heath boulder (30%-68%) (<0.01 km^2) and tussock/hummock (<0.01 km^2) The Mine footprint may increase slightly through the end of operations as a result of progressive reclamation activities but is not anticipated to exceed the EER prediction. The annual geographic extent of landscape disturbed from the Mine footprint is illustrated in Figure 3.

Table 2: Total and Predicted Ecological Landscape Classification Unit Loss Associated with Mine Development Phases, 2000 to 2024

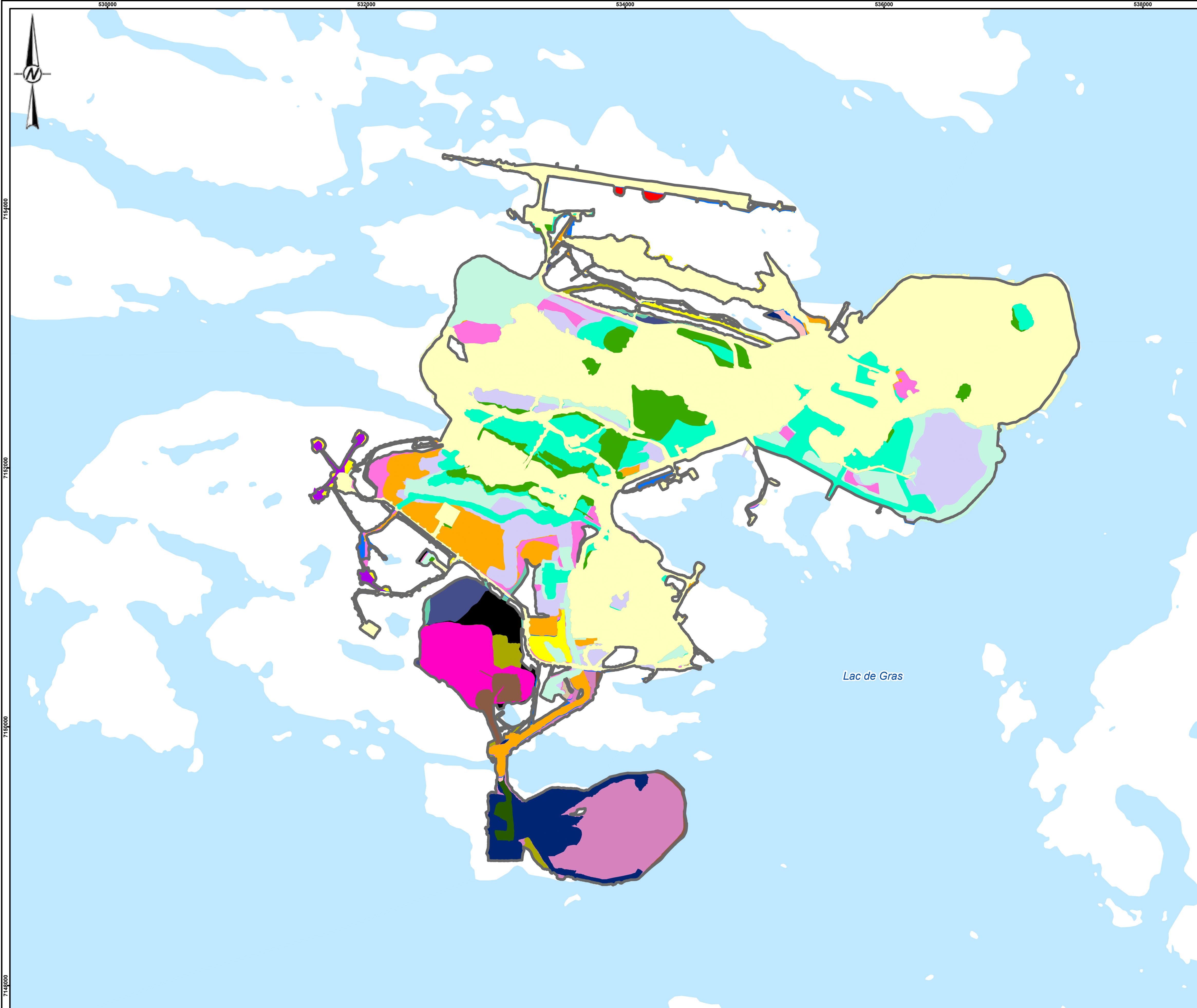
ELC Type	Construction and Open Pit Mining (2000 to 2005)	Open Pit Mining (2006 to 2009)	Underground Mining (2010 to 2016)	Underground and Open Pit Mining and A21 Underground Development (2017 to 2023)	Underground Mining and Pre-Closure Activities (2024)[(a)]	Predicted[(b)]
Heath Tundra	2.60	2.94	3.28	3.67	3.67	3.68
Heath Bedrock (30% to 80%)	0.45	0.56	0.61	0.66	0.66	0.78
Heath Boulder (30% to 80%)	1.06	1.47	1.64	1.77	1.77	1.89
Tussock/Hummock	1.19	1.41	1.50	1.62	1.62	1.64
Sedge Wetland	0.16	0.21	0.22	0.25	0.25	0.26
Riparian Shrub	0.03	0.03	0.03	0.04	0.04	0.03
Birch Seep and Shrub	0.08	0.09	0.10	0.11	0.11	0.11
Boulder Complex	0.03	0.04	0.05	0.05	0.05	0.05
Bedrock Complex	0.05	0.06	0.06	0.07	0.07	0.07
Esker Complex	0.17	0.17	0.17	0.17	0.17	0.16
Disturbed[(c)]	0.05	0.06	0.06	0.06	0.06	0.06
Shallow Water	0.29	0.34	0.40	0.44	0.44	0.48
Deep Water	1.93	2.12	2.63	2.71	2.71	3.46
Total[(d)]	**8.10**	**9.50**	**10.75**	**11.61**	**11.62**	**12.67**

(a) Represents cumulative loss prior to and during 2024.

(b) From DDMI 1998c.

(c) Disturbed includes areas that were already disturbed by exploration activities when the ELC was created.

(d) Any discrepancies in totals across the rows results from the rounding of numbers in annual columns for presentation purposes.



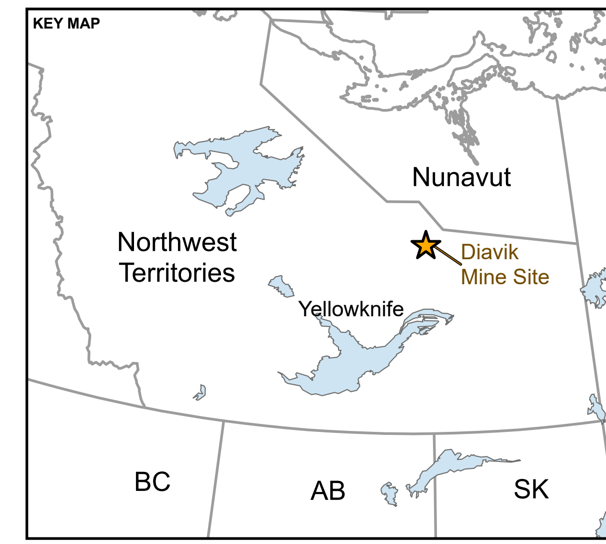
LEGEND

MINE PERIMETER 2024

WATERBODY

DISTURBANCE (2002-2023)

2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024



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1:30,000 METRES

REFERENCE(S)

DISTURBANCE AND MINE FOOTPRINT DATA OBTAINED FROM CLIENT. HYDROGRAPHY, POPULATED PLACE, AND PROVINCIAL BOUNDARY DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 12N

CLIENT

RioTinto | Diavik

PROJECT

DIAVIK DIAMOND MINES INC.

TITLE

MINE FOOTPRINT EXPANSION BY YEAR, 2002 TO 2024

CONSULTANT

wsp

YYYY-MM-DD	2025-04-22
DESIGNED	GE
PREPARED	AA
REVIEWED	GE
APPROVED	DC

PROJECT NO.	CONTROL	REV.	FIGURE
CA0022391.6786	7000.7300	0	3

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

4.0 BARREN GROUND CARIBOU

The Mine is within the spring (northern migration), summer, and fall/rut seasonal ranges of the Bathurst caribou herd (Gunn et al. 2002) and more recently in the shifted winter range. Caribou of this herd may travel through the Lac de Gras area during the northern migration to the calving grounds, and forage and move through the area during the summer and fall periods, sometimes following shorelines and onto the West and East Islands. Caribou from the Ahiak and Beverly caribou herds may also have ranges that overlap with the Mine to a lesser extent based on collared animal locations. At the time of this report, wintering caribou were present in the study area and caribou collar locations suggest these animals were most likely from the Beverly/Ahiak and Bathurst herds. Caribou from different herds may interact with the Mine and mitigation used by the Mine is designed to protect all caribou from any herd.

In 1996, the mean population size (± 95% confidence interval) of the Bathurst caribou herd was estimated at 349,000 ± 95,000 (Case et al. 1996; Gunn et al. 1997). The most recent population estimate determined by GNWT-ENR in 2021 was 6,240 animals (GNWT-ECC 2025). Although the Beverly and Ahiak herds are not monitored as intensively as the Bathurst herd, the last census for the Ahiak herd was in June of 2011 and estimated 71,340 individuals (COMA 2020). The population of the Beverly herd was estimated to be 103,372 individuals in 2018 (COMA 2020). Similar to the Bathurst caribou herd, these herds are believed to also be in decline as are a number of other circum-Arctic herds (Vors and Boyce 2009; Festa-Bianchet et al. 2011; Gunn et al. 2011).

Barren-ground caribou (*Rangifer tarandus groenlandicus*) were listed as threatened by the NWT Species at Risk (SAR) Committee on 11 July 2018 (NWT SAR 2018). The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessed barren-ground caribou in November 2016 as threatened (COSEWIC 2016). To support the recovery of all barren-ground caribou herds, the Conference of Management Authorities (COMA) developed a 2020 Recovery Strategy for Barren-Ground Caribou in the Northwest Territories (COMA 2020). The overall goals of the strategy are to:

- Maintain or restore self-sustaining, resilient populations of each barren-ground caribou herd, such that no herd is lost.
- Support and maintain the caribou-people relationship.
- Promote conditions that allow caribou to move and migrate across their historic ranges without barriers.
- Promote the conditions necessary for recovery.

The COMA (2020), which is comprised of wildlife co-management boards and governments in the NWT, has outlined five objectives to obtain this goal:

- Partners collaborate on the development and implementation of management, monitoring, guardianship, and conservation plans for barren-ground caribou in the NWT.
- Monitor barren-ground caribou, their habitat, and key factors and threats that may be affecting the status and health of herds in the NWT.
- Fill knowledge gaps, using traditional, community, and scientific knowledge, to enhance responsible and respectful barren-ground caribou conservation.
- Conserve and protect barren-ground caribou populations and their habitat.
- Provide education and promote respect for barren-ground caribou, their habitat, and conservation initiatives.

The strategy outlined the need to monitor the effects of predators on caribou as predation was considered a factor that could be managed. Wolves are the most important year-round natural predator of barren-ground caribou and knowledge of wolf numbers could help understand fluctuations in caribou populations and provide information required to support management decisions. In 2019, GNWT-ENR developed a Bathurst Caribou Range Plan (GNWT-ENR 2019), which proposes development limitations and hierarchical management actions for different areas in the Bathurst annual range. The Mine is located in Area 2 of the Bathurst Caribou Range Plan, which has a proposed moderate development level and status of cautionary. Mitigation included in the WMMP (DDMI 2022) is consistent with mitigation prescribed in the Bathurst Caribou Range Plan for developments in Area 2.

4.1 Habitat Loss

Physical alteration of the landscape reduces available caribou forage (DDMI 1998c). Habitat loss on East Island is expressed in habitat units (HUs) for caribou summer habitat. A habitat unit is the product of surface area and suitability of the habitat in that area to supply food for caribou and cover from predators (DDMI 1998c). Habitats were rated on a scale of 0 to 1 HUs for their capability to support caribou, with values greater than 0.30 regarded as highly suitable habitat and values less than 0.25 rated as low suitability for caribou. The area of each habitat type on East Island was multiplied by its habitat suitability value to determine the number of foraging habitat units available to caribou. One objective of the caribou component of the WMMR is to determine if direct summer habitat loss (in habitat units [HUs]) is greater than predicted. The impact prediction in the EER (DDMI 1998c) is:

At full development, direct summer habitat loss from the project is predicted to equal 2.965 HUs.

Dust deposition can also alter the landscape either by positively influencing vegetation vigour through deposition of nutrients and increased snowmelt rates, or by reducing plant growth by coating leaves and adversely changing soil chemistry. Both mechanisms can lead to a change in plant communities, and forage quality and quantity for caribou. Diavik also monitors for the effect of dust deposition on vegetation (including lichen) and soil chemistry (Section 3.0).

4.1.1 Methods

Using the ELC unit loss (Table 2), the area (km^2) of ELC lost was multiplied by its habitat suitability value (DDMI 1998c) to determine habitat units lost.

4.1.2 Results

Direct summer habitat loss to date from the Mine is approximately 2.885 HUs (Table 3). As noted above, ELC unit loss is below the level predicted in the EER (Table 2). Similarly, total direct losses of summer HUs for caribou are currently below that predicted in the EER (Table 3).

Table 3: Caribou Summer Habitat Unit Loss to 2024

ELC Type	Habitat Suitability Value	Cumulative ELC Loss to 2024 (km^2)	Cumulative Habitat Unit Loss to 2024
Heath Tundra	0.37	3.67	1.36
Heath Boulder	0.40	1.77	0.71
Riparian Shrub	0.46	0.04	0.02
Bedrock Complex	0.27	0.07	0.02
Tussock/Hummock	0.30	1.62	0.49
Sedge Wetland	0.28	0.25	0.07
Esker Complex	0.30	0.17	0.05
Birch Seep and Shrub	0.11	0.11	0.01
Boulder Complex	0.21	0.05	0.01
Heath Bedrock	0.23	0.66	0.15
Total[(a)]	**-**	**8.41**	**2.88**

(a) Any discrepancies in totals result from the rounding of numbers for presentation purposes.

4.2 Changes to Movement

To evaluate changes in caribou movement in proximity to the Mine, collar data collected from Beverly/Ahiak and Bathurst caribou herds in 2024 were analyzed following Poole et al. (2021), and the methods presented in the 2021 and 2022 WMMR (WSP Golder 2022b; WSP 2023). In 2021, Poole et al. (2021) provided the first exploratory analysis of geo-fence collar data and caribou interactions with the Ekati mine. DDMI committed to completing a similar analysis of geo-fence caribou collar data, following Poole et al.'s (2021) approach and in relation to the Diavik mine. These initial movement analyses were submitted as an addendum (WSP Golder 2022b) to the 2021 WMMR (WSP Golder 2022a). A comprehensive caribou movement analysis was completed as part of the 2022 WMMR (WSP 2023) and 2023 WWMR (WSP 2024a), which evaluated caribou movement at varying distances from the Ekati-Diavik mine complex to evaluate potential changes to caribou movement behaviours in response to the Mine.

This section of the WMMR provides a summary of movement metrics of caribou near the Mine (in a 3-km buffer zone) in 2024. Movement behaviours of caribou from Bathurst and Beverly/Ahiak herds are assessed using two movement metrics (i.e., speed and proportion of hard turns). A 3-km buffer zone is used as the focal area to evaluate movement metrics in relative proximity to the Mine and metrics are compared with a reference group for each herd that represents population-level estimates from collared caribou movement paths located outside a 35-km buffer zone surrounding the Mine. The buffer size of 35 km was chosen for the reference group to exclude the nearby Ekati mine site. Movement metrics calculated from caribou movement paths in the 3-km buffer zone were evaluated to determine if they overlapped those exhibited by the reference group. As a result, this analysis examines whether movement metrics were within expected population-level estimates or if they differ when closer to the Mine. In previous years, residency time was included as an additional movement metric but has since been removed to reduce redundancy, as it was found to be correlated with speed and proportion of hard turns (WSP 2023).

4.2.1 Methods

4.2.1.1 Data Preparation

Telemetry data from caribou in the Bathurst and Beverly/Ahiak herds from 15 January to 31 December 2024 were provided by the GNWT-ECC (Figure 4). Telemetry data were collected from both male and female caribou from the Bathurst and Beverly/Ahiak herds; however, a higher proportion of female caribou were equipped with collars (Table 4). Collars deployed in 2024 were geo-fence GPS collars, which were programmed to collect location data at 8-h fixes but increased to 1-h fixes when a caribou triggered a 'geo-fence' by travelling within a 30-km radius of the Mine.

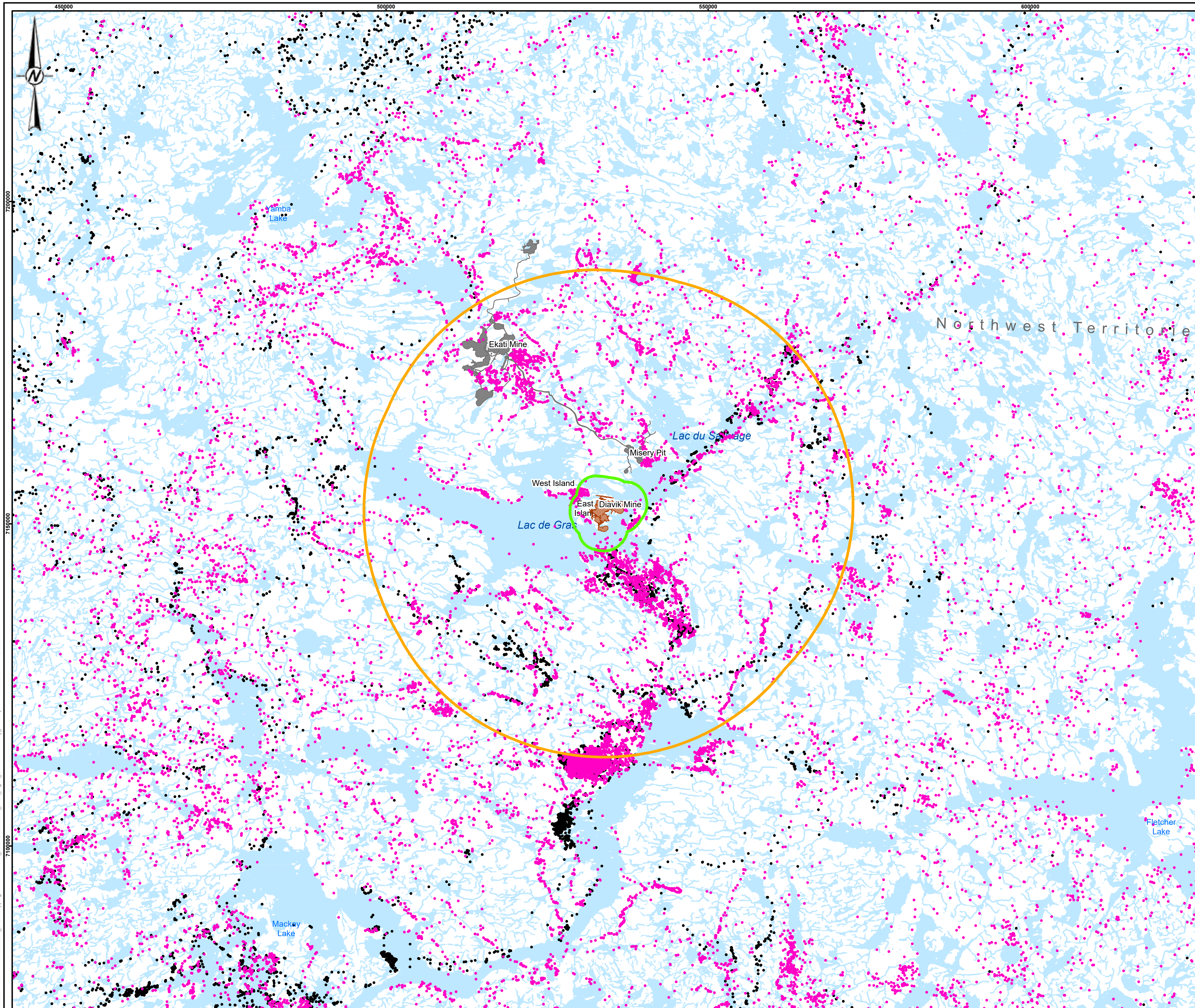
To clean the 2024 GPS telemetry dataset, duplicate telemetry data were identified and removed, which included identical records as well as records with duplicated timestamps from the same individual despite varying information in other columns. Records with missing location data were removed based on guidance from the GNWT-ECC. The first two weeks of data collected from each collar following collar deployment were removed to exclude locations that may have been influenced by behavioural effects from capture events (Werdel et al. 2021). Caribou-years with less than ten location records were excluded. All location records included in the caribou GPS data were class G, indicating that the location is a GPS fix obtained by a GPS receiver with accuracy better than 100 metres.

After the telemetry data were filtered according to the criteria above, data records were assigned a biological year and season. A biological year was defined as the time from the start of spring migration until the end of winter the following year (e.g., 20 April 2023 to 19 April 2024). For example, a caribou location collected on 16 January 2024 would be classified into the 2023 biological year. Sorting by biological year rather than calendar year is important so that the data collected during the same winter season can be evaluated together, rather than being split into two separate years. Data were sorted into six seasons (Table 4), which were defined according to Poole *et al*. (2021).

Table 4: Caribou Seasons

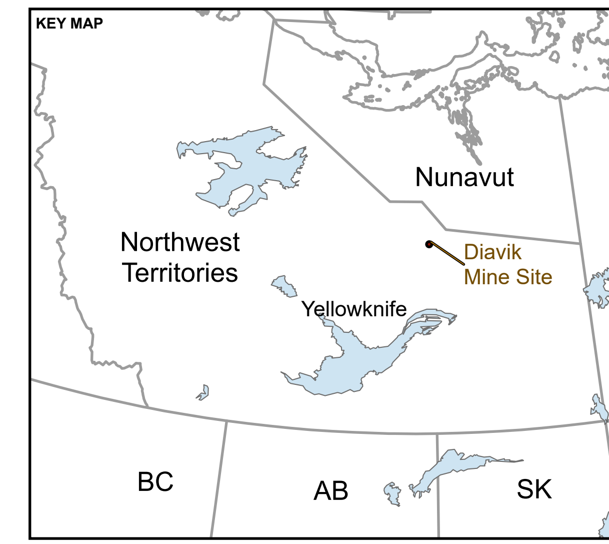
Season	Date Range
Spring migration	20 April – 1 June
Calving	2 June –16 June
Post-calving	17June – 28 June
Summer	29 June – 6 September
Fall	7 September – 30 November
Winter	1 December – 19 April

Source: Poole et al. 2021.



LEGEND

- BATHURST TELEMETRY LOCATION
- BEVERLY/AHIAK TELEMETRY LOCATION
- WATERCOURSE
- DIAVIK FOOTPRINT
- EKATI FOOTPRINT
- DIAVIK FOOTPRINT 3 KILOMETRE BUFFER
- DIAVIK FOOTPRINT 35 KILOMETRE BUFFER
- WATERBODY



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REFERENCE(S)

BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 12N

CLIENT

RioTinto | Diavik

PROJECT

DIAVIK DIAMOND MINES INC.

TITLE

FILTERED TELEMETRY LOCATIONS COLLECTED FROM COLLARED BARREN-GROUND CARIBOU IN THE BATHURST AND BEVERLY/ AHIAK HERDS IN THE 3 KM BUFFER AROUND THE MINE, 2024

CONSULTANT

wsp

YYYY-MM-DD	2025-04-22
DESIGNED	GE
PREPARED	SP
REVIEWED	GE
APPROVED	DC

PROJECT NO.	CONTROL	REV.	FIGURE
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0 25mm

4.2.1.2 Movement Metrics

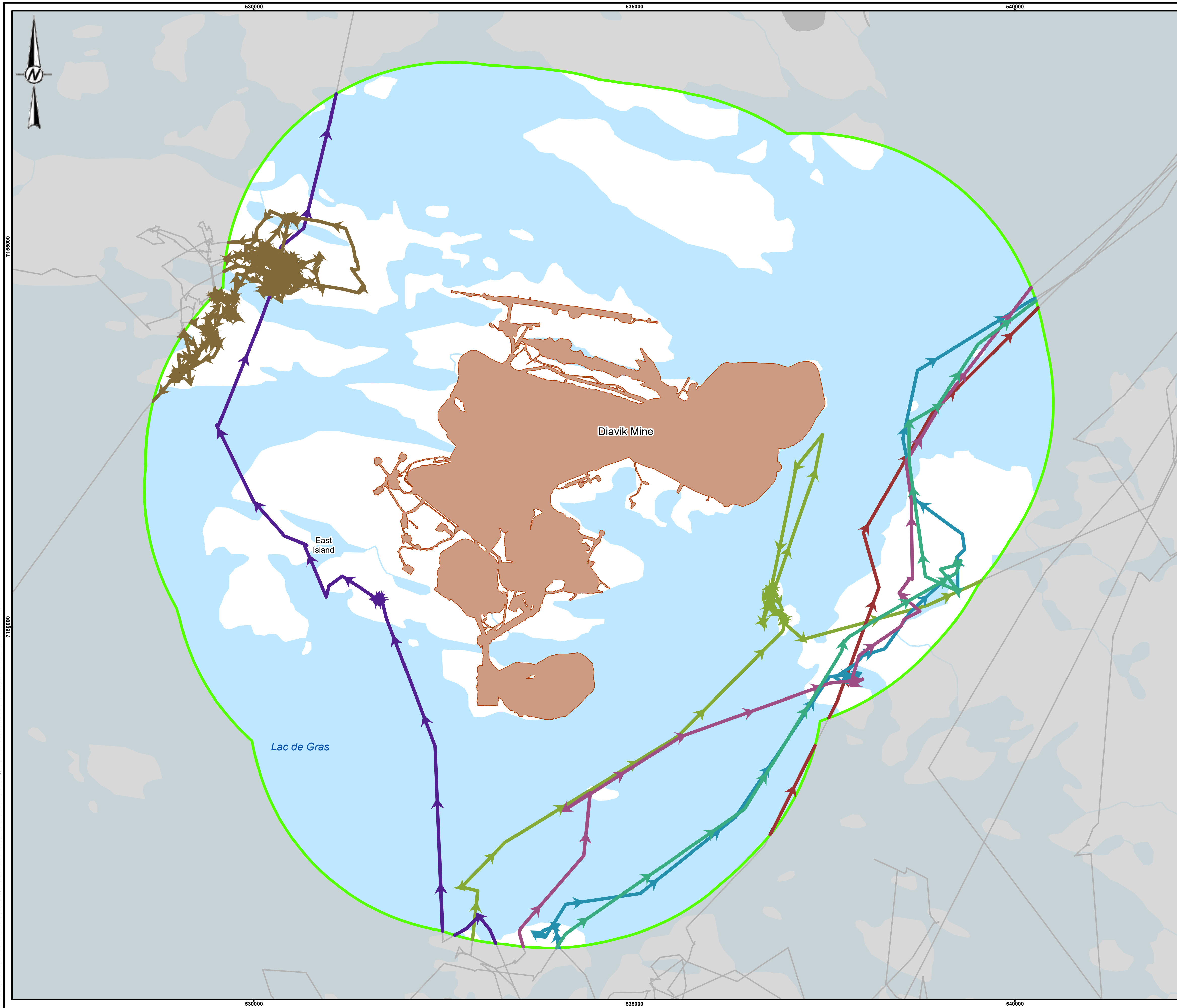
The filtered telemetry dataset was input into a GIS, and movement paths (steps) were created for each caribou as spatial polylines using the XY-to-line tool in ArcGIS Pro (ESRI 2024). Paths are the straight-line steps that connect consecutive caribou telemetry locations. Caribou paths were overlaid on top of the 3 km and reference buffer zone (i.e., 35-km buffer) in GIS (ESRI 2024), and if they crossed a buffer zone boundary, they were segmented at the buffer zone boundary and each segment was assigned to the applicable buffer zone. Figure 5 depicts how two movement paths from caribou-years were segmented in the 3-km and reference buffer zones.

All segmented paths were given a unique code (ID) that identified the original path it was derived from and the order of occurrence in the original path (e.g., “200-2” referred to the second segment of path 200). Segmented paths did not have a timestamp associated with them, so multiple steps were taken to assign each segmented path a revised timestamp. First, the length of each original path and segmented path were calculated in metres in GIS. Then, the duration (time length) of each segmented path was calculated by dividing the distance of a segmented path by the total distance of its original path and multiplying the proportionate length by the fix rate of the original path. This calculation resulted in a duration (hours) for each segmented path. Next, segmented paths were grouped by their original path and then ordered using their unique ID, which ordered the segmented paths consecutively. A cumulative duration was calculated for each segmented path by summing the duration of each segmented path with the durations of the previous segmented paths from the original path. Finally, a new timestamp was estimated for each segmented path by adding its cumulative duration with the timestamp from the previous original path. These segmented paths represent the movement paths used in the analysis.

Movement metrics calculated for all movement paths in the 3 km and reference buffer zones for this analysis included speed (i.e., movement rate) and proportion of hard turns (calculated from turning angles). Speed (i.e., movement rate) was calculated for movement paths in each buffer zone as the distance moved per hour (i.e., km/h) by dividing the distance of each path (kilometres) by the duration (in hours) of each path (as described above). For each herd and season in a biological year, a mean speed was also calculated by averaging caribou movement rate in each buffer zone. Movement metrics were calculated and summarized in R v. 4.3.2 (R Core Team 2024).

Turning angle was calculated as the relative difference in headings between two consecutive movement paths using the adehabitatLT package (Calenge 2006). If a sequential movement path was missing from the dataset (i.e., due to data cleaning and/or missed GPS fixes), a turning angle could not be calculated. Records without turning angles were removed from the dataset before summarizing turning angle information, resulting in a smaller sample size of turning angles (versus residency and speed datasets). Turning angles were first calculated in radians but were converted to degrees for easier interpretation. For simplicity, only the absolute value of turning angles were reported because it did not matter whether a caribou turned to the left or right but, rather, if they deviated from their heading (Poole et al. 2021). Following Poole et al. (2021), turning angles were identified as a ‘hard turn’ if the absolute turning angle was greater than or equal to 60°. The mean proportion of hard turns were calculated for each herd in each of the 3 km and reference buffer zones by season and year.

Comparisons between metrics calculated for the 3-km buffer zone with each herd’s reference group helped to determine if caribou movements near the Mine varied substantially from caribou assumed to be not influenced by mining activity. The comparisons include the use of standard deviation units because of the extreme differences in sample sizes of movement metrics between reference and in 3-km groups of collared caribou.

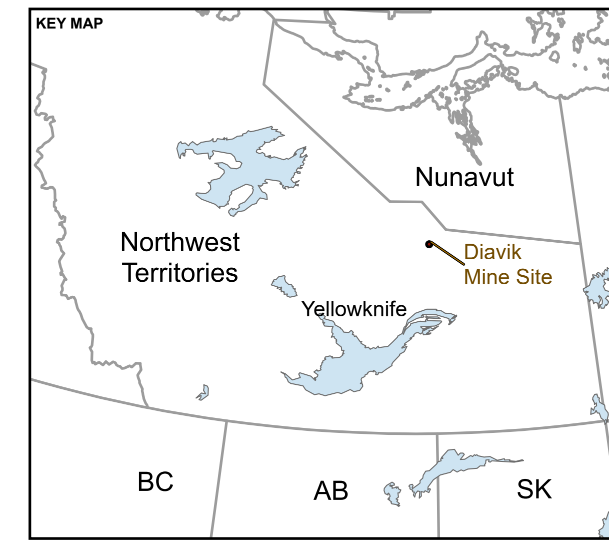


LEGEND

- WATERCOURSE
- DIAVIK FOOTPRINT
- EKATI FOOTPRINT
- DIAVIK FOOTPRINT 3 KILOMETRE BUFFER
- DIAVIK FOOTPRINT 35 KILOMETRE BUFFER
- WATERBODY
- CARIBOU TRAJECTORY OUTSIDE OF 3 KM BUFFER

CARIBOU ID - YEAR INTERSECTING 3 km BUFFER

- BGCA22140-2023
- BGCA23121-2023
- BGCA23123-2023
- BGCA23144-2023
- BGCA23170-2023
- BGCA23180-2024
- BGCA23191-2023



DRAFT

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REFERENCE(S)
BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 12N

CLIENT
RioTinto | Diavik

PROJECT
DIAVIK DIAMOND MINES INC.

TITLE
EXAMPLE OF SEVEN CARIBOU WITH MOVEMENT PATHS INSIDE THE 3 KM BUFFER AROUND THE MINE, 2024

CONSULTANT
wsp

YYYY-MM-DD	2025-04-22
DESIGNED	GE
PREPARED	SP
REVIEWED	GE
APPROVED	DC

PROJECT NO.	CONTROL	REV.	FIGURE
CA0011391.6786	7000.7300	0	5

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

4.2.2 Results

4.2.2.1 Data Preparation

The final cleaned dataset consisted of 39,398 records from the Bathurst herd and 105,147 from the Beverly/Ahiak herd. Figure 4 presents the filtered telemetry locations from caribou in the Bathurst and Beverly/Ahiak herds from 2024. Telemetry data from a total of 107 caribou were used in the movement analyses, resulting in 297 caribou-years (Table 5). In 2024, two caribou left Bathurst to join Beverly/Ahiak, and one left Beverly/Ahiak to join Bathurst. For the purposes of this analysis, the three individuals that joined a new herd in 2024 were classified as their new herd for the entire duration of the data set. Herd breakdowns were as follows: 35 Bathurst; 72 Beverly/Ahiak. The mean annual number of telemetry locations from collared caribou in this analysis was 1,145 locations (SD = 759) in the Bathurst herd and 1,451 locations (SD = 1,011) in the Beverly/Ahiak herd.

Of the 35 collared caribou (64 caribou-years) from the collared Bathurst herd that had telemetry data collected, one caribou (2.9%) had movement paths that occurred in the 3-km buffer zone (Table 5). Six collared caribou (8.3%) from the Beverly/Ahiak herd had movement paths in the 3-km buffer zone out of a total of 72 collared caribou (133 caribou-years). In 2024, 6 caribou observed in the 3-km buffer zone were female and one was male; this is likely due to the greater number of females collared compared to males in each herd throughout the study.

Table 5: Count of Collared Caribou and Caribou Years from Bathurst and Beveryly/Ahiak herds with at Least One Path in 3-km Buffer Zone around the Mine and in the Reference Group, 2023 to 2024

Herd	Count Type	Collared Caribou in the 3-km Buffer			Collared Caribou in the Reference Group[b]			Total Collared Caribou		
		F	M	Total[a]	F	M	Total[a]	F	M	Total
Bathurst	Caribou	1	0	1 (2.9%)	26	9	35 (100%)	26	9	35
	Caribou-years	1	0	1 (1.6%)	48	16	64 (100%)	48	16	64
Beverly/Ahiak	Caribou	5	1	6 (8.3%)	46	26	72 (100%)	46	26	72
	Caribou-years	5	1	6 (4.5%)	83	50	133 (100%)	83	50	133

a) Count and percent of collared caribou in the collared herd.

b) Caribou in the reference group are located outside the 35-km buffer around the Mine.

F = female, M = male.

The number of caribou with movement paths inside the 3-km buffer zone varied from one to five caribou across biological years, seasons, and herds, and remained below 7% of total collared caribou for all seasons each year (Table 6). Most caribou were observed in the 3-km buffer zone in winter 2023 for both herds, with one Bathurst caribou within the 3-km buffer in fall and winter 2024. No caribou had movement paths within 3 km of the Mine during the spring migration, calving, post-calving, and summer seasons.

Table 6: Count of Collared Caribou by Herd and Season with at Least One Movement Path in 3-km Buffer Zone around Mine and Reference Group, 2023 to 2024

Herd	Biological Year	Season	Collared Caribou in 3-km Buffer[(a)]	Collared Caribou in Reference Group[(a,b)]	Total Collared Caribou
Bathurst	2023	Winter	1 (2.9%)	35 (100%)	35
	2024	Spring migration	0 (0%)	29 (100%)	29
		Calving	0 (0%)	25 (100%)	25
		Post-calving	0 (0%)	25 (100%)	25
		Summer	0 (0%)	25 (100%)	25
		Fall	0 (0%)	24 (100%)	24
		Winter	0 (0%)	14 (100%)	14
Beverly/Ahiak	2023	Winter	5 (6.9%)	72 (100%)	72
	2024	Spring migration	0 (0%)	61 (100%)	61
		Calving	0 (0%)	57 (100%)	57
		Post-calving	0 (0%)	56 (100%)	56
		Summer	0 (0%)	56 (100%)	56
		Fall	1 (2%)	50 (100%)	50
		Winter	1 (2.3%)	44 (100%)	44

a) Count and percent of collared caribou in the collared herd. The sample size (n; number of caribou) is not mutually exclusive across seasons, meaning that the same individual may be included in the sample size (n) during multiple seasons. For example, there were six unique Beverly/Ahiak caribou observed in the 3-km buffer, with one individual being observed in the fall and winter seasons.
b) Caribou in the reference group are located outside the 35-km buffer around the Mine.

The mean length of time that location data were collected from individual collared caribou during the study period was 237 (SD = 760) days and 271 (SD = 105) days for the Bathurst and Beverly/Ahiak herds, respectively. The mean number of telemetry locations collected from individual collared caribou during the study period was 1,145 (SD = 760) and 1,451 (SD = 1,011) locations for the Bathurst and Beverly/Ahiak herds, respectively. In the reference group, most caribou had the greatest proportion of fixes collected at 8-h intervals, while within the 3-km buffer, most had fixes collected at 1-h intervals (Table 7). This is the result of interaction by some collared caribou with the geo-fence triggering higher frequency fixes.

Table 7: Number of Collared Caribou with Approximated Fix Rates from Bathurst and Beverly/Ahiak Herds, 2023 to 2024

Herd	Collared Caribou in 3-km Buffer		Collared Caribou in Reference Group[(a)]	
	1 h	8 h	1 h	8 h
Bathurst	1	0	11	24
Beverly/Ahiak	5	1	28	44

a) Caribou in the reference group are located outside the 35-km buffer around the Mine.

4.2.2.2 Movement Metrics

Speed

The mean speed of caribou varied across seasons and herds. The fastest mean speed was 0.9 km/h (SD = 0.7) and was observed from a caribou in the Beverly/Ahiak herd during winter (Table 8; Figure 6). The mean speed from caribou paths outside the 35-km buffer zone remained in a range of 0.3 to 0.7 km/h and varied slightly across herds and seasons (Table 8; Figure 6). Across both herds, the greatest mean speeds observed in the reference groups were during the summer and fall seasons. The mean speeds estimated from caribou in the 3-km buffer zone overlapped within one standard deviation of the estimated speed of the associated reference group (Figure 6). This indicates that the mean speeds of caribou in the 3-km buffer zone were comparable to the reference groups outside the 35-km buffer zone.

Table 8: Mean Speed Calculated of Caribou with Movement Paths in 3-km Buffer around Mine in 2023 to 2024

Herd	Season	Collared Caribou in 3-km Buffer		Collared Caribou in Reference Group[a]	
		n[b]	Mean Speed ± 1 SD (km/h)	n[b]	Mean Speed ± 1 SD (km/h)
Bathurst	Spring migration	0	-	29	0.4 ± 0.6
	Calving	0	-	25	0.3 ± 0.3
	Post-calving	0	-	25	0.3 ± 0.3
	Summer	0	-	25	0.5 ± 0.5
	Fall	0	-	24	0.4 ± 0.5
	Winter	1	0.9 ± 0.7	37	0.2 ± 0.4
Beverly/Ahiak	Spring migration	0	-	61	0.5 ± 0.6
	Calving	0	-	57	0.3 ± 0.4
	Post-calving	0	-	56	0.4 ± 0.4
	Summer	0	-	56	0.7 ± 0.8
	Fall	1	0.1 ± 0.1	50	0.5 ± 0.7
	Winter	6	0.3 ± 0.5	73	0.3 ± 0.5

a) Caribou in the reference group are located outside the 35-km buffer around the Mine.
b) The sample size (n; number of caribou) is not mutually exclusive across seasons, meaning that the same individual may be included in the sample size (n) during multiple seasons. For example, there were six unique Beverly/Ahiak caribou observed in the 3-km buffer, with one individual being observed in the fall and winter seasons.
SD = standard deviation; n = sample size (number of caribou); “-“ = not applicable.

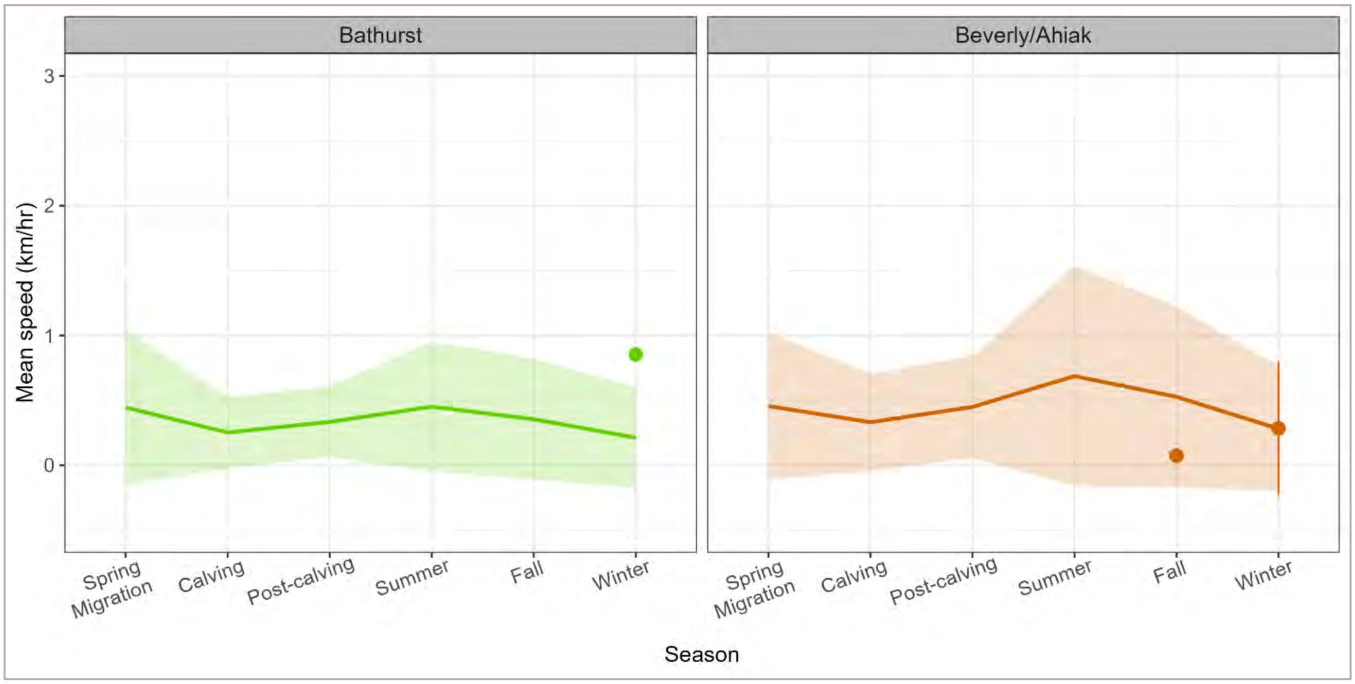


Figure 6: Mean (± SD) Speed by Herd and Season of Reference Caribou with Movement Paths in 3-km Buffer Zone Around Mine in 2024

Note: Error bars represent one SD of the mean. Horizontal lines and shading represent the mean plus/minus one SD for the reference group of each herd and season. SD are provided where sample sizes ≥ 3 caribou. Corresponding mean speed values by season and herd in the 3-km buffer zone are presented in Table 8.

SD = standard deviation; ≥ = greater than or equal to.

Proportion of Hard Turns

The distribution of relative turning angles for caribou in the 3-km buffer around the Mine are compared to the reference group for each herd in Figure 7. In general, the distribution of turning angles was similar between herds and across the 3-km buffer and reference groups. Sample sizes of turning angles in the 3-km buffer were much smaller than the reference groups, which resulted in smaller distributions in the 3-km buffer per season and herd (Figure 7). The 3-km buffer zone had low frequencies of turning angles because few caribou movement paths were available in the small 3-km buffer around the Mine.

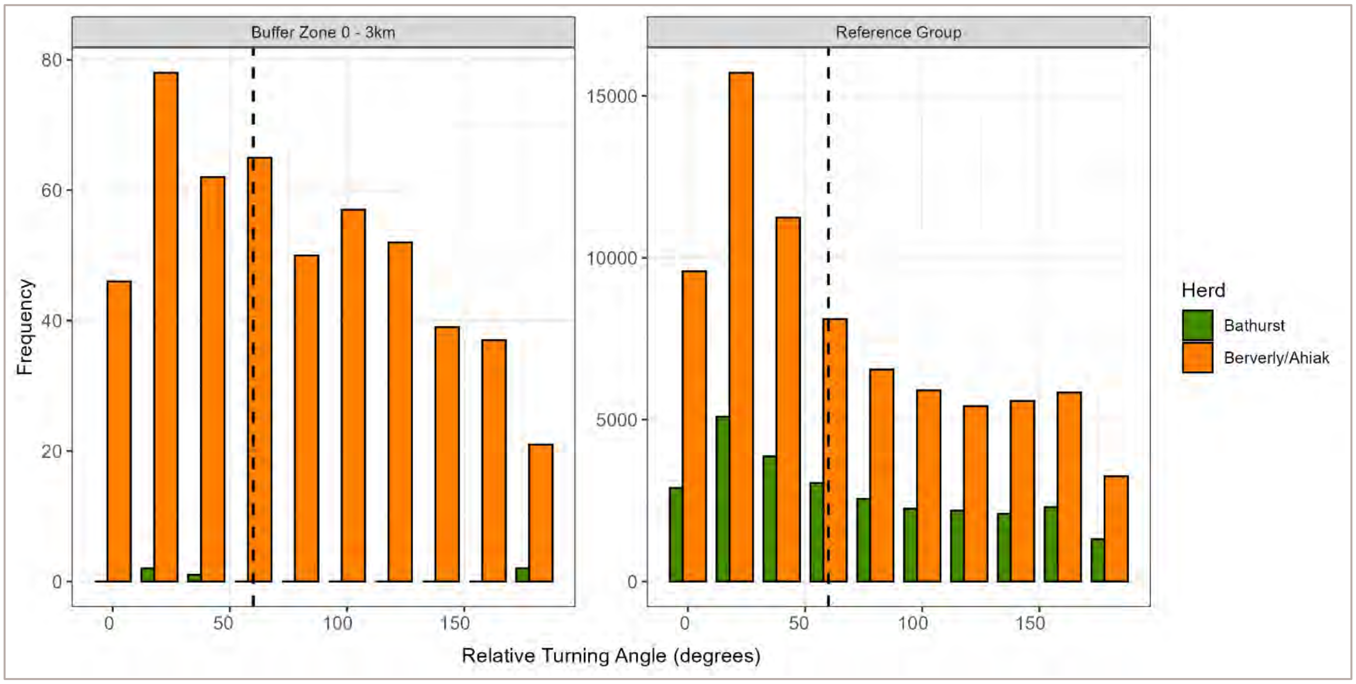


Figure 7: Frequency of Relative Turning Angles for Bathurst and Beverly/Ahiak Caribou Herds in 3-km Buffer and Reference Group, 2023 to 2024

Note: The dashed line indicates the threshold for determining a hard turn (i.e., greater than or equal to 60˚).

Mean proportion of hard turns was relatively constant for each reference group across seasons, ranging from 0.3 to 0.5 (Table 9; Figure 8). Thus, approximately one half of turns made by reference group caribou were hard turns (Table 9; Figure 8). The proportion of hard turns varied across individuals in the 3-km buffer zone from 0.4 to 0.6 (Table 9; Figure 8). Most of these caribou had proportion of hard turns that were in or slightly outside the proportions exhibited by the reference group (i.e., within 2 SD), except for the one individual of the Beverly herd in the fall, which had an increased proportion of hard turns relative to the reference group. Standard deviation could not be calculated for some values presented in Table 9 and Figure 8 due to low sample sizes per season for each herd (n = ≤ 2).

Table 9: Mean Proportion of Hard Turns of Caribou with Movement Paths in the 3-km Buffer around the Mine, 2023 to 2024

Herd	Season	Collared Caribou in 3-km Buffer		Collared Caribou in Reference Group[a]	
		n[b]	Mean Proportion of Hard Turns ± 1 SD (>60°)[c]	n[b]	Mean Proportion of Hard Turns ± 1 SD (>60°)[c]
Bathurst	Spring migration	0	-	29	0.4 ± 0.1
	Calving	0	-	25	0.5 ± 0.2
	Post-calving	0	-	25	0.5 ± 0.1
	Summer	0	-	25	0.5 ± 0.1
	Fall	0	-	24	0.5 ± 0.1
	Winter	1	0.4	37	0.5 ± 0.1
Beverly/Ahiak	Spring migration	0	-	61	0.3 ± 0.1
	Calving	0	-	57	0.4 ± 0.2
	Post-calving	0	-	56	0.4 ± 0.1
	Summer	0	-	56	0.4 ± 0.1
	Fall	1	0.6	50	0.4 ± 0.1
	Winter	6	0.5 ± 0.1	73	0.5 ± 0.1

a) Caribou in the reference group are located outside the 35-km buffer around the Mine.
b) The sample size (n; number of caribou) is not mutually exclusive across seasons, meaning that the same individual may be included in the sample size (n) during multiple seasons. For example, there were six unique Beverly/Ahiak caribou observed in the 3-km buffer, with one individual being observed in the fall and winter seasons.
c) Proportion of hard turns was calculated for each caribou with ≥ 2 turns (equals ≥ 4 consecutive telemetry locations) collected in the 3-km buffer or reference group (outside 35-km buffer). Standard deviation is provided for estimates with sample sizes ≥ 3 caribou.
≥ = greater than or equal to; SD = standard deviation; n = sample size (number of caribou); "-" = not applicable.

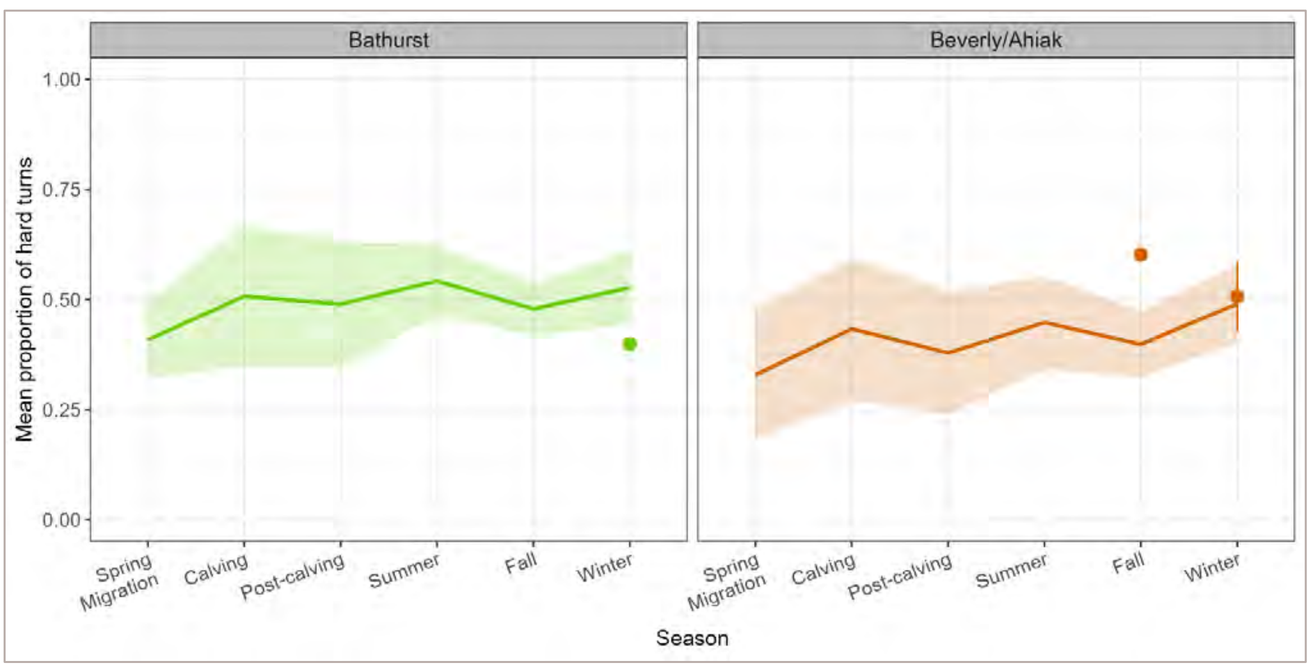


Figure 8: Mean Proportion of Hard Turns Greater than or Equal to 60˚ by Herd and Season of Caribou with Movement Paths in 3-km Buffer around the Mine in 2023 to 2024.

Note: Error bars represent one SD of the mean. Horizontal lines and shading represent the mean plus/minus one SD for the reference group of each herd and season. SD are provided where sample sizes greater than or equal to three caribou. Corresponding mean proportion of hard turn values by season and herd in the 3-km buffer zone are presented in Table 9.

SD = standard deviation.

4.2.3 Conclusion

This movement analysis summarized and compared speed and proportion of hard turns of caribou in 3 km of the Mine and in each herd reference group (i.e., located greater than or equal to 35 km from the Mine). During 2024, a total of seven caribou were observed in the 3-km buffer in the fall and winter. In most cases, collared caribou exhibited speeds and proportions of hard turns that were in the range of estimates for their associated reference group. There are very low numbers of collared caribou that spend time near the Mine.

Movement metrics estimated for the Bathurst and Beverly/Ahiak reference groups in 2024 were similar to those exhibited by the reference groups in 2010 to 2022, as evaluated in the 2022 WMMR (WSP 2023). For example, during spring migration, collared caribou in the reference group travelled faster and had lower proportions of hard turns. This indicates that caribou moved directionally and quickly as they migrated to their calving grounds. In contrast, during calving and post-calving, reference caribou tended to move slower and less directionally (i.e., higher proportion of hard turns), suggesting that individuals engaged in foraging and/or bedding behaviour more often than moving directionally over long-distances.

All caribou in the 3-km buffer exhibited mean speeds that overlapped the variation exhibited by the Bathurst and Beverly/Ahiak reference groups (i.e., overlapped 2 SD of mean speed). All but one caribou in the 3-km buffer exhibited proportions of hard turns that overlapped the variation exhibited by the Bathurst and Beverly/Ahiak reference groups (i.e., overlapped 2 SD of hard turns). One caribou (BGCA23180; male) that was observed in the 3-km buffer for 25 consecutive days on West Island to the west of the Mine in fall and winter 2024 (Figure 5) had a proportion of hard turns that exceeded the variation the Bathurst reference group. This caribou also exhibited slower speeds, which may indicate foraging, bedding and/or resting behaviour in suitable habitat in the 3-km buffer (Figure 5). The terrestrial area where this caribou was located is primarily in heath and heath boulder habitat types, which are considered highly suitable habitat types (Table 3). This supports the hypothesis that this the slow speed and hard turns indicate foraging and resting behaviours. The one Bathurst caribou within the 3-km buffer (BGCA23123; female) was observed in winter 2024 for less than one day where it travelled quickly and directionally through the 3-km buffer from the mainland northwest of the Mine through the mainland and over Lac de Gras east of the Mine (Figure 5). While it was within the range of variation of the reference group, this caribou exhibited relatively less hard turns and relatively faster speeds, indicating that it travelled quickly and mostly in a straight line.

Overall, caribou appeared to exhibit similar movement metrics when in proximity to the Mine, relative to their herd's reference group. However, the low sample sizes of caribou that used areas in 3 km of the Mine limited the inferences that could be made about caribou movement behaviours near the Mine but confirms that a very small proportion of Bathurst and Ahiak caribou interact with the Mine. This movement analysis should not be used to infer the presence and/or magnitude of a zone of influence (ZOI) surrounding the Mine, nor should 35 km (cut-off distance for the reference group) be inferred as the ZOI surrounding the Mine. Boulanger et al. (2021) investigated second-order habitat selection (Johnson et al. 1980) within 40 km of mines and found that the ZOI around the Diavik-Ekati mine complex varied by year and ranged from 0 to 12.8 km from 2009 through 2017. These authors concluded that that caribou distribution fluctuated between attraction and avoidance to Diavik-Ekati during the study period. The movement analysis presented here investigated movement behaviour in 3 km of the Mine and outside 35 km of the Mine.

4.3 Changes to Behaviour

Ground-based behavioural observations, or scan sampling, are completed to provide data on changes in caribou behaviour as a function of distance from the Mine. The monitoring objective from Handley (2010) is:

- To determine if caribou behaviour changes with distance from the mines.

The 2021 Diamond Mine Wildlife Monitoring Meetings hosted by the GNWT-ENR on 2 and 3 of February 2021 determined that the caribou behaviour monitoring program could be discontinued. Although 24 years of monitoring indicates no strong adverse response, in December 2023, DDMI agreed to continue to conduct group scan caribou behaviour monitoring visible from the Mine site (i.e., near field) (GNWT-ECC 2024) and discontinued far-field scans in 2024.

4.3.1 Methods

Caribou groups were scanned every eight minutes for a minimum of four observations and a maximum of eight observations. For each scan, the number of animals exhibiting each type of behaviour was recorded (Murphy and Curatolo 1987). Individual caribou activities were recorded as feeding, bedded, standing, alert, walking, trotting, or running. Individuals were classified as feeding when they were actively foraging or searching for food (i.e., walking with head down). The GPS location was recorded and observations were completed during the autumn (and more recently, during winter) when more caribou were passing through the area. Group composition was classified (e.g., males, females, males and females, and females and calves), and the number of animals in the group was recorded. If a group was too large where recording behaviour for each individual was not feasible, the total group size was noted, and a subset of the group was observed for behaviour.

Caribou observations during snow-free periods were performed in one habitat type (tundra with less than 30% bedrock or boulders). In winter months, habitat types are not observable, and scans are completed on caribou groups irrespective of habitat type. For the scan observations, weather conditions such as wind speed and direction, temperature, and type of precipitation were documented.

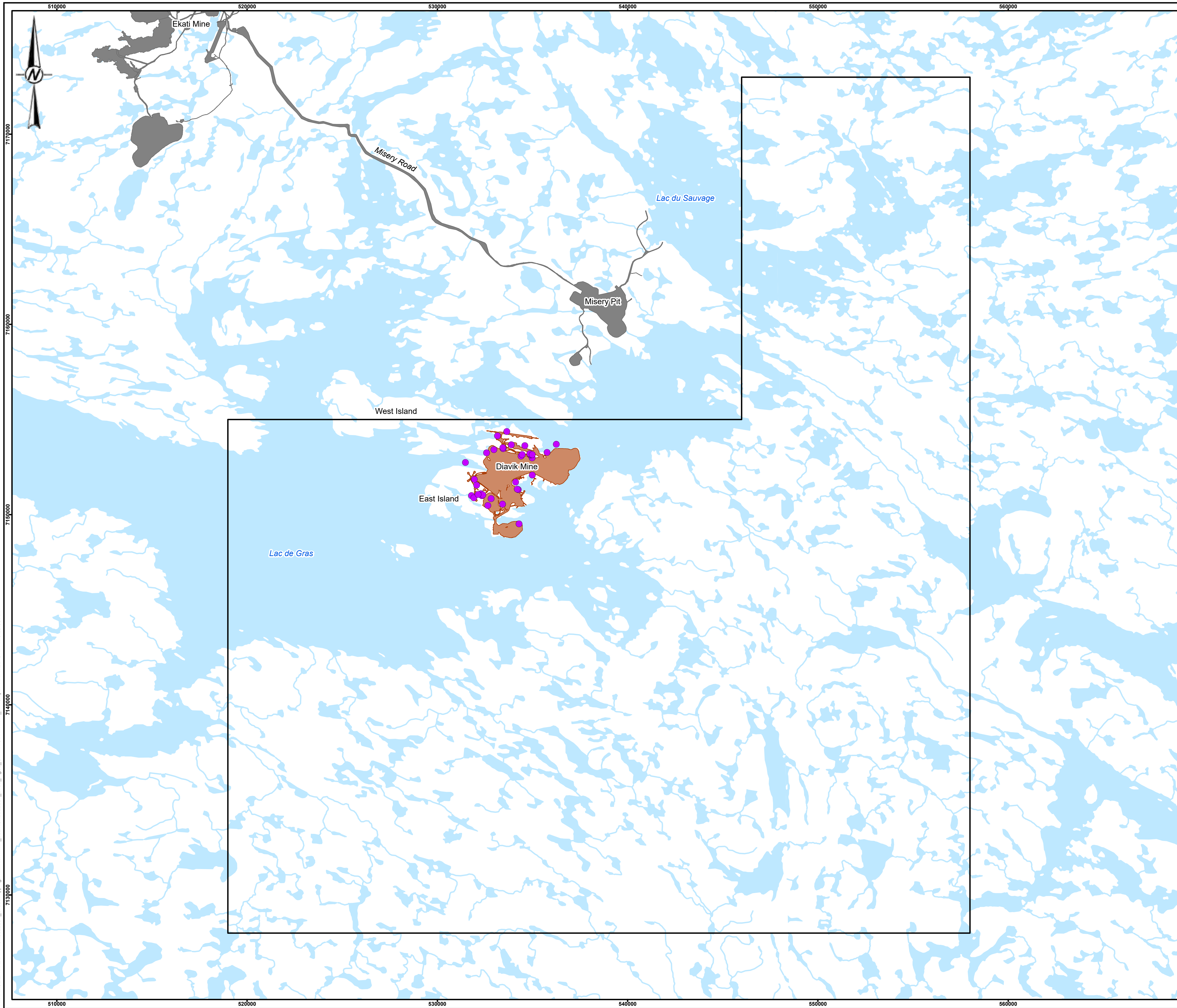
Response of caribou to stressors (natural or anthropogenic) was also assessed. In the event that a stressor was introduced during scan sampling, the observers noted the time and recorded the response of caribou to stressors as either no response, looked in the direction of the stressor, trotted or ran away. The reaction of the majority of the group was used in selecting the category. Estimated distance (m) from the stressor was also recorded. Stressors included type of wildlife, type of aircraft, type of vehicle, and blasts from pits. The observers then waited until the animals resumed their previous behaviour (usually one to two minutes) and would begin scanning observations again.

4.3.2 Results

From 24 March to 31 August behaviour scans were completed on 35 caribou groups from 0 m to 527 m from the Mine (Figure 9; Appendix B). Of the 35 scans conducted, 17 could not be included in the behaviour analysis because the scans did not contain the minimum number of four observations, or the recorded data were incomplete or contained errors (Appendix B). The caribou behaviour analysis was conducted with 18 behaviour scans containing sufficient data. These caribou were potentially from the Beverly/Ahiak and Bathurst herds based on collared caribou locations.

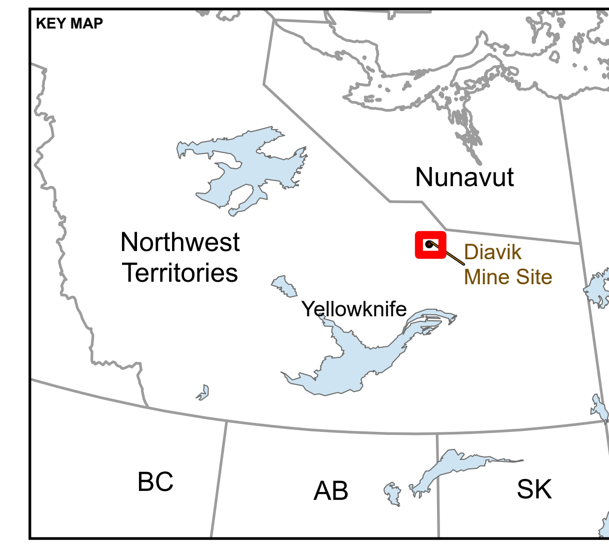
A total of 425 caribou were observed across the 18 behaviour scans. Group size ranged from 1 to 200 with an average group size of 20 animals (1SD = 46 animals). The estimated mean proportions (± 2SE) of caribou behaviour observed were as follows: bedded 34% (± 9%), feeding 52% (± 77%), standing 3% (± 11%), alert 2% (± 11%), walking 7% (± 10%), trotting 1% (± 11%), and running 0% (± 0%).

A total of 67 stressor events during caribou behaviour group scans were recorded in 2024. The most frequent stressor type was light vehicles (49%), followed by heavy vehicles (27%), and then predators (15%). Aircrafts (i.e., airplanes and helicopters) and snowmobiles were not common, accounting for 6% and 1% of the stressor types, respectively. Caribou did not respond to 70% of light vehicle stressor events (n = 33) or to 89% of the heavy vehicle stressor events (n = 18). Caribou showed an alert response to light vehicles (n = 33) stressors 9% of the time and 6% of the time in response to heavy vehicles (n = 18). Caribou also responded 20% of the time during aircraft events (n = 5) by walking. Caribou responded by walking away during 15% of light vehicle events (n = 33). Lastly, caribou responded strongly to the presence of predators (i.e., grizzly bear, red fox) by moving away from the stressor 70% of the time (n = 10). These results are summarized in Figure 10.



LEGEND

- LOCATION OF SCANNING OBSERVATIONS
- EKATI FOOTPRINT
- DIAVIK FOOTPRINT
- DIAVIK WILDLIFE STUDY AREA BOUNDARY
- WATERCOURSE
- WATERBODY



0 5 10

1:200,000 KILOMETRES

REFERENCE(S)

DISTURBANCE AND MINE FOOTPRINT DATA OBTAINED FROM CLIENT. HYDROGRAPHY, POPULATED PLACE, AND PROVINCIAL BOUNDARY DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 12N

CLIENT

RioTinto | Diavik

PROJECT

DIAVIK DIAMOND MINES INC.

TITLE

LOCATIONS OF CARIBOU BEHAVIOUR SCANNING OBSERVATIONS, 2024

CONSULTANT

wsp

YYYY-MM-DD	2025-04-22
DESIGNED	GE
PREPARED	AA
REVIEWED	GE
APPROVED	DC

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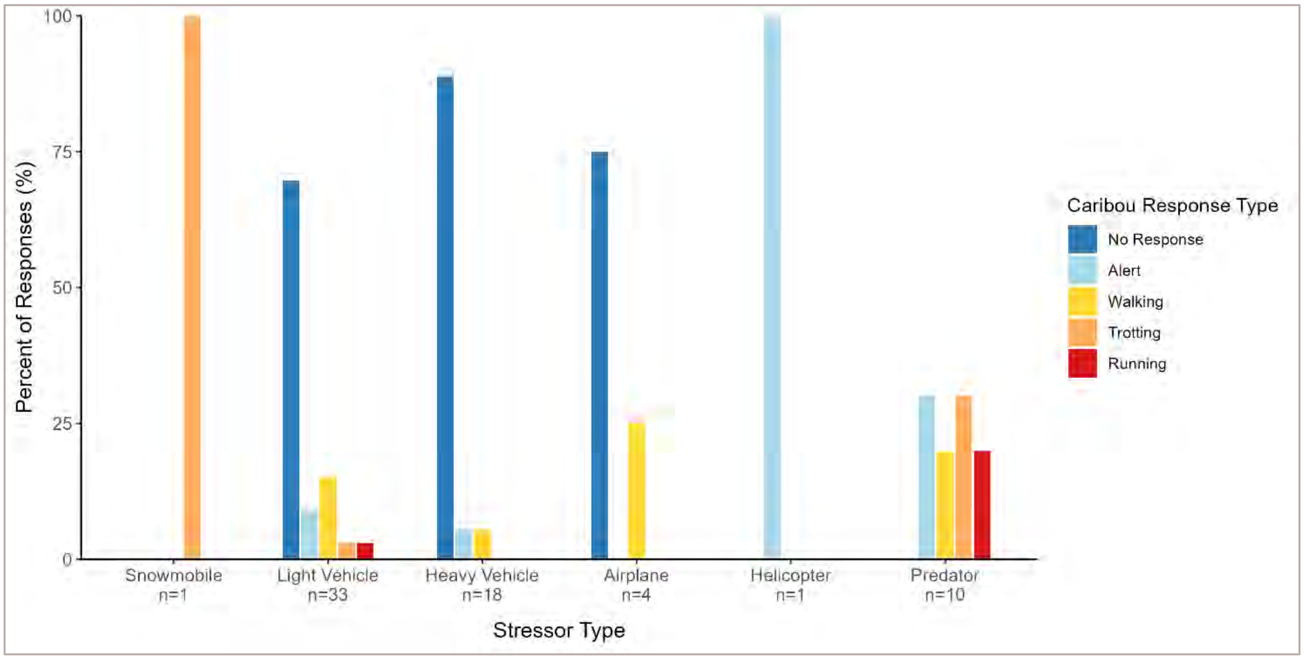


Figure 10: Caribou Behaviour Responses to Stressor Events During Caribou Behaviour Group Scans, 2024

4.4 Incidents and Mortalities

Mineral development in the Bathurst caribou herd range created concerns about increased mortality, which includes vehicle collisions, aircraft collisions, and accidents associated with caribou in hazardous areas around mining activities (DDMI 1998c). Mitigation practices and policies have been implemented to avoid and reduce the potential for mortalities such as, review of collared caribou maps provided regularly by the GNWT-ECC to detect approaching caribou, wildlife have the right-of-way on all roads, communicating the presence of caribou via radio, and the caribou traffic advisory. The objective for this component is to determine the number of caribou mortalities or injuries associated with the Mine. The following section summarizes the methods and results from incident reporting and road observations. The impact prediction in the EER (DDMI 1998c) is:

- Mine-related mortality is expected to be low (i.e., less than 1% change from baseline conditions; DDMI 1998c).

4.4.1 Methods

Mine-related incidents and mortalities are reported to the Environment Department for documentation in a detailed incident investigation for immediate follow-up (Appendix D). All caribou mortalities are reported immediately to the GNWT-ECC, and the GNWT-ECC is consulted for follow-up mitigation and disposal procedures. The information is tabulated and provided for annual comparisons.

4.4.2 Results

In 2024, there were no known Mine-related caribou injuries or mortalities recorded, which has been the case for the past 20 years (Table 10). The only Mine-related caribou mortality reported to date occurred in 2004.

Table 10: Caribou Mortalities on East Island, Baseline to 2024

	Baseline[(a)]	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Natural Caribou Mortalities on East Island	8	7	1	1	0	2	0	0	1	0	0	0	1	1	1	1	0	0	1	0	0	1	0	1	0	0
Mine-related Mortalities	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(a) Includes data from 1995 to 1997.

4.5 Caribou Advisories

The objective of the caribou advisories is to make certain that workers are aware of the approximate numbers of caribou on and near East Island, 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. The number of animals on East Island and in specific areas dictates the type of mitigation practices that will be undertaken (e.g., haul road closure, speed reduction).

4.5.1 Methods

Various methods were used to determine whether or not animals were present in the vicinity of East Island, which included incidental observations reported from pilots and workers, and using the satellite collar locations provided by GNWT-ECC.

4.5.2 Results

In 2024, caribou numbers on the East Island reported by staff ranged from 1 to 100 animals (Appendix F). Caribou were most likely from the Beverly/Ahiak and Bathurst herds based on collared caribou data. Photos of caribou taken at the Mine are included in Appendix E. There were two instances where groups of 100 caribou or more were observed. The first instance occurred in March where a herd of about 100 caribou were observed in tundra near the Emulsion Plant. The second occurred in April with a herd of about 100 caribou located around the South County Rock Pile (SCRP). In total, there were 93 different incidental observations reported from 14 March to 12 September (Appendix F).

A total of 19 caribou were spotted on or in proximity to haul roads in 2024 during three separate sightings (1 to 9 individuals/observation). All three of these sightings resulted in traffic control measures being implemented based on proximity to road and presence of traffic in area, such as radio wildlife advisories on local channels. Caribou were also observed near the airport (i.e., helipad, runway, road) on 17 occasions, with 13 of these observations resulted in traffic control measures being implemented.

There were two caribou observations on the Mine site that required deterrence measures to be implemented in 2024 (Section 4.6.2). On April 17 and 24, caribou were deterred from within the blast exclusion zone at the WRSA-SCRP (Appendix G).

4.6 Deterring Caribou from Hazardous Areas

When caribou are present on East Island their movements are monitored so that Mine personnel are aware of their presence and location. Of particular importance from a safety perspective (both human and animal), is caribou presence near hazardous areas (such as the airstrip and blast areas). When caribou are sighted adjacent to potentially hazardous areas, DDMI implements its Standard Operation Procedure for deterring caribou from these areas.

4.6.1 Methods

The method used to move caribou away from hazardous areas consists of the slow advancement of Environment Department staff (Environment) behind the caribou, encouraging the movement of the animals in a safe direction.

4.6.2 Results

On April 17 and 24, caribou were deterred from within the blast exclusion zone at the WRSA-SCRP (Appendix G).

4.7 Adaptive Management and Recommendations

Additional mitigation measures were included in the Conditionally Approved WMMP (DDMI 2022). The WMMP describes how approaching caribou will be detected, identifies trigger levels to initiate action, and introduces tiered mitigations that may be undertaken to avoid and reduce sensory disturbance to caribou and avoid mortality or injury risks (DDMI 2022). Tiered mitigation considers proximity of caribou to East Island and Mine areas, (e.g., within 5 km of East Island, reported on East Island) and corresponding mitigation and monitoring measures that will be implemented, including traffic control and reduced speed limits. A 1-km blast exclusion zone was implemented during blasting activities, consistent with Condition 5 provided by GNWT-ENR after their review and conditional approval of the 2022 WMMP (DDMI 2022), along with already established blasting procedures, such as blasting taking place in a 12-m deep charge hole and blasts being directed upward rather than outward (DDMI 2022). On two occasions, there were caribou observations that required deterrence measures to be implemented prior to blasting at the WRSA-SCRP in 2024.

Blasting activity in 2024 was conducted fully underground except for infrequent surface blasts at the WRSA-SCRP. Throughout the remainder of operations, production blasts will occur fully underground with infrequent surface blasts at the WRSA-SCRP.

In December 2023 and again in January 2024, DDMI met with EMAB, Tłı̨chǫ Government, and GNWT-ECC, to discuss group scan behaviour monitoring. Following these discussions, DDMI agreed to continue monitoring behaviour of caribou visible from the Mine (i.e., near-field) (GNWT-ECC 2024) and far-field observation scans were approved by the GNWT-ECC to be removed. As a result, this WMMR and following WMMRs will include a caribou behaviour analysis using scan data collected from near-field caribou behaviour scan surveys (Section 4.3).

5.0 GRIZZLY BEAR

The barren-ground grizzly bear (*Ursus arctos*) ranges throughout most of the NWT. The western population of grizzly bear is currently designated as Special Concern under Schedule 1 of the *Species at Risk Act* (GOC 2025) and listed as Special Concern under the NWT General Status Rank (NWT SAR 2025).

Grizzly bears have low population densities, low reproductive rates, and are sensitive to human activity (DDMI 1998c; McLoughlin et al. 1999). While some grizzly bears may avoid mineral developments, others may be attracted to human activity through odours associated with development (Gau and Case 2002; Johnson et al. 2005). Effects to grizzly bears from mining may occur through direct habitat loss, habitat suitability reduction, and direct mortality. The focus of grizzly bear monitoring is to estimate direct habitat loss, monitor grizzly bear presence, and minimize and report Mine-related mortalities.

5.1 Habitat Loss

Grizzly bears use a wide variety of vegetation and habitat types. Studies of grizzly bears in the NWT have led to understanding their seasonal habitat preferences (McLoughlin et al. 2002; Johnson et al. 2005). Loss of habitat may result in negative effects on grizzly bears. The objective of this component of the WMMR is to determine if direct habitat loss for grizzly bear from the Mine footprint is within the prediction in the EER (DDMI 1998c):

At full development, direct terrestrial habitat loss for grizzly bear from the project is predicted to be 8.67 km^2.

5.1.1 Methods

Methods used to determine grizzly bear habitat loss are similar to that described in Section 4.1; grizzly bear habitat is assumed to include all terrestrial habitats (i.e., all landscape types in Table 2) except for deep water, shallow water, and disturbed areas).

5.1.2 Results

Cumulative direct grizzly bear habitat loss resulting from the Mine up to 2024 was 8.41 km^2, which is below that predicted in the EER.

5.2 Incidents and Mortalities

Although there is some interaction between the Mine and grizzly bears, every effort is made to immediately report any animals that come into contact with the Mine. Bear awareness instruction is provided to employees and has contributed to the timely reporting of bears approaching site, which limits interactions. Despite mitigation, Mine activities may lead to grizzly bear mortalities, injuries, or relocations. The specific impact prediction in the EER (DDMI 1998c) is:

Mortalities associated with mining activities are predicted to be 0.12 to 0.24 bears per year.

5.2.1 Methods

Incidental observations of grizzly bears are recorded and are usually made by Mine staff and reported to the Environment Department. Typically, each independent grizzly bear observation is recorded because it is usually not known if different observations are of the same bear. As the number of incidental observations may be partially related to Mine activity, the occurrences of incidental observations of grizzly bears were compared to the camp population and the amount of waste rock moved, as these metrics have been identified as indices of Mine activity (Golder 2017). Waste rock deposition includes hauling of waste rock and is a source of fugitive dust, noise, and general activity at the Mine site.

Mine-related incidents and mortalities are reported to the Environment Department for documentation in a detailed incident investigation for immediate follow-up. All grizzly bear mortalities are reported immediately to GNWT-ECC, and GNWT-ECC is consulted for follow-up mitigation and disposal procedures. If wildlife had to be deterred to reduce the risk of a wildlife-human incident, then all effort is made by the Environment staff to start with the least intrusive method available, and all deterrent actions are recorded.

5.2.2 Results

There were 113 reported instances of grizzly bears on East Island in 2024, and a total of 130 grizzly bears were observed (Table 11; Appendix H). Grizzly bears were observed on 59 days from 15 May to 26 October. While these observations are not collected systematically, and contain repeated observations, incidental observations provide an indication of the potential for wildlife incidents or problem wildlife.

In 2024 there was an average of 537 people at the Mine (Table 11; Figure 11). The number of incidental observations of grizzly bears does not appear to be related to the number of people on site (Spearman correlation rho = -0.17, $P = 0.43$); however, staff reporting incidental observations does foster an awareness of wildlife issues at the Mine. Across years, grizzly bear observations were negatively correlated with the amount of waste rock moved (Spearman correlation rho = -0.67, $P < 0.01$); in recent years, the amount of waste rock moved has decreased (Table 11; Figure 11), and the number of grizzly bears observed has increased (Table 11).

Of the 130 grizzly bears seen (113 observation instances), 77 animals (64 observation instances) involved deterrent actions and 53 animals (49 observation instances) did not involve deterrent actions (Table 12; Appendix G). Deterrents used to encourage bears to move away from infrastructure included trucks, air horns, bear bangers, rubber bullets, gun cycles (noise), yelling, and clapping (Appendix G). The number of deterrents used does not appear to be related to the number of people on site (Spearman correlation rho = -0.17, P = 0.44). The number of grizzly bear deterrent actions were negatively correlated with the amount of waste rock moved (Spearman correlation rho = -0.63, P = 0.01); in recent years, the amount of waste rock moved has decreased, and the number of grizzly bear deterrent actions has increased (Table 11).

No grizzly bear relocations occurred in 2024. Two non-Mine-related grizzly bear mortalities occurred in 2024; on July 3, 2024, two cubs were euthanized by a GNWT-ECC wildlife officer following a health assessment performed by the GNWT-ECC. The calculated Mine-related mortality rate over the 25-year monitoring period is 0.12 bears per year, which is in the range predicted in the EER.

Table 11: Average Camp Population, Total Waste Rock Moved, and Number of Incidental Grizzly Bear Observations, 2002 to 2024

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Average Camp Population	1,100	470	397	646	716	747	979	562	579	630	629	537	484	524	625	641	578	586	585	558	557	583	537
Total Waste Rock Moved (millions of tonnes)[a]	2.39	19.88	28.73	26.90	23.32	18.13	19.98	17.23	18.24	9.02	0.40	0.39	1.88	0.45	0.35	0.39	6.23	7.44	8.33	8.81	4.92	7.37	1.79
Grizzly Bear Reported instances on East Island	5	19	24	43	21	41	5	22	44	56	97	65	69	77	137	89	90	80	95	80	75	87	113

(a) Values have been rounded for presentation purposes.

Table 12: Grizzly Bear Deterrent Actions, Incidents, and Mine-related Mortalities, 2000 to 2024

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Days with Bear Visitations on East Island	15	14	5	15	24	34	20	34	5	22	44	41	77	47	59[a]	56[b]	94[c]	73[d]	70[e]	70[f]	79[g]	60[h]	57[i]	77[j]	59[k]
Days Deterrent Actions were Utilized	10	8	2	6	20	23	8	20	3	18	40	31	65	40	39	27	50	51	36	45	50	41	33	26	64
Relocations	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0
Mortalities	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0

(a) Over 59 separate days, 69 grizzly bear observations were recorded.

(b) Over 56 separate days, 77 grizzly bear observations were recorded.

(c) Over 94 separate days, 137 grizzly bear observations were recorded.

(d) Over 73 separate days, 89 grizzly bear observations were recorded.

(e) Over 70 separate days, 90 grizzly bear observations were recorded.

(f) Over 70 separate days, 125 grizzly bear observations were recorded.

(g) Over 79 separate days, 169 grizzly bear observations were recorded.

(h) Over 60 separate days, 89 grizzly bear observations were recorded.

(i) Over 57 separate days, 164 grizzly bear observations were recorded.

(j) Over 77 separate days, 134 grizzly bear observations were recorded.

(k) Over 59 separate days, 113 grizzly bear observations were recorded.

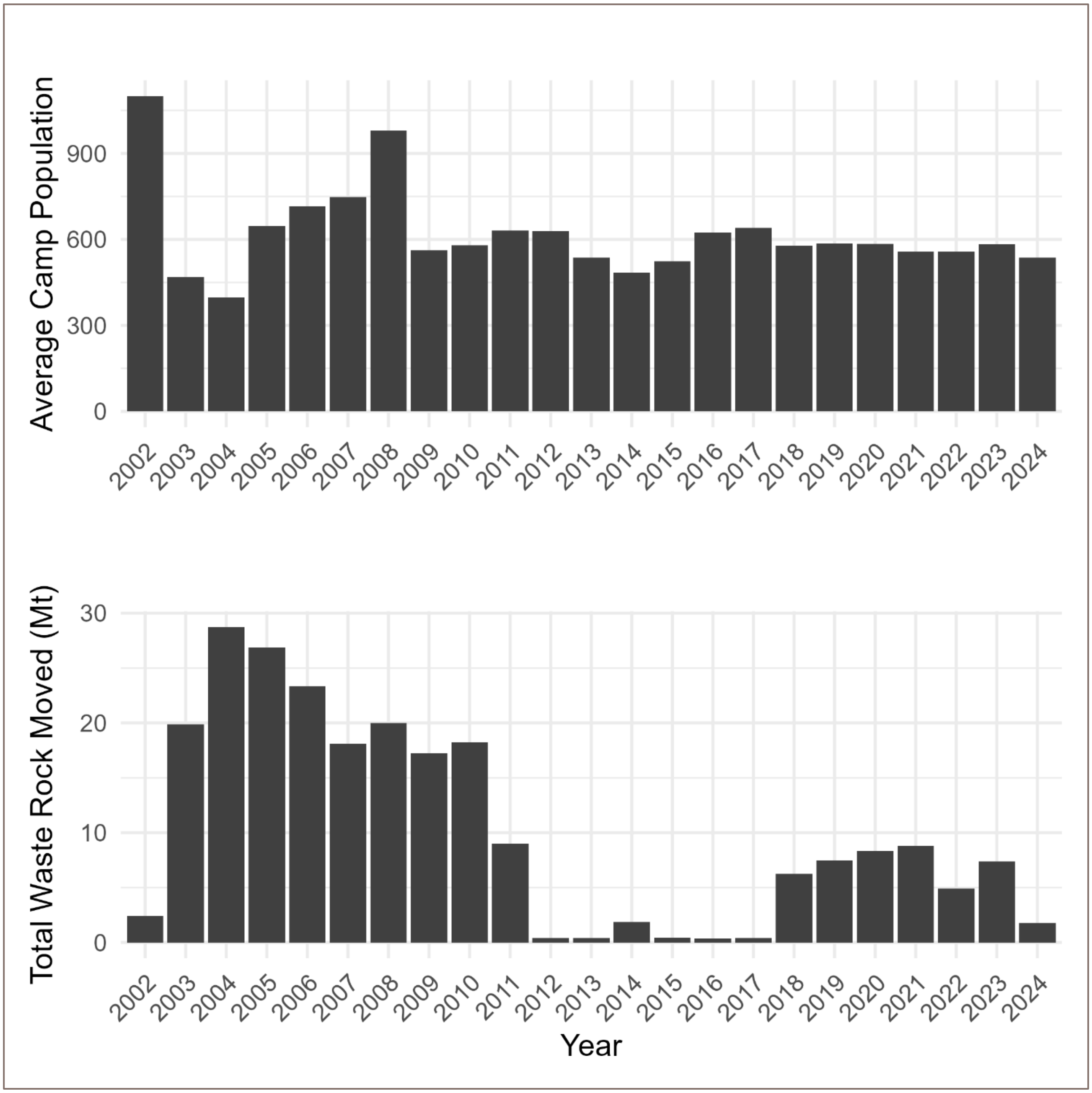


Figure 11: Average Camp Population and Total Waste Rock Moved, 2002 to 2024

5.2.3 Adaptive Management and Recommendations

Diavik participated in regional grizzly bear hair snagging monitoring in collaboration with BHP Billiton and De Beers Canada Inc. in 2012 and 2017. The results through 2017 indicated that the regional grizzly bear population is stable or increasing and not adversely affected by the Diavik and Ekati mines (ERM 2018). A growing grizzly bear population across years could explain the increase in incidental observations, and the resulting correlation with decreased total waste rock moved in recent years. Alternatively, moving waste rock may be a source of sensory disturbance and grizzly bear deterrent. In this case, the reduction of waste rock moved across years may have increased the need for alternative deterrents. Program partners at the 2021 Diamond Mine Wildlife Monitoring Meetings (GNWT-ENR 2021) concluded that the grizzly bear hair snagging program will be discontinued. Diavik continues to use deterrent actions that keep grizzly bears and Mine personnel safe.

6.0 WOLVERINE

6.1 Introduction

Wolverine (*Gulo gulo*) are annual residents in the Lac de Gras region (DDMI 1998c). Wolverines are federally listed as Special Concern under Schedule 1 of the SARA (GOC 2025) and are considered Not at Risk in the NWT (NWT SAR 2025, Species at Risk Committee 2014).

Wolverine home ranges have been estimated at 126 km^2 for adult females and 404 km^2 for adult males (Mulders 2000). The feeding behaviour of wolverine may result in their attraction to camps and habituation if they receive a food reward, which has been demonstrated during baseline, construction, and operations in the Lac de Gras area. Wolverines in the tundra have been shown to depend primarily on scavenging barren-ground caribou for their diet (Mattisson et al. 2016) particularly in the winter (Magoun 1987) and may travel long distances in search of carrion (NWT SAR 2025).

6.2 Presence and Distribution

The initial objective of this component of the WMMR was to determine if mining activities are influencing the presence of wolverines in the study area. The revised monitoring objective determined in Handley (2010) is to:

Provide estimates of wolverine abundance and distribution in the study area over time.

To meet this objective, DDMI participated in a joint wolverine DNA hair sampling research program in cooperation with Dominion Diamond Mines and the GNWT. Program partners present at the 2021 Diamond Mine Wildlife Monitoring Meetings (GNWT-ENR 2021) determined to discontinue hair sample monitoring for wolverine. The initial monitoring objective of determining wolverine presence noted previously resumes.

Wolverine presence around the Mine is monitored using the following systematic and anecdotal methods:

- snow track surveys
- incidental observations at site

6.3 Snow Track Surveys

6.3.1 Background

Surveys designed to detect organisms on the landscape are important for understanding factors influencing population dynamics and species ranges. Many surveys stratify the landscape into sampling locations (i.e., sites) and seek to determine whether a site is occupied by a given species or not. To estimate patterns of site occupancy, methods either assume perfect detection in the sampling methods or statistically control for imperfect detection in the analysis. Snow-track surveys are a popular non-invasive method for surveying mammalian communities with better detectability than alternative methods (Bayne et al. 2005). In snow-track surveys, the site occupancy of an animal is inferred by the presence of tracks in snow; however, the assumption of perfect detection is rarely met (Whittington et al. 2015). For the length of a transect to be occupied by an animal, the path of that animal must intersect with the transect at some point and leave behind distinguished, identifiable tracks. Detection depends on the observer(s) visually detecting the track and correctly identifying the source of the track. There is a non-zero probability that a transect be occupied by an animal and its tracks go undetected either through failure to see the track, or misidentification. To test hypotheses relating to the spatial distribution of animals on the landscape by way of contrasting occupied sites against unoccupied sites, the analysis must concurrently account for the probability that a site was occupied but the animal was not detected (MacKenzie et al. 2002).

6.3.2 Methods

Snow track surveys began in 2003 and have been completed with the assistance of a community member, when available. From 2003 to 2006, the study design and data collection used the experience of Inuit Qaujimajatuqangit to locate transects and record wolverine snow tracks. This included surveys of 23 transects of variable length and distance from the Mine in a 1,270 km^2 area. In 2008, DDMI revised the wolverine track survey to increase statistical power to detect changes in wolverine occurrence in the study area. Design changes included the placement of 40 survey transects of equal length (4 km long, total length = 160 km) located in areas of preferred wolverine habitat including heath tundra and heath boulder. The final locations of snow track transects were the result of a stratified random sampling process of potential locations in the study area, but some transects were relocated from Lac de Gras to areas of preferred wolverine habitat (based on Inuit Qaujimajatuqangit), including heath tundra and heath tundra boulder.

Each transect is driven by a snowmobile in March and/or April and all wolverine tracks and other sign (e.g., digs and dens) are recorded. In most years since 2015, each transect was surveyed twice so that detection probability could be estimated and incorporated into analyses of relative presence and distribution in the study area. However, two rounds of wolverine transect surveys were not completed in 2020 and 2021 due to delays and cancellations of the programs as a result of a staff shortage at the Mine from COVID-19 impacts.

The detection of snow tracks can be influenced by wind or snowfall. The effect of snowfall was estimated by determining the number of days from the survey date since the most recent snowfall. A wind threshold index was estimated from Mine meteorological data by determining the number of days prior to the survey date that the mean hourly wind speed eclipsed 7.7 metres per second (m/s) because a wind speed of 7.7 m/s is sufficient to move dry snow along the ground (Li and Pomeroy 1997). For each survey, a track density index (TDI) was calculated as the number of wolverine tracks per transect length per number of days since recent snowfall or threshold wind speed.

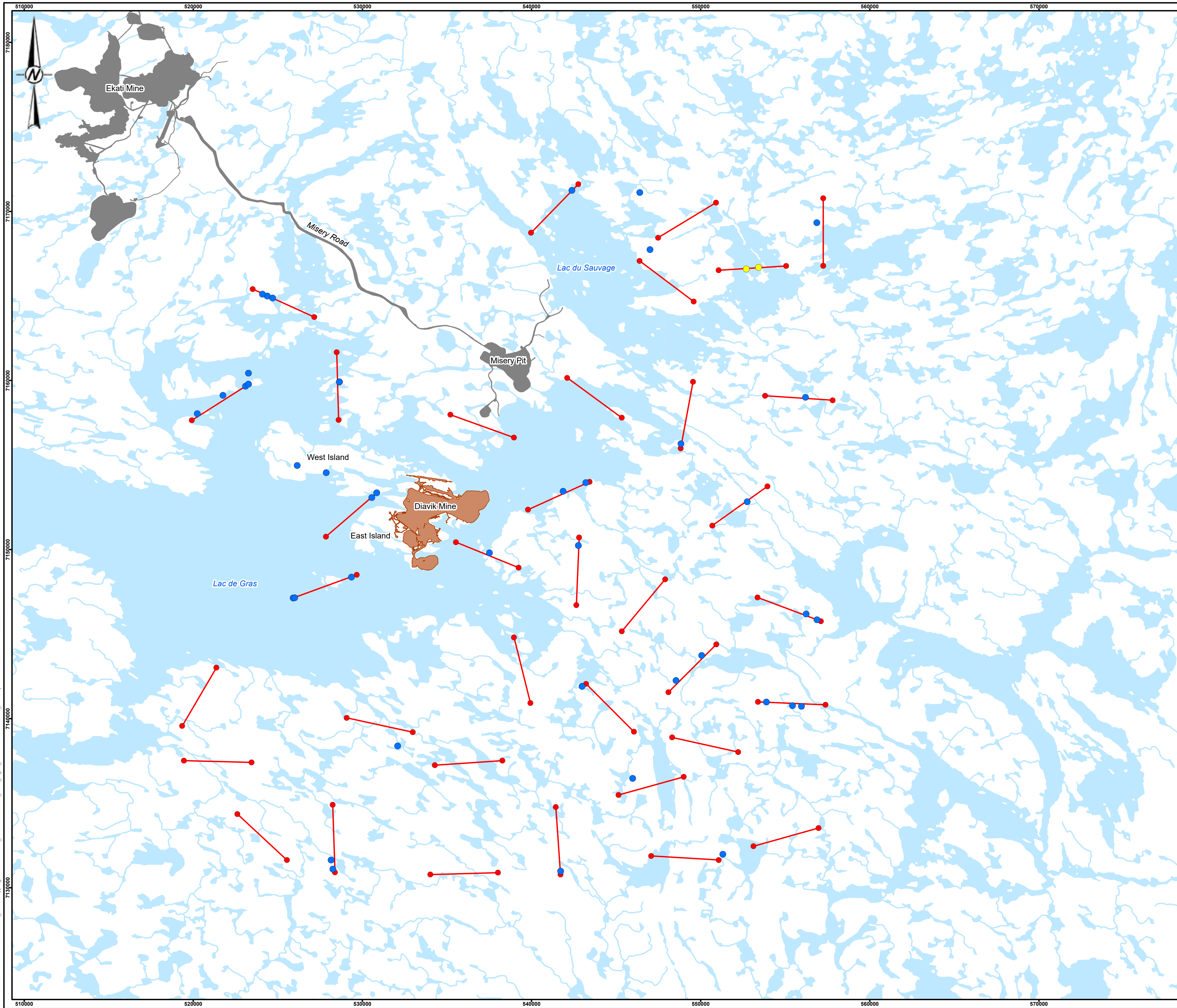
In addition, a single season occupancy model was applied to wolverine transect data using the package unmarked (Fisk and Chandler 2011) in R (R Core Team 2024). The standard occupancy model was based on zero-inflated binomial models as per MacKenzie et al. (2002) to estimate detection probabilities and the probability that a site (transect) was occupied by wolverine. The effect of wind and snowfall on track detectability was included in the model by measuring the minimum number of days since either most recent snowfall or when wind speeds surpassed the wind threshold index. The resultant values for number of days since threshold weather event were standardized and included as a covariate for estimating detection probability.

6.3.3 Results

The 2024 snow track surveys were conducted along 39 transects between 27 March and 6 April (Figure 12; Appendix I). Transect WT23 was not surveyed in 2024 due to weather interference. Repeated surveys were conducted on 6 transects. Due to weather interference, the remaining transects could not be surveyed a second time. In addition to wolverine, wolf tracks and caribou (individuals) were observed during snow track surveys. On April 5, observers recorded one caribou carcass and two wolf carcasses.

Wolverine tracks were identified at 26 of 39 transects (67% of transects surveyed; Appendix I; Figure 12). The number of wolverine tracks identified among transect surveys ranged from 0 to 7 individuals. Weather-adjusted measures of track density index (TDI) across all surveys yielded a mean TDI (± 2SE) of 0.20 ± 0.09 tracks/km/day since the last weather threshold (Table 13). The number of transects with at least one observed wolverine track was greater in 2024 (26 transects) than in 2023 (24 transects). Surveys in 2024 recorded a total count of 57 wolverine tracks across all surveyed transects (Table 13).

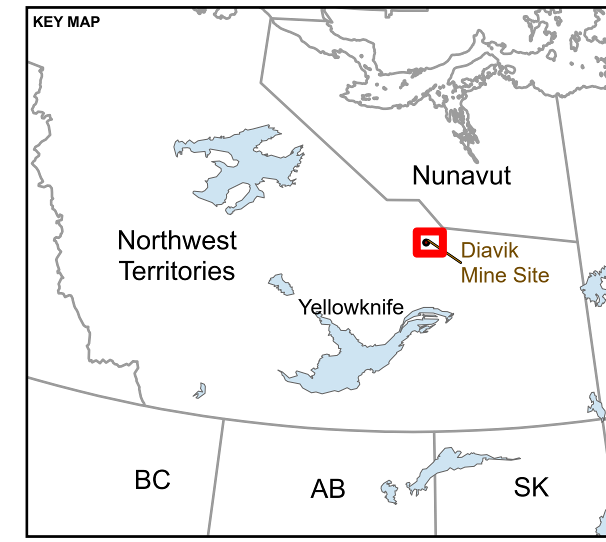
Occupancy models require multiple site visits to calculate detection probabilities. As weather interference allowed only six transects to be surveyed twice in 2024, results from the occupancy model should be treated with caution. According to the single season occupancy model, the expected occupancy probability (ψ) was 1.00, 95% CI [0.0, 1], whereby ψ represents the probability of wolverine occupying a site and applies to all possible sites in the sample (Royle and Dorazio 2009). The high occupancy estimate and extremely wide 95% confidence intervals are a function of small number of repeat surveys. The number of days since a weather threshold event had no significant influence on detecting wolverine tracks ($\beta = 0.71$, $Z = 1.86$, $P = 0.06$), where the probability of detection (p) was 0.66, 95% CI [0.50, 0.79], when the weather threshold covariate was held constant at zero. The estimate p describes the probability of detecting a species that is present.



LEGEND

- WOLVERINE TRACK
- WOLVERINE TRACK*
- TRANSECT
- DIAVIK FOOTPRINT
- EKATI FOOTPRINT
- WATERCOURSE
- WATERBODY

KEY MAP



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NOTE(S)

* LOCATION OF OBSERVED WOLVERINE TRACKS ALONG THE TRANSECT SURVEYED WAS ESTIMATED BASED ON INCOMPLETE UTM COORDINATES.

REFERENCE(S)

DISTURBANCE AND MINE FOOTPRINT DATA OBTAINED FROM CLIENT. HYDROGRAPHY, POPULATED PLACE, AND PROVINCIAL BOUNDARY DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 12N

CLIENT

RioTinto | Diavik

PROJECT

DIAVIK DIAMOND MINES INC.

TITLE

SNOW TRACK TRANSECTS AND WOLVERINE OCCURRENCE IN 2024

CONSULTANT

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Table 13: Wolverine Track Index and Mean Days Since Snow Fall, 2003 to 2024

Year	Survey Period	Number of Tracks	Distance of Transects Surveyed (km)	Mean Days Since Snowfall[(a)]	Mean Days Since Threshold Wind Speed[(a)]	Track Index (Tracks/km)	Mean Track Density Index (± 2SE)[(b)]
2003	10 – 12 Apr	13	148	2.2	2.1	0.09	0.05 ± 0.04
2004	16 – 24 Apr	22	148	4.0	4.6	0.15	0.06 ± 0.04
2004	2 – 8 Dec	10	148	3.9	2.5	0.07	0.05 ± 0.04
2005	30 – 31 Mar	7	148	7.5	3.9	0.05	0.03 ± 0.02
2005	7 – 12 Dec	18	148	2.4	3.5	0.12	0.11 ± 0.04
2006	30 Mar – 1 Apr	5	148	1.0	2.5	0.03	0.03 ± 0.01
2007[(c)]	-	-	-	-	-	-	-
2008[(d)]	30 Apr – 2 May	15	160	17.1	4.1	0.09	0.02 ± 0.01
2009	2 – 4 Apr	11	156	31.0	9.0	0.07	0.01 ± 0.01
2010[(e)]	-	-	-	-	-	-	-
2011	30 Mar – 3 Apr	23	156	0.9	6.7	0.15	0.17 ± 0.07
2012	28 Mar – 3 Apr	22	160	2.8	4.4	0.14	0.10 ± 0.06
2013	2 – 6 Apr	26	156	3.1	2.9	0.17	0.08 ± 0.04
2014	23 – 26 Mar	25	160	6.7	1.0	0.13	0.16 ± 0.08
2015	24 – 29 Mar	21	160	5.3	11.0	0.13	0.06 ± 0.05
	14 – 17 Apr	17	160	2.1	1.6	0.11	0.17 ± 0.13
2016	22 – 27 Mar	50	160	6.5	5.5	0.31	0.19 ± 0.13
	8 – 13 Apr	50	160	6.7	3.1	0.31	0.21 ± 0.10
2017	22 Mar – 4 Apr	10	160	4.1	2.5	0.06	0.02 ± 0.01
	9 – 19 Apr	42	160	2.4	2.7	0.26	0.26 ± 0.01
2018	23 Mar – 11 Apr	10	132	4.5	1.8	0.08	0.08 ± 0.06
	13 – 22 Apr	4	132	3.2	1.7	0.03	0.03 ± 0.03
2019	23 Mar – 2 Apr	14	160	1.6	1.2	0.09	0.14 ± 0.11
	13 – 21 Apr	32	160	2.1	2.3	0.20	0.21 ± 0.11
2020[(f)]	1 Apr – 18 Apr	21	160	2.0	3.6	0.13	0.14 ± 0.10
2021[(f)]	26 Mar – 4 Apr	24	156	4.6	4.8	0.15	0.04 ± 0.02
2022[(f)]	29 Mar – 14 Apr	16	148	5.9	4.3	0.11	0.06 ± 0.04
2023	24 Mar – 4 Apr	61	144	4.6	2.3	0.42	0.31 ± 0.14
	6 – 12 Apr	9	100	2.1	3.1	0.09	0.11 ± 0.08
2024	27 Mar – 5 Apr	51	156	6.9	2.6	0.33	0.21 ± 0.11
	6 Apr	6	24	4.0	2.0	0.25	0.13 ± 0.16

(a) Presented as a summary of the data used to calculate track densities. Wind threshold speed = 7.7 m/s.

(b) For each transect, a track density index (TDI) was calculated as the number of wolverine tracks per transect length per number of days since recent snowfall or threshold wind speed. TDI is reported as mean Track Density Index ± 2 times the SE (Appendix I).

(c) Survey was not completed in 2007 because a Wildlife Research permit was not acquired in time.

(d) The new survey technique was introduced in 2008. Only data hereafter was included in the multi-season occupancy analysis.

(e) Survey was not completed in 2010 due to community assistant not being available to participate in survey.

(f) Second round of surveys were not completed due to site access restrictions or staffing issues resulting from the COVID-19 pandemic.

tracks/km = tracks per kilometre; SE = standard error; - = no data available.

6.4 Incidents and Mortalities

Mortalities can occur if wolverines become habituated to mining activities resulting from efforts to locate food or shelter (DDMI 1998c). Diligent waste management and strictly enforced speed limits and immediate reporting of wildlife sightings on East Island have limited the mortality of wolverine during the operation phase of the Mine. To date, efforts have been focused on limiting Mine-related mortalities and associated changes to wolverine population parameters.

The prediction made in the EER was:

- Mine-related mortalities, if they occur, are not expected to alter wolverine population parameters in the Lac de Gras area.

6.4.1 Methods

Incidental observations of wolverine by Mine staff are reported to the Environment Department (Appendix J). Mine-related incidents and mortalities are also reported to the Environment Department for documentation in a detailed incident investigation and through incident reports submitted by Mine staff (Appendices C and D). All wolverine mortalities are reported immediately to GNWT-ECC, and GNWT-ECC is consulted for follow-up mitigation and disposal procedures. If wildlife had to be deterred to reduce the risk of a wildlife-human incident, then all effort is made by the Environment staff to start with the least intrusive method available and all deterrent actions are recorded. Correlation analysis was completed for wolverine observations, use of deterrence, and removals to ascertain if relationships exist between these variables and the number of individuals on site, and total waste rock hauled. Additionally, a logistic regression analysis was performed on the number of relocations and mortalities in relation to the camp population and waste rock hauled. For these analyses, any year with a relocation or mortality was coded as a ‘1’, while years without mortalities or relocations were coded as a ‘0’.

6.4.2 Results

In 2024, there were six reported wolverine observations on East Island, and a total of six wolverines (Table 14; Appendix J). These sightings were reported over six days from 10 January to 12 May. These observations are collected incidentally and may contain repeated observations of the same animal. Incidental observations provide an indication of the potential for wildlife incidents or problem wildlife. Wolverine incidental observations decreased in 2024 from 2023. There was no significant correlation between the number of incidental observations of wolverine and the number of people on site (Spearman correlation rho = 0.19, P = 0.38) or the amount of waste rock hauled (Spearman correlation rho = 0.18, P = 0.42); however, staff reporting incidental observations does foster an awareness of wildlife issues at the Mine.

Of the six wolverine observations on East Island in 2024, none were mortality incidents, required relocation, or required deterrent action (Table 15). These actions continue to be uncommon at the Mine and are not expected to have a measurable influence on wolverine population survival and reproduction rates. Wolverine relocations were not correlated to the number of people on site (Spearman correlation rho = -0.02, P = 0.94; logistic regression Odds Ratio = 1.00, 95% CI [0.98, 1.00], P = 0.57), or the amount of waste rock hauled (Spearman correlation rho = -0.30, P = 0.16; logistic regression Odds Ratio = 0.88, 95% CI [0.66, 1.02], P = 0.20). There was no significant relationship between wolverine mortalities and the number of people on site (Spearman correlation rho = 0.33, P = 0.13; logistic regression Odds Ratio = 1.00, 95% CI [1.00, 1.01], P = 0.17), or the amount of waste rock hauled (Spearman correlation rho = -0.22, P = 0.30; logistic regression Odds Ratio = 0.95, 95% CI [0.77, 1.09], P = 0.52). While there were no deterrent actions required in 2024, the number of deterrent actions was not related to the number of people on site (Spearman correlation rho = 0.33, P = 0.12) or the amount of waste rock hauled (Spearman correlation rho = 0.14, P = 0.53).

Table 14: Average Camp Population and Number of Incidental Wolverine Observations, 2002 to 2024

Year [a]	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Average Camp Population	1,100	470	397	646	716	747	979	562	579	630	629	537	484	524	625	641	578	586	585	558	557	583	537
Total Waste Rock Moved (millions of tonnes)[a]	2.39	19.88	28.73	26.90	23.32	18.13	19.98	17.23	18.24	9.02	0.40	0.39	1.88	0.45	0.35	0.39	6.23	7.44	8.33	8.81	4.92	7.37	1.79
Wolverine Observation instances on East Island	4	38	14	43	31	19	46	21	28	4	11	3	6	118	105	44	28	21	17	6	8	17	6[b]

(a) Monthly average camp population is not available for 2000 and 2001.

(b) A total of six wolverine observations were recorded in 2024 from six reports.

Table 15: Wolverine Observations, Deterrents, Relocations and Mortalities, 2000 to 2024

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Days with Wolverine Visitations on East Island	25	36	4	38	14	43	31	19	46	21	28	4	11	3	6	83[b]	73[c]	36[d]	23[e]	21[f]	16[g]	6[h]	8[i]	15[j]	6[k]
Days Deterrent Actions were Utilized	9	10	0	1	1	5	2	1	17	1	0	0	1	0	0	4	6	4	0	7	4	0	1	0	0
Relocations	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	2	1	0	0	0	0
Mortalities	0	1	0	0	0	0	0	0	1	0	0	0	2[a]	0	0	0	1	0	0	0	0	0	0	0	0

(a) Two wolverine mortalities occurred in 2012 at an off-site fish compensation program undertaken by DDMI.

(b) Over 83 separate days, 118 independent wolverine observations were recorded. It is believed that the majority of these observations were for the same wolverine which was relocated on 23 March 2015.

(c) Over 73 separate days, 105 independent wolverine observations were recorded.

(d) Over 36 separate days, 44 independent wolverine observations were recorded.

(e) Over 23 separate days, 28 independent wolverine observations were recorded.

(f) Over 19 separate days, 21 independent wolverine observations were recorded.

(g) Over 16 separate days, 17 independent wolverine observations were recorded.

(h) Over 6 separate days, 6 independent wolverine observations were recorded.

(i) Over 9 separate days, 10 independent wolverine observations were recorded.

(j) Over 15 separate days, 17 independent wolverine observations were recorded.

(k) Over 6 separate days, 6 independent wolverine observations were recorded.

6.4.3 Adaptive Management and Recommendations

Wolverines occupied many of the surveyed transects in 2024, with tracks from multiple individuals sometimes found concurrently. Future monitoring of wolverine snow tracks will continue to attempt two rounds of surveys to determine whether detection rates of snow tracks vary over longer periods of time. Results from the analysis of long-term snow track monitoring indicate consistent presence of wolverine since 2008.

The Environment Department will continue to encourage staff to report wolverine and other wildlife sightings as these promote awareness at site and help to prevent and limit incidents. The Environment Department will continue to work with site departments as a reminder about the importance of waste segregation and securing waste bins to prevent wildlife access. Program partners at the 2021 Diamond Mine Wildlife Monitoring Meetings (GNWT-ENR 2021) determined that the wolverine hair snagging program would be discontinued.

7.0 RAPTORS AND MIGRATORY BIRDS

Raptors (birds of prey) present in the study area include bald eagle (*Haliaeetus leucocephalus*), gyrfalcon (*Falco rusticolous*), northern harrier (*Circus hudsonius*), peregrine falcon (*Falco peregrinus anatum/tundrius*), rough-legged hawk (*Buteo lagopus*), snowy owl (*Bubo scandiacus*), and short-eared owl (*Asio flammeus*). The federal SARA previously listed peregrine falcon as Special Concern; however, on 15 February 2023, peregrine falcon was removed from Schedule 1 and is no longer considered at risk (GOC 2024). Additionally, peregrine falcon is not a listed species at risk under NWT species at risk legislation (NWT SAR 2023). Short-eared owl is designated as Special Concern under Schedule 1 of the SARA (GOC 2024), threatened by COSEWIC (COSEWIC 2008), but is not listed under NWT species at risk legislation (NWT SAR 2023).

Habitat loss, sensory disturbance, and changes to prey populations may influence raptors nesting in the Lac de Gras area. Mining activities may cause raptors to avoid the area and surrounding habitats. Mine-related changes in habitat quality can influence the presence and distribution of raptors. Impact predictions related to raptors (DDMI 1998c) were:

- Disturbance from the Mine and the associated zone of influence is not predicted to result in measurable impacts to the distribution of raptors in the study area.
- The Mine is not predicted to cause a measurable change in raptor presence in the study area.

Analysis of Diavik and Ekati peregrine falcon and gyrfalcon nest data from 1998 to 2010 determined that sensory disturbance was not influencing nest occupancy and success (Coulton et al. 2013). Instead, the study concluded that the patterns of use and success were associated with the spatial distribution of nest site quality and the age of nest sites, respectively, which is consistent with findings from another long-term study (Wightman and Fuller 2005). The results confirmed the decisions at the 2010 Diamond Mine Wildlife Monitoring Workshop that annual collection of raptor nest occupancy and success in the study area should be discontinued, and data collection should be focused on mitigating effects to raptors nesting in open pits and on Mine infrastructure.

The monitoring objectives presented in Handley (2010) are to:

- Determine if pit walls or other infrastructure are utilized as nesting sites for raptors.
- Determine nest success in areas of development and document effectiveness of deterrent efforts used.
- Document and determine the cause of direct Mine-related mortalities of raptors.

Another objective related to monitoring the regional status of raptor populations includes:

- Support GNWT-ECC in regional monitoring of raptor nest occupancy and productivity to determine long-term population trends.

Note that the Handley (2010) objective for regional monitoring of raptor nest occupancy for the Canadian Peregrine Falcon Survey (CPFS) has been changed because the CPFS has been discontinued. Instead, monitoring is contributed to a regional database administered by GNWT-ECC.

7.1 Nest Site Occupancy

7.1.1 Methods

The Canadian Peregrine Falcon survey is no longer completed; however, DDMI will still support surveys of nest use and success in the study area for regional monitoring by GNWT-ECC and other researchers. Nest monitoring for inclusion in regional and national databases is scheduled for every five years and was last completed in 2020. The monitoring was completed by GNWT-ECC biologists and included surveys of known nest sites in early and late summer to determine nest use and the presence of hatchlings. The monitoring approach included a helicopter survey using fly-by techniques to minimize disturbance to nesting birds.

Falcons and other raptors have been known to nest on Mine infrastructure and in the vertical rock faces of open pits at both the Mine and the Ekati Mine. Pit wall/infrastructure inspections at the Mine are completed at least once per week during the nesting season. Pit walls and other infrastructure are inspected for nests and falcon nesting behaviour. If nests are found, DDMI attempts to determine the species occupying the nest along with the presence of eggs and/or chicks. Nests are only considered active if eggs or young are observed. Deterrent actions are only considered in consultation with GNWT-ECC if the nest is in an area hazardous to the birds but not if eggs or young are observed.

Pit wall/infrastructure inspections are completed at eight locations on the Mine: A21 Pit area (Lookout 1, 2, 3, and A21 South Ramp), A154 Pit area (Lookout 1 and 2), A418 Pit area (Lookout #1 and #2), South Tank Farm, Process Plant, Powerhouse 1 and Powerhouse 2, Site Services Building, Boiler House, and Backfill Plant. The survey is completed by stopping at a clear vantage point and thoroughly scanning the area for any potential nesting locations. Incidental observations of raptors or bird species at risk are also noted in the results.

7.1.2 Results

Regional nest monitoring was not completed in 2024, with the next scheduled survey to occur in 2025. A total of 20 pit wall/infrastructure inspections were completed from 4 May until 7 Sep to determine use by raptors (Appendix K). No deterrent actions were used to prevent raptor nesting in 2024.

Two confirmed, active peregrine falcon nest were recorded in 2024: one on the A21 North Wall and the second on the rockwall behind the site services lineup. On August 12, the nest on the A21 North Wall was confirmed as present and successful when one of three juveniles was confirmed to have fledged. On 24 August, one fledgling was observed perched on a powerline near the A21 North Wall. On 24 August, the nest at the Site Services Lineup was confirmed as present and successful when a juvenile was observed as fledged, perched on a wall at the Line-up and then flying toward the Process Plant.

Gyrfalcon nesting activity was recorded at the A21 North Wall in 2024. On 17 August, the nest was confirmed as present and successful when one juvenile was observed over the A21 North and South Walls. Although not considered raptors, common ravens (*Corvus corax*) are functional raptors and were confirmed nesting in the Boiler House on the south side of the building near vents.

There were no nests belonging to migratory species at risk observed during the pit wall/infrastructure inspections between May and August in 2024 (Appendix K).

Table 16: Active Nests Observed on Mine Infrastructure, Open Pits, and Equipment in 2024

Area	Species	Date	Observations
A21 North Wall	Peregrine falcon	11 July to 24 August	The nest was first observed on 11 July where one adult was circling the employee's vehicle and alarm calling and three juveniles were observed in the nest. On August 12, the nest on the A21 North Wall was confirmed as present and successful when one of three juveniles was confirmed to have fledged. On 24 August, one fledgling was observed perched on a powerline near the A21 North Wall. The final observation included one fledgling flying to and perching on a powerline pole near the A21 North Wall on 24 August.
Site Services Lineup	Peregrine falcon	26 May to 24 August	On 26 May a nest was observed on the rock wall behind the Site Services Lineup. The final observation was on 24 August. The nest was confirmed as present and successful when a juvenile was observed fledged, perched on a wall at the Line-up and then flying toward the Process Plant.
A21 North Wall	Gyrfalcon	17 August	One juvenile gyrfalcon was observed flying over the A21 North Wall.
Boiler House	Common raven	8 June to 15 June	An active common raven nest was recorded on 8 June and again on 15 June with three visible nestlings. On 15 June the nest was deemed successful when one fledgling and one adult were observed perched on the rock pile behind Powerhouse #2.

7.2 Incidents and Mortalities

7.2.1 Methods

Mine-related incidents that occur are reported to Environment Department staff through incident reports submitted by Mine staff. Environment Department staff follow up on any incident and complete the necessary documentation, GNWT-ECC is consulted for mitigation and disposal procedures. This information is tabulated and provided for annual comparisons. Mine-related raptor mortalities per year are also displayed in the results.

7.2.2 Results

Two raptor mortalities occurred in 2024 (Appendix D; Figure 13). On 4 April, a dead peregrine falcon was discovered at the base of a power pole at the A21 dike. On 22 September, a scavenged raptor was discovered on the A418 dike. It was reported as a rough-legged hawk but upon review of the mortality record, it was identified as a peregrine falcon.

Since 2002, 14 Mine-related or Mine-suspected raptor mortalities have occurred, 10 of which have occurred since 2020 (Figure 13). The majority of these mortalities have occurred in proximity to Mine roads. One incidental raptor observation was reported in a non-raptor mortality report (Appendix D).

There were also eight raven mortalities in 2024, recorded in a total of six mortality reports. However, a raven mortality reported on 14 May was later re-identified as an American coot upon review of the mortality records.

On 30 August, a female green winged teal mortality was reported, and two peregrine falcons were observed perched nearby and feeding on the carcass.

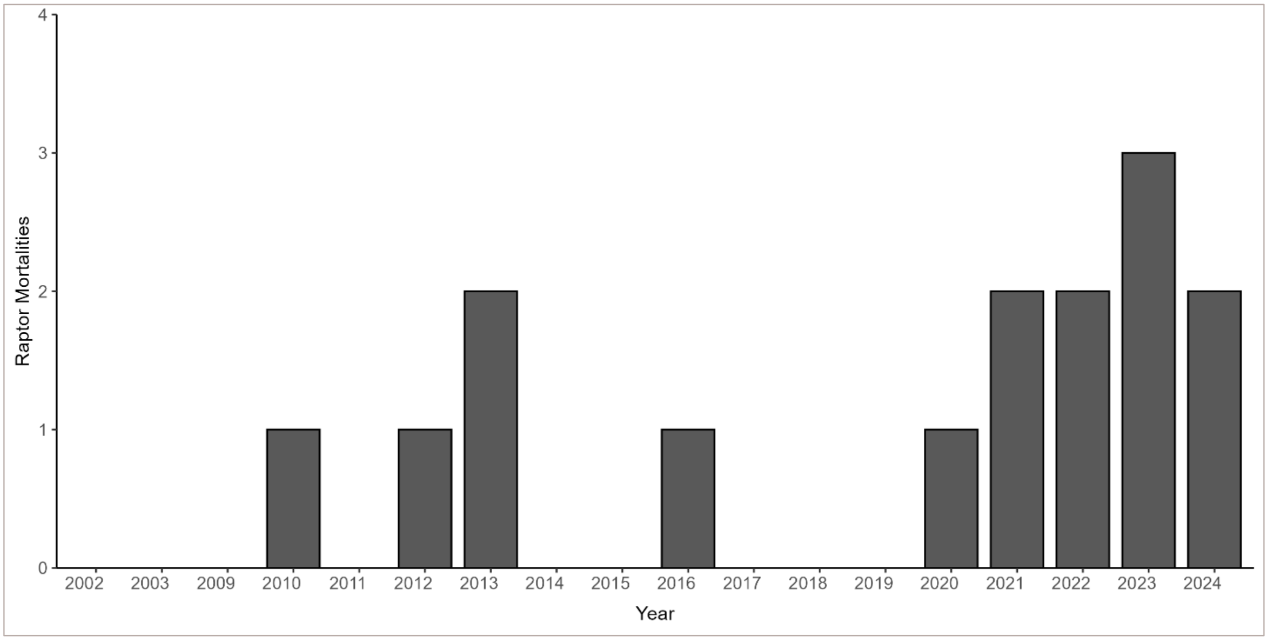

Figure 13: Reported Raptor Mortalities, 2000 to 2024

7.3 Adaptive Management and recommendations

Diavik will continue pit wall/infrastructure monitoring for nesting raptors and support regional nest monitoring. The next regional nest monitoring is scheduled to occur in 2025 and assumed to be completed by GNWT-ECC. In response to a comment from EMAB on the 2023 WMMR (Table 1), DDMI committed to presenting raptor mortalities across years in this WMMR (as displayed in Figure 13) and subsequent WMMRs to better understand interannual variation in raptor mortalities.

8.0 WASTE MANAGEMENT

Diavik is committed to taking the necessary steps to collect, store, transport, and dispose of all waste generated by the Mine to minimize environmental impacts, including attraction to the Mine site by wildlife. These procedures are being completed in a safe, efficient, and environmentally compliant manner. The Waste Management Plan is an integral part of DDMI's Environmental Management System and focuses on practical and positive management of waste.

The objectives of the Waste Management Plan include:

- creating a system for proper disposal of waste
- minimizing potentially adverse impacts on the physical and biological environment
- complying with Federal and NWT legislation

Mitigation practices include food waste incineration, categorical segregation of non-food waste for storage and subsequent removal from site, and on-site disposal and monitoring. In addition to these mitigation practices, DDMI has implemented waste recycling/reduction initiatives.

8.1 Waste Inspections

The DDMI Waste Management Plan outlines practices for waste disposal and mitigation actions. A Waste Management Plan was submitted in January 2015 to the WLWB as part of the water license renewal under water license number W2015L2-0001 (WLWB 2015). The most recent version of the Waste Management Plan was submitted to the WLWB on 2 April, 2024 and was implemented in 2024 (DDMI 2024). The Asset Management Department at the Mine maintains the various waste collection transfer and disposal points, inventories of bulk wastes, waste management datasheets, and status of protective equipment and spill kits. This assists in evaluating the capacity of waste management facilities, planning for logistics associated with backhauling, and requirements for any modifications to the system.

Waste Management staff identify problem areas and work with contractors and Mine employees to resolve any issues. Numbering and inspecting waste collection bins prior to pick up is an effective method of facilitating communication between Waste Management and Environment Department staff and addressing issues within various departments. Efforts are made to identify improperly disposed waste in the large waste collection bins prior to collection; however, on occasion improperly disposed waste may end up in either the Landfill or the burn pit.

Incineration, segregation, and storage of waste takes place at the waste transfer area (WTA), which was established to provide proper handling and storage of waste on site. The facility is located on the south side of East Island. The WTA is a lined facility surrounded by a gated, three-metre-high chain link fence to control wind transportation of any litter and prevent most wildlife intrusion. Contained within the WTA are two incinerators for food waste, a burn pit for nontoxic/non-food contaminated burnable material, a contaminated soils containment area, a treated sewage containment area, as well as sea cans, sheds, and storage areas for drums, crates, bins, and totes. The majority of waste is inventoried and stored at the WTA while awaiting backhaul on the Tibbitt-to-Contwoyto Winter Road.

On-site disposal of non-burnable wastes such as steel (mainly ground support for underground mining), vent tubing, plastics, and glass currently occurs at the inert Landfill located within the Waste Rock Storage Area – North Country Rock Pile. Waste is pushed into a large depression in the landfill. The location of the Landfill within the waste rock pile and traffic in the area will continue to discourage wildlife access to the Landfill, thereby limiting the availability of infrequently misdirected food and food packaging for animals.

8.1.1 Methods

In 2024, waste inspections at the WTA, Landfill, Underground waste bins, and A21 Area were completed twice per week throughout the year. These inspections are to confirm that all waste segregation, storage, and disposal procedures set out in the Waste Management Plan are being followed. Inspections undertaken by Environment Department staff consist of walking the area of the WTA, Landfill, A21 Area, and Underground waste bins, where safe to do so, and documenting the type and number of misdirected waste items, as well as wildlife species and sign that were present during the survey. Corrective actions at the WTA and Landfill area include notifying a WTA coordinator and transferring items to the appropriate disposal area. Corrective actions at the A21 Area and Underground waste bins include notifying the area supervisor to arrange for the transfer of items to the appropriate disposal area, notifying the area manager and safety superintendents for follow-up, and additional worker education where required. All misdirected waste items found during inspections in the WTA and Landfill are sorted into the proper disposal area by Waste Management staff. For example, non-burnable material is removed from the incinerator waste stream and transferred to the designated area in the Landfill. Hazardous wastes are stored in the WTA until they can be shipped to licensed facilities off-site.

8.1.2 Results

Development of the underground mines in 2024 yielded 305,240 tonnes of mined waste rock and a total of 1,231,782 tonnes of ore were processed. The average daily population at the Mine in 2024 was 536 people, and weekly the population ranged from 423 to 590 people (Table 11; Appendix L). During 2024, the WTA and Landfill were surveyed 98 occasions, respectively. The A21 Area and Underground were surveyed 68 and 98 times, respectively. All surveys occurred from 3 January to 29 December (Table 17; Appendix M). A total of 466 misdirected waste items were found during WTA inspections, 684 items during Landfill inspections, 102 items at the A21 Area, and 189 items at the waste segregation area of the Underground (Table 17). At the WTA, Landfill, A21, and Underground, 47.7%, 58.8%, 14.0%, and 30.0% of the inspections had at least one item of misdirected waste, respectively.

In the WTA, the most common misdirected waste item was gloves (142), followed by food packaging (122 items), and recyclable drink containers (94 items) (Table 17; Appendix M). In the Landfill, the most common misdirected item was gloves (358 items), followed by recyclable drink containers (105 items), and other (100 items). In the A21 Area, the most common misdirected waste item was food (30 items), followed by oily rags and recyclable drink containers and oily rags (14 items). In the Underground, the most common misdirected waste item was gloves (69 items), followed by recyclable drink containers and other (33 items).

Table 17: Misdirected Waste at the Waste Transfer Area, Landfill, A21 Area, and Underground, 2024

Misdirected Waste Type	Waste Transfer Area (n = 90 surveys)		Landfill (n = 90 surveys)		A21 Area (n = 64 surveys)		Underground (n = 90 Surveys)	
	Total Number Found in All Inspections	Percent of Inspections (%)	Total Number Found in All Inspections	Percent of Inspections (%)	Total Number Found in All Inspections	Percent of Inspections (%)	Total Number Found in All Inspections	Percent of Inspections (%)
Aerosol Cans	10	2.0	17	11.2	13	4.4	8	8.2
Batteries	1	1.0	0	0	0	0	2	1.0
Cigarette Butts	0	0	1	1.0	0	0	10	1.0
Cigarette Packaging	29	16.3	14	8.2	1	1.0	7	6.1
Drink Containers Recyclable	98	26.5	106	35.7	14	8.8	34	19.4
Food	16	5.1	17	6.1	30	1.5	0	0
Food Packaging	133	26.5	46	15.3	12	2.9	5	3.0
Gloves	143	31.6	326	41.8	15	7.4	67	19.4
Oil Contaminated Waste	0	0	2	2.0	3	1.5	1	1.0
Oil Products and Containers	1	1.0	8	7.1	0	0	8	5.1
Oily Rags	8	4.0	18	5.1	14	2.9	14	8.2
Other	3	23.4	79	29.6	3	2.9	29	17.3
Total	**442**	**45.9**	**634**	**58.2**	**105**	**16.1**	**185**	**45.9**

n = sample size (number of surveys).

In 2024, wildlife were observed on 15.5% of inspections of the WTA, 36.6% of inspections of the Landfill, 5.5% of inspections at the waste segregation area of the Underground, and 3.1% of inspections of the A21 area (Table 18). Wildlife species observed during inspections were grizzly bear, common raven, and red fox (*Vulpes vulpes*). Wildlife signs were observed on 17.7%, 22.2%, 0.01%, and 0.4% of inspections at the WTA, Landfill, A21 Area, and Underground, respectively (Table 18). The most common wildlife sign observed were fox tracks.

Since 2014, wildlife observed during waste inspections has remained relatively low and consistent. The highest amount of wildlife was recorded at the WTA in 2014 where 38 red fox, 14 common raven, and 2 unknown gull species were recorded. No wildlife were recorded at the Landfill in 2019 and 2022, the Underground in 2020, and the A21 Area from 2019 to 2021, and 2023. Overall, 7.5% of inspections since 2014 have included wildlife observations (Figure 14).

Table 18: Wildlife and Wildlife Sign in the Waste Transfer Area, Landfill, A21 Area, and Underground, 2024

Species	Waste Transfer Area (n=90 surveys)			Landfill (n=90 surveys)			A21 Area (n=64 surveys)			Underground (n=90 Surveys)		
	Number of Inspections with Wildlife Observations	Total Number of Observations	Number of Inspections with Wildlife Sign Observed	Number of Inspections with Wildlife Observations	Total Number of Observations	Number of Inspections with Wildlife Sign Observed	Number of Inspections with Wildlife Observations	Total Number of Observations	Number of Inspections with Wildlife Sign Observed	Number of Inspections with Wildlife Observations	Total Number of Observations	Number of Inspections with Wildlife Sign Observed
Grizzly bear	0	0	0	0	0	0	1	1	1	0	0	0
Red fox	7	7	7	15	15	15	1	1	1	1	1	1
Common raven	10	10	10	4	4	4	0	0	0	5	4	5
Unidentified	0	0	0	0	0	0	0	0	0	0	0	0
Total	17	17	17	19	19	19	2	2	2	6	5	5

n = sample size (number of surveys).

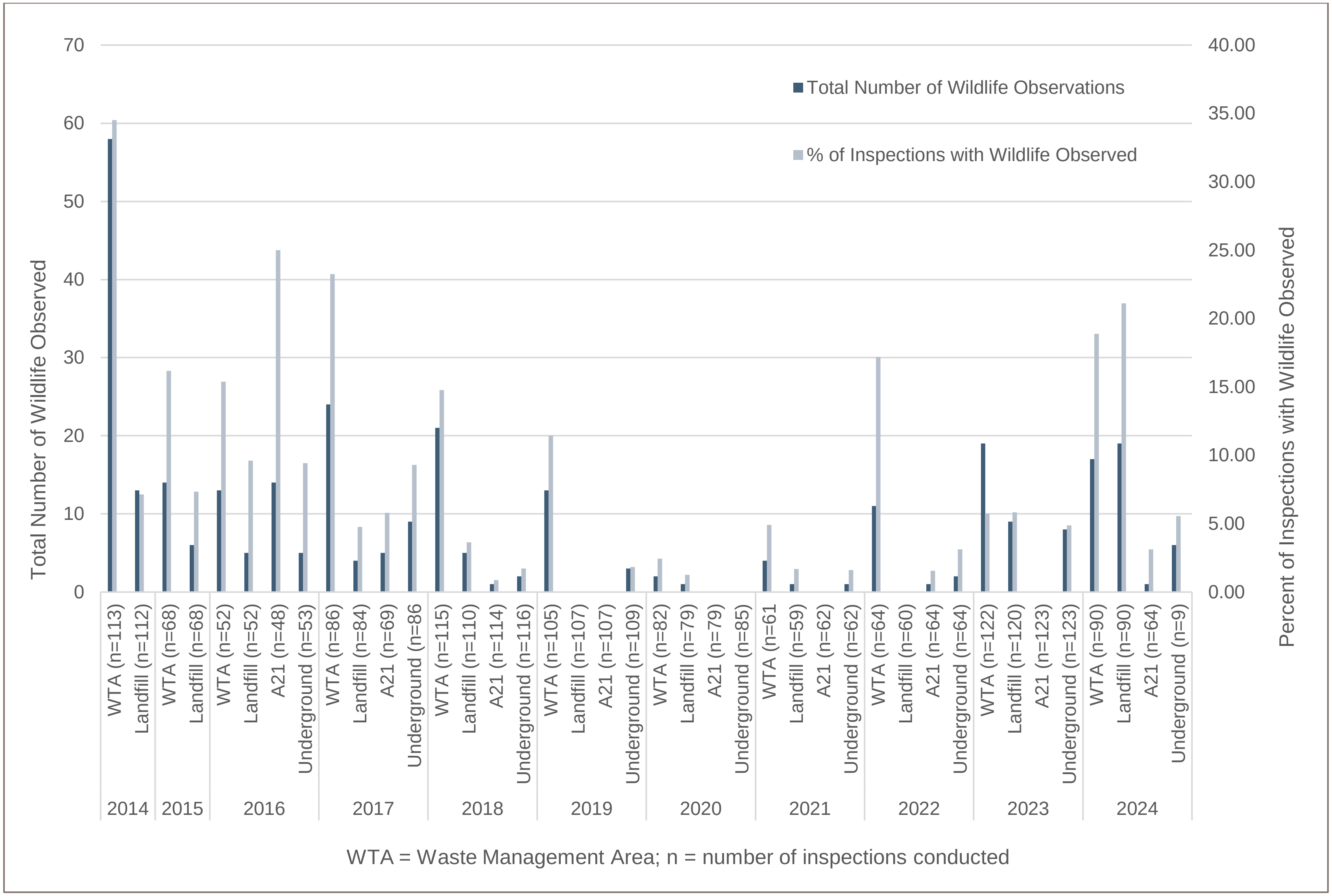

Figure 14: Total Number of Wildlife Observations per Waste Management Area, 2014 to 2024

Wildlife observed since 2014 during waste inspections are summarized in Table 19. The WTA has had an average of 13.3 wildlife observations recorded per year during inspections; 2014 having the highest amount of wildlife recorded with 58 observations recorded. The most frequently observed species at the WTA has been red fox. The Landfill has had an average of 4.9 observations recorded per year during inspections; 2024 having the highest amount of wildlife recorded with 19 observations. The most frequently observed species at the Landfill has been common raven. An average of 2.2 observations have been recorded per year since 2016 when inspections began at the A21 Area; 2016 having the highest amount of wildlife recorded with 14 observations. The most frequently observed species at the A21 Area has been fox species. An average of 3.4 observations have been recorded per year since 2016 when inspections began at the Underground; 2017 having the highest amount of wildlife recorded with nine observations. The most frequently observed species at the Underground has been fox species.

Table 19: Wildlife Reported During Waste Inspections, 2014 to 2024

Year	Location	Number of Surveys in Year	Red Fox	Fox spp.	Grey Wolf	Wolverine	Arctic Hare	Common Raven	Rough-Legged Hawk	Gull spp.	Unidentified	Total
2014	WTA	113	38	0	0	0	0	14	0	2	4	58
	Landfill	112	4	0	1	1	0	4	3	0	0	13
2015	WTA	68	0	6	0	0	0	5	0	0	3	14
	Landfill	68	0	3	0	0	0	3	0	0	0	6
2016	WTA	52	0	5	0	0	0	1	0	0	7	13
	Landfill	52	0	2	0	0	0	2	0	0	1	5
	A21	48	0	11	0	3	0	0	0	0	0	14
	Underground	53	0	3	0	2	0	0	0	0	0	5
2017	WTA	86	0	16	0	2	0	5	0	1	0	24
	Landfill	84	0	2	0	0	0	2	0	0	0	4
	A21	69	0	1	0	1	0	2	0	0	1	5
	Underground	86	0	7	0	0	0	2	0	0	0	9
2018	WTA	115	19	0	0	1	0	1	0	0	0	21
	Landfill	110	2	0	0	0	0	3	0	0	0	5
	A21	114	0	0	0	1	0	0	0	0	0	1
	Underground	116	0	0	0	0	0	2	0	0	0	2
2019	WTA	105	11	0	0	0	0	1	0	1	0	13
	Landfill	107	0	0	0	0	0	0	0	0	0	0
	A21	107	0	0	0	0	0	0	0	0	0	0
	Underground	109	2	0	0	0	1	0	0	0	0	3
2020	WTA	82	2	0	0	0	0	0	0	0	0	2
	Landfill	79	1	0	0	0	0	0	0	0	0	1
	A21	79	0	0	0	0	0	0	0	0	0	0
	Underground	85	0	0	0	0	0	0	0	0	0	0

Table 19: Wildlife Reported During Waste Inspections, 2014 to 2024

Year	Location	Number of Surveys in Year	Red Fox	Fox spp.	Grey Wolf	Wolverine	Arctic Hare	Common Raven	Rough-Legged Hawk	Gull spp.	Unidentified	Total
2021	WTA	61	3	0	0	0	0	1	0	0	0	4
	Landfill	59	0	0	0	0	0	1	0	0	0	1
	A21	62	0	0	0	0	0	0	0	0	0	0
	Underground	62	0	0	0	0	0	1	0	0	0	1
2022	WTA	64	3	0	0	0	0	17	0	0	0	20
	Landfill	60	0	0	0	0	0	0	0	0	0	0
	A21	64	1	0	0	0	0	0	0	0	0	1
	Underground	64	0	0	0	0	0	3	0	0	0	3
2023	WTA	122	11	0	0	0	0	8	0	0	0	19
	Landfill	120	9	0	0	0	0	0	0	0	0	9
	A21	123	0	0	0	0	0	0	0	0	0	0
	Underground	123	2	0	0	0	1	5	0	0	0	2
2024	WTA	90	7	0	0	0	0	10	0	0	0	17
	Landfill	90	15	0	0	0	0	4	0	0	0	19
	A21	64	1	0	0	0	0	0	0	0	0	1
	Underground	90	1	0	0	0	0	5	0	0	0	6
		Total	**109**	**56**	**1**	**11**	**1**	**89**	**3**	**4**	**16**	**290**

Note: Waste inspections began in 2016 at the A21 and Underground waste bin areas.

8.2 Waste Recycling and Reduction Initiatives

During 2008, DDMI implemented an employee-driven recycling program for plastic bottles and aluminium cans generated on site. In 2024, recyclable aluminium and plastic containers were collected for shipment off the Mine site. Approximately 110,000 litres of waste oil were collected in 2024 and used in the waste oil boiler that was commissioned in the second quarter of 2014. Since the boiler was commissioned, 2,242,494 litres of waste oil were burned to create heat at the Mine rather than being shipped off-site. In addition, a number of waste materials generated on-site are shipped off-site to a third-party waste receiver for re-use or disposal using winter road backhauls. These materials include:

- used oil, oil filters, and grease
- used glycol
- aerosol cans
- batteries (lead-acid and dry cell)
- expired/waste fuel (e.g., Jet B)
- oil-based paint
- absorbents

Diavik will continue to look for opportunities for recycling and reduction of waste streams generated at the Mine.

8.3 Adaptive Management and Recommendations

Procedures and mitigation strategies currently in place have been relatively successful at limiting wildlife interactions in the WTA and Landfill. While foxes, ravens, and occasionally wolverine appear to be present at the WTA, Landfill, A21 Area, and Underground waste bins, these animals are natural scavengers and will continue to visit these areas throughout the Mine’s life. Diavik will continue to monitor the WTA and Landfill at the minimum frequency of twice per week in the winter and once per week in the summer, and the A21 Area and Underground minimum once per week during the year. Diavik remains committed to carrying out employee education programs related to waste handling.

Signature Page

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9.0 REFERENCES

Bayne E, Moses R, Boutin S. 2005. Evaluation of winter tracking protocols as a method for monitoring mammals in the Alberta Biodiversity Monitoring Program. Integrated Landscape Management Group. Edmonton, AB: University of Alberta.

Boulanger J, Poole KG, Gunn A, Wierzchowski J. 2021. Estimation of trends in zone of influence of mine sites on barren-ground caribou populations in the Northwest Territories, Canada, using new methods. Wildlife Biology 2021(1). DOI: 10.2981/wlb.00719.

Burt PM. 1997. Diavik Diamond Project Vegetation Baseline Studies - Plant Associations and Habitat Types and Plant Species List.

Calenge C. 2015. Home range estimation R: the adehabitatHR Package. Saint-Benoit, France. Accessed at https://cran.r-project.org/web/packages/adehabitatHR/vignettes/ adehabitatHR.pdf.

Case R, Buckland J, Williams M. 1996. The Status and Management of the Bathurst Caribou Herd, Northwest Territories, Canada. Yellowknife, NT: Government of the Northwest Territories File Report 116:34-34.

COMA (Conference of Management Authorities). 2020. Recovery Strategy for Barren-ground Caribou (*Rangifer tarandus groenlandicus*) in the Northwest Territories. Conference of Management Authorities, Yellowknife, NT.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2008. COSEWIC assessment and update status report on the Short-eared Owl Asio flammeus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp. Accessed on 15 March 2025 at https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/cosewic-assessments-status-reports/short-eared-owl.html.

COSEWIC. 2016. COSEWIC assessment and status report on the Caribou Rangifer tarandus, Barren-ground population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 123 pp. Accessed on 15 March 2025 at https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html.

Coulton DW, Virgl JA, English C. 2013. Falcon nest occupancy and hatch success near two diamond mines in the Southern Arctic, Northwest Territories. Avian Conservation and Ecology 8(2):14. DOI: http://dx.doi.org/10.5751/ACE-00621-080214.

DDMI (Diavik Diamond Mines [2012] Inc.). 1998a. Environmental Assessment Overview. Yellowknife, NT.

DDMI. 1998b. Environmental Effects Report, Vegetation and Terrain. Yellowknife, NT.

DDMI. 1998c. Environmental Effects Report, Wildlife. Yellowknife, NT.

DDMI. 2020. Diavik Diamond Mines (2012) Inc. Wildlife Management and Monitoring Plan. July 2020.

DDMI. 2021. Diavik Diamond Mines (2012) Inc. Wildlife Management and Monitoring Plan, V1.2. November 2021.

DDMI. 2022. Diavik Diamond Mines (2012) Inc. Wildlife Management and Monitoring Plan, V1.3. October 2022.

DDMI. 2024a. Diavik Diamond Mines (2012) Inc. Waste Management Plan, V7.0. April 2024.

DDMI. 2024b. Diavik Diamond Mines (2012) Inc. Wildlife Management and Monitoring Plan, V1.4. July 2024.

Det'on Cho Environmental. 2022. DDMI Traditional Knowledge Panel Session 15. TK Watching Program, Full Historical Recommendation Review, and Status Update.

EC (Environment Canada). 2013. Letter to Diavik agreeing to discontinuation of water bird monitoring. 21 March 2013.

EMAB (Environmental Monitoring Advisory Board). 2004. Comments by EMAB on the 2004 Wildlife Monitoring Report. 18 October 2004.

ERM (ERM Rescan). 2014. Ekati and Diavik Diamond Mines: 2014 Final Lac de Gras Regional Grizzly Bear DNA Report. Prepared for Dominion Diamond Ekati Corporation and Diavik Diamond Mine (2012) Inc. Yellowknife, NT: ERM Rescan Consultants Canada Ltd.

ERM. 2018. Ekati Diamond Mine and Diavik Diamond Mine: Grizzly Bear Population Assessment in the Lac de Gras Region, Northwest Territories – Final Report. Prepared for Dominion Diamond Ekati ULC and Diavik Diamond Mine (2012) Inc. Vancouver, BC: ERM Consultants Canada Ltd.

ESRI (Environmental Systems Research Institute Inc.). 2024. *ArcGIS Pro* (Version 3.4). Redlands, CA.

Festa-Bianchet M, Ray JC, Boutin S, Côté SD, Gunn A. 2011. Conservation of caribou (*Rangifer tarandus*) in Canada: an uncertain future. Canadian Journal of Zoology 89(5):419-434.

Fiske I and Chandler R. 2011. Unmarked: An R Package for Fitting Hierarchical Models of Wildlife Occurrence and Abundance. Journal of Statistical Software 43(10):1-23.

Gau R, Case R. 2002. Evaluating nutritional condition of grizzly bears via 15N signatures and insulin-like growth factor-1. Ursus 13:285-291.

GNWT-ECC. 2024. Status of Approval of Condition 6. Letter issued to Mark Nelson and Nicole Goodman (DDMI) on March 5, 2024.

GNWT-ECC. 2025. Bathurst caribou herd. Accessed March 2025 at https://www.enr.gov.nt.ca/en/services/barren-ground-caribou/bathurst-herd.

GNWT-ENR (Government of the Northwest Territories, Department of Environment and Natural Resources). 2004. Comments by RWED on the 2004 Wildlife Monitoring Report. 14 June 2004.

GNWT-ENR. 2019. Wildlife management and Monitoring plan (WMMP) process and content guidelines. Yellowknife, NWT, Canada.

GNWT-ENR. 2021. Meeting Report. Diamond Mine Wildlife Monitoring Meeting. February 2 & 3, 2021. 22 p.

GNWT-ENR. 2022. Conditional Approval of the Wildlife Management and Monitoring Plan for the Diavik Diamond Mine. 15 July 2022.

GOC (Government of Canada). 2024. Canadian Wildlife Species at Risk Registry. Accessed on 10 March 2025 at https://species-registry.canada.ca/index-en.html#/species?sortBy=commonNameSort&sortDirection=asc&pageSize=10.

Golder (Golder Associates Ltd.). 2017. Analysis of environmental effects from the Diavik Diamond Mine on wildlife in the Lac de Gras Region. Prepared for Diavik Diamond Mines Inc. Yellowknife, NT: Golder Associates Ltd.

Golder. 2018. Diavik Diamond Mines (2012) Inc. 2017 Wildlife Monitoring Report. Prepared for Diavik Diamond Mines (2012) Inc. by Golder Associates Ltd. Vancouver, BC: Golder Associates Ltd.

Golder. 2019. Diavik Diamond Mines (2012) Inc. 2018 Wildlife Monitoring Report. Prepared for Diavik Diamond Mines (2012) Inc. by Golder Associates Ltd. Vancouver, BC: Golder Associates Ltd.

Golder. 2020. Diavik Diamond Mines (2012) Inc. 2019 Wildlife Monitoring Report. Prepared for Diavik Diamond Mines (2012) Inc. By Golder Associates Ltd. Vancouver, BC: Golder Associates Ltd.

Golder. 2021. 2020 Wildlife Monitoring Report, Diavik Diamond Mine. Prepared for Diavik Diamond Mines (2012) Inc. By Golder Associates Ltd. Vancouver, BC: Golder Associates Ltd. March 2021.

Gunn A, Dragon J, Nishi J. 1997. Bathurst Calving Ground Survey, 1996. Yellowknife, NT: Government of Northwest Territories, Department of Resources, Wildlife and Economic Development. File Report No. 119.

Gunn A, Dragon J, Boulanger J. 2002. Seasonal movements of satellite-collared caribou from the Bathurst Herd. Final report to the West Kitikmeot Slave Study Society. Yellowknife, NT.

Gunn A, Russell D, Eamer J. 2011. Northern caribou population trends in Canada. Canadian Biodiversity: Ecosystem Status and Trends 201, Technical Thematic Report No. 10. Ottawa, ON: Canadian Councils of Resource Ministers. 77 pp.

Handley, J. 2010. Diamond Mine Wildlife Monitoring Workshop Report. Yellowknife, NT.

Johnson DHJ. 1980. The comparison of usage and availability measurements for evaluating resource preference. Ecology 61:65-71.

Johnson CJ, Boyce MS, Case RL, Cluff HD, Gau RJ, Gunn A, Mulders R. 2005. Cumulative effects of human developments on Arctic wildlife. Wildlife Monographs 160:1-36.

Li L, Pomeroy JW. 1997. Estimates of threshold wind speeds for snow transport using meteorological data. Journal of Applied Meteorology 36:205-213.

MacKenzie DI, Nichols JD, Lachman GB, Droege S, Andrew Royle J, Langtimm CA. 2002. Estimating site occupancy rates when detection probabilities are less than one. Ecology 83(8):2248-2255.

Magoun AJ. 1987. Summer and winter diets of Wolverines, *Gulo*, in arctic Alaska. Canadian Field-Naturalist 101(3):392-397.

Marshall R. 2009. Diamond Mine wildlife monitoring workshop. Prepared for Environment and Natural Resources. Yellowknife NT: Rob Marshall and Associates.

Matthews S, Epp H, Smith G. 2001. Vegetation classification for the West Kitikmeot/Slave Study Region. Final Report to the West Kitikmeot/Slave Study Society. Yellowknife, NT.

Mattisson J, Rauset GR, Odden J, Andrén H, Linnell JD, Persson J. 2016. Predation or scavenging? Prey body condition influences decision-making in a facultative predator, the wolverine. Ecosphere 7(8):e01407.

McLoughlin PD, Case RL, Gau RJ, Messier F. 1999. Annual and seasonal pattern of barren-ground grizzly bears in the central Northwest Territories. Ursus 11:79-86.

McLoughlin PD, Case RL, Gau RJ, Cluff HD, Mulders R, Messier F. 2002. Hierarchical habitat selection by Barren-ground grizzly bears in the central Northwest Territories. Oecologia 132:102-108.

Mulders R. 2000. Wolverine ecology, distribution, and productivity in the Slave Geological Province. Final Report to the West Kitikmeot/Slave Study Society. Yellowknife, NT.

Murphy SM, Curatolo JA. 1987. Activity budgets and movement rates of caribou encountering pipelines, roads, and traffic in Northern Alaska. Canadian Journal of Zoology 65(10):2483-2490.

NWT SAR (Northwest Territories Species at Risk). 2018. Northwest Territories Gazette – Notice – Species at Risk (NWT) Act – Notice of Listed Species Barren-ground caribou. Volume 39, No. 7. Accessed at https://www.nwtspeciesatrisk.ca/sites/default/files/nwt_gazette_august_2018_0.pdf.

NWT SAR. 2023. NWT Species at Risk [accessed March 2025]. http://nwtspeciesatrisk.ca/.

Penner (Penner and Associates Ltd.). 1998. Wildlife baseline report, Diavik Diamonds Project, Lac de Gras, Northwest Territories. Prepared for Prepared for Diavik Diamond Mines Inc.

Poole KG, Gunn A, Pelchat G. 2021. Influence of the Ekati Diamond Mine on migratory tundra caribou movements. Prepared for Independent Environmental Monitoring Agency. 53 pp.

R Core Team. 2024. R: A Language and Environment for Statistical Computing. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/.

Royle AJ, and Dorazio. 2009. "3 - MODELING OCCUPANCY AND OCCURRENCE PROBABILITY." In *Hierarchical Modeling and Inference in Ecology*, edited by J. Andrew Royle and Robert M. Dorazio, 83–125. San Diego: Academic Press. DOI: https://doi.org/10.1016/B978-0-12-374097-7.00005-3.

Species at Risk Committee. 2014. Species status report for wolverine (*Gulo gulo*) in the Northwest Territories. Yellowknife, NT: Species at Risk Committee.

The Canadian Environmental Assessment Act. 1999. Comprehensive Study Report, Diavik Diamonds Project.

Tłı̨chǫ Government. 2013. Traditional knowledge study for Diavik soil and lichen sampling program. Prepared for the Tłı̨chǫ Government. Behchokǫ̀, NWT: Tłı̨chǫ Research and Training Institute.

Vors LS, Boyce MS. 2009. Global declines of caribou and reindeer. Global Change Biology 15(11): 2626-2633. DOI: https://doi.org/10.1111/j.1365-2486.2009.01974.x.

Werdel TJ, Jenks JA, Kanta JT, Lehman CP, Frink TJ. 2021. Space use and movement patterns of translocated bighorn sheep. Mammalian Biology 101:329–344. DOI: 10.1007/s42991-021-00107-4.

Whittington J, Heuer K, Hunt B, Hebblewhite M, Lukacs PM. 2015. Estimating occupancy using spatially and temporally replicated snow surveys. Animal Conservation 18:92-101.

Wightman, C.S., and M.R. Fuller. 2005. Spacing and Physical Selection Patterns of Peregrine Falcons in Central West Greenland. Wilson Bulletin 117(3):226-236.

WLWB (Wek'èezhìı Land and Water Board). 2015. WLWB Public Registry Online Review System. Accessed February 2016 at http://www.mvlwb.ca/Boards/WLWB/SitePages/search.aspx?Company=Diavik+Diamond+Mines+%282012%29+Inc.&doctype=4.+Renew al+-+Extension/

WSP (WSP Canada Inc). 2023. Diavik Diamond Mines (2012) Inc. 2022 Wildlife Management and Monitoring Report. Prepared for Diavik Diamond Mines (2012) Inc. by WSP, Victoria, BC. April 26, 2023.

WSP. 2024a. Diavik Diamond Mines (2012) Inc. 2023 Wildlife Management and Monitoring Report. Prepared for Diavik Diamond Mines (2012) Inc. by WSP, Victoria, BC. June 27, 2024.

WSP. 2024b. Responses to Comments on 2023 Wildlife Management and Monitoring Report. Prepared for Diavik Diamond Mines (2012) Inc. by WSP, Victoria, BC. October 4, 2024.

WSP. 2025. Diavik Diamond Mines (2012) Inc. 2024 Comprehensive Vegetation and Lichen Monitoring Program. Prepared for Diavik Diamond Mines (2012) Inc. by WSP, Victoria, BC. April 1, 2025.

WSP Golder (Golder Associates Ltd., a member of WSP Canada Inc.). 2022a. Diavik Diamond Mines 2021. Wildlife Management and Monitoring Report. Prepared for Diavik Diamond Mines (2012) Inc. by WSP Golder, Vancouver, BC. March 2022.

WSP Golder. 2022b. Exploratory collared caribou movement analysis. Addendum to the 2021 Wildlife Management and Monitoring Report. Technical memorandum prepared for Diavik Diamond Mines (2012) Inc. by WSP Golder, Vancouver, BC. June 14, 2022.

APPENDIX A

Comments on the 2023 Wildlife Management and Monitoring Report

DIAVIK DIAMOND MINES (2012) INC.

TECHNICAL MEMORANDUM

DATE 21 October 2024

Reference No. 23586538-2550-TM-Rev0-7000

DIAVIK WORK PLAN No. 778 Rev. 0

DIAVIK PO No. 3106033602 SO 1

TO Nicole Goodman and Mark Nelson
Diavik Diamond Mines (2012) Inc.

CC Kyla Gray (DDMI), Rainie Sharpe (WSP)

FROM Grace Enns; Daniel Coulton

EMAIL: grace.enns@wsp.com; daniel.coulton@wsp.com;

RESPONSES TO COMMENTS ON 2023 WILDLIFE MANAGEMENT AND MONITORING REPORT

On October 4, 2024, Diavik Diamond Mines (2012) Inc. (DDMI) requested support from WSP Canada Inc. (WSP) to respond to comments and recommendations provided by the Environmental Advisory Management Board (EMAB), Government of Northwest Territories, Department of Environment and Climate Change (GNWT-ECC), and Environment and Climate Change Canada (ECCC) on Diavik's 2023 Wildlife Management and Monitoring Report (WMMR). The comments, recommendations, and proponent responses are presented in Table 1.

Table 1: Responses to Comments on the 2023 Wildlife Management and Monitoring Report (WMMR)

Comment Identifier	Topic	Reviewer Comment	Reviewer Recommendation	Proponent Response
EMAB-WMMR-1	Raptor Mortality (DDMI-WMP-84)	The 2023 WMMR notes that “since 2002, twelve Mine-related or Mine-suspected raptor mortalities have occurred. The majority of these mortalities have occurred in proximity to Mine roads.” (p.45) This past year there were three raptor mortalities, that is 25% of the total number of mortalities since 2002 in one year. At the August 2023 EMAB meeting, DDMI noted that the raptor mortalities reported in the 2023 WMMR are ‘mine-related’ or ‘mine-suspected’ mortalities?	What mitigations are in place to reduce collisions with infrastructure (e.g., powerlines)? What additional mitigations could be implemented to limit raptor collisions with mine infrastructure in the future?	Currently mitigation includes that some power poles are outfitted with lights and DDMI has not identified nor plans for additional mitigations. Since 2002, there have been 12 Mine-related or Mine-suspected raptor mortalities or a rate of 0.56 Mine-related raptor mortalities per year, which is low. A rate of less than one raptor mortality per year means that there none in some years. The Mine is scheduled to begin Closure in 2025. During Closure infrastructure around site will be removed and further reduce the chances of interactions with wildlife.
EMAB-WMMR-2	Caribou Movement (DDMI-WMP-82)	Small sample sizes remain a concern. This highlights the importance of ongoing, near-mine group scan surveys to monitor caribou behaviour to support our interpretation of what the geo-fence collar data is telling us about caribou behaviour.	Has DDMI examined within-individual variation in movement behaviour metrics with distance from the mine? Please discuss if individual caribou movement metrics vary with distance from the mine.	DDMI has not undertaken within-individual movement behaviour metrics with distance from mine. This type of analysis will not influence the number of collared caribou and the number of collared caribou will remain small. DDMI has already committed to continuing near-field caribou group scans to monitor caribou behaviour so there is no need to compare to geo-fence collar for interpretations about the behaviour of collared caribou movements.
EMAB-WMMR-3	Mine Activity Index Figures (DDMI-WMP-85)	Figures are easier to interpret than tables, is it possible to include summary figures showing annual variation in the amount of waste rock and number of people on site? Currently these data are shown only in tables making it difficult to monitor for trends.	We recommend displaying a summary of annual amounts of waste rock and number of people on site (e.g., Camp Population – Appendix L) in order to more clearly understand interannual variation in these mine activity indices.	DDMI accepts this recommendation and will display this information as both tabulated and in a graph in the 2024 WMMR.
EMAB-WMMR-4	Wildlife Mortality Incident Figure (DDMI-WMP-86)	Mortality data for some species (e.g., caribou, grizzly bears) are reported in the WMMR, but Appendix D contains a summary of all morality incident reports over the year. Where or how are these mortality incident reports summarized and compared across years? A high-level review of Appendix D shows there are a number of mortality events for species that are not necessarily discussed in the WMMR. How do the levels of mortality in total and across species vary by year? Have these data been summarized somewhere to allow for examination of any potential trends in mortality events within and across species?	We recommend displaying a summary of all annual wildlife mortality data by species and year to more clearly understand interannual variation in incidental mortality across all species, not just the ones focused on in the annual WMMRs.	The WMMR presents mortality information for Valued Ecosystem Components assessed in the EER (DDMI 1998). All other wildlife mortalities observed are recorded and reported in an Appendix to the annual WMMR. DDMI commits to including Raptor mortality information across all years in subsequent WMMRs as this would help better understand interannual variation for this valued ecosystem component.
EMAB-WMMR-5	Caribou Behaviour (DDMI-WMP-83)	EMAB met with DDMI and GNWT in December 2023 to discuss the need for continuing group scan caribou behaviour monitoring. The program had shown no strong adverse response by caribou to the mine, but had suffered from perennial data deficiencies making it difficult to compare near mine and far from mine behaviours. We think the group scan data presents an opportunity to ground-truth inferences from satellite collar movement analyses. Only near-mine monitoring will occur until closure given difficulties collecting samples 30 km from the mine. The continuation of this component of behaviour monitoring was the main outcome from the meeting in December 2023. At the December 2023 meeting, EMAB noted significant concerns with dropping behaviour scans far from the mine, without this reference group it is very difficult to understand if caribou behave differently in proximity to the mine. Also at that time EMAB noted the potential utility of audiologgers on caribou satellite collars to collect behavioural data.	The methods used for the near mine behaviour scans is adequate, but we recommend exploring the potential use of other data collection tools (e.g., audiologgers on caribou collars) to collect far from the mine behaviour data.	DDMI and Ekati mine have collected caribou group behaviour data in the study area for 24 years. The most recent analysis results indicated no strong response associated with distance from mines (WSP 2023). DDMI committed to continue to collect near-field caribou group scan data during operations. However, importantly the results of caribou group scan data do not inform Diavik Mine operations, which will end in 2025. DDMI indicated it would consider contributing some financial support for the purchase of audio/accelerometer loggers for deployment on collared caribou. DDMI does not deploy collars on caribou, which is a monitoring program administered by the GNWT. As discussed and acknowledged by participants in the December 2023 meeting with EMAB, the GNWT and TG, there is a remote chance that loggers deployed with collars during winter will interact with Diavik Mine in the future. This renders the ability audio/accelerometer loggers to say anything about changes in behaviour associated with proximity to mines also remote without increasing the number of deployed on collared caribou by orders of magnitude from current levels. As this is a research recommendation, DDMI recommends that the GNWT-ECC undertake an analysis to determine how many loggers (and thus collars) would need to be deployed annually to provide adequate sample sizes to detect behavioural changes from logger data.
EMAB-WMMR-6		Technical Review of 2023 WMMR - Roam Ecology	N/A	N/A

Table 1: Responses to Comments on the 2023 Wildlife Management and Monitoring Report (WMMR)

Comment Identifier	Topic	Reviewer Comment	Reviewer Recommendation	Proponent Response
ECCC-WMMR-1	Topic: Migratory Birds Reference: Wildlife Mitigation and Monitoring Plan (WMMP); Appendix A: Standard Operating Procedures The WMMR	Appendix A of the Wildlife Mitigation and Monitoring Plan's (WMMP) contains Standard Operating Procedure (SOP) for Raptor Pit Inspection and Bird Monitoring. This SOP describes methods for reporting occurrences of raptors and migratory birds and outlines the monitoring activities to be completed for these species: "During the nesting season, typically May through August, conduct weekly inspections of site infrastructure to document raptor species and other bird species." The WMMR for 2023 includes a section reporting raptor sightings recorded during this ongoing monitoring. There is no mention of migratory birds in the WMMR. It is unclear if migratory birds were observed or recorded during the monitoring, as no observations were included in the reporting. Monitoring activities with no observations of the target species should be reported.	ECCC recommends that during monitoring events, observations of migratory birds and avian species at risk, including results of no observations, be included in future Wildlife Mitigation and Management Reports.	During Raptor Pit Inspection monitoring May-August, DDMI scans the areas for the at risk migratory birds identified in the WMMP (bank swallow, barn swallow, harris's swallow, lesser yellowlegs, red-necked pharalope, rusty blackbird and short eared owl). In 2023, there were not observations of these bird species. DDMI will update the table in Appendix K to include a specific column for observations of these listed species in next years report and will provide information in the main body of the report on if any observations were noted.
ECCC-WMMR-2	Cover Letter	Cover Letter	N/A	N/A
GNWT-ECC-WMMR-1	Section 4.3 - page 25 - Caribou group scans - response to stressors	In ECC's review of the 2022 annual WMMP report it was requested that DDMI report on the response of caribou to stressors that occurred during the 2022 caribou group scans, and that DDMI summarize the results according to the description of variables noted for recording response to stressors in the Methods. ECC notes that this information has again not been provided in the 2023 annual WMMP report.	1) ECC requests that DDMI report on the response of caribou to stressors that occurred during the 2023 caribou group scans, and summarize the results in a similar manner to that as provided in response to ECC's comments on the 2022 annual WMMP report. 2) ECC requests that this information be included as a standard part of reporting in future annual WMMP reports.	1) A total of 28 stressor events during caribou behaviour group scans were recorded in 2023. The most frequent stressor type was light vehicles (68%), followed by humans, helicopters and stressors that were not visible (7% each). If caribou appeared to modify their behaviour in response to a stressor, but a stressor could not be identified, the scanning event was precautionarily recorded to have a stressor that was not visible. Unseen stressors were likely too far away to detect and might have been of natural causes, such as an approaching predator. Heavy vehicles (i.e., haul trucks), grizzly bears, and blasts were not common; each accounting for 4% of the stressor types. Caribou did not respond to 42% of light vehicle stressor events (n = 19) or the single heavy vehicle stressor event (n = 1). Caribou also did not respond to 50% of human stressors (n = 2). Caribou looked towards the direction of the stressor 16% of the time in response to light vehicles (n = 19), and during the single event of blasting (n = 1). Caribou also looked towards human stressors 50% of the time (n = 2), and during 100% of helicopter events (n = 2). Caribou responded by walking away during 42% of light vehicle events (n = 19). Lastly, caribou responded strongly to the presence of a grizzly bear by running away (n =1), and during two instances where a stressor was not visible (n = 2). These results are summarized in Figure 1 presented in the cover letter. 2) DDMI will include caribou response to stessors information and figures in subsequent WMMRs.
GNWT-ECC-WMMR-2	Section 7.2.2 - Raptor mortalities	Three raptor mortalities were recorded in 2022, two along the A154 Dike roadway, and one on the outside of the A21 Dike. Although the specific causes of mortality were unknown, in reviewing the incident reports for these mortalities, ECC noted they all occurred near power lines or transformers: A154 Dike - RLHA found deceased near a power pole (26-07-2023; page 169 of pdf); RHLA found under power line on A154 Dike on 14-08-2023 (page 173 of pdf); RLHA found on 16-10-2023 near power transformer near A21 Dike. DDMI reported three raven mortalities to ECC in July 2024, which were found at the base of a power pole also located on the southeast portion of A154 Dike. These incidents suggest the potential for recurring bird mortalities from interactions with power lines/transformers at the A154 Dike which bear further investigation and potentially application of new mitigation measures.	1) Please clarify whether the 2023 raptor mortalities at A154 Dike occurred in similar locations or under similar circumstances to the 3 raven mortalities reported in 2024. 2) ECC encourages DDMI to assess whether bird diverters may be necessary along these power lines or at transformers to prevent further bird mortality.	1) In the case of the two 2023 raptor mortalities and the three 2024 raven mortalities, all deceased animals were located on the A154 dike. The ravens were found near a transformer and the two raptors in 2023 were found near a powerline. 2) DDMI understands that overall raptor mortalities are low for the mine site (see also EMAB 1) and as such will continue to monitor for increasing trends in mortality incidents along the A154 dike to determine if mitigation steps are deemed necessary.

WMMR = Wildlife Management and Monitoring Report; DDMI = Diavik Diamond Mines (2012) Inc.; EMAB = Environmental Advisory Management Board; GNWT = Government of Northwest Territories; ECC = Environment and Climate Change Canada; TG = Tłı̨chǫ Government

Closure

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

WSP Canada Inc.

ORIGINAL SIGNED BY

Grace Enns, M.Sc.
Senior Wildlife Biologist

ORIGINAL SIGNED BY

Daniel Coulton, Ph.D., RPBio
Principal, Senior Wildlife Biologist

GE/DC/pls

Disclaimer

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References

DDMI (Diavik Diamond Mine 2012 Inc.). 1998. Environmental Effects Report, Wildlife. Yellowknife, NT.

WSP (WSP Canada Inc). 2023. 2022 Wildlife Management and Monitoring Report. Prepared for Diavik Diamond Mines (2012) Inc. by WSP, Victoria, BC. April 26, 2023.

APPENDIX B

Caribou Behavioural Observations Summary 2024

Date	Time	Distance to Mine Component (m)	UTM Easting	UTM Northing	Group Size	Sample Composition	Included in Caribou Behaviour Analyses[(a)]
2024-03-24	13:50	0.00	532656	7150472	28	Females/Males/Calves	Yes
2024-03-28	16:25	-	-	-	200+	Females/Males/Calves	Yes
2024-03-31	9:45	136.69	533162	7154138	23	Females/Males/Calves	Yes
2024-04-06	15:52	7.37	532067	7151547	9	Females/Males/Calves	No
2024-04-12	10:20	223.53	536251	7153697	5	Females/Males	Yes
2024-04-12	7:49	0.00	532825	7150840	9	Females/Males/Calves	Yes
2024-04-13	8:35	25.62	531943	7151849	34	Females/Males/Calves	No
2024-04-13	15:30	34.76	535766	7153268	5	Females/Males	Yes
2024-04-14	7:37	61.50	532287	7151094	12	Females	Yes
2024-04-14	11:25	526.50	531479	7152740	25	Females/Males/Calves	Yes
2024-04-18	15:14	94.84	531795	7150998	35	Females/Males/Calves	Yes
2024-04-23	8:16	0.00	533889	7153670	23	Females/Males/Calves	Yes
2024-05-01	15:28	0.00	534402	7153074	22	Females/Males	Yes
2024-05-03	13:55	118.41	534113	7151707	9	Females/Males/Calves	Yes
2024-05-03	15:00	23.13	531917	7150878	13		Yes
2024-05-05	15:30	16.18	534983	7152984	13	Females/Males	Yes
2024-05-04	15:40	17.25	532347	7150993	3	Females/Calves	No
2024-05-07	15:08	25.69	532390	7151030	11	Females/Males/Calves	Yes
2024-05-21	9:50	32.21	534896	7153141	2	Females / Calves	No
2024-05-25	9:32	44.90	534900	7153155	2	Males	Yes
2024-06-01	16:10	61.22	534864	7153201	2	Males / Females	No
2024-06-18	9:42	105.49	534597	7153622	2	Males / Females	Yes
2024-06-21	15:15	89.15	534985	7153154	3	Males / Females	Yes
2024-06-28	16:15	0.00	532142	7151058	2	Males / Females	No
2024-06-29	9:30	22.07	534991	7152073	3	Males / Females	No
2024-07-07	15:55	0.00	532972	7153410	2	Males / Females	No
2024-07-08	9:50	0.00	534257	7151309	2	Males	No
2024-07-11	7:45	15.79	534459	7153155	2	Males	Yes
2024-07-12	10:40	71.76	533458	7153463	1	Males	Yes
2024-07-13	10:00	0.00	534297	7149511	1	Males	Yes
2024-07-19	16:35	0.00	533425	7150550	1	Males	Yes
2024-08-11	15:10	30.60	533442	7153519	1	Males	No
2024-08-16	16:10	0.00	534202	7151338	1	Males	Yes
2024-08-30	13:54	86.89	532590	7153248	1	Males	No
2024-08-31	8:20	37.10	533651	7154365	2	Males	No

(a) Of the 35 surveys conducted, 17 could not be included in the behavioural analyses because they did not include a minimum of four observations, or the recorded data was incomplete.

APPENDIX C

General Wildlife Reports 2024

Wildlife Report - 2021

Hare - 2024-08-29 - N17

Complete

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Hare - 2024-08-29 - N17
Document No.	WildlifeReport000392
	29.08.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	29.08.2024 10:30 MDT

Department/Individual Who Reported Mortality:

Surface ops

Environment at Call-out Location	29.08.2024 10:40 MDT

Location

Entrance of N17 laydown

Animal Type	Other

Description of Animal/Scene

Hare was found on ground middle of road, body was stiff when retrieving it.

Photo of Scene


Photo 1


Photo 2

Estimated Time of Death	Hours
End of Environment Call-out	29.08.2024 10:45 MDT

Final Location of Carcass

Incinerator

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Tina Burke
29.08.2024 18:05 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

Hare-2024-09-13-Airport rd

Complete

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Hare-2024-09-13-Airport rd

Photo 1

Document No.	WildlifeReport000398
	13.09.2024

Audit

1 / 1 (100%)

Type of Wildlife Report — General sighting / Other

Report Type — Mortality

Wildlife Mortality

Enter Initial Time of Report — 13.09.2024 09:45 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location — 13.09.2024 09:45 MDT

Location

Airport rd

Animal Type — Other

Description of Animal/Scene

Environment spotted hare on Airport road. Hare was picked up and disposed of in the incinerator.

E 535301
N 7152957

Photo of Scene


Photo 2


Photo 3

Estimated Time of Death — Hours

End of Environment Call-out — 13.09.2024 09:50 MDT

Final Location of Carcass

Incinerator at Waste Transfer Facility.

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete — On

Signature

13.09.2024 11:55 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Falcon - 2024-04-04 A21 Dike

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Falcon - 2024-04-04 A21 Dike
Document No.	WildlifeReport000317
	06.04.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	04.04.2024 13:00 MDT

Department/Individual Who Reported Mortality:

Clinton Muller, Geotech

Environment at Call-out Location	06.04.2024 16:30 MDT

Location

A21 Dike

Animal Type	Other

Description of Animal/Scene

Deceased falcon at the base of power pole

Photo of Scene


Photo 1


Photo 2

Estimated Time of Death	Days
End of Environment Call-out	06.04.2024 16:30 MDT

Final Location of Carcass

Environment freezer - to be shipped to ECC

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Dylan Price
06.04.2024 07:23 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

Green Winged Teal - 2024-05-25 **Complete**

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Green Winged Teal - 2024-05-25
Document No.	WildlifeReport000329
	27.05.2024

Audit 1 / 1 (100%)

Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	25.05.2024 16:00 MDT

Department/Individual Who Reported Mortality:

Surface Geotechnical

Environment at Call-out Location	25.05.2024 16:45 MDT

Location

South A21 Dike

Animal Type	Other

Description of Animal/Scene

Single deceased Green Winged Teal found on A21 Dike. No immediately identifiable cause of death.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4

Estimated Time of Death	Days
End of Environment Call-out	25.05.2024 17:00 MDT

Final Location of Carcass

Environment lab freezer awaiting shipment to ECCC.

Closure & Sign-off 1 / 1 (100%)

Wildlife Report Complete	On

Signature

Justin Macek
27.05.2024 13:28 MDT

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Wildlife Report - 2021

Green Winged Teal-2024-08-30-A418
Approach

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Green Winged Teal-2024-08-30-A418 Approach
Document No.	WildlifeReport000393
	30.08.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	30.08.2024 08:10 MDT

Department/Individual Who Reported Mortality:

Department: SCAP

Environment at Call-out Location	30.08.2024 08:20 MDT

Location

A418 Approach, middle of the road.

Animal Type	Other

Description of Animal/Scene

Single Green-Winged Teal, adult, female, body intact.
Middle of the road, powerlines near the location. No immediately identifiable cause of death.

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	30.08.2024 08:25 MDT

Final Location of Carcass

Sulphur Lab freezer awaiting shipment to ECC.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin
30.08.2024 13:41 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Green Winged Teal-2024-08-30-Cold Storage Warehouse

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Green Winged Teal-2024-08-30-Cold Storage Warehouse
Document No.	WildlifeReport000394
	30.08.2024

Audit

1 / 1 (100%)

Type of Wildlife Report — General sighting / Other

Report Type — Mortality

Wildlife Mortality

Enter Initial Time of Report — 30.08.2024 19:55 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location — 30.08.2024 08:10 MDT

Location

West of the Cold Storage Warehouse.

Animal Type — Other

Description of Animal/Scene

Single adult Green Winged Teal female.
Cause of death: predation. One peregrine falcon was feeding on the carcass. A second peregrine falcon was perched on a powerline pole nearby.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4

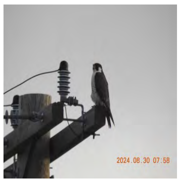


Photo 5


Photo 6

Estimated Time of Death — Hours

End of Environment Call-out — 30.08.2024 08:40 MDT

Final Location of Carcass

Tundra, West of the Cold Storage Warehouse, toward the Lakeshore Boulevard.

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete — On

Signature

Jessica Gosselin
30.08.2024 13:46 MDT

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

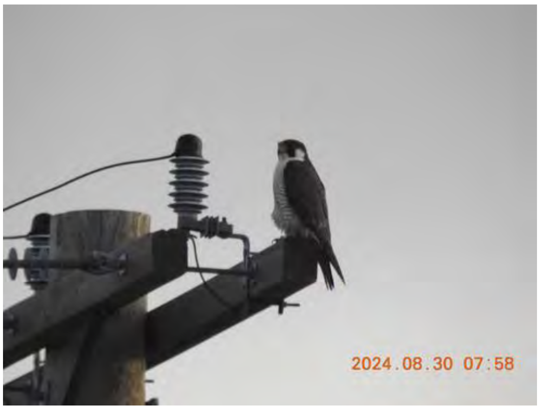


Photo 5

Photo 6

Wildlife Report - 2021

Robin - 2024-06-29 - SCAP

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Robin - 2024-06-29 - SCAP
Document No.	WildlifeReport000383
	09.07.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	29.06.2024 07:00 MDT

Department/Individual Who Reported Mortality:

SCAP team

Environment at Call-out Location	29.06.2024 08:30 MDT

Location

SACP dry storage building

Animal Type	Other

Description of Animal/Scene

Robin Nest with 4 deceased hatchlings.

Robins likely accessed infrequently used building through slightly ajar man door. Man door was fixed in the days prior to discovery of the nest, blocking access to the building for the birds. The hatchlings were found deceased.

Nest and bodies were incinerated.

Photo of Scene

Photo 1

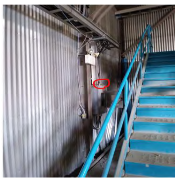


Photo 2

Estimated Time of Death	Days
End of Environment Call-out	29.06.2024 09:00 MDT

Final Location of Carcass

Incinerated at Waste Transfer Area

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Gordon Cumming
09.07.2024 10:21 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

Robin - 2024-07-06 - Aviation Storage

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Robin - 2024-07-06 - Aviation Storage
Document No.	WildlifeReport000382
	06.07.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	05.07.2024 08:30 MDT

Department/Individual Who Reported Mortality:

Site Services

Environment at Call-out Location	05.07.2024 08:45 MDT

Location

Aviation fuel drum storage near helipad

Animal Type	Other

Description of Animal/Scene

- Robin nest with two robin fledglings was located between aviation fuel drum barrels which were moved from one storage location, the night prior (July 4, 2024), at the helipad to another storage location, also near the helipad.
- On the morning of July 5, effort was made to move the fuel drum barrel pallets (which included the nest) back to the original location, however, robins were deceased at that point.

Photo of Scene


Photo 1

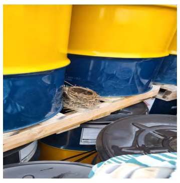


Photo 2


Photo 3


Photo 4

Estimated Time of Death	Hours
End of Environment Call-out	06.07.2024 12:00 MDT

Final Location of Carcass

Released into the tundra

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Anton Jitnikovitch

Anton Jitnikovitch
06.07.2024 07:18 MDT

Media summary

Photo 1

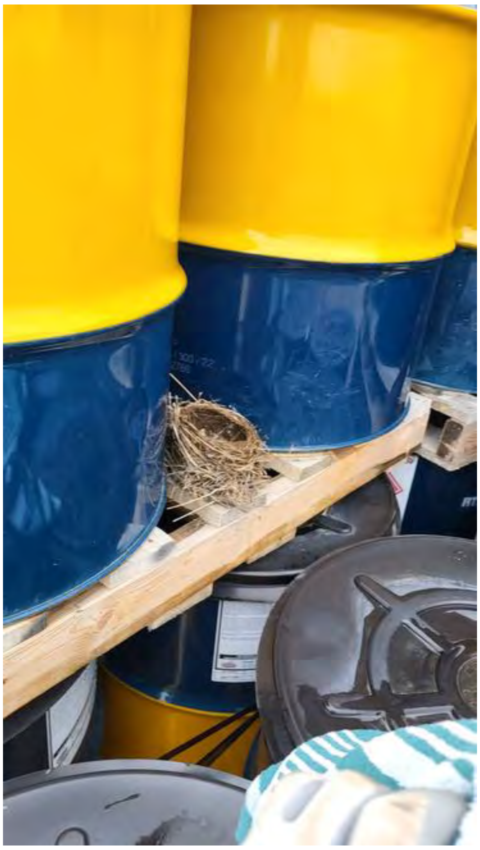


Photo 2

Photo 3

Photo 4

Wildlife Report - 2021

Robin-2024-08-30-Landfill

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Robin-2024-08-30-Landfill
Document No.	WildlifeReport000395
	30.08.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	30.08.2024 15:00 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	30.08.2024 15:00 MDT

Location

Old ERT trailer at the Landfill. Nest on the electrical panel.

Animal Type	Other

Description of Animal/Scene

Single young robin (most likely). Only bones and feathers remaining.
Cause of death unknown, could be the displacement of the trailer from the ERT training area to the Landfill.

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Months
End of Environment Call-out	30.08.2024 15:10 MDT

Final Location of Carcass

Same location.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin
30.08.2024 16:21 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Rough Legged Hawk - 2024-09-22 - A418 Dike

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Rough Legged Hawk - 2024-09-22 - A418 Dike
Document No.	WildlifeReport000400
	24.09.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	22.09.2024 15:00 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	22.09.2024 15:15 MDT

Location

A418 Dike

Animal Type	Other

Description of Animal/Scene

Deceased Rough Legged Hawk (RLHA) was identified on the A418 Dike. RLHA appeared to have been partially scavenged - exposed bones were noticeable including with missing muscle/meat.

Coordinates carcass was picked up:
536691 m E, 7151780 m N

Photo of Scene

Photo 1

Photo 2

Estimated Time of Death	Days
End of Environment Call-out	22.09.2024 15:25 MDT

Final Location of Carcass

Incinerator at the Waste Transfer Area

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Anton Jitnikovitch
24.09.2024 08:04 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

RustyBlackbird-2024-10-03-CafeteriaPatio | Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	RustyBlackbird-2024-10-03-CafeteriaPatio
Document No.	WildlifeReport000405
	04.10.2024

Audit
1 / 1 (100%)

Type of Wildlife Report — General sighting / Other

Report Type — Mortality

Wildlife Mortality

Enter Initial Time of Report — 03.10.2024 12:30 MDT

Department/Individual Who Reported Mortality:

Bouwa Whee

Environment at Call-out Location — 03.10.2024 17:45 MDT

Location

Cafeteria Patio

Animal Type — Other

Description of Animal/Scene

Deceased Rusty Blackbird on Cafeteria Patio
17:45 ENV retrieved bird.

Photo of Scene

Photo 1

Estimated Time of Death — Hours

End of Environment Call-out — 03.10.2024 17:50 MDT

Final Location of Carcass

ENV Sulfur lab freezer for shipment to ECC.

Closure & Sign-off
1 / 1 (100%)

Wildlife Report Complete — On

Signature

Rebecca Huang
04.10.2024 08:15 MDT

Media summary

Photo 1

Wildlife Report - 2021

Sparrow - 2024-08-23 - Truck Shop

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Sparrow - 2024-08-23 - Truck Shop
Document No.	WildlifeReport000391
	23.08.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	23.08.2024 11:00 MDT

Department/Individual Who Reported Mortality:

Fountain Tyre

Environment at Call-out Location	23.08.2024 11:10 MDT

Location

Outside truck shop near bay door 11

Animal Type	Other

Description of Animal/Scene

Bird found dead on the outside of a building corner

Photo of Scene

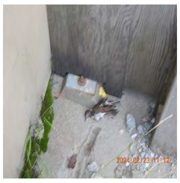


Photo 1

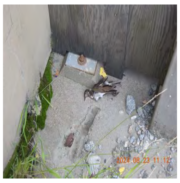


Photo 2


Photo 3


Photo 4


Photo 5

Estimated Time of Death	Hours
End of Environment Call-out	23.08.2024 11:25 MDT

Final Location of Carcass

Freezer in Sulfur lab

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Anton Jitnikovitch
23.08.2024 13:17 MDT

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Wildlife Report - 2021

Sparrow - 2024-09-21 - Truck Shop 3rd Floor

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Sparrow - 2024-09-21 - Truck Shop 3rd Floor
Document No.	WildlifeReport000399
	21.09.2024

Audit

1 / 1 (100%)

Type of Wildlife Report General sighting / Other

Report Type Mortality

Wildlife Mortality

Enter Initial Time of Report 21.09.2024 16:00 MDT

Department/Individual Who Reported Mortality:

Truck shop/warehouse cleaner

Environment at Call-out Location 21.09.2024 16:05 MDT

Location

on Truck Shop 3rd Floor

Animal Type Other

Description of Animal/Scene

Sparrow was found dead on the top portion of a 3 part storage shelf. Sparrow was very dusty and somewhat rigid.

Photo of Scene

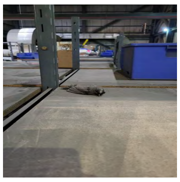


Photo 1


Photo 2


Photo 3

Estimated Time of Death Weeks

End of Environment Call-out 21.09.2024 16:10 MDT

Final Location of Carcass

Freezer in Environment Sulfur Laboratory

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete On

Signature

Anton Jitnikovitch
22.09.2024 08:41 MDT

Media summary

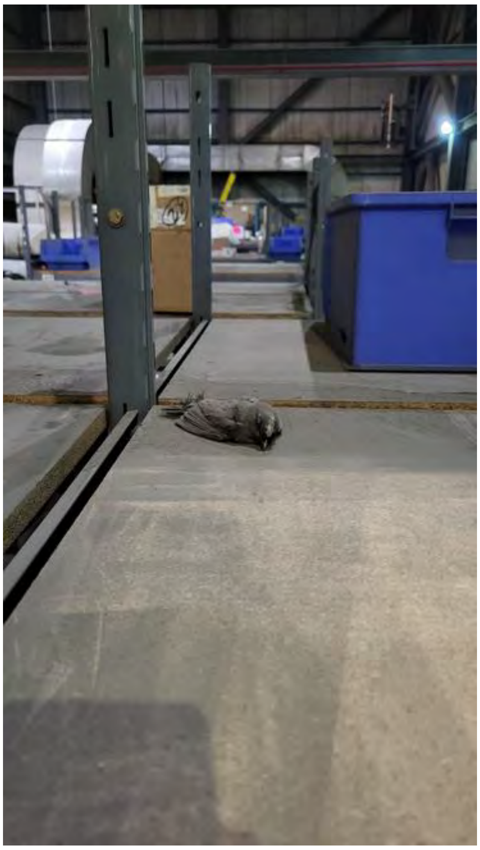


Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan - 2024-02-15 - SouthHaulRoad

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan - 2024-02-15 - SouthHaulRoad
Document No.	WildlifeReport000315
	17.02.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	15.02.2024 13:30 MST

Department/Individual Who Reported Mortality:

HSE (Environment)

Environment at Call-out Location	15.02.2024 13:30 MST

Location

Middle of South Haul road, by Pond 5

Animal Type	Other

Description of Animal/Scene

ENV seen Ptarmigan on middle of road on way to task.
ENV safely turned around at safe location.
Ptarmigan was frozen to ground with no head on body

Photo of Scene


Photo 1


Photo 2

Photo 3

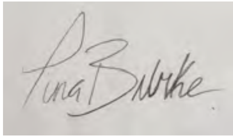
Estimated Time of Death	Hours
End of Environment Call-out	15.02.2024 13:45 MST

Final Location of Carcass

Environment Sulphur lab freezer

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature



17.02.2024 07:01 MST

Media summary

Photo 1

Photo 2

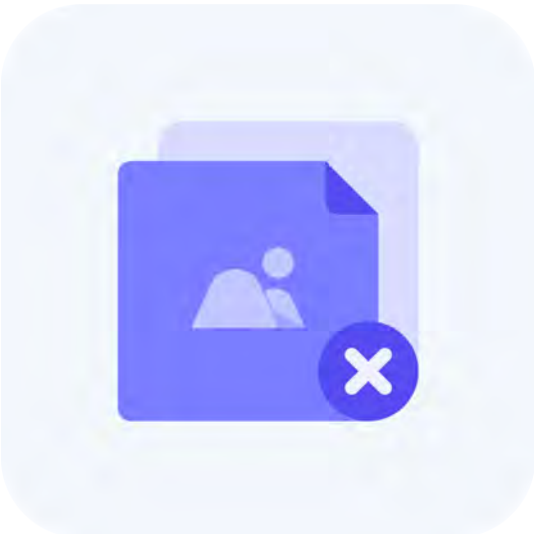


Photo 3

Wildlife Report - 2021

Ptarmigan - 2024-05-03 - north winter road approach

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan - 2024-05-03 - north winter road approach
Document No.	WildlifeReport000318
	04.05.2024

Audit

1 / 1 (100%)

Type of Wildlife Report — General sighting / Other

Report Type — Mortality

Wildlife Mortality

Enter Initial Time of Report — 03.05.2024 13:30 MDT

Department/Individual Who Reported Mortality:

SCAP WELDER

Environment at Call-out Location — 03.05.2024 14:10 MDT

Location

NORTH WINTER ROAD APPROACH

Photo 1

Animal Type — Other

PTARMIGAN

Description of Animal/Scene

14:10- ENV ARRIVED ON SCENE
14:20- TOOK PHOTOS OF SCENE, NO VISIBLE CAUSE OF DEATH

Photo of Scene

Photo 2

Photo 3

Photo 4

Estimated Time of Death — Hours

End of Environment Call-out — 03.05.2024 14:30 MDT

Final Location of Carcass

ENV FREEZER AWAITING SHIPPMENT TO ECC

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete On

Signature

BRENNAN DEBASSIGE
04.05.2024 08:27 MDT

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Wildlife Report - 2021

Ptarmigan 2024-05-04 A21 Dike

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan 2024-05-04 A21 Dike
Document No.	WildlifeReport000319
	05.05.2024

Audit

1 / 1 (100%)

Type of Wildlife Report — General sighting / Other

Report Type — Mortality

Wildlife Mortality

Enter Initial Time of Report — 04.05.2024 16:30 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location — 05.05.2024 16:30 MDT

Location

A21 Dike

Animal Type — Other

Description of Animal/Scene

16:40 ENV discovers deceased ptarmigan on A21 Dike while completing routine inspections
16:43 ENV collects deceased ptarmigan for shipment to ECC
16:50 ENV departs scene

Photo of Scene

Photo 1

Photo 2

Photo 3

Estimated Time of Death — Hours

End of Environment Call-out — 05.05.2024 19:00 MDT

Final Location of Carcass

Stored in Environment freezer for shipment to ECC.

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete — On

Signature

DP

Dylan Price
05.05.2024 07:08 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan - 2024-09-30 - Batch Plant

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan - 2024-09-30 - Batch Plant
Document No.	WildlifeReport000403
	30.09.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	30.09.2024 11:15 MDT

Department/Individual Who Reported Mortality:

Process Operations (Batch Plant)

Environment at Call-out Location	30.09.2024 11:40 MDT

Location

Batch Plant - Bay door 3

Animal Type	Other

Description of Animal/Scene

11:40 - Environment (ENV) arrive and took photos of scene - No visible cause of death
11:50 - Retrieves bird, ENV leaves scene

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	30.09.2024 11:50 MDT

Final Location of Carcass

Environment Freezer in Sulphur Lab

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Tina Burke
30.09.2024 13:47 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan-2024-10-03-AirportRoad-NIWTP-N17

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan-2024-10-03-AirportRoad-NIWTP-N17
Document No.	WildlifeReport000404
	04.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	03.10.2024 11:20 MDT

Department/Individual Who Reported Mortality:

Site Services

Environment at Call-out Location	03.10.2024 11:35 MDT

Location

Along Airport Road, near North Inlet Water Treatment Plant (NIWTP) and N17 Laydown

Animal Type	Other

Description of Animal/Scene

Three deceased Ptarmigans reported, one body retrieved, the other two partial remains found heavily scavenged.
11:37 ENV arrived along airport road near NIWTP, took photos, and collected partial remains. (Photo 1)
11:50 ENV arrived at road near N17, took photos, collected full body and partial remains. (Photo 2 and 3)

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	03.10.2024 12:00 MDT

Final Location of Carcass

ENV Sulfur lab freezer for shipment to ECC.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Rebecca Huang

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan - 2024-10-06 -A21 Ramp

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan - 2024-10-06 -A21 Ramp
Document No.	WildlifeReport000406
	06.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	06.10.2024 15:00 MDT

Department/Individual Who Reported Mortality:

Surface Mining

Environment at Call-out Location	06.10.2024 15:30 MDT

Location

A21 Pit Ramp on the right side headed downbound.

Animal Type	Other

Description of Animal/Scene

Heavily scavenged deceased ptarmigan. Looked as if it may have been contacted by a vehicle heading down the ramp.

A call-out of a deceased bird was called to ENV.
15:30 ENV arrived on scene, took photos, collected heavily scavenged remains.

Photo of Scene

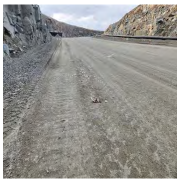


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	06.10.2024 15:45 MDT

Final Location of Carcass

Incinerator

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Rebecca Huang
06.10.2024 17:50 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan - 2024-10-19 - Lakeshore Blvd

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan - 2024-10-19 - Lakeshore Blvd
Document No.	WildlifeReport000407
	19.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	19.10.2024 10:30 MDT

Department/Individual Who Reported Mortality:

Surface Operator

Environment at Call-out Location	19.10.2024 10:40 MDT

Location

Lakeshore Blvd

Animal Type	Other

Description of Animal/Scene

Deceased ptarmigan identified on Lakeshore Blvd. Ptarmigan appeared to be scavenged.

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Days
End of Environment Call-out	19.10.2024 10:45 MDT

Final Location of Carcass

Freezer in Sulfur Lab

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Anton Jitnikovitch
19.10.2024 11:29 MDT

Photo 4

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Wildlife Report - 2021

Ptarmigan-2024-10-22-Airport Road

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan-2024-10-22-Airport Road
Document No.	WildlifeReport000408
	20.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	20.10.2024 08:25 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	20.10.2024 08:25 MDT

Location

Airport Road

Animal Type	Other

Description of Animal/Scene

Two deceased ptarmigans identified on Airport Road. Ptarmigans appeared to be scavenged.

08:25 - Environment (ENV) arrived and took photos of the scene - No visible cause of death.
08:30 - ENV retrieved the birds and left the scene.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4


Photo 5

Estimated Time of Death	Hours
End of Environment Call-out	20.10.2024 08:30 MDT

Final Location of Carcass

Freezer in Sulphur Lab

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Wildlife Report - 2021

Ptarmigan-2024-10-22-South Haul Road

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan-2024-10-22-South Haul Road
Document No.	WildlifeReport000409
	20.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	20.10.2024 08:40 MDT

Department/Individual Who Reported Mortality:

Surface Operations

Environment at Call-out Location	20.10.2024 09:15 MDT

Location

South Haul Road, on the right side of the road between Backfill and Truck Shop.

Animal Type	Other

Description of Animal/Scene

Deceased ptarmigan.

09:15 - Environment (ENV) arrived and took photos of the scene - Ptarmigan appeared to have been rolled over by a vehicle.
09:25 - ENV retrieved the bird and left the scene.

Photo of Scene


Photo 1


Photo 2

Estimated Time of Death	Hours
End of Environment Call-out	20.10.2024 09:25 MDT

Final Location of Carcass

Freezer in Sulphur Lab

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin
20.10.2024 11:50 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

Ptarmigan-2024-10-21-A21 dike

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan-2024-10-21-A21 dike
Document No.	WildlifeReport000410
	21.10.2024

Audit

1 / 1 (100%)

Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	20.10.2024 19:30 MDT

Department/Individual Who Reported Mortality:

Geotechnical

Environment at Call-out Location	21.10.2024 11:00 MDT

Location

A21 dike, on the road.

Animal Type	Other

Description of Animal/Scene

Deceased ptarmigan.

11:00-11:30 - Environment (ENV) arrived at the location but could not locate the ptarmigan.
11:45 - ENV confirmed the location with Geotechnical.
13:15 - ENV went back to the location and found the ptarmigan at the bottom of the slope at the A21 dike.
ENV took photos of the scene - Blood on ptarmigan's beak, may have been hit by a vehicle.
13:25 - ENV retrieved the bird and left the scene.

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	21.10.2024 13:25 MDT

Final Location of Carcass

Freezer in Sulphur Lab

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Jessica Gosselin
21.10.2024 17:37 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan-2024-10-25-MAC near BB Dorm

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan-2024-10-25-MAC near BB Dorm
Document No.	WildlifeReport000411
	25.10.2024

Audit
1 / 1 (100%)

Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	25.10.2024 13:15 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	25.10.2024 13:15 MDT

Location

On the road near the Main Camp Accommodation in front of BB-dorm.

Animal Type	Other

Description of Animal/Scene

Two deceased ptarmigans. Fox and raven scavenging on them.

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	25.10.2024 13:25 MDT

Final Location of Carcass

Freezer in the Sulphur Lab

Closure & Sign-off
1 / 1 (100%)

Wildlife Report Complete	On

Signature

Jessica Gosselin
26.10.2024 07:33 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan-2024-10-25-MAC near ERT Hall

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan-2024-10-25-MAC near ERT Hall
Document No.	WildlifeReport000412
	25.10.2024

Audit

1 / 1 (100%)

Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	25.10.2024 13:30 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	25.10.2024 13:30 MDT

Location

On the road near the Main Camp Accommodation in front of the ERT Hall.

Animal Type	Other

Description of Animal/Scene

1 deceased ptarmigan. Appeared to be scavenged.

Photo of Scene


Photo 1


Photo 2

Estimated Time of Death	Hours
End of Environment Call-out	25.10.2024 13:35 MDT

Final Location of Carcass

Freezer in Sulphur Lab

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Jessica Gosselin
26.10.2024 07:50 MDT

Media summary

Photo 1

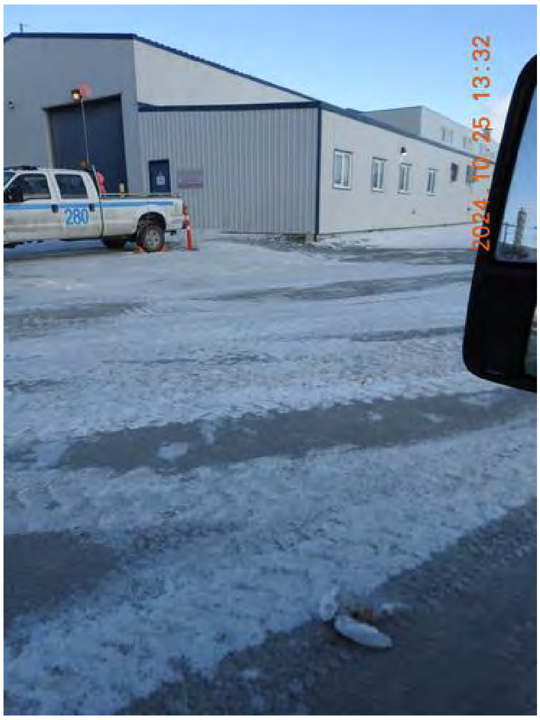


Photo 2

Wildlife Report - 2021

Ptarmigan- 2024-10-26 - A21 Dike

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan- 2024-10-26 - A21 Dike
Document No.	WildlifeReport000416
	26.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	26.10.2024 15:30 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	26.10.2024 15:30 MDT

Location

1530: While out on compliance, Environment observed Ptarmigan carcass and feathers on A21 dike

Animal Type	Other

Description of Animal/Scene

Ptarmigan carcass, wings and feathers

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours

Hours maybe day?

End of Environment Call-out	26.10.2024 15:35 MDT

Final Location of Carcass

Incinerator

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Tina Burke
26.10.2024 18:24 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan- 2024-10-26 - BB dorm

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan- 2024-10-26 - BB dorm
Document No.	WildlifeReport000415
	26.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	26.10.2024 11:00 MDT

Department/Individual Who Reported Mortality:

Site Services

Environment at Call-out Location	26.10.2024 11:10 MDT

Location

BB dorm on road

Animal Type	Other

Description of Animal/Scene

1110: Environment arrives, picks up bird (frozen), brings back to Sulfur lab freezer

Photo of Scene

no photos before picking up bird

Estimated Time of Death	Hours
End of Environment Call-out	26.10.2024 11:15 MDT

Final Location of Carcass

Environment Sulfur lab freezer

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Tina Burke
26.10.2024 18:12 MDT

Wildlife Report - 2021

Ptarmigan- 2024-10-26- MAC

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan- 2024-10-26- MAC
Document No.	WildlifeReport000417
	26.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	26.10.2024 16:20 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	26.10.2024 16:20 MDT

Location

In front of Main Accommodations on road

Animal Type	Other

Description of Animal/Scene

1620: Environment observed raven feeding on deceased Ptarmigan while driving by

Photo of Scene


Photo 1


Photo 2

Estimated Time of Death	Hours
End of Environment Call-out	26.10.2024 16:25 MDT

Final Location of Carcass

Environment Sulfur lab freezer

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Tina Burke
27.10.2024 07:20 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

Raven - 2024-01-17 - Process Plant

Complete

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Raven - 2024-01-17 - Process Plant
Document No.	WildlifeReport000312
	18.01.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	17.01.2024 13:20 MST

Department/Individual Who Reported Mortality:

Powerhouse personnel

Environment at Call-out Location	17.01.2024 13:50 MST

Location

Process Plant, outside door/bay 21

Animal Type	Other

Description of Animal/Scene

Deceased raven carcass with signs of previous scavenging

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	17.01.2024 13:55 MST

Final Location of Carcass

Environment Freezer

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature


Anton Jitnikovitch
18.01.2024 07:17 MST

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Raven - 2024-01-28 - West Ramp Mine Air Heater

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Raven - 2024-01-28 - West Ramp Mine Air Heater
Document No.	WildlifeReport000313
	28.01.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	28.01.2024 06:15 MST

Department/Individual Who Reported Mortality:

Site Services - Mechanical

Environment at Call-out Location	28.01.2024 08:30 MST

Location

3rd floor, east stairs at the A21 West Ramp Mine Air Heater

Animal Type	Other

Description of Animal/Scene

Adult raven found deceased on east access stairway at Mine Air Heater. No clear cause of death.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4

Estimated Time of Death	Days
End of Environment Call-out	28.01.2024 09:00 MST

Final Location of Carcass

Environment lab freezer, to be shipped off site for further evaluation.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Justin Macek
28.01.2024 10:59 MST

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Wildlife Report - 2021

Raven - 2024-05-14 - South Haul Road

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Raven - 2024-05-14 - South Haul Road
Document No.	WildlifeReport000320
	14.05.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	14.05.2024 09:15 MDT

Department/Individual Who Reported Mortality:

Site Services

Environment at Call-out Location	14.05.2024 09:25 MDT

Location

South Haul Road, between Pond 1 and Pond 5.

Animal Type	Other

Description of Animal/Scene

9:15 - Site Services called Environment (ENV) and reported a raptor feeding on a carcass on South Haul Road.
9:25 - ENV in light vehicle arrived at the location and observed a hawk feeding on a fresh raven carcass.
9:26 - ENV slowly approached the location. The hawk flew and perched on a rock about 100 meters away.
9:27 - ENV observed the scene and removed the raven carcass from the road.
9:35 - ENV moved the carcass in the vegetation plot in front of its original location on South Haul Road.

Photo of Scene

Photo 1

Estimated Time of Death	Hours
End of Environment Call-out	14.05.2024 09:35 MDT

Final Location of Carcass

In the Vegetation Plot in front of the South Haul Road.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin
14.05.2024 10:25 MDT

Media summary

Photo 1

Wildlife Report - 2021

Raven-2024-07-28-E21Sump

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Raven-2024-07-28-E21Sump
Document No.	WildlifeReport000387
	28.07.2024

Audit

1 / 1 (100%)

Type of Wildlife Report: General sighting / Other

Report Type: Mortality

Wildlife Mortality

Enter Initial Time of Report: 28.07.2024 09:00 MDT

Department/Individual Who Reported Mortality:

Site Services

Environment at Call-out Location: 28.07.2024 09:10 MDT

Location

E21 Sump, near the shack.

Animal Type: Other

Description of Animal/Scene

Raven, adult, only entrails, feathers and bone left.
No powerline near the location.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4

Estimated Time of Death: Days

End of Environment Call-out: 28.07.2024 09:15 MDT

Final Location of Carcass

Incinerator

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete: On

Signature

Jessica Gosselin
29.07.2024 08:05 MDT

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Wildlife Report - 2021

Raven-2024-08-04-Pond2 **Complete**

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Raven-2024-08-04-Pond2
Document No.	WildlifeReport000388
	04.08.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	04.08.2024 08:55 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	04.08.2024 08:55 MDT

Location

Pond 2, near the road access, at the bottom of the ramp, on the North side.
Coordinates: UTM 12 W0532833 7153290.

Animal Type	Other

Description of Animal/Scene

Raven, adult, only the head remains.

Photo of Scene

Photo 1

Estimated Time of Death	Weeks
End of Environment Call-out	04.08.2024 09:00 MDT

Final Location of Carcass

In the tundra on Lac-de-Gras side, opposite to Pond 2.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin
04.08.2024 13:37 MDT

Media summary

Photo 1

Wildlife Report - 2021

Raven Nest - 2024-03-30 - South Tank Farm

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Raven Nest - 2024-03-30 - South Tank Farm
Document No.	WildlifeReport000316
	30.03.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Sighting

General Wildlife Sighting

Animal Type	Other

Description of Individual / Activity (eg. number of individuals, colour, age, size, etc.)

Raven building nest on Tank 101 of the South Tank Farm. Nest is obstructing path/stairway for staff to collect regular tank measurements.

Photo (If Possible)

Enter Initial Time of Wildlife Sighting	30.03.2024 11:00 MDT

Department/Individual Who Reported Wildlife:

Waste Management

Environment at Call-out Location	30.03.2024 11:00 MDT

Chronological Events

Environment was contacted by Waste Management regarding the nest that was obstructing work. Environment contacted ECC for permission to destroy nest, which was granted.

Movement Map (Import NotePlus Site Map)

End of Environment Call-out	30.03.2024 23:00 MDT

Final Location of Wildlife

South Tank Farm

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Dylan Price
30.03.2024 15:23 MDT

Wildlife Report - 2021

Ravens - 2024-07-20 - A154 Dike

Complete

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ravens - 2024-07-20 - A154 Dike
Document No.	WildlifeReport000385
	21.07.2024

Audit

1 / 1 (100%)

Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	20.07.2024 13:00 MDT

Department/Individual Who Reported Mortality:

Surface Geotechnical

Environment at Call-out Location	20.07.2024 15:50 MDT

Location

Southeast portion of A154 Dike

Animal Type	Other

Description of Animal/Scene

3 deceased ravens found at base of power pole, directly underneath a transformer.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4


Photo 5

Estimated Time of Death	Days
End of Environment Call-out	20.07.2024 16:00 MDT

Final Location of Carcass

Waste Transfer.

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Justin Macek
21.07.2024 18:07 MDT

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Wildlife Report - 2021

2024-12-07

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	2024-12-07
Document No.	WildlifeReport000420
	07.12.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	07.12.2024 10:40 MST

Department/Individual Who Reported Mortality:

Surface Ops

Environment at Call-out Location	07.12.2024 10:50 MST

Location

A21 Haul Road, directly north of entry lane to HME refueling area at South Tank Farm

Animal Type	Fox

Description of Animal/Scene

Single white arctic fox. Deceased on east side of haul road. Scavenger damage to carcass, two ravens actively feeding on carcass upon arrival at scene. Carcass frozen. Cause of death unknown.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4

Estimated Time of Death	Hours
End of Environment Call-out	07.12.2024 11:10 MST

Final Location of Carcass

Waste Transfer Area

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Justin Macek
08.12.2024 07:18 MST

Media summary

Photo 1

Photo 2

Photo 3

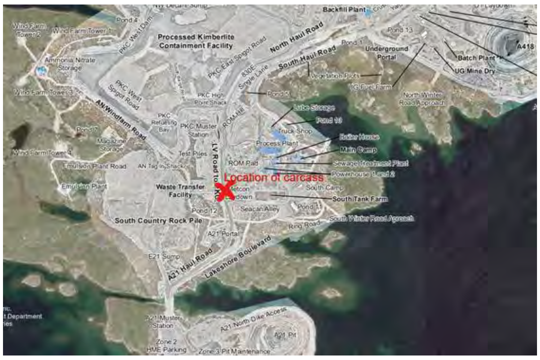


Photo 4

APPENDIX D

Wildlife Mortality Incident Reports 2024

Two separate bears were euthanized by a GNWT-ECC Wildlife Officer on July 3 2024, as a result of health assessments performed by GNWT-ECC.

Wildlife Report - 2021

2024-12-07

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	2024-12-07
Document No.	WildlifeReport000420
	07.12.2024

Audit

1 / 1 (100%)

Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	07.12.2024 10:40 MST

Department/Individual Who Reported Mortality:

Surface Ops

Environment at Call-out Location	07.12.2024 10:50 MST

Location

A21 Haul Road, directly north of entry lane to HME refueling area at South Tank Farm

Animal Type	Fox

Description of Animal/Scene

Single white arctic fox. Deceased on east side of haul road. Scavenger damage to carcass, two ravens actively feeding on carcass upon arrival at scene. Carcass frozen. Cause of death unknown.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4

Estimated Time of Death	Hours
End of Environment Call-out	07.12.2024 11:10 MST

Final Location of Carcass

Waste Transfer Area

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Justin Macek
08.12.2024 07:18 MST

Media summary

Photo 1

Photo 2

Photo 3

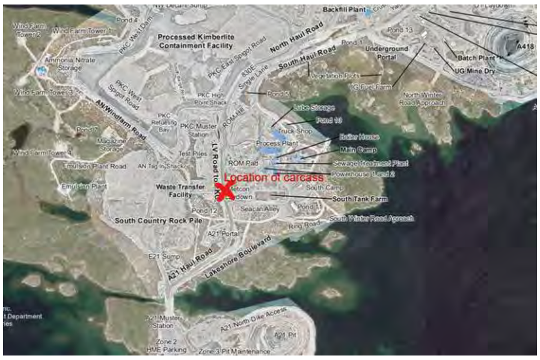


Photo 4

Wildlife Report - 2021

Falcon - 2024-04-04 A21 Dike

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Falcon - 2024-04-04 A21 Dike
Document No.	WildlifeReport000317
	06.04.2024

Audit 1 / 1 (100%)

Type of Wildlife Report General sighting / Other

Report Type Mortality

Wildlife Mortality

Enter Initial Time of Report 04.04.2024 13:00 MDT

Department/Individual Who Reported Mortality:

Clinton Muller, Geotech

Environment at Call-out Location 06.04.2024 16:30 MDT

Location

A21 Dike

Animal Type Other

Description of Animal/Scene

Deceased falcon at the base of power pole

Photo of Scene


Photo 1


Photo 2

Estimated Time of Death Days

End of Environment Call-out 06.04.2024 16:30 MDT

Final Location of Carcass

Environment freezer - to be shipped to ECC

Closure & Sign-off 1 / 1 (100%)

Wildlife Report Complete On

Signature

Dylan Price
06.04.2024 07:23 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

Green Winged Teal - 2024-05-25 **Complete**

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Green Winged Teal - 2024-05-25
Document No.	WildlifeReport000329
	27.05.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	25.05.2024 16:00 MDT

Department/Individual Who Reported Mortality:

Surface Geotechnical

Environment at Call-out Location	25.05.2024 16:45 MDT

Location

South A21 Dike

Animal Type	Other

Description of Animal/Scene

Single deceased Green Winged Teal found on A21 Dike. No immediately identifiable cause of death.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4

Estimated Time of Death	Days
End of Environment Call-out	25.05.2024 17:00 MDT

Final Location of Carcass

Environment lab freezer awaiting shipment to ECCC.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Justin Macek
27.05.2024 13:28 MDT

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Wildlife Report - 2021

Green Winged Teal-2024-08-30-A418 Approach

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Green Winged Teal-2024-08-30-A418 Approach
Document No.	WildlifeReport000393
	30.08.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	30.08.2024 08:10 MDT

Department/Individual Who Reported Mortality:

Department: SCAP

Environment at Call-out Location	30.08.2024 08:20 MDT

Location

A418 Approach, middle of the road.

Animal Type	Other

Description of Animal/Scene

Single Green-Winged Teal, adult, female, body intact.
Middle of the road, powerlines near the location. No immediately identifiable cause of death.

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	30.08.2024 08:25 MDT

Final Location of Carcass

Sulphur Lab freezer awaiting shipment to ECC.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin
30.08.2024 13:41 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Green Winged Teal-2024-08-30-Cold Storage Warehouse

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Green Winged Teal-2024-08-30-Cold Storage Warehouse
Document No.	WildlifeReport000394
	30.08.2024

Audit

1 / 1 (100%)

Type of Wildlife Report — General sighting / Other

Report Type — Mortality

Wildlife Mortality

Enter Initial Time of Report — 30.08.2024 19:55 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location — 30.08.2024 08:10 MDT

Location

West of the Cold Storage Warehouse.

Animal Type — Other

Description of Animal/Scene

Single adult Green Winged Teal female.
Cause of death: predation. One peregrine falcon was feeding on the carcass. A second peregrine falcon was perched on a powerline pole nearby.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4

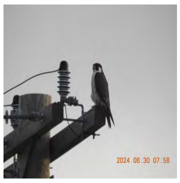


Photo 5


Photo 6

Estimated Time of Death — Hours

End of Environment Call-out — 30.08.2024 08:40 MDT

Final Location of Carcass

Tundra, West of the Cold Storage Warehouse, toward the Lakeshore Boulevard.

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete — On

Signature

Jessica Gosselin
30.08.2024 13:46 MDT

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

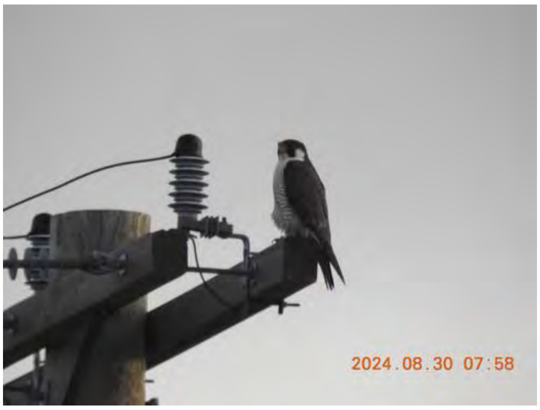


Photo 5

Photo 6

Wildlife Report - 2021

Hare - 2024-08-29 - N17 **Complete**

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Hare - 2024-08-29 - N17
Document No.	WildlifeReport000392
	29.08.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	29.08.2024 10:30 MDT

Department/Individual Who Reported Mortality:

Surface ops

Environment at Call-out Location	29.08.2024 10:40 MDT

Location

Entrance of N17 laydown

Animal Type	Other

Description of Animal/Scene

Hare was found on ground middle of road, body was stiff when retrieving it.

Photo of Scene


Photo 1


Photo 2

Estimated Time of Death	Hours
End of Environment Call-out	29.08.2024 10:45 MDT

Final Location of Carcass

Incinerator

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Tina Burke
29.08.2024 18:05 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

Hare-2024-09-13-Airport rd

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location) Hare-2024-09-13-Airport rd

Photo 1

Document No. WildlifeReport000398

13.09.2024

Audit

1 / 1 (100%)

Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	13.09.2024 09:45 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	13.09.2024 09:45 MDT

Location

Airport rd

Animal Type	Other

Description of Animal/Scene

Environment spotted hare on Airport road. Hare was picked up and disposed of in the incinerator.

E 535301
N 7152957

Photo of Scene


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	13.09.2024 09:50 MDT

Final Location of Carcass

Incinerator at Waste Transfer Facility.

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

 13.09.2024 11:55 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan - 2024-02-15 - SouthHaulRoad

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan - 2024-02-15 - SouthHaulRoad
Document No.	WildlifeReport000315
	17.02.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	15.02.2024 13:30 MST

Department/Individual Who Reported Mortality:

HSE (Environment)

Environment at Call-out Location	15.02.2024 13:30 MST

Location

Middle of South Haul road, by Pond 5

Animal Type	Other

Description of Animal/Scene

ENV seen Ptarmigan on middle of road on way to task.
ENV safely turned around at safe location.
Ptarmigan was frozen to ground with no head on body

Photo of Scene


Photo 1


Photo 2

Photo 3

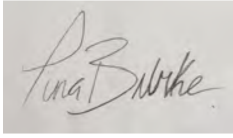
Estimated Time of Death	Hours
End of Environment Call-out	15.02.2024 13:45 MST

Final Location of Carcass

Environment Sulphur lab freezer

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature



17.02.2024 07:01 MST

Media summary

Photo 1

Photo 2

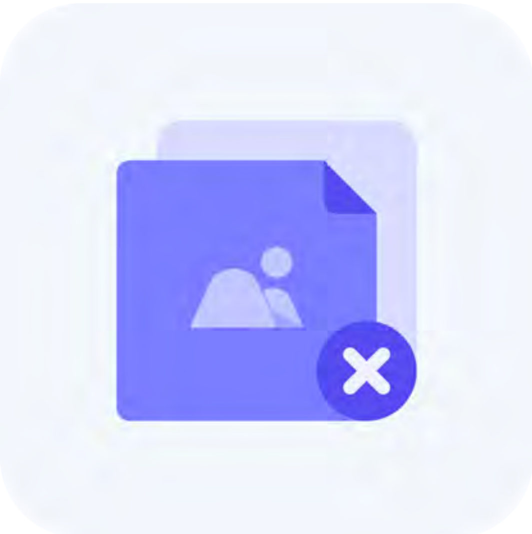


Photo 3

Wildlife Report - 2021

Ptarmigan - 2024-05-03 - north winter road approach

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan - 2024-05-03 - north winter road approach
Document No.	WildlifeReport000318
	04.05.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	03.05.2024 13:30 MDT

Department/Individual Who Reported Mortality:

SCAP WELDER

Environment at Call-out Location	03.05.2024 14:10 MDT

Location

NORTH WINTER ROAD APPROACH


Photo 1

Animal Type	Other

PTARMIGAN

Description of Animal/Scene

14:10- ENV ARRIVED ON SCENE
14:20- TOOK PHOTOS OF SCENE, NO VISIBLE CAUSE OF DEATH

Photo of Scene


Photo 2


Photo 3


Photo 4

Estimated Time of Death	Hours
End of Environment Call-out	03.05.2024 14:30 MDT

Final Location of Carcass

ENV FREEZER AWAITING SHIPPMENT TO ECC

Closure & Sign-off	1 / 1 (100%)

Wildlife Report Complete	On

Signature

BRENNAN DEBASSIGE
04.05.2024 08:27 MDT

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Wildlife Report - 2021

Ptarmigan 2024-05-04 A21 Dike

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan 2024-05-04 A21 Dike
Document No.	WildlifeReport000319
	05.05.2024

Audit

1 / 1 (100%)

Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	04.05.2024 16:30 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	05.05.2024 16:30 MDT

Location

A21 Dike

Animal Type	Other

Description of Animal/Scene

16:40 ENV discovers deceased ptarmigan on A21 Dike while completing routine inspections
16:43 ENV collects deceased ptarmigan for shipment to ECC
16:50 ENV departs scene

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	05.05.2024 19:00 MDT

Final Location of Carcass

Stored in Environment freezer for shipment to ECC.

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

DP

Dylan Price
05.05.2024 07:08 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan - 2024-09-30 - Batch Plant

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan - 2024-09-30 - Batch Plant
Document No.	WildlifeReport000403
	30.09.2024

Audit

1 / 1 (100%)

Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	30.09.2024 11:15 MDT

Department/Individual Who Reported Mortality:

Process Operations (Batch Plant)

Environment at Call-out Location	30.09.2024 11:40 MDT

Location

Batch Plant - Bay door 3

Animal Type	Other

Description of Animal/Scene

11:40 - Environment (ENV) arrive and took photos of scene - No visible cause of death
11:50 - Retrieves bird, ENV leaves scene

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	30.09.2024 11:50 MDT

Final Location of Carcass

Environment Freezer in Sulphur Lab

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Tina Burke
30.09.2024 13:47 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan-2024-10-03-AirportRoad-NIWTP-N17

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan-2024-10-03-AirportRoad-NIWTP-N17
Document No.	WildlifeReport000404
	04.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	03.10.2024 11:20 MDT

Department/Individual Who Reported Mortality:

Site Services

Environment at Call-out Location	03.10.2024 11:35 MDT

Location

Along Airport Road, near North Inlet Water Treatment Plant (NIWTP) and N17 Laydown

Animal Type	Other

Description of Animal/Scene

Three deceased Ptarmigans reported, one body retrieved, the other two partial remains found heavily scavenged.
11:37 ENV arrived along airport road near NIWTP, took photos, and collected partial remains. (Photo 1)
11:50 ENV arrived at road near N17, took photos, collected full body and partial remains. (Photo 2 and 3)

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	03.10.2024 12:00 MDT

Final Location of Carcass

ENV Sulfur lab freezer for shipment to ECC.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Rebecca Huang

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan - 2024-10-06 -A21 Ramp

Complete

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan - 2024-10-06 -A21 Ramp
Document No.	WildlifeReport000406
	06.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	06.10.2024 15:00 MDT

Department/Individual Who Reported Mortality:

Surface Mining

Environment at Call-out Location	06.10.2024 15:30 MDT

Location

A21 Pit Ramp on the right side headed downbound.

Animal Type	Other

Description of Animal/Scene

Heavily scavenged deceased ptarmigan. Looked as if it may have been contacted by a vehicle heading down the ramp.

A call-out of a deceased bird was called to ENV.
15:30 ENV arrived on scene, took photos, collected heavily scavenged remains.

Photo of Scene

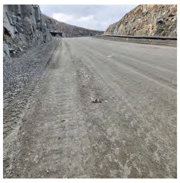


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	06.10.2024 15:45 MDT

Final Location of Carcass

Incinerator

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Rebecca Huang
06.10.2024 17:50 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan - 2024-10-19 - Lakeshore Blvd

Complete

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan - 2024-10-19 - Lakeshore Blvd
Document No.	WildlifeReport000407
	19.10.2024

Audit

1 / 1 (100%)

Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	19.10.2024 10:30 MDT

Department/Individual Who Reported Mortality:

Surface Operator

Environment at Call-out Location	19.10.2024 10:40 MDT

Location

Lakeshore Blvd

Animal Type	Other

Description of Animal/Scene

Deceased ptarmigan identified on Lakeshore Blvd. Ptarmigan appeared to be scavenged.

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Days
End of Environment Call-out	19.10.2024 10:45 MDT

Final Location of Carcass

Freezer in Sulfur Lab

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Anton Jitnikovitch
19.10.2024 11:29 MDT

Photo 4

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Wildlife Report - 2021

Ptarmigan-2024-10-22-Airport Road

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan-2024-10-22-Airport Road
Document No.	WildlifeReport000408
	20.10.2024

Audit

1 / 1 (100%)

Type of Wildlife Report General sighting / Other

Report Type Mortality

Wildlife Mortality

Enter Initial Time of Report 20.10.2024 08:25 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location 20.10.2024 08:25 MDT

Location

Airport Road

Animal Type Other

Description of Animal/Scene

Two deceased ptarmigans identified on Airport Road. Ptarmigans appeared to be scavenged.

08:25 - Environment (ENV) arrived and took photos of the scene - No visible cause of death.
08:30 - ENV retrieved the birds and left the scene.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4


Photo 5

Estimated Time of Death Hours

End of Environment Call-out 20.10.2024 08:30 MDT

Final Location of Carcass

Freezer in Sulphur Lab

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete On

Signature

Jessica Gosselin

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Wildlife Report - 2021

Ptarmigan-2024-10-22-South Haul Road

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan-2024-10-22-South Haul Road
Document No.	WildlifeReport000409
	20.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	20.10.2024 08:40 MDT

Department/Individual Who Reported Mortality:

Surface Operations

Environment at Call-out Location	20.10.2024 09:15 MDT

Location

South Haul Road, on the right side of the road between Backfill and Truck Shop.

Animal Type	Other

Description of Animal/Scene

Deceased ptarmigan.

09:15 - Environment (ENV) arrived and took photos of the scene - Ptarmigan appeared to have been rolled over by a vehicle.
09:25 - ENV retrieved the bird and left the scene.

Photo of Scene


Photo 1


Photo 2

Estimated Time of Death	Hours
End of Environment Call-out	20.10.2024 09:25 MDT

Final Location of Carcass

Freezer in Sulphur Lab

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin
20.10.2024 11:50 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

Ptarmigan-2024-10-21-A21 dike

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan-2024-10-21-A21 dike
Document No.	WildlifeReport000410
	21.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	20.10.2024 19:30 MDT

Department/Individual Who Reported Mortality:

Geotechnical

Environment at Call-out Location	21.10.2024 11:00 MDT

Location

A21 dike, on the road.

Animal Type	Other

Description of Animal/Scene

Deceased ptarmigan.

11:00-11:30 - Environment (ENV) arrived at the location but could not locate the ptarmigan.
11:45 - ENV confirmed the location with Geotechnical.
13:15 - ENV went back to the location and found the ptarmigan at the bottom of the slope at the A21 dike.
ENV took photos of the scene - Blood on ptarmigan's beak, may have been hit by a vehicle.
13:25 - ENV retrieved the bird and left the scene.

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	21.10.2024 13:25 MDT

Final Location of Carcass

Freezer in Sulphur Lab

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin
21.10.2024 17:37 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan-2024-10-25-MAC near BB Dorm

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan-2024-10-25-MAC near BB Dorm
Document No.	WildlifeReport000411
	25.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	25.10.2024 13:15 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	25.10.2024 13:15 MDT

Location

On the road near the Main Camp Accommodation in front of BB-dorm.

Animal Type	Other

Description of Animal/Scene

Two deceased ptarmigans. Fox and raven scavenging on them.

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	25.10.2024 13:25 MDT

Final Location of Carcass

Freezer in the Sulphur Lab

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin
26.10.2024 07:33 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan-2024-10-25-MAC near ERT Hall

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan-2024-10-25-MAC near ERT Hall
Document No.	WildlifeReport000412
	25.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	25.10.2024 13:30 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	25.10.2024 13:30 MDT

Location

On the road near the Main Camp Accommodation in front of the ERT Hall.

Animal Type	Other

Description of Animal/Scene

1 deceased ptarmigan. Appeared to be scavenged.

Photo of Scene


Photo 1


Photo 2

Estimated Time of Death	Hours
End of Environment Call-out	25.10.2024 13:35 MDT

Final Location of Carcass

Freezer in Sulphur Lab

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin
26.10.2024 07:50 MDT

Media summary

Photo 1

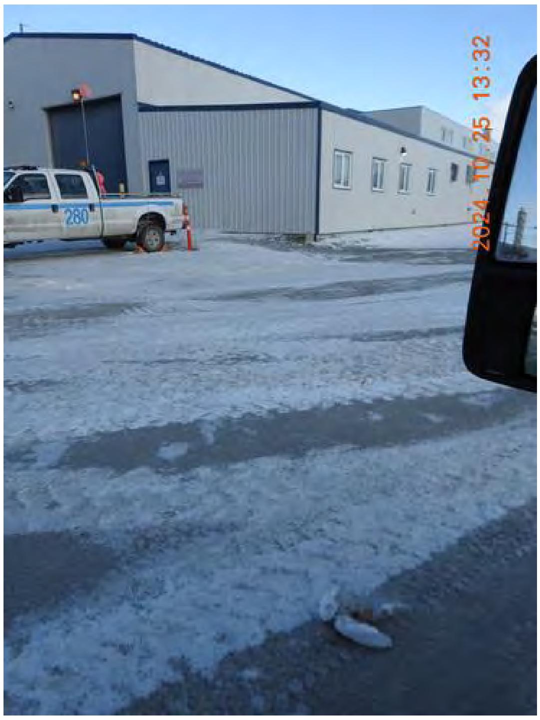


Photo 2

Wildlife Report - 2021

Ptarmigan- 2024-10-26 - A21 Dike

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan- 2024-10-26 - A21 Dike
Document No.	WildlifeReport000416
	26.10.2024

Audit 1 / 1 (100%)

Type of Wildlife Report General sighting / Other

Report Type Mortality

Wildlife Mortality

Enter Initial Time of Report 26.10.2024 15:30 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location 26.10.2024 15:30 MDT

Location

1530: While out on compliance, Environment observed Ptarmigan carcass and feathers on A21 dike

Animal Type Other

Description of Animal/Scene

Ptarmigan carcass, wings and feathers

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death Hours

Hours maybe day?

End of Environment Call-out 26.10.2024 15:35 MDT

Final Location of Carcass

Incinerator

Closure & Sign-off 1 / 1 (100%)

Wildlife Report Complete On

Signature

Tina Burke
26.10.2024 18:24 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Ptarmigan- 2024-10-26 - BB dorm

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan- 2024-10-26 - BB dorm
Document No.	WildlifeReport000415
	26.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality	
Enter Initial Time of Report	26.10.2024 11:00 MDT

Department/Individual Who Reported Mortality:

Site Services

Environment at Call-out Location	26.10.2024 11:10 MDT

Location

BB dorm on road

Animal Type	Other

Description of Animal/Scene

1110: Environment arrives, picks up bird (frozen), brings back to Sulfur lab freezer

Photo of Scene

no photos before picking up bird

Estimated Time of Death	Hours
End of Environment Call-out	26.10.2024 11:15 MDT

Final Location of Carcass

Environment Sulfur lab freezer

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Tina Burke
26.10.2024 18:12 MDT

Wildlife Report - 2021

Ptarmigan- 2024-10-26- MAC

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ptarmigan- 2024-10-26- MAC
Document No.	WildlifeReport000417
	26.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	26.10.2024 16:20 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	26.10.2024 16:20 MDT

Location

In front of Main Accommodations on road

Animal Type	Other

Description of Animal/Scene

1620: Environment observed raven feeding on deceased Ptarmigan while driving by

Photo of Scene


Photo 1


Photo 2

Estimated Time of Death	Hours
End of Environment Call-out	26.10.2024 16:25 MDT

Final Location of Carcass

Environment Sulfur lab freezer

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Tina Burke
27.10.2024 07:20 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

Raven - 2024-01-17 - Process Plant

Complete

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Raven - 2024-01-17 - Process Plant
Document No.	WildlifeReport000312
	18.01.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	17.01.2024 13:20 MST

Department/Individual Who Reported Mortality:

Powerhouse personnel

Environment at Call-out Location	17.01.2024 13:50 MST

Location

Process Plant, outside door/bay 21

Animal Type	Other

Description of Animal/Scene

Deceased raven carcass with signs of previous scavenging

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Hours
End of Environment Call-out	17.01.2024 13:55 MST

Final Location of Carcass

Environment Freezer

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Anton Jitnikovitch

Anton Jitnikovitch
18.01.2024 07:17 MST

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Raven - 2024-01-28 - West Ramp Mine Air Heater

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Raven - 2024-01-28 - West Ramp Mine Air Heater
Document No.	WildlifeReport000313
	28.01.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	28.01.2024 06:15 MST

Department/Individual Who Reported Mortality:

Site Services - Mechanical

Environment at Call-out Location	28.01.2024 08:30 MST

Location

3rd floor, east stairs at the A21 West Ramp Mine Air Heater

Animal Type	Other

Description of Animal/Scene

Adult raven found deceased on east access stairway at Mine Air Heater. No clear cause of death.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4

Estimated Time of Death	Days
End of Environment Call-out	28.01.2024 09:00 MST

Final Location of Carcass

Environment lab freezer, to be shipped off site for further evaluation.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Justin Macek
28.01.2024 10:59 MST

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Wildlife Report - 2021

Raven - 2024-05-14 - South Haul Road

Complete

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Raven - 2024-05-14 - South Haul Road
Document No.	WildlifeReport000320
	14.05.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	14.05.2024 09:15 MDT

Department/Individual Who Reported Mortality:

Site Services

Environment at Call-out Location	14.05.2024 09:25 MDT

Location

South Haul Road, between Pond 1 and Pond 5.

Animal Type	Other

Description of Animal/Scene

9:15 - Site Services called Environment (ENV) and reported a raptor feeding on a carcass on South Haul Road.
9:25 - ENV in light vehicle arrived at the location and observed a hawk feeding on a fresh raven carcass.
9:26 - ENV slowly approached the location. The hawk flew and perched on a rock about 100 meters away.
9:27 - ENV observed the scene and removed the raven carcass from the road.
9:35 - ENV moved the carcass in the vegetation plot in front of its original location on South Haul Road.

Photo of Scene

Photo 1

Estimated Time of Death	Hours
End of Environment Call-out	14.05.2024 09:35 MDT

Final Location of Carcass

In the Vegetation Plot in front of the South Haul Road.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin
14.05.2024 10:25 MDT

Media summary

Photo 1

Wildlife Report - 2021

Raven-2024-07-28-E21Sump **Complete**

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Raven-2024-07-28-E21Sump
Document No.	WildlifeReport000387
	28.07.2024

Audit 1 / 1 (100%)

Type of Wildlife Report General sighting / Other

Report Type Mortality

Wildlife Mortality

Enter Initial Time of Report 28.07.2024 09:00 MDT

Department/Individual Who Reported Mortality:

Site Services

Environment at Call-out Location 28.07.2024 09:10 MDT

Location

E21 Sump, near the shack.

Animal Type Other

Description of Animal/Scene

Raven, adult, only entrails, feathers and bone left.
No powerline near the location.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4

Estimated Time of Death Days

End of Environment Call-out 28.07.2024 09:15 MDT

Final Location of Carcass

Incinerator

Closure & Sign-off 1 / 1 (100%)

Wildlife Report Complete On

Signature

Jessica Gosselin
29.07.2024 08:05 MDT

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Wildlife Report - 2021

Raven-2024-08-04-Pond2 **Complete**

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Raven-2024-08-04-Pond2
Document No.	WildlifeReport000388
	04.08.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	04.08.2024 08:55 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	04.08.2024 08:55 MDT

Location

Pond 2, near the road access, at the bottom of the ramp, on the North side.
Coordinates: UTM 12 W0532833 7153290.

Animal Type	Other

Description of Animal/Scene

Raven, adult, only the head remains.

Photo of Scene

Photo 1

Estimated Time of Death	Weeks
End of Environment Call-out	04.08.2024 09:00 MDT

Final Location of Carcass

In the tundra on Lac-de-Gras side, opposite to Pond 2.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Jessica Gosselin
04.08.2024 13:37 MDT

Media summary

Photo 1

Wildlife Report - 2021

Ravens - 2024-07-20 - A154 Dike

Complete

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Ravens - 2024-07-20 - A154 Dike
Document No.	WildlifeReport000385
	21.07.2024

Audit 1 / 1 (100%)

Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	20.07.2024 13:00 MDT

Department/Individual Who Reported Mortality:

Surface Geotechnical

Environment at Call-out Location	20.07.2024 15:50 MDT

Location

Southeast portion of A154 Dike

Animal Type	Other

Description of Animal/Scene

3 deceased ravens found at base of power pole, directly underneath a transformer.

Photo of Scene


Photo 1


Photo 2


Photo 3


Photo 4


Photo 5

Estimated Time of Death	Days
End of Environment Call-out	20.07.2024 16:00 MDT

Final Location of Carcass

Waste Transfer.

Closure & Sign-off 1 / 1 (100%)

Wildlife Report Complete	On

Signature

Justin Macek
21.07.2024 18:07 MDT

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Wildlife Report - 2021

Robin - 2024-06-29 - SCAP

Complete

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Robin - 2024-06-29 - SCAP
Document No.	WildlifeReport000383
	09.07.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	29.06.2024 07:00 MDT

Department/Individual Who Reported Mortality:

SCAP team

Environment at Call-out Location	29.06.2024 08:30 MDT

Location

SACP dry storage building

Animal Type	Other

Description of Animal/Scene

Robin Nest with 4 deceased hatchlings.

Robins likely accessed infrequently used building through slightly ajar man door. Man door was fixed in the days prior to discovery of the nest, blocking access to the building for the birds. The hatchlings were found deceased.

Nest and bodies were incinerated.

Photo of Scene

Photo 1

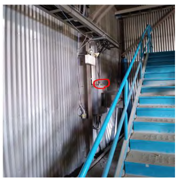


Photo 2

Estimated Time of Death	Days
End of Environment Call-out	29.06.2024 09:00 MDT

Final Location of Carcass

Incinerated at Waste Transfer Area

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Gordon Cumming
09.07.2024 10:21 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

Robin - 2024-07-06 - Aviation Storage

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Robin - 2024-07-06 - Aviation Storage
Document No.	WildlifeReport000382
	06.07.2024

Audit 1 / 1 (100%)

Type of Wildlife Report General sighting / Other

Report Type Mortality

Wildlife Mortality

Enter Initial Time of Report 05.07.2024 08:30 MDT

Department/Individual Who Reported Mortality:

Site Services

Environment at Call-out Location 05.07.2024 08:45 MDT

Location

Aviation fuel drum storage near helipad

Animal Type Other

Description of Animal/Scene

- Robin nest with two robin fledglings was located between aviation fuel drum barrels which were moved from one storage location, the night prior (July 4, 2024), at the helipad to another storage location, also near the helipad.
- On the morning of July 5, effort was made to move the fuel drum barrel pallets (which included the nest) back to the original location, however, robins were deceased at that point.

Photo of Scene


Photo 1

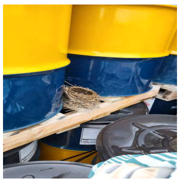


Photo 2


Photo 3


Photo 4

Estimated Time of Death Hours

End of Environment Call-out 06.07.2024 12:00 MDT

Final Location of Carcass

Released into the tundra

Closure & Sign-off 1 / 1 (100%)

Wildlife Report Complete On

Signature

Anton Jitnikovitch

Anton Jitnikovitch
06.07.2024 07:18 MDT

Media summary

Photo 1

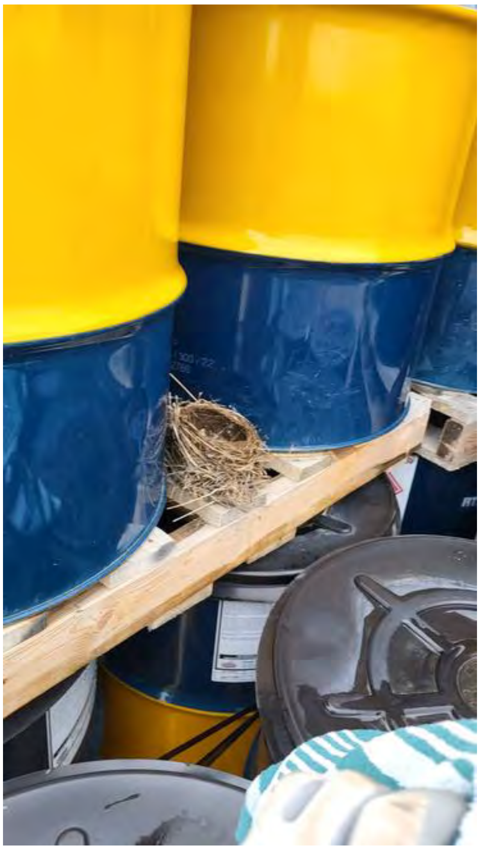


Photo 2

Photo 3

Photo 4

Wildlife Report - 2021

Robin-2024-08-30-Landfill

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Robin-2024-08-30-Landfill
Document No.	WildlifeReport000395
	30.08.2024

Audit

1 / 1 (100%)

Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	30.08.2024 15:00 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location	30.08.2024 15:00 MDT

Location

Old ERT trailer at the Landfill. Nest on the electrical panel.

Animal Type	Other

Description of Animal/Scene

Single young robin (most likely). Only bones and feathers remaining.
Cause of death unknown, could be the displacement of the trailer from the ERT training area to the Landfill.

Photo of Scene


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Months
End of Environment Call-out	30.08.2024 15:10 MDT

Final Location of Carcass

Same location.

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Jessica Gosselin
30.08.2024 16:21 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Rough Legged Hawk - 2024-09-22 - A418 Dike

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Rough Legged Hawk - 2024-09-22 - A418 Dike
Document No.	WildlifeReport000400
	24.09.2024

Audit

1 / 1 (100%)

Type of Wildlife Report — General sighting / Other

Report Type — Mortality

Wildlife Mortality

Enter Initial Time of Report — 22.09.2024 15:00 MDT

Department/Individual Who Reported Mortality:

Environment

Environment at Call-out Location — 22.09.2024 15:15 MDT

Location

A418 Dike

Animal Type — Other

Description of Animal/Scene

Deceased Rough Legged Hawk (RLHA) was identified on the A418 Dike. RLHA appeared to have been partially scavenged - exposed bones were noticeable including with missing muscle/meat.

Coordinates carcass was picked up:
536691 m E, 7151780 m N

Photo of Scene

Photo 1

Photo 2

Estimated Time of Death — Days

End of Environment Call-out — 22.09.2024 15:25 MDT

Final Location of Carcass

Incinerator at the Waste Transfer Area

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete — On

Signature

Anton Jitnikovitch

Anton Jitnikovitch
24.09.2024 08:04 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

RustyBlackbird-2024-10-03-CafeteriaPatio

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	RustyBlackbird-2024-10-03-CafeteriaPatio
Document No.	WildlifeReport000405
	04.10.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	03.10.2024 12:30 MDT

Department/Individual Who Reported Mortality:

Bouwa Whee

Environment at Call-out Location	03.10.2024 17:45 MDT

Location

Cafeteria Patio

Animal Type	Other

Description of Animal/Scene

Deceased Rusty Blackbird on Cafeteria Patio
17:45 ENV retrieved bird.

Photo of Scene


Photo 1

Estimated Time of Death	Hours
End of Environment Call-out	03.10.2024 17:50 MDT

Final Location of Carcass

ENV Sulfur lab freezer for shipment to ECC.

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Rebecca Huang
04.10.2024 08:15 MDT

Media summary

Photo 1

Wildlife Report - 2021

Sparrow - 2024-08-23 - Truck Shop

Complete

Score	1 / 1 (100%)	**Flagged items**	0	**Actions**	0

Audit Title (Animal - yyyy-mm-dd - Location)	Sparrow - 2024-08-23 - Truck Shop
Document No.	WildlifeReport000391
	23.08.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	23.08.2024 11:00 MDT

Department/Individual Who Reported Mortality:

Fountain Tyre

Environment at Call-out Location	23.08.2024 11:10 MDT

Location

Outside truck shop near bay door 11

Animal Type	Other

Description of Animal/Scene

Bird found dead on the outside of a building corner

Photo of Scene

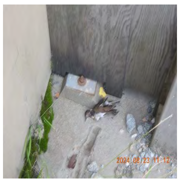


Photo 1

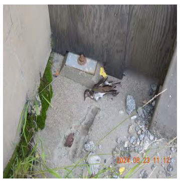


Photo 2


Photo 3


Photo 4


Photo 5

Estimated Time of Death	Hours
End of Environment Call-out	23.08.2024 11:25 MDT

Final Location of Carcass

Freezer in Sulfur lab

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Anton Jitnikovitch
23.08.2024 13:17 MDT

Media summary

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Wildlife Report - 2021

Sparrow - 2024-09-21 - Truck Shop 3rd Floor

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Sparrow - 2024-09-21 - Truck Shop 3rd Floor
Document No.	WildlifeReport000399
	21.09.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Mortality

Wildlife Mortality

Enter Initial Time of Report	21.09.2024 16:00 MDT

Department/Individual Who Reported Mortality:

Truck shop/warehouse cleaner

Environment at Call-out Location	21.09.2024 16:05 MDT

Location

on Truck Shop 3rd Floor

Animal Type	Other

Description of Animal/Scene

Sparrow was found dead on the top portion of a 3 part storage shelf. Sparrow was very dusty and somewhat rigid.

Photo of Scene

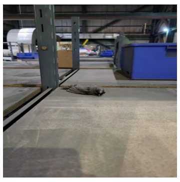


Photo 1


Photo 2


Photo 3

Estimated Time of Death	Weeks
End of Environment Call-out	21.09.2024 16:10 MDT

Final Location of Carcass

Freezer in Environment Sulfur Laboratory

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Anton Jitnikovitch

Anton Jitnikovitch
22.09.2024 08:41 MDT

Media summary

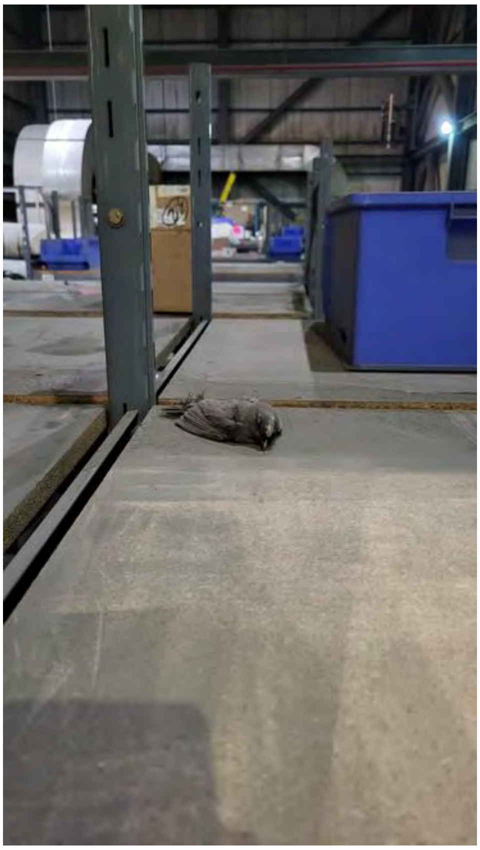


Photo 1

Photo 2

Photo 3

APPENDIX E

Site Wildlife Photographs 2024

Figure 1: Barren-ground caribou (*Rangifer tarandus groenlandicus*). 1 May 2024.

Figure 2: Sandhill crane (*Grus canadensis*). 17 May 2024.

Figure 3: Grizzly bear (*Ursus arctos*). 19 May 2024.

Figure 4: Grey wolf (*Canis lupus*) 31 May 2024.

Figure 5: Grizzly bear. 16 June 2024.

Figure 6: Greater white-fronted geese (*Answer albifrons*). 09 July 2024.

Figure 7: Barren-ground caribou. 9 July 2024.

Figure 8: Gyrfalcon (*Falco rusticolus*). 18 July 2024.

Figure 9: Gyrfalcon. 26 July 2024.

Figure 10: Peregrine falcon (*Falco peregrinus*). 3 August 2024.

Figure 11: Arctic hare (*Lepus arcticus*). 31 Aug 2024.

Figure 12: Grizzly bear. 8 Sep 2024.

Figure 13: Tundra swan (*Cygnus columbianus*). 28 Sep 2024.

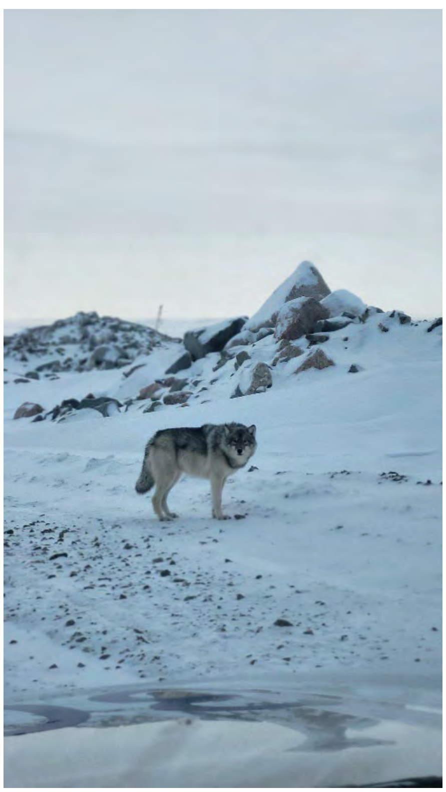


Figure 14: Grey wolf. 22 Nov 2024.

APPENDIX F

Caribou Incidental Observations Summary 2024

Date	Estimated Number of Caribou	Description
2024-03-14	10	Herd of caribou observed west of runway
2024-03-24	28	Herd of caribou observed near the emulsion plant
2024-03-27	10	Herd of caribou observed near the South Country Rock Pile (SCRP)
2024-03-28	100	Large herd of caribou observed in the tundra near the emulsion plant
2024-03-31	23	20 adult and 3 juvenile caribou observed northwest of the airport
2024-04-04	10	Herd of caribou near Pond 3
2024-04-06	9	Herd of caribou near windfarm
2024-04-08	15	Herd of caribou near the magazine storage
2024-04-09	12	Herd of caribou near the magazine storage
2024-04-12	9	Herd of caribou near the PKC Connector and the haul road to SCRP
2024-04-12	5	Caribou observed at the vegetation patch near the North Inlet Water Treatment Plant
2024-04-13	34	Herd of caribou observed in the tundra near the emulsion plant/magazine storage
2024-04-14	12	Herd of caribou observed in the tundra near the emulsion plant/magazine storage
2024-04-15	4	Herd of caribou observed in the tundra near the emulsion plant/magazine storage
2024-04-17	9	Herd of caribou east of the main accommodations on Lac de Gras
2024-04-18	~100	Multiple herds observed on three sides of the SCRP
2024-04-20	18	Herd bedded and walking on the ice north of the truckshop
2024-04-21	4	Herd grazing on the tundra near Pond 2 and 3
2024-04-22	12	Herd of caribou on the tundra near Lake Shore Blvd
2024-04-23	23	Herd of caribou near the Northern Inlet pond
2024-04-28	23	Herd of caribou along shoreline
2024-04-29	10	Herd of caribou near Airport Road
2024-04-30	22	Herd of caribou near Airport Road
2024-05-01	13	Herd of caribou bedded and walking on the North Country Rock Pile (NRCP)
2024-05-03	9	Herd of caribou on south haul road
2024-05-04	3	Female caribou with two calves observed near the AN road
2024-05-05	13	Herd of caribou near Airport Road
2024-05-07	11	Herd of caribou observed in the tundra near the emulsion plant
2024-05-08	3	Herd of caribou near Airport Road
2024-05-10	10	Adult caribou near A154
2024-05-12	5	Herd of caribou near Shallow Bay
2024-05-14	4	Herd of caribou observed on the ice across from A-Portal
2024-05-14	4	Herd of caribou observed on the vegetation patch near the emulsion plant
2024-05-14	5	Adults observed on Lac de Gras near the warehouse/truck shop
2024-05-17	2	Adults observed on the tundra near windfarm tower 2
2024-05-19	7	Herd of caribou observed on the ice north of the North Inlet/A154 dike
2024-05-22	1	Adult male observed leaving Shallow Bay
2024-05-25	2	Adults bedding and feeding at North Inlet
2024-06-01	1	Caribou observed near Lakeshore Blvd
2024-06-01	2	Caribou observed at Airport Road near NIWTP

Date	Estimated Number of Caribou	Description
2024-06-05	2	Adult caribou observed on tundra, west of North Inlet
2024-06-06	2	Caribou observed at North Inlet
2024-06-14	2	Caribou observed at Pond 4 on goat road
2024-06-16	2	Pair of caribou observed in tundra by North Inlet
2024-06-18	2	Caribou observed on Airport Road
2024-06-21	3	Caribou observed at North Inlet tailings
2024-06-23	2	Caribou observed in tundra north of Airport Road
2024-06-26	1	Adult caribou observed at North Winter Road approach
2024-06-28	2	Caribou observed at windfarm in tundra near Pond 7
2024-06-29	3	Caribou observed at backfill near Shallow Bays
2024-06-30	2	Adults observed near Shallow Bays
2024-07-01	1	Observed at 830 Single Lane.
2024-07-02	2	Caribou observed at Pond 11
2024-07-04	2	Caribou observed on the road near Batch Plant
2024-07-05	2	Caribou observed near Batch Plant
2024-07-05	2	Caribou observed on Airport Road beside NIWTP
2024-07-06	2	Caribou observed on Airport Road
2024-07-07	2	Caribou observed at Pond 2 and PKC Connector
2024-07-09	2	Caribou observed at Pond 10 Waste Transfer
2024-07-11	2	Caribou observed on Airport Road
2024-07-12	1	Caribou being chased towards chute at the PKC West Dam
2024-07-12	1	Caribou observed on ROM Hill
2024-07-12	1	Caribou observed in tundra north of N17
2024-07-13	1	Caribou observed at A21 Infield “Smurf Village”
2024-07-14	1	Caribou observed on South Haul Road
2024-07-15	1	Caribou observed at West Ramp Pit Shop
2024-07-16	1	Caribou observed at South Camp
2024-07-17	2	Caribou observed at N17
2024-07-17	1	Caribou observed at Truck Shop
2024-07-18	1	Caribou observed at Batch Plant
2024-07-18	2	Caribou observed at N17
2024-07-19	1	Caribou observed at Pond 12
2024-07-26	1	Caribou observed at Pond 12
2024-07-27	1	Caribou observed on road near truck shop parking lot
2024-07-27	2	Caribou observed at South Tank Farm HV fueling area
2024-07-28	2	Caribou observed on the walking trail around MAC
2024-07-29	1	Caribou observed at PKC
2024-07-31	1	Caribou observed at airport, near runway
2024-07-31	1	Caribou observed at PKC Connector
2024-08-02	1	Caribou observed on helipad

Date	Estimated Number of Caribou	Description
2024-08-02	2	Caribou observed in the northwest of SCRP
2024-08-03	1	Caribou observed on the road near the Emulsion Plant
2024-08-06	1	Caribou observed at the Communication Shack
2024-08-06	1	Caribou observed in tundra near Ponds 2 and 3
2024-08-10	1	Caribou observed near the airport/N17
2024-08-12	1	Caribou observed on Airport Road near N17
2024-08-13	1	Caribou observed at Pond 2 near NCRP
2024-08-13	1	Caribou observed at Pond 7
2024-08-16	1	Caribou observed at Process ROM near Pond 10
2024-08-17	1	Caribou observed on Airport Road
2024-08-22	1	Caribou observed in magazine storage area near Emulsion Plant
2024-08-25	1	Caribou observed at Pond 7
2024-08-30	1	Caribou observed near Pond 2
2024-08-31	2	Caribou observed in tundra near airport runway and between airport and North Inlet
2024-09-12	2	Caribou observed on runway, moving into tundra

APPENDIX G

Wildlife Deterrent Action Incident Reports 2024

Wildlife Report - 2021

Fox - 2024-02-11 - Environment Dock

Complete

Score	3 / 401 (0.75%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Fox - 2024-02-11 - Environment Dock
Document No.	WildlifeReport000314
	12.02.2024

Audit	3 / 401 (0.75%)
Type of Wildlife Report	Deterrent Reporting

Deterrent Report	2 / 400 (0.5%)
Enter Initial Time of Wildlife Sighting	11.02.2024 10:30 MST

Department/Individual Who Reported Wildlife:

Environment

Environment at Call-out Location	11.02.2024 10:30 MST
Animal Type	Fox

Description (eg. number of individuals, colour, age, size, etc.):

Single cross fox

Photo (If Possible):

Chronological Events

10:30 Fox approached Environment (ENV) personnel at the Environment Dock area
10:31 ENV SHOUTED and CLAPPED
10:32 Fox moved away from ENV personnel and towards the NIWTP
10:35 ENV noted the fox was at the tundra area of the NIWTP and ceased response to the wildlife situation.

Movement Map (Import NotePlus Site Map)

Photo 1

Deterrent Count	2 / 400 (0.5%)
Truck	0 From 0 to 40
Air Horn	0 From 0 to 40
C/F Bear Banger	0 From 0 to 40
C/F Pen Whistle	0 From 0 to 40

12GA Explosive	0 From 0 to 40
12GA B.B. Marker	0 From 0 to 40
12GA Rubber Bullet	0 From 0 to 40
12GA Slug	0 From 0 to 40
Helicopter	0 From 0 to 40
Other	2 From 0 to 40
Specify	(1) SHOUT, (2) CLAP
End of Environment Call-out	11.02.2024 10:30 MST

Final Location of Wildlife

Tundra area adjacent to the NIWTP

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Anton Jitnikovitch

Anton Jitnikovitch
12.02.2024 09:16 MST

Media summary

Photo 1

Wildlife Report - 2025

Caribou - 2024-04-17

Complete

Score	4 / 401 (1%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Caribou - 2024-04-17
Document No.	WildlifeReport000433
	17.04.2024

Audit	4 / 401 (1%)
Type of Wildlife Report	Deterrent Reporting
Deterrent Report	4 / 400 (1%)
Enter Initial Time of Wildlife Sighting	13.04.2024 15:00 MDT

Department/Individual Who Reported Wildlife:

Surface mining

Environment at Call-out Location	17.04.2024 16:00 MDT
Animal Type	Caribou

Description (eg. number of individuals, colour, age, size, etc.):

12 caribou, mix of yearlings and adult females

Photo (If Possible):

Chronological Events

Caribou have been feeding near the emulsion plant for 10 days. A surface blast was scheduled Saturday, June 13, but was delayed until the 17th due to caribou presence. The caribou stayed within the 1km caribou exclusion zone of the blast. On Monday June 16th, Environment notified ECC of the situation, requesting permission to move the animals away from the planned blast. ECC supported herding the animals away from the planned blast zone.

June 17, 2024:
Environment personnel arrived on the emulsion plant road. The caribou were bedded between the emulsion plant and the south country rock pile (SCRP), where the blast was scheduled to occur. One Environment monitor was stationed on the SCRP to provide direction while two Environment monitors approached the animals slowly from the North on Snowmobile. Once the animals began to move, the monitors stopped, to avoid triggering a run reaction. Once the animals stopped, the monitors continued advancing from the north, repeating this cycle until the caribou moved out of the 1km caribou exclusion zone of the blast.

Movement Map (Import NotePlus Site Map)

movement map.pdf

Deterrent Count	4 / 400 (1%)
Truck	0 From 0 to 40
Air Horn	0 From 0 to 40
C/F Bear Banger	0 From 0 to 40
C/F Pen Whistle	0

From 0 to 40

12GA Explosive	0 From 0 to 40
12GA B.B. Marker	0 From 0 to 40
12GA Rubber Bullet	0 From 0 to 40
12GA Slug	0 From 0 to 40
Helicopter	0 From 0 to 40
Other	4 From 0 to 40
Specify	Slow approach towards caribou, stopping when animals begin to move.
End of Environment Call-out	17.04.2024 17:30 MDT

Final Location of Wildlife

South of the SCRP outside the 1km caribou exclusion zone for blasts.

Closure & Sign-off

0 / 1 (0%)

Wildlife Report Complete	Off

Media summary

File summary

movement map.pdf

Wildlife Report - 2025

Caribou - 2024-04-24

Complete

Score	2 / 401 (0.5%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Caribou - 2024-04-24
Document No.	WildlifeReport000434
	25.04.2024

Audit	2 / 401 (0.5%)
Type of Wildlife Report	Deterrent Reporting
Deterrent Report	1 / 400 (0.25%)
Enter Initial Time of Wildlife Sighting	24.06.2025 16:00 MDT

Department/Individual Who Reported Wildlife:

Surface Mining

Environment at Call-out Location	25.04.2024 17:00 MDT
Animal Type	Caribou

Description (eg. number of individuals, colour, age, size, etc.):

Group of 12 adult Caribou, same ones from previous blast deterrence

Photo (If Possible):

Chronological Events

16:00 April 24, Surface mining reported caribou have entered the 1 km exclusion zone of the blast on the North Country Rock Pile sheduled for 17:45
17:00 Environment arrives on the south haul road. 3 environment monitors begin walking from the south haul road towards caribou in the shallow bays. When caribou begin moving East, monitors stop and allow them to move. When the animals stop, Environment continues forwards. This continued until the Caribou moved out of the 1km exclusion zone, and out of the shallow bays.
18:30 Environment stayed in place until the blast occurred and cleared to ensure the animals did not return to the area.

Movement Map (Import NotePlus Site Map)

movement map.pdf

Deterrent Count	1 / 400 (0.25%)
Truck	0 From 0 to 40
Air Horn	0 From 0 to 40
C/F Bear Banger	0 From 0 to 40
C/F Pen Whistle	0 From 0 to 40
12GA Explosive	0 From 0 to 40

12GA B.B. Marker	0 From 0 to 40
12GA Rubber Bullet	0 From 0 to 40
12GA Slug	0 From 0 to 40
Helicopter	0 From 0 to 40
Other	1 From 0 to 40
Specify	Walking towards caribou, herding them East
End of Environment Call-out	24.04.2024 18:30 MDT

Final Location of Wildlife

East end of shallow bays, outside the 1km caribou exclusion zone for blasts.

Closure & Sign-off 1 / 1 (100%)

Wildlife Report Complete	On

Signature

Gordon Cumming
16.06.2025 20:17 MDT

Media summary

File summary

movement map.pdf

Wildlife Report - 2021

Wolf - 2024-05-31 - Lakeshore Blvd

Complete

Score	8 / 401 (2%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Wolf - 2024-05-31 - Lakeshore Blvd
Document No.	WildlifeReport000331
	31.05.2024

Audit	8 / 401 (2%)
Type of Wildlife Report	Deterrent Reporting

Deterrent Report	7 / 400 (1.75%)
Enter Initial Time of Wildlife Sighting	31.05.2024 09:00 MDT

Department/Individual Who Reported Wildlife:

Surface mining

Environment at Call-out Location	31.05.2024 09:30 MDT
Animal Type	Wolf

Description (eg. number of individuals, colour, age, size, etc.):

Single wolf, mix of silver and grey color.

Photo (If Possible):


Photo 1


Photo 2

Chronological Events

09:30 Environment (ENV) is notified of a wolf at the Lakeshore Blvd
09:31 ENV arrives at Lakeshore Blvd in a TRUCK
09:35 Wolf slowly moves towards the A21 Muster. ENV follows.
09:40 ENV use the TRUCK HORN, CLAP, and SHOUT - wolf has no reaction
09:45 ENV releases three (3) BEAR BANGERS. The wolf moves towards the tundra and out of view.
09:50 ENV leaves the scene.

Movement Map (Import NotePlus Site Map)


Photo 3

Deterrent Count	7 / 400 (1.75%)
Truck	2 From 0 to 40
Air Horn	0

	From 0 to 40
C/F Bear Banger	3 From 0 to 40
C/F Pen Whistle	0 From 0 to 40
12GA Explosive	0 From 0 to 40
12GA B.B. Marker	0 From 0 to 40
12GA Rubber Bullet	0 From 0 to 40
12GA Slug	0 From 0 to 40
Helicopter	0 From 0 to 40
Other	2 From 0 to 40
Specify	CLAP, SHOUT
End of Environment Call-out	31.05.2024 09:50 MDT

Final Location of Wildlife

Tundra patch west of A21 Muster

Closure & Sign-off	1 / 1 (100%)
Wildlife Report Complete	On

Signature

Anton Jitnikovitch
31.05.2024 11:00 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Wolf - 2024-06-08 - South Tank Farm

Complete

Score	5 / 401 (1.25%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Wolf - 2024-06-08 - South Tank Farm
Document No.	WildlifeReport000334
	09.06.2024

Audit	5 / 401 (1.25%)
Type of Wildlife Report	Deterrent Reporting
Deterrent Report	4 / 400 (1%)
Enter Initial Time of Wildlife Sighting	08.06.2024 08:30 MDT

Department/Individual Who Reported Wildlife:

Site Services

Environment at Call-out Location	08.06.2024 08:40 MDT
Animal Type	Wolf

Description (eg. number of individuals, colour, age, size, etc.):

Single adult, grey and white. Seen multiple times on site since May 28, 2024.

Photo (If Possible):

Chronological Events

8:30 - Site Services reported a single wolf at the South Tank Farm.
8:40 - ENV spotted the wolf at the South Tank Farm, at the corner of the South-East Tank.
8:41 - ENV in LV followed the wolf and HONK x2 to guide him South towards the tundra.
8:48 - ENV HONK x2 to deter the wolf from hiding behind a trailer beside the Warehouse Cold Storage building.
8:50 - ENV observed the wolf walking near Pond 11 heading South-East in the tundra and left the area.

Movement Map (Import NotePlus Site Map)

Wolf Report.pdf

Deterrent Count	4 / 400 (1%)
Truck	0 From 0 to 40
Air Horn	0 From 0 to 40
C/F Bear Banger	0 From 0 to 40
C/F Pen Whistle	0 From 0 to 40
12GA Explosive	0 From 0 to 40
12GA B.B. Marker	0

	From 0 to 40
12GA Rubber Bullet	0 From 0 to 40
12GA Slug	0 From 0 to 40
Helicopter	0 From 0 to 40
Other	4 From 0 to 40
Specify	Truck horn
End of Environment Call-out	08.06.2024 08:50 MDT

Final Location of Wildlife

Near Pond 11, going South-East in the tundra.

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Jessica Gosselin
09.06.2024 08:51 MDT

Media summary

File summary

Wolf Report.pdf

Wildlife Report - 2021

Wolf - 2024-06-09

Complete

Score	5 / 401 (1.25%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Wolf - 2024-06-09
Document No.	WildlifeReport000337
	10.06.2024

Audit	5 / 401 (1.25%)
Type of Wildlife Report	Deterrent Reporting

Deterrent Report	4 / 400 (1%)
Enter Initial Time of Wildlife Sighting	09.06.2024 20:00 MDT

Department/Individual Who Reported Wildlife:

Site Services

Environment at Call-out Location	09.06.2024 20:15 MDT
Animal Type	Wolf

Description (eg. number of individuals, colour, age, size, etc.):

1 grey wolf, female, small

Photo (If Possible):

Photo 1

Chronological Events

8:00- Call out from site services that wolf is near c-portal and is on berm of road.
8:15- environment on site and got eyes on wolf, she was laying down about 20 meters from the berm.
-fired off two 12 gauge bangers and the wolf moved further out into the tundra. Wolf was still parallel to c-portal.
8:35- drove to the veg plots to shoot bangers on the west side and move the wolf east, wolf responded well.
8:40PM- I moved to winter road north approach and made sure she was headed into the right direction.
8:50-9:20PM: wolf was headed in the direction I wanted away from work area and into the tundra.

Movement Map (Import NotePlus Site Map)

Photo 2

Deterrent Count	4 / 400 (1%)
Truck	0 From 0 to 40

Air Horn	0 From 0 to 40
C/F Bear Banger	2 From 0 to 40
C/F Pen Whistle	0 From 0 to 40
12GA Explosive	2 From 0 to 40
12GA B.B. Marker	0 From 0 to 40
12GA Rubber Bullet	0 From 0 to 40
12GA Slug	0 From 0 to 40
Helicopter	0 From 0 to 40
Other	0 From 0 to 40
Specify	
End of Environment Call-out	09.06.2024 21:30 MDT

Final Location of Wildlife

tundra SE of 418 Pit

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Brennan Debassige
10.06.2024 17:48 MDT

Media summary

Photo 1

Photo 2

Wildlife Report - 2021

Grizzly-2024-09-08-Airport Road

Complete

Score	1 / 1 (100%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Grizzly-2024-09-08-Airport Road
Document No.	WildlifeReport000396
	08.09.2024

Audit	1 / 1 (100%)
Type of Wildlife Report	General sighting / Other
Report Type	Sighting

General Wildlife Sighting

Animal Type	Grizzly Bear

Description of Individual / Activity (eg. number of individuals, colour, age, size, etc.)

Singular grizzly bear, adult. Dark brown. Seems healthy.

Photo (If Possible)


Photo 1


Photo 2

Enter Initial Time of Wildlife Sighting	08.09.2024 11:20 MDT

Department/Individual Who Reported Wildlife:

Surface OPS

Environment at Call-out Location	08.09.2024 11:30 MDT

Chronological Events

11:20 Singular grizzly walking along the North side of the airport road, reported by Surface Ops.
11:30 Environment (ENV) arrives on scene. Bear is walking along road, towards airport terminal. ENV follows with truck and calls out to it, but bear was unfazed and continues walking. Bear then crosses the road in front of the truck heading towards the Pond 2 area. ENV followed along on the south side of the hill when sights were lost.
ENV repositions to the airport, bear was observed on the north side of the hill headed west.
11:55 ENV repositions to the Pond 2 area as the bear is crossing the crest of the hill. Bear was no longer observed.
12:30 ENV leaves the scene.

Movement Map (Import NotePlus Site Map)

[Map.pdf](Map.pdf)

End of Environment Call-out	08.09.2024 12:30 MDT

Final Location of Wildlife

Somewhere near airport/pond 2 area.

Closure & Sign-off	1 / 1 (100%)

Wildlife Report Complete	On

Signature

Rebecca Huang
08.09.2024 17:38 MDT

Media summary

Photo 1

Photo 2

File summary

Map.pdf

Wildlife Report - 2021

Black Scoter-2024-09-28-Process Plant

Complete

Score	4 / 401 (1%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Black Scoter-2024-09-28-Process Plant
Document No.	WildlifeReport000402
	28.09.2024

Audit 4 / 401 (1%)

Type of Wildlife Report	Deterrent Reporting

Deterrent Report 3 / 400 (0.75%)

Enter Initial Time of Wildlife Sighting	28.09.2024 03:30 MDT

Department/Individual Who Reported Wildlife:

Process Plant

Environment at Call-out Location	28.09.2024 03:45 MDT
Animal Type	Other

Description (eg. number of individuals, colour, age, size, etc.):

Single female Black Scoter

Photo (If Possible):


Photo 1


Photo 2

Chronological Events

0330 - Environment (ENV) was notified of a deceased duck near Door 16.
0345 - ENV arrives and observes the bird, alive, sitting in the middle of the road near Door 16.
0350 - ENV approaches on foot and visually assesses the bird for injuries (none apparent).
0355 - ENV slowly guides the bird to the side of the road by walking toward it.
0400 - The bird goes back into a puddle in the middle of the road.
0405 - ENV slowly guides the bird to the other side of the road by walking toward it.
0415-0425 ENV monitors the bird resting, then leaves the scene.
10:15 - ENV receives a call from Surface Ops about a bird swimming in a puddle near the Process Plant Chute.
10:25 - ENV arrives and identifies the bird as the one previously observed in the area.
10:45 - ENV safely captures the bird and transports it to the South Winter Road Approach.
10:55 - ENV releases the bird on the water, and it starts to swim. ENV leaves the area.

Movement Map (Import NotePlus Site Map)

Photo 3

Deterrent Count 3 / 400 (0.75%)

Truck	0 From 0 to 40
Air Horn	0 From 0 to 40
C/F Bear Banger	0 From 0 to 40
C/F Pen Whistle	0 From 0 to 40
12GA Explosive	0 From 0 to 40
12GA B.B. Marker	0 From 0 to 40
12GA Rubber Bullet	0 From 0 to 40
12GA Slug	0 From 0 to 40
Helicopter	0 From 0 to 40
Other	3 From 0 to 40
Specify	Person
End of Environment Call-out	28.09.2024 11:00 MDT

Final Location of Wildlife

Lac-de-Gras near the South Winter Road Approach

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Jessica Gosselin
28.09.2024 17:26 MDT

Media summary

Photo 1

Photo 2

Photo 3

Wildlife Report - 2021

Tundra Swan - 2024-09-28 - 154 Pit

Complete

Score	2 / 401 (0.5%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Tundra Swan - 2024-09-28 - 154 Pit
Document No.	WildlifeReport000401
	28.09.2024

Audit 2 / 401 (0.5%)

Type of Wildlife Report Deterrent Reporting

Deterrent Report 1 / 400 (0.25%)

Enter Initial Time of Wildlife Sighting 28.09.2024 08:30 MDT

Department/Individual Who Reported Wildlife:

Surface ops

Environment at Call-out Location 28.09.2024 08:50 MDT

Animal Type Other

Description (eg. number of individuals, colour, age, size, etc.):

Single juvenile tundra swan (white/gray, pink bill with black tip and base and black legs), could not fly, seemed very tired retrieving bird.

Photo (If Possible):

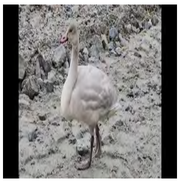


Photo 1

Chronological Events

0830 - Environment (ENV) receives call about a bird on the ramp of 154 pit, seemed it couldn't fly
0850 - ENV arrives and assesses bird to see for injuries (none apparent)
0855 - ENV safely captures bird and transports to shallow bays tundra
0900 - Bird walks to water and starts to swim, ENV leaves area.

Movement Map (Import NotePlus Site Map)

Photo 2

Deterrent Count 1 / 400 (0.25%)

Truck 0 From 0 to 40

Air Horn 0 From 0 to 40

C/F Bear Banger	0 From 0 to 40
C/F Pen Whistle	0 From 0 to 40
12GA Explosive	0 From 0 to 40
12GA B.B. Marker	0 From 0 to 40
12GA Rubber Bullet	0 From 0 to 40
12GA Slug	0 From 0 to 40
Helicopter	0 From 0 to 40
Other	1 From 0 to 40
Specify	Person
End of Environment Call-out	28.09.2024 09:00 MDT

Final Location of Wildlife

Shallow bays

Closure & Sign-off 1 / 1 (100%)

Wildlife Report Complete	On

Signature

Tina Burke
28.09.2024 13:25 MDT

Media summary

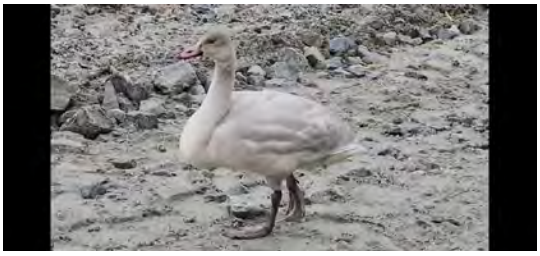


Photo 1

Photo 2

Wildlife Report - 2021

Wolf - 2024-11-22 - SCRP

Complete

Score	9 / 401 (2.24%)	Flagged items	0	Actions	0

Audit Title (Animal - yyyy-mm-dd - Location)	Wolf - 2024-11-22 - SCRP
Document No.	WildlifeReport000419
	22.11.2024

Audit	9 / 401 (2.24%)
Type of Wildlife Report	Deterrent Reporting

Deterrent Report	8 / 400 (2%)
Enter Initial Time of Wildlife Sighting	22.11.2024 11:30 MST

Department/Individual Who Reported Wildlife:

Site Services

Environment at Call-out Location	22.11.2024 11:40 MST
Animal Type	Wolf

Description (eg. number of individuals, colour, age, size, etc.):

Single wolf. Fur looked healthy and full (no patches).

Photo (If Possible):


Photo 1


Photo 2


Photo 3


Photo 4

Chronological Events

11:30 AM Environment (ENV) was notified of a wolf on the SCRP
11:40 ENV arrived in the area in a Light Vehicle (LV) and observed the wolf
11:45 ENV positioned the LV in a way to deter the wolf from moving towards Main Camp
11:47 ENV SHOUTED (X1) and CLAPPED (X1) . Wolf had minimal reaction
11:48 ENV released BEAR BANGER (X3). Wolf immediately ran deeper into the SCRP. ENV followed.
11:49 Wolf crossed the haul road from the SCRP and ENV used the LV to block the wolf while using the LV HORN. Wolf ran from the SCRP towards the tundra in the direction of the Emulsion Plant.
11:50-12:30 ENV patrolled nearby areas. No wolf observed.
12:31: ENV left the scene.

Movement Map (Import NotePlus Site Map)


Photo 5

Deterrent Count	8 / 400 (2%)
Truck	2 From 0 to 40

Air Horn	0 From 0 to 40
C/F Bear Banger	3 From 0 to 40
C/F Pen Whistle	0 From 0 to 40
12GA Explosive	0 From 0 to 40
12GA B.B. Marker	0 From 0 to 40
12GA Rubber Bullet	0 From 0 to 40
12GA Slug	0 From 0 to 40
Helicopter	0 From 0 to 40
Other	3 From 0 to 40
Specify	LV HORN (1), SHOUT (1), CLAP (1)
End of Environment Call-out	22.11.2024 12:31 MST

Final Location of Wildlife

Tundra near Emulsion Plant

Closure & Sign-off

1 / 1 (100%)

Wildlife Report Complete	On

Signature

Anton Jitnikovitch
22.11.2024 14:17 MST

Media summary

Photo 1

Photo 2

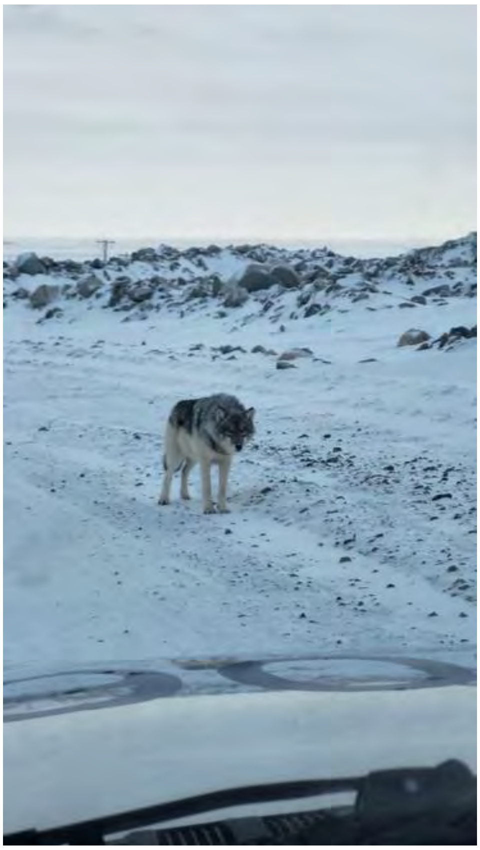


Photo 3

Photo 4

RioTinto
Diavik Mine Site Layout, 2024
North Country Rock Pile
First Spotted
Last Seen

Photo 5

APPENDIX H

Grizzly Bear Incidental Observations Summary 2024

Date	Number of Animals	Characteristics of Animals	Location	Deterrents Used?
2024-05-15	1	Single youth	AN Road near Mags	Yes
2024-05-16	1	Single youth	PKC	No
2024-05-17	1	Adolescent bear, light coloured body	A21 Muster Station	No
2024-05-18	1	Single youth	North Haul rd single lane to PKC	Yes
2024-05-18	1	Adolescent bear, blonde body with brown stripe down back	C Portal to NMD, Batch, Zone 1, ERT Training	Yes
2024-05-19	1	Adolescent bear, blonde body with brown stripe down back	154 access road, Zone 1, Batch, North Approach	Yes
2024-05-19	1	Single youth	PKC North Dam Road to Shallow Bays	Yes
2024-05-23	2	female and male	N17 between the pond 3 & 4	No
2024-05-23	4	Sow and 3 Cubs	154 Dyke to 418 dyke	Yes
2024-05-23	4	Sow and 3 cubs	NMD	Yes
2024-05-23	4	Sow and 3 cubs	NMD	Yes
2024-05-23	2	Dark and blonde adults	Shallow Bays	No
2024-05-24	2	Two grizzlies	C-portal to M Lakes	No
2024-05-24	1	Single young grizzly	Pond 4	No
2024-05-30	1	Single Grizzly	Pond 11	No
2024-06-02	1	Single bear - "very blonde"	Airport road between NI and Airport	No
2024-06-02	1	Single bear - "very blonde"	Landfill	Yes
2024-06-02	1	Unknown	Near backfill/Pond 13	No
2024-06-05	1	Single bear	Airport road between NI and Airport	No
2024-06-06	2	2 adults - 1 very tan	Near Pond 3	No
2024-06-06	3	3 grizzlies	Airport Road	No
2024-06-07	1	1 grizzly bear	ERT training area - scap - 418 tundra	Yes
2024-06-08	1	1 grizzly bear	Batch plant to tundra heath by 418 pit	No
2024-06-10	1	Single grizzly, youth, blond	(1) Process ROM (2) Process ROM (3) Backfill Plant	No
2024-06-11	1	1 adult grizzly	Backfill to Till dump	Yes
2024-06-11	1	Single adolescent, blonde with brown stripe on the back.	Metcon	Yes
2024-06-12	1	1 adolescent/cub grizzly	Batch Plant	Yes
2024-06-12	1	Single grizzly	A21 Muster	No
2024-06-12	1	Single youth, blonde.	North Inlet	No
2024-06-13	1	Single youth, blonde.	ERT training area	No

Date	Number of Animals	Characteristics of Animals	Location	Deterrents Used?
2024-06-13	1	Adolescent with brown stripe on back	(1) Pond 13 (2) South Haul Road going toward SCAP Fab Shop	No
2024-06-13	1	Single youth blonde grizzly	North Inlet/dock	No
2024-06-13	1	Single blonde young adult grizzly.	Behind North Man Dry	Yes
2024-06-13	1	Single blonde grizzly.	A21 benches, behind MudX Pile	No
2024-06-13	1	Single grizzly.	Airport road going up the Till Dump	No
2024-06-14	1	Single grizzly.	Backfill Crusher Loader	No
2024-06-14	1	Single bear, young	Behind Mud X pile at A21	Yes
2024-06-14	1	Adolescent grizzly	Batch Plant/Pond 13/ C portal	Yes
2024-06-14	1	Adult grizzly	Pond 13	Yes
2024-06-14	1	Young adult grizzly, blonde.	Batch Plant	Yes
2024-06-14	1	Adult grizzly	Pond 5, base of ROM Hill	Yes
2024-06-15	1	Young grizzly with the pink marker	Batch plant	Yes
2024-06-15	1	Young grizzly with the pink marker	Backfill by refuelling bay	Yes
2024-06-15	1	Single grizzly	Batch Plant	Yes
2024-06-15	1	Adult grizzly	Firehall/MAC	Yes
2024-06-16	1	Single blonde young adult, pink mark.	C-Portal going toward Pond 13.	Yes
2024-06-16	1	Single blonde young adult, pink mark.	(1) Backfill (2) Backfill to Pond 1	No
2024-06-16	1	Single grizzly.	Behind the Env dock and North Inlet	No
2024-06-16	1	Single grizzly.	Backfill along the pipes	No
2024-06-17	1	Single grizzly	South haul road	Yes
2024-06-17	1	Single grizzly	Pond 13	Yes
2024-06-18	1	Single grizzly, darker hair	Pond 3	No
2024-06-18	1	Single grizzly	A154 Pit	Yes
2024-06-18	1	Single grizzly	Batch Plant	Yes
2024-06-19	1	Single grizzly	A154 Pit	Yes
2024-06-19	1	Single grizzly	Pond 1	Yes
2024-06-19	1	Single grizzly	A154 Pit, 390 Bench	Yes
2024-06-20	1	Single grizzly	Pond 5	Yes
2024-06-21	1	Single grizzly. Marked during encounter with pink marker	South haul road next to backfill loadout	Yes
2024-06-21	1	Single grizzly	Batch plant	Yes
2024-06-21	1	Adolescent grizzly	Truck Shop	Yes
2024-06-22	1	1 grizzly	C-Portal	No
2024-06-22	1	Young grizzly, 3rd year cub?	Pond 1 along base of rock hill	Yes
2024-06-23	1	Young grizzly, 3rd year cub?	Pond 5	Yes
2024-06-23	1	One grizzly, grazing	Bear in Pond 5 by backfill	Yes

Date	Number of Animals	Characteristics of Animals	Location	Deterrents Used?
2024-06-23	1	Single grizzly	Pond 10 near truck shop	Yes
2024-06-23	1	single grizzly	Pond 1 near backfill plant	Yes
2024-06-23	1	One grizzly	Pond 10 - winter road approach	Yes
2024-06-23	1	One grizzly	South tank-SCRP	Yes
2024-06-23	1	Single grizzly. Small black spot on the right side of body	Metcon	Yes
2024-06-23	1	Single blonde adult grizzly	West Ramp	Yes
2024-06-24	1	One grizzly	A21 west ramp- A21 Dyke	Yes
2024-06-25	1	One grizzly	North inlet tundra	Yes
2024-06-26	1	Young grizzly, a 3rd year cub?	A21 dike	No
2024-06-26	1	Single blonde young/small adult grizzly	A21 Pit Shop to E21 Sump	Yes
2024-06-27	1	Blonde grizzly cub with limp, from description of caller.	A21 dyke	No
2024-06-28	1	One Grizzly	Warehouse- Veg Plots	Yes
2024-06-28	1	Single grizzly bear, blonde, small adult.	(1) Backfill in the ditch besides HV entrance (2) Backfill in the ditch besides South Haul Road along the pipes	No
2024-06-28	1	Single grizzly bear, could not find	Backfill, between crusher and South Haul Road	No
2024-06-28	1	Unknown animal description. Environmental Monitor could not locate when responding to reported wildlife sighting.	Backfill	No
2024-06-29	1	Unknown animal description. Environmental Monitor could not locate when responding to reported wildlife sighting.	Batch Plant	No
2024-06-29	1	1 adult grizzly	West Ramp	Yes
2024-07-01	1	Single grizzly bear	Airport runway	No
2024-07-01	1	Unknown animal description. Environmental Monitor could not locate when responding to reported wildlife sighting.	ROM Hill going toward PKC muster/A21	No
2024-07-02	1	Single grizzly bear, blonde, small adult.	North Inlet going to the Airport runway	No
2024-07-03	1	Single juvenile, unhealthy.	Between Magazine Storage and SCRP	Yes
2024-07-03	2	One blonde adult, one injured blonde juvenile	North Inlet	Yes
2024-07-04	1	Single grizzly bear, juvenile.	North Inlet going to the ERT training grounds	No
2024-07-04	1	Single grizzly bear, blonde, small adult.	Pond 13 to Till Dump towards Airport Road	Yes
2024-07-10	1	Single grizzly	ERT training grounds	No
2024-07-11	1	Single grizzly	ERT training	No
2024-07-12	1	Single grizzly apparently chasing a single caribou towards chute	PKC West Dam	No

Date	Number of Animals	Characteristics of Animals	Location	Deterrents Used?
2024-07-12	1	Unknown animal description. Environmental Monitor could not locate when responding to reported wildlife sighting.	(1) Backfill ROM, (2) C portal	No
2024-07-12	1	1 adolescent, looked thin	West Ramp pit shop	Yes
2024-07-19	1	Single grizzly, unable to find in field after call	Pond 1/ south haul road	No
2024-07-20	1	Single new grizzly, dark brown colour	Pipe bench between dock area and Airport Road	No
2024-07-21	1	Same new grizzly from day before	Pipe bench between dock area and Airport Road	No
2024-07-23	1	Same dark brown grizzly, young adult likely	Pond 1	Yes
2024-08-03	1	Single grizzly bear, adult, small size	Airport, besides Helipad	No
2024-08-05	1	Single grizzly	North inlet	No
2024-08-10	1	Adolescent, straggly hair	PKC / C portal	Yes
2024-08-18	1	Single grizzly	MAC/Pond 1	Yes
2024-08-22	1	Single grizzly	Between NIWTP and Airport in the tundra near the water	No
2024-08-23	1	Single grizzly	Batch plant yard headed towards SCAP yard	No
2024-09-08	1	Single grizzly, adult	Airport road near N17 laydown	Yes
2024-09-09	1	Single grizzly, dark brown, adult	Top of A154 ramp	Yes
2024-09-17	1	1 adult grizzly	seen at powerhouse to winter road approach	No
2024-09-22	1	1 single large dark coloured grizzly	Airport apron headed towards NC17	No
2024-10-03	1	Single grizzly, adult size. Viewed from distance	Tundra near Pond 2	No
2024-10-13	1	Single grizzly	NCRP	No
2024-10-14	1	Single grizzly	Between airport terminal and N17	No
2024-10-25	1	Single grizzly, adult size, brown fur.	Shallow Bay	Yes
2024-10-26	1	Single grizzly	South haul road	Yes

APPENDIX I

Wolverine Snow Track Survey Results 2024

Date	Transect	UTM Zone 12 W		Days Since		Observation Type	Number of Individuals	Age of Track Since Weather Event	Comments
		Easting	Northing	Last Snow	Last Wind				
27-Mar	WT17	520238	7158039	8	1	Tracks	1	After	-
27-Mar	WT17	523086	7159659	8	1	Tracks	1	After	Likely a male
27-Mar	WT17	523266	7159785	8	1	Tracks	1	After	-
27-Mar	WT01	524378	7164996	8	1	Tracks	1	Before	-
27-Mar	WT01	524694	7164877	8	1	Tracks	1	After	Likely a female
27-Mar	WT32	528641	7159920	8	1	Tracks	1	Before	-
27-Mar	WT32	528641	7159920	8	1	Tracks	1	Before	-
27-Mar	WT16	526145	7154975	8	1	Tracks	1	Before	-
27-Mar	WT26	530844	7153357	8	1	Tracks	1	After	-
27-Mar	WT26	530559	7153071	8	1	Tracks	2	After	Male and female
27-Mar	WT36	525906	7147137	8	1	Tracks	2 to 3	After	2, possibly 3, sets of tracks
27-Mar	WT36	525996	7147148	8	1	Tracks	1	After	1 female
27-Mar	WT36	527403	7047717	8	1	Tracks	2+	After	Multiple tracks, at least 1 male, 1 female
27-Mar	WT36	529358	7148373	8	1	Tracks	2	After	1 male, 1 female
29-Mar	WT22	552754	7152826	10	3	Tracks	2	After	Likely male and female
29-Mar	WT35	556200	7159007	10	3	Tracks	1	Before	-
29-Mar	WT08	548839	7156259	10	3	Tracks	1	Before	-
29-Mar	WT14	543213	7153958	10	3	Tracks	1	Before	-
29-Mar	WT14	541865	7153448	10	3	Tracks	2	Before	-
30-Mar	WT31	556868	7169330	11	4	Tracks	1	After	-
30-Mar	WT07	552284	716662	11	4	Tracks	1	After	-
30-Mar	WT07	551560	716577	11	4	Tracks	2	After	-
30-Mar	WT05	547007	7167743	11	4	Tracks	2	Before	-
30-Mar	WT06	546404	7171117	11	4	Tracks	1	After	-
30-Mar	WT34	542388	7171245	11	4	Tracks	1	After	Fresh tracks
31-Mar	WT39	553889	7140986	12	5	Tracks	1	<24h	Multiple tracks
31-Mar	WT39	555429	7140765	12	5	Tracks	1	After	Multiple tracks
31-Mar	WT39	555963	7140725	12	5	Tracks	1	After	-
31-Mar	WT29	556880	7145846	12	5	Tracks	1	After	-
31-Mar	WT29	556240	7146192	12	5	Tracks	1	After	Female
31-Mar	WT21	550061	7143733	12	5	Tracks	1	>24h	-

Date	Transect	UTM Zone 12 W		Days Since		Observation Type	Number of Individuals	Age of Track Since Weather Event	Comments
		Easting	Northing	Last Snow	Last Wind				
31-Mar	WT21	548545	7142256	12	5	Tracks	1	>24h	-
31-Mar	WT10	542768	7150239	12	5	Tracks	2	<24h	-
31-Mar	WT09	537512	7149809	12	5	Tracks	1	After	-
03-Apr	WT40	551311	7131978	1	0	Tracks	1	After	-
03-Apr	WT37	545982	7136467	1	0	Tracks	1	After	-
03-Apr	WT38	542988	7141912	1	0	Tracks	1	After	Wolverine following caribou tracks
05-Apr	WT12	528151	7131639	3	1	Tracks	2	After	Wolverine using trail back and forth
05-Apr	WT12	528257	7131101	3	1	Tracks	1	After	Big tracks
05-Apr	WT19	541726	7130982	3	1	Tracks	1	Before	-
05-Apr	WT27	532086	7138383	3	1	Tracks	1	After	-
06-Apr	WT17	523263	7160435	4	2	Tracks	1	Before	-
06-Apr	WT17	521756	7159124	4	2	Tracks	3	After	3 Wolverine, following 1 female wolverine
06-Apr	WT01	524090	7165109	4	2	Tracks	1	After	-
06-Apr	WT16	527927	7154488	4	2	Caribou Fur	1	After	Possible kill site around, found small batch of caribou fur
06-Apr	WT16	527863	7154547	4	2	Tracks	1	After	-
27-Mar	WT17	520238	7158039	8	1	Tracks	1	After	-
27-Mar	WT17	523086	7159659	8	1	Tracks	1	After	Likely a male
27-Mar	WT17	523266	7159785	8	1	Tracks	1	After	-
27-Mar	WT01	524378	7164996	8	1	Tracks	1	Before	-
27-Mar	WT01	524694	7164877	8	1	Tracks	1	After	Likely a female
27-Mar	WT32	528641	7159920	8	1	Tracks	1	Before	-
27-Mar	WT32	528641	7159920	8	1	Tracks	1	Before	-
27-Mar	WT16	526145	7154975	8	1	Tracks	1	Before	-
27-Mar	WT26	530844	7153357	8	1	Tracks	1	After	-
27-Mar	WT26	530559	7153071	8	1	Tracks	2	After	Male and female
27-Mar	WT36	525906	7147137	8	1	Tracks	2 to 3	After	2, possibly 3, sets of tracks
27-Mar	WT36	525996	7147148	8	1	Tracks	1	After	1 female
27-Mar	WT36	527403	7047717	8	1	Tracks	2+	After	Multiple tracks, at least 1 male, 1 female
27-Mar	WT36	529358	7148373	8	1	Tracks	2	After	1 male, 1 female
29-Mar	WT22	552754	7152826	10	3	Tracks	2	After	Likely male and female

Date	Transect	UTM Zone 12 W		Days Since		Observation Type	Number of Individuals	Age of Track Since Weather Event	Comments
		Easting	Northing	Last Snow	Last Wind				
29-Mar	WT35	556200	7159007	10	3	Tracks	1	Before	-
29-Mar	WT08	548839	7156259	10	3	Tracks	1	Before	-
29-Mar	WT14	543213	7153958	10	3	Tracks	1	Before	-

APPENDIX J

Wolverine Incidental Observations Summary 2024

Date	Number of Animals	Characteristics of Animals	Location
2024-01-10	1	Single wolverine unknown description.	North Mine Dry near refueling bay.
2024-01-20	1	Single wolverine unknown description.	Between C & D dorms.
2024-01-21	1	Single wolverine unknown description	Ice rink.
2024-01-27	1	Single wolverine unknown description	DOC
2024-02-23	1	Single wolverine unknown description	N17 - moving south
2024-05-12	1	Single wolverine unknown description	On Lac de Gras - moving away from site.

APPENDIX K

Pit Wall/Mine Infrastructure Raptor Survey Results 2024

Date	Area	Method Used (D/L)[a]	Bird Species[b]	Species at Risk Migratory Bird[c,d]	Number of Observed	Confirmed Active Nest (Y/N)[c]	Potential Nesting (Y/N)[c]	Young / Fledglings (Y#/N/U)[c]	Comments
2024-05-04	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-05-04	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-05-04	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-05-04	A418 Lookout #2	L	-	N	-	-	-	-	-
2024-05-04	Process Plant	L	-	N	-	-	-	-	-
2024-05-04	Powerhouse #1	L	-	N	-	-	-	-	-
2024-05-04	Powerhouse #2	L	-	N	-	-	-	-	-
2024-05-04	Boiler House	L	-	N	-	-	-	-	-
2024-05-04	Site Services Lineup	L	-	N	-	-	-	-	-
2024-05-04	Backfill Plant	L	-	N	-	-	-	-	-
2024-05-04	A21 North Wall	L	PEFA	N	2	N	Y	N	-
2024-05-04	A21 East Wall	L	-	N	-	-	-	-	-
2024-05-04	A21 South Wall	L	RLHA	N	1	N	Y	N	-
2024-05-04	A21 S Ramp	L	-	N	-	-	-	-	-
2024-05-04	S. Tank Farm	L	-	N	-	-	-	-	-
2024-05-11	A154 Lookout #1	L	-	N	-	-	-	-	Strong winds
2024-05-11	A154 Lookout #2	L	-	N	-	-	-	-	Strong winds
2024-05-11	A418 Lookout #1	L	-	N	-	-	-	-	Strong winds
2024-05-11	A418 Lookout #2	L	-	N	-	-	-	-	Strong winds
2024-05-11	Process Plant	L	-	N	-	-	-	-	Strong winds
2024-05-11	Powerhouse #1	D	-	N	-	-	-	-	Strong winds
2024-05-11	Powerhouse #2	D	-	N	-	-	-	-	Strong winds
2024-05-11	Boiler House	D	-	N	-	-	-	-	Strong winds
2024-05-11	Site Services Lineup	L	-	N	-	-	-	-	Strong winds
2024-05-11	Backfill Plant	L	-	N	-	-	-	-	Strong winds
2024-05-11	A21 North Wall	L	-	N	-	-	-	-	Strong winds
2024-05-11	A21 East Wall	L	-	N	-	-	-	-	Strong winds
2024-05-11	A21 South Wall	L	-	N	-	-	-	-	Strong winds
2024-05-11	A21 S Ramp	L	-	N	-	-	-	-	Strong winds
2024-05-11	S. Tank Farm	L	-	N	-	-	-	-	Strong winds
2024-05-18	A154 Lookout #1	L	-	N	-	-	-	-	
2024-05-18	A154 Lookout #2	L	-	N	-	-	-	-	
2024-05-18	A418 Lookout #1	L	PEFA?	N	1	N	N	N	Briefly seen SM/MD bird fly into pit, could not locate again.
2024-05-18	A418 Lookout #2	L	-	N	-	-	-	-	-
2024-05-18	Process Plant	L	-	N	-	-	-	-	-
2024-05-18	Powerhouse #1	D	-	N	-	-	-	-	-
2024-05-18	Powerhouse #2	L	-	N	-	-	-	-	-
2024-05-18	Boiler House	L	CORA	N	1	N	N	N	-
2024-05-18	Site Services Lineup	L	PEFA	N	2	N	Y	N	-
2024-05-18	Backfill Plant	D	-	N	-	-	-	-	-
2024-05-18	A21 North Wall	D	-	N	-	-	-	-	-
2024-05-18	A21 East Wall	D	PEFA	N	1	N	N	N	Flying low around ring road. Had PEFA shaped wings but size looked bigger
2024-05-18	A21 South Wall	D	-	N	-	-	-	-	-

Date	Area	Method Used (D/L)[a]	Bird Species[b]	Species at Risk Migratory Bird[c,d]	Number of Observed	Confirmed Active Nest (Y/N)[c]	Potential Nesting (Y/N)[c]	Young / Fledglings (Y#/N/U)[c]	Comments
2024-05-18	A21 S Ramp	L	-	N	-	-	-	-	-
2024-05-18	S. Tank Farm	D	-	N	-	-	-	-	-
2024-05-26	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-05-26	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-05-26	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-05-26	A418 Lookout #2	L	-	N	-	-	-	-	-
2024-05-26	Process Plant	L	-	N	-	-	-	-	-
2024-05-26	Powerhouse #1	L	-	N	-	-	-	-	-
2024-05-26	Powerhouse #2	L	-	N	-	-	-	-	-
2024-05-26	Boiler House	L	-	N	-	-	-	-	-
2024-05-26	Site Services Lineup	L	PEFA	N	1	Y	N	N	input differs from field sheet as field sheet was incorrectly filled out
2024-05-26	Backfill Plant	L	-	N	-	-	-	-	-
2024-05-26	A21 North Wall	L	-	N	-	-	-	-	-
2024-05-26	A21 East Wall	L	-	N	-	-	-	-	-
2024-05-26	A21 South Wall	L	-	N	-	-	-	-	-
2024-05-26	A21 S Ramp	L	-	N	-	-	-	-	-
2024-05-26	S. Tank Farm	L	-	N	-	-	-	-	-
2024-06-01	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-06-01	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-06-01	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-06-01	A418 Lookout #2	L	-	N	-	-	-	-	-
2024-06-01	Process Plant	L	-	N	-	-	-	-	No birds, white wash on building
2024-06-01	Powerhouse #1	L	-	N	-	-	-	-	No birds, white wash on building
2024-06-01	Powerhouse #2	L	-	N	-	-	-	-	-
2024-06-01	Boiler House	L	-	N	-	-	-	-	-
2024-06-01	Site Services Lineup	L	-	N	-	-	-	-	-
2024-06-01	Backfill Plant	L	-	N	-	-	-	-	No birds, white wash on building
2024-06-01	A21 North Wall	L	-	N	-	-	-	-	-
2024-06-01	A21 East Wall	L	-	N	-	-	-	-	-
2024-06-01	A21 South Wall	L	-	N	-	-	-	-	-
2024-06-01	A21 S Ramp	L	-	N	-	-	-	-	-
2024-06-01	S. Tank Farm	L	-	N	-	-	-	-	-
2024-06-08	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-06-08	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-06-08	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-06-08	A418 Lookout #2	L	-	N	-	-	-	-	-
2024-06-08	South Tank Farm	D	-	N	-	-	-	-	-
2024-06-08	Process Plant	L	-	N	-	-	-	-	-
2024-06-08	Powerhouse #1	D	-	N	-	-	-	-	-
2024-06-08	Powerhouse #2	D	-	N	-	-	-	-	-
2024-06-08	Boiler House	D	CORA	N	5	Y	Y	Y	Active nest observed. 4 youngs. Photos taken on June 10.
2024-06-08	Site Services Lineup	L	PEFA	N	1	N	Y	N	-
2024-06-08	Backfill Plant	L	-	N	-	-	-	-	-

Date	Area	Method Used (D/L)[a]	Bird Species[b]	Species at Risk Migratory Bird[c,d]	Number of Observed	Confirmed Active Nest (Y/N)[c]	Potential Nesting (Y/N)[c]	Young / Fledglings (Y#/N/U)[c]	Comments
2024-06-15	A21 North Wall	L	-	N	-	-	-	-	Strong winds
2024-06-15	A21 East Wall	L	-	N	-	-	-	-	-
2024-06-15	A21 South Wall	L	-	N	-	-	-	-	-
2024-06-15	A21 S Ramp	L	-	N	-	-	-	-	-
2024-06-15	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-06-15	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-06-15	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-06-15	A418 Lookout #2	L	-	N	-	-	-	-	-
2024-06-15	South Tank Farm	D	-	N	-	-	-	-	-
2024-06-15	Process Plant	L	-	N	-	-	-	-	-
2024-06-15	Powerhouse #1	D	-	N	-	-	-	-	-
2024-06-15	Powerhouse #2	D	CORA	N	2	N	Y	Y	1 adult/1 fledging. Could be from the nest at the Boiler House.
2024-06-15	Boiler House	D	CORA	N	3	Y	Y	Y	3 youngs observed in the nest.
2024-06-15	Site Services Lineup	L	PEFA	N	1	N	Y	N	Potential nest at Line-up or near by.
2024-06-15	Backfill Plant	D	-	N	-	-	-	-	-
2024-06-22	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-06-22	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-06-22	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-06-22	A418 Lookout #2	L	-	N	-	-	-	-	-
2024-06-22	South Tank Farm	D	-	N	-	-	-	-	-
2024-06-22	Process Plant	D	-	N	-	-	-	-	-
2024-06-22	Powerhouse #1	D	-	N	-	-	-	-	-
2024-06-22	Powerhouse #2	D	-	N	-	-	-	-	-
2024-06-22	Boiler House	D	-	N	-	-	-	-	-
2024-06-22	Site Services Lineup	D	-	N	-	-	-	-	Known peregrine nest, no activity in area at time of scan
2024-06-22	Backfill Plant	D	-	N	-	-	-	-	-
2024-06-22	A21 North Wall	L	-	N	-	-	-	-	-
2024-06-22	A21 East Wall	L	PEFA	N	1	N	N	N	-
2024-06-22	A21 South Wall	L	-	N	-	-	-	-	-
2024-06-22	A21 S Ramp	L	-	N	-	-	-	-	-
2024-06-29	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-06-29	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-06-29	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-06-29	A418 Lookout #2	L	-	N	-	-	-	-	-
2024-06-29	South Tank Farm	D	CORA	N	1	N	N	NA	Could be a fledging from the Boiler House nest.
2024-06-29	Process Plant	L	-	N	-	-	-	-	-
2024-06-29	Powerhouse #1	L	-	N	-	-	-	-	Potential nest over Door 9. No activity, looks old.
2024-06-29	Powerhouse #2	L	-	N	-	-	-	-	-
2024-06-29	Boiler House	L	-	N	-	-	-	-	Raven nest empty.
2024-06-29	Site Services Lineup	L	-	N	-	-	-	-	-
2024-06-29	Backfill Plant	D	-	N	-	-	-	-	-
2024-06-29	A21 North Wall	L	-	N	-	-	-	-	-
2024-06-29	A21 East Wall	L	-	N	-	-	-	-	-

Date	Area	Method Used (D/L)[a]	Bird Species[b]	Species at Risk Migratory Bird[c,d]	Number of Observed	Confirmed Active Nest (Y/N)[c]	Potential Nesting (Y/N)[c]	Young / Fledglings (Y#/N/U)[c]	Comments
2024-06-29	A21 South Wall	L	-	N	-	-	-	-	-
2024-06-29	A21 S Ramp	L	-	N	-	-	-	-	-
2024-07-06	A154 Lookout #1	L	-	N	-	-	-	-	Windy
2024-07-06	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-07-06	A418 Lookout #1	L	Unable to ID	N	1	N	N	N	-
2024-07-06	A418 Lookout #2	L	Unable to ID	N	2	N	Y	N	-
2024-07-06	Process Plant	L	-	N	-	-	-	-	-
2024-07-06	Powerhouse #1	L	-	N	-	-	-	-	-
2024-07-06	Powerhouse #2	L	-	N	-	-	-	-	-
2024-07-06	Boiler House	L	-	N	-	-	-	-	-
2024-07-06	Site Services Lineup	L	PEFA	N	1	Y	Y	N	Sitting in nest
2024-07-06	Backfill Plant	D	-	N	-	-	-	-	-
2024-07-06	A21 North Wall	L	-	N	-	-	-	-	-
2024-07-06	A21 East Wall	L	-	N	-	-	-	-	-
2024-07-06	A21 South Wall	L	-	N	-	-	-	-	-
2024-07-06	A21 S Ramp	L	-	N	-	-	-	-	-
2024-07-06	S. Tank Farm	L	-	N	-	-	-	-	-
2024-07-13	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-07-13	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-07-13	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-07-13	A418 Lookout #2	L	-	N	-	-	-	-	No raptor but 2 chirping American pipits
2024-07-13	South Tank Farm	D	-	N	-	-	-	-	-
2024-07-13	Process Plant	L	-	N	-	-	-	-	-
2024-07-13	Powerhouse #1	L	-	N	-	-	-	-	-
2024-07-13	Powerhouse #2	D	-	N	-	-	-	-	-
2024-07-13	Boiler House	D	-	N	-	-	-	-	-
2024-07-13	Site Services Lineup	L	PEFA	N	1	Y	Y	N	On nest ledge
2024-07-13	Backfill Plant	D	-	N	-	-	-	-	-
2024-07-13	A21 North Wall	L	-	N	-	-	-	-	-
2024-07-13	A21 East Wall	L	-	N	-	-	-	-	-
2024-07-13	A21 South Wall	L	-	N	-	-	-	-	-
2024-07-13	A21 S Ramp	L	-	N	-	-	-	-	-
2024-07-21	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-07-21	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-07-21	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-07-21	A418 Lookout #2	L	GYRF	N	1	N	N	N	-
2024-07-21	South Tank Farm	D	-	N	-	-	-	-	-
2024-07-21	Process Plant	D	-	N	-	-	-	-	-
2024-07-21	Powerhouse #1	D	-	N	-	-	-	-	-
2024-07-21	Powerhouse #2	D	-	N	-	-	-	-	-
2024-07-21	Boiler House	D	-	N	-	-	-	-	-
2024-07-21	Site Services Lineup	D	-	N	-	N	N	N	Peregrine nest looks to be empty. Offspring may have fledged
2024-07-21	Backfill Plant	D	-	N	-	-	-	-	-

Date	Area	Method Used (D/L)[(a)]	Bird Species[(b)]	Species at Risk Migratory Bird[(c,d)]	Number of Observed	Confirmed Active Nest (Y/N)[(c)]	Potential Nesting (Y/N)[(c)]	Young / Fledglings (Y#/N/U)[(c)]	Comments
2024-07-21	A21 North Wall	L	-	N	-	-	-	-	-
2024-07-21	A21 East Wall	L	PEFA	N	1	-	-	-	Flying with food (siksik) and making a lot of noise over east wall. Perched a couple time in similar areas. Possible nest in area? Briefly spoted two possible young flying above pit before flying into pit and out of sight
2024-07-21	A21 South Wall	L	-	N	-	-	-	-	-
2024-07-21	A21 S Ramp	L	-	N	-	-	-	-	-
2024-07-26	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-07-26	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-07-26	A418 Lookout #1	L	Unknown GYRF	N	2 1	N N	N N	NA NA	-
2024-07-26	A418 Lookout #2	L	RLHA	N	2	N	N	NA	Photos taken
2024-07-26	South Tank Farm	D	-	N	-	-	-	-	-
2024-07-26	Process Plant	L	PEFA	N	1	N	N	NA	Photos taken
2024-07-26	Powerhouse #1	L	-	N	-	-	-	-	-
2024-07-26	Powerhouse #2	D	-	N	-	-	-	-	-
2024-07-26	Boiler House	L	-	N	-	-	-	-	-
2024-07-26	Site Services Lineup	L	PEFA	N	3	Y	Y	Y- 2	Adult flew to the nest, perched and fed 2 youngs. Photos taken.
2024-07-26	Backfill Plant	D	-	N	-	-	-	-	-
2024-07-26	A21 North Wall	L	PEFA	N	1	Y	Y	Y -3?	Adult flying I circles over the vehicle and doing alarm calls. Youngs observed on July 11th, not seen today.
2024-07-26	A21 East Wall	L	-	N	-	-	-	-	-
2024-07-26	A21 South Wall	L	-	N	-	-	-	-	-
2024-07-26	A21 S Ramp	L	-	N	-	-	-	-	-
2024-08-03	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-08-03	A154 Lookout #2	L	PEFA	N	1	N	N	NA	-
2024-08-03	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-08-03	A418 Lookout #2	L	-	N	-	-	-	-	-
2024-08-03	South Tank Farm	D	-	N	-	-	-	-	-
2024-08-03	Process Plant	D	PEFA	N	1	N	N	NA	Adult from Site Services active nest.
2024-08-03	Powerhouse #1	D	-	N	-	-	-	-	-
2024-08-03	Powerhouse #2	D	-	N	-	-	-	-	-
2024-08-03	Boiler House	D	-	N	-	-	-	-	-
2024-08-03	Site Services Lineup	L	PEFA	N	2	Y	-	Y- 2	2 youngs, one resting. Photos taken.
2024-08-03	Backfill Plant	D	-	N	-	-	-	-	-
2024-08-03	A21 North Wall	L	PEFA	N	4	Y	-	Y- 3	3 youngs (1 white, 2 brown) in nest, 1 adult flying the area. Photos taken.
2024-08-03	A21 East Wall	L	-	N	-	-	-	-	-
2024-08-03	A21 South Wall	L	-	N	-	-	-	-	-
2024-08-03	A21 S Ramp	L	-	N	-	-	-	-	-
2024-08-11	A154 Lookout #1	L	-	N	-	-	-	-	Smokey
2024-08-11	A154 Lookout #2	L	-	N	-	-	-	-	Smokey
2024-08-11	A418 Lookout #1	L	-	N	-	-	-	-	Smokey
2024-08-11	A418 Lookout #2	L	-	N	-	-	-	-	Smokey
2024-08-11	South Tank Farm	D	-	N	-	-	-	-	-
2024-08-11	Process Plant	D	-	N	-	-	-	-	-

Date	Area	Method Used (D/L)[a]	Bird Species[b]	Species at Risk Migratory Bird[c,d]	Number of Observed	Confirmed Active Nest (Y/N)[c]	Potential Nesting (Y/N)[c]	Young / Fledglings (Y#/N/U)[c]	Comments
2024-08-11	Powerhouse #1	D	-	N	-	-	-	-	-
2024-08-11	Powerhouse #2	D	-	N	-	-	-	-	-
2024-08-11	Boiler House	D	-	N	-	-	-	-	-
2024-08-11	A21 North Wall	L	PEFA	N	2	Y	N	U	Same PEFA at all A21 wall sites. Circling around the shacks on the north wall. As soon as I got out of the truck, they started calling(loud shrieks)
2024-08-11	A21 East Wall	L	PEFA	N	2	N	N	N	Same PEFA at all A21 wall sites.
2024-08-11	A21 South Wall	L	PEFA	N	2	N	N	N	Same PEFA at all A21 wall sites.
2024-08-12	Site Services Lineup	L	PEFA	N	2	Y	N	Y-2	2 young, looks brown
2024-08-12	Backfill Plant	D	-	N	-	-	-	-	-
2024-08-12	A21 S Ramp	L	-	N	-	-	-	-	-
2024-08-12	A21 North Wall	L	PEFA	N	3	Y	N	Y-1	Same PEFA as yesterday.
2024-08-17	A154 Lookout #1	D	PEFA	N	1	N	N	N	-
2024-08-17	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-08-17	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-08-17	A418 Lookout #2	L	-	N	-	-	-	-	-
2024-08-17	South Tank Farm	L	-	N	-	-	-	-	-
2024-08-17	Process Plant	L	-	N	-	-	-	-	-
2024-08-17	Powerhouse #1	L	-	N	-	-	-	-	-
2024-08-17	Powerhouse #2	L	-	N	-	-	-	-	-
2024-08-17	Boiler House	L	-	N	-	-	-	-	-
2024-08-17	Site Services Lineup	L	-	N	-	-	-	-	-
2024-08-17	Backfill Plant	L	-	N	-	-	-	-	-
2024-08-17	A21 North Wall	L	GYRF	N	2	Y	-	Y	One young observed flying.
2024-08-17	A21 East Wall	L	-	N	-	-	-	-	-
2024-08-17	A21 South Wall	L	GYRF	N	1	-	-	-	-
2024-08-17	A21 S Ramp	L	-	N	-	-	-	-	-
2024-08-24	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-08-24	A154 Lookout #2	L	PEFA	N	1	N	N	NA	-
2024-08-24	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-08-24	A418 Lookout #2	L	RLHA PEFA	N	1 1	N N	N N	NA NA	-
2024-08-24	South Tank Farm	D	-	N	-	-	-	-	-
2024-08-24	Process Plant	L	PEFA	N	1	N	N	NA	Adult from Site Services nest. Photo taken.
2024-08-24	Powerhouse #1	D	-	N	-	-	-	-	-
2024-08-24	Powerhouse #2	D	-	N	-	-	-	-	-
2024-08-24	Boiler House	D	-	N	-	-	-	-	-
2024-08-24	Site Services Lineup	L	PEFA	N	1	Y	N	Y-1	Fledgling from nest. Photo taken.
2024-08-24	Backfill Plant	D	-	N	-	-	-	-	-
2024-08-24	A21 North Wall	L	PEFA	N	1	Y	N	Y-1	Fledgling from nest. Photo taken.
2024-08-24	A21 East Wall	L	-	N	-	-	-	-	-
2024-08-24	A21 South Wall	L	-	N	-	-	-	-	-
2024-08-24	A21 S Ramp	L	-	N	-	-	-	-	-
2024-08-31	A154 Lookout #1	L	-	N	-	-	-	-	-

Date	Area	Method Used (D/L)[a]	Bird Species[b]	Species at Risk Migratory Bird[c,d]	Number of Observed	Confirmed Active Nest (Y/N)[c]	Potential Nesting (Y/N)[c]	Young / Fledglings (Y#/N/U)[c]	Comments
2024-08-31	A154 Lookout #2	L	Unknown	N	2	N	N	NA	Most likely PEFA.
2024-08-31	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-08-31	A418 Lookout #2	L	PEFA	N	1	N	N	NA	-
2024-08-31	South Tank Farm	D	-	N	-	-	-	-	-
2024-08-31	Process Plant	D	-	N	-	-	-	-	PEFA seen later that day perched on North-East corner of the building.
2024-08-31	Powerhouse #1	D	-	N	-	-	-	-	-
2024-08-31	Powerhouse #2	D	-	N	-	-	-	-	-
2024-08-31	Boiler House	D	-	N	-	-	-	-	-
2024-08-31	Site Services Lineup	L	-	N	-	-	-	-	-
2024-08-31	Backfill Plant	D	-	N	-	-	-	-	-
2024-08-31	A21 North Wall	L	-	N	-	-	-	-	-
2024-08-31	A21 East Wall	L	PEFA	N	2	N	N	NA	Could not determine the peregrine's age.
2024-08-31	A21 South Wall	L	-	N	-	-	-	-	-
2024-08-31	A21 S Ramp	L	-	N	-	-	-	-	-
2024-09-07	A154 Lookout #1	L	-	N	-	-	-	-	-
2024-09-07	A154 Lookout #2	L	-	N	-	-	-	-	-
2024-09-07	A418 Lookout #1	L	-	N	-	-	-	-	-
2024-09-07	A418 Lookout #2	L	Unable to ID	N	3	-	-	-	Raptors are likely PEFAs but uncertain
2024-09-07	South Tank Farm	D	-	N	-	-	-	-	-
2024-09-07	Process Plant	L	-	N	-	-	-	-	-
2024-09-07	Powerhouse #1	D	-	N	-	-	-	-	-
2024-09-07	Powerhouse #2	D	-	N	-	-	-	-	-
2024-09-07	Boiler House	D	-	N	-	-	-	-	-
2024-09-07	Site Services Lineup	D	-	N	-	-	-	-	-
2024-09-07	Backfill Plant	D	-	N	-	-	-	-	-
2024-09-07	A21 North Wall	L	PEFA	N	1	-	-	-	flying above in circles
2024-09-07	A21 East Wall	L	PEFA	N	1	-	-	-	same PEFA as above. Still circling
2024-09-07	A21 South Wall	L	-	N	-	-	-	-	-
2024-09-07	A21 S Ramp	L	-	N	-	-	-	-	-

(a) “D” refers to an observation made from within a vehicle (“Driving”) and “L” refers to ground observation made outside of a vehicle (“Looking”).
(b) RLHA = Rough-legged hawk (*Buteo lagopus*); CORA = Common Raven *(Corvus corax*); GYRF = gyrfalcon (*Falco rusticolus*); and PEFA = peregrine falcon (*Falco peregrinus anatum/tundrius*).
(c) “Y” = Yes; “N” = No; and U = unknown.
(d) Government of the Northwest Territories. 2023. Our Species at Risk. https://www.nwtspeciesatrisk.ca/en/our-species-risk. Accessed March 31, 2025.

APPENDIX L

Camp Population 2024

Month	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
January	-	-	-	389	429	443	534	593	866	692	495	603	627	542	489	510	542	565	578	562	583	550	529	600	517
February	-	-	-	424	408	512	671	682	973	702	545	661	647	574	524	557	573	615	627	579	617	571	577	620	532
March	63	402	576	413	453	585	748	729	1010	712	552	672	617	559	508	556	572	635	620	580	578	584	591	623	570
April	-	-	-	318	570	678	743	755	1001	679	548	648	595	553	495	543	580	684	590	570	546	567	570	616	570
May	-	-	-	333	470	682	871	854	1021	645	610	634	618	561	509	552	642	718	614	594	616	581	582	605	564
June	189	523	751	326	392	746	821	873	1,028	600	612	641	611	552	500	561	694	698	587	606	606	574	564	591	545
July	-	-	-	443	396	736	819	857	600	378	589	588	607	524	465	554	701	692	574	583	606	545	540	560	516
August	-	-	-	425	399	745	768	868	990	335	623	607	625	524	442	562	703	651	562	584	597	546	532	512	508
September	211	681	879	432	408	755	708	943	993	526	639	648	608	547	466	586	704	670	561	609	585	563	545	550	542
October	-	-	-	457	390	726	714	950	1,042	524	620	646	577	546	481	564	664	649	563	589	565	550	557	575	549
November	-	-	-	379	425	670	704	984	1,043	536	608	648	579	515	498	550	627	618	562	604	569	566	567	588	541
December	287	881	766	-	386	611	524	696	1,030	453	510	546	464	452	460	498	490	518	518	545	551	505	533	564	490
Maximum	211	681	879	433	408	755	821	943	1,028	600	639	672	647	574	500	562	703	698	587	609	606	584	591	646	642

APPENDIX M

Waste Inspection Summary 2024

Date	Location	Attractants				Wildlife				Wildlife Sign			
		Attractants Present?	Items	Number of Items Present	Comments	Wildlife Present?	Species	# of Individuals Observed	Wildlife Comments	Wildlife Sign Observed?	Wildlife Sign Observed Species	Wildlife Sign Type	Wildlife Sign Observed Comments
1/3/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
1/6/2024	Landfill	Yes	Gloves, Other	4	-	No	-	-	-	Yes	Fox	Unknown	-
1/13/2024	Landfill	Yes	Drink Containers Recyclable, Other	3	-	No	-	-	-	No	-	-	-
1/17/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
1/20/2024	Landfill	Yes	Cigarette Packaging, Drink Containers Recyclable, Food, Other	21	-	No	-	-	-	Yes	Fox	Unknown	-
1/24/2024	Landfill	Yes	Drink Containers Recyclable, Other	3	-	No	-	-	-	Yes	Fox	Unknown	-
1/28/2024	Landfill	Yes	Drink Containers Recyclable, Food, Food Packaging, Gloves, Other	24	-	No	-	-	-	Yes	Raven & Fox	Unknown	-
1/31/2024	Landfill	No	-	0	-	No	-	-	-	Yes	Fox	Unknown	-
2/3/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
2/7/2024	Landfill	Yes	Food Packaging	1	-	No	-	-	-	Yes	Raven	Unknown	-
2/10/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
2/14/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
2/17/2024	Landfill	Yes	Drink Containers Recyclable, Gloves, Other	8	-	No	-	-	-	Yes	Raven & Fox	Unknown	-
2/21/2024	Landfill	Yes	Drink Containers Recyclable, Gloves	8	-	No	-	-	-	No	-	-	-
2/24/2024	Landfill	Yes	Drink Containers Recyclable	1	-	No	-	-	-	No	-	-	-
2/29/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
3/2/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
3/6/2024	Landfill	Yes	Other	6	-	No	-	-	-	No	-	-	-
3/9/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
3/13/2024	Landfill	Yes	Other	3	-	No	-	-	-	No	-	-	-
3/16/2024	Landfill	Yes	Gloves	9	-	No	-	-	-	No	-	-	-
3/21/2024	Landfill	Yes	Aerosol Can, gloves	3	-	No	-	-	-	Yes	Fox	Unknown	-
3/23/2024	Landfill	No	-	0	-	No	-	-	-	Yes	Fox	Unknown	-
3/27/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
3/30/2024	Landfill	No	-	0	-	No	-	-	-	Yes	Fox	Unknown	-
4/6/2024	Landfill	Yes	Drink Containers Recyclable, Food, Food Packaging, Gloves	28	-	No	-	-	-	Yes	Fox	Unknown	-
4/10/2024	Landfill	Yes	Drink Containers Recyclable, Food, Gloves	21	-	No	-	-	-	Yes	Fox	Unknown	-

Date	Location	Attractants				Wildlife				Wildlife Sign			
		Attractants Present?	Items	Number of Items Present	Comments	Wildlife Present?	Species	# of Individuals Observed	Wildlife Comments	Wildlife Sign Observed?	Wildlife Sign Observed Species	Wildlife Sign Type	Wildlife Sign Observed Comments
4/20/2024	Landfill	Yes	Aerosol Can, Gloves, Other	9	-	No	-	-	-	Yes	Fox	Unknown	-
4/24/2024	Landfill	No	-	0	-	No	-	-	-	Yes	Fox	Unknown	-
4/27/2024	Landfill	Yes	Food Packaging, Oil Contaminated Waste, Other	4	-	No	-	-	-	Yes	Fox	Unknown	-
5/4/2024	Landfill	Yes	Food Packaging, Other	4	-	No	-	-	-	Yes	Fox	Unknown	-
5/8/2024	Landfill	Yes	Drink Containers Recyclable, Gloves	16	-	No	-	-	-	No	-	-	-
5/11/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
5/15/2024	Landfill	Yes	Drink Containers Recyclable, Gloves	7	-	No	-	-	-	No	-	-	-
5/18/2024	Landfill	Yes	Drink Containers Recyclable, Gloves, Other	6	-	No	-	-	-	No	-	-	-
5/22/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
5/25/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
6/1/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
6/5/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
6/8/2024	Landfill	Yes	Gloves	4	-	No	-	-	-	No	-	-	-
6/12/2024	Landfill	Yes	Gloves, Drink Containers Recyclable,	1	-	No	-	-	-	No	-	-	-
6/15/2024	Landfill	Yes	Gloves	0	-	No	-	-	-	No	-	-	-
6/19/2024	Landfill	Yes	Other, Oily Rags, Gloves, Drink Containers Recyclable, Cigarette Butts, Aerosol Can,	10	1 boot, 2 ppe glove	No	-	-	-	No	-	-	-
6/22/2024	Landfill	Yes	Food Packaging, Food, Drink Containers Recyclable	11	-	No	-	-	-	Yes	-	-	-
6/26/2024	Landfill	Yes	Other, Food Packaging, Drink Containers Recyclable	14	Utensils 8	No	-	-	-	No	-	-	-
6/29/2024	Landfill	Yes	Other, Gloves, Food Packaging, Aerosol Can	7	Truck pre-op logbook, 2 fire extinguishers (discharged)	No	-	-	-	No	-	-	-
7/4/2024	Landfill	Yes	Oily Rags, Oil Products and Containers Gloves, Food Packaging, Aerosol Can	5	-	No	-	-	-	No	-	-	-

Date	Location	Attractants				Wildlife				Wildlife Sign			
		Attractants Present?	Items	Number of Items Present	Comments	Wildlife Present?	Species	# of Individuals Observed	Wildlife Comments	Wildlife Sign Observed?	Wildlife Sign Observed Species	Wildlife Sign Type	Wildlife Sign Observed Comments
7/6/2024	Landfill	Yes	Other, Oil Products and Containers, Gloves, Food Packaging, Aerosol Can	5	PPE coveralls	No	-	-	-	No	-	-	-
7/10/2024	Landfill	Yes	Other, Gloves, Food Packaging, Drink Containers Recyclable	5	N95 mask	No	-	-	-	No	-	-	-
7/13/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
7/18/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
7/20/2024	Landfill	Yes	Other, Oily Rags, Oil Products and Containers, Gloves	24	coveralls, fire extinguisher	No	-	-	-	No	-	-	-
7/24/2024	Landfill	Yes	Food Packaging	3	-	No	-	-	-	No	-	-	-
7/27/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
7/31/2024	Landfill	Yes	Other, Gloves, Drink Containers Recyclable, Cigarette Packaging	21	1 Radio charger (e-waste)	No	-	-	-	No	-	-	-
8/3/2024	Landfill	Yes	Other, Gloves, Food Packaging, Food, Drink Containers Recyclable, Cigarette Packaging	9	Electronic waste x5; PPE coverall x1; full tube of multipurpose sealant x1	No	-	-	-	No	-	-	-
8/7/2024	Landfill	Yes	Gloves, Drink Containers Recyclable	7	-	No	-	-	-	No	-	-	-
8/10/2024	Landfill	Yes	Gloves, Drink Containers Recyclable, Aerosol Can	12	-	No	-	-	-	No	-	-	-
8/14/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
8/17/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
8/21/2024	Landfill	Yes	Other, Oil Products and Containers Gloves, Drink Containers, Recyclable, Cigarette Packaging	0	Earplugs (5 from Backfill)	No	-	-	-	No	-	-	-
8/24/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
8/28/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
8/31/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
9/4/2024	Landfill	Yes	Oily Rags, Gloves, Drink Containers Recyclable, Aerosol Can	23	-	No	-	-	-	No	-	-	-
9/7/2024	Landfill	Yes	Other, Oily Rags, Oil Products and Containers, Gloves	8	1 half PFD/PPE	No	-	-	-	No	-	-	-

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9/11/2024	Landfill	Yes	Other, Gloves, Drink Containers Recyclable, Cigarette Packaging	11	1 N95 mask, PPE boots & gloves	No	-	-	-	No	-	-	-
9/14/2024	Landfill	Yes	Other, Gloves, Drink Containers Recyclable, Cigarette Packaging	5	2x fire extinguishers, sunscreen tube, PPE hard hat 20xboots, Lysol wipes	No	-	-	-	No	-	-	-
9/18/2024	Landfill	Yes	Other, Gloves, Food Packaging, Drink Containers Recyclable, Cigarette Packaging	8	1 shampoo bottle, 1 nicotine gum packaging, 5+ earplugs, mask, 6 electronic cards	No	-	-	-	No	-	-	-
9/21/2024	Landfill	Yes	Oil Products and Containers, Gloves, Drink Containers Recyclable, Aerosol Can	8	-	No	-	-	-	No	-	-	-
9/25/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
9/28/2024	Landfill	Yes	Other	0	1 Windex with product on bottom	No	-	-	-	No	-	-	-
10/2/2024	Landfill	Yes	Other, Drink Containers Recyclable	1	Carpet glue bucket	No	-	-	-	No	-	-	-
10/5/2024	Landfill	Yes	Other, Gloves, Food Packaging, Drink Containers Recyclable	6	1 glue bucket	No	-	-	-	No	-	-	-
10/9/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
10/12/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
10/16/2024	Landfill	Yes	Other, Gloves, Drink Containers Recyclable, Cigarette Packaging	8	PPE clothes and earplugs	No	-	-	-	No	-	-	-
10/19/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
10/23/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
10/26/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
10/30/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
11/2/2024	Landfill	Yes	Gloves, Drink Containers Recyclable	4	-	No	-	-	-	No	-	-	-
11/6/2024	Landfill	Yes	Gloves	1	-	No	-	-	-	No	-	-	-
11/9/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
11/13/2024	Landfill	No	-	0	-	Yes	Raven	1	-	No	-	-	-
11/16/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
11/21/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
11/23/2024	Landfill	Yes	Gloves, Drink Containers Recyclable	4	-	No	-	-	-	No	-	-	-
11/27/2024	Landfill	Yes	Gloves, Drink Containers Recyclable	2	-	No	-	-	-	Yes	Raven	Tracks	-
12/1/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
12/4/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-

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12/7/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
12/11/2024	Landfill	Yes	Gloves	2	-	No	-	-	-	No	-	-	-
12/14/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
12/18/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
12/21/2024	Landfill	Yes	Gloves, Aerosol Can	6	-	No	-	-	-	No	-	-	-
12/25/2024	Landfill	Yes	Gloves	1	-	No	-	-	-	No	-	-	-
12/29/2024	Landfill	Yes	Oil Contaminated Waste, Drink Containers Recyclable	2	-	No	-	-	-	No	-	-	-
1/3/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
1/6/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
1/13/2024	Underground	Yes	Aerosol Can, Gloves, Oily Rags	12	-	No	-	-	-	Yes	Raven	Unknown	-
1/17/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
1/20/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
1/24/2024	Underground	No	-	0	-	No	-	-	-	Yes	Raven	Unknown	-
1/28/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
1/31/2024	Underground	No	-	0	-	No	-	-	-	Yes	Raven & Fox	Unknown	-
2/3/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
2/7/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
2/10/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
2/14/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
2/17/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
2/21/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
2/24/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
2/29/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
3/2/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
3/6/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
3/9/2024	Underground	Yes	Oil Contaminated Waste, Other	4	-	No	-	-	-	No	-	-	-
3/13/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
3/16/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
3/21/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
3/23/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
3/27/2024	Underground	Yes	Drink Containers Recyclable, Gloves, Other	5	-	No	-	-	-	No	-	-	-
3/30/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
4/6/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
4/10/2024	Underground	Yes	Drink Containers Recyclable, Other	2	-	No	-	-	-	No	-	-	-

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4/20/2024	Underground	Yes	Oil Products and Contaminants	3	-	No	-	-	-	No	-	-	-
4/24/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
4/27/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
5/4/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
5/8/2024	Underground	Yes	Drink Containers Recyclable, Other	5	-	No	-	-	-	No	-	-	-
5/11/2024	Underground	Yes	Aerosol Can, Other	2	-	No	-	-	-	No	-	-	-
5/15/2024	Underground	Yes	Aerosol Can, Cigarette Packaging, Drink Containers Recyclable, Other	9	-	No	-	-	-	No	-	-	-
5/18/2024	Underground	Yes	Drink Containers Recyclable	1	-	No	-	-	-	No	-	-	-
5/22/2024	Underground	Yes	Drink Containers Recyclable, Other	2	-	No	-	-	-	No	-	-	-
5/25/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
6/1/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
6/5/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
6/8/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
6/12/2024	Underground	Yes	Drink Containers Recyclable	2	-	No	-	-	-	No	-	-	-
6/15/2024	Underground	Yes	Drink Containers Recyclable	2	-	No	-	-	-	No	-	-	-
6/19/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
6/22/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
6/26/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
6/29/2024	Underground	Yes	Cigarette Packaging	1	-	No	-	-	-	No	-	-	-
7/4/2024	Underground	Yes	Other, Gloves	8	Empty grease container	No	-	-	-	No	-	-	-
7/6/2024	Underground	Yes	Other	2	Filters in burn bin, PPE in non burn	No	-	-	-	No	-	-	-
7/10/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
7/13/2024	Underground	Yes	Gloves, Drink Containers Recyclable, Aerosol Can	7	-	No	-	-	-	No	-	-	-
7/18/2024	Underground	Yes	Oily Rags	1	-	No	-	-	-	No	-	-	-
7/20/2024	Underground	Yes	Oily Rags, Cigarette Packaging	2	-	No	-	-	-	No	-	-	-
7/24/2024	Underground	Yes	Drink Containers Recyclable, Aerosol Can	2	-	No	-	-	-	No	-	-	-
7/27/2024	Underground	Yes	Drink Containers Recyclable	1	-	No	-	-	-	No	-	-	-

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7/31/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
8/3/2024	Underground	Yes	Other, Gloves	1	A lot of waste on the ground around the bins, Disinfectant wipes	No	-	-	-	No	-	-	-
8/7/2024	Underground	Yes	Oil Products and Containers	1	-	No	-	-	-	No	-	-	-
8/11/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
8/14/2024	Underground	Yes	Gloves	3	-	No	-	-	-	No	-	-	-
8/17/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
8/21/2024	Underground	Yes	Gloves, Aerosol Can	5	-	No	-	-	-	No	-	-	-
8/24/2024	Underground	Yes	Oil Products and Containers	2	-	No	-	-	-	No	-	-	-
8/28/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
8/31/2024	Underground	Yes	Other	3	PPE masks, other potential items	No	-	-	-	No	-	-	-
9/4/2024	Underground	Yes	Gloves, Cigarette Butts	13	-	Yes	Raven	1	-	No	-	-	-
9/7/2024	Underground	Yes	Other, Oily Rags, Oil Products and Containers, Gloves	5	Rag 1	No	-	-	-	No	-	-	-
9/11/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
9/14/2024	Underground	Yes	Gloves, Drink Containers Recyclable, Cigarette Packaging	7	-	No	-	-	-	No	-	-	-
9/18/2024	Underground	Yes	Gloves, Cigarette Packaging	19	-	No	-	-	-	No	-	-	-
9/21/2024	Underground	Yes	Other, Gloves, Batteries	7	1 earplug in non-burn	Yes	Raven	2	-	No	-	-	-
9/25/2024	Underground	Yes	Gloves, Drink Containers Recyclable, Aerosol Can	3	-	No	-	-	-	No	-	-	-
9/28/2024	Underground	Yes	Other	1	-	No	-	-	-	No	-	-	-
10/2/2024	Underground	Yes	Oily Rags, Drink Containers Recyclable	3	-	No	-	-	-	No	-	-	-
10/5/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
10/9/2024	Underground	Yes	Other, Food Packaging, Aerosol Can	2	1 tv, 1 ppe boot	No	-	-	-	No	-	-	-
10/12/2024	Underground	Yes	Oil Products and Containers, Gloves, Drink Containers Recyclable, Cigarette Packaging	5	-	No	-	-	-	No	-	-	-
10/16/2024	Underground	Yes	Other, Gloves, Food Packaging, Drink Containers Recyclable	7	Rags x3 in burn bin, boot covers x4 in non-burn (bag)	No	-	-	-	No	-	-	-

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10/19/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
10/23/2024	Underground	Yes	Other	0	7 compressed gas cylinders	No	-	-	-	No	-	-	-
10/26/2024	Underground	Yes	Oily Rags, Gloves, Drink Containers Recyclable	5	-	No	-	-	-	No	-	-	-
10/30/2024	Underground	Yes	Food Packaging	3	-	No	-	-	-	No	-	-	-
11/2/2024	Underground	Yes	Oily Rags, Gloves	2	-	No	-	-	-	No	-	-	-
11/6/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
11/9/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
11/13/2024	Underground	Yes	Other	0	4+ Burnable pallets in non-burn bin	No	-	-	-	No	-	-	-
11/16/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
11/21/2024	Underground	Yes	Other, Drink Containers Recyclable	1	N95 mask	No	-	-	-	No	-	-	-
11/23/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
11/27/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
12/1/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
12/4/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
12/7/2024	Underground	No	-	0	-	Yes	Raven	1	-	No	-	-	-
12/11/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
12/14/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
12/18/2024	Underground	Yes	Other, Oily Rags, Gloves, Drink Containers Recyclable	3	Loose paper in non burn bin	No	-	-	-	No	-	-	-
12/21/2024	Underground	Yes	Other	0	1 bag of misc. plastic items in burn bin	No	-	-	-	No	-	-	-
12/25/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
12/29/2024	Underground	No	-	0	-	No	-	-	-	No	-	-	-
1/3/2024	Waste Transfer Area	Yes	Other	1	-	No	-	-	-	Yes	Fox & Raven	Unknown	-
1/6/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
1/13/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
1/17/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
1/20/2024	Waste Transfer Area	Yes	Drink Containers Recyclable, Food, Food Packaging	7	-	No	-	-	-	Yes	Fox & Ravens	Unknown	-
1/24/2024	Waste Transfer Area	Yes	Other	0	-	No	-	-	-	Yes	Fox	Unknown	-
1/28/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	Yes	Raven & Fox	Unknown	-
1/31/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	Yes	Raven	Unknown	-
2/3/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
2/7/2024	Waste Transfer Area	Yes	Oil Products and Contaminants, Other	2	-	No	-	-	-	No	-	-	-
2/10/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-

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2/14/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
2/17/2024	Waste Transfer Area	Yes	Drink Containers Recyclable, Food Packaging, Other	4	-	No	-	-	-	Yes	Fox	Unknown	-
2/21/2024	Waste Transfer Area	Yes	Cigarette Packaging, Drink Containers Recyclable, Food Packaging	23	-	No	-	-	-	Yes	Raven	Unknown	-
2/24/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	Yes	Raven	Unknown	-
2/29/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
3/2/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
3/6/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
3/9/2024	Waste Transfer Area	Yes	Gloves, Other	6	-	No	-	-	-	No	-	-	-
3/13/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
3/16/2024	Waste Transfer Area	Yes	Drink Containers Recyclable, Gloves	4	-	No	-	-	-	No	-	-	-
3/21/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
3/23/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
3/27/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
3/30/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	Yes	Fox	Unknown	-
4/6/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
4/10/2024	Waste Transfer Area	Yes	Drink Containers Recyclable, Food Packaging, Gloves	20	-	No	-	-	-	No	-	-	-
4/20/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
4/24/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
4/27/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
5/4/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
5/8/2024	Waste Transfer Area	Yes	Cigarette Packaging, Drink Containers Recyclable, Food Packaging, Gloves	18	-	No	-	-	-	Yes	Fox	Unknown	-
5/11/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
5/15/2024	Waste Transfer Area	Yes	Drink Containers Recyclable, Food, Food Packaging, Gloves, Other	31	-	No	-	-	-	No	-	-	-
5/18/2024	Waste Transfer Area	Yes	Other	3	-	No	-	-	-	No	-	-	-
5/22/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
5/25/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
6/1/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
6/5/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-

Date	Location	Attractants				Wildlife				Wildlife Sign			
		Attractants Present?	Items	Number of Items Present	Comments	Wildlife Present?	Species	# of Individuals Observed	Wildlife Comments	Wildlife Sign Observed?	Wildlife Sign Observed Species	Wildlife Sign Type	Wildlife Sign Observed Comments
6/8/2024	Waste Transfer Area	Yes	Drink Containers Recyclable, Cigarette Packaging	6	-	No	-	-	-	No	-	-	-
6/12/2024	Waste Transfer Area	Yes	Other, Food Packaging, Food, Drink Containers Recyclable, Cigarette Packaging	17	2 paper plates in burn pit	No	-	-	-	No	-	-	-
6/15/2024	Waste Transfer Area	Yes	Gloves, Cigarette Packaging	5	-	No	-	-	-	No	-	-	-
6/19/2024	Waste Transfer Area	Yes	Other	0	1 non burn bag in burn pile	No	-	-	-	No	-	-	-
6/22/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
6/26/2024	Waste Transfer Area	Yes	Other Gloves, Food Packaging, Drink Containers Recyclable, Cigarette Packaging	14	Vape(1)	No	-	-	-	No	-	-	-
6/29/2024	Waste Transfer Area	Yes	Gloves, Drink Containers Recyclable, Cigarette Packaging	4	-	No	-	-	-	No	-	-	-
7/4/2024	Waste Transfer Area	Yes	Other, Food Packaging, Drink Containers Recyclable, Batteries	9	Tow rope and rags in burn pit	No	-	-	-	No	-	-	-
7/6/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
7/10/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
7/13/2024	Waste Transfer Area	Yes	Aerosol Can	5	-	No	-	-	-	No	-	-	-
7/18/2024	Waste Transfer Area	Yes	Oily Rags, Gloves, Food Packaging, Cigarette Packaging, Aerosol Can	15	-	No	-	-	-	No	-	-	-
7/20/2024	Waste Transfer Area	Yes	Other, Oily Rags, Gloves, Food Packaging,	19	5x degreaser	No	-	-	-	No	-	-	-
7/24/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
7/27/2024	Waste Transfer Area	Yes	Oily Rags, Gloves, Drink Containers Recyclable	6	-	No	-	-	-	No	-	-	-
7/31/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
8/3/2024	Waste Transfer Area	Yes	Other, Oily Rags, Gloves, Food Packaging, Cigarette Packaging	20	Mouthwash bottle, paper towels	No	-	-	-	No	-	-	-
8/7/2024	Waste Transfer Area	Yes	Other, Gloves, Food Packaging, Drink Containers Recyclable, Cigarette Packaging	21	Suitcase?	Yes	Raven	1	-	No	-	-	-

Date	Location	Attractants				Wildlife				Wildlife Sign			
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8/10/2024	Waste Transfer Area	Yes	Other Gloves, Food Packaging, Drink Containers Recyclable, Cigarette Packaging	16	PPE boot	No	-	-	-	No	-	-	-
8/14/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
8/17/2024	Waste Transfer Area	Yes	Drink Containers Recyclable	0	-	No	-	-	-	No	-	-	-
8/21/2024	Waste Transfer Area	Yes	Gloves, Cigarette Packaging	5	-	No	-	-	-	No	-	-	-
8/24/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
8/28/2024	Waste Transfer Area	Yes	Gloves, Drink Containers Recyclable	5	-	No	-	-	-	No	-	-	-
8/31/2024	Waste Transfer Area	Yes	Other, Gloves, Drink Containers Recyclable	7	Burn items in non burn	No	-	-	-	No	-	-	-
9/4/2024	Waste Transfer Area	Yes	Gloves, Drink Containers Recyclable	6	-	No	-	-	-	No	-	-	-
9/7/2024	Waste Transfer Area	Yes	Other, Gloves, Food Packaging, Drink Containers Recyclable, Cigarette Packaging	9	Lotion bottle 1	No	-	-	-	No	-	-	-
9/11/2024	Waste Transfer Area	Yes	Other, Gloves, Food Packaging, Cigarette Packaging	22	N95 mask	Yes	Raven	2	-	No	-	-	-
9/14/2024	Waste Transfer Area	Yes	Gloves, Cigarette Packaging	6	-	No	-	-	-	No	-	-	-
9/18/2024	Waste Transfer Area	Yes	Gloves, Food Packaging, Drink Containers Recyclable, Cigarette Packaging	9	-	No	-	-	-	No	-	-	-
9/21/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
9/25/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
9/28/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
10/2/2024	Waste Transfer Area	Yes	Gloves, Food Packaging	2	-	No	-	-	-	No	-	-	-
10/5/2024	Waste Transfer Area	Yes	Other, Gloves, Food Packaging, Drink Containers Recyclable	7	1 plastic jug in burn pile	No	-	-	-	No	-	-	-
10/9/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
10/12/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
10/16/2024	Waste Transfer Area	Yes	Other, Gloves, Food Packaging	17	Boot covers x5+ in bag in non-burn	No	-	-	-	No	-	-	-
10/19/2024	Waste Transfer Area	Yes	Other, Gloves	4	Garbage bag with paper towel and other waste for incinerator in the burn pit.	No	-	-	-	No	-	-	-
10/23/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
10/26/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-

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10/30/2024	Waste Transfer Area	Yes	Gloves, Food Packaging, Food	9	-	No	-	-	-	Yes	Raven	Pecks	Holes pecked into paper bowls by ravens
11/2/2024	Waste Transfer Area	Yes	Gloves, Food Packaging, Food, Drink Containers Recyclable	19	-	Yes	Raven	1	-	No	-	-	-
11/6/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
11/9/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
11/13/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
11/16/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
11/21/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
11/23/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
11/27/2024	Waste Transfer Area	Yes	Food Packaging, Drink Containers Recyclable	27	-	Yes	Fox, ravens	3	-	No	-	-	-
12/1/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
12/4/2024	Waste Transfer Area	Yes	Other, Food Packaging, Drink Containers Recyclable	3	1 boot cover	No	-	-	-	No	-	-	-
12/7/2024	Waste Transfer Area	No	-	0	-	Yes	Raven	1	-	No	-	-	-
12/11/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
12/14/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	Yes	-	-	-
12/18/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
12/21/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
12/25/2024	Waste Transfer Area	No	-	0	-	No	-	-	-	No	-	-	-
12/28/2024	Waste Transfer Area	Yes	Other, Gloves, Food Packaging, Drink Containers Recyclable	13	Shotcrete fibres	No	-	-	-	Yes	Raven	pecks	Raven peck holes in food containers
1/3/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
1/6/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
1/13/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
1/17/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
1/20/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
1/24/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
1/28/2024	A21	No	-	0	-	No	-	-	-	Yes	Fox	Unknown	-
1/31/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
2/3/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
2/7/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
2/10/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
2/14/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
2/17/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
2/21/2024	A21	No	Aerosol Can, Gloves	10	-	No	-	-	-	No	-	-	-
2/24/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-

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2/29/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
3/2/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
3/6/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
3/9/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
3/13/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
3/16/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
3/21/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
3/23/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
3/27/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
3/30/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
4/6/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
4/10/2024	A21	No	Aerosol Can	6	-	No	-	-	-	No	-	-	-
4/20/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
4/24/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
4/27/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
5/4/2024	A21	No	Other	1	-	No	-	-	-	No	-	-	-
5/8/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
5/11/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
5/15/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
5/18/2024	A21	No	Drink Containers Recyclable, Other	3	-	No	-	-	-	No	-	-	-
5/22/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
5/25/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
6/1/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
6/5/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
6/12/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
6/19/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
6/26/2024	A21	No	-	0	-	Yes	Grizzly Bear	1	-	No	-	-	-
7/4/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
7/10/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
7/18/2024	A21	Yes	Other, Oily Rags, Gloves	2	Not sure if boots in box or if just box burn bin	No	-	-	-	No	-	-	-
7/24/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
7/31/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
8/7/2024	A21	Yes	Food Packaging, Drink Containers Recyclable, Cigarette Packaging	4	-	No	-	-	-	No	-	-	-
8/14/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
8/21/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-

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8/28/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
9/4/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
9/11/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
9/18/2024	A21	Yes	Oil Contaminated Waste, Gloves, Drink Containers Recyclable	7	-	No	-	-	-	No	-	-	-
9/25/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
10/2/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
10/9/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
10/16/2024	A21	Yes	Gloves, Drink Containers Recyclable	6	-	No	-	-	-	No	-	-	-
10/23/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
10/30/2024	A21	Yes	Oily Rags, Drink Containers Recyclable	16	-	No	-	-	-	No	-	-	-
11/6/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
11/13/2024	A21	Yes	Food Packaging, Food, Drink Containers Recyclable	47	-	No	-	-	-	No	-	-	-
11/21/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
11/27/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
12/4/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
12/11/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
12/18/2024	A21	Yes	Gloves ,Aerosol Can	3	-	No	-	-	-	No	-	-	-
12/25/2024	A21	No	-	0	-	No	-	-	-	No	-	-	-
1/3/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
1/6/2024	Landfill	Yes	Gloves, Other	4	-	No	-	-	-	Yes	Fox	Unknown	-
1/13/2024	Landfill	Yes	Drink Containers Recyclable, Other	3	-	No	-	-	-	No	-	-	-
1/17/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
1/20/2024	Landfill	Yes	Cigarette Packaging, Drink Containers Recyclable, Food, Other	21	-	No	-	-	-	Yes	Fox	Unknown	-
1/24/2024	Landfill	Yes	Drink Containers Recyclable, Other	3	-	No	-	-	-	Yes	Fox	Unknown	-
1/28/2024	Landfill	Yes	Drink Containers Recyclable, Food, Food Packaging, Gloves, Other	24	-	No	-	-	-	Yes	Raven & Fox	Unknown	-
1/31/2024	Landfill	No	-	0	-	No	-	-	-	Yes	Fox	Unknown	-
2/3/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
2/7/2024	Landfill	Yes	Food Packaging	1	-	No	-	-	-	Yes	Raven	Unknown	-
2/10/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-

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2/14/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
2/17/2024	Landfill	Yes	Drink Containers Recyclable, Gloves, Other	8	-	No	-	-	-	Yes	Raven & Fox	Unknown	-
2/21/2024	Landfill	Yes	Drink Containers Recyclable, Gloves	8	-	No	-	-	-	No	-	-	-
2/24/2024	Landfill	Yes	Drink Containers Recyclable	1	-	No	-	-	-	No	-	-	-
2/29/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
3/2/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
3/6/2024	Landfill	Yes	Other	6	-	No	-	-	-	No	-	-	-
3/9/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
3/13/2024	Landfill	Yes	Other	3	-	No	-	-	-	No	-	-	-
3/16/2024	Landfill	Yes	Gloves	9	-	No	-	-	-	No	-	-	-
3/21/2024	Landfill	Yes	Aerosol Can, gloves	3	-	No	-	-	-	Yes	Fox	Unknown	-
3/23/2024	Landfill	No	-	0	-	No	-	-	-	Yes	Fox	Unknown	-
3/27/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
3/30/2024	Landfill	No	-	0	-	No	-	-	-	Yes	Fox	Unknown	-
4/6/2024	Landfill	Yes	Drink Containers Recyclable, Food, Food Packaging, Gloves	28	-	No	-	-	-	Yes	Fox	Unknown	-
4/10/2024	Landfill	Yes	Drink Containers Recyclable, Food, Gloves	21	-	No	-	-	-	Yes	Fox	Unknown	-
4/20/2024	Landfill	Yes	Aerosol Can, Gloves, Other	9	-	No	-	-	-	Yes	Fox	Unknown	-
4/24/2024	Landfill	No	-	0	-	No	-	-	-	Yes	Fox	Unknown	-
4/27/2024	Landfill	Yes	Food Packaging, Oil Contaminated Waste, Other	4	-	No	-	-	-	Yes	Fox	Unknown	-
5/4/2024	Landfill	Yes	Food Packaging, Other	4	-	No	-	-	-	Yes	Fox	Unknown	-
5/8/2024	Landfill	Yes	Drink Containers Recyclable, Gloves	16	-	No	-	-	-	No	-	-	-
5/11/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
5/15/2024	Landfill	Yes	Drink Containers Recyclable, Gloves	7	-	No	-	-	-	No	-	-	-
5/18/2024	Landfill	Yes	Drink Containers Recyclable, Gloves, Other	6	-	No	-	-	-	No	-	-	-
5/22/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
5/25/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
6/1/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-

Date	Location	Attractants				Wildlife				Wildlife Sign			
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6/5/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
6/8/2024	Landfill	Yes	Gloves	4	-	No	-	-	-	No	-	-	-
6/12/2024	Landfill	Yes	Gloves, Drink Containers Recyclable,	1	-	No	-	-	-	No	-	-	-
6/15/2024	Landfill	Yes	Gloves	1	-	No	-	-	-	No	-	-	-
6/19/2024	Landfill	Yes	Other, Oily Rags, Gloves, Drink Containers Recyclable, Cigarette Butts, Aerosol Can,	10	1 boot, 2 ppe glove	No	-	-	-	No	-	-	-
6/22/2024	Landfill	Yes	Food Packaging, Food, Drink Containers Recyclable	11	-	No	-	-	-	Yes	-	-	-
6/26/2024	Landfill	Yes	Other, Food Packaging, Drink Containers Recyclable	14	Utensils 8	No	-	-	-	No	-	-	-
6/29/2024	Landfill	Yes	Other, Gloves, Food Packaging, Aerosol Can	7	Truck pre-op logbook, 2 fire extinguishers (discharged)	No	-	-	-	No	-	-	-
7/4/2024	Landfill	Yes	Oily Rags, Oil Products and Containers Gloves, Food Packaging, Aerosol Can	5	-	No	-	-	-	No	-	-	-
7/6/2024	Landfill	Yes	Other, Oil Products and Containers, Gloves, Food Packaging, Aerosol Can	5	PPE coveralls	No	-	-	-	No	-	-	-
7/10/2024	Landfill	Yes	Other, Gloves, Food Packaging, Drink Containers Recyclable	5	N95 mask	No	-	-	-	No	-	-	-
7/13/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
7/18/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
7/20/2024	Landfill	Yes	Other, Oily Rags, Oil Products and Containers, Gloves	24	coveralls, fire extinguisher	No	-	-	-	No	-	-	-
7/24/2024	Landfill	Yes	Food Packaging	3	-	No	-	-	-	No	-	-	-
7/27/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
7/31/2024	Landfill	Yes	Other, Gloves, Drink Containers Recyclable, Cigarette Packaging	21	1 Radio charger (e-waste)	No	-	-	-	No	-	-	-
8/3/2024	Landfill	Yes	Other, Gloves, Food Packaging, Food, Drink Containers Recyclable, Cigarette Packaging	9	Electronic waste x5; PPE coverall x1; full tube of multipurpose sealant x1	No	-	-	-	No	-	-	-

Date	Location	Attractants				Wildlife				Wildlife Sign			
		Attractants Present?	Items	Number of Items Present	Comments	Wildlife Present?	Species	# of Individuals Observed	Wildlife Comments	Wildlife Sign Observed?	Wildlife Sign Observed Species	Wildlife Sign Type	Wildlife Sign Observed Comments
8/7/2024	Landfill	Yes	Gloves, Drink Containers Recyclable	7	-	No	-	-	-	No	-	-	-
8/10/2024	Landfill	Yes	Gloves, Drink Containers Recyclable, Aerosol Can	12	-	No	-	-	-	No	-	-	-
8/14/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
8/17/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-
8/21/2024	Landfill	Yes	Other, Oil Products and Containers Gloves, Drink Containers, Recyclable, Cigarette Packaging	5	Earplugs (5 from Backfill)	No	-	-	-	No	-	-	-
8/24/2024	Landfill	No	-	0	-	No	-	-	-	No	-	-	-

APPENDIX N

Vegetation and Lichen Monitoring Report 2024

Diavik Diamond Mines (2012) Inc.

2024 Comprehensive Vegetation and Lichen Monitoring Program

24 April 2025

Project No. CA0022391.6786-2511-R-Rev1-Phase 2000

Distribution List

1 Electronic Copy - Diavik Diamond Mines (2012) Inc.

1 Hard Copy - WSP Canada Inc.

Plain Language Summary

The Diavik Diamond Mine (the Mine) is located on East Island in Lac de Gras in the Northwest Territories. Diavik Diamond Mine Inc. (DDMI) conducts vegetation and lichen monitoring programs to assess if dust deposition from the Mine is altering the abundance (i.e., percent cover) and richness (i.e., number of species) of plant species in representative plant communities. The objectives of the 2024 vegetation and lichen monitoring programs are to:

- assess changes in plant species abundance (species percent cover) and composition (species richness) between Mine and reference sites over time
- determine if any detected changes in plant species abundance and composition are qualitatively related to dust deposition
- identify differences or changes in lichen chemistry between near-field and far-field areas, and relate those changes to possible implications for caribou health

The vegetation monitoring program focused on permanent vegetation plots (PVP) that were established in two sites or areas: adjacent to the Mine site (mine plots), and on the West Island and mainland (reference plots) (Golder 2011a). In 2024, there were 15 permanent vegetation plots in each area, with five PVPs in each of three vegetation community types: Heath Tundra, Shrub, and Tussock-Hummock. Plant species percent cover was estimated for all vascular plant species (such as sedges and grasses) and non-vascular plant species (such as lichens and mosses). Plant species data from 2006 to 2024 were compiled and graphically and statistically analyzed to assess differences in the number and percent cover of plant species between mine and reference plots over the years.

Overall, the results of the analysis of dust deposition and vegetation data in 2024 identified significant differences in plant species abundance and composition between mine and reference plots for some vascular and non-vascular vegetation types and vegetation communities that are likely due to Mine-related effects, such as dust deposition. Other factors, including natural variation in site conditions among PVPs before and after mining, climate fluctuations, foraging by caribou, surveyor variability, and challenges in detecting cryptic or uncommon species, are also likely to have influenced variation in plant species richness and cover at mine and reference plots and over time. While Mine-related effects on some vegetation types and vegetation communities are likely to have occurred, the overall direction and magnitude of differences between mine and reference sites have remained largely consistent over the past 15 years, and these patterns contrast with a key prediction (i.e., Key Question 4) in the Environmental Effects Report (EER) for the Mine (DDMI 1998). Importantly, the data show no indication that plant species abundance and composition are diverging further over time, as past and current spatial and temporal patterns remain stable.

Lichens were collected at locations near and far from the Mine site for analysis of metals to determine if dust generated from mining activities is causing a measurable increase in metal concentrations near the Mine, and if concentrations have changed since they were first measured in 2010. Lichens were chosen because they are a preferred forage of caribou and effectively and preferentially bioaccumulate airborne contaminants because of their lack of roots, large surface area, and long lifespan. Thus, analysing metal concentrations in lichen provides conservative exposure concentrations for assessing risks to caribou. Elders have observed that caribou will avoid areas with deposited dust on their forage by altering migration routes to target better quality forage (Tłįchǫ Government 2013). Science has also suggested a potential link between dust deposition near the Ekati and Diavik mines and caribou avoiding the mines (Boulanger et al. 2012, 2021). However, dust, vegetation, lichen and metals concentrations monitoring at Diavik indicates that spatial patterns are local and unlikely causing the larger extents or annual patterns of caribou avoidance reported in science (Boulanger et al. 2012, 2021).

In 2010, two sampling areas were developed for the lichen monitoring program. A near-field area included stations surrounding the Mine site. The near-field area stations were generally located near existing dustfall collector stations. A far-field area was a concentric area 30 to 40 km from the Mine site, and stations within this area were randomly selected prior to the start of the program. The original study design included 20 stations in each sampling area. During the 2013 program, Elders from the Tłı̨chǫ and Łutsel K'e communities and two researchers from the Tłı̨chǫ Research and Training Institute accompanied Golder and DDMI biologists during part of the sampling program. Based on their knowledge of caribou migration routes, the Elders selected additional three stations located 14 to 21 km from the centre of the Mine site; these stations were also sampled in 2016 and 2021. Hence, Indigenous Traditional Knowledge was applied to the program sampling design. In 2016, a far-far-field sampling area was added to collect lichen at three stations approximately 100 km from the Mine site.

The Elders' Traditional Knowledge provided in 2013 remained important in 2024 for selecting specific sampling sites appropriate for caribou use. Although there was a random element to the station selection, the actual site of sampling was based on guidance from the Elders as to where the caribou eat (i.e., appropriate caribou habitat). Lichens identified by the Elders as those that would be consumed by caribou were recorded and collected for analysis. This is a second way how Indigenous Traditional Knowledge has been integrated into the sampling program.

Metals concentrations in lichen were graphically and statistically compared between near-field and far-field areas, and for the 2010, 2013, 2016, 2021, and 2024 sampling events. The analysis of metal concentrations in lichen confirmed the observations of the Elders that dust deposition was higher near the Mine, as most of the metals were significantly higher in lichens from the near-field area compared to the far-field area. Further analysis indicated that Mine-related dust deposition declined with distance, with background (far-field) concentrations being reached within approximately 4 km from the Mine. Statistical analysis revealed that metal concentrations in lichen decreased from the first round of lichen monitoring in 2010 through to 2016. This may be due to the change in mining operations from above ground (open pit) to underground mining from 2010 to 2016, resulting in an overall reduction in dust levels. There was a small rise in dust deposition in the 2018 to 2022 period, likely influenced by open pit mining at the A21 Pit. Despite this increase, metal concentrations in lichen measured in 2021 were the lowest recorded over the entire monitoring period and did not reflect the effects of dust deposition. The reason for this remains unknown but could be related to the different geology of the A21 pit, compared to the A418 and A154 pits. Some metals had significantly higher concentrations in 2024 compared to 2021. However, either the near-field concentrations were not significantly different from far-field concentrations, or far-field concentrations were also higher, suggesting a regional increase in these metals.

The lichen monitoring program was designed to assess whether the increased metals uptake by lichen in the near-field area posed a risk to caribou health. An initial screening-level risk assessment was conducted in 2010 (Golder 2011b), and a recent study assessing spatiotemporal trends in metals concentrations and risk to caribou which incorporated monitoring data up to 2016 (Watkinson et al. 2021) was also available. This study used conservative assumptions to estimate exposure and effects to caribou, such as the caribou would reside in the near-field area throughout the year and obtain all their food and water from this area. Despite these conservative assumptions, the risk estimates demonstrated no adverse effects on caribou health. Additionally, the initial screening-level risk assessment results are consistent with the Human Health and Environmental Risk Assessment (HHERA) completed under less conservative assumptions in 2022 in support of the Final Closure and Reclamation Plan for the Mine (WSP Golder 2022a). The 2024 metals concentrations in lichen were below the concentrations reported in the 2010 risk assessment, therefore, additional follow-up based on 2024 data is not required. Metal concentrations are predicted to remain within safe levels for caribou.

Table of Contents

TABLES

FIGURES

APPENDICES

Acronyms and Abbreviations

Term	Definition
ANOVA	Analysis of Variance
BACI	Before-after control-impact
BV Labs	Bureau Veritas Laboratories
CI	Confidence interval
CRC-ICPMS	Collision/reaction cell inductively coupled plasma mass spectrometry
CVAF	Cold vapour atomic fluorescence
DDMI	Diavik Diamond Mines Inc.
DL	Detectable limit
EER	Environmental Effects Report
FF	Far-field
FFF	Far-far-field
ID	Identification
n	Number
NF	Near-field
NMDS	Non-metric multidimensional scaling
PERMANOVA	Permutational multivariate analysis of variance
PERMDISP	Permutational multivariate homogeneity of group variance
PKCF	Processed Kimberlite Containment Facility
$PM_{2.5}$	Fine particulate matter
PVP	Permanent vegetation plots
RDL	Reportable detection limit
RM-ANOVA	Repeated Measures Analysis of Variance
RPD	Relative percent difference
SE	Standard error
Tukey HSD	Tukey’s Honest Significant Differences
WRSA-NCRP	Waste Rock Storage Area-North Country Rock Pile

Units of Measure and Symbols

Unit	Definition
mm	millimetre
µm	micrometre
cm	centimetre
m	metre
km	kilometre
km^2	square kilometre
$mg/dm^2/y$	milligram per square decimetre per year
mg/kg dw	milligram per kilogram dry weight
°C	Celsius
α	alpha
%	percent

1 INTRODUCTION

Dust deposition due to industrial development has the potential to cause localized effects on vegetation abundance and composition and can also affect the quality of food resources for wildlife that eat plants. In 2013, the Tłı̨chǫ Government completed a Traditional Knowledge study on the potential effects of dust on caribou and caribou habitat. Comments from the Elders on lichen and vegetation conditions near the Diavik Diamond Mine (Mine) reflect that they noticed dust on the lichen near the Mine site and stated that dust reduced the quality of the forage for caribou (Tłı̨chǫ Government 2013). The Elders also stated that the caribou will avoid using the area close to the Mine as their migration route because the caribou recognize the difference in lichen quality (by smell and taste).

Long-term monitoring is fundamental for determining changes in plant community and ecosystem dynamics over time due to anthropogenic disturbance (Condit 1995; Dale et al. 2002; Vellend et al. 2013). As such, Diavik Diamond Mines (2012) Inc. (DDMI or Diavik) initiated a vegetation monitoring program in 2001, one year after construction began, to examine vegetation composition and abundance over time. The results of the monitoring would assist in developing appropriate and practical mitigation strategies if mining operations were having a strong adverse effect on tundra vegetation communities. Dustfall monitoring has also been conducted since 2002 as part of the environmental monitoring program. Chemical analysis of lichen was first completed by DDMI in 2005, and an extensive monitoring program was implemented in 2010 to assess whether dust deposition increased metals concentrations in lichen and subsequent possible health effects on caribou. Vegetation and lichen chemistry monitoring occurred in 2013, 2016, 2021, and 2024.

1.1 Background

The Mine is located on East Island, a 20 km^2 island in Lac de Gras, Northwest Territories, approximately 300 km northeast of Yellowknife (Figure 1.1-1). Lac de Gras is located about 100 km north of the tree line in the central barren-ground tundra at the headwaters of the Coppermine River. The river, which flows north to the Arctic Ocean east of Kugluktuk, is 520 km long and has a drainage area of approximately 50,800 km^2. The area is remote, and major freight must be trucked over a seasonal winter road from Yellowknife. Worker access is by aircraft to the Mine's private airstrip.

The Mine involves the mining of four diamond-bearing kimberlite pipes. The pipes, designated as A154North, A154South, A418, and A21, are located directly off-shore of East Island. All mining, diamond recovery, support activities and infrastructure are located on the East Island.

The Environmental Assessment for the Mine was submitted in 1998 and approved in 1999 by the Federal Government. Construction of Mine infrastructure began on East Island in 2000. A kimberlite processing plant, power plant, boiler plant, accommodation building, sewage treatment facility, and administration/maintenance building were constructed on the southeast part of the island. An airstrip is located on the northern edge of the island. In total, the Mine site at full development was expected to have a footprint of 12.76 km^2; the current footprint is 11.61 km^2. Full production started in 2003 in open pits, and underground mining was added in 2008. From 2012 to 2017, mining was conducted underground and open pit (2017) The Mine began development of the A21 pit in 2015, open pit mining began again in 2017 (DDMI 2019) and completed in 2023. Underground mining is currently ongoing together with progressive reclamation activities.

LEGEND

- DIAVIK MINE LOCATION
- MINE LOCATION
- POPULATED PLACE
- ALL-SEASON ROAD
- HIGHWAY
- WINTER ROAD
- TREELINE
- WATERCOURSE
- PROVINCIAL/TERRITORIAL BOUNDARY
- WATERBODY

0 100 200

1:6,000,000 KILOMETRES

REFERENCE(S)

BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTED COORDINATE SYSTEM: CANADA LAMBERT CONFORMAL CONIC

CLIENT

RioTinto

PROJECT

DIAVIK DIAMOND MINES INC.

TITLE

LOCATION OF DIAVIK DIAMOND MINE

CONSULTANT

wsp

YYYY-MM-DD	2025-04-01
DESIGNED	RK
PREPARED	AA
REVIEWED	DC
APPROVED	KS

PROJECT NO.	CONTROL	REV.	FIGURE
CA22391.6786	2100.2500	0	1.1-1

1.2 Purpose and Objectives

The purpose of the vegetation and lichen monitoring programs is to assess if dust deposition from the Mine is altering plant community structure and composition and if it is influencing lichen species. Lichen species represent one of the caribou food sources and there is potential for lichen abundance to be altered in areas near the Mine site. Additionally, lichens have the potential to uptake metals and other chemicals that can adversely affect the caribou and other wildlife health.

The vegetation and lichen monitoring programs include the following objectives:

- assess changes in plant species abundance (species percent cover) and composition (species richness) between the mine and reference plots over time
- determine if any detected changes in plant species abundance and composition are qualitatively related to dust deposition
- identify differences or changes in lichen chemistry between near-field and far-field areas, and relate those changes to possible implications for caribou health

Additionally, the vegetation monitoring program provides a quantitative approach for testing and evaluating the predicted effects identified as part of the Environmental Effects Report (EER) for the Mine (DDMI 1998). Four measurement endpoints expressed as key questions and associated environmental effects predictions were identified in the EER for vegetation (Table 1.2-1).

Table 1.2-1: Key Questions and Associated Environmental Effects Predictions for Vegetation

Key Question	Environmental Effects Prediction
Key Question 1: How much vegetation/land cover would be directly affected by the proposed Project?	Predicted loss of 12.67 km^2 of habitat.
Key Question 2: How would the structure of vegetation communities outside of the Mine footprint be changed as a result of the proposed Project?	Increased dust deposition may lead to potential changes in vegetation.
Key Question 3: Would any rare or endangered species or communities be lost because of the proposed Project?	No effects predicted.
Key Question 4: Would there be changes to vegetation and/or terrain diversity because of the proposed Project?	Community level richness predicted to decrease by 14%. Species diversity and richness predicted to decrease by 44%.

An additional four key questions were developed for the lichen study to address community concerns about dust deposition and its effect on caribou (Table 1.2-2). Lichen species that were of dietary importance to caribou (i.e., that caribou would prefer to eat), were preferentially collected and analyzed.

Table 1.2-2: Key Questions and Predictions for Lichen

Key Question	Environmental Effects Prediction
Is there metals uptake in lichen due to dust?	Yes.
Is there a difference between concentrations of metals in lichen near the Mine versus 30 to 40 km from the Mine?	Yes, but no level estimated.
Are there differences between metal concentrations in lichen over years?	Concentrations in lichen are predicted to be similar over years.
Are concentrations of metals in lichen within a safe level for caribou?	Yes.

1.3 Previous Studies

1.3.1 Vegetation Studies

Detailed vegetation data were initially collected in 2001 and were typically collected every three years through 2016. Through adaptive management, the program frequency was reduced to every five years unless triggered by dustfall monitoring results (Golder 2017, 2019). Because the dust deposition rates in 2021 exceeded the trigger, the sampling frequency resumed on a three-year interval[3]. Analysis of the Mine’s vegetation monitoring data from 2008 to 2016 by Watkinson et al. (2021) found that cover of vascular plants had increased while bryophyte and lichen cover had decreased at vegetation monitoring plots close to the Mine (<500 m). Further, shrub cover at all plots had increased since the onset of monitoring. Cover and richness of forbs and graminoid species were greater at plots close to the Mine in some plant community types when compared with reference plots, while lichen cover was greater at reference plots compared to plots near the Mine.

1.3.2 Lichen Chemistry

Chemical concentrations were measured in lichen collected near the Mine in four previous studies conducted in 2005, 2010, 2013, 2016, and 2021. Naeth and Wilkinson (2006) concluded that the Mine influences chemical concentrations in lichen collected near the Mine site compared to far-field locations 30 km and 60 km away. Similar results were found by Golder (2011b) and concluded that metals concentrations in lichen collected at near-field locations were higher than at far-field locations 30 to 40 km away but were within a safe level for caribou to eat. Metals concentrations were reduced in 2016 compared to 2010 and 2013, likely due to the reduction in dust deposition associated with the change to underground mining (Golder 2014, 2017, 2019; Watkinson et al. 2021). Concentrations were higher in 2021, likely due to higher dust generation associated with the return to open-pit mining in A21 pit in 2017 (WSP Golder 2022b). Concentrations of most metals in lichen were found to decline exponentially with distance from the Mine, reaching background (far-field) concentrations within approximately 4 km from the Mine (Watkinson et al. 2021).

[3] The frequency of future monitoring during closure and post-closure phases will be identified in the *Final Closure and Reclamation Plan Version 1.1* which is currently in preparation for submission to the WLWB in April 2025.

2 VEGETATION MONITORING PROGRAM

2.1 Study Area

The Mine is located in the subarctic tundra along the transition between taiga and upper Arctic tundra ecozones (Ecosystem Classification Group 2012). The climate in this region consists of long, cold winters and short, cool summers with a mean annual temperature of -9°C and mean annual precipitation of 306 mm (unpublished data, Diavik Meteorological Stations 1999-2012).

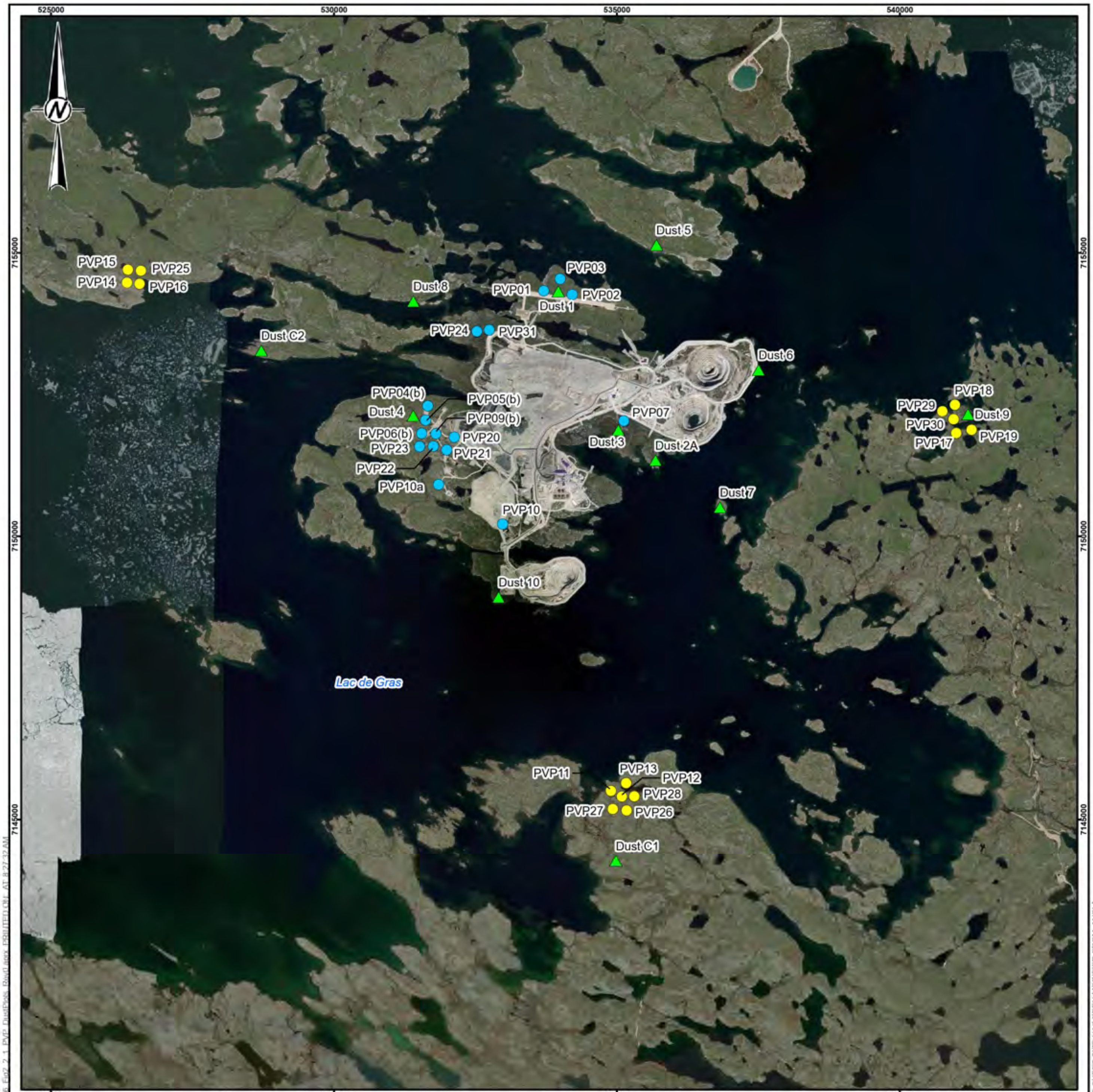
The upland ecosystems in the region generally consist of Heath Tundra communities on well drained soils, which are dominated by ericaceous shrubs along with other members of the heath family (*Ericaceae*), and a healthy layer of lichen (Watkinson et al 2021). Shrub-dominated communities exist on more moderately drained soils, where shrub cover is more extensive and non-vascular, forb, and graminoid presence is generally low. Tussock-Hummock habitats comprise vegetation communities growing on poorly drained organic soils, with a higher graminoid and forb presence on a well-developed bryophyte layer.

Dust collector locations and permanent vegetation plots (PVP) were established adjacent to the Mine (mine plots), and on the West Island and the mainland (reference plots). Figure 2.2-1 shows the location of PVPs and dust collector sampling locations.

2.2 Methods

2.2.1 Dustfall Monitoring

Dust deposition data (diameter >30 µm particulates [Watkinson et al. 2021]) have been collected since 2002 at various locations around the Mine, with 14 collection stations in use currently (Figure 2.2-1; Golder 2014). . A determination of the annual rate of dust deposition (milligram per square decimetre per year [$mg/dm^2/y$]) was calculated based on the weight of the dust residue remaining, the sampling area of the gauge, and the number of days the monitoring gauge was deployed.



LEGEND

- DUSTFALL COLLECTOR
- MINE PERMANENT VEGETATION PLOT*
- REFERENCE PERMANENT VEGETATION PLOT

0 2 4

1:100,000 KILOMETRES

NOTE(S)

* PVP10 WAS REPLACED BY PVP10A (SEE SECTION 2.2.2.1).

REFERENCE(S)

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PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 12N

CLIENT

RioTinto

PROJECT

DIAVIK DIAMOND MINES INC.

TITLE

PERMANENT VEGETATION PLOT AND DUST COLLECTOR SAMPLING LOCATIONS

CONSULTANT

wsp

YYYY-MM-DD	2025-04-01
DESIGNED	RK
PREPARED	AA
REVIEWED	DC
APPROVED	KS

PROJECT NO.	CONTROL	REV.	FIGURE
CA22391.6786	2100.2500	0	2.2-1

2.2.2 Vegetation Monitoring

Detailed vegetation data have been collected at Diavik since 2001. As described in Naeth and Wilkinson (2009) and Golder (2011a), 10 PVPs were initially established and sampled in 2001 (nine plots in the vicinity of the Mine and one reference plot located on the mainland) and re-sampled in 2004. The program was expanded in 2006 to include five additional mine plots established to replace plots lost due to Mine expansion, and eight new reference plots at three locations off East Island. This provided an equal number of mine (n=9) and reference (n=9) plots, assigned equally among three vegetation communities (Heath Tundra, Shrub, and Tussock-Hummock). In 2008, the program was further expanded to include 30 plots (15 mine plots and 15 reference plots) occurring in three vegetation communities (Figure 2.2-1 and Table 2.2-1). A list of all plots sampled since 2001 is provided in Appendix A, and representative photos for each community are provided in Appendix F.

Table 2.2-1: Current Distribution of Plots by Vegetation Community

Vegetation Community	Number of Mine Plots	Number of Reference Plots
Heath Tundra	5	5
Shrub	5	5
Tussock-Hummock	5	5
Total	**15**	**15**

All 30 PVPs were visited over eleven days from July 30 to August 9, 2024. Data sampling methods followed previously established protocols (Naeth and Wilkinson 2009). Each PVP consisted of a 2 m by 2 m area that was subdivided into four, 1 m^2 subplots. Starting at the northwest corner and working clockwise, a 1 m by 1 m quadrat frame with 10-cm increment markings on each side was used to estimate plant species percent cover for all vascular plant species rooted within the four subplots. Wherever possible, vascular plants were identified to the species level in the field and unknown specimens were collected from outside the plot and later identified using Porsild and Cody (1980) or other resources when necessary.

Non-vascular species such as lichens and bryophytes comprise a large portion of the species diversity in tundra environments and may be sensitive to disturbances, particularly dust deposition. As lichens and bryophytes were not identified to the species level prior to 2013, a comprehensive sampling program of bryophyte and lichen species was initiated in 2013. Where possible, lichens and bryophytes were identified to genus or species level, and percent cover was estimated following the same procedures used for vascular plants. In contrast to 2013, comprehensive sampling of trace non-vascular species (<1% cover) was not completed in 2016, 2021, and 2024, due to inconsistencies in sampling method replication and the potential for spurious results. In general, scientific nomenclature and common names followed naming conventions consistent with the NatureServe online database (NatureServe 2021).

Additional parameters that were recorded for each quadrat included the percent ground cover of:

- total vegetation cover
- total rock lichen
- total terrestrial (ground) lichen
- total moss species
- fungi

- bare ground
- rock
- litter
- animal pellets

Plot boundaries were also re-staked and marked, and photographs were taken of each plot and associated quadrats.

2.2.3 Data Analysis

Analysis of Dust Deposition

The relationship between dust deposition rates and differences in plant species abundance and composition between mine and reference PVP sites is assessed qualitatively because the locations of the dust deposition gauges are not directly correlated with PVP locations (Figure 2.2-1).

Previously (Golder 2014), dust deposition statistics were computed using arithmetic averages for the period of record (i.e., 2002 to 2013), and were divided into three plot type groups: ‘Mine’, ‘None’, and ‘Reference’. Analysis of dust deposition rates in 2024 follows the updates included in the 2016 and 2021 reports:

- Dust deposition rates are stratified into periods to reflect changes in mining activities over time at the Diavik Mine. The periods of activity are as follows:
  - 2002 to 2005: open pit mine construction and mining
  - 2006 to 2009: open pit mining and underground Mine construction
  - 2010 to 2013: underground mining
  - 2013 to 2017: underground and open pit (2017) mining
  - 2018 to 2021: open pit mining and underground mining
  - 2022 to 2024: open pit mining (to early 2023), underground mining, and progressive reclamation (i.e., placement of rock cover on both Processed Kimberlite Containment Facility [PKCF] and Waste Rock Storage Area – North Country Rock Pile [WRSA-NCRP]).
- Dust deposition rates at each station for the 2002 to 2024 period of record are best described using a log-normal distribution instead of a normal distribution, and the rates should be tabulated as geometric averages instead of arithmetic averages (Golder 2014, 2017).
- The dust gauges were categorized as ‘Mine’ and ‘Reference’ groups, following the classification used in Watkinson et al (2021). As comparisons between dust deposition rate and the vegetation surveys are qualitative, grouping the dust gauges based on categorical distance from the Mine footprint provides an appropriate statistical analysis of dust deposition data.

Dust deposition was compared among periods of differing Mine operations and among plot types (i.e., mine vs reference). A linear mixed effects model was used with periods of Mine operation and plot type as fixed effects and individual dust monitoring stations as a random effect. Interaction effects between periods of Mine operation and plot type were tested using Type III Sum of Squares. The assumption of normality was tested using Shapiro-Wilk test. Interaction effects and normality were evaluated using $\alpha = 0.05$. Post-hoc pairwise comparisons were completed using least squares means employing the Kenward-Rogers adjustment (Kenward & Rogers 1997). Dust deposition estimates can have a high degree of variation across years and plot types due to natural factors (e.g., varying levels of wind). As such, an alpha value of 0.05 could have been too conservative to detect a statistical effect (i.e., increased probability of Type II error). Therefore, main effects and post-hoc tests were evaluated using an alpha value of 0.10 as a precautionary approach to detecting statistical significance.

Analysis of Plant Species Abundance and Composition Data

Data analysis focused on evaluating trends and determining if there were statistical differences in vegetation abundance and composition between mine plots and reference plots among years. The variables measured included the following:

- change or difference in plant species abundance, as defined by percent species cover
- change or difference in plant species composition, as defined by plant species richness

Plant species data from 2001 and 2004 were reported in Golder (2011a), but the sampling design was biased towards mine plots and no numerical analysis could be completed. Similar to Golder (2017), the analysis here is focused on data from 2006, 2008, 2010, 2013, 2016, 2021, and 2024 to investigate potential trends in plant species cover and richness over time relative to mine and reference plots. Data were compiled and assessed for consistency in plant species names and checked for potential outliers that may represent misidentified species. Plant species that were identified to the genus level were retained for analysis, while all unidentified species were excluded from the analysis. Additionally, the two varieties of water sedge (*Carex aquatilis* var. *stans* and *Carex aquatilis* var. *aquatilis*) were grouped as one species, water sedge (*Carex aquatilis*), as it was not possible to separate the varieties on every plot.

Analyses were run separately for each of the three vegetation community types (i.e., Heath Tundra, Shrub, and Tussock-Hummock); an effective approach to reduce the within-group (i.e., mine or reference areas) variability associated with plant species cover estimates and increase the power to detect meaningful trends between mine and reference plots.

Repeated Measured Analysis of Variance

Vascular plant species abundance and richness (i.e., shrubs, forbs, graminoids, and total vascular plants [combined shrubs, forbs, and graminoids]) on mine and reference sites were analyzed from 2008 to 2024, by vegetation community type (i.e., Heath Tundra, Shrub, and Tussock-Hummock) using two-way repeated measures analysis of variance (RM-ANOVA). Statistical models were parameterized using either species richness or percent cover as the dependent variable, sampling year as the within-subject factor, plot type (either mine or reference) as the between-subjects factor, and plot ID to partition variance due to repeated measurements of vegetation plots. Prior to completing statistical analysis, data were tested for normality of residuals, sphericity, and factor interactions using R version 4.4.1 (R Core Team 2024) and the R package ‘rstatix’ v. 0.7.2 (Kassambara 2023). For assumptions testing, the level of statistical significance was set *a priori* at an alpha value of 0.05. If assumptions were violated, data transformations and sphericity corrections (i.e., Greenhouse-Geisser correction; Girden 1992) were applied, respectively as required. The Greenhouse-Geisser correction reduces the degrees of freedom of the *F*-distribution by multiplying the degrees of freedom by the estimate of (non)sphericity, as a lack of sphericity can overestimate the degrees of freedom (Abdi 2010). Corrected degrees of freedom often appear as fractions (i.e., decimals) instead of whole numbers.

Lichen and bryophyte data were also analyzed using RM-ANOVA to investigate differences in mean species cover of selected lichen and bryophyte groups (from 2008 to 2024, and total species richness (2013 and 2024) between mine and reference sites, stratified by vegetation community type. To account for variation in survey effort across years, particularly between 2013 and later survey years due to comprehensive sampling of trace species in 2013, trace bryophyte and lichen species with <1% cumulative cover across all plots and recorded in only one survey year were excluded from the species cover and richness analyses.

To meet the requirement of equal sample sizes for the repeated measures analyses, 2006 data were excluded as the number of plots (n=18) was different from 2008 to 2024 (n=30 per sampling event/cycle). However, the mean ± 90% confidence interval (± 90% CI) for 2006 data was calculated and plotted to provide visual comparisons.

All plant species cover data were transformed using the arcsine of the square root of the percent cover to satisfy the assumption of normality of residuals. In addition, it was assumed that parametric tests would be sufficiently robust to detect trends in the differences in plant species composition and abundance between mine plots and reference plots and across years (Zar 1999). A summary of mean percent cover of plant species and ground vegetation on mine and reference plots for 2024 is provided in Appendix B. Similar data for 2006 to 2021 are provided in Golder (2014, 2017, 2022b), and summary values for all years are presented in Appendix C.

The level of statistical significance for hypothesis testing was set *a priori* at an alpha value of 0.10. Species cover and richness estimates have a high degree of variation associated with natural factors and sampling methods (e.g., observer subjectivity). Therefore, an alpha value of 0.05 was believed to be too conservative and would have increased the likelihood of not detecting a statistical effect (i.e., increased the probability of Type II error). To detect potential effects from mining activity, it was decided that an increased probability of a Type I error was preferable to a Type II error (i.e., a precautionary approach was applied).

Because many plant species were present in trace amounts and there was considerable multicollinearity (i.e., correlation among two or more variables, in this case plant species cover) in the data, vascular plant species cover values were pooled to yield percent cover by vegetation layer (i.e., shrub, forb, and grass) rather than individual species. For each plot, the total percent cover of shrubs, forbs, and grasses were determined by summing the individual species covers associated with each vegetation layer. As vegetation layer and ground cover abundance data were generally non-normally distributed, data were transformed using the arcsine of the square root of the percent cover. Total plant species richness was also determined for each plot and was also calculated for each vegetation layer. Species richness is determined by counting the total number of species present in a plot and is independent of species percent cover (Krebs 1989).

Lichen and bryophyte (moss) data were also analyzed using a similar approach to that used for analyzing the vascular plant species data. However, as many lichen and moss species were present in trace amounts, only select groups of lichen and moss species were retained for subsequent analyses and were rolled up to the genus level by summing the individual species covers associated with each genus (Table 2.2-2). Lichen and moss species groups were then selected for analyses based on their respective presence and abundance on plots, such that only those species groups present on greater than ten plots and with greater than 1% cover on greater than or equal to three plots were retained for subsequent analyses. These criteria were chosen to allow the analysis to focus on those lichen and moss species groups that had sufficient presence and abundance on both mine and reference plots to allow comparisons to be made. Total lichen species richness and total moss species richness were also determined for each plot.

Table 2.2-2: Bryophyte and Lichen Species Groupings for Analysis

Group Code	Bryophyte Species[a] Scientific Name	Group Code	Lichen Species Scientific Name
AULSPP	*Aulacomnium palustre, Aulacomnium turgidum*	BRY SPP	*Bryocaulon divergens*
DICSPP	*Dicranum acutifolium, Dicranum elongatum, Dicranum discescens, Dicranum fuscescens, Dicranum groenlandicum, Dicranum scoparium, Dicranum spadiceum, Dicranum undulatum*	CETSPP	*Cetraria ericetorum, Cetraria islandica, Cetraria laevigata, Cetraria nivalis, Cetrariella delisei*[b]
LIVSPP	Liverwort species (1), Liverwort species (2), Liverwort species (3), *Ptilidium ciliare*	CLASPP	*Cladonia amaurocraea, Cladonia gracilis, Cladonia mitis, Cladonia rangiferina, Cladonia stellaris, Cladonia stygia, Cladonia* species 1, *Cladonia unicalis*
POLSPP	*Polytrichum commune, Polytrichum juniperinum, Polytrichum strictum*	FLASPP	*Flavocetraria cucullata, Flavocetraria nivalis*
SPHSPP	*Sphagnum angustifolium, Sphagnum balticum, Sphagnum capillifolium, Sphagnum compactum, Sphagnum fuscum, Sphagnum girgensohnii, Sphagnum lindbergii, Sphagnum magellanicum, Sphagnum majus, Sphagnum obtusum, Sphagnum rossowii, Sphagnum warnstorfii, Sphagnum* species (1)	MASSPP	*Masonhalea richardonsii*
		PELSPP	*Peltigera aphthosa, Peltigera* species 1, *Peltigera* species 2

(a) Numbers in brackets indicate the number of unidentified species.

(b) Grouped with Cetraria species to conform with previous groupings.

Multivariate Analyses

Multivariate analysis of 2024 data, specifically the ordination technique non-metric multidimensional scaling (NMDS), was used to further evaluate potential differences in vascular plant species composition between mine and reference sites. Ordination analyses were completed using R version 4.4.1 and the R package ‘vegan’ v.2.6-10 (R Core Team 2024; Oksanen et al. 2025). Non-metric multidimensional scaling is an ordination technique that assesses the similarity of plots in plant species space based on plant species composition data (Kruskal 1964; Prentice 1977; Kenkel & Orloci 1986). For this analysis, a chi-squared distance matrix was used to compare vegetation plots as this distance method operates on relative abundances and is relatively invariant given differences in sample size or in this case, differences in total cover at vegetation plots (Greenacre 2017). Vegetation community cover data were Wisconsin double standardized to remove effects of uneven total cover per plot prior to analysis (Cottam et al. 1978). Small distances between plots indicate that plots have greater similarities in plant community composition than plots that are positioned further apart, which indicates lower similarities. To reduce the variability in the data, only those plant species or groups (for bryophytes and lichens) that occurred on two or more plots were included in the analysis. This reduced the effect of uncommon species on the ordination.

To compliment the NMDS analysis, multivariate statistical tests using the Wisconsin double standardized chi-square distance matrix was used to compare vegetation plot species. A block two-way permutational multivariate analysis of variance (PERMANOVA) using distance matrices was used to evaluate differences in plant species cover between plot and community types. Permutations were restricted within each community type (i.e., blocked permutations). Assumptions, including multivariate homogeneity of variance and factor interactions, were tested using a permutational multivariate homogeneity of group variance (PERMDISP) test and Type III Sum of Squares (i.e., marginal SS) PERMANOVA, respectively. A total of 9,999 permutations were used for each test. If factor interactions were found not to be significant, then a reduced model with no interaction (i.e., Type II SS) was implemented. PERMANOVA and PERMDISP were implemented using R v. 4.4.1 with the R package 'vegan' v. 2.6-10 (Oksanen et al. 2025).

2.3 Results

2.3.1 Dust Deposition Rates

Dust deposition rates at mine dust gauges are significantly higher relative to reference dust gauges from 2002 to 2024 ($t=4.845$, $p<0.001$). Table 2.3-1 presents the arithmetic and geometric mean dust deposition rates from 2002 to 2024. As expected, due to the log-normal distribution of dust deposition data, average values using arithmetic means are greater than geometric mean values. Figure 2.3-1 depicts the geometric mean dust deposition rates at mine and reference dust gauges across periods of Mine activity spanning from 2002 to 2024.

Dust deposition rates at mine dust gauges during open pit mine construction and mining (2002 to 2005), and during open pit mining and underground Mine construction (2006 to 2009) were significantly higher than during the following periods of mining activity:

- underground mining phase during 2010 to 2013 ($t=5.513$, $p<0.001$; $t=5.433$, $p<0.001$, respectively)
- underground mining (with open pit starting in 2017) phase during 2014 to 2017 ($t=5.872$, $p<0.001$; $t=5.811$, $p<0.001$, respectively)
- open pit mining and underground mining phases during 2018 to 2021 ($t=3.745$, $p=0.003$; $t=3.579$, $p=0.005$, respectively)
- open pit mining (to 2023), underground mining, and progressive reclamation phases during 2022 to 2024 ($t=6.822$, $p<0.001$; $t=6.793$, $p<0.001$, respectively) (Figure 2.3-1)

Dust deposition rates averaged across all stations in the 2018 to 2021 time-period, which consisted of both underground and open pit mining, did not vary significantly from deposition rates during the underground mining phases (2010 to 2017) ($t=-2.135$, $p=0.209$). Meanwhile, a significant decrease in dust deposition was observed near the Mine during the most recent time-period (2021-2024) compared to the 2018 to 2021 time-period ($t=3.693$, $p=0.004$) (Figure 2.3-1). Specifically, dust deposition declined from a mean rate of 399 mg/dm^2/y (95% CI: 321 to 495 mg/dm^2/y) during the 2018 to 2021 time-period to a mean rate of 213 mg/dm^2/y (95% CI: 149 to 304 mg/dm^2/y) in 2022 to 2024. This significant decline in dust deposition in recent years is likely related to the decrease and completion of open pit mining at A21 by May 2023.

Dust deposition rates for PVP's located near the Mine have had an average deposition rate of 408 mg/dm^2/y (95% CI: 337 to 493 mg/dm^2/y) over the 2002 to 2024 period of record. These deposition rates are three to four times higher than a deposition rate of 102 mg/dm^2/y (95% CI: 88 to 119 mg/dm^2/y) observed at the reference stations over the same period.

Table 2.3-1: Summary Statistics of Dust Deposition Rates near the Diavik Mine, 2002 to 2024

Plot Type	Dust Gauge	Nearest PVP	Arithmetic Mean (mg/dm^2/y)	Geometric Mean (mg/dm^2/y)	Geometric 95% CI (mg/dm^2/y)
Mine	Dust 01	PVP01, PVP02, PVP03	485	444	370 – 444
	Dust 2A		520	418	313 – 559
	Dust 03	PVP07	1140	880	643 – 1200
	Dust 04	PVP04, PVP05, PVP06, PVP09, PVP20, PVP21, PVP22, PVP23	343	345	172 – 350
	Dust 06		469	340	234 – 492
	Dust 10	PVP10	357	254	158 – 409
	Dust 11		388	290	136 – 618
		Combined	**3702**	**2871**	**2026 – 4160**
Reference	Dust 05		127	118	99 – 140
	Dust 07		258	220	169 – 285
	Dust 08	PVP24, PVP31	189	164	128 – 210
	Dust 09	PVP17, PVP18, PVP19, PVP29, PVP30	124	100	72 – 139
	Dust 12		238	174	84 – 363
	Dust C1	PVP11, PVP12, PVP13, PVP26, PVP27, PVP28	80	68	52 – 88
	Dust C2	PVP14, PVP15, PVP16, PVP25	124	98	73 - 130
		Combined	**1140**	**942**	**677 – 1355**

PVP = permanent vegetation plot; mg/dm^2/y = milligrams per square metre per year; CI = confidence interval.

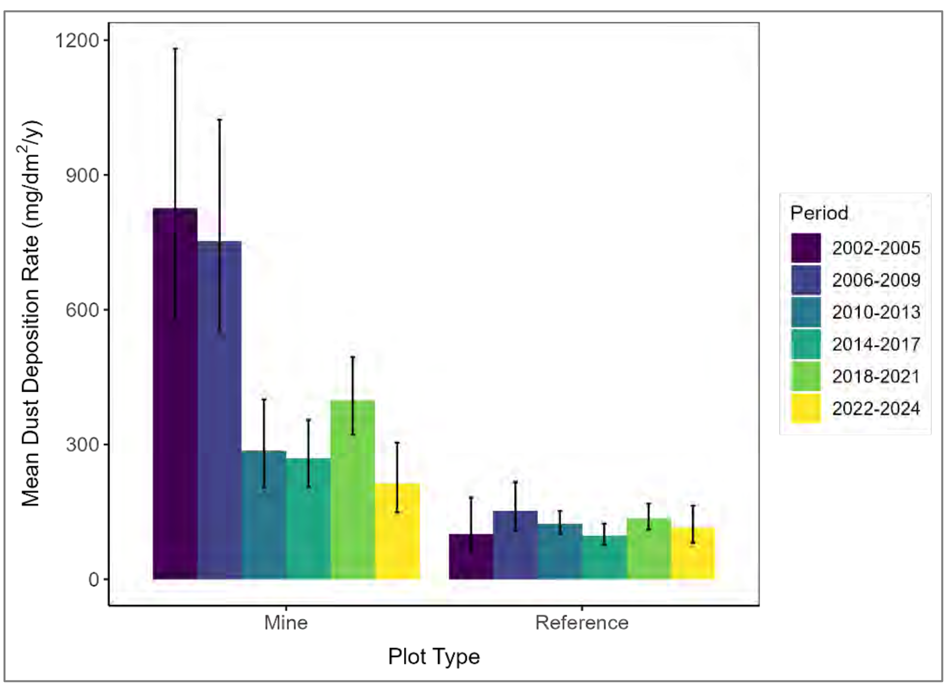


Figure 2.3-1: Geometric Mean Dust Deposition Rates (± 95% Confidence Interval) near the Diavik Mine during Discrete Time Periods, 2002-2024

2.3.2 Vascular Plant Species Cover and Richness

2.3.2.1 Mean Species Cover

As described in Section 2.2.3 Data Analysis, vascular plant species cover data were evaluated using RM-ANOVA to investigate differences in mean species cover between mine and reference sites and across survey years, while stratified by vegetation community type. The level of statistical significance for hypothesis testing was set *a priori* at an alpha value of 0.10.

Heath Tundra Vegetation Community

Mean total shrub cover was found to not differ significantly between mine and reference plots in the Heath Tundra community ($F_{1,8}$=2.800, p=0.138). However, shrub cover was significantly different among years ($F_{2.25,18.01}$=9.507, p=0.001), being greater in 2013, 2016, 2021, and 2024 as compared to 2008 and 2010 (Appendix C, Figure C-1), and appears to be increasing over time. There was no significant interaction between year and plot type ($F_{5,40}$=0.733, p=0.509).

Mean total forb cover for mine plots was significantly greater than reference plots ($F_{1,8}$=6.132, p=0.038; Appendix C, Figure C-2). Forb cover was also significantly different among years ($F_{1.60,12.81}$=4.924, p=0.032), with a general decrease in forb cover in 2021 and 2024 compared to previous years. There was a significant interaction between year and plot type ($F_{5,40}$=7.050, p=0.012), likely due to the low mean cover and variability of forb species at reference sites compared to mine sites as well as interannual variability in forb cover at mine sites.

Mean total graminoid cover was significantly greater at mine plots than at reference plots ($F_{1,8}$=4.258, p=0.073; Appendix C, Figure C-3). Graminoid cover was significantly different among years ($F_{1.31,10.52}$=3.503, p=0.082), being greater in 2021 compared to the other survey years. There was no significant interaction between year and plot type ($F_{5,40}$=0.34, p=0.631).

In the Heath Tundra community, mean total litter cover did not differ significantly between mine and reference plots ($F_{1,8}$=0.237, p=0.640). However, litter cover did significantly change among years ($F_{5,40}$=27.792, p<0.001), and was greater for mine plots in 2008 and 2010 relative to other sampling years (Appendix C, Figure C-4). The interaction between year and plot type was significant ($F_{5,40}$=4.427, p=0.003).

Shrub Vegetation Community

In the Shrub community, mean total shrub cover differed significantly between mine and reference plots ($F_{1,8}$=2.297, p=0.063) and among years ($F_{1.97,15.79}$=27.282, p<0.001). Similar to Heath Tundra, shrub cover was greater in 2013, 2016, 2021, and 2024 compared to previous survey years, as well as at mine plots compared to reference plots in recent years (Appendix C, Figure C-1). There was not a significant interaction between year and plot type ($FF_{5,40}$=2.297, p=0.134).

Mean total forb cover on mine plots in the Shrub community did not differ significantly from forb cover on reference plots ($F_{1,8}$=1.737, p=0.224; Appendix C, Figure C-2). Forb cover also did not differ significantly across years ($F_{1.57,12.55}$=0.967, p=0.386). There was a significant interaction between year and plot type ($F_{5,40}$=3.319, p=0.078).

Mean total graminoid cover for mine plots was significantly greater than reference plots ($F_{1,8}$=4.258, p=0.073; Appendix C, Figure C-3), and varied significantly among years ($F_{1.31,10.52}$=3.503, p=0.082). Graminoid cover generally increased in mine plots over time, while graminoid cover in reference plots remained stable or decline until 2021 and 2024 where greater cover was observed. There was a significant interaction between year and plot type due to this trend ($F_{5,40}$=0.34, p=0.089).

Mean total litter cover did not differ significantly between mine and reference plots in the Shrub community ($F_{1,8}$=0.237, p=0.640). However, litter cover showed significant year-to-year variability ($F_{5,40}$=27.79, p<0.001; Appendix C, Figure C-4). There was a significant interaction between year and plot type ($F_{5,40}$=4.427, p=0.003).

Tussock-Hummock Vegetation Community

Similar to the Heath Tundra and Shrub communities, mean total shrub cover did not differ significantly between mine and reference plots in the Tussock-Hummock community ($F_{1,8}$=0.097, p=0.763; Appendix C, Figure C-1), but was statistically greater in 2013, 2016, 2021, and 2024 than previous years ($F_{1.43,11.44}$=11.452, p=0.003). Shrub cover appears to have increased over time, with mean cover at both reference and mine plots being greater in 2021 and 2024 than previous years, having peaked in 2021. There was no significant interaction between year and plot type ($F_{5,40}$=0.186, p=0.760).

Mean total forb cover did not differ significantly between plot type ($F_{1,8}$=1.342, p=0.280) but did differ significantly among years ($F_{1.64,12.93}$=13.488, p=0.010). There was no significant interaction between year and plot type ($F_{5,40}$=0.439, p=0.613) (Appendix C, Figure C-2).

Mean total graminoid cover did not differ significantly between mine and reference plots ($F_{1,8}$=0.054, p=0.822; Appendix C, Figure C-3). Graminoid cover varied significantly among years in the Tussock-Hummock community ($F_{1.56,12.510}$=3.460, p=0.072) and is likely related to interannual differences in graminoid cover at vegetation plots that did not follow a clear trend over time. There was no significant interaction between year and plot type ($F_{5,40}$=0.869, p=0.481).

Similar to Heath Tundra and Shrub communities, mean total litter cover did not differ significantly between mine and reference plots in the Tussock-Hummock community ($F_{1,8}$=2.850, p=0.130; Appendix C, Figure C-4), and varied significantly among years ($F_{2.58,20.62}$=4.505, p=0.017). A significant interaction between year and plot type was present ($F_{5,40}$=2.690, p=0.080). This is likely attributable to the variable direction of differences between reference and mine plot litter cover in past sampling years where litter cover was relatively steady in reference plots but declined in 2024 and litter cover typically decreased in mine plots over time.

2.3.2.2 Mean Species Richness

As described in Section 2.2.3 Data Analysis, vascular plant species richness data were evaluated using RM-ANOVA to investigate differences in mean species richness between mine and reference sites and across survey years, while stratified by vegetation community type. The level of statistical significance for hypothesis testing was set *a priori* at an alpha value of 0.10.

Heath Tundra Vegetation Community

Mean total vascular plant species richness in mine plots was significantly higher than in reference plots in the Heath Tundra community ($F_{1,8}$=5.395, p=0.049; Appendix D, Figure D-1). However, vascular plant species richness did not differ significantly among years ($F_{5,40}$=0.742, p=0.597). There was also no significant interaction between year and plot type ($F_{5,40}$=2.03, p=0.095).

Mean total shrub species richness did not differ significantly between mine and reference plots ($F_{1,8}$=0.113, p=0.746). Shrub species richness differed significantly among years, with a slight increase in number of species observed in 2024 relative to previous survey years ($F_{5,40}$=4.772, p=0.002; Appendix D, Figure D-2). There was no significant interaction between year and plot type ($F_{5,40}$=0.53, p=0.752).

In the Heath Tundra community, mean total forb species richness in mine plots was significantly higher than in reference plots ($F_{1,8}$=6.203, *p*=0.037; Appendix D, Figure D-3) and varied significantly among years ($F_{5,40}$=2.403, *p*=0.054). There was no significant interaction between year and plot type ($F_{5,40}$= 1.156, *p*=0.348).

Mean total graminoid species richness in mine plots was significantly higher than in reference plots ($F_{1,8}$=19.38, *p*=0.002) and showed some interannual variation in the Heath Tundra community ($F_{5,40}$=5.18, *p*<0.001; Appendix D, Figure D-4). There was no significant interaction between year and plot type ($F_{5,40}$=1.602, *p*=0.182).

Shrub Vegetation Community

In the Shrub community, mean total vascular plant species richness did not differ significantly between plot type ($F_{1,7}$=0.762, *p*=0.412) or between years ($F_{5,35}$=0.695, *p*=0.630). There was a significant interaction between year and plot type with total vascular plant species richness declining slightly over time but remaining relatively steady and then increasing in 2024 at reference plots ($F_{5,35}$=2.051, *p*=0.095; Appendix D, Figure D-1).

Mean total shrub species richness did not differ significantly between mine and reference plots ($F_{1,7}$=0.028, *p*=0.871) or between years in the Shrub community ($F_{5,35}$=1.638, *p*=0.176; Appendix D, Figure D-2). There was no significant interaction between year and plot type ($F_{5,35}$=1.345, *p*=0.269).

Mean total forb species richness did not differ significantly between plot type ($F_{1,7}$= 0.110, *p*=0.749) or among years ($F_{5,35}$=0.742, *p*=0.598) in the Shrub community. In addition, there was no significant interaction between year and plot type ($F_{5,35}$=1.305, *p*=0.284; Appendix D, Figure D-3).

Similar to the Heath Tundra community, mean total graminoid species richness in mine plots was significantly higher than in reference plots in the Shrub community ($F_{1,7}$=8.102, *p*=0.025; Appendix D, Figure D-4). However, species richness did not differ significantly among years ($F_{5,35}$=0.599, *p*=0.701). There was no significant interaction between year and plot type ($F_{5,35}$=0.767, *p*=0.580).

Tussock-Hummock Vegetation Community

Mean total vascular plant species richness did not differ significantly between mine and reference plots in the Tussock-Hummock community ($F_{1,8}$=0.109, *p*=0.749; Appendix D, Figure D-1) or between years ($F_{2.39,19.02}$=1.102, *p*=0.362). There was no significant interaction between year and plot type ($F_{5,40}$=0.273, *p*=0.800).

Mean total shrub species richness did not differ significantly between mine and reference plots in the Tussock-Hummock community ($F_{1,8}$=1.018, *p*=0.343; Appendix D, Figure D-2). Shrub species richness differed significantly among years, with a slight increase in species richness in 2021 and 2024 compared to previous years ($F_{2.28,18.24}$= 4.595, *p*=0.021). There was no significant interaction between year and plot type ($F_{5,40}$=0.472, *p*=0.655).

In the Tussock-Hummock community, mean total forb species richness did not differ significantly between mine and reference plots ($F_{1,8}$=0.886, *p*=0.374). However, forb species richness was statistically higher during 2010 to 2016, particularly in reference plots, and lower during 2008, 2021, and 2024 at both reference and mine plots ($F_{5,40}$=10.01, *p*=0.003; Appendix D, Figure D-3). There was no significant interaction between year and plot type ($F_{5,40}$=0.622, *p*=0.684).

Mean total graminoid species richness did not differ significantly between plot type ($F_{1,8}$=0.304, *p*=0.597) or across years ($F_{2.24,17.94}$=1.142, *p*=0.345). There was no significant interaction between year and plot type ($F_{5,40}$=1.242, *p*=0.316; Appendix D, Figure D-4).

2.3.3 Lichen and Moss Species Cover and Richness

As described in Section 2.2.3 Data Analysis, lichen and moss species group cover and richness data were evaluated using RM-ANOVA to investigate differences in mean species group cover and richness between mine and reference sites and across survey years, while stratified by vegetation community type. The level of statistical significance for hypothesis testing was set *a priori* at an alpha value of 0.10.

Heath Tundra Vegetation Community

In the Heath Tundra community, mean total lichen cover differed significantly between mine plots and reference plots ($F_{1,8}$=11.080, p=0.010; Appendix C, Figure C-5), with greater lichen cover observed at reference plots compared to mine plots. Lichen cover also differed significantly among years ($F_{1.86,14.89}$=7.309, p=0.007), with greatest lichen cover observed from 2008 to 2016. There was no significant interaction between year and plot type ($F_{4,32}$=1.408, p=0.274).

Mean total lichen species richness did not differ significantly between mine and reference plots ($F_{1,8}$=0.199, p=0.667). Lichen species richness was significantly different among years ($F_{3,24}$=26.946, p<0.001; Appendix D, Figure D-5), with the greatest species richness observed in 2013 but remaining relatively steady in following survey years (Figure D-5). There was no significant interaction between year and plot type ($F_{3,24}$=1.88, p=0.160).

Mean total bryophyte cover was significantly higher in mine plots than reference plots in the Heath Tundra community ($F_{1,8}$=8.047, p=0.022; Appendix C, Figure C-6). Bryophyte cover also differed significantly among years ($F_{1.43,11.43}$=14.826, p=0.001), showing an increase at mine and reference plots in 2021 but remaining relatively steady across other survey years. There was not a significant interaction between year and plot type ($F_{4,28}$=0.598, p=0.521).

Mean total bryophyte species richness was significantly higher in mine plots than reference plots ($F_{1,8}$=5.222, p=0.052). Bryophyte species richness did not vary significantly among years in the Heath Tundra community ($F_{3,24}$=1.648, p=0.205; Appendix D, Figure D-6). There was no significant interaction between year and plot type ($F_{3,24}$=1.648, p=0.205).

Shrub Vegetation Community

Similar to the Health Tundra community, mean total lichen cover in the Shrub community was significantly higher in reference plots compared to mine plots ($F_{1,8}$=3.581, p=0.095; Appendix C, Figure C-5). Mean total lichen cover also significantly differed among years ($F_{1.52,12.14}$=8.689, p=0.007), with greatest lichen cover observed in 2021. There was no significant interaction between year and plot type ($F_{4,32}$=0.308, p=0.682).

Like the Heath Tundra community, mean total lichen species richness did not differ significantly between mine and reference plots ($F_{1,7}$=0.866, p=0.383) but was significantly higher in 2013 than in following survey years ($F_{3,21}$=20.508, p<0.001; Appendix D, Figure D-5). There was no significant interaction between year and plot type ($F_{3,21}$=0.973, p=0.424).

Mean total bryophyte cover did not differ significantly between plot type ($F_{1,8}$=0.026, p=0.875) or among years ($F_{1.45,11.60}$=1.073, p=0.351). There was no significant interaction between year and plot type ($F_{4,32}$=1.255, p=0.308; Appendix C, Figure C-6).

Mean total bryophyte species richness in the Shrub community did not differ significantly between mine and reference plots ($F_{1,8}$=0.024, p=0.882; Appendix D, Figure D-6) or across years ($F_{3,21}$=2.227, p=0.115). There was no significant interaction between year and plot type ($F_{3,21}$=2.227, p=0.115).

Tussock-Hummock Vegetation Community

Unlike the Heath Tundra and Shrub communities, mean total lichen cover in the Tussock-Hummock community did not differ significantly between reference plots compared to mine plots ($F_{1,8}$=0.512, p=0.494). However, mean lichen cover in the Tussock-Hummock community varied significantly among years ($F_{4,32}$=5.217, p=0.002). There was a significant interaction between year and plot type due to this trend ($F_{4,32}$=2.771, p=0.044; Appendix C, Figure C-5), with lichen cover increasing in mine plots and remaining relatively stable in reference plots across study years. The interactions indicate that there was an apparent decrease on mine plots in 2024 to pre-2021 levels.

Similar to the Heath Tundra and Shrub communities, lichen species richness in the Tussock-Hummock community did not vary between mine and reference plots ($F_{1,8}$=0.869, p=0.378) but was significantly higher at mine and reference plots in 2013 than following years ($F_{3,24}$=10.026, p<0.001; Appendix D, Figure D-5). There was no significant interaction between year and plot type ($F_{3,24}$=0.468, p=0.707).

Mean total bryophyte cover did not differ significantly between plot type ($F_{1,8}$=0.033, p=0.860), but did vary among years ($F_{1.61,12.89}$=3.79, p=0.058). There was no significant interaction between year and plot type ($F_{4,32}$=1.319, p=0.284; Appendix C, Figure C-6).

Like the Shrub community, mean total bryophyte species richness did not differ significantly between mine and reference plots ($F_{1,8}$=0.263, p=0.621) but did differ significantly among sampling years ($F_{3,24}$=13.897, p<0.001). There was a significant interaction between mine and reference plots across years ($F_{3,24}$=4.483, p=0.012; Appendix D, Figure D-6).

2.3.4 Distribution of Vegetation Communities and Mine and Reference Sites Based on Plant Species Composition, 2024

Non-metric multidimensional scaling (NMDS) was used to plot and visually assess the ecological similarity between 2024 mine and reference plots for each of the three vegetation community types based on species composition data. Small distances between plots indicate the plots have greater similarities in plant community composition than plots that are positioned further apart. Ordination scores for vegetation species/groups were overlaid onto the plot ordination using symbols corresponding to plot type and habitat it was observed within to depict the relative strengths of the relationships between plots and vegetation variables.

The NMDS ordination was highly representative of vegetation assemblages at PVPs (R^2=0.988; Figure 2.3-2). The overlap of each convex hull (i.e., the polygons that encompass all PVPs within each plot and community type) visible in ordination space indicates that vegetation cover is similar within vegetation communities and plot type (i.e., mine or reference). There was overlap among convex hulls for all plot and vegetation community types indicating similarities in vegetation cover. Although the convex hulls for mine and reference plot types overlapped in the Tussock-Hummock community, there is an apparent difference in species cover type between mine and reference plots as the convex hulls for each plot type span opposite ends of axis 1 and have the least amount of overlap out of the three vegetation communities (Figure 2.3-2). In contrast, convex hulls for the Shrub community had considerable overlap between plot types, with the reference plots completely overlapped by the mine plots indicating that the plots in Shrub community have similar plant species cover. Similar to the Shrub community, PVPs in the Heath-Tundra community overlapped considerably in ordination space, with the reference plots falling entirely within the mine plots.

Results of the PERMANOVA indicated both differences and similarities in plant species cover. Assumptions testing indicated multivariate homogeneity of variance among groups (PERMDISP: $F_{5,24}$=0.7739, p=0.590) and no significant interaction between plot type and community type ($F_{5,24}$=1.0383, p=0.3683). Two-way PERMANOVA test results indicate plant species cover similarity differed significantly by plot type ($F_{2,26}$=1.356, p=0.052; $R^2_{partial}$=0.161) and by community type ($F_{2,26}$= 1.3555, p=0.0542; $R^2_{partial}$=0.042), which together explained 21% of the observed variation in plant species cover. These results indicate that plant species cover is significantly different between mine and reference plots and among vegetation community types.

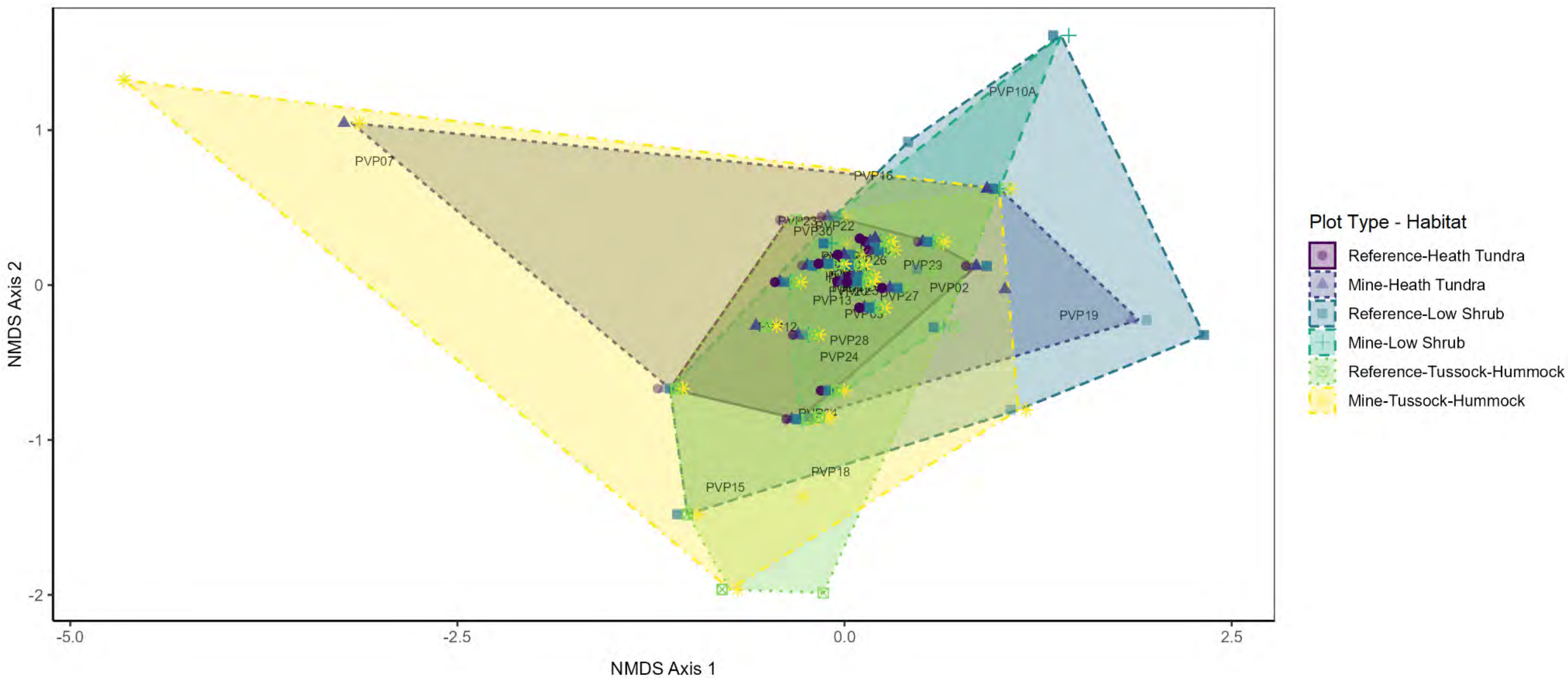


Figure 2.3-2: Non-metric Multidimensional Scaling Analysis of 2024 Plots in Plant Species Space

2.4 Discussion

The composition and dynamics of plant communities in Arctic ecosystems are inherently variable, with seasonal differences in precipitation, temperature, and nutrients, as well as herbivory, interspecific competition, and successional processes (Barbour et al. 1987). This natural variability poses challenges in distinguishing changes in plant species abundance and composition that may occur due to mining activities from those due to natural factors or field sampling bias over time. Thus, long-term monitoring is fundamental to identifying changes to ecosystems, particularly in Arctic environments where changes may accumulate slowly over time.

Typically, a before-after control-impact (BACI) design that includes the monitoring of control and impacted sites before and after the establishment of a disturbance is used to account for some of this variability (Smith 2006). A BACI design was not used in this study, as permanent detailed vegetation sampling plots (i.e., PVPs) were established in 2001, one year after the construction of the Mine. However, the vegetation monitoring program is robust enough to detect statistical changes in tundra vegetation composition and abundance. The RM-ANOVA (Zar 1999) used in this vegetation monitoring program allows for the statistical control of variation between sampling sites (PVPs or between subjects) that may be due to local site conditions prior to and after mining, and other factors such as dust and climate. The method examines the variation within each sampling site through time (within subject variation), which provides a robust test of the influence of annual and cumulative dust deposition from Mine-related activities and concurrent changes in natural factors. The results of the 2024 surveys were generally consistent with the patterns observed in previous monitoring reports (Golder 2011a, 2014, 2017; WSP Golder 2022b) and a recently published study by Watkinson et al. (2021).

For the Heath Tundra and Tussock-Hummock vegetation communities, there was no statistical difference in total shrub cover between mine and reference sites. However, the total shrub cover differed significantly between mine and reference plots in the Shrub communities. Additionally, shrub cover on mine and reference plots was greater in 2013, 2016, 2021, and 2024 relative to 2008 and 2010. The results show an increasing trend in total shrub cover in Heath Tundra communities over time, while the cover in the Tussock-Hummock communities appears to be declining from a high in 2021. Total cover in the Shrub communities increased from 2021. In the Heath Tundra and Shrub vegetation communities, graminoid covers on mine plots were significantly greater than on reference plots. While the forb cover in the Heath Tundra communities was also significantly greater on mine plots, there was no significant difference between mine and reference plots observed for the Shrub or Tussock-Hummock communities. Forb cover in the Shrub and Tussock-Hummock appears to be declining over time, likely due to the increasing shrub or graminoid cover in the Tussock-Hummock and Shrub communities, respectively. The 2024 results support a hypothesis posed by Watkinson et al. (2021) that increasing shrub cover over time may be linked to climate change. The observed increase in shrub cover across both mine and reference plots, regardless of vegetation community, suggests that climate-related factors could have an enhancing effect on shrub habitat quality and their growth. Warmer temperatures could contribute to extending the growing season or altering soil conditions in ways that favour shrub expansion, together with other factors such as shifting precipitation patterns or reduced snow cover.

Litter cover exhibited similar and opposite trends among vegetation communities with respect to changes between mine and reference plots and across time. In all three vegetation communities, litter cover was not statistically different between mine and reference sites but appeared greater within mine plots in 2008 and 2010 (Appendix C, Figure C-4). Litter cover was significantly greater in 2008 and 2010 than in 2006, 2013, 2016, 2021, and 2024 on both mine and reference plots in the Heath Tundra and Shrub communities. For the Tussock-Hummock community, litter cover was not statistically different between mine and reference sites but varied significantly among years. The litter cover in reference plots was relatively steady but decreased in mine plots over time. The reasons for greater litter cover in 2008 and 2010 are uncertain. Deposition of dust onto vegetation is known to cause physiological and chemical responses in plant species, ranging from subtle changes in plant productivity (e.g., reduced photosynthesis or carbon uptake) to chlorosis or necrosis of the leaves that result in partial or complete defoliation of the plant (Spatt and Miller 1981). The higher rates of dust deposition observed during open pit mining (i.e., 2002 to 2009) may be partly responsible for greater litter cover on mine plots in 2008 and 2010. This does not, however, explain the larger values of litter cover on reference plots during the same sampling periods. Temporal changes in litter cover may be also related to temperature and/or moisture patterns, which can affect leaf retention in shrubs or senescence in graminoids.

Total lichen cover was significantly lower on mine plots than on reference plots for the Heath Tundra and Shrub communities. In the Tussock-Hummock community, there was no significant difference between the mine and reference plots, but lichen cover in mine plots increased over time before declining in 2024 (Appendix C, Figure C-5). Bryophyte cover was significantly greater on mine plots in the Heath Tundra community, but in the Shrub and Tussock-Hummock communities, mine and reference plots were similar. Lichen cover varied significantly over time in all three communities. In the Heath Tundra community, bryophyte cover was significantly greater in 2021 at mine plots while staying consistent at the reference plots compared with previous sampling years. Bryophyte cover in the Tussock-Hummock communities varied among years.

Vascular plant species richness among vegetation communities was primarily composed of shrub species; forb and graminoid taxa each contained 0 to 5 and 0 to 9 species, respectively, depending on the community. Total vascular plant species richness was significantly higher in the Heath Tundra community on mine plots than reference plots but did not differ significantly between plot types in the other two communities. Shrub species richness was not statistically different between mine and reference plots for any vegetation community. Forb species richness was not statistically different in the Shrub or Tussock-Hummock communities but was statistically greater at mine plots in the Heath Tundra community. Graminoid species richness was generally low in all vegetation communities and showed little difference between mine and reference plots in the Tussock-Hummock community but was significantly higher in the Heath Tundra and Shrub mine plots.

Similar to vascular plant cover, species richness exhibited some degree of variation over time among the different vegetation communities. In the Heath Tundra and Tussock-Hummock communities, shrub species richness on mine and reference plots showed temporally increasing trends and no significant annual changes were detected in the Shrub community. In contrast, forb species richness in Tussock-Hummock was significantly lower during 2024 following the decreasing trend from previous sampling years, while no significant changes occurred in the other communities. No significant interannual variation was observed in forb species richness in the Shrub community. Heath Tundra and Shrub communities were displaying a decrease in richness from 2010 to 2024.

Lichen species richness was similar in mine and reference plots for all vegetation communities but was apparently higher in 2013 on both plot types compared to the 2016 to 2024 survey years, where richness remained relatively steady. Greater species richness in lichens observed in 2013 on both mine and reference plots was likely associated with more comprehensive sampling of trace species in 2013 that was reduced in 2016, 2021, and 2024 to control for the increased variability associated with cryptic/uncommon species and observer bias (Section 2.2.2). Measures were taken to control for discrepancies in sampling effort among years by excluding trace lichen and bryophyte records that had a cumulative cover of less than 1% recorded during only one survey year. However, despite best efforts, confounding effects from differences in sampling effort across years could not be completely removed and likely contributed to this observed decline in lichen species richness since 2013. Unlike lichen richness, bryophyte richness did not exhibit a pattern of significantly greater richness in 2013 compared to following survey years, likely because sampling effort for trace bryophyte species did not vary across survey years as much as it did for sampling of trace lichen species. No significant temporal changes in bryophyte richness were detected in the Heath Tundra or Shrub vegetation communities, while bryophyte richness decreased significantly in 2024 compared to previous years in the Tussock-Hummock community.

The results suggest that the Mine is likely having some local-scale effects on plant species abundance and composition. Most analyses showed that mine plots had greater vascular plant species cover and richness than reference plots, except for the shrub communities where the richness was greater at the reference plots, but no statistically significant difference was detected. Heath Tundra communities displayed significantly higher bryophyte species richness in mine plots than in reference plots, while bryophyte species richness in the Shrub and Tussock-Hummock communities did not differ significantly between mine and reference plots. Although lichen cover was lower on mine plots than reference plots, lichen and bryophyte species richness were not adversely affected on mine plots relative to reference plots. It is known that many lichen and moss species are especially sensitive to the effects of dust deposition, as they derive some of their moisture and nutrient requirements from the atmosphere and are vulnerable to the smothering effects of dust (Farmer 1993). Reduced lichen cover on mine plots may be associated with a greater potential for vascular plant species to become established, which may contribute to the greater cover and richness of some vascular plant species on mine plots in some vegetation communities. Similar results have been reported from other studies investigating the effects of road dust on plant species composition (Forbes 1995; Auerbach et al. 1997; Meyers-Smith et al. 2006), where one of the major responses of vegetation to dust was a decrease in lichen species and a corresponding increase in graminoids. Chen et al. (2017) detected a reduction in lichen cover within 1 km of the Misery Road, which corresponded to dust deposition measured on dwarf birch leaves. However, the results for the Mine have detected no strong, adverse temporal patterns in plant species abundance and composition. For example, when lichen and bryophyte cover were found to vary significantly over time at mine plots, similar variation was observed at reference plots, suggesting drivers other than Mine-related effects.

The vegetation (and wildlife) monitoring programs provide data for testing the predictions associated with Key Questions from the EER (Table 1.2-1; Section 1.2) (DDMI 1998). For Key Question 1, the current level of disturbance from the Mine footprint (11.61 km^2) is less than predicted in the EER (data from Wildlife Monitoring Program Report). No rare or endangered species or communities have been lost due to the Mine, which supports the prediction related to Key Question 3. The vegetation community structure, which includes plant species abundance and richness, has likely been altered due to dust deposition from the Mine, which supports the prediction for Key Question 2. Dust deposition has declined significantly to the lowest mean rates since the project construction and is likely attributed to the decline and completion of open pit mining at A21. Dust produced in 2022-2024 was most associated with open pit mining at A21 (until May 2023), underground mining at A154 and A21 underground, and progressive reclamation of WRSA-NCRP and the PKCF. Mean dust deposition from 2022 to 2024 was less than two times greater in mine plots than in the reference plots (Figure 2.3-1).

Effects from the Mine may have also resulted in some changes to plant community and species level diversity. In the Heath Tundra vegetation community, total vascular plant species richness at mine plots was found to be significantly higher by about 3% than in reference plots for total vascular plants. This was driven by a slightly higher average richness of 1% in Health Tundra mine plots for forbs and graminoids. In contrast, total vascular species richness in the Shrub and Tussock-Hummock did not vary significantly amongst mine and reference plots, indicating similar species richness amongst plot types. Similarly, bryophyte species richness at Health Tundra mine plots was also found to be significantly higher by an average of 2%, but did not differ significantly between plot types in the Shrub and Tussock-Hummock vegetation communities. Richness did not vary significantly between plot types for shrubs or lichen in any of the three vegetation communities. In addition, multivariate analyses on species composition data indicated no statistical difference between mine and reference plots. These findings contrast Key Question 4, which predicts a decrease of 44% in species richness (Table 1.2-2).

Overall, the results of the analysis of dust deposition and vegetation data indicate differences in plant species abundance and composition in mine and reference plots over time for some vegetation types and vegetation communities, some of which are likely due to Mine-related effects, such as dust deposition. Natural variation in site conditions among PVPs prior to and after mining, annual variation in climate, foraging by caribou, surveyor variability, and difficulty in detecting cryptic species are also likely to have influenced changes in plant species cover and richness. However, the direction and magnitude of the differences between mine and reference sites have remained largely consistent over the past 15 years, and with limited and small adverse effects. Importantly, the data show no trajectory towards a divergence in the previous and current observed temporal and spatial patterns of plant species abundance and composition. The 2024 monitoring program represented the final round of monitoring during the operational phase of the Mine, as it transitions into the closure phase in 2026.

2.5 Recommendations for Vegetation Monitoring

The following recommendations are proposed for future vegetation monitoring:

- Continue to calculate average dust deposition rates using geometric means.
- Continue to monitor the vegetation composition to confirm that similar patterns are observed during the closure and post-closure periods.
- Detailed future closure monitoring recommendations will be outlined in the Final Closure and Reclamation Plan.

3 LICHEN MONITORING PROGRAM

3.1 Study Objectives

The objective of the 2024 lichen sampling program was to collect lichen near and far from the Mine for analysis of metals, metalloids, and non-metals[4] to determine if dust generated from mining activities is causing a measurable increase in concentrations of metals in lichen near the Mine, and if metals concentrations in lichen have changed over time. Lichens were chosen because they are estimated to account for 87% to 90% of the diet of 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 health risks to caribou.

Soil samples were also collected at each lichen sampling location and were archived for possible future analysis if the results of the lichen chemistry indicated elevated metals concentrations relative to previous sampling events. The purpose of the soil sampling program was to incorporate exposure from inadvertent ingestion of soil by caribou while grazing on lichen.

[4] Henceforth, metals, metalloids (e.g., arsenic), and non-metals (e.g., selenium) will be referred to as metals.

3.2 Study Area

The study design includes three primary sampling zones: near-field (NF), far-field (FF), and far-far-field (FFF; Table 3.2-1). The first zone is the near-field area surrounding the Mine. The original 20 stations in this near-field area were selected in 2010 and are distributed 0 to 6 km from the Mine (Figure 3.2-1). Nine of these stations are located near long-term dustfall monitoring gauges (Golder 2011b). In 2024, station NF-19 was not sampled due to Mine footprint development over the past three years that caused the station to be buried under a waste rock stockpile.

The second zone is a far-field area, which consists of twenty-four stations (Figure 3.2-2). Of these 24 stations, 20 have been sampled since 2010 and are located within a concentric area 30 to 40 km from the Mine site. The initial 20 stations were randomly selected[5]. Another station located just outside of this area to the east was sampled in 2016 and 2021 (i.e., FF-25)[6]. Three additional stations were identified as important caribou habitat by the Elders in 2013 (Tłı̨chǫ Government 2013). The three stations selected by the Elders were located between the near-field and far-field areas at 14.0 to 20.6 km from the Mine; for this report, these are considered to be within the far-field area. In the study area, winds are generally omnidirectional with east being a commonly dominant direction. Between 2021 and 2024 dominant wind directions were northwest, southeast, and east (WSP 2022), east (WSP 2023), east (WSP 2024), east and southwest (WSP 2025).

Three stations were sampled in 2024 in a far-far-field area approximately 100 km from the Mine site (Figure 3.2-3). One of these stations was also sampled in 2016 (i.e., FFF-3). Two of the three stations were moved from their 2016 locations because they were located in Nunavut, although just on the other side of the Northwest Territories-Nunavut border. These stations were moved slightly in 2021 to be within the Northwest Territories. Data collected from these stations were used to provide additional context for regional dust deposition rates and to address concerns from community members.

Table 3.2-1: Lichen and Soil Sampling Locations, 2024

Site	Zone	Easting	Northing	Distance to Mine (km)
NF-1	Near-field	535098	7153541	0.4
NF-2	Near-field	532121	7153671	1.6
NF-3	Near-field	532164	7152700	2.4
NF-4	Near-field	530679	7152296	3.5
NF-5	Near-field	530241	7150395	5.4
NF-6	Near-field	533797	7149996	4.2
NF-7	Near-field	534884	7150837	3.5
NF-8	Near-field	532176	7150633	4.0
NF-9	Near-field	538547	7151561	5.2
NF-10	Near-field	534052	7153980	0.3
NF-11	Near-field	535678	7151334	3.1
NF-12	Near-field	535028	7151876	2.7
NF-13	Near-field	531403	7152131	3.4

[5] In 2010, there were also four stations located in the northwest quadrant of the concentric 30 to 40 km area. These stations have not been sampled since 2013 due to the influence of Arctic Canadian Diamond Company Ltd.'s (formerly BHP Billiton and Dominion Diamond Ekati Corporation) Ekati mine on those stations.

[6] In 2013, FF-25 was located in south of the far-field area; this station was accidentally moved to a location east of the far-field area in 2016 due to a field technician error.

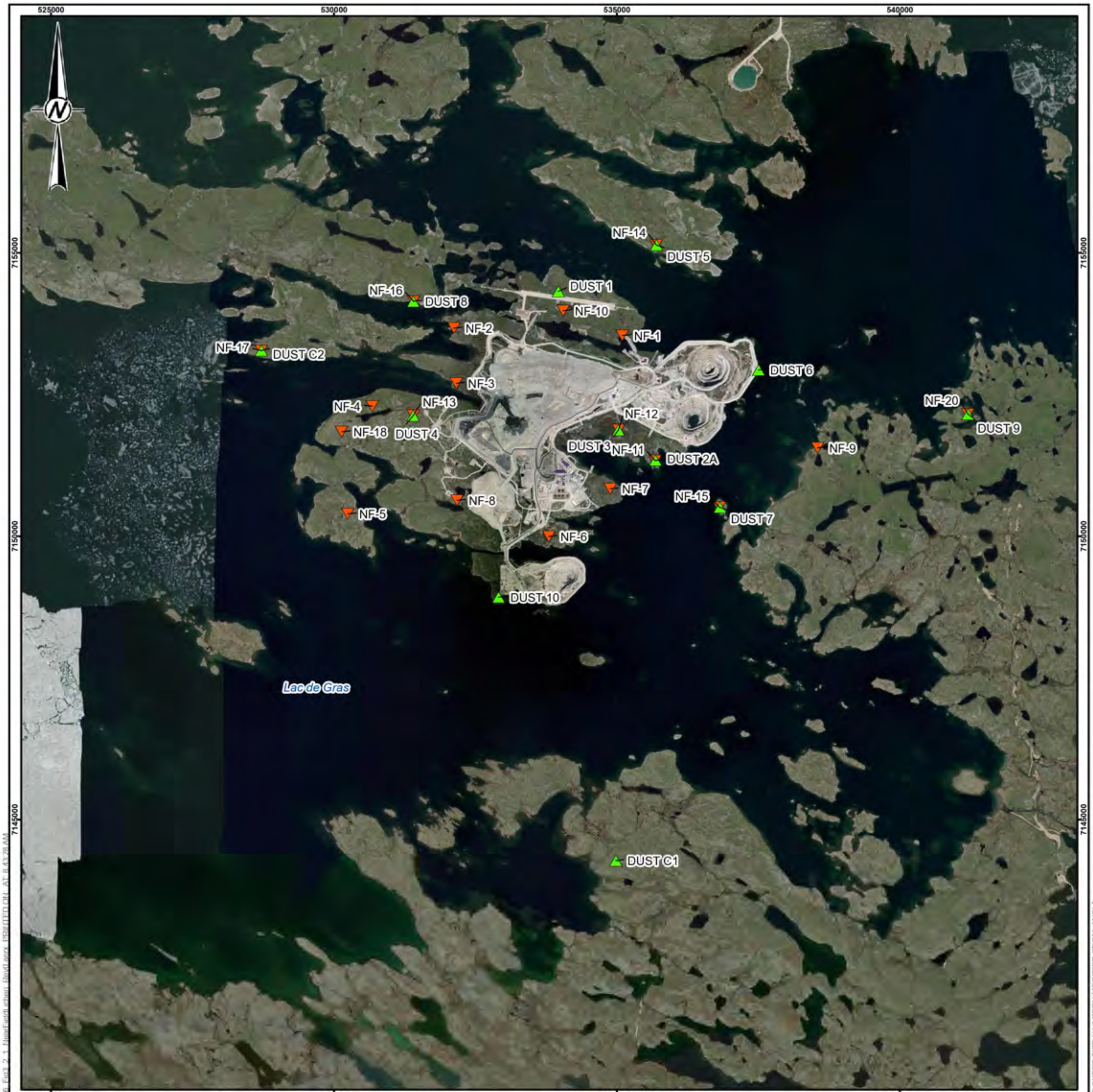
Table 3.2-1: Lichen and Soil Sampling Locations, 2024

Site	Zone	Easting	Northing	Distance to Mine (km)
NF-14	Near-field	535697	7155142	1.9
NF-15	Near-field	536812	7150511	4.5
NF-16	Near-field	531407	7154144	2.7
NF-17	Near-field	528715	7153275	5.5
NF-18	Near-field	530139	7151843	4.5
NF-20[(a)]	Near-field	541203	7152159	7.3
FF-1	Far-field	552068	7186646	37.2
FF-2	Far-field	560186	7168321	29.4
FF-3	Far-field	536421	7191280	32.4
FF-5	Far-field	565729	7146692	32.5
FF-7	Far-field	563209	7163757	30.4
FF-8	Far-field	569086	7137830	38.6
FF-9	Far-field	558940	7125075	38.3
FF-10	Far-field	543933	7121624	34.0
FF-11	Far-field	516602	7113742	35.7
FF-12	Far-field	516761	7125546	32.8
FF-13	Far-field	502498	7135690	36.7
FF-14	Far-field	500803	7146944	34.1
FF-15	Far-field	501945	7152466	32.2
FF-17	Far-field	566257	7175342	38.2
FF-19	Far-field	503447	7149631	31.1
FF-20	Far-field	519922	7116303	40.4
FF-21	Far-field	534692	7121664	32.4
FF-22	Far-field	507587	7127844	37.4
FF-23	Far-field	564525	7138023	34.4
FF-24	Far-field	547915	7123830	33.3
FF-25	Far-field	555928	7114994	33.0
FF-26[(b)]	Far-field	546859	7145772	15.2
FF-27[(b)]	Far-field	547136	7159238	14.0
FF-28[(b)]	Far-field	551046	7164649	20.0
FFF-1	Far-far-field	614548	7089054	103.6
FFF-2	Far-far-field	635650	7177422	104.2
FFF-3	Far-far-field	436424	7151896	97.8

Notes:

(a) Station was moved in 2024. Location was adjusted due to insufficient lichen cover available for sampling at the original coordinates.

(b) These sites were selected by the Elders in 2013 and were formerly grouped with the Near-Field sites (formerly NF-21, NF-22, and NF-23, respectively). Following Watkinson et al. (2021), these sites were grouped with the Far-Field sites for analyses.



LEGEND

- ▲ DUSTFALL COLLECTOR
- ▼ NEAR-FIELD SAMPLING LOCATION

0 2 4

1:100,000 KILOMETRES

NOTE(S)

(a) STATION BURIED UNDER THE WASTE ROCK STOCK PILE – NOT SAMPLED IN 2024.

REFERENCE(S)

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PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 12N

CLIENT

RioTinto

PROJECT

DIAVIK DIAMOND MINES INC.

TITLE

NEAR-FIELD AREA LICHEN AND SOIL SAMPLING LOCATIONS AND DUSTFALL COLLECTORS, 2024

CONSULTANT

wsp

YYYY-MM-DD	2025-04-01
DESIGNED	RK
PREPARED	AA
REVIEWED	DC
APPROVED	KS

PROJECT NO.	CONTROL	REV.	FIGURE
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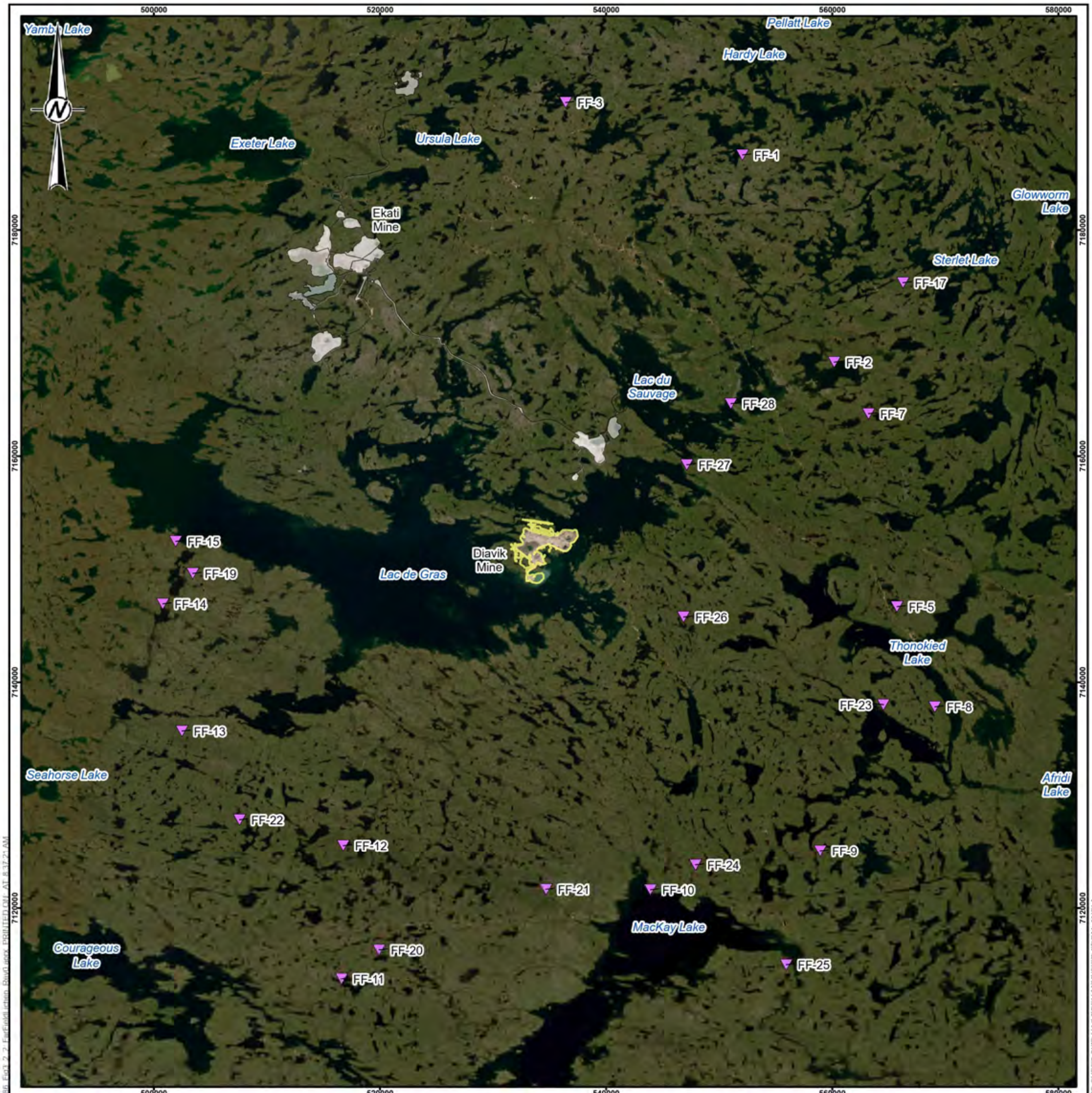

LEGEND

- FAR-FIELD SAMPLING LOCATION
- DIAVIK FOOTPRINT
- EKATI FOOTPRINT

0 10 20

1:500,000 KILOMETRES

REFERENCE(S)

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PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 12N

CLIENT

RioTinto

PROJECT

DIAVIK DIAMOND MINES INC.

TITLE

FAR-FIELD AREA LICHEN AND SOIL SAMPLING LOCATIONS, 2024

CONSULTANT

wsp

YYYY-MM-DD	2025-04-01
DESIGNED	RK
PREPARED	AA
REVIEWED	DC
APPROVED	KS

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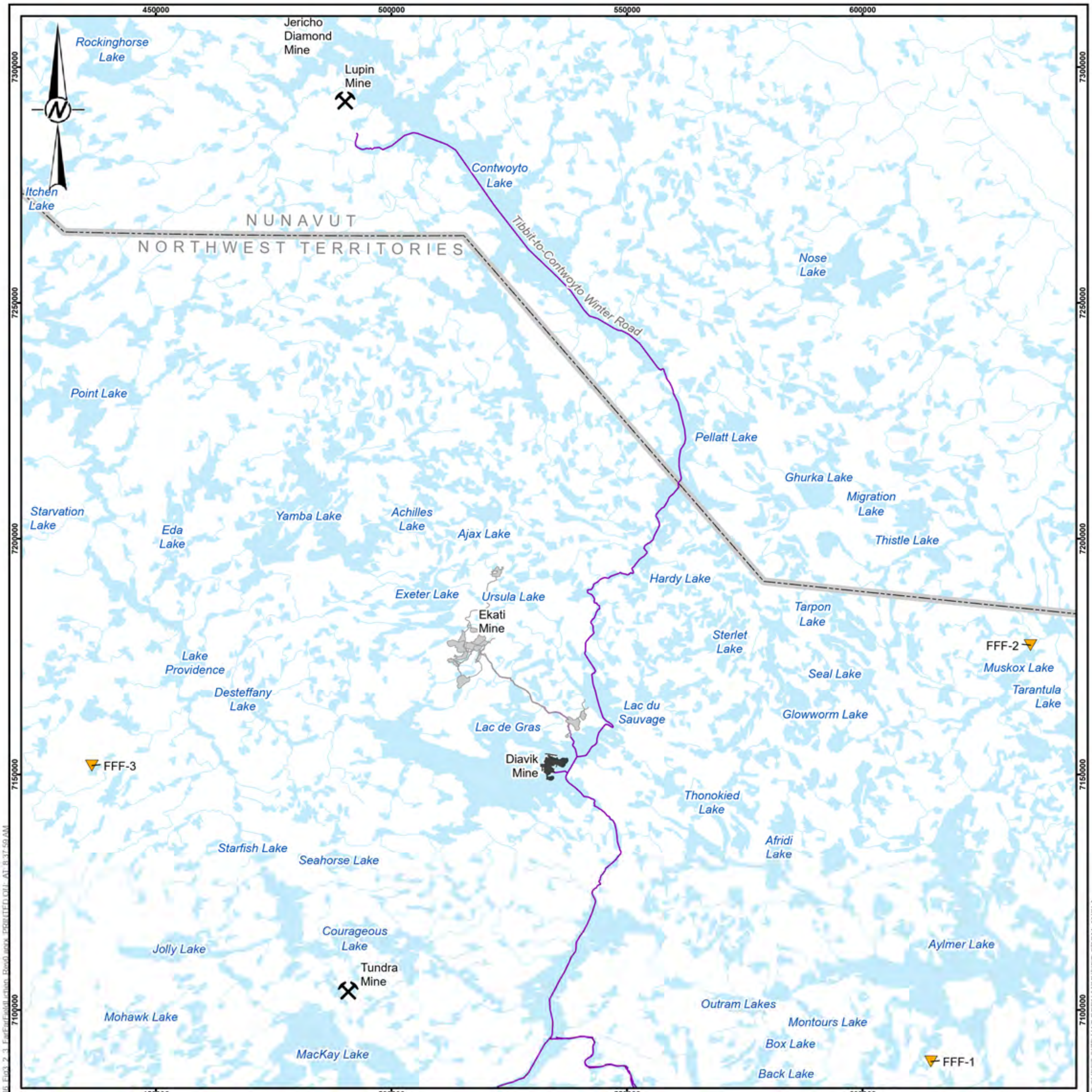

LEGEND

- FAR-FAR-FIELD SAMPLING LOCATION
- MINE LOCATION
- WINTER ROAD
- WATERBODY
- DIAVIK FOOTPRINT
- EKATI FOOTPRINT
- TERRITORIAL BOUNDARY
- WATERCOURSE

0 25 50

1:1,200,000 KILOMETRES

REFERENCE(S)

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PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 12N

CLIENT

RioTinto

PROJECT

DIAVIK DIAMOND MINES INC.

TITLE

FAR-FAR-FIELD AREA LICHEN AND SOIL SAMPLING LOCATIONS, 2024

CONSULTANT

wsp

YYYY-MM-DD	2025-04-01
DESIGNED	RK
PREPARED	AA
REVIEWED	DC
APPROVED	KS

PROJECT NO.	CONTROL	REV.	FIGURE
CA22391.6786	2100.2500	0	3.2-3

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

25mm

3.3 Methods

3.3.1 Sample Site Selection at Sampling Stations

Although there was a random element to the station selection in the original study design (Golder 2011b), the actual site of sampling in 2013, 2016, 2021, and 2024 was subjective and based on the previous guidance of the Elders (Tłįchǫ Government 2013) as to where caribou would eat and preferred caribou habitat. Upon arrival at the station coordinates, the general area was surveyed by the WSP biologist from the helicopter and on the ground to determine a location where caribou would be likely to feed. The final sampling sites were chosen within 1 km of the 2013 coordinates.

3.3.2 Data Collection

The field investigation was completed from July 30 to August 9, 2024. The investigations were carried out by two WSP biologists. The weather during the sampling period was mainly sunny, with light breeze, with several overcast, windy days, with light rain/precipitation.

For each sample location, species of lichen collected, soil characteristics, and observations of caribou activity were recorded (Appendix E). Lichens previously identified by Elders as those that would potentially be consumed by caribou were observed and collected at every sample location; this includes the following species[7]:

- *Alectoria ochroleuca* (green witch's hair lichen)
- *Arctocetraria andrejevii* (Andrejev's Iceland lichen)
- *Bryocaulon divergens* (northern/heath foxhair lichen)
- *Bryoria nitidula*
- *Cetraria islandica* (Iceland lichen)
- *Cetraria laevigata* (striped Iceland lichen)
- *Cladonia gracillis* (smooth reindeer lichen)
- *Cladonia mitis* (green reindeer lichen)
- *Cladonia rangiferina* (grey reindeer lichen)
- *Cladonia stellaris* (star-tipped reindeer lichen)
- *Cladonia stygia* (black-footed reindeer lichen)
- *Cladonia* species
- *Dactylina* species
- *Flavocetraria cucullata* (curled snow lichen)
- *Flavocetraria nivalis* (crinkled snow lichen)

[7] In general, scientific nomenclature and common names followed naming conventions consistent with the NatureServe on-line database (NatureServe 2021).

- *Masonhalea richardsonii* (arctic tumbleweed lichen)
- *Peltigera* species
- *Stereocaulon paschale* (easter foam lichen)
- *Stereocaulon* species

Clean sampling protocols were implemented so that samples were not contaminated by external sources. Powderless nitrile gloves were used for all contact with lichens and soil. 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 resealable plastic bags and kept cool until they could be refrigerated 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 on datasheets.

Lichen samples were not washed or cleaned of dust and soil prior to analysis. A cleaning step was not considered to be appropriate given that the purpose of the lichen monitoring program was to assess dust deposition on lichen and its associated effects on caribou health. Caribou are also known to inadvertently ingest dust and soil while foraging. In addition, no statistical differences in metals concentrations were observed in comparisons of washed and unwashed lichen samples in 2010 (Golder 2011b).

Soil samples were collected from the top 15 cm of the soil layer at the same locations as lichen samples using a plastic (nylon) trowel. As with lichen samples, soil was collected in resealable plastic bags and kept cool until it could be transported to the laboratory for analysis. The purpose of the soil sampling was to incorporate exposure from inadvertent ingestion of soil by caribou while grazing on lichens into a risk assessment, if deemed necessary.

Field duplicates of lichen and soil were collected to assess the variability in results within a sampling location. Seven lichen and soil duplicate samples were collected: four in the near-field area, two in the far-field area, and one in the far-far-field area. At each location, the sample was gently mixed to form a composite and then split into two separate samples, which were analyzed separately for metals.

Lichen and soil samples were analyzed by Bureau Veritas Laboratories (BV Labs), Burnaby, British Columbia. Lichen samples were analyzed for total mercury by cold vapour atomic fluorescence (CVAF), total metals by collision/reaction cell inductively coupled plasma mass spectrometry (CRC-ICPMS), and percent moisture. The metals analyzed by CRC-ICPMS were aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, calcium, cesium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, molybdenum, nickel, phosphorus, potassium, selenium, silver, sodium, strontium, tellurium, thallium, thorium, tin, titanium, uranium, vanadium, zinc, and zirconium. A sub-sample of each soil sample was analyzed for mercury because mercury in soil has a short holding time (14 days). The remaining soil sample was archived for possible future metals analysis if the results of the lichen analysis indicated higher concentrations than previously observed (i.e., an increasing trend in metals concentrations).

3.3.3 Data Analysis

3.3.3.1 Comparison of Near- and Far-Field Lichen Samples

Metals concentrations in lichen collected in 2024 were tabulated and summary statistics calculated for each area (e.g., mean, median, standard deviation, standard error, minimum, and maximum concentrations). Mean concentrations of parameters measured in lichen from near-field and far-field areas were statistically and graphically compared to determine if metals concentrations were different between areas. One half the reportable detection limit (RDL) was substituted for non-detect values in the dataset prior to data analyses. Data were examined for normality, using the Shapiro-Wilk test, and equality of variance (homoscedasticity) using Levene's test; log10-transformations were applied to help meet assumptions of parametric statistics. If transformed data did not meet assumptions, then a non-parametric test was used. Data that met assumptions were compared using analysis of variance (ANOVA); data that did not meet assumptions were compared using Kruskal-Wallis tests (non-parametric equivalent of one-way ANOVA). All statistical tests used $\alpha=0.05$. Metals concentrations in lichen from the far-far-field were graphically compared to near-field and far-field values. Statistical analyses were completed using R version 4.1.1 (R Core Team 2024), using base packages as well as the 'psych' package (Revelle 2021). Graphs were generated using R version 4.1.1 and the package 'ggplot2' (Wickham 2016).

3.3.3.2 Spatial Trends in Lichen Metals Concentrations

Trends in lichen metals concentrations with distance from the Mine were characterized using generalized linear models, following Watkinson et al. (2021). A power model ($y = a \cdot x^b$) was fit to metals concentration data in lichen collected in 2024 for each metal of interest. The significance and strength of the relationship between metal concentrations and distance to mining activity were assessed using the regression coefficient p-value and coefficient of determination (R^2), respectively. Power models of metals concentrations in lichen and distance from the Mine were visualized graphically. Models were fit to data and graphs were generated using R version 4.1.1, using base packages and the package 'ggplot2'.

3.3.3.3 Temporal Trends in Near-Field Lichen Metals Concentrations

The mean concentrations of parameters measured in lichen from the near-field area were statistically and graphically compared to determine if metals concentrations were different across 2010, 2013, 2016, 2021, and 2024. The metals concentration data collected in 2010, 2013, 2016, and 2021 are presented in Golder (2011b, 2014, 2017) and WSP Golder (2022b). Data were examined for normality and homoscedasticity. One-way ANOVA and Tukey's honest significant differences (Tukey HSD) post-hoc tests were used to compare metals concentrations in lichen samples collected in the near-field areas across years. For those parameters that did not meet the statistical assumptions, Kruskal-Wallis tests and Dunn's multiple comparisons post-hoc tests were used. All statistical tests used $\alpha=0.05$ to determine significance. Comparisons were completed using R version 4.1.1, using base packages as well as the package 'FSA' (Ogle et al. 2021). Graphs were generated using R version 4.1.1 and the package 'ggplot2'.

3.3.3.4 Comparison of Duplicates

Duplicate lichen and soil samples were analyzed to assess sample homogeneity. The results obtained from the duplicate samples were used to calculate the relative percent difference (RPD) for each parameter. A lower RPD indicates higher sample homogeneity. A RPD was considered notable when it was 30% or greater and when the mean of the duplicates was greater than five times the detection limit (DL). This second criterion takes into account the potential for data accuracy error when parameter concentrations approach detection limits. RPD was calculated from the following formula:

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

3.4 Results

3.4.1 Field Observations

In general, the field crew observed that the lichen in the near-field stations appeared in poorer health, which may be due to dust deposition. In comparison, the lichen and other vegetation in the far-field stations appeared healthier and had no apparent signs of dust deposition. Rain was relatively frequent during field collections, which may have affected signs of dust deposition. Based on field observations, both lichen cover and diversity also appeared higher at far-field sites compared to the near-field sites with the exception of stations NF2, NF5, NF10, and NF14. These stations had higher density and diversity of lichen coverage compared with other near-field sites, which may be due to their locations in proximity to Lac de Gras and on peninsulas or islands, respectively.

Lichen species assemblage varied between sites. Generally, near-field stations had fewer lichen species that had lower coverage (mean = 7 species) than far-field stations (mean = 7.6 species). The most abundant species included *Flavocetraria nivalis*, *Flavocetraria cucullata*, *Cladonia rangiferina*, and *Cladonia stygia*. Common species also included *Bryocaulon divergens*, *Masonhalea richardsonii*, *Cladonia stellaris*, *Cladonia mitis, Peltigera* species, and *Stereocaulon* species. Trace species included *Cetraria* species recorded at 60% of sites and *Alectoria ochroleuca* recorded at 46% of the sites.

The Elders previously documented that caribou no longer used the near-field stations adjacent to the Mine or did not use them to the same extent prior to the development of the Mine (Tłı̨chǫ Government 2013). In the 2024 field surveys, signs of caribou activity (e.g., tracks, fecal pellets, or grazed lichens and/or plants) were observed by the biologists at one near-field station (5%), although the age of these signs could not be confirmed (Table 3.4-1). No caribou were observed at near-field stations during sampling.

Table 3.4-1: Summary of Caribou Activity Observations at 2024 Sampling Stations

Sampling Area	Number of Stations with Observed Caribou Activity	Total Number of Stations	Percent of Total
Near-field	1	20	5.0%
Far-field	3	24	12.5%
Far-far-field	1	3	33.3%
Total	**5**	**47**	**10.6%**

In 2013, the far-field stations FF5, FF13, FF14, FF15, FF19, and FF21 were identified by Elders as no longer being of high use by caribou. Such areas were described as “sites not located on migration routes or on valuable forage areas” (Tłı̨chǫ Government 2013). No caribou activity was observed at these stations in 2024. Recent caribou activity (e.g., animal sightings, fecal pellets, grazed lichens and/or plants, and trails) was observed at three of the far-field (12.5%) and one of the far-far field stations (Table 3.4-1).

3.4.2 Lichen Chemistry

Appendix G, Table G-1 (near-field stations), Table G-2 (far-field stations), and Table G-3 (far-far-field stations), provides chemistry results by station and measured parameters for lichen samples.

Data quality and replicability were evaluated prior to analysis. Parameters with concentrations below the RDL in more than 60% of samples were excluded from the analyses. Since all parameters reported concentrations below the RDL in less than 60% of samples (Appendix H, Table H-1), none were removed on this basis. However, more than 83% of detected concentrations for antimony, bismuth, boron, selenium, and tin were within five times the detection limit, which falls within the range of analytical uncertainty[8]. As a result, these parameters were not retained for further analysis.

Although several parameters were measured in lichen, the list of metals carried forward into the statistical analysis was limited to parameters that had the potential to be toxic to caribou or be present at high enough concentrations to cause toxicity. Parameters not retained for analysis were calcium, magnesium, phosphorus, potassium, and sodium. The 21 retained lichen chemistry parameters included:

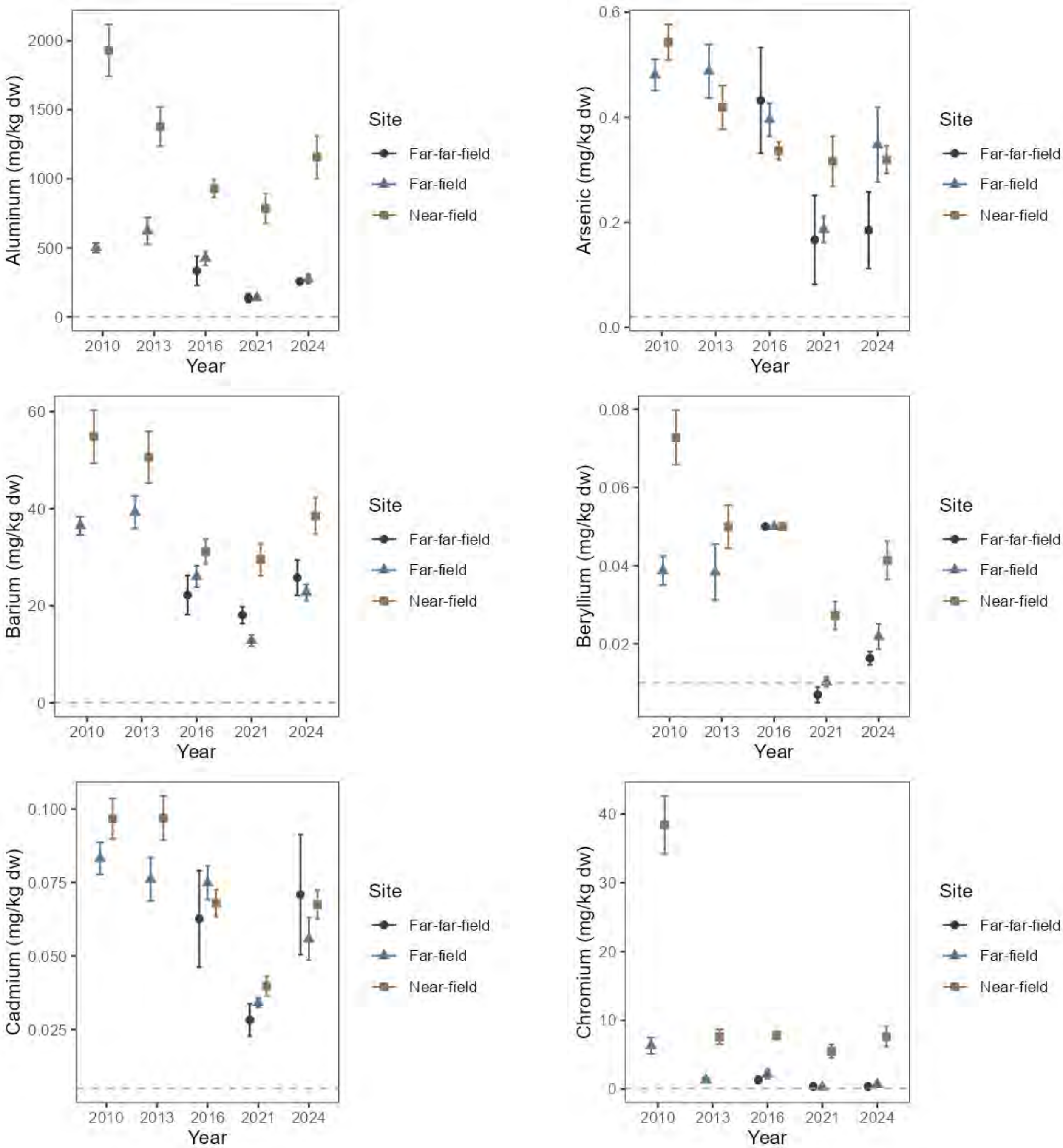
- Aluminum
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Copper
- Iron
- Lead
- Manganese
- Mercury
- Molybdenum
- Nickel
- Silver
- Strontium
- Thallium
- Titanium
- Uranium
- Vanadium
- Zinc

3.4.2.1 Comparison of Near- and Far-Field Lichen Samples

Mean (plus or minus [±] 1 standard error [SE]) metals concentrations in lichens collected from the near-field area were graphically compared to mean concentrations measured in the far-field area (Figure 3.4-1 to Figure 3.4-4). For most parameters, mean metals concentrations were higher in the near-field area than in the far-field area (Appendix H, Table H-1). Metals concentrations of all assessed parameters in 2024 were confirmed to be statistically higher in the near-field area compared with the far-field area (p<0.05) except for arsenic, copper, manganese, mercury, and zinc (Appendix H, Table H-2). In addition, mean (±1SE) metals concentrations in lichens collected from the far-far-field area were graphically compared to mean concentrations measured in the

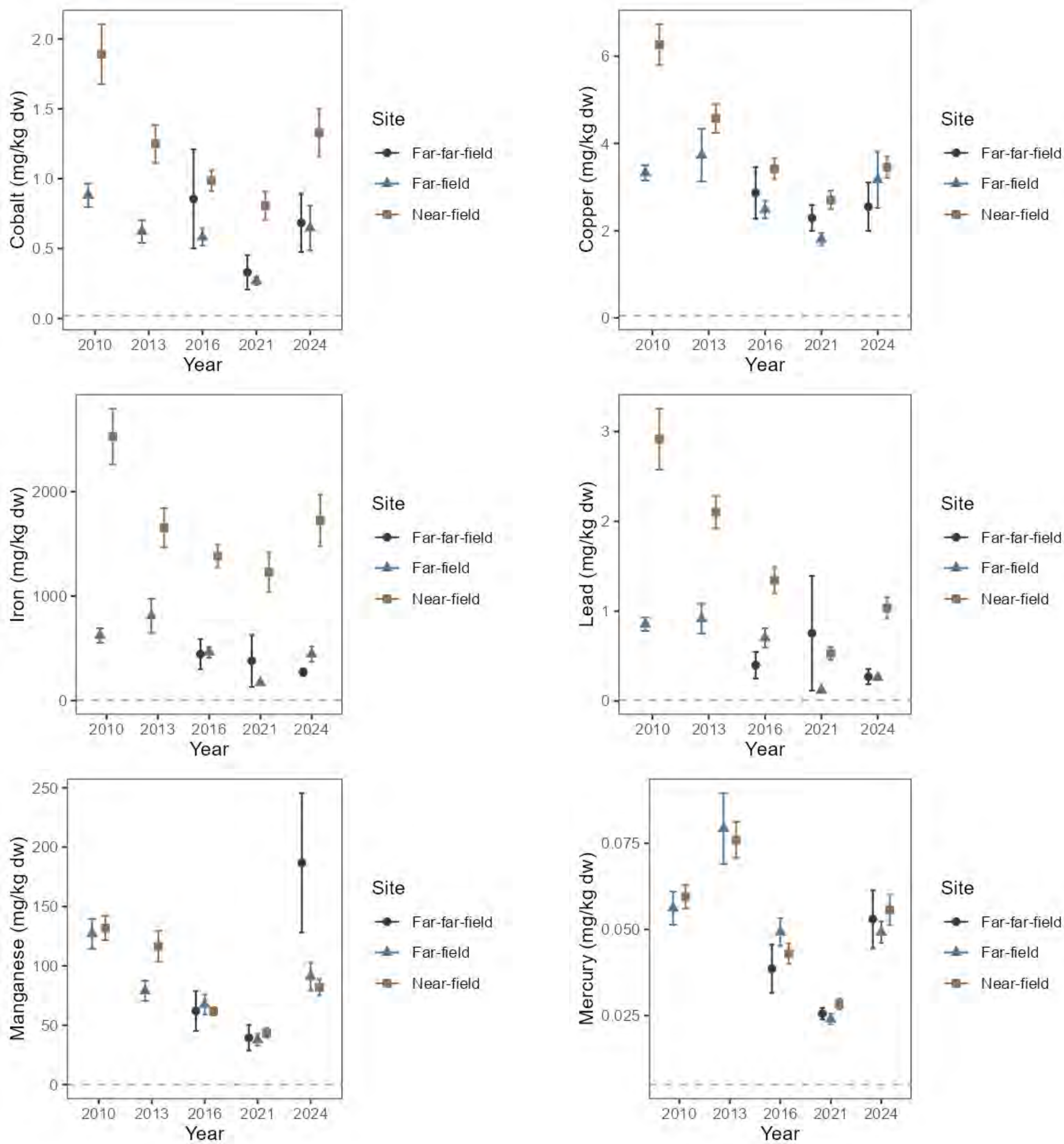
[8] Measured concentrations that are close to the analytical detection limit have a higher level of uncertainty. Acceptability criteria in water quality monitoring programs typically take into consideration this uncertainty and relax the data quality objectives when reported values are close to the detection limit. For example, BCFSM (2013) assesses the acceptability of field duplicate results if at least one of the duplicate values is greater than five times the detection limit.

far-field area (Figure 3.4-1 to Figure 3.4-4). For all assessed parameters, mean metals concentrations in the far-far-field area were similar or lower compared to far-field area except for manganese and zinc, which were higher.



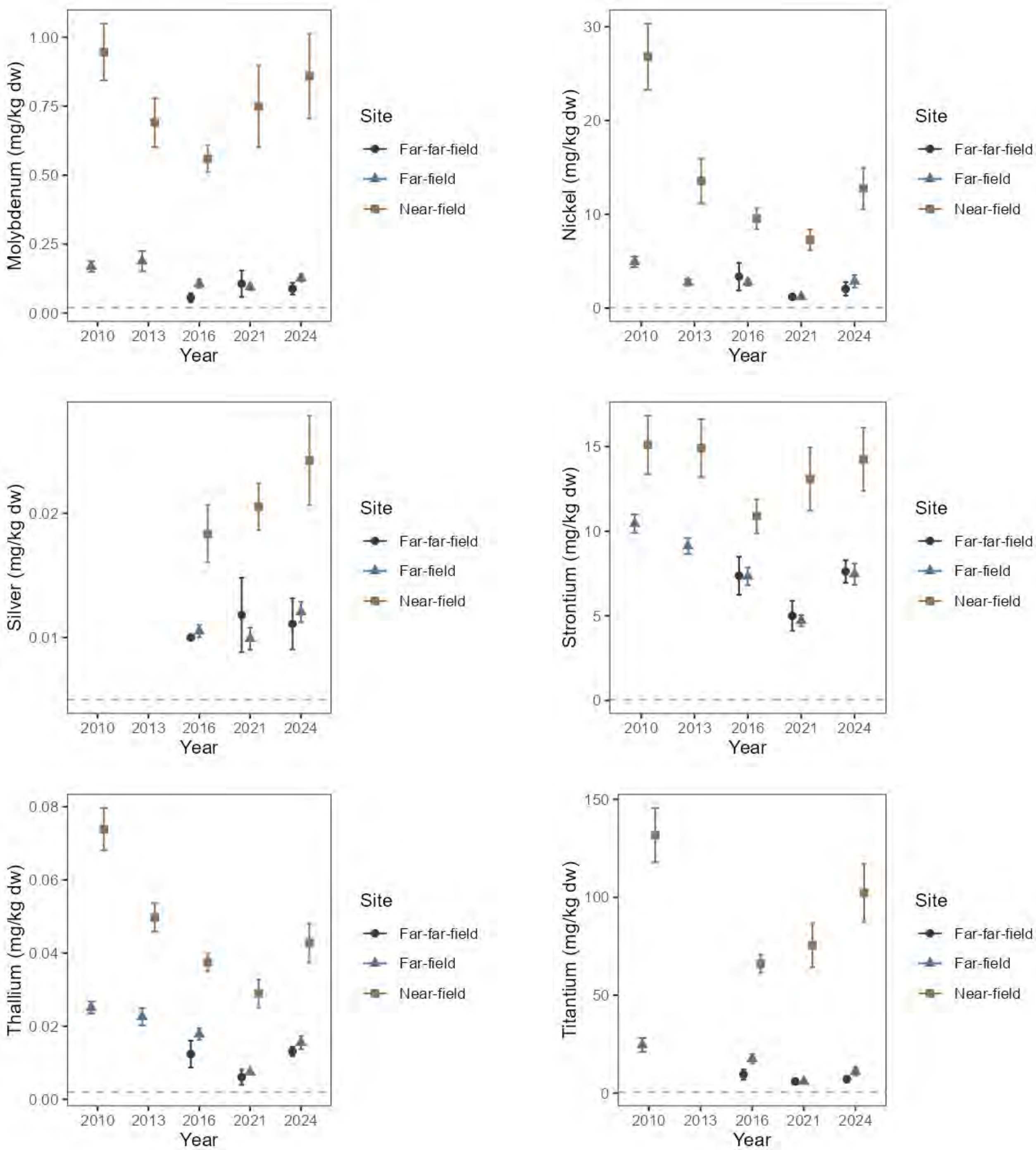
Detection limits indicated with grey dashed line. Note: scale of y-axis is different among metals.

Figure 3.4-1: Mean (± 1 Standard Error) Concentrations of Aluminum, Arsenic, Barium, Beryllium, Cadmium, and Chromium in Lichen, 2010 to 2024



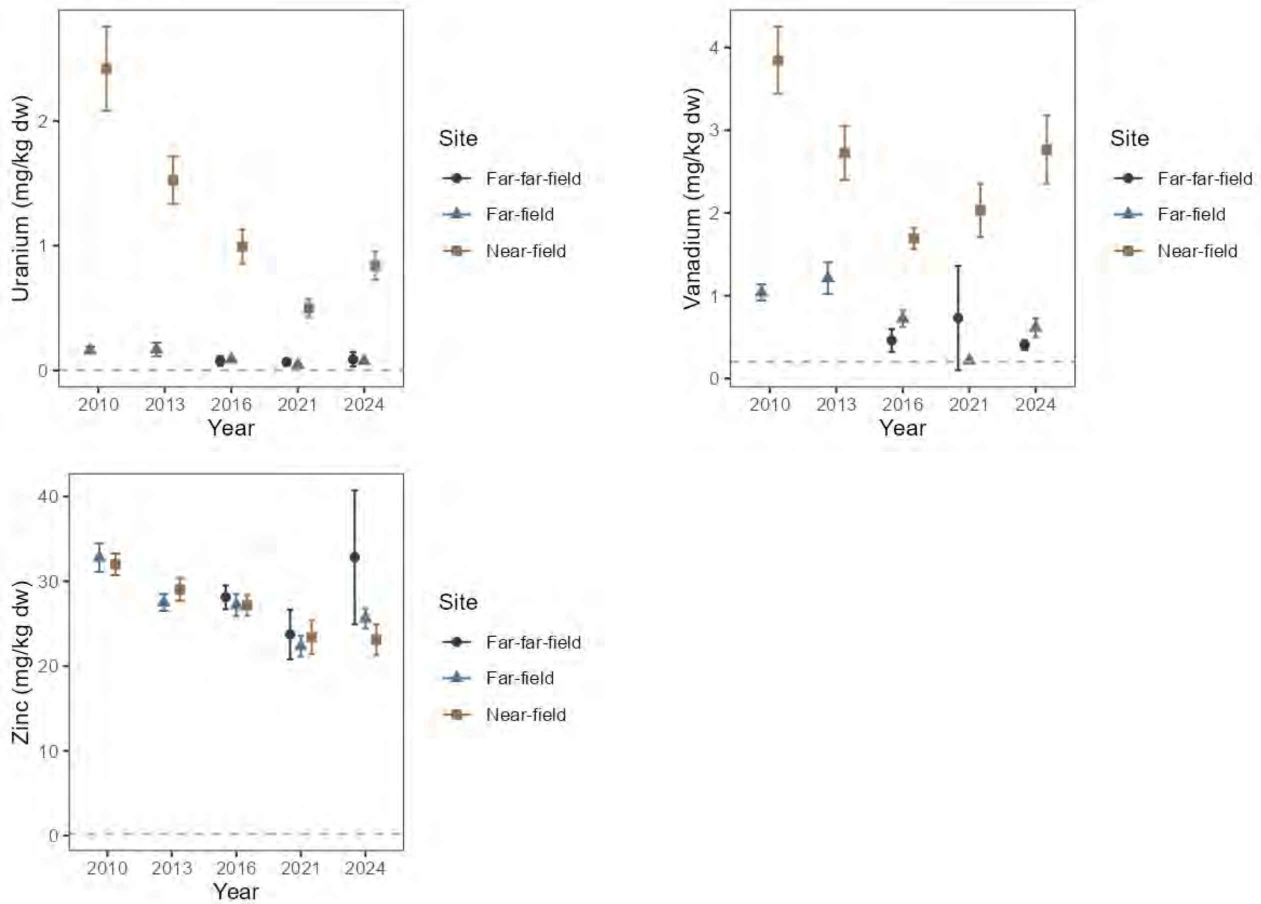
Detection limits indicated with grey dashed line. Note: scale of y-axis is different among metals.

Figure 3.4-2: Mean (± 1 Standard Error) Concentrations of Cobalt, Copper, Iron, Lead, Manganese, and Mercury in Lichen, 2010 to 2024



Detection limit indicated with grey dashed line. Note: silver not measured in 2010 and 2013; titanium not measured in 2013; scale of y-axis is different among metals.

Figure 3.4-3: Mean (± 1 Standard Error) Concentrations of Molybdenum, Nickel, Silver, Strontium, Thallium, and Titanium in Lichen, 2010 to 2024



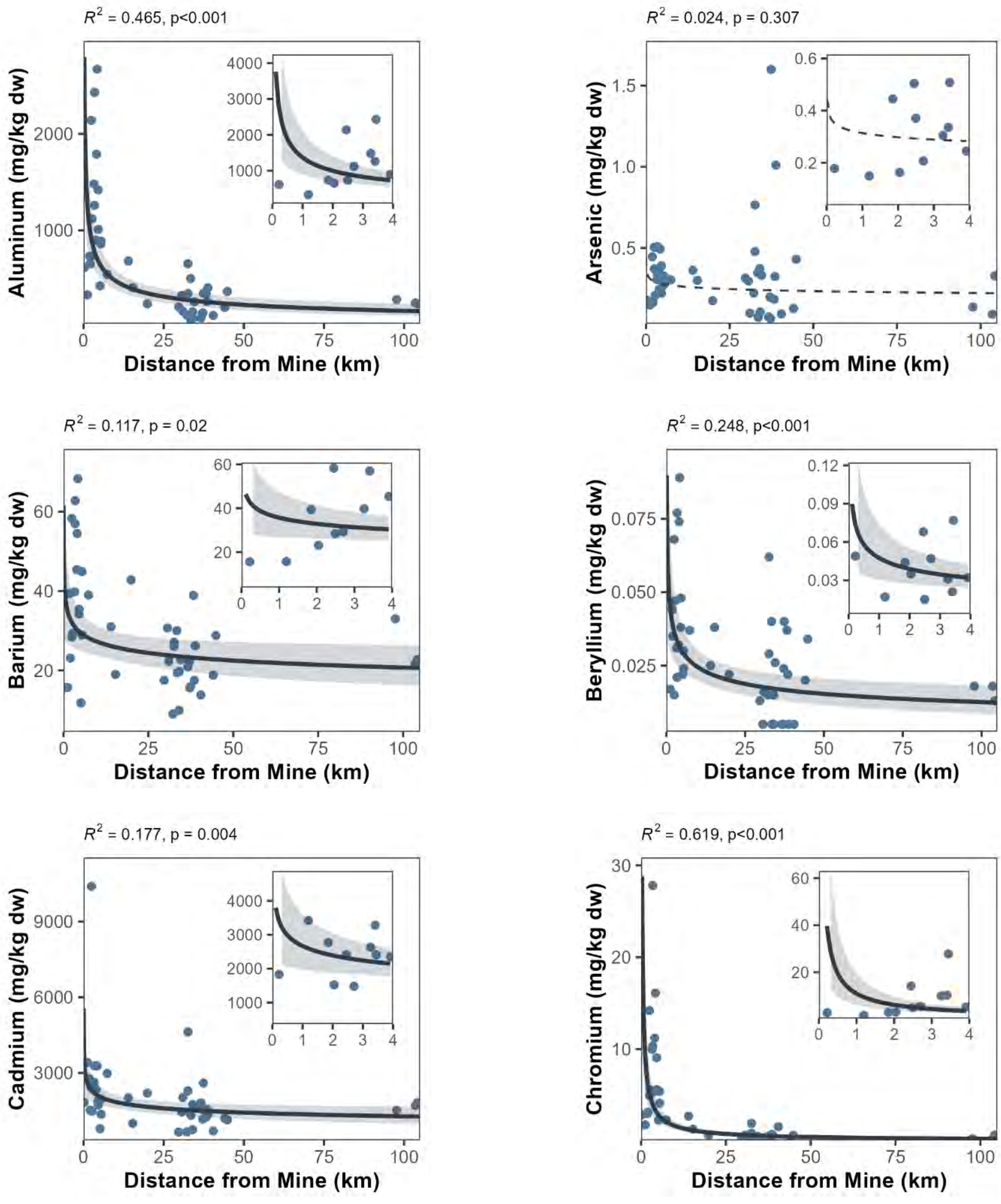
Detection limit indicated with grey dashed line. Note: scale of y-axis is different among metals.

Figure 3.4-4: Mean (± 1 Standard Error) Concentrations of Uranium, Vanadium, and Zinc in Lichen, 2010 to 2024

3.4.2.2 Spatial Trends in Lichen Metals Concentrations

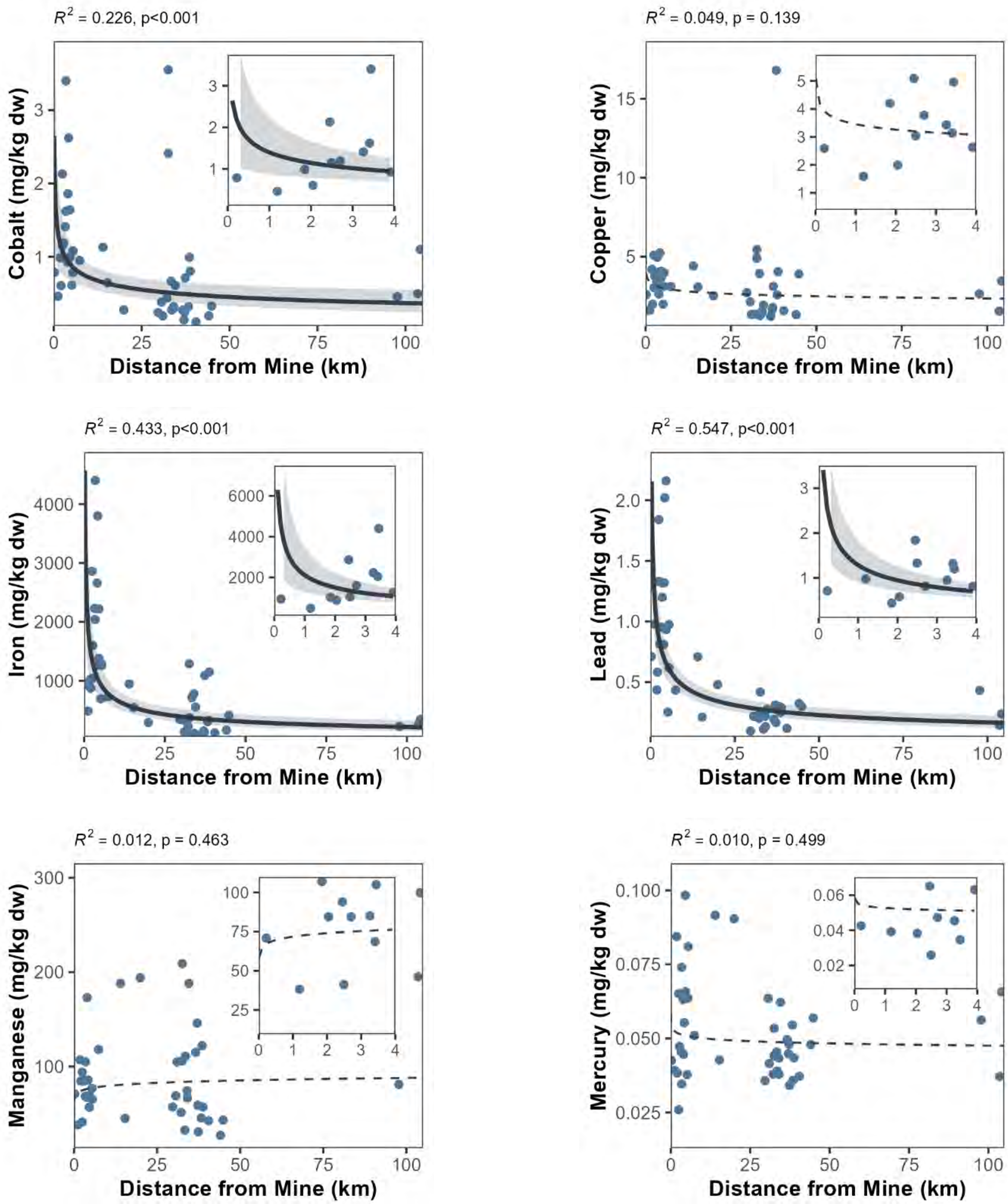
Power models ($y = a \cdot x^b$) were used to explore trends in lichen metal concentrations with distance from the Mine (Figure 3.4-5 to Figure 3.4-8). For most metals, concentrations declined significantly ($p<0.05$) with increasing distance from the Mine (Appendix H, Table H-3); arsenic, copper, manganese, and mercury concentrations in lichen were not significantly ($p \geq 0.05$) related to distance (Appendix H, Table H-3). Most lichen samples collected beyond 4 km had metal concentrations similar to those at far-field sites. However, arsenic, beryllium, manganese, mercury, and zinc concentrations varied at far-field locations 30–40 km from the Mine. Notably, zinc concentrations displayed an unusual trend, increasing with distance from the Mine while also exhibiting high variability.

Metals with the strongest and most significant correlation between concentration and distance were chromium, lead, molybdenum, titanium, and uranium. Those with a moderate but significant correlation included aluminum, iron, nickel, thallium, and vanadium. Metals with low R^2 values and no significant correlation were arsenic, barium, cadmium, copper, manganese, mercury, strontium, and zinc. Cobalt exhibited a significant but weak correlation between concentration and distance.



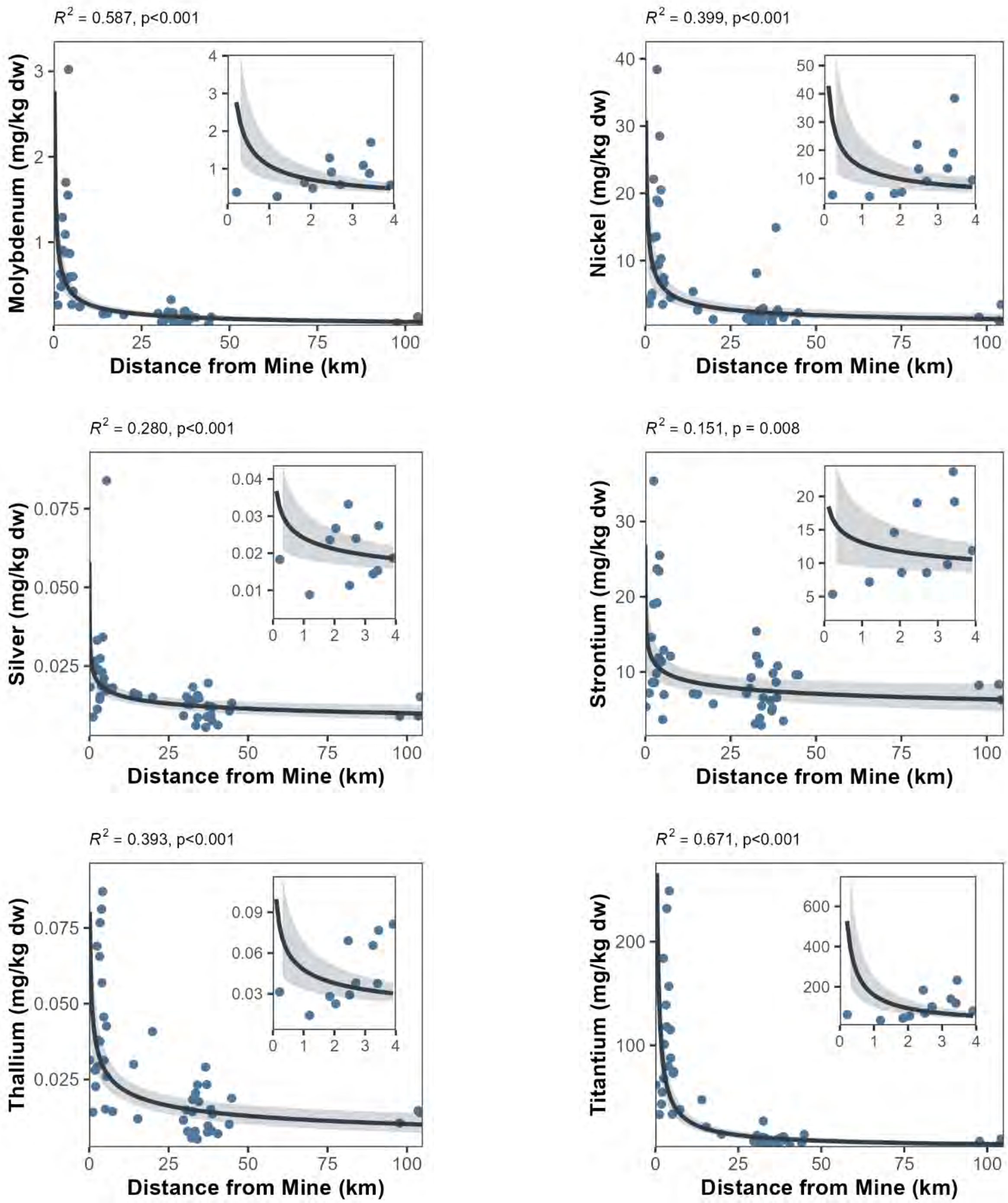
Note: The power model is shown with a solid gray line, and the 95% confidence interval is shown with a light gray band. Arsenic was not significantly related to distance, and therefore the power model is shown with a dashed gray line. Inset plots show concentrations measured within 4 km of the Mine site. Scale of y-axis is different among metals.

Figure 3.4-5: Concentrations of Aluminum, Arsenic, Barium, Beryllium, Cadmium, and Chromium in Lichen Collected at Various Distances from the Mine



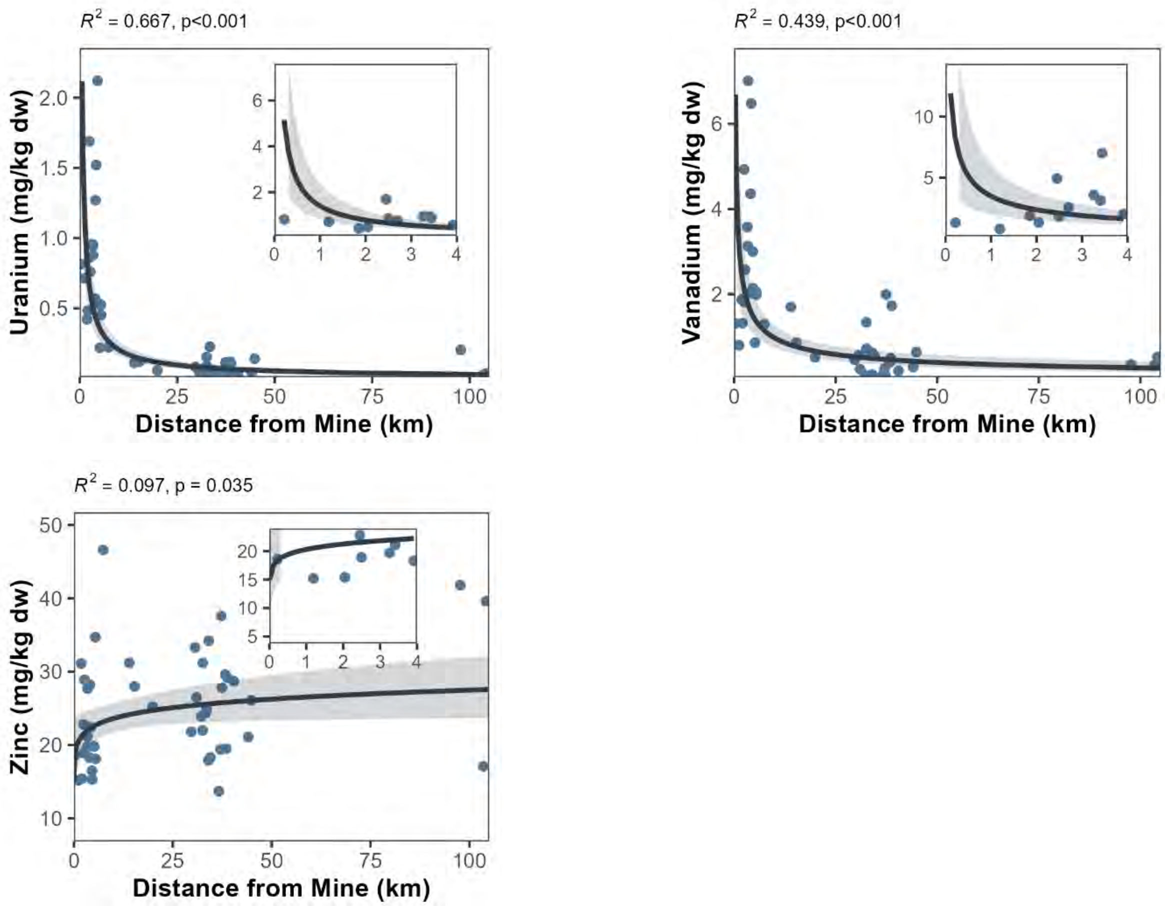
Note: The power model is shown with a solid gray line, and the 95% confidence interval is shown with a light gray band. Copper, manganese, and mercury were not significantly related to distance, and therefore the power models are shown with a dashed gray line. Inset plots show concentrations measured within 4 km of the Mine site. Scale of y-axis is different among metals.

Figure 3.4-6: Concentrations of Cobalt, Copper, Iron, Lead, Manganese, and Mercury in Lichen Collected at Various Distances from the Mine



Note: The power model is shown with a solid gray line, and the 95% confidence interval is shown with a light gray band. Inset plots show concentrations measured within 4 km of the Mine site. Scale of y-axis is different among metals.

Figure 3.4-7: Concentrations of Molybdenum, Nickel, Silver, Strontium, Thallium, and Titanium in Lichen Collected at Various Distances from the Mine



Note: The power model is shown with a solid green line, and the 95% confidence interval is shown with a light green band. Inset plots show concentrations measured within 4 km of the Mine site. Scale of y-axis is different among metals.

Figure 3.4-8: Concentrations of Uranium, Vanadium, and Zinc in Lichen Collected at Various Distances from the Mine

3.4.2.3 Temporal Trends in Near-field Lichen Metals Concentrations

Mean metals concentrations in lichens in the near-field area were compared among years both graphically (Figure 3.4-1 to Figure 3.4-4) and statistically (Appendix H, Table H-2).

In lichen samples from the near-field area, concentrations of several metals increased from 2021 to 2024, but mean concentrations of most metals were found to be not significantly different in 2024 when compared to 2021 results. Only cadmium, cobalt, lead, manganese, and mercury had significantly higher mean concentrations in lichen in 2024 compared to 2021. There were no significant differences between 2024 and 2016 mean concentrations. Mean concentrations of cadmium, lead, mercury, and uranium in 2024 were found significantly lower when compared to concentrations from 2013. When compared to the 2010 results, mean concentrations in 2024 were significantly higher for aluminum, arsenic, beryllium, cadmium, chromium, copper, lead, manganese, nickel, thallium, uranium, and zinc. Overall, 2024 concentrations in the near-field samples were the same or lower than those measured in 2010.

3.4.2.4 Comparison of Duplicate Samples

The incidence of RPDs greater than 30% was generally high in the lichen duplicates, regardless of sampling areas. Duplicates ranged in number of incidences, from 1 to 23 parameters. High variability among some duplicates was also observed in 2013, 2016, and 2021 (Golder 2014, 2017, WSP Golder 2022b).

3.4.3 Soil Chemistry

Appendix G, Table G-5 provides the mercury concentrations in soil samples collected with the lichen samples. These results are provided for future reference but are not analyzed or discussed further in this report. As stated in Section 3.1, the purpose of the soil collection and analysis was to assess the uptake of metals by caribou through incidental soil ingestion, which would be necessary if a new risk assessment was required.

3.5 Discussion

Lichen species are an important and preferred food source for caribou, along with willows, birch, sedges, grasses, and mushrooms (Thomas 1998; Bergerud et al. 2008). Lichens are also good indicators of air quality as they absorb metals from fossil fuel emissions and deposited dust. The input from the Elders during the 2013 field program remained valuable in 2024 for identifying specific sampling sites near the pre-selected near-field, far-field and far-far-field station locations (Tłı̨chǫ Government 2013). The Elders pointed out the lichen species that caribou prefer to eat and commented on the lichen and vegetation conditions at the sampling sites, and how the dust from the Mine influences caribou use at the sites. Comments from the Elders on lichen and vegetation conditions near the Mine site reflect that they noticed dust on the lichen near the Mine, and they stated that this dust reduced the quality of the forage for caribou (Tłı̨chǫ Government 2013). The Elders also stated that caribou will avoid using the area close to the Mine as their migration route because caribou recognize the difference in lichen quality (by smell and taste). A previous study has suggested dust deposition near the Ekati and Diavik mines may lead to caribou avoiding the mines (Boulanger et al. 2012). However, metals concentrations in lichen monitored at Diavik indicates that local spatial patterns and are unlikely causing the larger extents or annual patterns of caribou avoidance reported in science (Boulanger et al. 2012, 2021).

The lichen monitoring program provides data for testing the predictions associated with Key Questions in Table 1.2-1 (Section 1.2). During the 2024 sampling program, the field crew observed that the lichen communities in the near-field area had lower species richness and lower coverage. In comparison, the lichen communities in the far-field stations had greater richness and greater coverage and had no apparent signs of dust deposition. Similar reductions in lichen cover were found within 1 km of the Misery Road (Chen et al. 2017). Lichens are sensitive to the smothering effects of dust deposition as they derive both required nutrients and moisture from the air (Farmer 1993). The statistical analysis of metals concentrations in lichen from the near-field area confirmed the observations of the Elders that dust deposition is higher near the Mine and further supports the recent study by Watkinson et al. (2021). Most of the assessed metals concentrations (16 of 21) were higher in lichens from the near-field area compared to the far-field area and reached similar concentrations in the far-field area as within 4 km of the Mine, which supports the predictions related to Key Questions 1 and 2 (Table 1.2-2). Additionally, most metals concentrations in the far-far-field sampling area were similar to concentrations in the far-field sampling area, indicating that the far-field area provided a sufficient reference for testing conditions near the Mine site.

Mining methods have changed at the Mine since the inception of the lichen monitoring program. Open pit mining occurred prior to 2010 and then switched to underground methods until 2016. In 2017, one of the three active kimberlite extraction operations (pit A21) began using open-pit mining methods; mining at this pit was completed in May 2023. Accordingly, dust deposition rates were highest during the open pit mining phase (prior to 2010) and lowest during periods when only underground mining occurred. In 2024, the primary source of fugitive dust was associated with the re-mining of Waste Rock Storage Area-South Country Rock Pile and placement of this rock cover on PKCF. Dust deposition rates increased from 2018 to 2021 from the low rates measured during the underground mining phase (probably due to the open-pit mining at A21 pit) although the observed increase was not statistically significant. Dust deposition rates from 2022 to 2024 decreased from rates measured in the 2018 to 2021 period and are below those measured during pit construction and the initial open-pit mining phases (2002 to 2009). Previously, the move from open-pit to underground extraction led to a decrease in metal concentrations measured in lichen from 2010 to 2016. Despite the open pit mining at A21 pit starting in 2017, an increase in metal concentrations was not observed in 2021, and in fact concentrations were the same or lower. In 2024, metal concentrations in near-field lichen are either the same or higher (for some metals) than in 2021, but no different from those concentrations measured in 2016. These results do not support the prediction from Key Question 3 that metals concentrations in lichen would be similar over time (Table 1.2-2), but the differences in metal concentrations in lichen over years may likely be attributed to change in dust sources over time.

Analysis of lichen chemistry in 2013, 2016, and 2021 showed that metals concentrations in the near-field (Mine site) area were higher than in the far-field area but that there was an apparent decreasing trend in metals concentrations near the Mine (Golder 2014, 2017; WSP Golder 2022b). The analysis provided during the fifth cycle of this program showed a statistically significant increase in concentrations of some metals in lichen in the near-field area between 2021 and 2024. Only cadmium, cobalt, lead, manganese, and mercury had significantly higher mean concentrations in lichen in 2024 compared to 2021. Of these metals, there were no statistically significant differences between near-field and far-field concentrations for manganese and mercury indicating that the source is regional or international and not Mine-related. For cadmium, cobalt, and lead, the time series plots also show that concentrations in the far-field area also increased during this time period. These results suggests that concentrations of these metals have increased regionally since 2021.

The lichen monitoring program was primarily designed to assess whether the predicted increased metals uptake by lichen near the Mine would pose a risk to the health of caribou. The 2010 risk assessment used conservative assumptions to estimate exposure and effects to caribou, such as assuming the caribou would obtain all their food and water from the near-field area throughout the year (Golder 2011b). Despite these conservative assumptions, the risk estimates predicted no adverse effects on caribou health.

All 2024 concentrations were below the concentrations reported in the 2010 risk assessment, consistent with findings of the HHERA completed in 2022 (WSP Golder 2022a). Therefore, a follow-up risk assessment based on 2024 data is not required. Metals concentrations are predicted to be within safe levels for caribou (as predicted from Key Question 4; Table 1.2-2) and are expected to remain within safe levels into the future as the Mine is approaching the end of operations. The 2024 monitoring program represented the final round of monitoring during the operational phase of the Mine, as it transitions into the closure phase in 2026.

3.6 Recommendations for Lichen Monitoring

The 2024 lichen chemistry results did not identify any new recommendations for this monitoring program. Detailed future monitoring recommendations will be outlined in the Final Closure and Reclamation Plan.

4 CLOSURE

This report was prepared by Shannon O’Dwyer (Experienced Vegetation Ecologist), Grace Enns (Senior Wildlife Biologist), and Radka Kelblerova (Intermediate Vegetation Ecologist) of WSP and reviewed by Kerrie Serben and Dan Coulton. We trust that the information provided in this report is sufficient for your present needs. Should you have any questions regarding the above information or require additional information please contact the undersigned.

WSP Canada Inc.

ORIGINAL SIGNED BY	ORIGINAL SIGNED BY
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5 REFERENCES

Abdi H. 2010. The greenhouse-geisser correction. Encyclopedia of Research Design 1(1): 544–548.

Anderson MJ, Ellingsen KE, McArdle BH. 2006. Multivariate dispersion as a measure of beta diversity. Ecology Letters*,* *9*(6), 683–693. https://doi.org/10.1111/j.1461-0248.2006.00926.

Anderson MJ. 2017. Permutational multivariate analysis of variance (PERMANOVA). In Wiley StatsRef: Statistics Reference Online (eds N. Balakrishnan, T. Colton, B. Everitt, W. Piegorsch, F. Ruggeri and J.L. Teugels). https://doi.org/10.1002/9781118445112.stat07841.

Barbour MG, Burk JH, Pitts WD. 1987. Terrestrial plant ecology. 2nd ed. The Benjamin/Cummings Publishing Company, Inc.: Menlo Park USA. 634 p.

Bergerud AT, Luttich SN, Camps L. 2008. The return of caribou to Ungava. McGill–Queens University Press. Montreal QC. 586 p.

Boulanger J, Poole KG, Gunn A, Wierzchowski J. 2012. Estimating the zone of influence of industrial developments on wildlife: a migratory caribou *Rangifer tarandus groenlandicus* and diamond mine case study. Wildlife Biology 18(2): 164–179; [accessed January 28, 2025]. https://bioone.org/journals/wildlife-biology/volume-18/issue-2/11-045/Estimating-the-zone-of-influence-of-industrial-developments-on-wildlife/10.2981/11-045.full.

Boulanger J, Poole KG, Gunn A, Wierzchowski J. 2021. Estimation of trends in zone of influence of mine sites on barren-ground caribou populations in the Northwest Territories, Canada, using new methods. Wildlife Biology; doi: 10.2981/wlb.00719.

British Columbia Field Sampling Manual (BCFSM). 2013. Part A Quality Control and Quality Assurance. Available at: B.C. Field Sampling Manual - Province of British Columbia (gov.bc.ca). Accessed 5 March 2025.

Chen W, Leblanc SG, White HP, Prevost C, Milakovic B, Rock C, Sharam G, O'Keefe H, Corey L, Croft B, Gunn A, Van Der Wielen S, Football A, Tracz B, Pellissey JS, Boulanger J. 2017. Does dust from Arctic mines affect caribou forage? Journal of Environmental Protection 8: 258-276.

Condit R. 1995. Research in large, long-term tropical forest plots. Trends in Ecological Evolution 10:18–22.

Cottam G, Goff FG, Whittaker RH. 1978. Wisconsin comparative ordination. Ordination of Plant Communities. Springer: Dordrecht, The Netherlands. 185 – 213.

Dale VH, Beyeler SC, Jackson B. 2002. Understory vegetation indicators of anthropogenic disturbance in longleaf pine forests at Fort Benning, Georgia, USA. Ecological Indicators 1:155-170. [accessed January 28, 2025]. https://www.sciencedirect.com/science/article/abs/pii/S1470160X01000140.

DDMI (Diavik Diamond Mines [2012] Inc.). 1998. Environmental Effects Report, Vegetation and Terrain. Yellowknife, NT.

DDMI. 2019. Closure and Reclamation Plan – Version 4-1.

Ecosystem Classification Group. 2012. Ecological regions of the Northwest Territories: Southern Arctic. Department of Environment and Natural Resources, Government of Northwest Territories; [accessed January 28, 2025]. https://www.gov.nt.ca/sites/ecc/files/resources/southern_arctic_ecological_land_classification_report.pdf 183 p.

Farmer AM. 1993. The effects of dust on vegetation: A review. Environmental Pollution 79: 6375.

Girden E. 1992. ANOVA Repeated Measures. Quantitative Applications in the Social Sciences series. No. 84. Sage Publications: Newbury Park, USA.

Golder (Golder Associates Ltd). 2011a. Appendix I: Vegetation monitoring program. Comprehensive data report. Submitted to Diavik Diamond Mines Inc., Yellowknife NT, Canada.

Golder. 2011b. Appendix II: Risk assessment of caribou exposure to metals from dust deposition to lichen. Submitted to Diavik Diamond Mines Inc., Yellowknife NT, Canada.

Golder. 2014. Final Report: 2013 Comprehensive vegetation and lichen monitoring program. Submitted to Diavik Diamond Mines Inc., Yellowknife NT, Canada.

Golder. 2017. Final Report: 2016 Comprehensive vegetation and lichen monitoring program. Submitted to Diavik Diamonds Mines Inc., Yellowknife NT, Canada.

Golder. 2019. Technical memorandum: Dust trigger for vegetation and lichen monitoring. Submitted to Diavik Diamonds Mines Inc., Yellowknife NT, Canada.

Greenacre M. 2017. 'Size' and 'shape' in the measurements of multivariate proximity. Methods in Ecology and Evolution 8: 1415-1424.

Kassambara A. 2023. rstatix: Pipe-Friendly Framework for Basic Statistical Tests. R package version 0.7.2. https://cran.r-project.org/web/packages/rstatix/rstatix.pdf.

Kenkel, NC, Orloci, L. 1986. Applying metric and nonmetric multidimensional scaling to ecologist studies: some new results. Ecology 67(4): 919–928.

Kenward MG, Rogers JH. 1997. Small sample inference for fixed effects from restricted maximum likelihood. Biometrics 53: 983–997.

Krebs CJ. 1989. Ecological Methodology. Harper and Row. New York NY.

Kruskal JB. 1964. Nonmetric multidimensional scaling: a numerical method. Psychometrika 20(2): 115–129.

Naeth MA, Wilkinson S. 2006. Lichens as bioindicators of dust distribution and monitoring at Diavik Diamond Mine, Northwest Territories. Final Report. Submitted to Environmental Division. Diavik Diamond Mines Ltd. NT.

NatureServe. 2021. NatureServe Explorer: An online encyclopedia of life. NatureServe, Arlington, Virginia; [accessed January 28, 2025]. https://explorer.natureserve.org/.

Ogle DH., Doll JC, Wheeler P, Dinno A. 2021. FSA: Fisheries Stock Analysis. R package version 0.9.1, https://github.com/droglenc/FSA.

Oksanen J, Simpson GL, Blanchet FG, Friendly M, Kindt R, Legendre P, Minchin PR, O'Hara RB, Solymos P, Stevens MHH, Szoecs E, Wagner H, et al. 2025. vegan: community ecology package. R package version 2.6-10. https://CRAN.R-project.org/package=vegan.Porsild AE, Cody WJ. 1980. Vascular Plants of Continental Northwest Territories, Canada. National Museum of Natural Sciences. Ottawa ON.

Porsild AE, Cody WJ. 1980. Vascular Plants of Continental Northwest Territories, Canada. National Museum of Natural Sciences. Ottawa. ON.

Prentice IC. 1977. Non-metric ordination methods in ecology. Journal of Ecology 65(1): 85–94.

R Core Team. 2024. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/.

Revelle W. 2021. psych: Procedures for Personality and Psychological Research. R package. Version = 2.1.9. Northwestern University, Evanston, Illinois USA; [accessed January 28, 2025]. https://CRAN.R-project.org/package=psych.

Smith EP. 2006. BACI Design. Encyclopaedia of Environmetrics. Ed. A.H El-Shaarawi and W.W. Piegorsch. 1:141–148.

Spatt PD, Miller MC. 1981. Growth conditions and vitality of sphagnum in a tundra community along the Alaska Pipeline Haul Road. Arctic. 34(1):48–54.

Thomas DC. 1998. Fire-caribou relationships: (V) Winter diet of the Beverly Herd in Northern Canada, 1980 to 1987. Technical Report Series No. 313. Canadian Wildlife Service, Edmonton, AB.

Tłı̨chǫ Government. 2013. Traditional Knowledge study for Diavik soil and lichen sampling program. Tłı̨chǫ Government and Tłı̨chǫ Research and Training Institute. Behchoko, NT Canada. 44 p.

Vellend M, Brown CD, Kharouba HM, McCune JL, Myers-Smith IH. 2013. Historical ecology: Using unconventional data sources to test for effects of global environmental change. American Journal of Botany, 100: 1294-1305. https://doi.org/10.3732/ajb.1200503.

Watkinson AD, Virgl J, Miller VS, Naeth MA, Kim J, Serben K, Shapka C, Sinclair S. 2021. Effects of dust deposition from diamond mining on subarctic plant communities and barren-ground caribou forage. Journal of Environmental Quality 50(4): 990–1003.

Wickham H. 2016. ggplot2: Elegant Graphics for Data Analysis. R package. Springer-Verlag New York.

WSP Golder. 2022a. Human Health and Ecological Risk Assessment. Submitted to Diavik Diamond Mines Inc., Vancouver BC. Canada. September 2022.

WSP Golder. 2022b. Final Report: 2021 Comprehensive Vegetation and Lichen Monitoring Program. Submitted to Diavik Diamonds Mines Inc., Yellowknife NT, Canada. March 2022.

WSP (WSP Canada Inc.). 2022. AEMP 2021 Annual Report for the Diavik Diamond Mine, NT. Prepared for Diavik Diamond Mines (2012) Inc. Yellowknife, NT, Canada. March 2022.WSP. 2023 AEMP 2022 Annual Report for the Diavik Diamond Mine, NT. Prepared for Diavik Diamond Mines (2012) Inc. Yellowknife, NT, Canada. March 2023.

WSP. 2024. AEMP 2023 Annual Report for the Diavik Diamond Mine, NT. Prepared for Diavik Diamond Mines (2012) Inc. Yellowknife, NT, Canada. March 2024.

WSP. 2025. AEMP 2024 Annual Report for the Diavik Diamond Mine, NT. Prepared for Diavik Diamond Mines (2012) Inc. Yellowknife, NT, Canada. March 2025.

Zar JH. 1999. Biostatistical Analysis – Fourth Edition. Prentice Hall. Upper Saddle River, New Jersey.

APPENDIX A

List of Permanent Vegetation Plots Sampled from 2001 to 2024

Table A-1: Permanent Vegetation Plots sampled between 2001 and 2024

PVP Number	Plot Type	Vegetation Type	UTM Zone	Easting	Northing	Year Established	Year Sampled								
							2001	2004	2006	2008	2010	2013	2016	2021	2024
PVP01	Mine	Heath Tundra	12W	533933	7154277	2001	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP02	Mine	Heath Tundra	12W	533955	7154320	2001	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP03	Mine	Tussock-Hummock	12W	534019	7154476	2001	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP04a[a]	Mine	Tussock-Hummock	12W	n/a	n/a	2001	Yes	Yes	No	No	No	No	No	No	No
PVP05a[a]	Mine	Shrub	12W	n/a	n/a	2001	Yes	Yes	No	No	No	No	No	No	No
PVP06a[a]	Mine	Heath Tundra	12W	n/a	n/a	2001	Yes	Yes	No	No	No	No	No	No	No
PVP04[b]	Mine	Tussock-Hummock	12W	531572	7152032	2006	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP05[b]	Mine	Shrub	12W	531450	7152017	2006	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP06[b]	Mine	Heath Tundra	12W	531454	7151954	2006	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP07	Mine	Tussock-Hummock	12W	535039	7151919	2001	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP08[c]	Mine	Esker	12W	n/a	n/a	2001	Yes	Yes	Yes	Yes	No	No	No	No	No
PVP09a[a]	Mine	Shrub	12W	n/a	n/a	2001	Yes	Yes	No	No	No	No	No	No	No
PVP09[b]	Mine	Shrub	12W	531543	7151831	2006	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP10[a]	Mine	Shrub	12W	532982	7150215	2006	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
PVP10A[d]	Mine	Shrub	12W	531852	7150917	2021	No	No	No	No	No	No	No	Yes	Yes
PVP11 (PVP10a)	Reference	Heath Tundra	12W	534937	7145517	2001	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP12	Reference	Tussock-Hummock	12W	535033	7145453	2006	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP13	Reference	Shrub	12W	535076	7145613	2006	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP14	Reference	Heath Tundra	12W	526342	7154475	2006	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP15	Reference	Tussock-Hummock	12W	526477	7154564	2006	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP16	Reference	Shrub	12W	526578	7154638	2006	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP17	Reference	Heath Tundra	12W	541029	7152048	2006	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP18	Reference	Tussock-Hummock	12W	541123	7152116	2006	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PVP19	Reference	Shrub	12W	541182	7152084	2006	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table A-1: Permanent Vegetation Plots sampled between 2001 and 2024

PVP Number	Plot Type	Vegetation Type	UTM Zone	Easting	Northing	Year Established	Year Sampled								
							2001	2004	2006	2008	2010	2013	2016	2021	2024
PVP20	Mine	Tussock-Hummock	12W	532096	7151695	2008	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PVP21	Mine	Heath Tundra	12W	531972	7151655	2008	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PVP22	Mine	Shrub	12W	531843	7151611	2008	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PVP23	Mine	Shrub	12W	531664	7151649	2008	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PVP24	Mine	Tussock-Hummock	12W	532528	7153617	2008	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PVP25	Reference	Tussock-Hummock	12W	526526	7154653	2008	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PVP26	Reference	Heath Tundra	12W	535118	7145272	2008	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PVP27	Reference	Shrub	12W	535067	7145232	2008	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PVP28	Reference	Tussock-Hummock	12W	535113	7145348	2008	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PVP29	Reference	Shrub	12W	540977	7152066	2008	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PVP30	Reference	Heath Tundra	12W	541027	7152077	2008	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PVP31	Mine	Heath Tundra	12W	532743	7153642	2008	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

a) Plot lost due to site expansion between 2004 and 2006; no UTM coordinates available for these sites.
b) New plots established in 2006 to replace plots lost due to site expansion.
c) Plot not surveyed from 2013 onwards due to site location on an Esker.
d) New plot established in 2021 to replace site lost due to site expansion in 2018 with A21 rock pile.
PVP = permanent vegetation plots; UTM = Universal Transverse Mercator; n/a = not applicable.

APPENDIX B

Mean Percent Cover by Species, 2024

Table B-1: Mean Percent Cover by Species in Mine Permanent Vegetation Plots, 2024

Scientific Name	Common Name	Shrub					Heath Tundra					Tussock-Hummock				
		PVP 05	PVP 09	PVP 10A	PVP 22	PVP 23	PVP 01	PVP 02	PVP 06	PVP 21	PVP 31	PVP 03	PVP 04	PVP 07	PVP 20	PVP 24
Trees and Shrubs																
Andromeda polifolia	bog rosemary	0	0	0	0	0	0	0	0	0	<1	0	4	7	0	<1
Arctous alpina	Alpine bearberry	0	5	0	5	0	8	6	0	2	17	<1	0	0	3	0
Betula glandulosa	glandular birch	19	11	45	23	42	7	15	5	24	7	5	3	4	33	19
Betula nana	Arctic dwarf birch	0	0	0	0	0	0	0	0	0	0	0	<1	0	0	0
Empetrum nigrum	black rowberry	3	4	1	18	3	6	12	<1	13	34	1	1	2	3	0
Kalmia procumbens	Alpine azalea	0	0	0	0	0	4	4	0	6	0	0	0	0	0	0
Rhododendron tomentosum	narrow-leaved Labrador tea	49	23	3	1	2	5	7	49	31	22	18	1	4	30	27
Rubus chamaemorus	cloudberry	4	3	0	0	3	0	0	4	1	0	<1	3	<1	3	4
Salix fuscescens	Alaska bog willow	0	0	0	0	0	0	0	0	0	0	0	<1	0	0	0
Salix glauca	gray willow	0	0	0	0	0	4	2	0	0	0	0	0	0	0	0
Salix planifolia	tea-leaved willow	0	0	0	18	9	<1	0	0	20	0	0	<1	0	0	0
Vaccinium oxycoccos	small cranberry	0	0	0	0	0	0	0	0	0	0	0	0	<1	0	0
Vaccinium uliginosum	Alpine bilberry	5	12	2	2	35	<1	<1	4	4	0	<1	<1	4	8	1
Vaccinium vitis-idaea	rock cranberry (lingonberry)	18	24	1	32	3	36	13	37	19	23	12	13	0	19	19
Forbs																
Astragalus alpinus	Alpine milk-vetch	0	0	0	0	0	0	<1	0	0	0	0	0	0	0	0
Oxytropis splendens	showy locoweed	0	0	0	0	0	0	<1	0	0	0	0	0	0	0	0
Pedicularis labradorica	Labrador lousewort	0	0	0	0	0	<1	0	0	<1	0	0	<1	<1	0	0
Pedicularis lapponica	Lapland lousewort	0	0	0	0	0	0	0	0	0	0	0	<1	0	0	0
Tofieldia pusilla	Scotch false asphodel	0	0	0	0	0	<1	0	0	0	0	0	0	<1	0	0
Graminoids																
Anthoxanthum monticola	Alpine sweet grass	0	0	10	<1	0	0	0	0	0	0	0	0	0	0	0
Calamagrostis lapponica	Lapland reed grass	0	0	0	0	0	0	0	<1	0	0	0	0	0	0	0
Calamagrostis stricta	slim-stem reed grass	2	1	0	0	3	0	0	0	0	0	0	1	0	0	0
Carex aquatilis	water sedge	2	0	<1	<1	2	<1	<1	0	1	0	<1	<1	3	1	0

Table B-1: Mean Percent Cover by Species in Mine Permanent Vegetation Plots, 2024

Scientific Name	Common Name	Shrub					Heath Tundra					Tussock-Hummock				
		PVP 05	PVP 09	PVP 10A	PVP 22	PVP 23	PVP 01	PVP 02	PVP 06	PVP 21	PVP 31	PVP 03	PVP 04	PVP 07	PVP 20	PVP 24
Carex utriculata	Northwest Territory sedge	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
Eriophorum vaginatum	tussock cotton-grass	0	0	0	0	0	0	0	0	0	0	2	4	0	3	10
Juncus drummondii	Drummond rush	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Luzula parviflora	small-flowered wood rush	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0
Poa arctica	Arctic bluegrass	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0
Bryophytes																
Aulacomnium palustre	ribbed bog moss	0	0	0	0	0	0	0	0	0	0	10	0	2	0	0
Aulacomnium turgidum	mountain groove moss	9	3	40	0	0	4	20	1	5	0	8	1	0	4	8
Dicranum acutifolium	sharp-leaved broom moss	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Dicranum elongatum	long-forked broom moss	0	<1	0	0	0	4	0	1	0	0	0	0	0	0	0
Dicranum fuscescens	curly broom moss	0	0	0	<1	0	0	8	2	0	0	0	0	10	0	0
Dicranum groenlandicum	Greenland broom moss	0	0	0	0	0	0	0	0	0	0	<1	2	2	<1	0
Dicranum scoparium	common broom moss	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
Dicranum undulatum	wavy broom moss	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Gemmabryum caespiticium	tufted bryum moss	0	0	0	0	0	0	0	0	<1	0	0	0	<1	0	0
Hylocomium splendens	stair-step moss	1	0	0	0	0	0	0	0	0	0	2	0	0	<1	0
Leptobryum pyriforme	golden thread moss	0	0	0	0	0	0	0	0	0	0	0	0	<1	0	0
Pleurozium schreberi	red-stemmed feather moss	0	0	0	0	0	0	0	0	0	0	<1	0	0	0	0
Polytrichum strictum	bog haircap moss	0	0	0	0	0	0	0	0	0	0	0	0	<1	0	10
Sanionia uncinata	sickle moss	0	0	0	0	0	0	0	0	0	0	0	0	18	3	0
Scorpidium cossonii	Cosson's hook moss	0	0	0	0	0	0	0	0	0	0	0	0	<1	0	0
Sphagnum angustifolium	large sphagnum moss	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52
Sphagnum capillifolium	small red sphagnum moss	0	0	0	0	0	0	0	0	0	0	0	40	0	0	0
Sphagnum fuscum	brown sphagnum moss	0	0	0	0	0	0	0	5	0	0	60	0	0	0	0
Sphagnum girgensohnii	Girgensohn’s sphagnum moss	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
Sphagnum magellanicum	Magellan sphagnum moss	0	8	0	0	0	0	0	0	0	0	0	11	0	0	0

Table B-1: Mean Percent Cover by Species in Mine Permanent Vegetation Plots, 2024

Scientific Name	Common Name	Shrub					Heath Tundra					Tussock-Hummock				
		PVP 05	PVP 09	PVP 10A	PVP 22	PVP 23	PVP 01	PVP 02	PVP 06	PVP 21	PVP 31	PVP 03	PVP 04	PVP 07	PVP 20	PVP 24
Sphagnum obtusum	blunt sphagnum moss	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
Sphagnum warnstorfii	Warnstorf's sphagnum moss	0	7	0	0	0	0	0	2	0	0	0	0	0	8	0
Straminergon stramineum	straw moss	0	<1	0	0	0	0	0	0	0	0	0	0	0	0	0
Lichens																
Alectoria ochroleuca	green witch's hair	0	0	0	0	0	<1	<1	0	<1	1	0	0	0	0	0
Arctocetraria andrejevii	thin-man's Iceland moss lichen	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Bryocaulon divergens	Arctic pretzel lichen	0	0	0	0	0	<1	<1	<1	<1	5	0	1	0	0	0
Bryoria nitidula	tundra horsehair lichen	0	0	0	<1	0	<1	<1	0	<1	<1	0	0	0	0	0
Cetraria laevigata	striped Icelandic lichen	<1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cetrariella delisei	snow-bed Iceland lichen	0	0	0	0	0	0	0	0	0	0	0	<1	<1	0	0
Cladonia amaurocraea	quill pixie lichen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<1
Cladonia gracilis	smooth pixie lichen	<1	0	0	0	0	0	0	0	0	<1	0	0	0	0	<1
Cladonia rangiferina	gray reindeer lichen	<1	0	0	0	0	<1	2	<1	0	<1	<1	0	0	0	0
Cladonia stygia	black-footed reindeer lichen	0	<1	<1	<1	0	0	0	<1	<1	2	0	2	0	0	3
Dactylina arctica	Arctic butterfingers lichen	0	0	0	0	0	<1	<1	0	<1	<1	<1	0	0	0	0
Flavocetraria cucullata	curled snow lichen	<1	0	0	<1	0	<1	2	2	<1	2	<1	<1	0	0	1
Flavocetraria nivalis	crinkled snow lichen	0	0	0	0	0	<1	<1	0	<1	4	0	<1	0	0	0
Masonhalea richardsonii	Arctic tumbleweed lichen	0	0	0	0	0	<1	1	0	<1	<1	0	0	0	0	0
Nephroma expallidum	purple paw lichen	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
Peltigera aphthosa	silver-edged freckle pelt lichen	<1	0	2	0	0	<1	2	1	0	0	<1	0	0	0	0
Peltigera scabrosa	greater toad pelt lichen	<1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Rhizocarpon geographicum	yellow map lichen	0	0	0	<1	0	0	0	0	0	0	0	0	0	0	0
Sphaerophorus globosus	Northern coral lichen	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Stereocaulon tomentosum	eyed foam lichen	0	0	<1	0	0	<1	0	<1	0	0	0	0	0	0	0
Thamnolia vermicularis	universal whiteworm lichen	0	0	<1	0	0	<1	<1	0	<1	0	0	0	0	0	0

Note: Means are rounded to the nearest whole number for presentation purposes; <1 indicates species present but with low cover. Table includes all species observed between Mine and Reference sites, even if only present within mine or reference sites. Species with '0' observations are retained in both Table 1 and 2 to more easily display differences in species presence by location.

Table B-2: Mean Percent Cover by Species in Reference Permanent Vegetation Plots, 2024

Scientific Name	Common Name	Shrub					Heath Tundra					Tussock-Hummock				
		PVP 13	PVP 16	PVP 19	PVP 27	PVP 29	PVP 11	PVP 14	PVP 17	PVP 26	PVP 30	PVP 12	PVP 15	PVP 18	PVP 25	PVP 28
Trees and Shrubs																
Andromeda polifolia	bog rosemary	<1	0	0	0	0	0	0	0	0	<1	15	2	3	<1	<1
Arctous alpina	Alpine bearberry	0	3	14	0	9	9	0	7	5	19	0	0	0	5	0
Arctous rubra	red bearberry	0	0	0	0	0	0	0	0	0	35	<1	0	0	0	0
Betula glandulosa	glandular birch	7	75	44	51	53	10	29	13	16	8	10	3	2	37	6
Empetrum nigrum	black crowberry	<1	4	4	0	19	6	18	19	11	19	4	1	6	18	2
Kalmia microphylla	Alpine laurel	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0
Kalmia polifolia	bog laurel	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0
Kalmia procumbens	Alpine azalea	0	0	0	0	0	0	0	15	3	4	0	0	0	0	0
Rhododendron tomentosum	narrow-leaved Labrador tea	14	5	10	2	22	<1	18	11	<1	9	7	2	6	18	6
Rubus chamaemorus	cloudberry	0	0	0	0	0	0	<1	0	0	0	42	1	2	2	2
Salix fuscescens	Alaska bog willow	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
Salix glauca	gray willow	0	0	2	0	<1	0	0	0	2	0	0	0	0	0	0
Salix planifolia	diamond-leaved willow	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0
Vaccinium oxycoccos	small cranberry	<1	0	0	0	0	0	0	0	0	0	0	1	2	0	0
Vaccinium uliginosum	Alpine bilberry	1	2	3	2	7	0	9	1	3	4	<1	3	2	11	2
Vaccinium vitis-idaea	rock cranberry (lingonberry)	24	22	28	3	21	13	26	3	5	18	32	1	3	14	6
Forbs																
Astragalus alpinus	Alpine milk-vetch	0	0	<1	0	0	0	0	0	0	0	0	0	0	0	0
Chamerion angustifolium	fireweed	0	0	<1	0	0	0	0	0	0	0	0	0	0	0	0
Equisetum arvense	field horsetail	0	0	0	0	12	0	0	0	0	0	0	0	0	2	0
Pedicularis labradorica	Labrador lousewort	0	0	0	0	0	0	0	0	0	0	<1	0	<1	2	<1
Saxifraga tricuspidata	prickly saxifrage	0	0	<1	0	0	0	0	0	0	0	0	0	0	0	0

Table B-2: Mean Percent Cover by Species in Reference Permanent Vegetation Plots, 2024

Scientific Name	Common Name	Shrub					Heath Tundra					Tussock-Hummock				
		PVP 13	PVP 16	PVP 19	PVP 27	PVP 29	PVP 11	PVP 14	PVP 17	PVP 26	PVP 30	PVP 12	PVP 15	PVP 18	PVP 25	PVP 28
Graminoids																
Anthoxanthum arcticum	Arctic sweet grass	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0
Anthoxanthum monticola	Alpine sweet grass	0	0	0	<1	1	0	0	0	0	0	0	0	0	0	0
Calamagrostis stricta	slim-stem reed grass	<1	<1	0	0	<1	0	0	0	0	0	0	0	0	1	0
Carex aquatilis	water sedge	0	0	0	<1	0	0	0	0	1	0	0	<1	3	2	0
Carex sartwellii	Sartwell's sedge	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
Carex saxatilis	Russet sedge	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
Carex utriculata	Northwest Territory sedge	0	0	0	0	0	0	0	0	0	0	0	10	7	0	0
Eriophorum scheuchzeri	Schechzer's white cotton-grass	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0
Eriophorum vaginatum	tussock cotton-grass	0	0	0	0	19	0	0	0	0	0	<1	16	9	11	25
Bryophytes																
Aulacomnium turgidum	mountain groove moss	<1	<1	28	0	1	0	0	0	<1	0	<1	0	<1	0	<1
Dicranum elongatum	long-forked broom moss	0	0	<1	0	0	0	0	0	3	0	0	0	0	0	0
Dicranum fuscescens	curly broom moss	0	<1	0	4	6	0	0	0	0	0	0	0	0	0	0
Dicranum groenlandicum	Greenland broom moss	<1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Dicranum undulatum	wavy broom moss	0	0	6	0	0	0	0	0	0	0	0	0	0	0	2
Drepanocladus aduncus	Knieff's hook moss	0	0	0	0	0	0	0	0	<1	0	0	0	0	0	0
Polytrichum juniperinum	juniper haircap moss	0	0	<1	<1	0	0	0	0	<1	<1	0	0	1	<1	0
Polytrichum strictum	bog haircap moss	<1	0	0	0	0	0	0	0	<1	0	<1	0	2	0	1
Scorpidium cossonii	Cosson's hook moss	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<1
Sphagnum angustifolium	large sphagnum moss	7	0	0	0	0	0	0	0	0	0	4	4	0	0	6
Sphagnum capillifolium	small red sphagnum moss	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5
Sphagnum compactum	compact sphagnum moss	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Sphagnum fuscum	N/A	0	0	0	0	0	0	0	0	0	0	36	18	0	0	0
Sphagnum lindbergii	Lindberg's sphagnum moss	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0
Sphagnum magellanicum	Magellan sphagnum moss	27	0	0	0	0	0	0	0	<1	0	0	53	0	0	0

Table B-2: Mean Percent Cover by Species in Reference Permanent Vegetation Plots, 2024

Scientific Name	Common Name	Shrub					Heath Tundra					Tussock-Hummock				
		PVP 13	PVP 16	PVP 19	PVP 27	PVP 29	PVP 11	PVP 14	PVP 17	PVP 26	PVP 30	PVP 12	PVP 15	PVP 18	PVP 25	PVP 28
Sphagnum majus	greater sphagnum moss	0	0	0	0	0	0	0	0	0	0	0	0	87	0	0
Sphagnum platyphyllum	flat-leaved sphagnum moss	0	0	0	0	0	0	0	0	<1	0	0	0	0	0	0
Lichen																
Alectoria ochroleuca	green witch's hair	0	0	0	0	0	0	<1	<1	<1	<1	0	0	0	0	0
Arctocetraria andrejevii	thin-man's Iceland moss lichen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Bryocaulon divergens	Arctic pretzel lichen	0	<1	<1	0	<1	<1	<1	6	<1	7	0	0	<1	0	0
Bryoria nitidula	tundra horsehair lichen	0	0	0	0	0	<1	0	0	<1	0	0	0	0	0	0
Cetraria islandica	true Icelandic lichen	0	0	0	0	0	0	0	0	0	0	0	0	<1	0	0
Cetraria laevigata	striped Icelandic lichen	0	0	0	0	3	0	0	0	0	0	0	0	<1	0	0
Cetraria nivalis	N/A	0	0	<1	0	0	0	0	0	0	0	0	0	0	0	0
Cladonia amaurocraea	quill pixie lichen	0	0	0	<1	0	0	0	0	0	0	0	0	0	0	0
Cladonia gracilis	smooth pixie lichen	0	0	0	1	0	<1	0	0	0	0	0	0	0	0	0
Cladonia mitis	N/A	0	0	0	3	0	<1	0	0	<1	0	0	0	0	0	<1
Cladonia pleurota	moderate sulphur-cup lichen	0	0	<1	0	0	0	0	0	0	0	0	0	0	0	0
Cladonia rangiferina	gray reindeer lichen	<1	0	0	<1	<1	0	1	<1	<1	<1	<1	0	<1	0	0
Cladonia stellaris	star-nosed reindeer lichen	0	0	0	<1	0	0	<1	0	<1	0	0	0	0	0	<1
Cladonia stygia	Black-footed reindeer lichen	<1	0	0	2	1	<1	<1	<1	<1	<1	<1	0	<1	3	9
Cladonia symphycarpa	greater ribbed pixie lichen	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Cladonia uncialis	thorn pixie lichen	0	0	0	<1	0	0	0	0	<1	0	0	0	0	0	0
Dactylina arctica	Arctic butterfingers lichen	<1	0	<1	0	<1	0	0	<1	<1	<1	<1	0	<1	0	0
Flavocetraria cucullata	curled snow lichen	<1	0	<1	<1	<1	<1	2	4	<1	6	<1	0	<1	<1	<1
Flavocetraria nivalis	crinkled snow lichen	<1	<1	<1	2	<1	<1	3	5	<1	7	0	0	<1	1	0
Icmadophila ericetorum	N/A	0	0	0	0	0	0	0	<1	0	0	0	0	0	0	0
Masonhalea richardsonii	Arctic tumbleweed lichen	0	0	<1	1	0	<1	1	<1	<1	<1	0	0	<1	0	0
Peltigera aphthosa	silver-edged freckle pelt lichen	0	0	1	0	<1	0	0	0	0	0	0	0	0	<1	0
Peltigera scabrosa	greater toad pelt lichen	0	0	0	0	0	0	0	0	0	0	0	0	0	<1	0

Table B-2: Mean Percent Cover by Species in Reference Permanent Vegetation Plots, 2024

Scientific Name	Common Name	Shrub					Heath Tundra					Tussock-Hummock				
		PVP 13	PVP 16	PVP 19	PVP 27	PVP 29	PVP 11	PVP 14	PVP 17	PVP 26	PVP 30	PVP 12	PVP 15	PVP 18	PVP 25	PVP 28
Porpidia flavocaerulescens	orange boulder lichen	0	0	0	<1	0	0	0	0	0	0	0	0	0	0	0
Rhizocarpon geographicum	yellow map lichen	0	0	0	<1	0	0	0	<1	0	0	0	0	0	0	0
Sphaerophorus globosus	Northern coral lichen	0	0	0	0	0	0	0	0	0	<1	0	0	0	0	0
Stereocaulon tomentosum	eyed foam lichen	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0
Thamnolia vermicularis	universal whiteworm lichen	0	0	<1	0	<1	0	0	<1	<1	<1	0	0	<1	<1	0

Note: Means are rounded to the nearest whole number for presentation purposes; <1 indicates species present but with low cover. Table includes all species observed between Mine and Reference sites, even if only present within mine or reference sites. Species with ‘0’ observations are retained in both Table 1 and 2 to more easily display differences in species presence by location.

APPENDIX C

Mean Species Cover Changes over the 2006 to 2024 Period

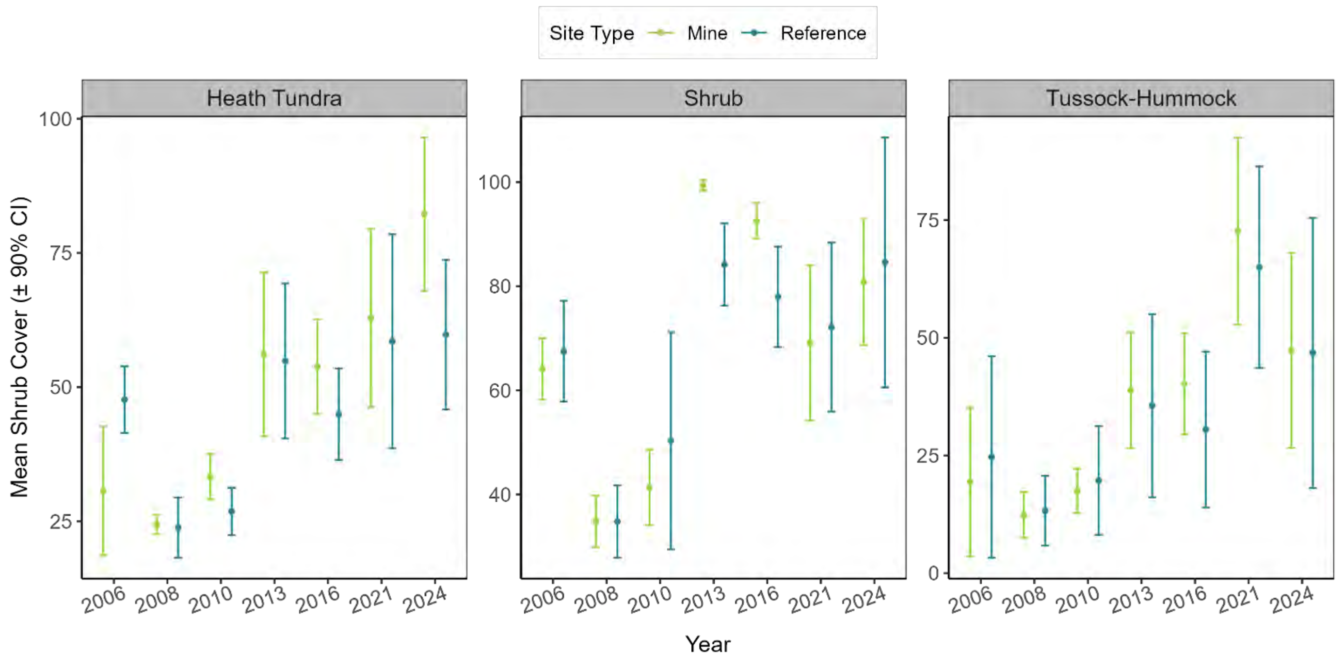

Figure C-1*:* Mean (± 90% Confidence Interval) total shrub cover (%) for Mine and reference plots between Heath Tundra, Low Shrub, and Tussock-Hummock vegetation communities among sampling years (2006-2024)

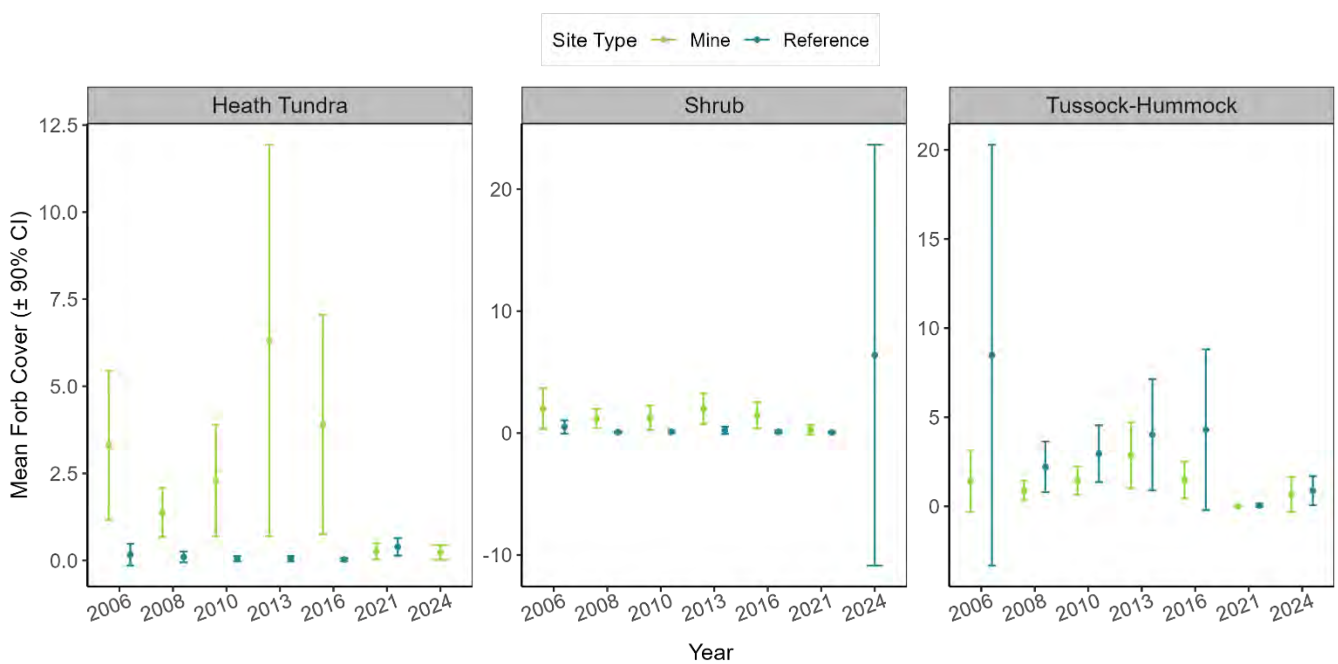

Figure C-2*:* Mean (± 90% Confidence Interval) total forb cover (%) for Mine and reference plots between Heath Tundra, Low Shrub, and Tussock-Hummock vegetation communities among sampling years (2006-2024)

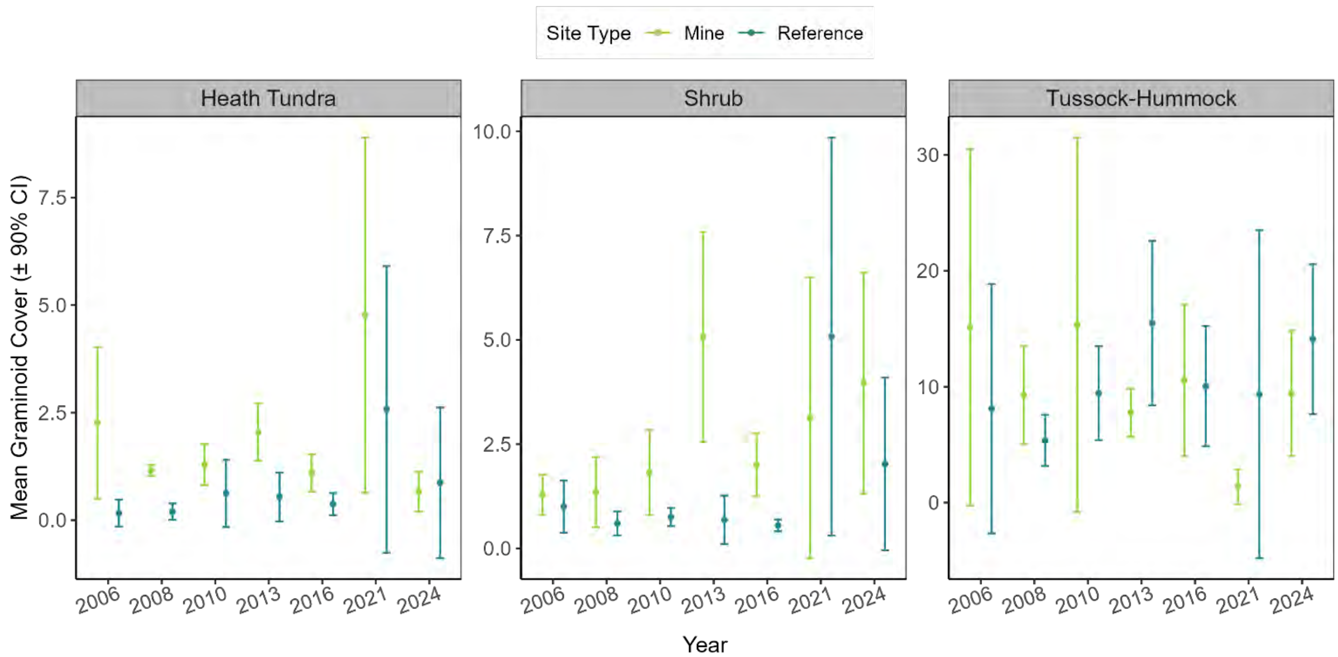

Figure C-3*: Mean (± 90% Confidence Interval) total graminoid cover (%) for Mine and reference plots between Heath Tundra, Low Shrub, and Tussock-Hummock vegetation communities among sampling years (2006-2024)*

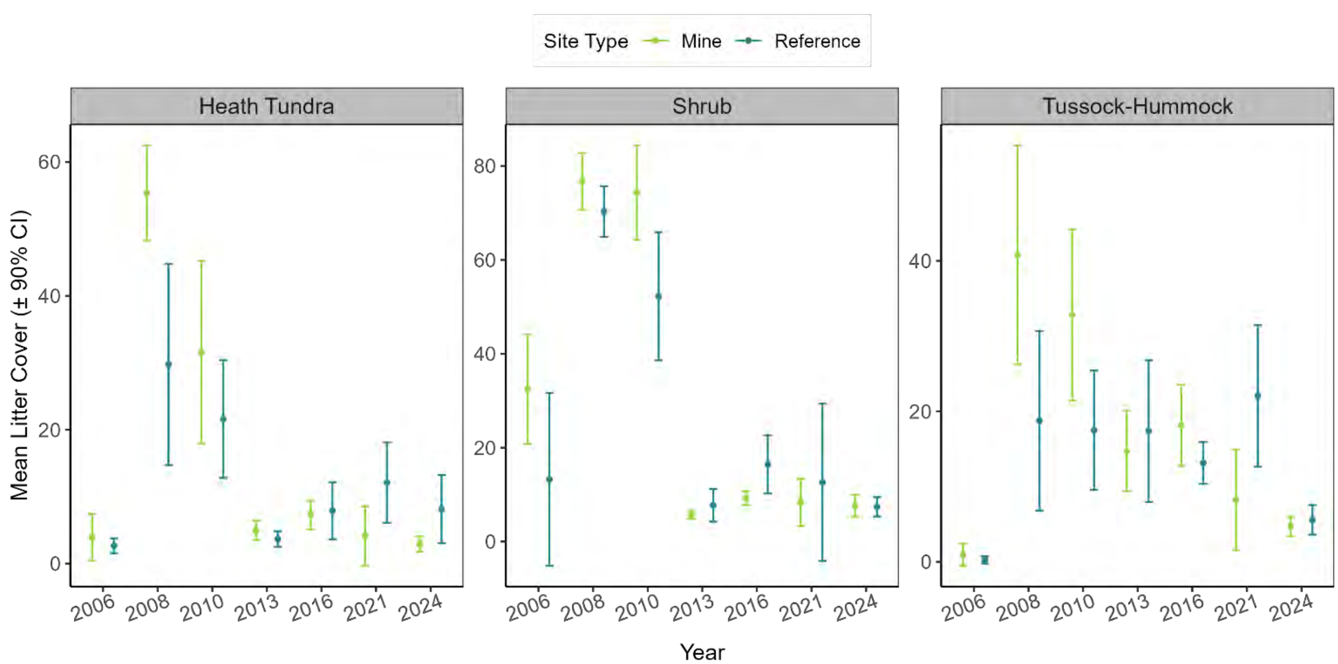

Figure C-4*: Mean (± 90% Confidence Interval) total litter cover (%) for Mine and reference plots between Heath Tundra, Low Shrub, and Tussock-Hummock vegetation communities among sampling years (2006-2024)*

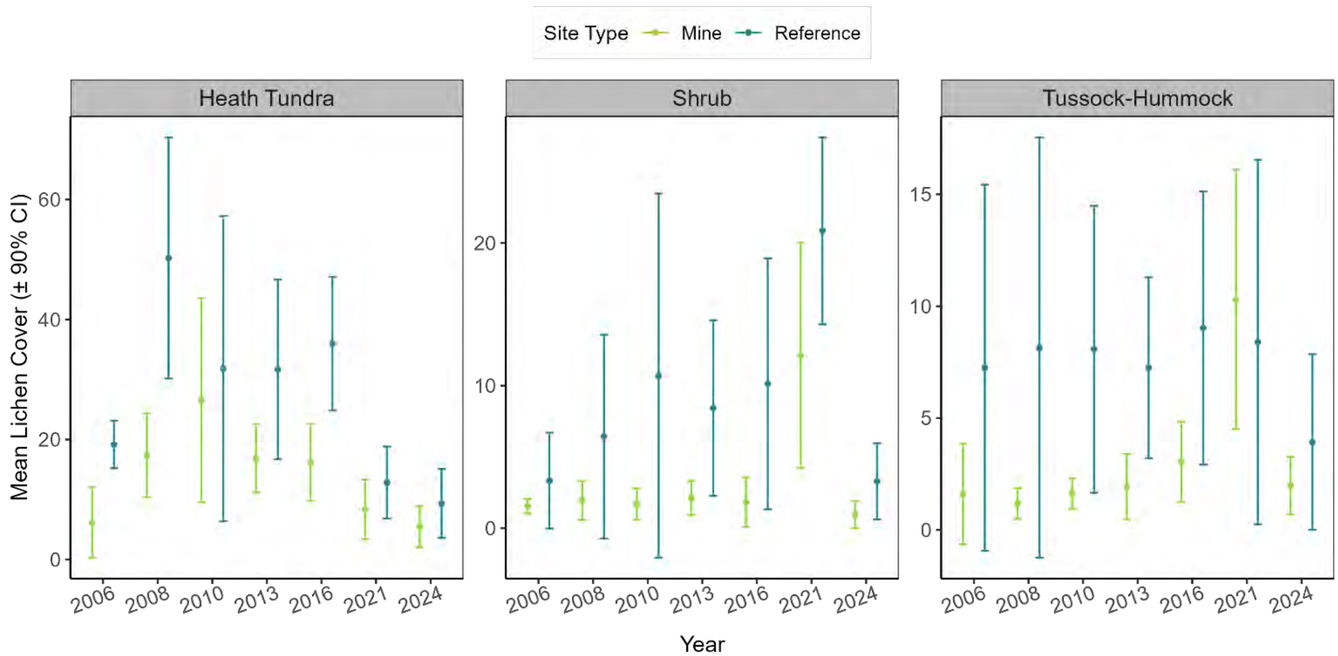

Figure C-5:Mean (± 90% Confidence Interval) total lichen cover (%) for Mine and reference plots between Heath Tundra, Low Shrub, and Tussock-Hummock vegetation communities among sampling years (2006-2024)

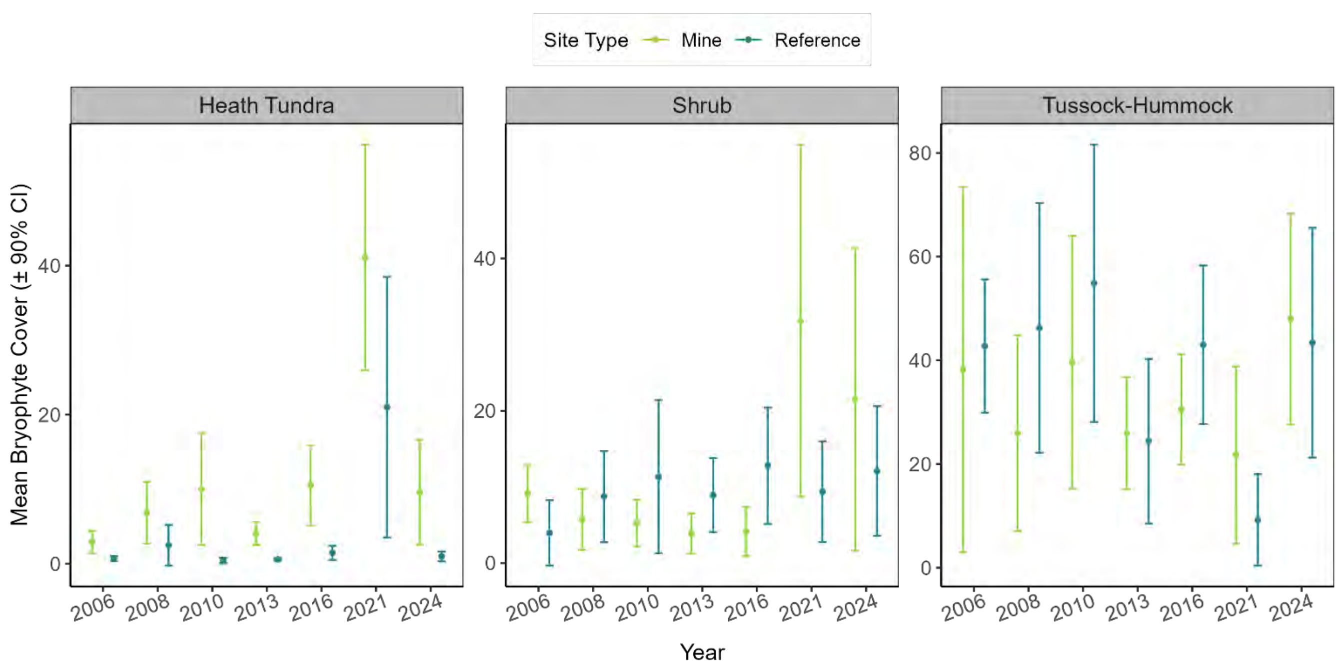

Figure C-6*:* Mean (± 90% Confidence Interval) total bryophyte cover (%) for Mine and reference plots between Heath Tundra, Low Shrub, and Tussock-Hummock vegetation communities among sampling years (2006-2024)

APPENDIX D

Mean Species Richness Changes over the 2006 to 2024 Period

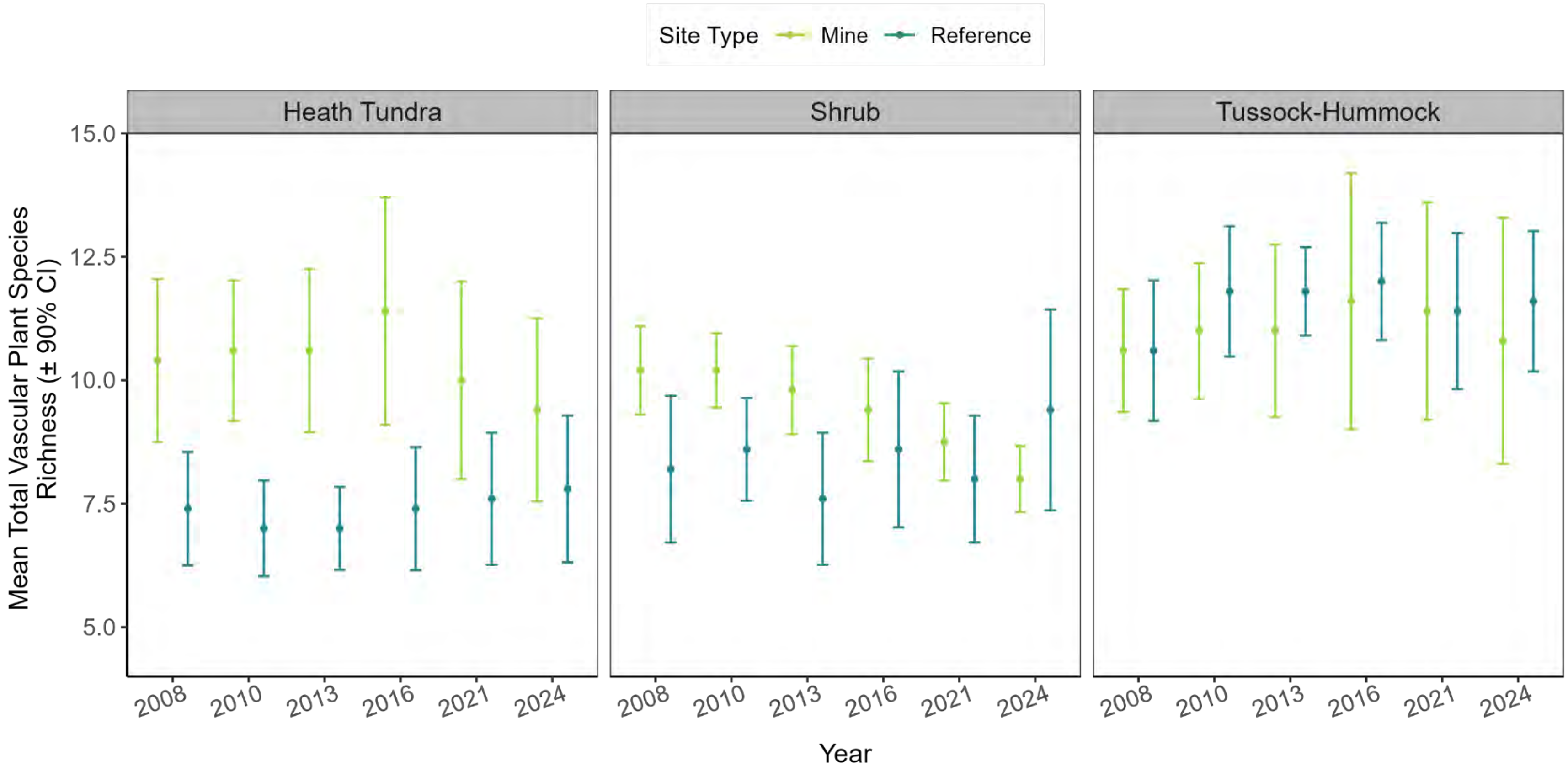

Figure D-1: Mean (±90% Confidence Interval) total vascular species richness (%), for Mine and reference plots between Heath Tundra, Low Shrub, and Tussock-Hummock vegetation communities among sampling years (2008-2024)

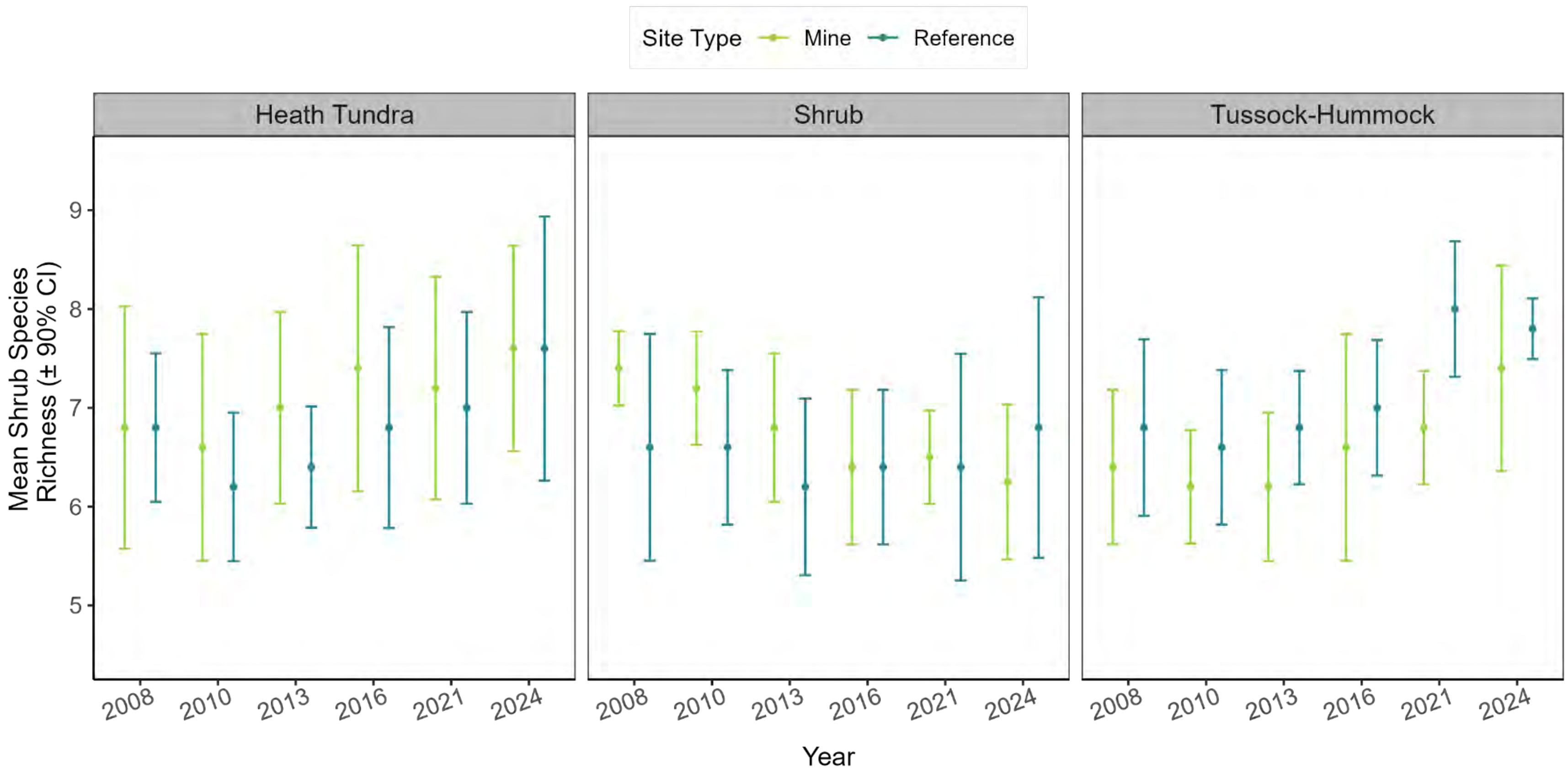

Figure D-2*:* Mean (±90% Confidence Interval) shrub species richness (%), for Mine and reference plots between Heath Tundra, Low Shrub, and Tussock-Hummock vegetation communities among sampling years (2008-2024)

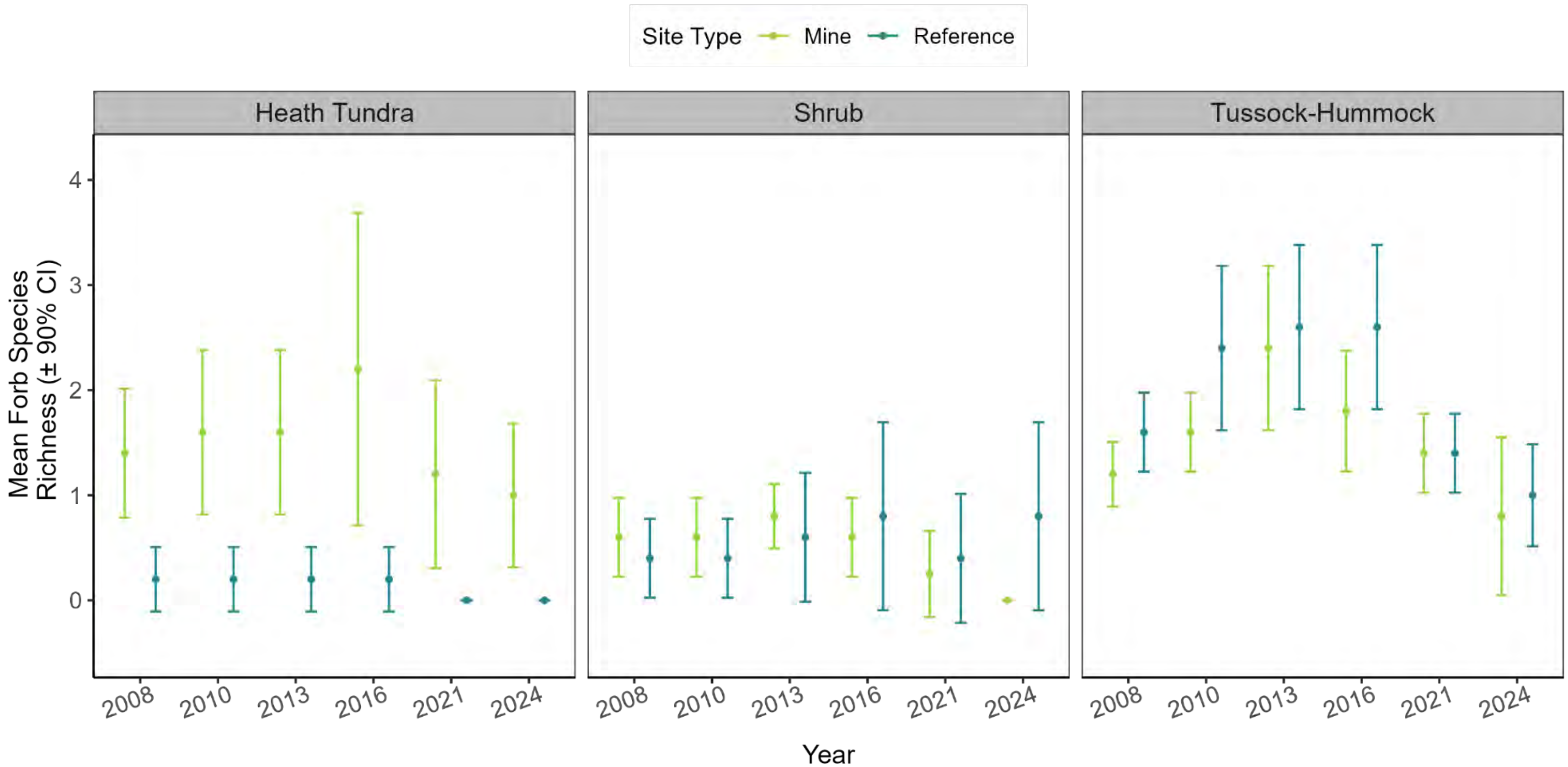

Figure D-3: Mean (±90% Confidence Interval) forb species richness (%), for Mine and reference plots between Heath Tundra, Low Shrub, and Tussock-Hummock vegetation communities among sampling years (2008-2024)

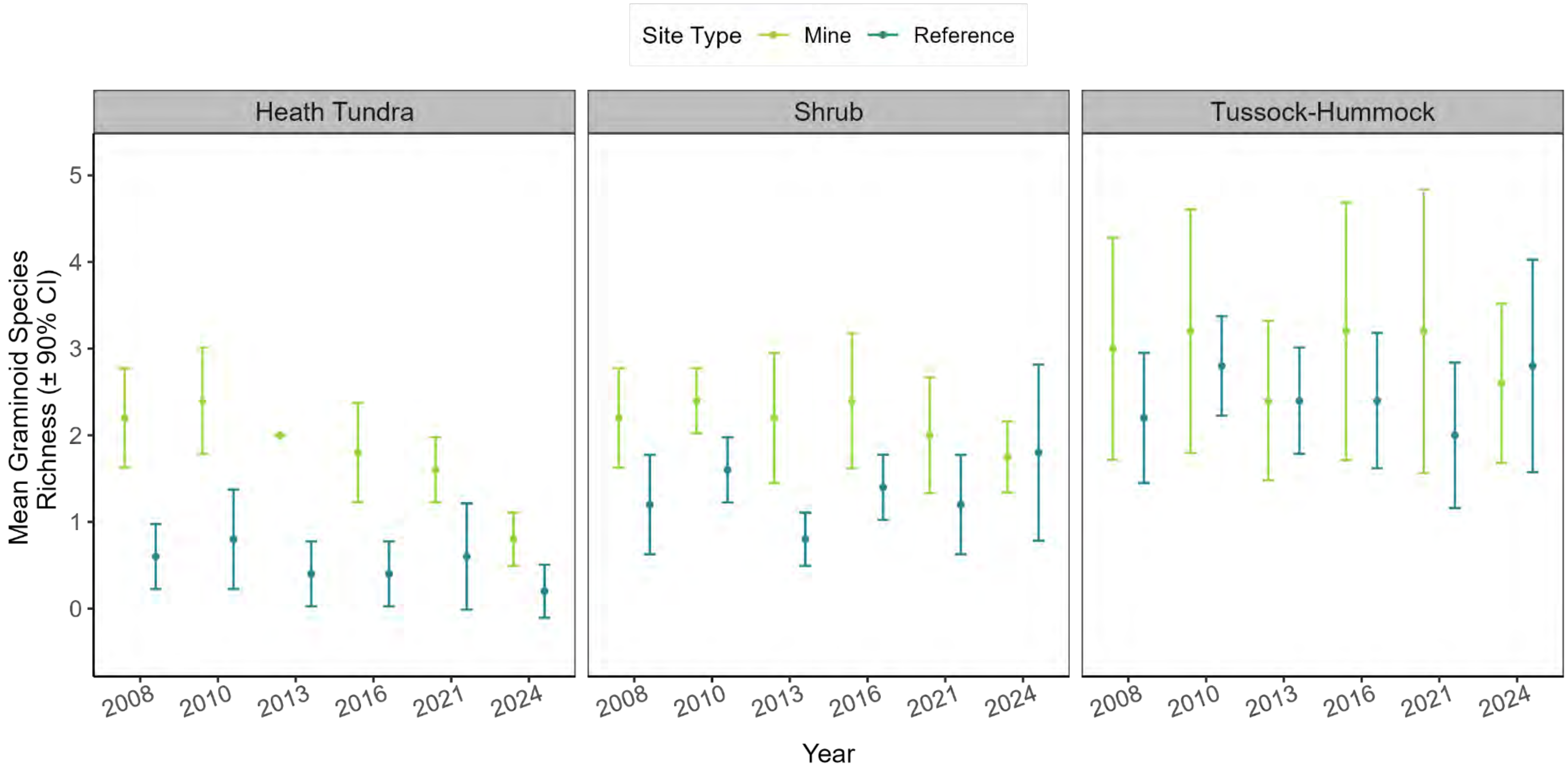

Figure D-4: Mean (±90% Confidence Interval) graminoid species richness (%), for Mine and reference plots between Heath Tundra, Low Shrub, and Tussock-Hummock vegetation communities among sampling years (2008-2024)

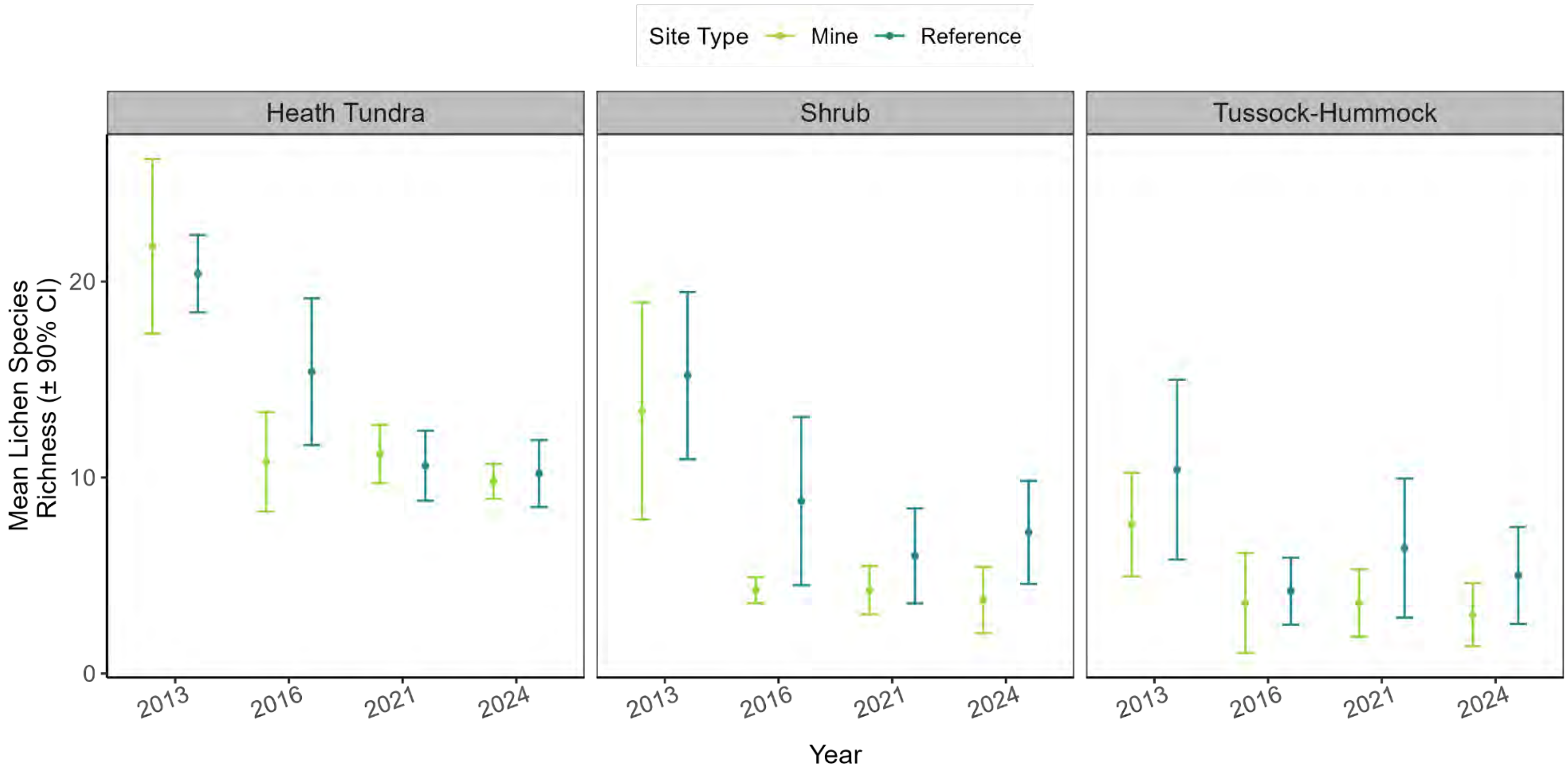

Figure D-5: Mean (±90% Confidence Interval) lichen species richness (%), for Mine and reference plots between Heath Tundra, Low Shrub, and Tussock-Hummock vegetation communities among sampling years (2013-2024)

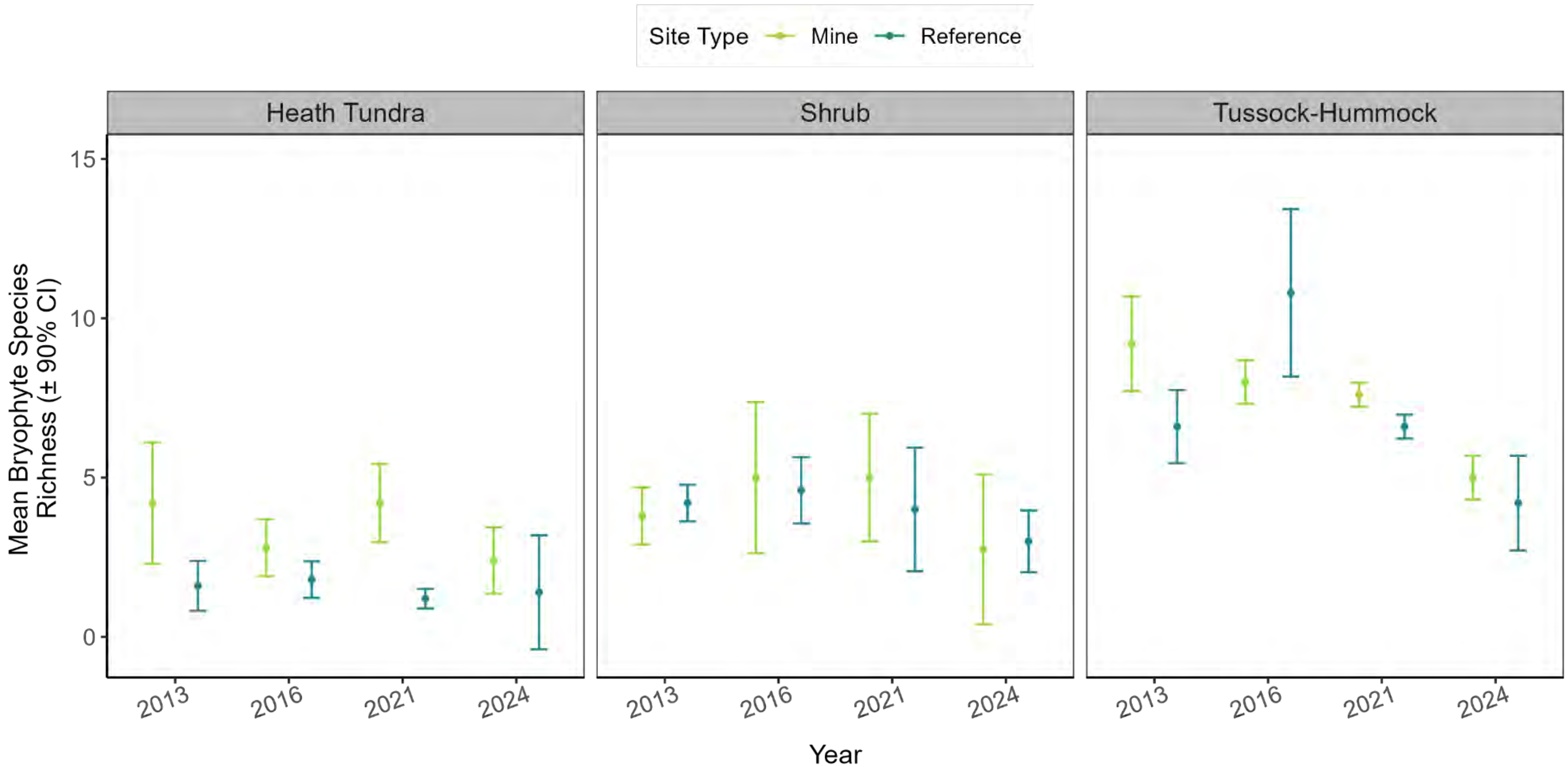

Figure D-6: Mean (±90% Confidence Interval) bryophyte species richness (%), for Mine and reference plots between Heath Tundra, Low Shrub, and Tussock-Hummock vegetation communities among sampling years (2013-2024)

APPENDIX E

2024 Lichen Monitoring Field Observations

Sample Location	Lichen Species Composition	Vegetation Class	Soil Type	Caribou Activity Observed
Near-Field				
NF-1	*Flavocetraria nivalis* – 30% *Flavocetraria cuculata* – 15% *Masonhalea richardsonii* – 30% *Cladonia* spp. – 24%	Heath Tundra	Sand	None
NF-2	*Flavocetraria nivalis* – 30% *Flavocetraria cuculata* – 10% *Bryocaulon divergens* – 7% *Masonhalea richardsonii* – 3% *Cladonia rangiferina* – 25% *Cladonia mitis* – 15% *Cladonia stygia* – 5% *Cladonia* spp. – 5% *Stereocaulon* sp. – 0.1% *Cetraria* sp. – 0.1% *Alectoria ochroleuca* – 0.1%	Heath Tundra	Sand	None
NFL-3	*Flavocetraria nivalis* – 50% *Flavocetraria cuculata* – 5% *Bryocaulon divergens* – 0.1% *Cladonia* stellaris – 5% *Cladonia* spp. – 40%	Heath Tundra	Sand	None
NFL-4	*Flavocetraria nivalis* – 40% *Flavocetraria cuculata* – 10% *Bryocaulon divergens* – 0.1% *Cladonia* spp. – 50% *Alectoria ochroleuca* – 0.1%	Heath Tundra	Sand	None
NFL-5	*Flavocetraria nivalis* – 30% *Flavocetraria cuculata* – 15% *Bryocaulon divergens* – 0.1% *Masonhalea richardsonii* – 0.1% *Cladonia stellaris* – 1% *Cladonia* spp. – 30% *Stereocaulon tomentosum* - 20% *Cetraria andrejevii* – 2% *Cetraria* sp. – 2%	Heath Tundra	Sand	None
NFL-6	*Flavocetraria nivalis* – 30% *Flavocetraria cuculata* – 5% *Bryocaulon divergens* – 0.1% *Cladonia* sp. – 65% *Cetraria* spp. – 0.1%	Heath Tundra	Clay	None
NFL-7	*Flavocetraria nivalis* – 25% *Flavocetraria cuculata* – 7% *Bryocaulon divergens* – 1% *Masonhalea richardsonii* – 0.1% *Cladonia stellaris* – 1% *Cladonia* sp. – 65% *Cetraria* spp. – 1%	Heath Tundra	Clay	None

Sample Location	Lichen Species Composition	Vegetation Class	Soil Type	Caribou Activity Observed
NFL-8	*Flavocetraria nivalis* – 54% *Flavocetraria cuculata* – 10% *Bryocaulon divergens* – 1% *Cladonia stellaris* – 0.1% *Cladonia* sp. – 35%	Heath Tundra	Sand	None
NFL-9	*Flavocetraria nivalis* – 10% *Flavocetraria cuculata* – 8% *Masonhalea richardsonii* – 2% *Cladonia rangiferina* – 20% *Cladonia stygia* – 30% *Cladonia* sp. – 20% *Peltigera* sp. – 0.1% *Cetraria* spp. – 7% *Stereocaulon* sp. – 3%	Tall Shrub	Sand (coarse fragments)	None
NFL-10	*Flavocetraria nivalis* – 24% *Flavocetraria cuculata* – 5% *Bryocaulon divergens* – 1% *Masonhalea richardsonii* – 10% *Alectoria ochroleuca* – 0.1% *Cladonia* sp. – 20% *Bryoria nitidula* – 1% *Peltigera aphthosa* – 2% *Nephroma arcticum* – 2% *Stereocaulon* sp. – 35%	Tussock/Hummock	Clay	None
NFL-11	*Flavocetraria nivalis* – 30% *Flavocetraria cuculata* – 19% *Bryocaulon divergens* – 2% *Masonhalea richardsonii* – 3% *Cladonia* spp. – 45% *Cetraria* spp. – 1% *Bryoria nitidula* – 0.1%	Heath Tundra	Sand (with coarse fragments)	None
NFL-12	*Flavocetraria nivalis* – 30% *Flavocetraria cuculata* – 15% *Bryocaulon divergens* – 1% *Masonhalea richardsonii* – 10% *Cladonia* spp. – 24% *Cetraria* spp. – 10% *Stereocaulon tomentosum* – 10%	Tussock/Hummock	Sand	None
NFL-13	*Flavocetraria nivalis* – 40% *Flavocetraria cuculata* – 20% *Bryocaulon divergens* – 2% *Masonhalea richardsonii* – 0.1% *Cladonia* spp. – 33% *Cladonia stygia* – 2% *Alectoria ochroleuca* – 0.1% *Cetraria* spp. – 3%	Heath Tundra	Sand	None

Sample Location	Lichen Species Composition	Vegetation Class	Soil Type	Caribou Activity Observed
NFL-14	*Flavocetraria nivalis* – 17% *Flavocetraria cuculata* – 10% *Bryocaulon divergens* – 2% *Masonhalea richardsonii* – 0.1% *Cladonia* spp. – 30% *Cladonia amaurocraea* – 0.1% *Nephroma arcticum* – 20% *Alectoria ochroleuca* – 1% *Stereocaulon* sp. – 3% *Peltigera aphthosa* – 7% *Peltigera* spp. – 10%	Heath Tundra	Sand	None
NFL-15	*Flavocetraria nivalis* – 35% *Flavocetraria cuculata* – 5% *Cladonia* spp. – 10% *Cladonia rangiferina* – 5% *Cladonia stygia* – 45%	Heath Tundra	Sand	None
NFL-16	*Flavocetraria nivalis* – 3% *Cladonia* spp. – 25% *Cladonia uncialis*– 2% *Stereocaulon* sp. – 70%	Tall Shrub	Sand	None
NFL-17	*Flavocetraria nivalis* – 10% *Flavocetraria cuculata* – 0.1% *Masonhalea richardsonii* – 1% *Cladonia rangiferina* – 25% *Cladonia mitis* – 9% *Cladonia stygia* – 25% *Cladonia uncialis*– 2% *Cladonia* spp. – 25%	Heath Tundra	Sandy Clay	None
NFL-18	*Flavocetraria nivalis* – 20% *Flavocetraria cuculata* – 5% *Cladonia* spp. – 75% *Cetraria laevigata* – 0.1%	Heath Tundra	Sand	None
NFL-20[(a)]	*Flavocetraria* spp. – N/A *Cetraria* spp. – N/A *Peltigera* spp. – N/A *Cladonia* spp. – N/A	Tall Shrub	Clay	None
Far-Field				
FFL-1	*Flavocetraria nivalis* – 25% *Flavocetraria cuculata* – 25% *Masonhalea richardsonii* – 0.1% *Bryocaulon divergens* – 0.1% *Cladonia* spp. - 38% *Cladonia stellaris* – 8% *Cladonia stygia* – 2% *Alectoria ochroleuca* – 2%	Heath Tundra	Silt	None

Sample Location	Lichen Species Composition	Vegetation Class	Soil Type	Caribou Activity Observed
FFL-2	*Flavocetraria nivalis* – 4% *Flavocetraria cuculata* – 5% *Masonhalea richardsonii* – 4% *Bryocaulon divergens* – 0.1% *Cladonia* spp. - 40% *Cladonia stellaris* – 0.1% *Alectoria ochroleuca* – 0.1% *Cetraria* spp. – 0.1% *Stereocaulon* sp. – 35% *Cetraria andrejevii* – 2%	Heath Tundra	Sand (coarse fragments)	Caribou scat
FFL-3	*Flavocetraria nivalis* – 10% *Flavocetraria cuculata* – 10% *Cladonia stellaris* – 25% *Alectoria ochroleuca* – 20% *Stereocaulon* sp. – 25% *Cladonia* spp. - 20%	Heath Tundra	Sand (coarse fragments)	None
FFL-5	*Flavocetraria nivalis* – 2% *Flavocetraria cuculata* – 5% *Bryocaulon divergens* – 1% *Masonhalea richardsonii* – 0.1% *Cladonia* spp. – 40 *Alectoria ochroleuca* – 2% *Cetraria* spp. – 0.1% *Stereocaulon* sp. – 5% *Peltigera* sp. – 45%	Tall Shrub	Sand	None
FFL-7	*Flavocetraria nivalis* – 8% *Flavocetraria cuculata* – 5% *Bryocaulon divergens* – 0.1% *Masonhalea richardsonii* – 45% *Cladonia* spp. – 25% *Alectoria ochroleuca* – 0.1% *Cetraria* spp. – 2% *Stereocaulon* spp. – 15%	Heath Tundra	Sand	None
FFL-8	*Flavocetraria nivalis* – 3% *Flavocetraria cuculata* – 7% *Bryocaulon divergens* – 0.1% *Cladonia* spp. – 50% *Cetraria* spp. – 0.1% *Stereocaulon* spp. – 35% *Peltigera aphthosa* – 5%	Tall Shrub	Sand	None
FFL-9	*Flavocetraria nivalis* – 15% *Flavocetraria cuculata* – 7% *Cladonia* spp. – 28% *Cetraria* spp. – 2% *Stereocaulon* sp. – 45% *Alectoria ochroleuca* – 3%	Tall Shrub	Sandy Clay	None

Sample Location	Lichen Species Composition	Vegetation Class	Soil Type	Caribou Activity Observed
FFL-10	*Flavocetraria nivalis* – 15% *Flavocetraria cuculata* – 13% *Cladonia rangiferina* – 25% *Cladonia stellaris* – 0.1% *Cladonia stygia* – 22% *Cladonia* spp. – 2% *Cetraria* sp. – 3% *Stereocaulon* sp. – 10% *Cetraria andrejevii* – 10%	Tussock/Hummock	Sand	None
FFL-11	*Flavocetraria nivalis* – 18% *Flavocetraria cuculata* – 7% *Masonhalea richardsonii* – 3% *Cladonia rangiferina* – 25% *Cladonia stellaris* – 6% *Cladonia mitis* – 4% *Cladonia stygia* – 20% *Cladonia* spp. – 10% *Cetraria* spp. – 2% *Cetraria andrejevii* – 5%	Heath Tundra	Sand	None
FFL-12	*Flavocetraria nivalis* – 2% *Flavocetraria cuculata* – 4% *Bryocaulon divergens* – 0.1% *Cladonia rangiferina* – 40% *Cladonia stygia* – 20% *Cladonia* spp. – 25% *Cladonia uncialis* – 4% *Cetraria* spp. – 5% *Peltigera* sp. – 0.1%	Tussock/Hummock	Sandy Clay	None
FFL-13	*Flavocetraria nivalis* – 5% *Flavocetraria cuculata* – 2% *Masonhalea richardsonii* – 7% *Cladonia* spp. – 18% *Stereocaulon tomentosum* – 65% *Cetraria* spp. – 2% *Peltigera* sp. – 1% *Peltigera aphthosa* – 0.1%	Tall Shrub	Sand	None
FFL-14	*Flavocetraria nivalis* – 35% *Flavocetraria cuculata* – 13% *Bryocaulon divergens* – 0.1% *Masonhalea richardsonii* – 2% *Cladonia stellaris* – 5% *Cladonia rangiferina* – 20% *Cladonia stygia* – 10% *Cladonia* spp. – 10% *Cetraria* spp. – 5%	Wetland (sedge meadow)	Sandy (course fragments)	None

Sample Location	Lichen Species Composition	Vegetation Class	Soil Type	Caribou Activity Observed
FFL-15	*Flavocetraria nivalis* – 3% *Flavocetraria cuculata* – 7% *Bryocaulon divergens* – 2% *Masonhalea richardsonii* – 1% *Cladonia* spp. – 67% *Cetraria andrejevii* – 17% *Cetraria* spp. – 3% *Alectoria ochroleuca* – 0.1%	Heath Tundra	Sandy Clay	None
FFL-17	*Flavocetraria nivalis* – 2% *Flavocetraria cuculata* – 3% *Masonhalea richardsonii* – 1% *Cladonia* spp. – 19% *Cetraria* spp. – 0.1% *Stereocaulon* spp. – 75%	Heath Tundra	Silty Sand	None
FFL-19	*Flavocetraria nivalis* – 10% *Flavocetraria cuculata* – 16% *Bryocaulon divergens* – 7% *Masonhalea richardsonii* – 1% *Cladonia* spp. – 30% *Cladonia stellaris* – 0.1% *Cetraria* spp. – 1% *Alectoria ochroleuca* – 5% *Stereocaulon tomentosum* – 30%	Heath Tundra	Sandy Clay	None
FFL-20	*Flavocetraria nivalis* – 10% *Flavocetraria cuculata* – 6% *Cladonia* spp. – 4% *Cladonia stellaris* – 5% *Cladonia mitis* – 8% *Cladonia uncialis* – 2% *Stereocaulon tomentosum* – 65%	Heath Tundra	Clay/Sand	None
FFL-21	*Flavocetraria nivalis* – 5% *Flavocetraria cuculata* – 2% *Cladonia rangiferina* – 5% *Cladonia* spp. – 8% *Alectoria ochroleuca* – 5% *Stereocaulon tomentosum* – 60% *Cetraria andrejevii* – 15%	Tall Shrub	Sand	None
FFL-22	*Flavocetraria nivalis* – 2% *Flavocetraria cuculata* – 1% *Cladonia* spp. – 10% *Stereocaulon tomentosum* – 75% *Cetraria* sp. – 10% *Nephroma* sp. – 2%	Tall Shrub	Sand	None

Sample Location	Lichen Species Composition	Vegetation Class	Soil Type	Caribou Activity Observed
FFL-23	*Flavocetraria nivalis* – 20% *Flavocetraria cuculata* – 20% *Bryocaulon divergens* – 1% *Cladonia* spp. – 55% *Alectoria ochroleuca* – 0.1% *Cetraria* sp. – 4%	Tussock/Hummock	Sand	None
FFL-24	*Flavocetraria nivalis* – 2% *Flavocetraria cuculata* – 3% *Bryocaulon divergens* – 0.5% *Cladonia* spp. – 3% *Cetraria* sp. – 7% *Stereocaulon* sp. – 85%	Tall Shrub	Clay	Caribou scat
FFL-25	*Flavocetraria nivalis* – 12% *Flavocetraria cuculata* – 8% *Bryocaulon divergens* – 5% *Cladonia* spp. – 25% *Alectoria ochroleuca* – 3% *Stereocaulon* sp. – 45% *Cetraria* sp. – 2%	Tall Shrub/Esker Complex	Sand	Grazing on *Betula* sp.
FFL-26	*Flavocetraria nivalis* – 12% *Flavocetraria cuculata* – 5% *Bryocaulon divergens* – 0.1% *Masonhalea richardsonii* – 0.1% *Cladonia* spp. - 48% *Stereocaulon* sp. – 35% *Cetraria* sp. – 0.1% *Peltigera aphthosa* – 0.1% *Peltigera* sp. – 0.1% *Alectoria ochroleuca* – 0.1%	Heath Tundra	Sandy Silt	None
FFL-27	*Flavocetraria nivalis* – 45% *Flavocetraria cuculata* – 35% *Bryocaulon divergens* – 0.1% *Masonhalea richardsonii* – 0.1% *Cladonia* spp. - 30% *Alectoria ochroleuca* – 0.1%	Tall Shrub	Sand/Silt	None
FFL-28	*Flavocetraria nivalis* – 30% *Flavocetraria cuculata* – 30% *Masonhalea richardsonii* – 5% *Cladonia* spp. - 35% *Cladonia gracilis* - 0.1%	Heath Tundra	Sand	None

Sample Location	Lichen Species Composition	Vegetation Class	Soil Type	Caribou Activity Observed
Far-Far-Field				
FFFL-1	*Flavocetraria nivalis* – 9% *Flavocetraria cuculata* – 9% *Cladonia rangiferina* – 45% *Cladonia mitis* – 15% *Cladonia stygia* – 12% *Cladonia* sp. – 10% *Alectoria ochroleuca* – 0.1%	Tussock/Hummock	Clay (course fragments)	None
FFFL-2	*Flavocetraria nivalis* – 3% *Flavocetraria cuculata* – 5% *Bryocaulon divergens* – 0.1% *Cladonia* sp. – 60% *Stereocaulon* sp. – 20% *Peltigera aphthosa* – 5% *Alectoria ochroleuca* – 0.1% *Peltigera* sp. – 7%	Wetland (sedge meadow)	Clay	Caribou scat
FFFL-3	*Flavocetraria nivalis* – 2% *Flavocetraria cuculata* – 5% *Bryocaulon divergens* – 0.1 *Cladonia* sp. – 50% *Cladonia mitis* – 3% *Stereocaulon* sp. – 40% *Alectoria ochroleuca* – 0.1% *Cetraria* sp. – 0.1%	Heath Tundra (Taiga Shield)	Sand	None

(a) For station NFL-20 due to an error in the field, the % composition data were not collected. Species are included only as genus, reflecting the previous years' data, and confirmation of the WSP biologists who completed the survey in 2024.

Field observations were compiled from field data forms completed by WSP biologists during the field portion of the Diavik Soil and Lichen Sampling Program, July and August 2024.

APPENDIX F

Site Photos from the Vegetation and Lichen Monitoring Program

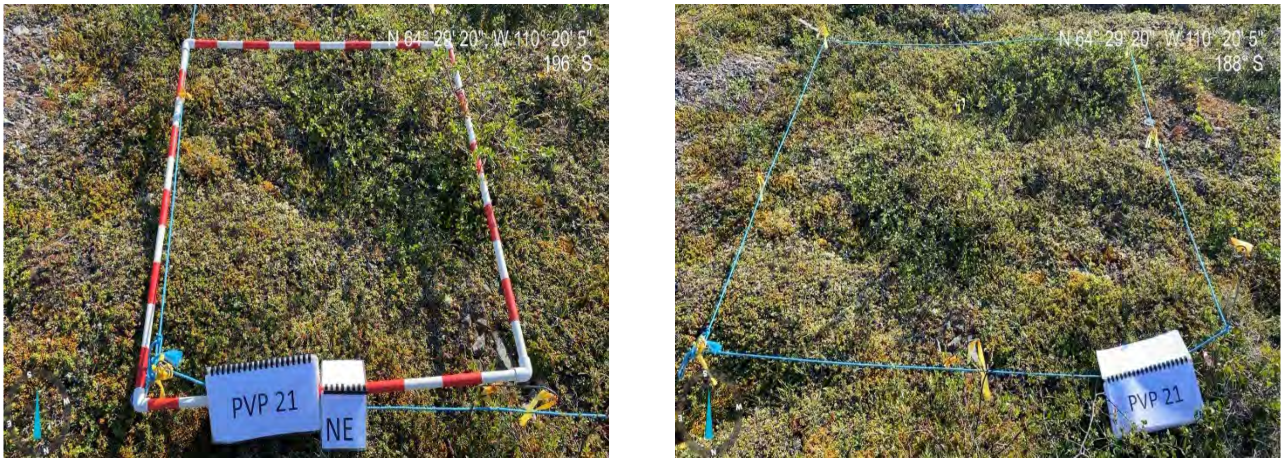

Figure F-1: Representative photos of a Heath Tundra Community Mine plot. PVP21

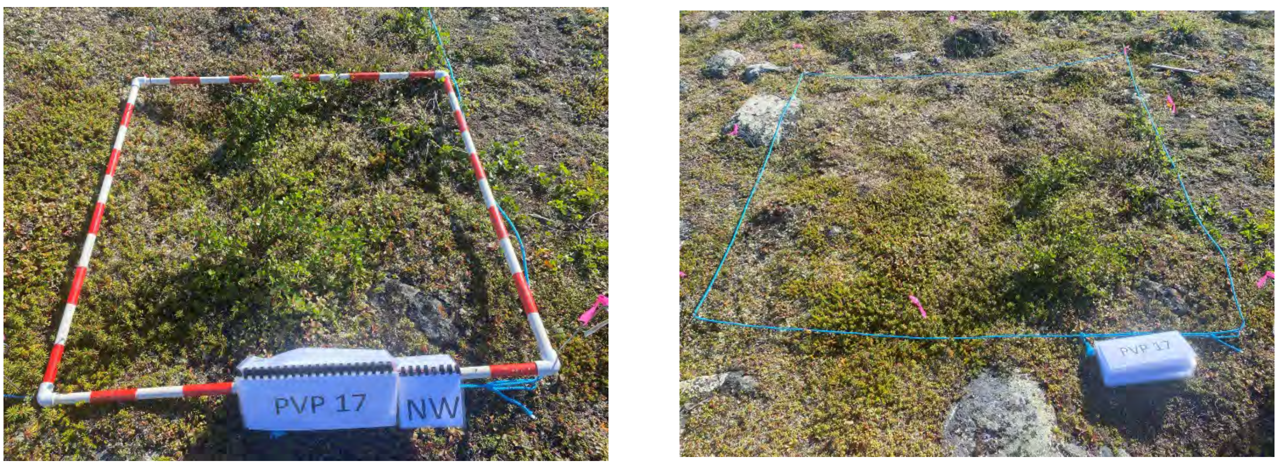

Figure F-2: Representative photos of a Heath Tundra Community Reference plot. PVP17

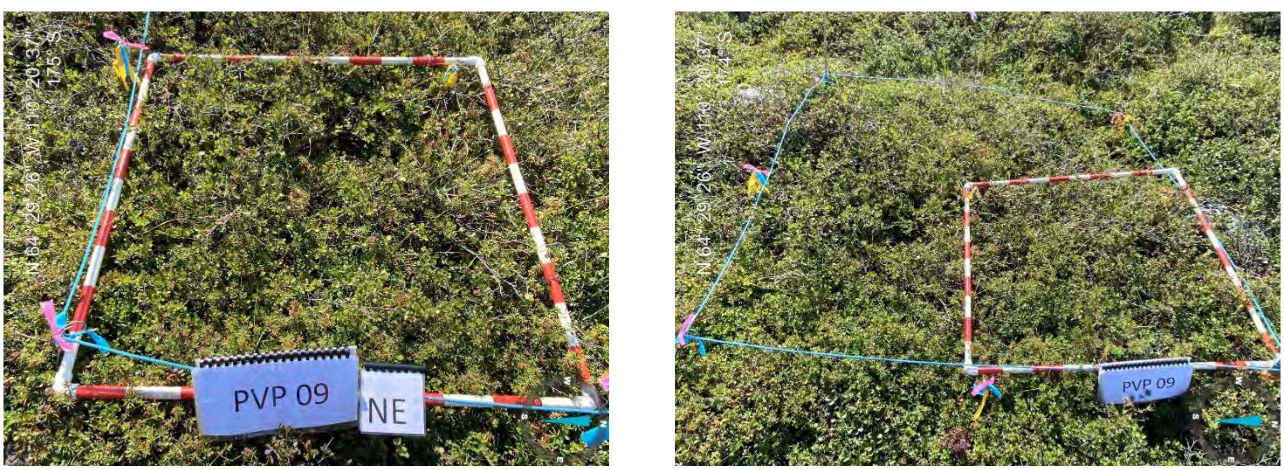

Figure F-3: Representative photos of a Shrub Community Mine plot. PVP09

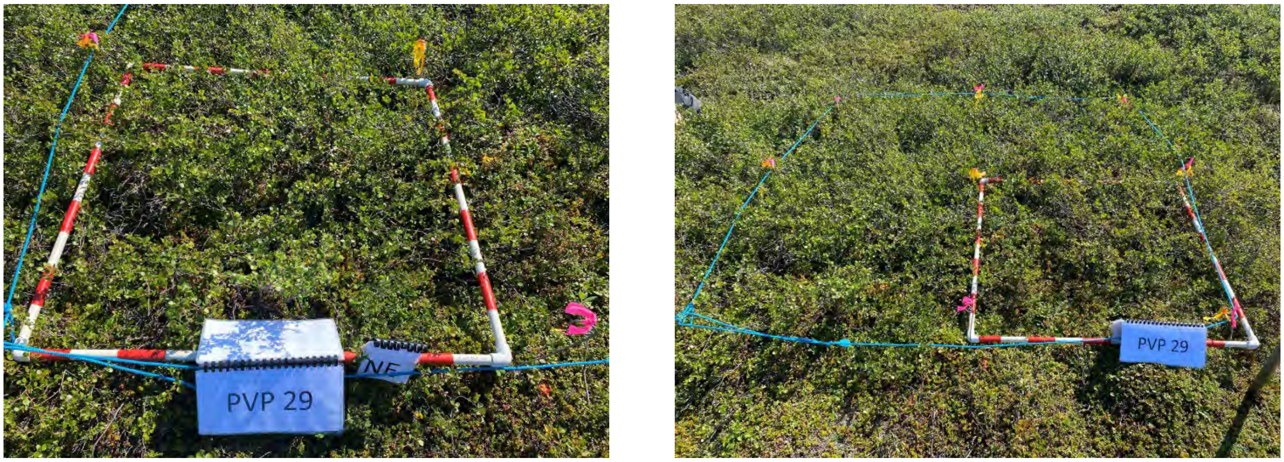

Figure F-4: Representative photos of a Shrub Community Reference plot. PVP29

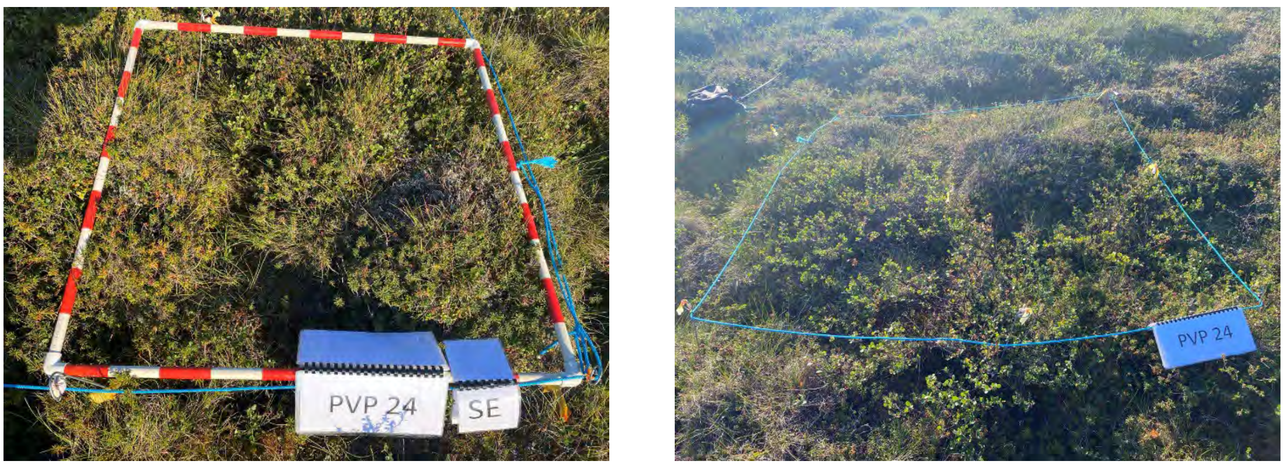

Figure F-5: Representative photos of a Tussock-Hummock Community Mine plot. PVP24

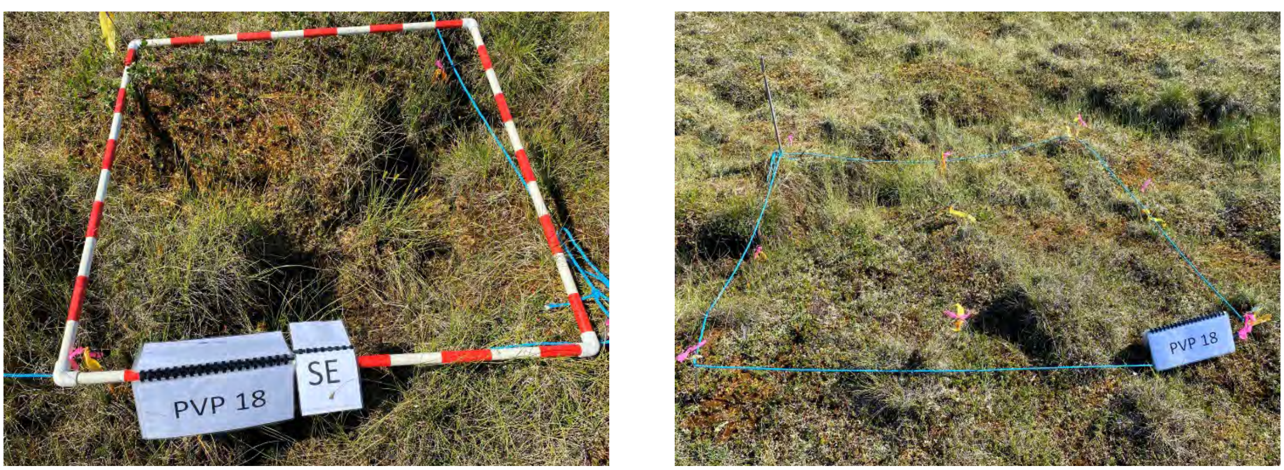

Figure F-6: Representative photos of a Tussock-Hummock Community Reference plot. PVP18

APPENDIX G

2024 Lichen and Soil Chemistry Results

Table G-1: Metals Chemistry and Moisture Content for Lichen Samples Collected from Near-Field Locations, 2024

Parameters	Units	RDL	NFL-1	NFL-2	NFL-3	NFL-4	NFL-5	NFL-6	NFL-7	NFS-8	NFL-9	NFL-10	NFL-11	NFL-12	NFL-13	NFL-14	NFL-15	NFL-16	NFL-17	NFL-18	NFL-20
			31-Jul-24	05-Aug-24	05-Aug-24	05-Aug-24	06-Aug-24	06-Aug-24	06-Aug-24	06-Aug-24	04-Aug-24	02-Aug-24	06-Aug-24	31-Jul-24	03-Aug-24	01-Aug-24	03-Aug-24	04-Aug-24	04-Aug-24	05-Aug-24	06-Aug-24
Total Metals by ICPMS																					
Total Aluminum (Al)	mg/kg dw	1.0	331	652	2140	898	860	2670	2430	1790	425	613	1480	733	1260	732	1420	1120	888	1010	544
Total Antimony (Sb)	mg/kg dw	0.0050	0.0068	0.0144	0.0280	0.0190	0.0180	0.0740	0.0372	0.0320	0.0121	0.0122	0.0253	0.0174	0.0300	0.0162	0.0283	0.0138	0.0216	0.0178	0.0255
Total Arsenic (As)	mg/kg dw	0.020	0.149	0.163	0.504	0.245	0.326	0.493	0.508	0.374	0.269	0.178	0.305	0.371	0.336	0.445	0.390	0.207	0.279	0.221	0.303
Total Barium (Ba)	mg/kg dw	0.050	15.7	23.1	58.3	45.4	44.9	68.3	62.8	54.5	11.8	15.6	39.8	28.4	57.0	39.4	34.2	29.3	28.9	35.4	39.0
Total Beryllium (Be)	mg/kg dw	0.010	0.015	0.025	0.068	0.032	0.030	0.089	0.077	0.074	0.022	0.021	0.044	0.038	0.047	0.024	0.048	0.035	0.037	0.038	0.022
Total Bismuth (Bi)	mg/kg dw	0.010	0.064	0.104	0.285	0.121	0.076	0.253	0.115	0.143	0.026	0.091	0.177	0.076	0.185	0.058	0.540	0.128	0.096	0.097	0.026
Total Boron (B)	mg/kg dw	1.0	<1.0	1.4	2.1	1.9	2.0	2.8	2.6	2.2	<1.0	1.6	2.4	1.5	1.6	2.9	3.4	1.8	1.4	1.1	2.7
Total Cadmium (Cd)	mg/kg dw	0.0050	0.0499	0.0474	0.0809	0.0550	0.114	0.0596	0.0465	0.0739	0.0334	0.0714	0.0370	0.0750	0.0807	0.102	0.0672	0.0645	0.0698	0.0563	0.0981
Total Calcium (Ca)	mg/kg dw	10	3420	1520	2410	2350	1960	3270	2410	3290	791	1830	2630	10400	3280	2770	1900	1480	1360	1730	2980
Total Chromium (Cr)	mg/kg dw	0.10	1.76	3.13	14.2	5.37	5.40	16.1	27.8	11.2	2.26	2.86	10.0	4.95	10.3	2.99	9.07	5.55	4.12	5.59	2.30
Total Cobalt (Co)	mg/kg dw	0.020	0.462	0.606	2.13	0.927	0.785	2.62	3.40	1.86	0.613	0.787	1.41	1.15	1.62	0.987	1.64	1.19	1.08	1.00	0.95
Total Copper (Cu)	mg/kg dw	0.050	1.59	1.99	5.09	2.63	3.98	5.25	4.96	4.04	1.99	2.59	3.43	3.04	3.14	4.20	3.68	3.77	3.12	4.07	3.10
Total Iron (Fe)	mg/kg dw	5.0	487	874	2860	1260	1290	3800	4400	2660	694	936	2230	1040	2040	1020	2220	1600	1260	1380	730
Total Lead (Pb)	mg/kg dw	0.010	0.979	0.582	1.84	0.811	0.618	2.02	1.20	1.32	0.252	0.711	0.953	1.33	1.32	0.436	2.16	0.814	0.975	0.933	0.434
Total Magnesium (Mg)	mg/kg dw	5.0	582	1160	3630	1770	1470	4510	7960	3220	802	921	2810	1370	3280	1530	2440	1800	1030	1610	1230
Total Manganese (Mn)	mg/kg dw	0.050	38.2	84.5	94.0	173	76.9	85.8	105	67.1	66.2	70.9	85.0	41.2	68.6	107	69.1	84.4	65.4	56.9	118.0
Total Molybdenum (Mo)	mg/kg dw	0.020	0.263	0.480	1.29	0.571	0.597	3.02	1.70	1.55	0.270	0.377	1.09	0.909	0.876	0.628	0.867	0.577	0.425	0.596	0.243
Total Nickel (Ni)	mg/kg dw	0.050	3.59	5.15	22.1	9.43	7.46	28.5	38.4	18.6	3.50	4.16	13.6	13.4	19.0	4.63	20.5	8.99	6.65	10.3	4.5
Total Phosphorus (P)	mg/kg dw	10	623	539	707	561	960	712	663	753	826	787	601	667	526	1220	406	701	538	471	924
Total Potassium (K)	mg/kg dw	10	2030	1350	1990	1370	1810	2010	1840	2110	2000	2030	1670	2280	1560	3070	934	1770	1270	1160	2290
Total Selenium (Se)	mg/kg dw	0.050	<0.050	<0.050	0.067	<0.050	<0.050	0.069	0.064	0.060	<0.050	<0.050	<0.050	<0.050	0.059	0.060	0.068	<0.050	0.063	0.051	<0.050
Total Silver (Ag)	mg/kg dw	0.0050	0.0113	0.0164	0.0332	0.0187	0.0839	0.0342	0.0274	0.0230	0.0172	0.0153	0.0236	0.0186	0.0240	0.0172	0.0211	0.0267	0.0181	0.0158	0.0151
Total Sodium (Na)	mg/kg dw	10	143	78	107	74	62	98	69	92	107	114	75	153	118	77	42	33	85	65	155
Total Strontium (Sr)	mg/kg dw	0.050	7.19	8.58	19.0	11.9	12.9	25.5	19.2	23.4	3.67	5.35	9.80	35.4	23.7	14.6	11.3	8.56	6.98	11.5	12.1
Total Thallium (Tl)	mg/kg dw	0.0020	0.0142	0.0227	0.0690	0.0812	0.0426	0.0870	0.0767	0.0569	0.0152	0.0314	0.0656	0.0292	0.0376	0.0281	0.0456	0.0380	0.0260	0.0313	0.0144
Total Tin (Sn)	mg/kg dw	0.10	<0.10	<0.10	0.21	<0.10	<0.10	0.32	0.24	0.23	<0.10	<0.10	0.17	0.13	0.13	<0.10	0.16	0.14	<0.10	<0.10	<0.10
Total Titanium (Ti)	mg/kg dw	0.50	33.2	54.6	184	79.6	73.1	249	232	157	33.5	61.7	139	68.2	118	43.3	115	101	74.7	87.8	38.1
Total Uranium (U)	mg/kg dw	0.0020	0.714	0.484	1.69	0.570	0.524	1.52	0.879	1.27	0.219	0.814	0.956	0.861	0.949	0.421	2.12	0.760	0.452	0.540	0.222
Total Vanadium (V)	mg/kg dw	0.20	0.80	1.32	4.93	2.03	2.05	6.48	7.01	4.36	0.86	1.31	3.58	1.82	3.13	1.87	3.00	2.57	1.99	2.14	1.29
Total Zinc (Zn)	mg/kg dw	0.20	15.2	15.4	22.8	18.3	34.7	22.4	27.7	28.2	19.8	18.6	19.7	18.9	21.1	31.1	16.5	28.9	18.1	15.3	46.6
Mercury by CVAF																					
Total Mercury (Hg)	mg/kg dw	0.0050	0.0392	0.0383	0.0651	0.0631	0.0636	0.0553	0.0346	0.0446	0.0378	0.0426	0.0454	0.0259	0.0740	0.0844	0.0983	0.0473	0.0810	0.0658	0.0510
Physical Properties																					
Moisture	%	0.30	9.3	48	47	43	29	24	28	36	55	50	19	6.5	59	65	21	54	52	24	10

Notes:

RDL = reporting detection limit; NFL – near-field lichen; % = percent; CVAF = cold vapour atomic fluorescence; mg/kg dw = milligrams per kilogram dry weight; CRC-ICPMS = collision/reaction cell inductively coupled plasma mass spectrometry; < = less than.

Table G-2: Metals Chemistry and Moisture Content for Lichen Samples Collected from Far-Field Locations, 2024

Parameters	Units	RDL	FFL-1	FFL-2	FFL-3	FFL-5	FFL-7	FFL-8	FFL-9	FFL-10	FFL-11	FFL-12	FFL-13	FFL-14	FFL-15	FFL-17	FFL-19	FFL-20	FFL-21	FFL-22	FFL-23	FFL-24	FFL-25	FFL-26	FFL-27	FFL-28
			01-Aug-24	01-Aug-24	01-Aug-24	31-Jul-24	01-Aug-24	31-Jul-24	09-Aug-24	03-Aug-24	04-Aug-24	04-Aug-24	05-Aug-24	05-Aug-24	05-Aug-24	07-Aug-24	05-Aug-24	04-Aug-24	03-Aug-24	05-Aug-24	31-Jul-24	03-Aug-24	03-Aug-24	31-Jul-24	30-Jul-24	01-Aug-24
Total Metals by ICPMS																										
Total Aluminum (Al)	mg/kg dw	1.0	135	206	145	346	326	404	346	156	202	63.1	92.1	86.2	123	263	162	118	655	347	259	500	366	407	682	238
Total Antimony (Sb)	mg/kg dw	0.0050	0.0089	<0.0050	<0.0050	0.0076	0.0065	0.0089	0.0078	<0.0050	0.0086	<0.0050	0.0051	0.0060	<0.0050	0.0062	<0.0050	0.0053	0.0053	0.0093	0.0073	0.0065	0.0070	0.0074	0.0126	0.0110
Total Arsenic (As)	mg/kg dw	0.020	0.197	0.314	0.065	0.478	0.296	1.01	0.183	0.373	0.127	0.073	0.075	0.105	0.222	0.324	0.098	0.093	0.765	1.60	0.331	0.346	0.431	0.300	0.362	0.175
Total Barium (Ba)	mg/kg dw	0.050	22.2	17.5	15.6	27.1	30.7	26.2	38.9	9.90	18.8	19.4	20.9	19.7	9.01	17.5	22.3	13.8	26.1	15.9	22.7	30.0	28.8	19.0	31.0	42.8
Total Beryllium (Be)	mg/kg dw	0.010	<0.010	0.013	<0.010	0.037	0.017	0.049	0.031	0.015	0.020	<0.010	<0.010	<0.010	0.015	0.022	0.016	<0.010	0.062	0.040	0.026	0.040	0.034	0.024	0.029	<0.010
Total Bismuth (Bi)	mg/kg dw	0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.016	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.015	0.017	<0.010	<0.010	0.011	0.011	0.017	<0.010
Total Boron (B)	mg/kg dw	1.0	2.8	2.4	<1.0	4.2	2.5	2.1	2.4	1.4	1.1	2.0	1.5	1.3	1.4	1.4	1.0	1.5	2.0	1.4	2.0	3.1	2.2	1.6	2.1	1.5
Total Cadmium (Cd)	mg/kg dw	0.0050	0.0503	0.0291	0.0478	0.198	0.0559	0.0545	0.0610	0.0371	0.0802	0.0196	0.0415	0.0407	0.0303	0.0390	0.0554	0.0374	0.0928	0.0716	0.0424	0.0305	0.0401	0.0434	0.0835	0.0576
Total Calcium (Ca)	mg/kg dw	10	1560	655	1170	2290	1450	1350	1260	752	1200	1320	1820	1750	661	1550	2030	699	4630	2600	1690	1420	1140	1000	2010	2200
Total Chromium (Cr)	mg/kg dw	0.10	0.27	0.39	0.19	0.85	0.63	0.67	0.42	0.31	0.23	0.15	0.19	0.27	0.29	0.71	0.30	1.57	1.92	0.54	0.50	0.43	0.62	1.29	2.71	0.60
Total Cobalt (Co)	mg/kg dw	0.020	0.139	0.240	0.246	2.41	0.382	0.804	0.319	0.293	0.195	0.275	0.273	0.320	0.437	0.992	0.194	0.112	3.55	0.711	0.611	0.667	0.327	0.645	1.13	0.275
Total Copper (Cu)	mg/kg dw	0.050	1.61	2.72	1.78	5.45	2.14	4.05	16.8 (2)	1.43	1.33	1.27	1.22	1.54	1.36	2.58	1.34	1.58	4.90	3.12	1.93	3.93	3.90	3.08	4.41	2.52
Total Iron (Fe)	mg/kg dw	5.0	148	344	126	374	336	1150	305	778	163	96.4	101	107	224	328	131	115	1290	1090	554	715	414	545	947	291
Total Lead (Pb)	mg/kg dw	0.010	0.311	0.097	0.166	0.245	0.218	0.290	0.297	0.218	0.325	0.113	0.193	0.133	0.201	0.250	0.217	0.119	0.418	0.275	0.276	0.246	0.299	0.211	0.709	0.479
Total Magnesium (Mg)	mg/kg dw	5.0	421	362	303	862	433	517	389	313	355	431	412	562	358	431	551	289	719	363	392	432	492	534	922	478
Total Manganese (Mn)	mg/kg dw	0.050	146	57.2	58.9	209	68.9	57.1	45.5	74.3	27.1	111	115	66.8	51.3	122	105	42.7	106	30.8	188	32.6	43.2	45.1	188	194
Total Molybdenum (Mo)	mg/kg dw	0.020	0.184	0.167	0.048	0.132	0.067	0.140	0.085	0.174	0.045	0.131	0.045	0.060	0.110	0.093	0.053	0.118	0.185	0.193	0.099	0.328	0.124	0.166	0.161	0.151
Total Nickel (Ni)	mg/kg dw	0.050	0.802	1.40	0.749	8.17	1.76	2.68	14.9 (2)	1.40	0.645	0.642	1.51	1.01	1.36	2.29	0.856	1.55	8.12	1.71	2.90	2.50	2.24	2.62	5.40	1.26
Total Phosphorus (P)	mg/kg dw	10	552	835	578	905	907	692	952	530	665	388	466	440	507	541	695	797	687	846	385	755	1090	678	867	811
Total Potassium (K)	mg/kg dw	10	1320	1980	1960	3430	1850	1950	2140	2340	1360	966	1000	1110	2530	1730	1640	1850	2500	2990	1000	1710	2200	1720	2080	1580
Total Selenium (Se)	mg/kg dw	0.050	<0.050	<0.050	<0.050	0.051	<0.050	0.052	0.052	0.067	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.052	<0.050	0.065	<0.050	<0.050	0.052	<0.050	0.056	0.052
Total Silver (Ag)	mg/kg dw	0.0050	0.0089	0.0092	0.0120	0.0094	0.0088	0.0183	0.0144	0.0157	0.0107	0.0061	0.0055	0.0086	0.0129	0.0076	0.0128	0.0062	0.0142	0.0196	0.0148	0.0145	0.0132	0.0123	0.0183	0.0153
Total Sodium (Na)	mg/kg dw	10	44	38	29	74	46	56	44	109	46	16	28	59	96	45	128	27	48	127	36	42	49	40	150	85
Total Strontium (Sr)	mg/kg dw	0.050	4.83	7.12	5.17	12.1	7.85	10.8	8.64	2.89	9.61	3.85	6.19	5.47	3.11	6.57	9.24	3.49	15.4	9.81	6.56	11.1	9.60	7.01	7.10	5.74
Total Thallium (Tl)	mg/kg dw	0.0020	0.0233	0.0116	0.0076	0.0144	0.0149	0.0136	0.0151	0.0053	0.0102	0.0205	0.0291	0.0232	0.0057	0.0081	0.0079	0.0071	0.0184	0.0097	0.0177	0.0079	0.0188	0.0120	0.0300	0.0408
Total Tin (Sn)	mg/kg dw	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Titanium (Ti)	mg/kg dw	0.50	6.83	7.17	5.27	11.2	13.2	11.3	8.65	4.95	5.87	3.40	4.64	4.81	4.28	11.9	6.08	4.24	26.9	10.2	7.31	9.97	14.0	21.2	47.5	14.2
Total Uranium (U)	mg/kg dw	0.0020	0.0623	0.0819	0.0489	0.0897	0.0472	0.111	0.0522	0.0331	0.0418	0.0185	0.0254	0.0186	0.0233	0.119	0.0211	0.0324	0.153	0.114	0.0586	0.226	0.141	0.121	0.111	0.0572
Total Vanadium (V)	mg/kg dw	0.20	0.25	0.46	<0.20	0.72	0.56	1.73	0.40	0.62	0.29	<0.20	<0.20	<0.20	<0.20	0.50	0.24	0.20	1.34	1.99	0.56	0.65	0.64	0.86	1.70	0.52
Total Zinc (Zn)	mg/kg dw	0.20	19.4	21.8	37.6	31.2	33.3	29.2	29.6	17.9	21.1	24.9	13.7	34.2	23.9	19.5	26.5	28.7	22.0	27.8	18.3	24.4	26.1	28.0	31.2	25.2
Mercury by CVAF																										
Total Mercury (Hg)	mg/kg dw	0.0050	0.0448	0.0357	0.0480	0.0534	0.0635	0.0434	0.0545	0.0433	0.0479	0.0390	0.0496	0.0379	0.0380	0.0359	0.0415	0.0372	0.0441	0.0341	0.0622	0.0454	0.0569	0.0427	0.0916	0.0904
Physical Properties																										
Moisture	%	0.30	66	64	66	28	69	43	58	12	63	45	58	38	39	72	24	47	20	52	47	25	28	51	17	64

Notes

RDL = reporting detection limit; FFL – far-field lichen; % = percent; CVAF = cold vapour atomic fluorescence; mg/kg dw = milligrams per kilogram dry weight; CRC-ICPMS = collision/reaction cell inductively coupled plasma mass spectrometry; < = less than.

Table G-3: Metals Chemistry and Moisture Content for Lichen Samples Collected from Far-Far-Field Locations, 2024

Parameters	Units	RDL	FFFL-1	FFFL-2	FFFL-3
			05-Aug-24	02-Aug-24	02-Aug-24
Total Metals by ICPMS					
Total Aluminum (Al)	mg/kg dw	1.0	247	240	283
Total Antimony (Sb)	mg/kg dw	0.0050	<0.0050	0.0072	<0.0050
Total Arsenic (As)	mg/kg dw	0.020	0.091	0.328	0.136
Total Barium (Ba)	mg/kg dw	0.050	21.6	22.7	33.0
Total Beryllium (Be)	mg/kg dw	0.010	0.018	0.013	0.018
Total Bismuth (Bi)	mg/kg dw	0.010	<0.010	<0.010	<0.010
Total Boron (B)	mg/kg dw	1.0	1.3	2.2	2.3
Total Cadmium (Cd)	mg/kg dw	0.0050	0.0362	0.107	0.0695
Total Calcium (Ca)	mg/kg dw	10	1710	1820	1520
Total Chromium (Cr)	mg/kg dw	0.10	0.18	0.65	0.26
Total Cobalt (Co)	mg/kg dw	0.020	0.497	1.10	0.456
Total Copper (Cu)	mg/kg dw	0.050	1.55	3.46	2.64
Total Iron (Fe)	mg/kg dw	5.0	249	344	226
Total Lead (Pb)	mg/kg dw	0.010	0.144	0.238	0.432
Total Magnesium (Mg)	mg/kg dw	5.0	389	659	407
Total Manganese (Mn)	mg/kg dw	0.050	195	284	81.1
Total Molybdenum (Mo)	mg/kg dw	0.020	0.127	0.085	0.054
Total Nickel (Ni)	mg/kg dw	0.050	1.07	3.47	1.62
Total Phosphorus (P)	mg/kg dw	10	421	871	684
Total Potassium (K)	mg/kg dw	10	1140	2090	1610
Total Selenium (Se)	mg/kg dw	0.050	<0.050	<0.050	<0.050
Total Silver (Ag)	mg/kg dw	0.0050	0.0091	0.0152	0.0090
Total Sodium (Na)	mg/kg dw	10	59	37	19
Total Strontium (Sr)	mg/kg dw	0.050	8.34	6.29	8.24
Total Thallium (Tl)	mg/kg dw	0.0020	0.0147	0.0140	0.0106
Total Tin (Sn)	mg/kg dw	0.10	<0.10	<0.10	<0.10
Total Titanium (Ti)	mg/kg dw	0.50	4.18	9.56	7.33
Total Uranium (U)	mg/kg dw	0.0020	0.0274	0.0358	0.204
Total Vanadium (V)	mg/kg dw	0.20	0.34	0.52	0.35
Total Zinc (Zn)	mg/kg dw	0.20	17.1	39.6	41.8
Mercury by CVAF					
Total Mercury (Hg)	mg/kg dw	0.0050	0.0371	0.0657	0.0562
Physical Properties					
Moisture	%	0.30	46	38	21

Notes:

RDL = reporting detection limit; FFFL – far-far-field lichen; % = percent; CVAF = cold vapour atomic fluorescence; mg/kg dw = milligrams per kilogram dry weight; CRC-ICPMS = collision/reaction cell inductively coupled plasma mass spectrometry; < = less than.

APPENDIX H

Statistical Analysis for Lichen Chemistry

Table H-1: Summary Statistics of Metals Concentrations in Lichen, 2024

Parameter	Near-Field									Far-Field									Far-Far-Field								
	n	# of ND	Det Freq	Mean	Median	SD	SE	Min	Max	n	# of ND	Det Freq	Mean	Median	SD	SE	Min	Max	n	# of ND	Det Freq	Mean	Median	SD	SE	Min	Max
Total Aluminum (Al)	19	0	100%	1158	1010	676	155	425	2670	24	0	100%	276	249	169.13	34.523	63.1	682	3	0	100%	256.67	247	23.072	13.322	240	283
Total Arsenic (As)	19	0	100%	0.319	0.326	0.114	0.0261	0.163	0.508	24	0	100%	0.35	0.300	0.347	0.0709	0.065	1.6	3	0	100%	0.19	0.14	0.1259	0.0727	0.091	0.328
Total Barium (Ba)	19	0	100%	38.5	39.4	16.4	3.77	11.8	68.3	24	0	100%	22.7	21.6	8.253	1.685	9.01	42.8	3	0	100%	25.8	22.7	6.288	3.6306	21.6	33
Total Beryllium (Be)	19	0	100%	0.041	0.038	0.0212	0.0049	0.021	0.089	24	7	71%	0.029	0.026	0.0136	0.0033	0.013	0.062	3	0	100%	0.016	0.018	0.0029	0.0017	0.013	0.018
Total Cadmium (Cd)	19	0	100%	0.0680	0.0698	0.0216	0.005	0.0334	0.114	24	0	100%	0.0558	0.0456	0.0353	0.0072	0.0196	0.198	3	0	100%	0.0709	0.0695	0.0354	0.0205	0.0362	0.107
Total Chromium (Cr)	19	0	100%	7.63	5.55	6.43	1.47	2.26	27.8	24	0	100%	0.67	0.47	0.621	0.127	0.15	2.71	3	0	100%	0.36	0.26	0.2515	0.1452	0.18	0.65
Total Cobalt (Co)	19	0	100%	1.3	1.2	0.749	0.172	0.606	3.4	24	0	100%	0.648	0.323	0.785	0.16	0.112	3.55	3	0	100%	0.68	0.50	0.3606	0.2082	0.456	1.1
Total Copper (Cu)	19	0	100%	3.46	3.68	1.04	0.239	1.99	5.25	24	1	96%	3.17	2.33	3.169	0.661	1.22	16.8	3	0	100%	2.55	2.64	0.9582	0.5532	1.55	3.46
Total Lead (Pb)	19	0	100%	1.04	0.953	0.53	0.122	0.252	2.16	24	0	100%	0.26	0.25	0.131	0.027	0.097	0.709	3	0	100%	0.271	0.238	0.1469	0.0848	0.144	0.432
Total Manganese (Mn)	19	0	100%	82	77	30.2	6.92	41.2	173	24	0	100%	91.1	67.9	57.065	11.64	27.1	209	3	0	100%	187	195	101.7	58.719	81.1	284
Total Mercury (Hg)	19	0	100%	0.056	0.055	0.0192	0.0044	0.0259	0.098	24	0	100%	0.0492	25.7	0.0152	0.0031	0.0341	0.0916	3	0	100%	0.053	0.0562	0.0146	0.0084	0.0371	0.0657
Total Molybdenum (Mo)	19	0	100%	0.859	0.628	0.671	0.154	0.243	3.02	24	0	100%	0.13	0.13	0.0646	0.0132	0.045	0.328	3	0	100%	0.089	0.085	0.0366	0.0212	0.054	0.127
Total Nickel (Ni)	19	0	100%	12.8	10.3	9.6	2.2	3.5	38.4	24	1	96%	2.85	1.63	3.292	0.686	0.642	14.9	3	0	100%	2.05	1.62	1.257	0.7259	1.07	3.47
Total Silver (Ag)	19	0	100%	0.024	0.021	0.0157	0.0036	0.0151	0.084	24	0	100%	0.012	0.017	0.0040	0.0008	0.0055	0.019	3	0	100%	0.01	0.009	0.0036	0.0021	0.009	0.0152
Total Strontium (Sr)	19	0	100%	14.2	12.1	8.17	1.87	3.67	35.4	24	0	100%	7.47	7.06	3.091	0.631	2.89	15.4	3	0	100%	7.62	8.24	1.1558	0.6673	6.29	8.34
Total Thallium (Tl)	19	0	100%	0.043	0.038	0.0233	0.0054	0.0144	0.087	24	0	100%	0.016	0.014	0.0089	0.0018	0.0053	0.0408	3	0	100%	0.0131	0.014	0.0022	0.0013	0.0106	0.0147
Total Titanium (Ti)	19	0	100%	102	88	64.2	14.7	33.5	249	24	0	100%	11	8	9.588	1.957	3.4	47.5	3	0	100%	7.02	7.33	2.703	1.5606	4.18	9.56
Total Uranium (U)	19	0	100%	0.84	0.814	0.502	0.115	0.219	2.12	24	0	100%	0.0753	0.0579	0.0525	0.0107	0.0185	0.226	3	0	100%	0.0891	0.0358	0.0996	0.0575	0.0274	0.204
Total Vanadium (V)	19	0	100%	2.8	2.1	1.79	0.41	0.86	7.01	24	5	79%	0.7	0.6	0.539	0.124	0.2	1.99	3	0	100%	0.4	0.35	0.101	0.0584	0.34	0.52
Total Zinc (Zn)	19	0	100%	23.1	21.1	8.06	1.85	15.3	46.6	24	0	100%	25.7	25.7	5.796	1.183	13.7	37.6	3	0	100%	32.8	39.6	13.67	7.8923	17.1	41.8

Notes:

Value units are mg/kg dw = milligrams per kilogram dry weight; n = number; # = number; % = percent; ND = non-detect (values below reporting detection limit); Det Freq = detection frequency; SD = standard deviation; SE = standard error; min = minimum; max = maximum.

Table H-2: Statistical Comparisons of Metals Concentrations in Lichen, 2024

Parameter	2024 Near-Field vs. Far-Field Comparison				2010, 2013, 2016, 2021 & 2024 Comparison			Post-hoc Tests (adjusted *p*-values)					Mean Concentration (mg/kg dw)				
	Transform.?	Test	*p*-value	Difference	Transform.?	Test	*p*-value	Test	2024-2010	2024-2013	2024-2016	2024-2021	2010	2013	2016	2021	2024
Total Aluminum (Al)	$\log_{10}$	ANOVA	<0.001	NF > FF	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	**0.005**	0.582	0.926	0.094	1930	1378	929	785	1158
Total Arsenic (As)	none	KW	0.293	none	none	KW	**<0.001**	Dunn	**<0.001**	0.552	0.644	1.000	0.543	0.419	0.336	0.316	0.319
Total Barium (Ba)	$\log_{10}$	ANOVA	<0.001	NF > FF	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	0.129	0.380	0.688	0.330	55	51	31	29	39
Total Beryllium (Be)	none	KW	0.002	NF > FF	none	KW	**<0.001**	Dunn	**0.002**	0.415	0.085	0.238	0.07	0.05	0.05	0.03	0.04
Total Cadmium (Cd)	$\log_{10}$	ANOVA	0.044	NF > FF	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	**0.016**	**0.016**	1.000	**<0.001**	0.097	0.097	0.068	0.04	0.068
Total Chromium (Cr)	$\log_{10}$	ANOVA	<0.001	NF > FF	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	**<0.001**	0.984	0.750	0.560	38	7.6	7.8	5.5	7.6
Total Cobalt (Co)	$\log_{10}$	ANOVA	<0.001	NF > FF	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	0.124	1.000	0.491	**0.010**	1.89	1.25	0.986	0.807	1.33
Total Copper (Cu)	none	KW	0.029	none	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	**<0.001**	0.074	1.000	0.114	6.26	4.57	3.42	2.70	3.46
Total Lead (Pb)	$\log_{10}$	ANOVA	<0.001	NF > FF	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	**<0.001**	**<0.001**	0.490	**<0.001**	2.9	2.1	1.35	0.53	1.05
Total Manganese (Mn)	none	KW	0.797	none	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	**0.002**	0.097	0.170	**<0.001**	132	116	62	44	82
Total Mercury (Hg)	$\log_{10}$	ANOVA	0.273	none	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	0.865	**0.011**	0.056	**<0.001**	0.059	0.076	0.043	0.028	0.056
Total Molybdenum (Mo)	$\log_{10}$	ANOVA	<0.001	NF > FF	$\log_{10}$	ANOVA	0.076	Tukey HSD	0.820	0.950	0.475	0.916	0.95	0.69	0.559	0.749	0.859
Total Nickel (Ni)	$\log_{10}$	ANOVA	<0.001	NF > FF	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	**0.001**	0.994	0.898	0.106	26.8	13.6	9.52	7.28	12.8
Total Silver (Ag)	none	KW	<0.001	NF > FF	none	KW	0.108	Dunn	-	-	0.122	0.504	NA	NA	0.018	0.021	0.024
Total Strontium (Sr)	$\log_{10}$	ANOVA	<0.001	NF > FF	none	KW	0.394	Dunn	1.000	1.000	1.000	1.000	15.1	14.9	10.9	13.1	14.2
Total Thallium (Tl)	$\log_{10}$	ANOVA	<0.001	NF > FF	none	KW	**<0.001**	Dunn	**0.002**	0.278	0.716	0.182	0.079	0.050	0.037	0.029	0.043
Total Titanium (Ti)	$\log_{10}$	ANOVA	<0.001	NF > FF	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	0.277	-	0.217	0.271	132	NA	66	75	102
Total Uranium (U)	$\log_{10}$	ANOVA	<0.001	NF > FF	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	**<0.001**	**0.028**	0.944	0.055	2.42	1.52	0.993	0.497	0.84
Total Vanadium (V)	$\log_{10}$	ANOVA	<0.001	NF > FF	$\log_{10}$	ANOVA	**<0.001**	Tukey HSD	0.172	0.999	0.166	0.293	3.8	2.7	1.7	2.0	2.8
Total Zinc (Zn)	$\log_{10}$	ANOVA	0.138	none	none	KW	**<0.001**	Dunn	**<0.001**	0.074	0.214	0.885	32	29	27.2	23.4	23.1

Note:

Significant *p*-values (<0.05) were **bolded**.

Transform.? = transformation applied to the data; mg/kg dw = milligrams per kilogram dry weight; ANOVA = analysis of variance; NF = near-field; > = greater than; FF = far-field; Tukey HSD = Tukey Honest Significant Difference; KW = Kruskal-Wallis test; Dunn = Dunn's multiple comparisons; > = greater than; "-" = comparison was not made because there are no data for that parameter in one of the years; NA = not applicable.

Table H-3: Power Model (ln y = a · ln[x] + b) Parameters Characterizing Relationships Between Metals Concentrations and Distance from the Mine

Parameter	Slope (a)			Intercept (b)			Modei *p*-value	R^2
	value	SE	*p*-value	value	SE	*p*-value		
Aluminum	-0.458	0.074	<0.001	7.222	0.215	<0.001	**<0.001**	0.465
Arsenic	-0.075	0.073	0.307	-1.159	0.212	<0.001	0.307	0.024
Barium	3.575	0.143	<0.001	3.575	0.143	<0.001	**0.020**	0.117
Cadmium	-0.160	0.052	0.004	7.889	0.151	<0.001	**0.004**	0.177
Chromium	-0.825	0.097	<0.001	2.396	0.283	<0.001	**<0.001**	0.619
Cobalt	-0.289	0.081	0.001	0.335	0.234	0.161	**<0.001**	0.226
Copper	-0.083	0.055	0.139	1.240	0.161	<0.001	0.139	0.049
Iron	-0.496	0.085	<0.001	7.654	0.248	<0.001	**<0.001**	0.433
Lead	-0.442	0.061	<0.001	0.250	0.176	0.163	**<0.001**	0.547
Manganese	0.044	0.059	0.463	4.274	0.173	<0.001	0.463	0.012
Mercury	-0.022	0.032	0.499	-2.943	0.094	<0.001	0.499	0.010
Molybdenum	-0.601	0.076	<0.001	0.080	0.221	0.718	**<0.001**	0.587
Nickel	-0.509	0.094	<0.001	2.633	0.274	<0.001	**<0.001**	0.399
Strontium	-0.157	0.056	0.008	2.571	0.163	<0.001	**0.008**	0.151
Thallium	-0.333	0.062	<0.001	-3.042	0.182	<0.001	**<0.001**	0.393
Titanium	-0.769	0.081	<0.001	5.066	0.236	<0.001	**<0.001**	0.671
Uranium	-0.834	0.089	<0.001	0.337	0.259	0.199	**<0.001**	0.667
Vanadium	-0.556	0.095	<0.001	1.250	0.276	<0.001	**<0.001**	0.439
Zinc	0.066	0.030	0.035	3.010	0.088	<0.001	**0.035**	0.097

Note:

Significant *p*-values (<0.05) were **bolded**.

SE = standard error; R^2 = coefficient of determination, < = less than wsp.com

RioTinto | Diavik

Closing responsibly, Closing with care

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Government of the Northwest Territories
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April 30, 2025

Subject: Diavik Diamond Mines (2012) Inc. (DDMI) 2023 Wildlife Management and Monitoring Report (WMMR)

Attached is an electronic copy of the DDMI 2024 WMMR. The WMMR aligns with the components and objectives of the Wildlife Management and Monitoring Plan (WMMP) and provides the analysis and reporting of data collected using the methods described for wildlife valued ecosystem components and other wildlife in the WMMP.

DDMI's responses to parties' comments and recommendations on the 2023 WMMR are provided in Appendix A.

If you have any questions regarding the above, please contact the undersigned or Kyla Gray (kyla.gray@riotinto.com; 867-445-4922) at your convenience.

Yours sincerely,

Nicole Goodman
Superintendent, Environment & Closure
Cross shift: Mark Nelson

Cc: John McCullum, EMAB
Allison McCabe, EMAB