Appendix 38

Meadowbank and Whale Tail Terrestrial Ecosystem Management Plan Version 9

AGNICO EAGLE

MEADOWBANK COMPLEX

Terrestrial Ecosystem Management Plan

Prepared by:
Agnico Eagle Mines Limited – Meadowbank Complex

Version 9.0
March 2025

EXECUTIVE SUMMARY

As a requirement of the Whale Tail Mine Project Certificate No.008, Condition 28, and Meadowbank Project Certificate No.004, Condition 54, an updated Terrestrial Ecosystem Management Plan (TEMP) for Agnico Eagle Mines Limited (Agnico Eagle) Meadowbank Gold Mine, which includes the All-Weather Access Road (AWAR) from Baker Lake to the Mine, the Whale Tail Haul Road (WTHR), and the Whale Tail Mine (inclusively 'the Project'), which is this current document. The Project is located approximately 90 to 150 km north of Baker Lake and 300 km inland from the northwest coast of Hudson Bay.

This revised TEMP has been prepared as a requirement of Project Certificate No.004 and No.008 (Amendment 001) in association with the Meadowbank Terrestrial Ecosystem Impact Assessment and the Whale Tail Mine and Expansion Project Final Environmental Impact Statements, which identify potential residual effects of the Project to wildlife and wildlife habitat. For each potential effect, mitigation measures are proposed. To confirm that residual effects (i.e., after mitigation) are acceptable, a comprehensive monitoring plan is presented that evaluates the response of wildlife habitat and wildlife populations to the effects of the Project and Project-related activities, and measures effects against thresholds.

Adaptive management is used to assess the effectiveness of the mitigation. Ongoing review of the TEMP through the Whale Tail Mine regulatory process and annual Wildlife Monitoring Summary Reports by regulatory agencies, technical reviewers, Terrestrial Advisory Group (TAG), and stakeholders will further ensure that local and regional concerns have been adequately addressed. Revisions along these lines in version 9.0 of the TEMP were informed through TAG discussions and include an Inuit Qaujimajatuqangit (IQ) based lead caribou protection approach during spring, new mitigation measures for fall migration, refinement of caribou decision trees and convoy mitigation, new objectives for camera monitoring, discontinuation of viewshed surveys, and discontinuation of the decision tree for muskox. Adaptive management changes in past TEMP versions include an updated caribou GST methodology provided by the Government of Nunavut, relaxing spatial thresholds associated with blast monitoring and description of the consensus decision process. In 2021, an agreement with Environment and Climate Change Canada (ECCC) was reached related to changes the number of monitored PRISM plots and frequency of BBS surveys. The final agreement was signed in 2022.

This revised comprehensive TEMP builds on the successes of the original TEMP (October 2005) and subsequent versions, and incorporates the expansion of the Meadowbank Mine through the Whale Tail Mine operations. To date, the TEMP has been effective in identifying, monitoring, and managing residual effects of the Project on wildlife and wildlife habitat. This revised TEMP incorporates detailed decision trees outlining monitoring and adaptive management for varying scenarios of wildlife occurrence, and should enhance the ability of operations managers to respond to changes in wildlife distribution, abundance, and movement. This method provides transparency based on conservative approaches to minimize and mitigate potential Project/wildlife interactions. Monitoring and management measures may be revised as collected data is analyzed over years, through ongoing TAG discussions and if trends reflect effective mitigation that allow for optimization or a reduction in efforts through adaptive management, in line with Project Certificate No.008 Term and Condition 28.

IMPLEMENTATION SCHEDULE

This Plan will be implemented immediately subject to any modifications proposed by the Nunavut Water Board and Nunavut Impact Review Board as a result of the review and approval process.

DISTRIBUTION LIST

Agnico Eagle – General Manager

Agnico Eagle – Engineering Superintendent

Agnico Eagle – Geotechnical Engineer

Agnico Eagle – Environment and Critical Infrastructures Superintendent

Agnico Eagle – Environment General Supervisor

Agnico Eagle – Environmental Coordinator

Agnico Eagle – Environmental Technician

DOCUMENT CONTROL

Version	Date (YMD)	Section	Revision
1	October 2005		Comprehensive plan for Meadowbank Project
2	May 2016	All	Update to include Whale Tail Mine and Haul Road
3	February 2017	All	Update in response to Whale Tail environmental assessment information requests
3.1	May 2017	All	Further revisions following meetings with GN, KivIA, HTO in Ottawa, February 22 and 23, 2017
3.2	June 2017	2.2, 3.4 and 4.0	Following EIS Technical Session and Community Roundtable in Baker Lake, April 28 – May 2, 2017
4	July 2017	All	Further revisions following meetings with GN, KivIA, HTO in Winnipeg, June 20 and 21, 2017
5	June 2018	All	Final revisions following final hearings, receipt of NIRB Project Certificate No.008 and comments from the June 2018 pre-TAG technical meeting.
6	December 2018	All	Revisions following receipt of NIRB Project Certificate No.008, pre-TAG technical meeting and for review of the proposed Whale Tail Expansion Project.
7	February 2019	All	Revisions per comments from January 2019 TAG meeting (issued as draft)
	June 2019	All	Revision per additional comments from TAG members, and Whale Tail Expansion Project environmental assessment information requests, technical comments, and technical meetings.
8	April 2020	Throughout	Revision per additional comments from TAG members, annual report outcomes, Whale Tail Mine Expansion Project NIRB Review Process, and Project Certificate No.008 [Amendment 001]. Version was not approved by TAG.
8.1	July 2021	Throughout	Revision per TEMP V8 comments from TAG members, consensus at TAG meetings and ECCC engagement.
9.0	February 2025	Throughout	Revision per TEMP V8 comments from TAG members, consensus at TAG meetings.

Prepared By: WSP Canada Inc., and Meadowbank Environment Department

Approved by:

Meadowbank Environment Department
Name: _____

Title: _____

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1. INTRODUCTION AND APPROACH

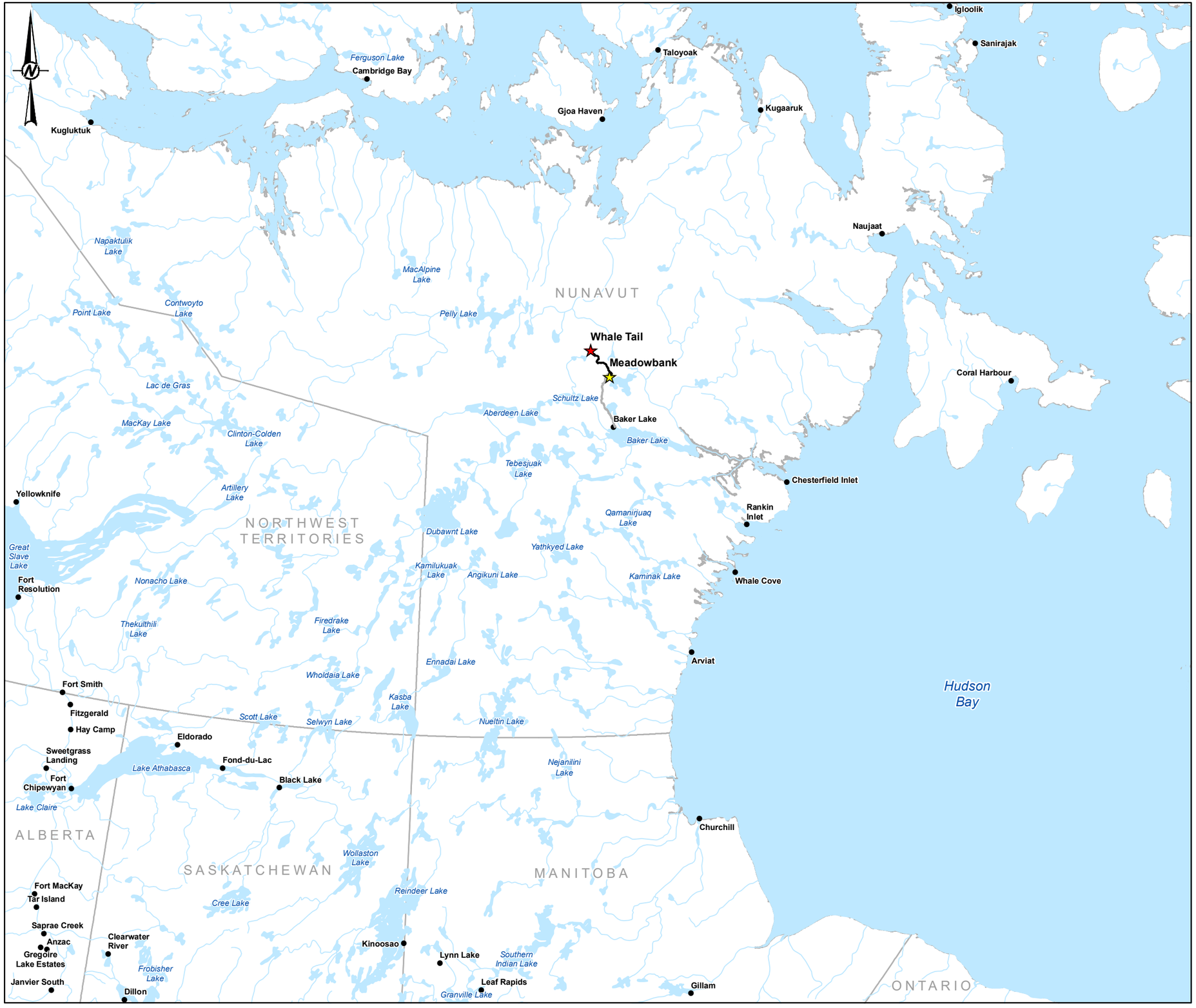
1.1 BACKGROUND

This report provides the Terrestrial Ecosystem Management Plan (TEMP) for Agnico Eagle Mines Limited (Agnico Eagle) Meadowbank Gold Mine, which includes the All-Weather Access Road (AWAR) from Baker Lake to the Mine, the Whale Tail Haul Road (WTHR), and Whale Tail Mine (inclusively the Project; see **Figure 1** and **Figure 2**). The Project area is above the tree line near the Arctic Circle. The local physiography is characterized by numerous lakes and low, rolling hills covered mainly by lichen/rock complexes, and heath tundra.

This TEMP has been prepared as a requirement of Nunavut Impact Review Board (NIRB) Project Certificate No.004 and No.008 (Amendment 001), and has been written to ensure consistency in association with the Meadowbank Terrestrial Ecosystem Impact Statement (EIS; Cumberland 2005a), the Whale Tail Mine Final Environmental Impact Statement Addendum (FEIS; Golder 2016) and the Whale Tail Mine Expansion FEIS Addendum (Golder 2018), which identify potential residual effects of the Project to vegetation and wildlife. The EISs are based on an analysis of Project components and their effects on terrestrial Valued Ecosystem Components (VECs). In addition to being a revision of the original TEMP (Cumberland 2005a) and building on the monitoring experience at Meadowbank, this version of the TEMP also reflects the commitments made during the Whale Tail Mine Expansion Project. These and previous commitments are included in **Appendix A**. This TEMP has also benefitted from collaborative input from the Government of Nunavut Department of Environment (GN), the Kivalliq Inuit Association (KivIA), Environment and Climate Change Canada (ECCC), and the Hunters and Trappers Organization (HTO) of Baker Lake through annual report reviews, technical reviews, workshops, and discussions through the Terrestrial Advisory Group (TAG).

A summary of environmental effects and a description of mitigation measures that have already been implemented during the design, construction, and operations phases of the Project, and those that will be implemented, are provided in this document. A detailed description of potential environmental effects is provided in the Project's EIS documents.

For each potential effect (described in detail in the EISs), mitigation measures are proposed. To measure residual effects (i.e., after mitigation), a monitoring plan is presented that evaluates the response of vegetation communities and wildlife to the effects of the Project and Project-related activities, and measures effects against thresholds (see **Figure 3**).



LEGEND

- POPULATED PLACE
- WHALE TAIL MINE
- MEADOWBANK MINE
- WHALE TAIL HAUL ROAD (WTHR)
- ALL-WEATHER ACCESS ROAD (AWAR)
- WATERCOURSE
- WATERBODY
- PROVINCIAL/TERRITORIAL BOUNDARY

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REFERENCE(S)

1. INFRASTRUCTURE OBTAINED FROM AGNICO EAGLE MINES LIMITED.
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COORDINATE SYSTEM: NAD 1983 CSRS UTM ZONE 14N

CLIENT

AGNICO EAGLE

AGNICO EAGLE MINES LIMITED: MEADOWBANK DIVISION

PROJECT

TERRESTRIAL ECOSYSTEM MANAGEMENT PLAN

TITLE

PROJECT LOCATION MAP - NUNAVUT OVERVIEW

CONSULTANT

wsp

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PREPARED	CDB
REVIEWED	JF
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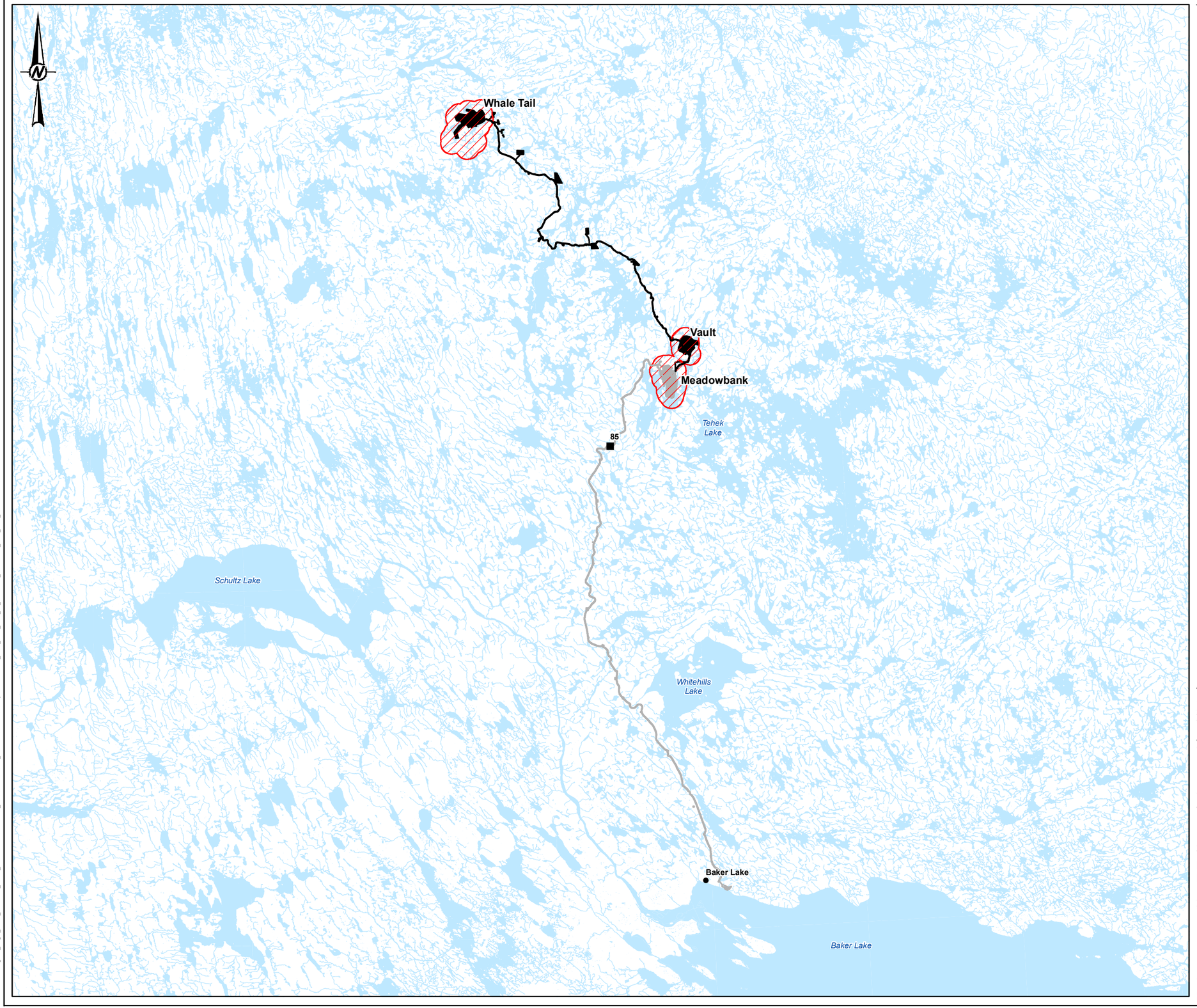

LEGEND

- POPULATED PLACE
- KILOMETRE MARKER
- WHALE TAIL HAUL ROAD (WTHR)
- ALL-WEATHER ACCESS ROAD (AWAR)
- WHALE TAIL MINE LEASE
- MEADOWBANK MINE LEASE
- NO-SHOOTING ZONE
- WATERCOURSE
- WATERBODY

0 12 24

1:600,000 KILOMETRES

REFERENCE(S)

1. INFRASTRUCTURE OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. WATERCOURSE AND WATERBODY DATA OBTAINED FROM NATURAL RESOURCES CANADA. COORDINATE SYSTEM: NAD 1983 CSRS UTM ZONE 14N

CLIENT

AGNICO EAGLE

AGNICO EAGLE MINES LIMITED:
MEADOWBANK DIVISION

PROJECT

TERRESTRIAL ECOSYSTEM MANAGEMENT PLAN

TITLE

PROJECT LOCATION MAP - MEADOWBANK AND WHALE TAIL EXPANSION

CONSULTANT

wsp

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PREPARED	CDB
REVIEWED	JF
APPROVED	CDLM

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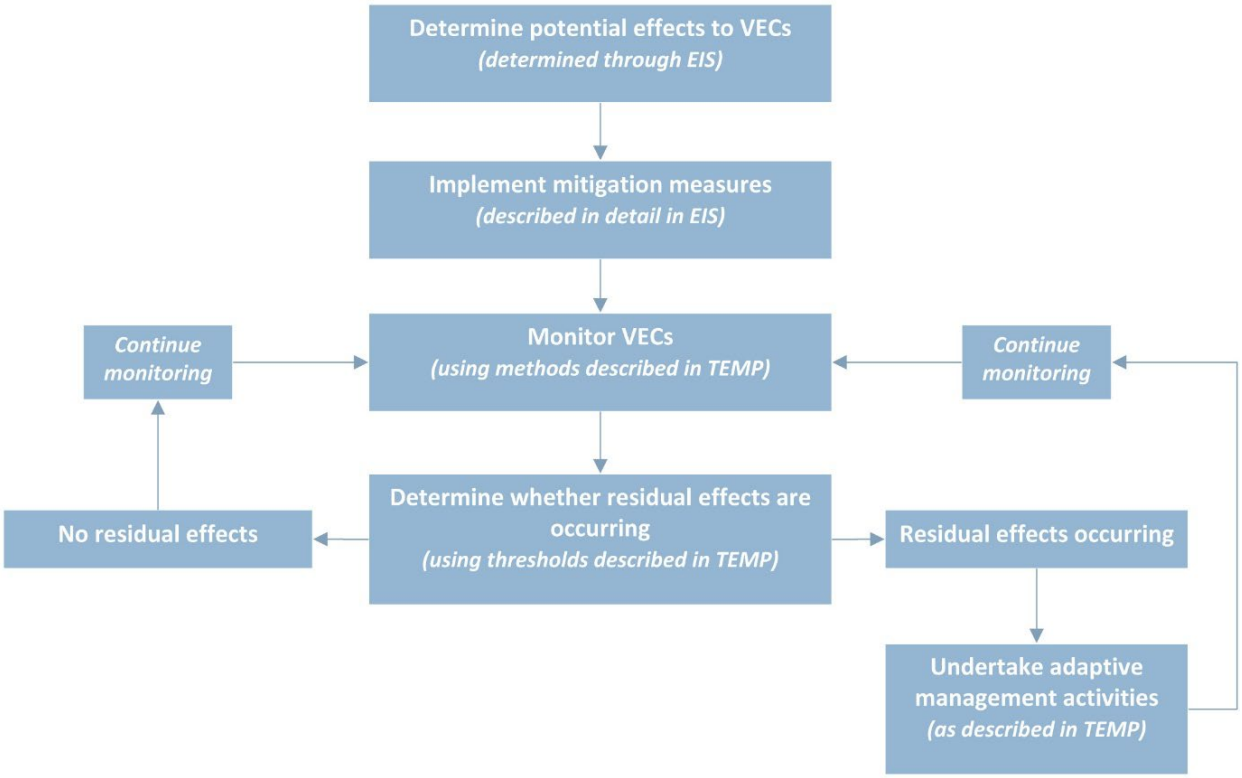
Figure 3: Relationship between Effects, Mitigation, and Monitoring



Adaptive management is a cyclical process of learning by doing. Where monitoring determines that residual effects are larger than predicted (i.e., mitigation is not effective), an adaptive management approach will be taken to assess the monitoring and mitigation. Alternative outcomes of adaptive management include maintaining the status quo or changing monitoring or mitigation. Additional or reduced mitigation will be the most likely means by which this will be accomplished. Future changes that may deviate from mitigation or monitoring outlined in the TEMP are anticipated and would be based on monitoring results and/or reviewed with the TAG. Continual review of the TEMP and annual Wildlife Monitoring Summary Reports (which provide results of TEMP monitoring programs) by regulatory agencies, technical reviewers, and stakeholders will further ensure that local and regional concerns have been adequately addressed. All of these approaches or plans have been previously reviewed by the NIRB.

The mitigation and monitoring procedures identified in this TEMP will be integrated into all stages of the Project to ensure that mine operation and future mine development can proceed as scheduled while accommodating wildlife management needs. The TEMP also outlines strategies for identifying how natural changes in the environment can be distinguished from Project-related effects. Reporting of natural versus Project-related effects will be in the annual Wildlife Monitoring Summary Report.

This TEMP builds on the success of the original TEMP (October 2005) and subsequent meetings and feedback from the KivIA, the Baker Lake HTO, ECCC, the Kivalliq Wildlife Board (KWB), the GN, and the NIRB.

1.2 PURPOSE AND OBJECTIVES

While specific monitoring objectives for each VEC are provided in later sections, the TEMP should meet the following global objectives:

- Provide information to test the predicted wildlife-related effects of the Project.
- Estimate the effectiveness of environmental design and mitigation efforts.
- Incorporate local and traditional ecological knowledge (Inuit Qaujimajatuqangit [IQ]).
- Monitor for action levels or thresholds that could be used to initiate additional mitigation or studies.
- Reduce uncertainties and provide information that increases confidence in environmental assessment predictions of future developments.
- Consider regional and collaborative environmental monitoring programs, and contributions to regional or national monitoring initiatives.
- Reduce Project-related effects to wildlife.

1.3 RELEVANT ENVIRONMENTAL MANAGEMENT PLANS

This document includes overlap with other environmental management plans for the Meadowbank Mine and the Whale Tail Project. Other management plans developed for the Project contain elements of mitigation and monitoring that are relevant to the terrestrial environment, particularly the following:

- Air Quality and Dustfall Monitoring Plan
- Hazardous Materials Management Plan
- Whale Tail Mine Landfarm Design and Management Plan
- Landfarm Design and Management Plan
- Whale Tail Mine Landfill and Waste Management Plan
- Landfill and Waste Management Plan
- Noise Monitoring and Abatement Plan
- Spill Contingency Plan
- Transportation Management Plan AWAR
- WTHR Management Plan

1.4 VALUED ECOSYSTEM COMPONENTS SELECTION

Valued Ecosystem Components were selected through consultation with regulatory and governmental authorities and members of the local community (e.g., Hamlet of Baker Lake, Baker Lake HTO), and a review of VECs identified in other northern mines. Selection of VECs was further refined through the consideration of one or more of the following criteria: conservation status, relative abundance within the Project study area, importance in subsistence lifestyle and economy, importance in predator-prey systems, habitat requirement size and sensitivity, and contribution to local area concerns.

Based on this selection process, the key terrestrial VECs were determined to be Wildlife Habitat, Ungulates, Predatory Mammals, Raptors, Waterbirds, and Upland Breeding Birds. Key species associated with these VECs are shown in **Table 1.**

Table 1: Valued Ecosystem Components in the Meadowbank and Whale Tail Study Areas

VEC	Common Name	Scientific Name
Vegetation	N/A	N/A
Ungulates	barren-ground caribou muskox	*Rangifer tarandus* ssp. *groenlandicus* *Ovibos moschatus*
Predatory Mammals	grizzly bear wolverine gray (Arctic) wolf Arctic fox	*Ursus arctos* *Gulo gulo* *Canis lupus* *Vulpes lagopus*
Raptors	peregrine falcon gyrfalcon rough-legged hawk snowy owl	*Falco peregrinus* ssp. *tundrius* *Falco rusticolus* *Buteo lagopus* *Bubo scandiacus*
Waterbirds	Canada goose long-tailed duck loons sandhill crane	*Branta canadensis* *Clangula hyemalis* *Gavia* spp. *Grus canadensis*
Upland Breeding Birds	rock ptarmigan lapland longspur horned lark semipalmated sandpiper	*Lagopus mutus* *Calcarius lapponicus* *Eremophila alpestris* *Calidris pusilla*

1.5 SPECIES OF CONCERN

Species of concern include those species identified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as being at risk, and may be impacted by the Project, along with their status under the *Species at Risk Act* (SARA; 2002). Species of concern for the Project are listed in **Table 2**.

Table 2: Species of Concern in the Meadowbank and Whale Tail Study Areas

Species	COSEWIC Status	SARA Status	Effects Pathways
barren-ground caribou	Threatened (as of November 2016)	No schedule	• mortality due to vehicle collisions • habitat loss • change in harvest due to improved access • barriers to movement and changes in behaviour
grizzly bear (western population)	Special Concern	Special Concern – Schedule 1 (as of May 2018)	• habitat loss • mortality due to attraction or vehicle collisions
polar bear	Special Concern	Special Concern – Schedule 1	• None anticipated
wolverine	Special Concern	Special Concern – Schedule 1 (as of May 2018)	• habitat loss • mortality due to attraction or vehicle collisions
short-eared owl	Threatened (as of May 2021)	Special Concern – Schedule 1	• habitat loss • potential loss of nest/eggs from clearing or flooding during the breeding season and due to vehicle collisions
peregrine falcon (*anatum/tundrius*)	Not at Risk (as of November 2017)	No Status	• physical hazards to nests on mine infrastructure or in quarries
harris's sparrow	Special Concern (as of April 2017)	Special Concern – Schedule 1 (as of February 2023)	• habitat loss • potential loss of nest/eggs from clearing or flooding during the breeding season and due to vehicle collisions
red-necked phalarope	Special Concern	Special Concern – Schedule 1 (as of May 2019)	• habitat loss • mortality due to potential loss of nest/eggs from clearing or flooding during breeding season
transverse lady beetle	Special Concern (as of November 2016)	Special Concern – Schedule 1 (as of August 2021)	• habitat loss

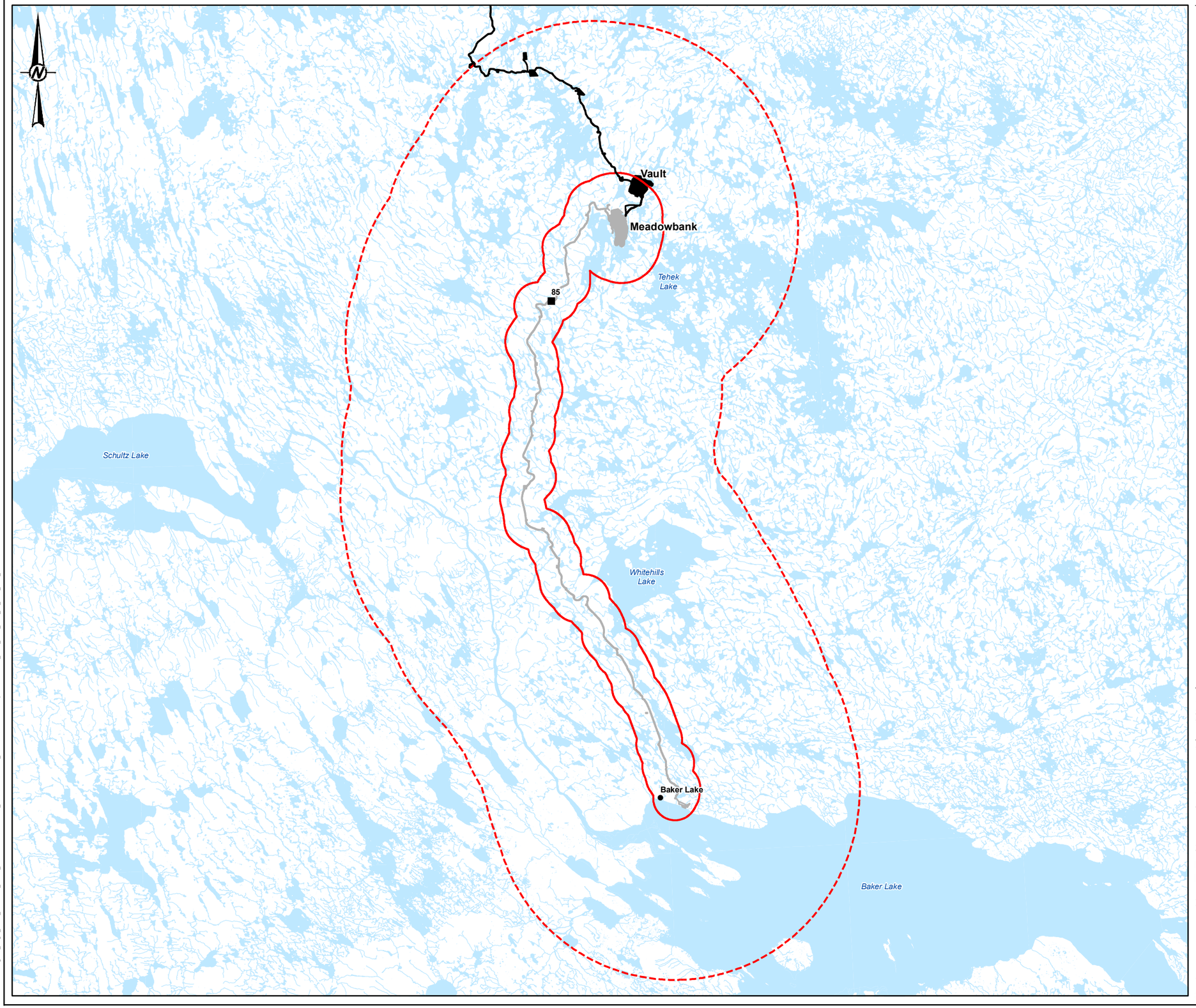
Notes: species listed as identified through the Meadowbank Terrestrial Ecosystem Impact Assessment (EIS; Cumberland 2005a), the Whale Tail Pit Final Environmental Impact Statement Addendum (FEIS; Golder 2016) and Whale Tail Expansion activities (FEIS Addendum, Golder 2018). Status updates under SARA since 2015-2016 are to be considered.

As per Project Certificate No.008, Condition 35, Agnico Eagle will ensure that the mitigation and monitoring strategies developed for Species at Risk (SARA) are updated as necessary to maintain consistency with any applicable status reports, recovery strategies, action plans, and management plans that may become available through the duration of the Project. Updates to the SARA will be considered during annual review and with each new revision of the TEMP.

1.6 SPATIAL BOUNDARIES

The Meadowbank Mine LSA includes a 5 km radius area centred on the Mine site and a 3 km wide corridor centred on the AWAR between Baker Lake and the Meadowbank Mine, with a total area of 725 km^2 (**Figure 4**). The regional study area (RSA) encompasses an area that includes a 25 km radius area around the Meadowbank Mine and a 50 km wide corridor along the AWAR for a total area of 6,669 km^2 (**Figure 4**).

The Whale Tail LSA is a 3 km corridor centered on the WTHR, Vault site, and borrow site access roads (i.e., 1.5 km buffer on either side of the road and 1.5 km buffer around Vault and borrow areas) and includes an approximate 1.5 km buffer around development areas at the Whale Tail Mine, for a total area of 287 km^2. The Whale Tail RSA is a 50 km corridor centred on the Haul Road alignment (i.e., 25 km buffer on either side of the Haul Road and borrow site access roads, and 25 km buffer around Vault site and borrow areas), with a total area of 5,172 km^2 (**Figure 5**).



LEGEND

- KILOMETRE MARKER
- MEADOWBANK (5 km) & AWAR (3 km) LSA BOUNDARY
- AWAR RSA BOUNDARY (25 km)
- WHALE TAIL HAUL ROAD (WTHR)
- ALL-WEATHER ACCESS ROAD (AWAR)
- WHALE TAIL MINE LEASE
- MEADOWBANK MINE LEASE
- WATERCOURSE
- WATERBODY

0 10 20

1:525,000 KILOMETRES

REFERENCE(S)

1. INFRASTRUCTURE OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. WATERCOURSE AND WATERBODY DATA OBTAINED FROM NATURAL RESOURCES CANADA.

COORDINATE SYSTEM: NAD 1983 CSRS UTM ZONE 14N

CLIENT

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AGNICO EAGLE MINES LIMITED:
MEADOWBANK DIVISION

PROJECT

TERRESTRIAL ECOSYSTEM MANAGEMENT PLAN

TITLE

MEADOWBANK RSA & LSA BOUNDARIES FOR MONITORING STUDIES

CONSULTANT

wsp

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APPROVED	CDLM

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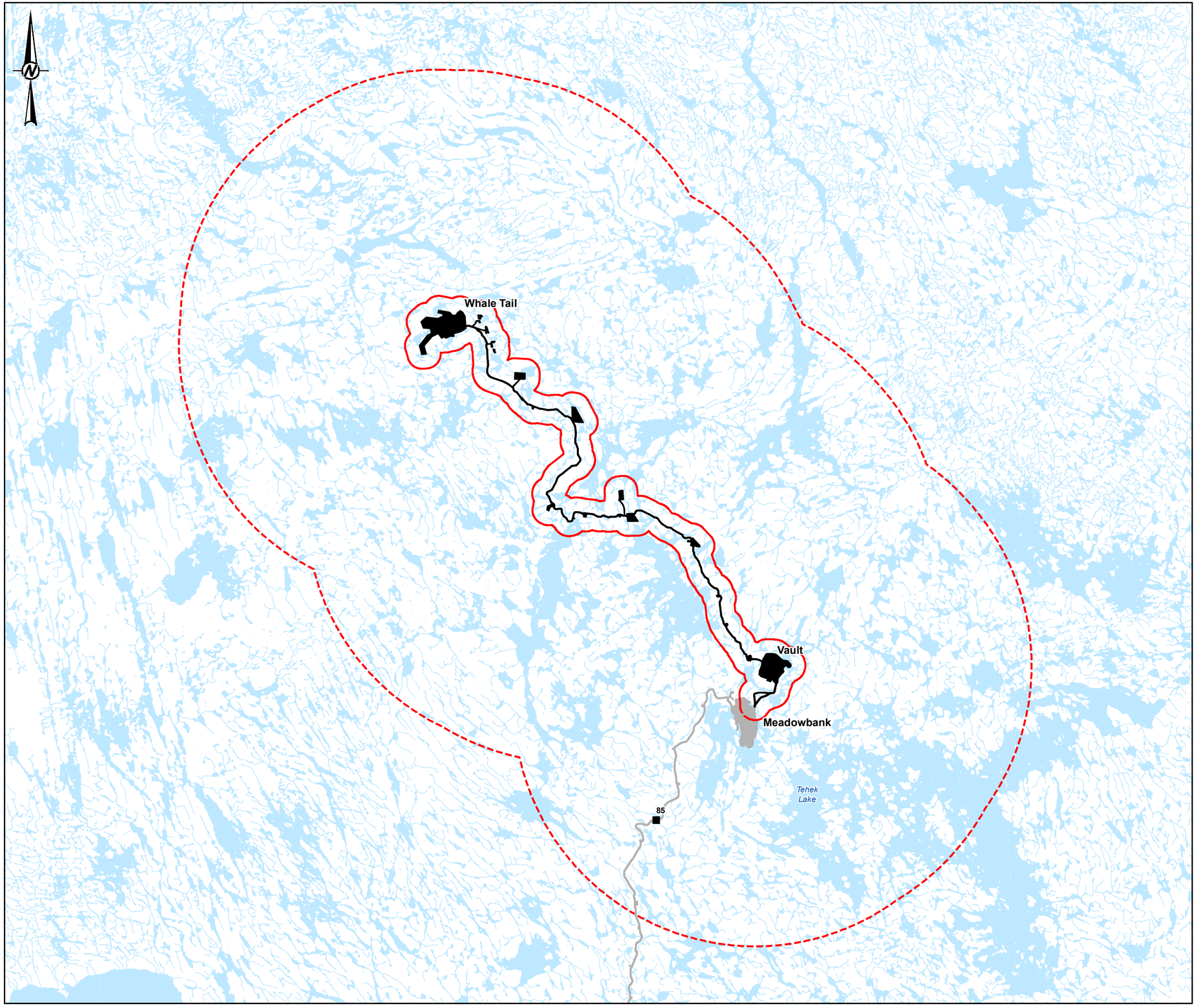

LEGEND

- KILOMETRE MARKER
- WHALE TAIL LSA BOUNDARY (1.5 km)
- WHALE TAIL RSA BOUNDARY (25 km)
- WHALE TAIL HAUL ROAD (WTHR)
- ALL-WEATHER ACCESS ROAD (AWAR)
- WHALE TAIL MINE LEASE
- MEADOWBANK MINE LEASE
- WATERCOURSE
- WATERBODY

0 8 16

1:400,000 KILOMETRES

REFERENCE(S)

1. INFRASTRUCTURE OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. WATERCOURSE AND WATERBODY DATA OBTAINED FROM NATURAL RESOURCES CANADA.
COORDINATE SYSTEM: NAD 1983 CSRS UTM ZONE 14N

CLIENT

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AGNICO EAGLE MINES LIMITED:
MEADOWBANK DIVISION

PROJECT

TERRESTRIAL ECOSYSTEM MANAGEMENT PLAN

TITLE

WHALE TAIL RSA & LSA BOUNDARIES FOR MONITORING STUDIES

CONSULTANT

wsp

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PREPARED	CDB
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1.7 RESIDUAL EFFECTS

Residual effects are Project effects that remain after implementation of all mitigation. A comprehensive assessment of the expected residual effects on vegetation and wildlife has been provided in the Meadowbank Terrestrial Ecosystem Impact Assessment (Cumberland 2005a), the Whale Tail Mine FEIS (Golder 2016) and the Whale Tail Mine Expansion FEIS Addendum (Golder 2018). The effectiveness of mitigation (described in **Section 2**) and magnitude of residual effects will be determined via monitoring programs outlined in this document, and compared against thresholds described in **Section 3**. Where monitoring determines that residual effects are outside established thresholds, adaptive management will lead to revised monitoring or mitigation. Outcomes of adaptive management may include no change, or increased or decreased monitoring and mitigation.

2. MITIGATION

2.1 GENERAL MITIGATION

General mitigation applicable to most wildlife are provided in **Table 3**, while **Section 2.3** summarizes the anticipated environmental effects and mitigation specific to each VEC.

Table 3: General Mitigation for the Meadowbank Mine, and Whale Tail Mine and Haul Road

Environmental Education
Employees participate in an online wildlife training developed by the Environment Department that is appropriate to their roles and responsibilities.
Employees participate in mandatory environmental awareness training led by the environmental department on site.
Fishing is prohibited on site.
Feeding of wildlife is prohibited.
Wildlife on Site
A wildlife reporting system (e.g., wildlife log) will be maintained by environmental staff. Where human safety or wildlife well-being is an issue, employees will be notified regarding procedures (up to an including stopping work in the affected area). The Wildlife Protection and Response plan includes a staff organizational chart indicating who has responsibility for predatory mammal-human interactions, and procedures to be followed (see **Appendix B**).
Road Access and Restrictions
Public use of the AWAR is monitored by the Safety Department. For mine safety reasons, Baker Lake residents will be prohibited from travelling beyond the 85 km mark of the AWAR (see **Figure 2**). Because the Whale Tail Mine and WTHR begin within existing mine facilities and are beyond kilometer 85, public access to these roads will be limited (see **Figure 2**). Voluntary hunting use data will be collected by Agnico Eagle at the gatehouse, and further action regarding acquiring this information is sought to evaluate the presence of ATVs and hunting (i.e., shooting) as a mechanism affecting caribou interactions with the AWAR and as a component of the Hunter Harvest Survey (HHS).
The *Wildlife Act* prohibits discharging firearms within a radius of 1.6 km of any building, structure or other facility on lands under a surface lease or across roads (see **Figure 2** for no shooting zone). Upon notification by Agnico Eagle or the public, this is to be enforced by the Government of Nunavut (GN).
To avoid unnecessary degradation of wildlife habitats, Project vehicles will be restricted to existing roads unless authorized by the site's environmental department.
Wildlife have the right-of-way on roads.
Maximum speed limits of 50 km/hr will be enforced, including periods of reduced speed limits when caribou, and/or other wildlife, are on or adjacent to the road.
All wildlife mortalities will be reported immediately to Meadowbank Complex environmental staff and removed to avoid attracting scavengers. All wildlife mortalities will be reported using the Incident Report Form **(Appendix C)**. If necessary, animals will be examined by the Environment Department to determine cause of death; ungulate and predatory mammal mortalities will be reported to the GN wildlife conservation officer and KivIA. If approved by the GN officer, disposal of ungulates and predatory mammals will be through the composter at the mine or as directed by the GN wildlife conservation officer. In the case of an ungulate and predatory mammal collision, drivers must fill out a vehicle/animal collision report to document the conditions and circumstances surrounding the incident. All such incidents will be reported using the Incident Report Form **(Appendix C)**.

Table 3: General Mitigation for the Meadowbank Mine, and Whale Tail Mine and Haul Road

Hunting
Hunting and harassment of any wildlife species by mine employees while on shift will be prohibited.
Access by way of ATV from Baker Lake to kilometer 85 on the AWAR for hunting, is permissible according to NIRB Project Certificate No.004, Condition 32. See **Figure 2.**
Agnico Eagle has a policy of a "no-hunting zone" from kilometer 85 to Whale Tail Mine, to reduce road-related effects on wildlife and to protect employee safety. A 1-km marker at the gatehouse is available to ensure all hunters are made aware of these restrictions. See **Figure 2**.
Except for designated persons (e.g., wildlife monitors, environmental technicians), employees will not be permitted to carry firearms.
Spills and Contamination
All spills will be immediately cleaned up or isolated to minimize the potential for exposure to wildlife or degradation of the surrounding environment (see the Spill Contingency Plan).
Water that may be physically or chemically affected by mining activities including all runoff and seepage from rock storage facilities, ore stockpiles or mine facilities will be intercepted, contained, and will meet license limits prior to discharge.

2.2 CARIBOU PROTECTION MEASURES

Caribou Protection measures employed by the Project will be evaluated, in collaboration with, and through data sharing among TAG members, including the components outlined in **Table 4**.

Table 4: Caribou Protection Measure Components to be Evaluated

Caribou Protection Measure Components
Tests of monitoring methods that are used to detect caribou near the Project to quantify: (i) the probability of detecting groups; (ii) the effective range of detection; and (iii) the spatial extent of detection capacity relative to the mitigation distance buffers.
Collection of additional collar and observation data on caribou group sizes to confirm the relevance of group size thresholds used in mitigation. IQ will also be considered when determining group size thresholds.
Collection and analyses of collar and observation data to quantify the effects of the Whale Tail Project, it's Haul Road and the existing Meadowbank Mine (and AWAR) on the movements of caribou, in particular during migratory periods.
Collection of accurate records documenting the detection of caribou and the subsequent implementation of mitigation measures.
Analyses of collar data from the GN – analysis to be completed within 5 years of Project commencement. Evaluate phase/timing data comparing the movements of individuals, per collar data, that were and were not subject to the implementation of mitigation measures. If active mining life-span extended, the evaluation should be updated every 5 years (NIRB Final Hearing Decision for the Whale Tail Mine Project NIRB File No. 16MN056, Page B-2).
Evaluation of Caribou Protection Measure Components - Scope
A study area or areas that encompass the Whale Tail Mine, Haul Road, Meadowbank mine and AWAR (including all activities utilizing this infrastructure including on-going exploration), all of which are integral components of the Project.
The use of accepted scientific methods and experimental designs to provide quantitative information.
The engagement of recognized subject-matter-experts in each area of the evaluation.
Collection of data with sufficient statistical power to detect potential impacts.

Table 4: Caribou Protection Measure Components to be Evaluated

Evaluation of Caribou Protection Measure Components - Scope
Recommendations on study designs, analyses and interpretation from the Project's TAG.
The collection of data during both the construction and active mining phases of the Project.
Completion of the evaluation within 5 years of Project commencement (beginning with construction) to ensure that any adverse effects or deficiencies in caribou protection measures are revealed prior to potential extensions in the use of Project infrastructure.
A technical report on the collar data analysis completed within 5 years of Project commencement, as noted above, is to be submitted to NIRB; and if the Project's active mining life span is extended beyond that currently proposed (i.e., 2026), including extended use of the haul road to support other projects, the evaluation should be updated every 5 years (**Appendix A**, GN Commitment #1).

2.3 VEC-SPECIFIC MITIGATION

2.3.1 Wildlife Habitat

2.3.1.1 Summary of Potential Environmental Effects

Permanent habitat loss will occur due to the construction footprint of mine facilities, including mine buildings, haul roads, and access roads to quarry and borrow sites. Dewatering of Whale Tail Lake at the end of the construction phase, has resulted in the flooding of a number of tributary lakes upstream of the Whale Tail Dike to the Mammoth Lake Watershed, thereby altering flows to Mammoth Lake and downstream lakes. This change in water regime can strongly influence plant species composition, community structure, and biological diversity (Vale et al. 2015). These temporary changes in water levels will affect soil moisture and may result in localized effects to vegetation quality through decreased species abundance and flooding. All terrestrial habitats provide some value to wildlife VECs. Consequently, loss or degradation of any of these habitats may result in localized negative effects on wildlife.

Another potential effect on Wildlife Habitat is degradation from dust and exhaust. Bryophytes and lichens may experience the largest effects close to roads where the greatest amount of deposition frequently occurs. Consistent with current dustfall monitoring and terrestrial monitoring along the AWAR, the EIS predicted that the primary effects of dust are generally confined to the immediate area next to roadways (Cumberland 2005a; Golder 2016; Everett 1980; Walker and Everett 1987). A recent study found that dust on plant leaves from diamond mine haul roads was significantly higher in a zone of up to 1000 m from the road (Chen et al. 2017).

2.3.1.2 Mitigation for Wildlife Habitat

Proposed mitigations for Wildlife Habitat are summarized in **Table 5**.

Table 5: Mitigation to Minimize Effects to Wildlife Habitat at the Meadowbank Mine and Whale Tail Mine and Haul Road

Mitigation	Design	Construction	Operations	Closure/ Post-Closure
Minimizing Wildlife Habitat Loss				
Avoid high value habitats (e.g., eskers, wet graminoid/sedge meadows), where practical	X	X		
Cluster facilities and minimize footprints	X			
Minimize haul and access road width and length	X	X		
Minimize borrow area size	X	X	X	
Construct boardwalks and helicopter pads		X	X	X
Stay on roads		X	X	X
Clearly mark road edges		X	X	X
Restore and revegetate disturbed habitats			X	X
Scarify roads, remove facilities, restore drainage patterns, and stabilize slopes			X	X
Minimizing Wildlife Habitat Degradation				
Minimize vehicle traffic and speeds to reduce dust		X	X	X
Contain (berms) fuel storage areas	X	X	X	X
Follow hazmat and spill contingency guidelines	X	X	X	X
Implement dust control measures (including dust suppressants) on mine roads and airstrip		X	X	X
Use landfill area to dispose of inorganic waste (e.g., concrete, plastic). All other materials shipped and disposed off-site		X	X	X
Maintain natural drainage patterns	X	X	X	X
During water diversion, pump discharge using natural drainage patterns when possible		X	X	X
Remove and dispose of contaminated soil (see 'Environmental Guidelines for Site Remediation', DOE 2009)		X	X	X

2.3.2 Ungulates

2.3.2.1 Summary of Potential Environmental Effects

Caribou and muskox are susceptible to habitat loss and sensory disturbance associated with Project facilities and activities. The potential for direct effects such as vehicle-animal collisions and increased hunting pressure are concerns, as are indirect effects related to contaminated water and vegetation. Although caribou may be present during any season, movements of collared caribou through the Meadowbank RSA is most common during the spring and fall migratory periods (Agnico Eagle 2016; Appendix 5-D in Golder 2016).

Per previous information requests for the Project and in reference to GN Commitment No. 2 (see **Appendix A**), caribou observation data are presented based on Project-specific seasons, which are largely based on caribou migratory movements and historical caribou numbers (i.e., when they have been at their peak) from monitoring data. Project-specific seasons are defined per GN seasonal guidelines as follows:

- Spring migration: April 1 – May 25 (sensitive season)
- Summer: May 26 – September 21
- Fall migration: September 22 – December 15 (sensitive season)
- Winter: December 16 – March 31

Following principles of adaptive management, start and end dates are approximate and may vary from year to year, pending caribou movement observations over time. The time frames aim to capture a wide enough window where caribou movements have been recorded to date, based on GN collar data and particularly for the migration periods, during which applicable monitoring and mitigations measures are to be employed. Caribou movements and behaviour may be altered by different factors, including the severity of the seasons (i.e., colder or hotter temperatures, variable precipitation, etc.), insect prevalence (more or less insects may emerge between seasons), and other factors. These considerations, guided by caribou movement observations, will be taken into account for the implementation of adaptive management measures along with TAG advice on seasons, as appropriate.

Likewise, while there are areas of the Haul Road and AWAR with more frequent observations of caribou, caribou may be observed along the entire length of the Haul Road and AWAR (Agnico Eagle 2016; Golder 2019). Seasonally, caribou most frequently interact with the Haul Road and AWAR during spring and fall based on collar and monitoring data (Golder 2017c, 2019).

Monitoring at other mines suggests that caribou herds may change their distribution around diamond mine developments, where probability of occurrence increases with distance from the mine (Boulanger et al. 2012; Johnson et al. 2005; Rescan 2007; Golder 2011a). This area is termed the zone of influence (ZOI), and likely results from sensory disturbance that may be related to smell, noise, taste and sight. A study using aerial survey and satellite-collar data collected around the Diavik, Ekati, and Snap Lake mines estimated that caribou relative occurrence was reduced near the mine, and reached expected levels at up to 14 km (Boulanger et al. 2012). Conversely, there have been other studies where no ZOI could be detected (ERM 2019; Golder 2020a).

There may be natural factors, such as lakes, that can also explain a ZOI (Golder 2011a, Boulanger et al. 2024), and this has shown to potentially contribute to seasonal ZOIs or a range of ZOIs. Ground-based monitoring at Ekati suggested that caribou groups with calves spend less time feeding within 5 km of the mine footprint (BHPB 2004). At the smaller Snap Lake Mine, a ZOI of 6.5 to 28 km was detected (Golder 2008; Boulanger et al. 2009), which increased with the level of mining activity (Golder 2008). Adding to the uncertainty, interviews with hunters in Kugluktuk familiar with mining reported that caribou are often observed at active mines, appearing

undisturbed and staying for days at a time. Caribou are even attracted to mine infrastructure for mosquito relief (Golder 2011b). To date, although ZOI have been demonstrated to varying degrees around mine sites, they are poorly understood in terms of their mechanism, their extent, and the effects to individual caribou and populations.

Agnico Eagle completed a preliminary ZOI study for the Lorillard and Wager Bay herds and found no ZOI effect with the exception of a weak effect during the winter months at a distance of 35 km (Golder 2017a). As part of the ZOI study, the Ahiak/Beverly herds were considered; however, there were too few collar locations within the RSA to include these data in the analysis. Although some discussions of completing additional ZOI studies were discussed as late as the January 2019 TAG meeting, most recent analysis of caribou data has focused on the finer-scale interaction of caribou movements and mining infrastructure, primarily the AWAR and WTHR during spring migration (Kite et al. 2017; Boulanger et al. 2019, 2024; Golder 2020b). Discussions of future analysis have largely been focused on further understanding caribou-road interactions and effects to caribou movement during spring migration, paired with broader range-scale studies examining timing of caribou arrival to calving grounds and eventual calving success.

Agnico Eagle completed a desktop study as part of Commitment 8 for the Expansion Project (**Appendix A**) and in preparation of a plan for construction of caribou friendly road crossings (Golder 2019) to mitigate potential barrier effects to migrating caribou. The results of the desktop study and plan were reviewed by TAG members. The plan includes visits by TAG members and Elders during the snow free period to further refine key areas of the Haul Road where crossing mitigation will be applied.

Agnico Eagle also committed to maintaining WTHR snowbank heights at 1 m or less relative to the road surface (**Appendix A**, GN-FWS-03 Commitment #5), which is new mitigation to reduce potential physical barrier effects to caribou. Agnico Eagle also committed (**Appendix A**, Commitments KivIA-Terrestrial-01 #9, and GN-FWS-03 Commitment #20) to monitoring spring snow conditions along the Haul Road to assess influence of snow management on caribou use and movements (**Appendix D**; Golder 2020c). The snow study was developed in collaboration with the TAG and has been presented to the TAG. A power analysis was competed in 2022 to identify the number of survey locations required to detect differences in snow depth and snow hardness between snow managed areas and adjacent areas (WSP 2023). Based on the results of the snow power analysis, a minimum of 65 survey locations, each with six snow plots as per the study design, will be completed and data analyzed to meet this commitment (**Appendix A**, Commitments KivIA-Terrestrial-01 #9, and GN-FWS-03 Commitment #20). The snow study is anticipated to conclude in 2025.

Road-related mortality may be a source of residual effects if not carefully managed. Although muskox are not considered a species at risk, their low reproductive rate, sedentary nature, and tendency to stand their ground when threatened make them vulnerable to disturbance and over-hunting. Following TAG discussion and agreement during fall 2024 (Agnico Eagle 2024a) and the increase in muskox using habitats in close proximity to Mine infrastructure, muskox mitigation and decision trees were removed. Instead drivers will reduce speeds in areas where muskox are

observed near roads (<500 m). Observations of muskox near the Meadowbank Complex will continue to be communicated via site-wide notification to personnel.

A minor concern is the potential for caribou or muskox to drink potentially contaminated water from the tailings impoundments or possibly runoff from the waste rock piles; however this has not been documented. Approved deterrent methods have been implemented at the Whale Tail Mine and Haul Road when necessary to remove caribou from areas of risk. On-site environmental staff will monitor the tailings facilities frequently.

2.3.2.2 Mitigation for Ungulates

Proposed mitigation for Ungulates are summarized in **Table 6**. See also General Mitigation in **Table 3** and the Wildlife Protection and Response Plan.

Table 6: Mitigation to Minimize Effects to Ungulates at the Meadowbank Mine and Whale Tail Mine and Haul Road

Mitigation	Design	Construction	Operations	Closure/ Post-Closure
Minimizing Wildlife Habitat Loss (see Table 5 for Wildlife Habitat)				
Minimizing Wildlife Habitat Degradation (see Table 5 for Wildlife Habitat)				
Reducing Sensory Disturbance (see also General Measures, Table 3)				
Site-wide notifications of caribou presence (see **Figure 6** through **Figure 9**)		X	X	
Caribou on or crossing the road are given right-of-way		X	X	X
Expand the WTHR at a timing that will avoid effects to caribou during potentially sensitive periods (e.g., spring and fall migration)	X	X		
Minimize engine noises, as per the Noise Abatement and Monitoring Plan		X	X	X
Limit (regular season) or postpone (sensitive season) blasting when caribou are near (i.e., within 3 km outside of the calving period, or within 5 km during the calving period, see **Figure 10**).		X	X	
Enforce speed limits on the AWAR and haul roads		X	X	X
Aircraft pilots are instructed to avoid caribou and muskox, and will receive site-wide notifications of caribou movements. All aircraft are to maintain a minimum distance buffer of 300 m vertically and 1,000 m horizontally from caribou. Aircraft are to maintain a vertical distance of 1,000 m and 1,500 m horizontal distance from groups of 50 or more caribou and 10 or more muskox. Flight restrictions are subject to exception for safety considerations.		X	X	X
Report Ungulates in the vicinity of the road to environmental staff and road dispatcher		X	X	X
Reduce speed to 30 km/h when Level 3 caribou mitigation is triggered as outlined in **Figure 6** through **Figure 9**.		X	X	

Table 6: Mitigation to Minimize Effects to Ungulates at the Meadowbank Mine and Whale Tail Mine and Haul Road

Mitigation	Design	Construction	Operations	Closure/ Post-Closure
Other mitigative action as determined by the Environmental Supervisor, possibly including: grouping vehicles into convoys, imposing speed limits, using pilot vehicles, stopping traffic near caribou attempting to cross haul roads, complete closure of haul roads, and suspending blasting, in accordance with **Figure 6** through **Figure 10.**		X	X	X
Reducing Ungulate Project-related Mortality (see also General Measures, Section 2.2)				
Along pits, graduate slope angles to diminish likelihood of slippage	X	X	X	
Herd ungulates off airstrip only prior to arrivals and departures if air traffic could not be delayed		X	X	X
Avoiding Exposure to Potentially Contaminated Water and Wildlife Habitat				
Deter ungulates attracted to potentially contaminated water in tailings ponds or runoff, documented using the Incident Report Form (**Appendix C**)		X	X	X
Avoiding Disruption of Movement or Migration Patterns				
Where caribou intersect with the Haul Road, road shoulders will be designed with either a low profile or smaller-grained materials to accommodate caribou passage. Roads will be top-dressed with esker-sourced materials, where available. The WTHR is not perceived to be a physical barrier to caribou movement where caribou predominately interact with the Haul Road as >70% of the road is <1.5 m above the surrounding terrain.	X	X	X	
Implement special measures if Ungulates are in close proximity to Project facilities and roads (see **Section 3.4**)		X	X	
Contour snow banks to avoid creating barriers. Snow banks will be maintained to be no greater than 1 m above road surface height.		X	X	X
Updated maps of known migration corridors and report to GN, KivIA, and HTO personnel		X	X	
During road decommissioning, flatten and scarify road edges			X	X

2.3.3 Predatory Mammals

2.3.3.1 Summary of Potential Environmental Effects

Predatory Mammals are susceptible to animal/vehicle collisions, loss of denning habitat, and sensory disturbance associated with Project construction and operation. Grizzly bears and wolverines may be particularly vulnerable to road development. Due to their wide-ranging and scavenging natures, they are drawn to road edges where road kills may be readily available. Once they have been attracted, habituated or food-conditioned to a site, they may be difficult to avert and may eventually become a human safety concern.

The potential for direct loss of denning habitat for some predatory mammals, especially wolves, is also a concern during road construction and borrow pit development. Wolves use unconsolidated materials (e.g., eskers), to excavate den sites, and the same den sites may be used from year to year (Cluff et al. 2002). Occasionally, adults with pups have been sighted along the AWAR area in summer denning months, and most recently, an active den and nursery site was identified within the borrow area at Esker #3 in the WTHR study area (Dougan & Associates 2015). Wolf denning occurs between early May and late September (May et al. 2012).

Grizzly Bears are also known to use habitats such as eskers for denning (Mueller 1995), wolverines have been linked to areas of persistent snow cover and boulders because of their reliance on cached food as they litter during late winter (Inman et al. 2012). Sensory disturbance from road construction and operation could result in an indirect loss of nearby functional denning habitat (May et al. 2012).

Other potential effects to Predatory Mammals, such as changes in prey abundance, distribution, or health, are of lesser concern. Mitigation to ensure that the viability and integrity of prey populations are maintained (e.g., Ungulates) will also mitigate the potential effects to Predatory Mammals.

2.3.3.2 Mitigation for Predatory Mammals

Proposed mitigation for Predatory Mammals are summarized in **Table 7**. See also General Measures in **Table 3** and the Wildlife Protection and Response Plan.

Table 7: Mitigation to Minimize Effects to Predatory Mammals at the Meadowbank Mine and Whale Tail Mine and Haul Road

Mitigation	Design	Construction	Operations	Closure/ Post-Closure
Reducing Project-related Mortality (see also General Measures, Table 3)				
Apply response plan (see **Appendix B**) when individuals are near		X	X	X
Manage mine food wastes and odors (**Appendix B**)		X	X	X
Instruct mine workers to keep lunches inside vehicle cabs or buildings		X	X	X
Remove or incinerate all wildlife carcasses to avoid attracting predators to facilities		X	X	X
Continue to improve waste segregation techniques and procedures	X	X	X	X
Incinerate/compost all kitchen waste, wood/paper products daily		X	X	X
Seal and store all aromatic products (e.g., paint) in bear-proof containers		X	X	X
Construct skirts or sheathing along all facilities with potential to attract Predatory Mammals	X	X	X	
Use deterrents, if necessary, for human and wildlife safety (**Appendix B**)		X	X	X

Table 7: Mitigation to Minimize Effects to Predatory Mammals at the Meadowbank Mine and Whale Tail Mine and Haul Road

Mitigation	Design	Construction	Operations	Closure/ Post-Closure
Avoiding Disturbance of Den Sites				
Initiate a den-specific response plan when a wolverine, grizzly bear or wolf den site is detected within 1 km of activities (see **Section 3.5**)		X	X	X
Restrict human and vehicle activity in the vicinity of den sites		X	X	X

2.3.4 Raptors

2.3.4.1 Summary of Potential Environmental Effects

Available survey data indicate that few Raptors nest in the vicinity of the Project area, and possibly also in old quarries and open pits. However, direct effects to breeding Raptors are expected to be very low (Cumberland 2005b; Dougan & Associates 2015). Ongoing monitoring (see Section 3.6) will document active nests if they are near mine facilities, or along the AWAR, WTHR, and access roads to quarry/borrow sites. Other potential effects to Raptors may result from changes in abundance, distribution, and health of prey populations due to road activities. Mitigation to minimize Wildlife Habitat removal (see Section 2.3.1) will reduce effects to prey populations.

2.3.4.2 Mitigation for Raptors

Proposed mitigation for Raptors are summarized in **Table 8**. See also General Measures in **Table 3**.

Table 8: Mitigation to Minimize Effects to Raptors at the Meadowbank Mine and Whale Tail Mine and Haul Road

Mitigation	Design	Construction	Operations	Closure/ Post-Closure
Minimizing Wildlife Habitat Loss (see Table 5 for Wildlife Habitat)				
Minimizing Wildlife Habitat Degradation (see Table 5 for Wildlife Habitat)				
Avoiding Disturbance to Nesting Raptors				
Develop a nest-specific response plan for identified raptor nests within areas of concern to ensure that nesting success is not affected by development activities (see **Section 3.7**)		X	X	X
Follow GN DoE guidelines (DOE 2005) for avoiding disturbance to raptor nests		X	X	X
Consult with GN (with respect to obligations under the *Wildlife Act*, SNU 2003, c.26) as per Project Certificate No.008, Condition 36. If deemed appropriate, discourage raptors from establishing nests on artificial structures, pit walls, or other facilities (see **Appendix E**)			X	
Limit ferrying flight altitudes to a minimum height of 300 m above ground level (provided Transport Canada		X	X	X

Table 8: Mitigation to Minimize Effects to Raptors at the Meadowbank Mine and Whale Tail Mine and Haul Road

Mitigation	Design	Construction	Operations	Closure/ Post-Closure
requirements and flight safety considerations are accounted for)				

2.3.5 Waterbird

2.3.5.1 Summary of Potential Environmental Effects

During baseline data collection and operational monitoring, only a small number of nesting Waterbirds were documented within the Meadowbank Mine and along the AWAR (see annual Wildlife Monitoring Summary Reports). Given these low densities of nests identified within the Project area since 2005 (i.e., too low to determine whether changes in nest abundance or success have occurred), and the absence of data suggesting that road-related effects were occurring, the Waterfowl nest survey program at Meadowbank was discontinued in 2012 (Gebauer et al. 2013). Initial waterfowl surveys for the Whale Tail Mine study area have also documented low numbers of nesting waterfowl (Dougan & Associates 2015).

Waterbirds that use flooded portions of the tailings impoundment areas for resting or roosting purposes during the summer and migratory periods may be exposed to contaminants; however, residence times are not expected to be long due to the lack of wetland vegetation, and the absence of fish or invertebrates in the tailings impoundment and water management areas in addition to deterrent measures as outlined in **Appendix F**.

There is a possibility that Waterbirds (e.g., geese) may forage on potentially contaminated graminoid vegetation (e.g., vegetation that may have been contaminated by fugitive dust fall from vehicles); however, results of recent risk assessments for the Meadowbank Mine have indicated negligible risk to Waterbirds as a result of Project activities (**Appendix E**).

The expansion at Whale Tail required fish-outs. No mortalities related to diving birds getting caught in nets were reported during fish-outs. A study was conducted over three field seasons (2018, 2019, 2021) through collaboration with Trent University and ECCC to determine the effectiveness of planned mitigation measures for migratory birds during flooding of the Whale Tail South area (Holmes 2021, Agnico Eagle 2022b). The study was completed in 2021, and final measured impacts of flooding on nesting birds were lower than FEIS Addendum predictions. Analyses of these data have been completed and have been published in Avian Conservation & Ecology (Holmes et al. 2024). Results are also presented in the 2023 Wildlife Monitoring Summary Report (Agnico Eagle 2022b).

2.3.5.2 Mitigation for Waterbirds

Proposed mitigation for Waterbirds are summarized in **Table 9**. See also General Measures in **Table 3**.

Table 9: Mitigation to Minimize Effects to Waterbirds at the Meadowbank Mine and Whale Tail Mine and Haul Road

Mitigation	Design	Construction	Operations	Closure/ Post-Closure
Minimizing Wildlife Habitat Loss (see Table 5 for Wildlife Habitat)				
Stay 30 m away from shoreline areas during design except where necessary for constructing road crossings and pit development	X	X	X	
Provide foraging opportunities for Waterbirds, particularly geese, over the long term in revegetated areas and flooded mine pits			X	X
Minimizing Wildlife Habitat Degradation (see Table 5 for Wildlife Habitat)				
Where high levels of contaminants have been identified in water or vegetation, undertake reclamation activities to manage risks to Waterbirds		X	X	X
Avoiding Disturbance to Nesting Waterbird				
Clear land outside the breeding season (mid-May to mid-August) unless a nest survey by a qualified wildlife biologist has determined that no Waterbird nests are present		X	X	X
Helicopter ferrying flight altitudes will be above 1,000 m when birds are congregated and during sensitive seasons (e.g., breeding, moulting), provided Transport Canada requirements and flight safety considerations are accounted for		X	X	X
Where important bird areas (e.g., moulting areas, goose breeding colonies etc.) are identified, observe a 1,100 m vertical and 1,500 m horizontal distance whenever possible (Hines and Wiebe 1997). Make all pilots aware of these flight restrictions		X	X	X
Reducing Waterbird Project-related Mortality (see also General Measures, Table 3)				
Monitor tailings, reclaim ponds, and storm water retention ponds daily during freshet until mid July to mitigate (e.g., use of propane cannons) Waterbird landings on these waterbodies. Where Waterbird have landed on ponds, use aversive tactics to scare them away		X	X	X
Implement mitigation for nests in flooding zones at the Whale Tail Project (**Appendix F**)		X		
Implement mitigation for diving bird mortality during fish-out activities (see the Fishout Diving Waterbird Protection Plan, **Appendix F**)		X		

2.3.6 Upland Breeding Birds

2.3.6.1 Summary of Potential Environmental Effects

The greatest effect to Upland Breeding Birds (e.g., songbirds, shorebirds) is the removal, flooding, or degradation of nesting habitat and incidental take of breeding birds. Virtually all terrestrial habitat within the study area provides foraging or nesting habitats for one or more species. Some species prefer shrubby terrain (e.g., savannah sparrow), others are found primarily in open tundra (e.g., lapland longspur), whereas some are restricted to wet meadows (e.g., semipalmated sandpiper).

Another potential environmental effect is the reduced habitat effectiveness due to human activity, although passerines appear to readily habituate to these activities compared to larger species such as Raptors and Waterbird. Studies have documented avoidance effects and reduced bird densities within 1 km of human infrastructure (Reijnen et al. 1997; Benitez-Lopez et al. 2010). Conversely, a study of lapland longspurs by Male and Nol (2005) showed no difference in nest success between sites with high and low levels of human noise at the Ekati Diamond Mine, though this is not a particularly sensitive bird species. In addition, the results of recent studies show that no decrease in upland bird species richness or abundance from mine activity has been observed at the Meadowbank Mine (Gebauer et al. 2012, 2013, Agnico Eagle 2020a), or at the Ekati Diamond Mine (Smith et al. 2005; Rescan 2010).

Buildings, pits, and other facilities will provide new perching opportunities and possibly nesting opportunities for Raptors. The potentially higher densities of Raptors in the area, and potentially increased depredation rates on passerines, are possible negative effects of the Project on songbirds.

2.3.6.2 Mitigation for Upland Breeding Birds

Proposed mitigation for Upland Breeding Birds are summarized in **Table 10**. See also General Measures in **Table 3**.

Table 10: Mitigation to Minimize Effects to Upland Breeding Birds at the Meadowbank Mine and Whale Tail Mine and Haul Road

Mitigation	Design	Construction	Operations	Closure/ Post-Closure
Minimizing Wildlife Habitat Loss (see Table 5 for Wildlife Habitat)				
Minimizing Wildlife Habitat Degradation (see Table 5 for Wildlife Habitat)				
Where high levels of contaminants have been identified in water or vegetation, undertake reclamation activities to manage risks to Upland Breeding Birds		X	X	X
Avoiding Disturbance to Nesting Upland Breeding Birds				
Clear land outside the breeding season (mid-May to mid-August) unless a nest survey by a qualified wildlife biologist or technician has determined that no Upland Breeding Bird nests are present		X	X	X

Table 10: Mitigation to Minimize Effects to Upland Breeding Birds at the Meadowbank Mine and Whale Tail Mine and Haul Road

Mitigation	Design	Construction	Operations	Closure/ Post-Closure
If nest found within Project facilities, set up buffer zone		X	X	X
Report any incidents or mortalities of breeding birds to ECCC (cwsnorth-scfnord@ec.gc.ca.)		X	X	X
Avoid human activity around nest sites to avoid attracting predators to site		X	X	X
Reducing Upland Breeding Bird Project-related Mortality (see also General Measures, Table 3)				
Monitor tailings, reclaimed ponds, and storm water retention ponds daily during freshet until mid July (concurrent with Waterbird monitoring) to mitigate (e.g., use of propane cannons) Shorebirds landings at these waterbodies. Where Shorebirds have landed at ponds, use aversive tactics to scare them away		X	X	X
Deter Raptors from nesting or roosting on mine facilities, only when necessary (see **Appendix G**). Locally breeding Raptors will increase predation rates on songbirds		X	X	X
Deter Upland Breeding Birds from nesting or roosting on equipment and facilities prior to arrival (see **Appendix F**)		X	X	X
Implement mitigation for nests in flooding zones at the Whale Tail Project (**Appendix F**)		X		

3. MONITORING OVERVIEW

A comprehensive suite of monitoring activities are being undertaken for the Project facilities, haul roads and AWAR. **Table 11** summarizes all of the monitoring activities, their frequency, and the VEC each activity targets.

Table 11: Monitoring Activities Being Undertaken for the Project Facilities, Haul Roads, and All-Weather Access Road

Monitoring Activity	Frequency	VECs					
		Wildlife Habitat	Ungulates	Predatory Mammals	Raptors	Waterbirds	Upland Breeding Birds
Traffic Monitoring for AWAR and Haul Roads	Currently completed and will be provided in the annual summary report		X	X	X	X	X
Public Use of Roads	Monitoring and incidental observations, and will be provided in the annual summary report		X	X	X	X	X
Habitat monitoring	Every three years post-construction, or if greater than 25% of the overall mine footprint changes	X					
Dustfall monitoring	Monthly around Meadowbank Mine and Whale Tail Mine; detailed study conducted annually along the AWAR and the WTHR, as per the Air Quality and Dustfall Monitoring Plan	X					
Habitat reclamation monitoring	At Year 2 post-closure and every 3 years until Year 12 post-closure	X					
Caribou satellite-collaring program	Data provided to Agnico Eagle from GN at least 1x/week		X				
Mechanistic Investigation Studies	As necessary and/or identified through the TAG		X				
Haul Roads, Pits and mine site ground surveys	At least 1x/week, includes inspections of waste streams for scavenger attractants		X	X	X	X	
Road surveys (AWAR and Haul Roads)	At least 1x/week		X	X	X	X	X
Vehicle encounter reports	Ongoing		X	X	X	X	X
Incident reports	Ongoing (when incidents with wildlife occur)						
Hunter Harvest Survey	Implemented (see **Section 3.4.2.8**)		X	X			
Snow study	Special Study, 2022 to 2025		X				
Caribou behaviour monitoring	Ongoing		X				
Remote camera program	Ongoing, focused on spring and fall migration		X				
Active den site surveys	Initiated by the detection of an active den (grizzly bear, wolf or wolverine) within the active mine footprint or vicinity of Project facilities (see **Figure 11**)			X			

Table 11: Monitoring Activities Being Undertaken for the Project Facilities, Haul Roads, and All-Weather Access Road

Monitoring Activity	Frequency	VECs					
		Wildlife Habitat	Ungulates	Predatory Mammals	Raptors	Waterbirds	Upland Breeding Birds
Active Raptor nest monitoring	During nesting season (May 1 to Sept 15) if active nest is within the active mine footprint and vicinity of Project facilities (see **Figure 12**)				X		
Migratory bird (upland breeding bird and waterbirds) nest surveys	Active nests identified within 100 m of Project facilities, and all roads monitored, if deemed necessary Additional monitoring may be required during fish-out or flooding					X	X
PRISM plot surveys	48 PRISM plots over 10 years for combined Meadowbank and Whale Tail sites (2021-2031) at sites selected by ECCC					X	X
North American Breeding Bird Survey (BBS)	BBS will be conducted every 3 years as a minimum during operation and opportunistically when qualified or same individuals are coming to site for other wildlife monitoring (including PRISM). Every 3 years during closure and post-closure on both AWAR and Haul Road on portion selected by ECCC.						X

3.1 GENERAL MONITORING

Agnico Eagle has implemented electronic data entry for wildlife monitoring surveys described below. Wildlife observations are stored in a centralized database. Each observation is linked to mitigation implemented (if required) in the wildlife database. Standard Operating Procedures (SOP) will be periodically revised by the TAG and implemented for monitoring.

3.1.1 Road Surveys

Meadowbank AWAR and Whale Tail Haul Road

Methods: Systematic ground surveys will be conducted along the AWAR and WTHR by an observer in a vehicle. Observers will generally include either environment department representatives, Wildlife HTO Coordinators or KivIA employees. Survey vehicles will travel no more than 30 km/h, when wildlife is observed, to maximize observations of all wildlife along the route. Wildlife observations are recorded on both sides of roads. All wildlife observations recorded incidentally as part of regular traffic along the haul roads and AWAR will be known at the start of ground surveys so that observers are aware of the location of wildlife observations and can focus attention in these areas. Road survey data are primarily collected using iPads, and stored in the EQuIS database. For each sighting, a UTM coordinate will be taken along the route along with distance of the animal from the road, nearest road marker, and a variety of other information (see field data form in **Appendix C**). Behavior of Ungulates will also be recorded for each encounter and comments on disturbance related to a particular behavior (e.g., running) will be made (see field form in **Appendix C**).

Further information on these surveys as they relate to caribou interaction are described below in **Section 3.4.2.3**.

Viewshed Surveys

Height-of-land (HOL) surveys completed during past monitoring were reviewed with TAG and determined to be ineffective for monitoring caribou. Reasons for ineffectiveness included a limited number of locations, difficult access, and health and safety concerns for participants. During the summer of 2019, viewshed surveys were considered as an alternative to HOL surveys, and locations were selected along the WTHR. The survey locations and viewshed of these locations were provided and reviewed with the TAG in November 2019. HOL surveys were replaced by viewshed surveys in February 2020, and viewshed surveys were conducted at 12 predetermined roadside locations that optimize the distance and area of the surrounding landscape that can be monitored. In 2021, viewshed survey locations were adjusted based on areas with high caribou use and points of high elevation within areas with high caribou use, and an additional survey location was added bringing the total number of locations to 13 viewshed survey locations along WTHR. Based on analyses and TAG discussions during the fall 2024 TAG meeting #21 (Agnico Eagle 2024a), viewshed surveys were discontinued due to their redundancy with collar data and road surveys to detect caribou. Further, viewshed surveys on the WTHR did not result in additional implementation of mitigation measures compared to road surveys.

3.1.2 Pits and Mine Site Ground Surveys

Methods: Within the Meadowbank Mine site (e.g., tailings pond, haul road to Vault Site) and the Whale Tail Mine, systematic ground observations of Ungulates will be conducted by on-site environmental technicians/monitors who record details on species, numbers, sex, habitat type, and location. Behavior of Ungulates will also be recorded for each encounter and comments on disturbance related to a particular behavior (e.g., running) will be made (see field form in **Appendix C**).

Frequency: Once per week (frequency will increase if caribou are present, **Figure 6; Table 11**).

3.1.3 Helicopter Monitoring

Helicopters are utilized at the Project for various reasons including transport, exploration, surveying, monitoring, and reconnaissance. As there have not been any large staging or stopover locations noted, currently there are no established corridors, however in the event that an area requiring avoidance, flight corridors will be established.

Flight restrictions related to GN Commitment No.18, 19, and 20 (**Appendix A**) include:

- All aircraft are to maintain a minimum distance buffer of 300 m vertically and 1,000 m horizontally from caribou.
- Aircraft flying to/from the Mine site are to maintain a vertical distance of 1,000 m and 1,500 m horizontal distance from groups of 50 or more caribou and 10 or more muskox.

- Where important bird areas (e.g., moulting areas, goose breeding colonies, etc.) are identified, observe a 1,100 m vertical and 1,500 m horizontal distance whenever possible (Hines and Wiebe 1997).

- Sensitive bird/wildlife areas will be avoided by 610 m vertically.

- Long-range flights (25 km or greater) are a minimum of 650 m above ground level, except for take-off and landings (Agnico Eagle 2024a,b).

- Short-range flights (less than 25 km) are a minimum of 300 m above ground level, except for take-off and landings (fall 2024 TAG meeting; Agnico Eagle 2024a,b).

- Pilots are required to review and sign the Air Traffic Management Procedure.

Certain activities are required to be completed at lower altitudes than specified in the air traffic management plan. External load operations (equipment/material slinging), site inspections, reconnaissance and environmental surveys often require lower flight. Flights with these purposes have been considered permissible for low flight. Similarly, flights lower than 300 m have been considered permissible when flying low due to low visibility (poor weather conditions) or for emergency medevac services.

Contractors record the spatial location, altitude, and speed of helicopters throughout flights, and provide these data to Agnico Eagle. Based on discussions with TAG, reporting should include:

- Maps of helicopter flights by season, with flights with maximum altitudes less than 300 m identified.

- Summary statistics by season, such as number of flights, flight days, total and/or average distance flown, total and/or average duration, average and/or maximum altitude.

Long-range and short-range flight definitions as well as methods for calculating altitude were first implemented in the Meadowbank Complex 2023 Wildlife Monitoring Summary report (Agnico Eagle 2024b) and were discussed at the fall 2024 TAG meeting with support from TAG members (Agnico Eagle 2024a). For an accurate assessment of flying height above ground, take-off and landing are excluded. Flight paths are classified as take-off/landing using the following definition: If a flight path had a change in speed of ±15 knots and was within 500 ft/152 m above the ground or if the flight path was less than 20 m from the ground regardless of speed, it was classified as take-off/landing and was removed from the flying height calculations. Flights were classified as short- or long-range by calculating the maximum distance spanned during an individual flight leg. Methods may be refined as needed based on flight database and analytical improvements following principles of adaptive management.

3.2 WILDLIFE HABITAT

3.2.1 Objectives

The objectives of monitoring Wildlife Habitat will be to ensure that measures to minimize the amount (or area) of Wildlife Habitat lost to Project construction and operation are effective, and that concentrations of contaminants in vegetation, water, and sediment do not exceed acceptable levels for wildlife health. Residual effects will be assessed, and opportunities for reclamation or habitat creation will be identified (e.g., recontouring, stabilization, and restoration of drainage patterns). Monitoring will also ensure that potentially contaminated vegetation is removed (or isolated from wildlife), and that the site is restored to its natural state. **Table 12** describes the framework that has been established for monitoring effects to Wildlife Habitat.

Table 12: Monitoring Approach for Wildlife Habitat for the Meadowbank, Whale Tail Mine and Haul Road

Potential Effect	Impact Prediction	Quantitative Monitoring Variable	Thresholds	Monitoring Activity	Frequency
Habitat Loss **Meadowbank Mine, Vault Pit, and Haul Road**	Loss <EIS prediction and subsequent approvals (see Golder 2022)	Area of altered habitat	5% above permitted areas of 1,515 ha for the Mine site	Habitat monitoring	Every three years post-construction, or if greater than 25% of the overall mine footprint changes.
Habitat Loss **Meadowbank AWAR**	Loss <EIS prediction and subsequent approvals (see Golder 2022)	Area altered habitat	5% above permitted area of 455 ha for AWAR	Habitat monitoring	Every three years post-construction, or if greater than 25% of the overall mine footprint changes.
Habitat Loss **Whale Tail Mine and Haul Road**	Loss <EIS prediction and subsequent approvals (see Golder 2022)	Area of altered habitat	5% above permitted area of 1,584 ha for the Pit and Haul Road	Habitat monitoring	Every three years post-construction, or if greater than 25% of the overall mine footprint changes.
Habitat Degradation by Contamination **Mine site, AWAR and Haul Roads**	Dust and emissions will not result in unacceptable levels of contaminants in vegetation, water or sediment	Concentrations of contaminants	See Wildlife Screening Level Risk Assessment Plan (**Appendix E**), and current version of Air Quality and Dustfall Monitoring Plan (Agnico Eagle 2022a)	Screening Level Risk Assessment Dust fall monitoring	WSLRA: Every three years Dust fall monitoring: annually
Habitat Reclamation following Project Closure	Vegetation will be naturally established on reclaimed sites	Proportion of disturbed areas revegetated	Up to 80% of the reclamation will be completed by year 12. Refer to the reclamation and closure plan for more details	Habitat reclamation monitoring	At Year 2 post-closure and every 3 years until Year 12 post-closure

3.2.2 Monitoring Approach

As per Project Certificate No.008, Condition 33, Agnico Eagle will continue to document and map newly discovered sensitive wildlife features such as denning sites, caribou crossing sites, raptor nests and other nesting sites (representative figures are provided in **Appendix H**; from Dougan & Associates 2017).

Initial documentation and mapping has been completed for the Whale Tail Mine and Haul Road (Dougan & Associates 2017) and information related to other development areas will be compiled into a single spatial dataset to guide monitoring activities. There are no caribou calving areas within the regional study area.

Monitoring activities for Wildlife Habitat will be carried out post-construction and post-closure. The following are the methods and frequency for the monitoring efforts for each measurable parameter.

3.2.2.1 Habitat Loss

Methods: Total area of habitat disturbance will be determined following Project construction using a combination of ground and aerial surveys, photography, ground-truthing (with the aid of GPS), as-built reports, and satellite imagery. Monitoring of habitat loss will occur at three primary locations: Meadowbank Mine, AWAR (including quarry sites), and Whale Tail Mine, and WTHR (includes Vault Pit and Haul Road, borrow/quarry sites and access roads). ArcGIS software is used to describe the overall area of Ecological Landscape Classification (ELC) units and high suitability habitats for VECs (i.e., Ungulate Growing Season, Ungulate Winter Season, Waterbirds, and Breeding Birds) lost due to Project development, in relation to the permitted areas. High suitability habitats for VECs are based on Dougan & Associates (2015).

For the Meadowbank Mine and AWAR locations, the thresholds of disturbance are 5% above permitted areas of 1,515 ha and 455 ha, respectively. For the Whale Tail and Haul Road location, the threshold of disturbance is 5% above a permitted area of 1,584 ha. Thresholds may increase from EIS values over time due to subsequent approval of mine plan amendments.

Frequency: Every three years post-construction or if changes are greater than 25% of the overall mine footprint from the previous year ELC was evaluated. This frequency may be reduced during the operation phase if the amount of new disturbance and reclamation areas is relatively unchanged.

3.2.2.2 Habitat Degradation by Contamination

Methods: A comprehensive environmental health monitoring program has been initiated that compares contaminant levels in soil and vegetation (i.e., lichen, berries, and sedges) before and after Project activities. Samples taken from the Project area are also compared to reference sites that are not influenced by Project activities. This Screening Level Risk Assessment program is described in **Appendix E** of this document. Additional information is provided through dustfall monitoring along the AWAR and WTHR, as described in Air Quality and Dust Monitoring Plan (Agnico Eagle 2022a).

3.2.2.3 Habitat Reclamation Post-Closure

Methods: Reclamation efforts will focus on providing conditions conducive to natural re-colonization of the site by surrounding native vegetation. There is a lack of available soils in the Project area that, in conjunction with the harsh climatic conditions (short cold and dry growing season), makes it difficult to establish vegetation over large areas. Reclamation activities and natural re-vegetation of disturbed areas during the closure and post-closure phases will reduce overall residual effects within the LSA.

Frequency: Vegetation plots and mapping will be conducted during the second growing season following closure and every three years thereafter for four iterations (considered to be a reasonable period of time within which to expect revegetation of most disturbed areas) to ensure effort is made to re-vegetate and that re-vegetation of previously disturbed areas is progressing.

3.2.3 Thresholds

Should the thresholds outlined in **Table 12** be exceeded, the following actions will be undertaken.

3.2.3.1 Habitat Loss

Where mapping indicates a loss of habitat area beyond that predicted, discussions will be held with construction contractors and Project personnel to resolve the concern. Additional mitigation may include clearer delineation of workspace, road areas, and designated no-disturbance areas. Where unauthorized off-road vehicle activity is noted, more stringent off-road access control measures will be implemented. Habitat reclamation and restoration of natural drainage patterns and contours may be ordered depending on the scale of the disturbance.

3.2.3.2 Habitat Degradation by Contamination

See **Appendix E -** Screening Level Risk Assessment Program.

3.2.3.3 Habitat Reclamation Post-Closure

If progress of revegetation is not occurring, further reclamation activity will be undertaken and may involve reseeding (e.g., native-grass cultivars and forbs such as nitrogen-fixing legumes).

3.3 INVASIVE PLANT MONITORING

The invasive plant monitoring component outlines the means by which Agnico Eagle plans to reduce Project-related effects to plant populations and communities, primarily through the mitigation and management of invasive species, and includes both environmental and follow-up monitoring (Project Certificate No.008, Condition 25). Proactive measures and monitoring programs are used to track conditions and implement further mitigation as required, while follow-up monitoring is used to verify the accuracy of impact predictions and adaptively manage and implement further mitigation as required.

3.3.1 Objectives and Thresholds

The objectives of the vegetation monitoring and management component are as follows:

- measure distribution and abundance of non-native invasive plant species; and
- using industry standards and best practices, equipment and bulk supplies must arrive to Project site free of soil or plant debris to minimize the risk of invasive plant introduction.

Specific thresholds for invasive plant monitoring include the following:

- no non-native invasive species will occur as a result of mining operations (i.e., new equipment or materials arrival).

3.3.2 Monitoring Approach

Monitoring programs for non-native invasive plant species will be completed during the construction and operations phase of the Project. Surveys for non-native invasive plant species will be undertaken in disturbed areas (e.g., active mine site, borrow pits) to identify and document the extent of any non-native invasive plant species that may occur during construction and operations. These surveys will extend into undisturbed areas to determine if non-native invasive plant species are establishing in native tundra. Additionally, invasive plant inspection surveys will be completed on cargo in Becancour, prior to being loaded onto shipping vessel(s); monitoring procedure: NU-PRO- ENV- Invasive Species Inspection Prior Loading onto Shipping Vessel.

The early detection of non-native invasive plant species is important, as preventing these species from becoming established is the most effective mitigation that can be employed. If non-native invasive plant species are identified in the Project area, they will be reported to Government of Nunavut Department of Environment (GN DoE), as per DoE guidelines. As part of the reporting process, the following information will be collected and sent to DoE via the Meadowbank Complex Annual Report:

- location of the species (i.e., GPS coordinates)
- species identification and population extent, including a population extent comparison to previous years surveys
- photographs of the species in question to confirm identification and
- species-specific management and eradication recommendations

A management plan for non-native plant species employing adaptive management may be implemented if the non-endemic and other non-native plant species continue to be observed and/or are observed to spread further within the Meadowbank Complex area. A non-native plant management plan would describe the methods for the eradication, control and/or minimization of the encroachment of non-native plant species into new areas and outline additional measures such as on-boarding and training in the identification of non-native plant species for the area.

3.3.3 Mitigation

Terrestrial Pathways

- All equipment and supplies brought to the project sites are clean and free of soils that could contain plant seeds or organic matter not naturally occurring in the area.
- Vehicle tires and treads are inspected prior to initial use in project areas.

Specific Cleaning Measures

- Equipment and bulk supplies will be cleaned using brooms, brushes, shovels, water, or compressed air. Areas of particular concern include tires, tracks, skids, buckets, scoops, and packing materials.
- Accumulated soil, plant material or crop debris from openings, tracks, skids, wheels, buckets, scoops, and packing materials using a hand scraper, shovel, broom, or other methods.
- Additional focus should be made to areas where soil or plant debris can accumulate (i.e., tires or undercarriage).

Eradication Methods

- Eradication trials of non-native invasive plants will be implemented with methods including, but not limited to, hand pulling, mechanical removal and covering with geotextile fabric.

3.4 UNGULATES

Monitoring and mitigation are based off on Mobile Caribou Conservation Measures for Kivalliq Region, Nunavut (Poole and Gunn 2015). As previously mentioned, decision charts (**Figure 6** through **Figure 9**) outlining monitoring and mitigation (adaptive management) measures for ungulates have been developed for each phase as follows:

- **Figure 6** – caribou and mining operations
- **Figure 7** – caribou and surface roads (WTHR and AWAR) during non-sensitive seasons
- **Figure 8** – caribou and surface roads (WTHR and AWAR) during spring migration
- **Figure 9** – caribou and surface roads (WTHR and AWAR) during fall migration and
- **Figure 10** – caribou and blasting

These figures are periodically updated per ongoing discussions with the TAG and monitoring results to reflect appropriate protection measures. The GST values will be recalculated annually based on methodology provided by the GN (**Appendix I**) and will be presented in the Wildlife Monitoring Summary Report and to the TAG.

In 2024, a pilot mitigation program was implemented to protect lead caribou during spring migration. The update is based on IQ highlighting the importance of allowing the lead migrating caribou herd to travel, encouraging the remaining herd to follow. A lead caribou protection protocol was developed by Agnico Eagle in collaboration with the TAG (**Figure 8**; **Appendix J**). When present, leaders are subject to enhanced mitigation measures through a 10-day road closure period (**Appendix J**). See **Appendix J** for the full description of spring migration mitigation protocols.

A pilot mitigation program has also been developed for fall migration, with implementation proposed for fall 2025 (**Appendix K**). The new fall program is based on IQ and TAG collaboration with an overall goal of creating gaps in traffic along the AWAR and WTHR to facilitate caribou crossings. The objective of the new pilot program is to evaluate the effectiveness of allowing fixed periods of time without non-essential disturbance to caribou. Closures will still be triggered using GST (**Figure 9**, **Appendix K**), while allowing flexibility for convoys. For example, during periods of road closure and following discussions with the operational TAG members, Agnico Eagle can operate a convoy composed of operational needs vehicles on the conditions that following the convoy, a minimum period of 24 hours is maintained without any non-essential traffic (**Appendix K**). The fall mitigation pilot program was developed collaboratively with the TAG during fall 2024 (TAG meeting #21; Agnico Eagle 2024a). See **Appendix K** for the full description of fall migration mitigation protocols.

The TEMP includes a collaborative decision making through implementing mitigation by consensus, which also includes two triggers for level 3 actions. If the lesser of the two triggers (one collared caribou within 10 km of the roads and on a trajectory to cross) is triggered, Agnico Eagle consults with IQ contributors, elders, stakeholders and agrees (consensus) to initiate level 3 monitoring or agree its not warranted (no consensus). If no consensus, then level 2 monitoring continues. It should be noted that level 3 is triggered with or without consultation should monitoring results exceed the GST.

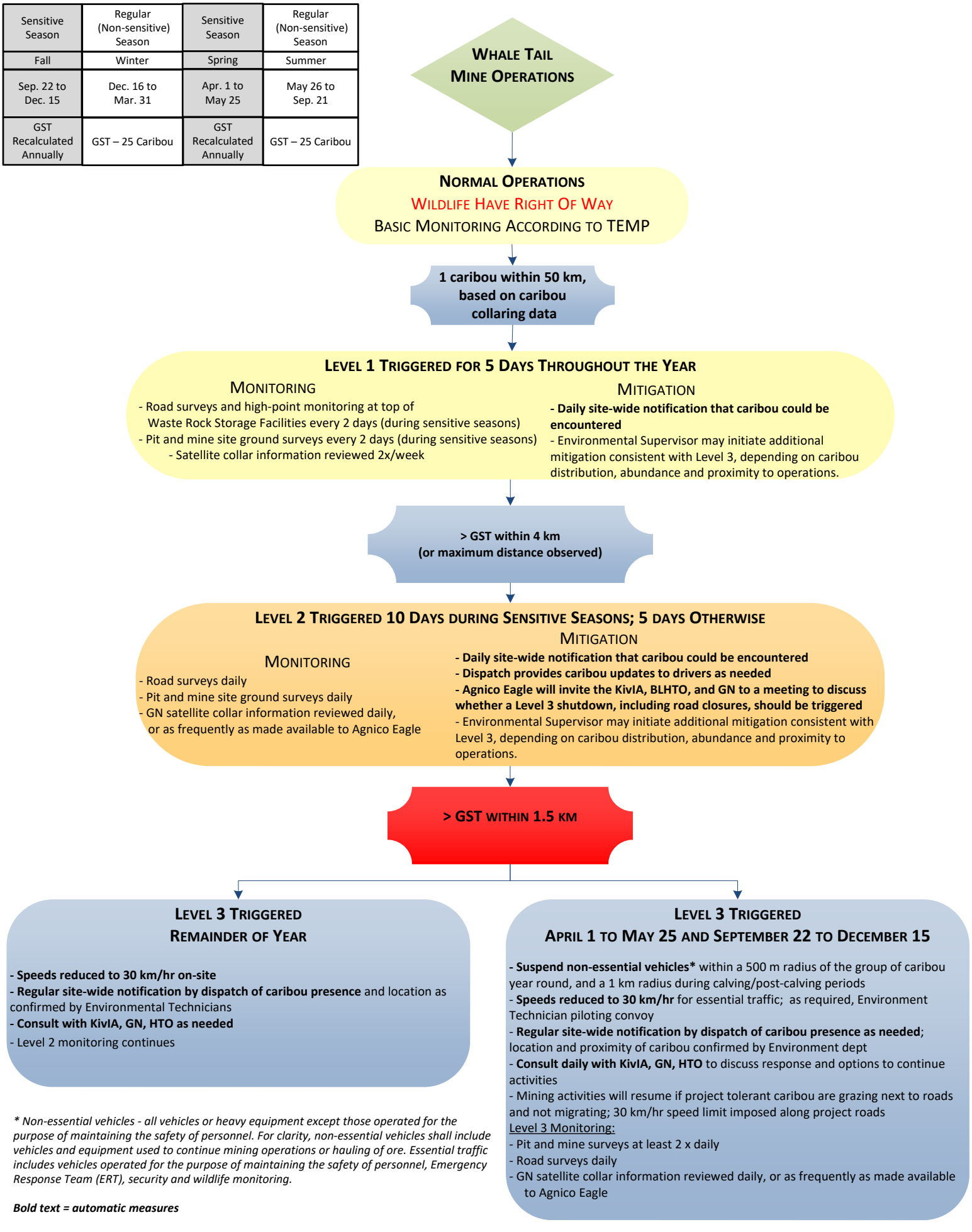
Mitigation measures will be relaxed when no observations from road surveys exceed caribou GST within 1.5 km of the road.

3.4.1 Objectives

The monitoring objectives are to detect if effect thresholds have been exceeded, to test the efficacy of mitigation, and understand Project-related effects to Ungulates. For Ungulates, it is also an objective to manage sensory disturbance to caribou approaching the Project, leading to monitoring to detect caribou approaching the project and mitigation to reduce sources of sensory disturbance (e.g., reductions in mine-related activities and traffic). Due to the collar data sharing agreement, extensive range, large numbers of caribou and muskox, and history of analysis, this evaluation is done in collaboration with the GN.

Figure 6: Thresholds for Monitoring and Mitigation of Caribou in Proximity to Mine Operations

Sensitive Season	Regular (Non-sensitive) Season	Sensitive Season	Regular (Non-sensitive) Season
Fall	Winter	Spring	Summer
Sep. 22 to Dec. 15	Dec. 16 to Mar. 31	Apr. 1 to May 25	May 26 to Sep. 21
GST Recalculated Annually	GST – 25 Caribou	GST Recalculated Annually	GST – 25 Caribou

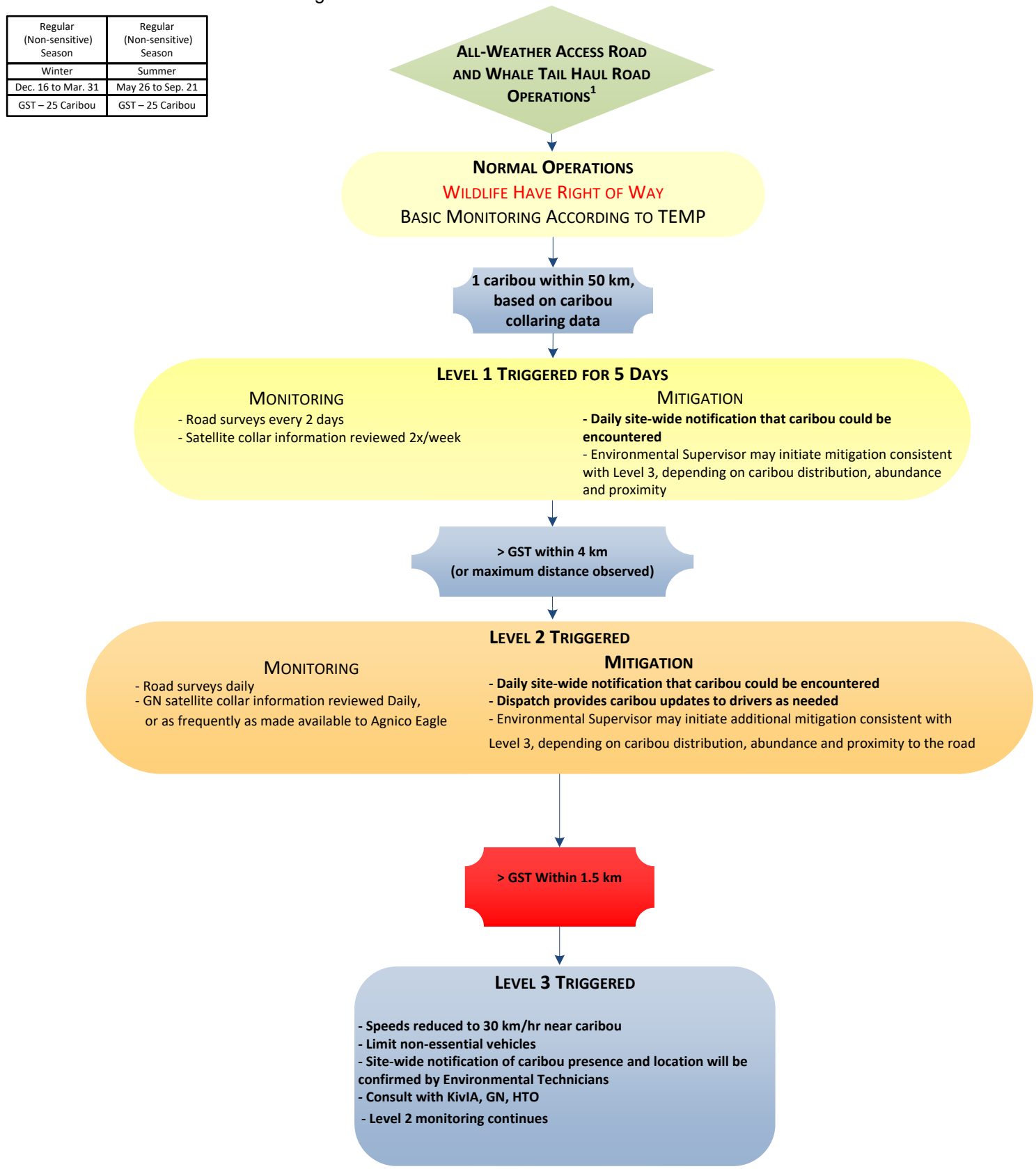


** Non-essential vehicles - all vehicles or heavy equipment except those operated for the purpose of maintaining the safety of personnel. For clarity, non-essential vehicles shall include vehicles and equipment used to continue mining operations or hauling of ore. Essential traffic includes vehicles operated for the purpose of maintaining the safety of personnel, Emergency Response Team (ERT), security and wildlife monitoring.*

Bold text = automatic measures

Figure 7: Thresholds for Monitoring and Mitigation of Caribou in Proximity to the All-Weather Access Road and Whale Tail Haul Road During Non-Sensitive Seasons

Regular (Non-sensitive) Season	Regular (Non-sensitive) Season
Winter	Summer
Dec. 16 to Mar. 31	May 26 to Sep. 21
GST – 25 Caribou	GST – 25 Caribou

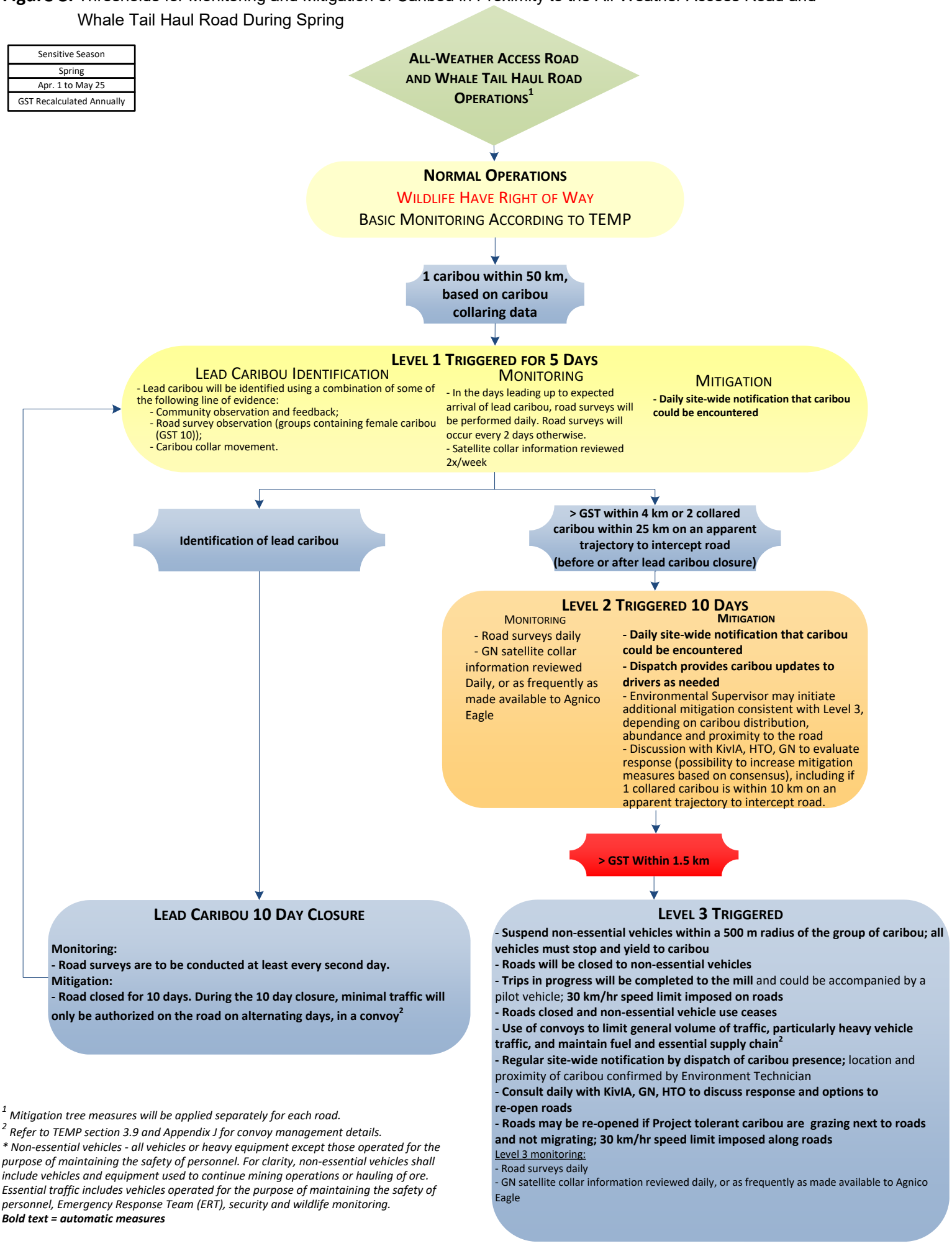


[1] *Mitigation tree measures will be applied separately for each road.*

** Non-essential vehicles - all vehicles or heavy equipment except those operated for the purpose of maintaining the safety of personnel. For clarity, non-essential vehicles shall include vehicles and equipment used to continue mining operations or hauling of ore. Essential traffic includes vehicles operated for the purpose of maintaining the safety of personnel, Emergency Response Team (ERT), security and wildlife monitoring.*

Bold text = automatic measures

Figure 8: Thresholds for Monitoring and Mitigation of Caribou in Proximity to the All-Weather Access Road and Whale Tail Haul Road During Spring



[1] *Mitigation tree measures will be applied separately for each road.*

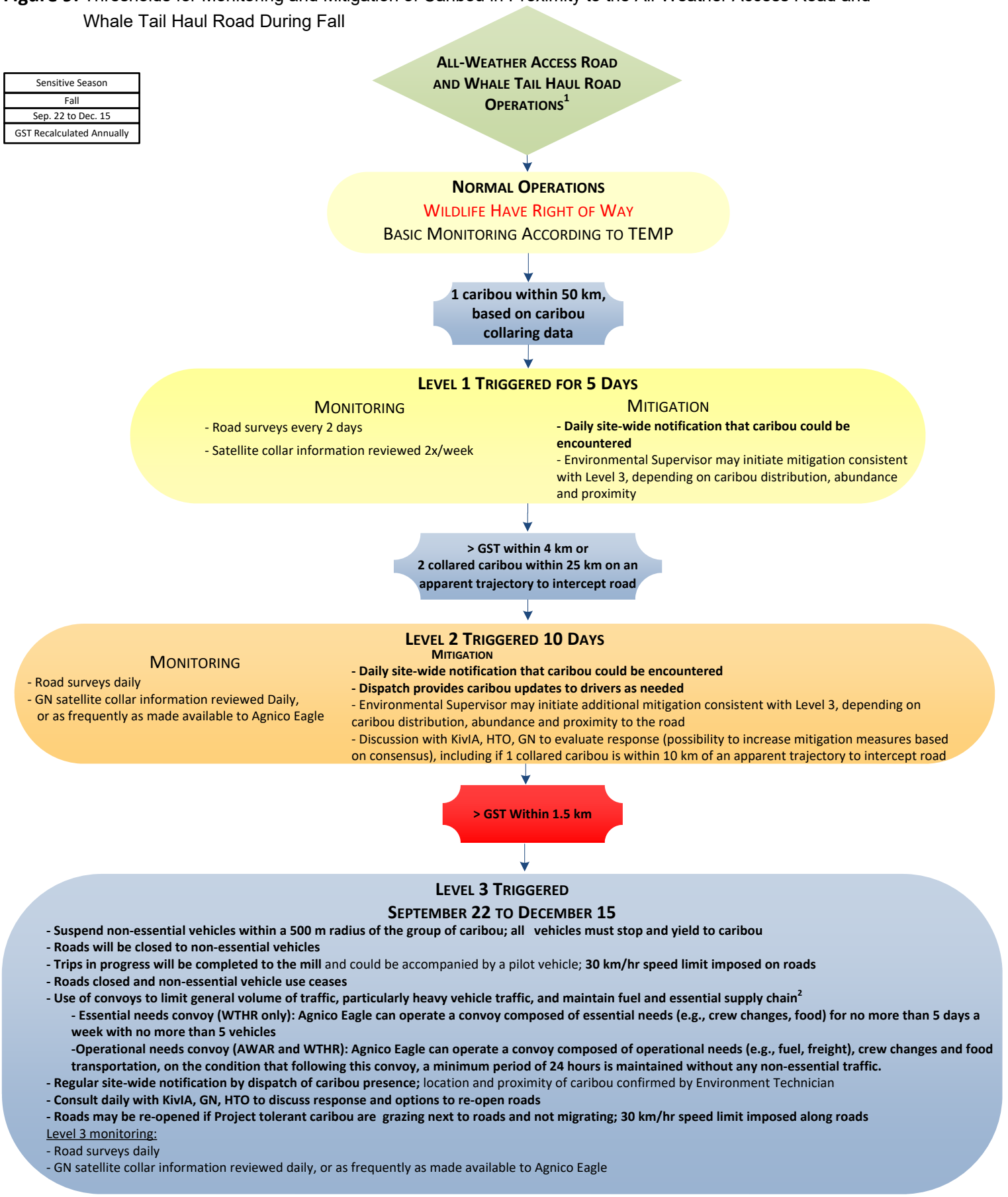
[2] *Refer to TEMP section 3.9 and Appendix J for convoy management details.*

** Non-essential vehicles - all vehicles or heavy equipment except those operated for the purpose of maintaining the safety of personnel. For clarity, non-essential vehicles shall include vehicles and equipment used to continue mining operations or hauling of ore. Essential traffic includes vehicles operated for the purpose of maintaining the safety of personnel, Emergency Response Team (ERT), security and wildlife monitoring.*

Bold text = automatic measures

Figure 9: Thresholds for Monitoring and Mitigation of Caribou in Proximity to the All-Weather Access Road and Whale Tail Haul Road During Fall

Sensitive Season
Fall
Sep. 22 to Dec. 15
GST Recalculated Annually



[1] *Mitigation tree measures will be applied separately for each road.*

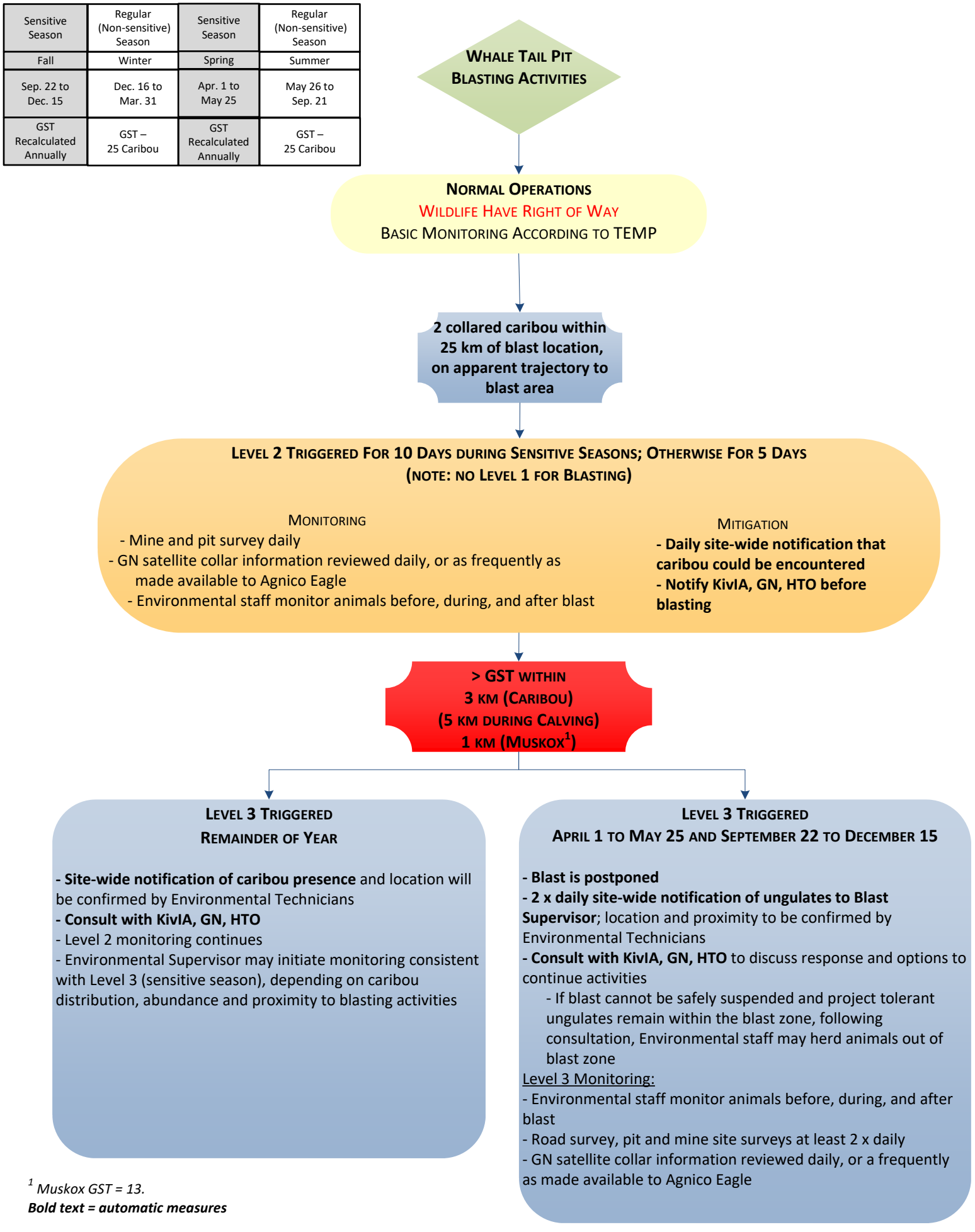
[2] *Refer to TEMP section 3.9 and Appendix K for convoy management details.*

** Non-essential vehicles - all vehicles or heavy equipment except those operated for the purpose of maintaining the safety of personnel. For clarity, non-essential vehicles shall include vehicles and equipment used to continue mining operations or hauling of ore. Essential traffic includes vehicles operated for the purpose of maintaining the safety of personnel, Emergency Response Team (ERT), security and wildlife monitoring.*

Bold text = automatic measures

Figure 10: Thresholds for Monitoring and Mitigation of Ungulates in Proximity to Blasting Activities

Sensitive Season	Regular (Non-sensitive) Season	Sensitive Season	Regular (Non-sensitive) Season
Fall	Winter	Spring	Summer
Sep. 22 to Dec. 15	Dec. 16 to Mar. 31	Apr. 1 to May 25	May 26 to Sep. 21
GST Recalculated Annually	GST – 25 Caribou	GST Recalculated Annually	GST – 25 Caribou



[1] *Muskox GST = 13.*

Bold text = automatic measures

3.4.2 Monitoring Approach

Monitoring activities for Ungulates will be carried out prior to, during, and following construction. Following are the methods and frequency for the monitoring efforts for each measurable parameter.

Table 13 describes the framework which has been established for monitoring effects to Ungulates. As described above, an objective is to reduce sensory disturbance to caribou approaching the Project. This objective is not linked to an impact prediction, as the monitoring is to trigger mitigation rather than to test a threshold. **Figure 6** through **Figure 10** describe monitoring and mitigation for caribou approaching the Project site for all aspects of the operations. Documents reviewed to develop monitoring and mitigation strategies included:

- Mobile Caribou Conservation Measures for Kivalliq Region, Nunavut (Poole and Gunn 2015).
- Caribou Road Mitigation Plan for the Jay Project (Golder 2017b).
- Wildlife Mitigation and Monitoring Program Plan for the Back River Project (ERM 2017).
- Management of Caribou Post-Calving Areas in the Kivalliq Region, Nunavut (Poole and Gunn 2016).

Distance thresholds for caribou monitoring have the ultimate objective of detecting caribou group size triggers up to a distance of 4 km (or maximum distance observed; GN Commitment No. 6); however, not all caribou will be able to be observed at this distance in all circumstances and areas associated with the Project. On-site environmental supervisors may use discretionary mitigation measures at level 2 or 3 for caribou per the decision trees in **Figure 6** to **Figure 10**, and initiate adaptive management in collaboration with KivIA, HTO, and GN. This could include the addition of specific automatic measures intended to prepare for an operational shutdown if caribou move closer to mine operations or roads (e.g., increase survey frequency, reduce traffic speeds, suspending non-essential vehicles and heavy equipment where possible or at night, use of convoys or suspending haul trucks, and temporary road closure). Automatic measures applied to the AWAR or WTHR are applied to the entire length of the road with each road being managed separately as outlined in decision trees (e.g., a GST exceedance on the AWAR would trigger mitigation on the AWAR, not on the WTHR). Data during field surveys will provide an understanding of caribou behaviour when approaching infrastructure (e.g., within 500 m of AWAR) and when interacting with infrastructure (e.g., caribou on road with no traffic vs caribou on road with traffic vs. caribou near road with ATV and hunters). These data will be analyzed, discussed with the TAG and reported annually or on a relevant frequency commensurate with data volume.

Past monitoring and mitigation included muskox that are also observed along the AWAR and Haul Road between 2009 and 2020, with 7,906 animals from 813 observation records. Research shows that muskox populations are growing (Cuyler et al. 2020). Through adaptive management in collaboration with the TAG, specific monitoring and mitigation decision chart for muskox was discontinued for 2025 (Agnico Eagle 2024a).

To provide additional clarity and support to the decision trees, the following definitions are provided (**Figure 6** to **Figure 8**; **Appendix J**; **Appendix K**):

> *'Essential Traffic: vehicles operated for the purpose of maintaining the safety of personnel, Emergency Response Team (ERT), Security and wildlife monitoring.'*
>
> *'Non-Essential Vehicles: include vehicles and equipment used to continue mining operations or hauling of ore.'*
>
> *'Essential needs convoy: Agnico Eagle can operate a convoy composed of essential needs (e.g. crew changes, food) for no more than 5 days a week. Essential needs convoy shall be designed in a manner to limits potential disturbances with no more than 5 vehicles.'*
>
> *Operational Needs Convoy: Agnico Eagle can operate a convoy composed of operational needs (e.g. fuel, freight), crew changes and food transportation, based on the conditions outlined in the spring migration protocols (***Appendix J***) and fall migration protocols (***Appendix K***). Composition of the convoy will be of Agnico Eagle choosing.*
>
> *'Project tolerant' as: an animal or group of animals (i) observed within a mitigation distance buffer for greater than 72 hours during the winter or 48 hours during other seasons; and (ii) not visibly disturbed by the Project. Behavior monitoring is used to document that the group was examined and monitored before determining they were deemed 'tolerant'. Notification to HTO/GN/KivIA is required when labeling of a project tolerant caribou will lead to a change in road status.*

A convoy is understood to be a continuous line of vehicles (no more than 1,000 m apart) that are led by a pilot vehicle, all departing from the hub within 30 minutes of the first vehicle. A single daily convoy refers to one roundtrip per day. See Section 3.9 for details on traffic and convoy management.

Table 13: Monitoring Approach for Ungulates for the Project

Potential Effect	Impact Prediction	Quantitative Monitoring Variable	Thresholds	Monitoring Activity	Frequency
Habitat Loss **Meadowbank Mine**	Loss <EIS prediction and subsequent approvals (see Golder 2022)	Area of altered habitat	10% above total loss of high suitability habitat (for Ungulates) predicted in EIS and subsequent approvals **Meadowbank Mine** – 372 ha and 280 ha for the growing and winter seasons, respectively	Habitat monitoring	Every three years post-construction or based on TAG meeting outcomes
Habitat Loss **Meadowbank AWAR**	Loss <EIS prediction and subsequent approvals (see Golder 2022)	Area of altered habitat	10% above total loss of high suitability habitat (for Ungulates) predicted in EIS and subsequent approvals **Meadowbank AWAR** – 4 ha and 30 ha for the growing and winter seasons, respectively	Habitat monitoring	Every three years post-construction or based on TAG meeting outcomes
Habitat Loss **Whale Tail Mine and Haul Road**	Loss < EIS prediction (see Golder 2022)	Area of altered habitat	10% above total loss of high suitability habitat (for Caribou)[(a)] predicted in EIS and subsequent approvals **Whale Tail Mine** – 21 ha and 561 ha for the growing and winter seasons, respectively	Habitat monitoring	Every three years post-construction or based on TAG meeting outcomes
Barriers to Movements	N/A	Caribou Use	No threshold, addresses an information gap	Snow condition monitoring	Three consecutive years during spring migrations
Sensory Disturbance to Caribou	N/A	Caribou presence	Monitoring is continuous, but with increasing intensity as caribou approach the Project (see **Figure 6** through **Figure 10**)	Pits and mine site ground surveys	Weekly increased up to every two days as per triggers (see **Figure 6**)
				AWAR and WTHR surveys	Weekly increased up to every two days as per triggers (see **Figure 7**)
				Caribou satellite-monitoring program	Data provided to Agnico Eagle from GN weekly, requested daily as per triggers (see **Figure 6** through **Figure 10**)
				TAG Special Studies (Section 3.10)	Through discussions/workshops with TAG members, determine new analysis requirements to better understand the indirect effects of mining on caribou as new data is acquired (Project Certificate No.008, Condition 29)
				Incident reports	As occurring

Table 13: Monitoring Approach for Ungulates for the Project

Potential Effect	Impact Prediction	Quantitative Monitoring Variable	Thresholds	Monitoring Activity	Frequency
Sensory Disturbance to Caribou from Blasting	N/A	Intensity of blast	NPC-119 criteria Monitoring is continuous, but with increasing intensity as caribou approach the blasting site (see **Figure 10**)	Monitoring of blast frequency, noise, and vibration	Blast is postponed. 2 x daily site-wide notification of ungulates to Blast supervisor; location and proximity to be confirmed by Environmental Technicians (see **Figure 10**)
Sensory Disturbance to Muskox	N/A	Muskox presence	Monitoring is continuous and captured as part of caribou monitoring initiatives	Incident reports	As occurring
Vehicle Collisions	Ungulates will not be killed by vehicles	Numbers of Ungulates killed by vehicles	Two individuals	Pits and mine site ground surveys	See above
				WTHR and AWAR surveys	See above
				Incident reports	As occurring
Hunting by Baker Lake Residents	Harvest intensity in the Meadowbank RSA will increase <20%	Correlation between spatial distribution of Ungulate harvest and road development Monitor trend in harvest from Hunter Harvest Study	>20% adjustment in harvest distribution Meadowbank AWAR use. This metric will further be refined as part of the revised HHS design and implementation	Baker Lake Hunter Harvest Study	Initiated in 2007 and active until 2015. Re-initiated in September 2019 with quarterly data collection; Yearly reporting
	No increase in harvest from WTHR RSA	Monitor trend in harvest distribution or total harvest from Hunter Harvest Study	No change in harvest	Baker Lake Hunter Harvest Study Satellite-collaring program	Initiated in 2007 and active until 2015. Re-initiated in September 2019 with data collection three or four times per year, Yearly reporting Data provided to Agnico Eagle from GN weekly, requested up to 2x/week as per triggers (see **Figure 6** through **Figure 7**)

Note: Frequency for some activities may change, see **Figure 6** through **Figure 10**

a) For Whale Tail extension, effects on muskox were screened out during the EA process; therefore, they are not included in habitat loss calculations for the Whale Tail Mine

3.4.2.1 Caribou Group Size

The environment department representative or observer (i.e., biologist, technician, and local hunter conducting caribou surveys) responsible for determining exceedance of triggers will monitor and document a "group of caribou" defined as:

> An aggregation of caribou that are sufficiently close together that they can see and react to another animal's behaviour, and have the potential of responding should one or more animal in the aggregation become startled.

Survey type will be recorded when documenting group sizes to determine any bias in determining group sizes as a function of survey type (i.e., road survey).

3.4.2.2 Group Size Thresholds

Project Certificate No.008, Condition 30, Agnico Eagle initially adopted GSTs for the Approved Whale Tail Project. The GSTs were adopted with the intent of protecting 75% of caribou interacting with the Haul Road (GN-FWS-06). A GST of 12 has been used to trigger adaptive management for caribou during spring at the Whale Tail Project and Meadowbank Mine beginning in 2018. Discussions during TAG meetings acknowledged that caribou group sizes vary naturally over time and GST values that are held constant over time may result in excessive mitigation than is required to achieve 75% protection. The GST values will be recalculated annually based on methodology provided by the GN (**Appendix I**) and presented in the Wildlife Monitoring Summary Report and to the TAG. The methodology determines the group size at, or above which, 75% of caribou observed interacting with Project infrastructure are expected to occur. Observations of caribou from road surveys are grouped by season and pooled between the AWAR and Haul Road. Observations of caribou within 250 m of the road or greater than 1,000 m away from the road are excluded. GSTs are calculated by averaging GSTs for the corresponding season across all years with at least 100 caribou groups observed for that season (**Appendix I**). The GST values agreed upon by the TAG and used in 2021 are provided for example in **Table 14**.

Table 14: Example of Seasonal Caribou Group Size's Based on 2021 Observations

Sensitive Season	Regular (Non-sensitive) Season	Sensitive Season	Regular (Non-sensitive) Season
Fall	**Winter**	**Spring**	**Summer**
Sep.22 to Dec.15	Dec.16 to Mar.31	Apr.1 to May.25	May.26 to Sep.21
GST - 112 Caribou	GST - 25 Caribou	GST - 35 Caribou	GST - 25 Caribou

At the conclusion of the Expansion Project review, the NIRB revised Project Certificate No. 008 Term and Condition #30 per Amendment 001 of the Project Certificate to no longer specify use of GSTs (**Appendix A**). Through adaptive management, Agnico Eagle is currently working with the TAG on alternative monitoring triggers that protect lead caribou and incorporate IQ while achieving a sustainable mining operation (**Appendix J**, **Appendix K)**. Through this process it is possible that these studies will support deviation from the TEMP and will be reported on an annual basis. Once finalized, the new thresholds will be described and included in a future revision of the TEMP.

3.4.2.3 Range Level Monitoring, Site Level Monitoring and Evaluating Mitigation and Protection Measures

As per Project Certificate No.008, Condition 29, Agnico Eagle will work in collaboration with the GN and other relevantly interested parties, to collect additional caribou data and conduct analysis of this data to address questions about the direct and indirect effects of mining on caribou distribution and abundance. This is also directly related to GN Commitment No.1 (**Appendix A**), specifically around the collection of data, and data analysis to evaluate caribou protection measures (refer to **Section 2.2**, **Table 4** for additional details).

Range Level Monitoring

Caribou range level monitoring is primarily achieved through the use of GPS collars deployed on caribou. The GN currently manages and directs the caribou collaring programs in Nunavut.

To date, Agnico Eagle completed a preliminary ZOI study using collar data collected through the spring of 2017 (Golder 2017a). Whereas the GN completed a study on the effects of the Haul Road and AWAR on caribou movements (Boulanger et al. 2024). Agnico Eagle will continue to collaborate with the GN so that additional caribou data relevant to Agnico Eagle's operations can be collected. Agnico Eagle may also initiate mechanistic or special studies to further evaluate range-level implications of the Project on caribou (e.g., Golder 2019; 2020bc). Use of collar data by Agnico Eagle are managed under a Data Sample Sharing Agreement with the GN.

Ultimately, understanding range level parameters related to caribou populations, movements and timing, and distribution and abundance should be clearly communicated by the GN as they are responsible for caribou monitoring and management. Subsequently, site-level monitoring data by Agnico Eagle can be analysed to feed into range level objectives and help to understand observed patterns and trends at the range level (e.g., seasonal movement timing, arrival dates to calving grounds, individual tortuosity). The integration of site-specific and range-level data and associated analytical methods will be discussed and reviewed with the TAG.

Site Level Monitoring

As described above, ground-based monitoring is the major source of data collection on the mine site for day-to-day operations and management. Caribou monitoring along the Haul Road and AWAR is primarily collected through road surveys, and through dispatch reporting of caribou observations, both of these methods have been ongoing since operations began at Meadowbank Mine.

Caribou monitoring has expanded to include the WTHR through the use of road surveys, caribou behaviour monitoring, and observations recorded by drivers through dispatch. In addition, a remote camera program was initiated along the WTHR to examine the interactions of caribou with the road.

Surveys provide information on caribou distribution and relative abundance, and the Haul Road and AWAR datasheet has been the means for collecting information using the following parameters: date, time, species, number (group size), behavior, habitat, location coordinates,

direction from road, distance from road, and general comments about the observation. These data are now recorded electronically by observers and immediately uploaded to a centralized database.

Group size thresholds, or alternative monitoring triggers that may be identified over time, trigger enhanced protection and as such the accuracy of group size or alternative trigger determination is of critical importance. Group size determination may be biased towards survey type, consequently, survey type will be recorded and used as a variable to examine group sizes for any patterns or biases.

Agnico Eagle wishes to work collaboratively with the GN, the KivIA, BL HTO, and other interested relevant and qualified parties to help understand the key effects and the optimal mitigation and management. Studies and reports will be completed on an as-needed basis throughout the operations of the mine as determined through the TAG and as additional data is acquired.

Evaluating Mitigation and Protection Measures

The ability to link the collar data patterns (e.g., movement animations) when caribou interact with the mine site and associated infrastructure in combination with site-level monitoring and mitigation implementation is an important, but qualitative, means of determining mitigation outcomes based on caribou behaviour.

For each date occurrence of enhanced caribou protection mitigation, a decision-based process could be documented as follows: Date → Caribou Group Size (e.g., >GST) → Distance Observed → Mitigation Action → Outcome of caribou movement/behaviour.

The probability of this series of events happening to a caribou group with a collared individual is very low as there are fewer collared individuals relative to the overall herd size. However, on-site observations of the caribou response to the implementation of mitigation will be completed to determine the outcome of the mitigation action. In addition, a retrospective qualitative analysis can be completed by examining collar animation data and retroactively going back through data records to understand what was being observed on site, what the mitigation actions were and what the collared caribou response was. This type of qualitative analysis can be highly useful to establish a pattern of mitigation timing and implementation to encourage a positive outcome for caribou (i.e., unimpeded movement through the mine site). However, it should also be noted that there are several other confounding variables that may contribute to caribou behavior than simply the operations of the mine (e.g., ATV traffic, hunting, presence of predators).

During review of the Expansion Project, the GN requested a study of snow condition during spring migration with the concern that caribou encountering areas of managed snow may be impeded. A pilot snow study was conducted in 2020 and 2021 to monitor snow conditions used by caribou and adjacent unused areas to identify differences (Golder 2020c). Agnico Eagle committed to a three-year snow study (**Appendix I**, Commitment #20). The three-year snow study will be conducted from 2022 to 2024.

The request of GN Commitment No. 1 (**Appendix A**) is for a robust study design and analysis with statistical power to detect effects. Agnico Eagle presented the results of a power analysis at the November 2022 TAG meeting, which indicted a total of 65 survey locations. While this is ultimately the goal, the complexity and variability of the environment, caribou movements and behaviour, and confounding variables and not under the control of the mine operations present analytical challenges. Ongoing collaboration and dialogue with the TAG will help to provide continuous improvements toward this goal, and potential for other analytical approaches.

3.4.2.4 Blasting Thresholds

Nunavut does not have any regulations or guidelines related to potential environmental noise and vibration effects from blasting and the NIRB does not endorse or recommend any specific regulation or guideline as being appropriate for assessing potential environmental effects from blasting. As such, the approach used here is that safety procedures for the protection of caribou due to blasting should follow the standards and procedures for humans.

The Ontario Ministry of Environment Noise Pollution Control (NPC) Publication 119 (OMOE 1978) represents best practices with respect to the assessment of potential noise and vibration effects from blasting. As such, NPC-119 assessment methods and criteria were used in the Project Noise Impact Assessment. The EIS estimates that blasting noise during haul road construction will reach the NCP-119 limit of 120 dBZ at 300 m from the blast, and at 1,000 m for Whale Tail Mine operations. Noise is also reduced when receptors are not within the line-of-sight of the blast (such as when the blast is in a deep open pit or when receptors are behind a hill). For vibration, the EIS estimates that blasting vibration from haul road construction will reach the NCP-119 limit of 10 mm/s at 165 m from the blast, and at 1,150 m for Whale Tail Mine operations. Blasting vibrations from the Whale Tail Mine operations decay quickly from the source and are 504 mm/s at 100 m from the source, 38 mm/s at 500 m from the source, and down to 4 mm/s 2 km from the source.

Caribou Response to Noise and Vibration

Research into the range of caribou frequency sensitivity has found that caribou are less sensitive to low frequency noise than humans (Flydal et al. 2001). For example, the caribou hearing threshold at 63 Hz is approximately 30 decibels (dB) higher than the human hearing threshold at 63 Hz. Put another way, a human could be expected to detect a low frequency noise approximately 30 dB quieter than could be detected by a caribou.

Because human hearing is more sensitive to low frequencies than caribou hearing, using human-centric thresholds for effects to caribou can be considered conservative – i.e., tending to overestimate the magnitude of the effect.

Blasting noise and vibration are measured by two parameters:

- Peak Particle Velocity (PPV) expressed in millimetres per second (mm/s)
- Peak Pressure Level (PPL) expressed in unweighted or linear decibels (dBZ)

Caribou hearing is less sensitive at low frequencies than human hearing (Flydal et al. 2001); therefore, it is likely that humans will be able to detect airborne PPL associated with blasting at larger distances than will caribou. In contrast, IQ indicates that caribou feet are sensitive; therefore, it is likely that caribou will be able to detect ground-borne PPV associated with blasting at larger distances than humans. In the absence of research identifying specific vibration detection thresholds for caribou feet, it is not possible to estimate specific distances over which caribou will be able to detect ground vibration from Project blasting, although Reimers and Coleman (2001) noted that aerial bombing in military exercises did not typically elicit a visible behavioural response from reindeer at distances between 1.8 km and 3.0 km. The EIS indicates that PPV from blasting at the Whale Tail Mine is predicted to drop to effectively 0 mm/s for distances of 4.0 km from the blasting site. As such, it seems reasonable to conclude that PPV associated with blasting would not be detectible by even the most sensitive caribou feet at distances beyond 4.0 km from the blasting site. Conversely, PPV is predicted to be at 13 mm/s at 1,000 m from the source and 7 mm/s at 1.5 km from the site.

Agnico Eagle has initiated a field-based study to understand and document the visual and physical parameters of the blast and quantify the response of caribou to the blast.

The Study design was initiated during the 2019 summer period and followed up again during winter conditions. Based on preliminary data collected, the data collection efforts were revised to use different equipment for consistent data collection; this was implemented in 2020 and 2021. The objective of the program is to first characterize blasting and vibration levels on the landscape as a result of operational blasting activities (initiated in late 2019). The measurement data from 2021 were used to characterize the relationship between noise/vibration levels and blasting parameters (e.g., charge mass, burden depth), and the relationship between noise/vibration levels and season (Golder 2022).

The results of the 2021 blast measurement analysis were assessed in relation to the ECCC Environmental Code of Practice for Metal Mines (Environment Canada 2009), which recommends that PPV be limited to 12.5 mm/s and PPL be limited to 128 dBL at nearby receptors. Another document commonly referenced in blasting assessments is the Australian and New Zealand Environment Council (ANZEC) Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration (ANZEC 1990). To protect against human annoyance, the ANZEC document recommends that PPV be limited to 5 mm/s and PPL be limited to 115 dBL at nearby receptors.

Based on the largest blasts measured on site in 2021 (178,665 kg), the modelled PPV curve fell below the ECCC threshold approximately 350 m from the blast site and fell below the ANZEC threshold approximately 900 m from the blast site (Golder 2022). This suggests that human receptors located more than 900 m from the Whale Tail Mine are unlikely to be annoyed by ground vibration from even the largest blasts. The PPL curve for the largest blast measured on site fell below the ECCC threshold approximately 125 m from the blast site and fell below the ANZEC threshold approximately 1,900 m from the blast site. This suggests that human receptors located more than 1,900 m from the Whale Tail Mine are unlikely to be annoyed by airblast overpressure from even the largest blasts.

Future caribou behaviour data will be assessed in relation to the existing modelled relationship between blast parameters and PPL and PPV. When sample size allows, future analysis could determine the relationship between proportion of stress behaviours (i.e., alert, walking, trotting), and PPL and PPV levels. If increased proportions of stressed behaviours are observed following blasts, the time for behaviour to return to pre-blast levels could be assessed.

Mitigation and monitoring of related to blasting will follow the approach outlined in **Figure 10**. In addition, following threshold to delay a blast will be used for caribou and other wildlife such as muskox:

- If caribou, muskox or other wildlife are observed within the danger zone for humans surrounding the blast, where there may potentially be fly rock or debris, as determined by the Blast Supervisor – typically 600 m radius from blast centre.
- If the caribou Level 3 mitigation is triggered, when the caribou seasonal GST are observed within 3 km (5 km during calving) of the blast (**Figure 10**) until caribou successfully move outside of the blast zone.

3.4.2.5 Habitat Loss & Degradation

Methods: Habitat loss and degradation will be monitored and assessed through habitat monitoring (see **Section 3.4.2** for details). An analysis of the loss of High suitability habitats will be conducted and compared to thresholds (see **Table 13**).

Frequency: See **Section 3.4.2**.

3.4.2.6 Sensory Disturbance and Disruption of Movements

The primary goal of monitoring for sensory disturbance and disruption of movements of Ungulates is to provide an early detection of animals approaching a project (Poole and Gunn 2015). Once animals are detected, operational activities will be adjusted, as described in **Figure 6** through **Figure 10**, to reduce sensory disturbance. For example, when the caribou seasonal GST are observed within 1.5 km of the WTHR during the regular season (i.e., winter and summer), additional mitigation will be implemented of reducing speeds to 30 km/h and limit non-essential traffic. Any caribou crossing any mine associated roads, including the WTHR and the AWAR, will always be given the right-of-way (see **Section 3.9**). The following monitoring will be used to detect caribou:

- Caribou Satellite-Collaring Program
- Road Surveys (see **Section 3.2.1**)
- Pit and Mine Ground Surveys (see **Section 3.2.2**)

Monitoring and mitigation triggers for caribou include one collared caribou within 50 km of the Project (i.e., Level 1), which initiates more intensive monitoring and heightened awareness for Project staff that caribou are in the area. For day-to-day monitoring and management, maps depicting the movement of collared caribou provided by the GN are reviewed regularly and as provided to identify caribou approaching the mine site, haul road or AWAR. Reviewing frequency of these maps increases when caribou numbers at or greater than GSTs are detected within distance thresholds, and around the sensitive season periods when caribou are detected within 50 km of the mine or associated infrastructure. This is done to prepare for increased monitoring/mitigation measures, or possible road shut-downs, especially during the sensitive seasons. Map reviewing frequency is identified in **Figure 6** to **Figure 10**.

Remote Camera Monitoring

During the June 2018 TAG meeting, several topics were evaluated regarding sensory effects to caribou related to general monitoring to examine group size, distribution, seasonality and implement mitigation, blasting (see **Section 3.4.2.4** for a study to be immediately implemented) and road interactions, particularly along the haul road in relation to traffic. To gather additional information on caribou interactions with the WTHR, 20 remote cameras were placed along the haul road. This initial monitoring was used to assess the efficacy of using remote cameras to determine any trends related to distribution of caribou road crossing, effects of traffic/activity to caribou road monitoring, which can then guide more fine-scale mitigation of traffic, road activity and potentially roadside marker design. Based on preliminary analysis, the program was refined for the late 2019 season with new remote camera locations along the Haul Road. The current design of the remote camera program is outlined in Golder (2022).

During the fall 2024 TAG meeting (TAG meeting #21), the TAG discussed revising the camera program to prioritize new objectives (Agnico Eagle 2024a). The remote camera program has limited ability to detect caribou road interactions compared to data collection methods such as satellite collaring due to the fixed location of units and limited field of view. The new camera program will primarily be used to detect and quantify traffic on the AWAR and WTHR. The program will also include secondary objectives, including estimating convoy duration and assessing caribou crossings in relation to vehicle traffic. A new study design is under development and will be appended to a future iteration of the TEMP, pending finalization.

Caribou Satellite-Collaring Program

Methods: As part of its ongoing monitoring program for the Project, Agnico Eagle intends to continue collaboration with the GN in a caribou satellite-collaring program in the Meadowbank Complex. The satellite-collaring program will provide seasonal and regional information on caribou distribution within the Meadowbank and Whale Tail RSAs, and data collected during spring and fall migration periods will inform mitigation and management activities. In collaboration with the GN, data are formally analyzed for caribou migration trends and analyzed annually.

Results of the analysis will be included in the annual Wildlife Monitoring Summary Report, as appropriate. In addition, Agnico Eagle has intends to explore the extent of a potential ZOI from the Project and will provide this information as it is available. Collaring data provided to Agnico Eagle from GN supports monitoring and analyses (see **Figure 6** through **Figure 10**).

3.4.2.7 Project-Related Mortality – Vehicle Collisions

Methods: Monitoring will be conducted during ground surveys at pits and the mine site, and along roads. Incident report (**Appendix C**) to be submitted following every vehicle collision with an Ungulate. The thresholds level of mortality beyond which further mitigation will be required is two Ungulate mortalities per year (see **Table 13**).

Frequency: Incident reports (**Appendix C**) submitted when mortalities occur. Ungulate mortality will be reviewed on an annual basis.

3.4.2.8 Project-Related Mortality – Hunting by Baker Lake Residents

Methods: As stated in the original TEMP (Cumberland 2006), the Hunter Harvest Study (HHS) was established to monitor the spatial distribution, seasonal patterns, and harvest rates prior to and following construction of the AWAR. A survey of hunter harvests was conducted among Baker Lake residents from 2007 through 2015; however, declining participant rates has led to revaluation of the HHS approach.

Agnico Eagle has discussed and met with stakeholders (GN, KivIA, and HTO in November 2016 [Winnipeg], January and June 2017 [Ottawa]) and January 2019 to broaden the scope of the HHS and facilitate greater involvement of the local community in future years of the study.

The primary objectives of the HHS are to monitor potential Project related effects on harvesting of wildlife by residents of Baker Lake. This objective is achieved by estimating the following key metrics:

1. The distribution of caribou, muskox, and wolverine harvest by residents of Baker Lake.
2. The total level (or an index of) caribou, muskox, and wolverine harvest by residents of Baker Lake.

Other objectives of the HHS may be established in consultation with TAG or other participants and may include:

1. Supporting creel surveys by gathering information on Arctic char (*salvelinus alpinus*), lake trout (*salvelinus namaycush*), lake whitefish (*coregonus clupeaformis*), and Arctic grayling (*thymallus arcticus*) catch rates and Inuit-use patterns in the Baker Lake area.
2. Understanding regional distribution of hunting and fishing activity.
3. Investigating seasonal timing of hunting and fishing activity.
4. Determining whether increased harvest and catch rates are associated with the AWAR.

As discussed during consultation with stakeholders, HHS will further seek to:

- increase and maintain the hunter participant rate in the future of the program
- improve resource protection
- improve hunter awareness and education
- increase the integration of IQ and Traditional Knowledge and
- increase availability of data collected for a collective approach to understanding wildlife harvest, assist Agnico Eagle in mitigative actions and the GN in management decisions

The HHS will promote involvement/partnership of the local stakeholders, including the HTO, Elders, GN officer, and KivIA in a collaborative format**.** Detailed survey methods, survey timing, and promotional strategies will tentatively include HHS members visit hunter harvest study participants on a regular basis to document harvests and discuss general hunting trends and observations. The members will also conduct communication actions and post promotional material around the Hamlet of Baker Lake. The use of social media will also be assessed and potentially used to increase awareness within the community and especially towards a younger generation of hunters.

The HHS was reinstated prior to the 2019 spring caribou migration to facilitate the collection of hunter harvest data and greater inclusion of younger hunters.

Frequency: Data will continue to be collected three times per year and analyzed at the end of each calendar year and provided within the annual Wildlife Monitoring Summary Report.

3.4.3 Thresholds

Should the thresholds outlined in **Table 13** exceeded, the following actions will be undertaken.

3.4.3.1 Habitat Loss & Degradation

See **Section 3.3.3**.

3.4.3.2 Sensory Disturbance and Disruption of Movements

Agnico Eagle has developed a tiered caribou monitoring procedure to increase levels of monitoring and mitigation if caribou are found to be in the vicinity of the site. **Figure 6** through **Figure 10** describes the tiers and triggers of this procedure and the appropriate actions to be undertaken.

3.4.3.3 Project-Related Mortality – Vehicle Collisions

If an Ungulate mortality occurs (i.e., threshold of two mortalities exceeded), an investigation into the circumstances and factors leading up to the incident will be conducted by the on-site Environmental Supervisor (see also the Incident Report Form, **Appendix C**). Where an incident has resulted from operator negligence, disciplinary action may be considered.

3.4.3.4 Project-Related Mortality – Hunting by Baker Lake Residents

If harvest rates are determined to be increasing significantly (as determined by the GN) as a result of Project infrastructure, Agnico Eagle, will request the Baker Lake HTO and GN investigate additional access control measures.

3.5 PREDATORY MAMMALS

3.5.1 Objectives

The primary objective of the Predatory Mammal monitoring program in the Project area will be to evaluate the success of preventative programs designed to proactively avoid the occurrence of problem animals and detect thresholds, as opposed to reactively trying to manage them by relocation or destruction.

3.5.2 Monitoring Approach

Table 15 describes the framework that has been established for monitoring effects to Predatory Mammals.

Table 15: Monitoring Approach for Predatory Mammals at the Meadowbank, Whale Tail Mine and Haul Road

Potential Effect	Impact Prediction	Quantitative Monitoring Variable	Thresholds	Monitoring Activity	Frequency
Project-related mortality	Predatory Mammals will not be killed as a result of Project activities	Number of grizzly bears, wolves and wolverines killed	Two individuals of the same species in a year	Pits and mine site ground surveys	Weekly, at least. Includes inspections of waste streams to ensure no attractants for Predatory Mammals
				Road surveys	Weekly, at least
				Incident and vehicle encounter reports	Ongoing (when incidents with wildlife occur)
				Baker Lake Hunter Harvest Study (for wolverines)	Initiated in 2007, stopped in 2015 and re-implementation in 2019 Quarterly data collection; Yearly reporting
Disturbance of Den Sites	Active Predatory Mammal dens will not be destroyed or disturbed to the point of den abandonment	Number of active grizzly bear, wolf or wolverine dens destroyed or abandoned due to sensory disturbances	One active den	Den-specific management plan, active den site surveys	Initiated by the detection of an active Predatory Mammal den (grizzly bear, wolf or wolverine) within the active mine footprint or vicinity of Project facilities. See **Figure 12.** Frequency of den monitoring will be determined by season, species and location. See **Appendix L**

3.5.2.1 Project-Related Mortality

Methods: Methods are the same as those described for Ungulates (**Section 3.4.2**). The threshold level of mortality beyond which further mitigation will be required is two individuals of the same species per year (see **Table 15**). The pits and mine site ground surveys will include inspections of waste streams to ensure no attractants for Predatory Mammals. In addition, the hunter harvest study (see **Section 3.4.2**) will investigate potential increases in wolverine mortality related to the road.

Frequency: The number of grizzly bear, wolf, and wolverine mortalities will be analyzed on an annual basis with findings presented in the annual Wildlife Monitoring Summary Report (see **Table 15**).

3.5.2.2 Disturbance of Den Sites

Methods: For existing operations, data will be collected on Arctic wolf abundance and behaviour during ground surveys and vehicle surveys. Should the wildlife technician suspect or confirm that a den is present within the active mine footprint and vicinity of Project facilities or roads, a den management plan will be prepared (see **Appendix L** for required components of den management plans). For new development sites, suitable habitat within 1 km of new development site will be investigated on foot for active wolf dens. In the event that wolverine or grizzly bear dens are discovered, den management strategies with appropriate timing windows will be developed for these species. The thresholds beyond which further mitigation will be required is discovery of one active den (see **Figure 12** and **Table 15**).

Frequency: See **Table 15** for frequency of ground and road surveys, see **Figure 12, Section 3.5.3** for further mitigation strategy to be undertaken upon discovery of an active Predatory Mammal den.

3.5.3 Thresholds

Should the thresholds outlined in **Table 15** be exceeded, the following actions will be undertaken.

3.5.3.1 Project-Related Mortality

The basic course of action is to contact the appropriate conservation officer with the Hamlet of Baker Lake and the GN, and to discuss additional mitigation options. At the discretion of the Agnico Eagle Environment Supervisor, GN conservation officer and the KivIA land inspector, if grizzly bears, wolverines, or wolves become problems and need to be dispatched or get killed in vehicle collisions (i.e., thus exceeding the threshold mortality of two despite efforts to avoid habituation and/or food conditioning), alternative mitigation action may be required. Regular inspections of waste streams will identify possible attractants and respond immediately with improved waste management approaches. Detailed reports for dealing with problem wildlife will be issued and are provided as an example in **Appendix B**.

3.5.3.2 Disturbance of Den Sites

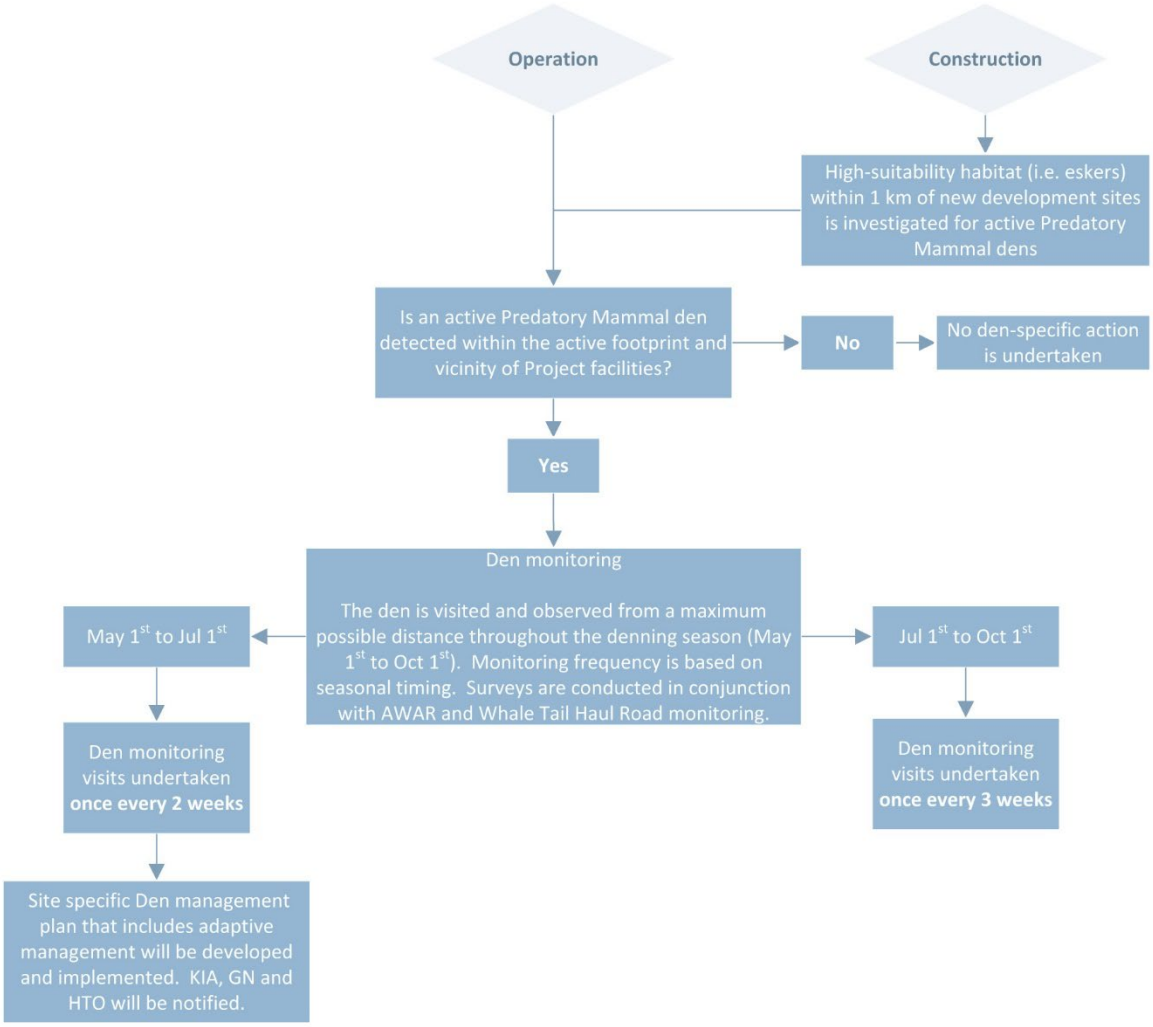
If an active Predatory Mammal den is detected within the active mine footprint or in the vicinity of Project facilities, a den management plan will be developed (see **Figure 11** and **Appendix L** for details). The plan will include consultation with the GN with respect to obligations under *The Wildlife Act*, SNU 2003, c. 26. Ground personnel and vehicle access will be restricted in the vicinity of the den as needed to minimize disturbances at the den. The den management plan outlines a monitoring schedule (dependent on seasonal timing) and will inform further mitigation strategies as required. See **Appendix L** for Den Management and Protection Plan components.

Based on the findings from den monitoring, disturbance mitigation may be required, including increased frequency of den site monitoring, vehicle access restrictions, alterations to Project operation, or work stoppage in the vicinity of the den. Dens will be observed from a distance of at least 300 m with a spotting scope, and information on location, behaviour and number of juveniles will be determined, where possible. **Figure 11** outlines the steps to be taken if a den is found during monitoring activities.

Example of mitigation and monitoring in action: if construction is proposed within 1 km of high-suitability denning habitat (i.e., eskers), these areas will be investigated for signs of denning (wolf pack, defensive behaviour, pups). If a den is confirmed within the active mine footprint or in the vicinity of Project facilities, monitoring will be undertaken from the maximum possible distance to determine if Project activities are inducing stress responses. See **Figure 11** for monitoring frequencies. If Wolves are showing signs of stress, further restrictions on vehicle access or other adaptive mitigation options may need to be considered.

See **Appendix L** for recommended Den Management and Protection Plan components.

Figure 11: Thresholds for Monitoring and Mitigation of Predatory Mammal Dens in Proximity to the Project



3.6 RAPTORS

3.6.1 Objectives

The primary objective of ongoing monitoring surveys for nesting Raptors evaluate the success of mitigation to prevent disturbance to raptors or raptor nests, to test for thresholds, and to determine the level of Project-related effects. Nest-specific management plans for nesting birds will reduce the potential for birds to abandon nests due to high noise or activity levels.

3.6.2 Monitoring Approach

Table 16 describes the framework that has been established for monitoring effects to Raptors.

Table 16: Monitoring Approach for Raptors at the Meadowbank, Whale Tail Mine and Haul Road

Potential Effect	Impact Prediction	Quantitative Monitoring Variable	Thresholds	Monitoring Activity	Frequency
Disturbance of Nesting Raptors	Nest failures are not Project-related	Nest success	Failure of nest monitored through a Nest Protection Plan	Active Raptor nest monitoring	Daily during nesting season (May 1 to September 15) if active nest on Project facilities or within 500 m of activity Weekly if not within area of concern (see **Figure 12)**
Project-related Mortality	Raptors will not be killed at the Project site or along roads	Number of raptors killed	One individual	Pits and mine site ground surveys	Weekly, at least
				Road surveys	Weekly, at least
				Incident and vehicle encounter reports	Ongoing (when incidents with wildlife occur)

3.6.2.1 Nest Monitoring

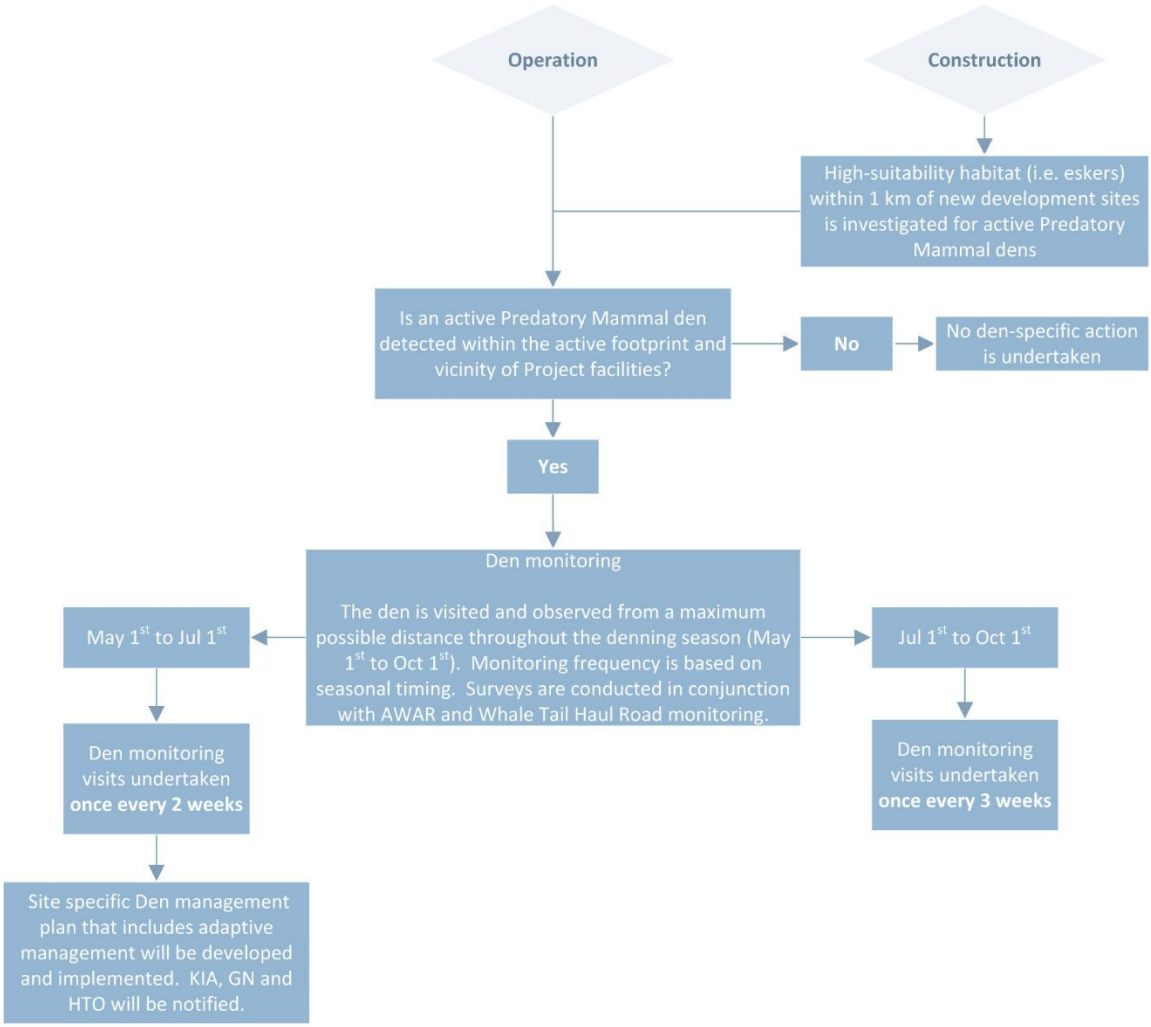
Methods: For existing operations, data will be collected on Raptor abundance and behaviour during ground, road, and . For active nests within the active footprint and within 1.5 km (AANDC 2011) of Project facilities a site-specific raptor response plan will be developed and implemented. Daily surveys will be conducted for nests within the area of concern while weekly surveys will be conducted for nests outside the area of concern. The plan will outline automatic minimum no-disturbance buffers around all raptor nests located in proximity to the Project. Project activities including the operation of vehicles, heavy equipment, aircraft and blasting shall be prohibited within these buffers unless an exception is specified within a nest specific management plan that has been reviewed and approved by the GN, subject matter experts and other relevant parties. The size of minimum, no-disturbance buffers shall be based on the BC guidelines for Raptor Conservation or similar guidelines as recommended by the TAG.

In accordance with Project Certificate No.008, Condition 36, Agnico Eagle will consult and review the raptor mitigation plan with the GN, prior to undertaking discouragement and in accordance with obligations under the Wildlife Act (SNU 2003, c. 26). Furthermore, the GN will be contacted prior to removal or deterrence of raptors to obtain a permit if required. To discourage raptors from nesting on pit walls and Project facilities, protocols outlined in the 'Peregrine Falcon Management and Protection Plan on the Meadowbank Gold Project Site' will be followed (see **Appendix G**). The plan also outlines management and mitigation around nests that have become established on Project facilities.

For new development sites, suitable habitat within 1.5 km of the sites will be surveyed on foot for active Raptor nests. No-disturbance buffers will be established around detected active nests, in line with British Columbia Guidelines for Raptor Conservation (2013) or similar guidelines, and will be monitored from a distance of 100 m with a spotting scope (or closer if not interfering with no disturbance buffers), and information on location, behaviour, number of eggs, number of chicks, and number of fledged young will be determined, if possible. A raptor researcher or subject matter expert will be consulted as needed. The threshold beyond which further mitigation will be required is disturbance of one active Raptor nest (**Table 16**).

Frequency: During the nesting season (May 1 to September 15), if an active nest is within the active footprint and vicinity of Project facilities and within an area of concern, surveys will be conducted as per **Figure 12**. If disturbance to an active raptor nest is detected, mitigation and monitoring will be initiated (see **Figure 12**).

Figure 12: Thresholds for Monitoring and Mitigation of Raptor Nests in Proximity to the Project



3.6.2.2 Project-Related Mortality

Methods: Methods are the same as for the ground surveys, road surveys, and Incident reports described for Ungulates (**Section 3.4.2**). The threshold level of mortality beyond which further mitigation will be required is one Raptor per year (see **Table 16** and **Appendix G** for details).

Frequency: Incident reports are filed when a Raptor mortality occurs. The number of Raptor mortalities will be analyzed on an annual basis with findings presented in the annual Wildlife Monitoring Summary Report.

3.6.3 Thresholds

Should the thresholds outlined in **Table 16** be exceeded, the following actions will be undertaken.

3.6.3.1 Nesting Monitoring

In consultation with the subject matter expert, a nest management plan will be developed for active nests established within an area of concern (e.g., within active footprint or in close vicinity of Project facilities) and will include a monitoring schedule based on the proximity of the nest to the Project. The management plan will also review disturbance levels at the nest to inform active management requirements (see **Figure 12**). Where recommended mitigations are not considered adequate for reducing disturbance to nesting raptors (determined through the nest management plan monitoring), more stringent mitigation, such work stoppage for nearby operations, may be implemented.

3.6.3.2 Project-Related Mortality

If the threshold mortality level for Raptors is exceeded, further mitigation will be implemented as described for Ungulates (**Section 3.4.3**).

3.7 WATERBIRDS

3.7.1 Objectives

The primary objective will be to determine the effectiveness of mitigation efforts to prevent or reduce effects from the Project, to test for thresholds, and to describe Project-related effects to Waterbirds.

3.7.2 Monitoring Approach

Table 17 describes the framework that has been established for monitoring effects to Waterbirds.

Table 17: Monitoring Approach for Waterbirds at the Meadowbank, Whale Tail Mine and Haul Road

Potential Effect	Impact Prediction	Quantitative Monitoring Variable	Thresholds	Monitoring Activity	Frequency
Habitat Loss and Degradation **Meadowbank Mine**	Loss <EIS prediction and subsequent approvals (see Golder 2022)	Area of altered habitat	10% above predicted EIS High suitability values. **Meadowbank Mine** – 274 ha	Habitat monitoring	Every three years post-construction
Habitat Loss and Degradation **Meadowbank AWAR**	Loss <EIS prediction and subsequent approvals (see Golder 2022)	Area of altered habitat	10% above predicted EIS High suitability values. **Meadowbank AWAR** – 3 ha	Habitat monitoring	Every three years post-construction
Habitat Loss and Degradation **Whale Tail Mine and Haul Road**	Given the minimal effects associated with the Meadowbank project, habitat loss effects on Waterbird were not considered an issue and were screened out during the EA (Golder 2016)				
Loss of nests due to flooding **Whale Tail Mine**	Nests will be lost due to flooding during nesting season	See the Migratory Bird Protection Plan (**Appendix F**)			
Project-related Mortality	Waterbird will not be killed at the Project	Number of Waterbird killed	One individual	Pits and mine site ground surveys	Weekly, at least
				Road surveys	Weekly, at least
				Incident and vehicle encounter reports	Ongoing (when incidents with wildlife occur)

3.7.2.1 Habitat Loss & Degradation

Methods: Habitat loss and degradation will be monitored and assessed through the Wildlife Habitat monitoring program (see **Section 3.2.2** for details). An analysis of the loss of High suitability habitats will be conducted and compared to thresholds (see **Table 17** and **Appendix F**).

Frequency: See **Section 3.2.2**.

3.7.2.2 Project-Related Mortality

Methods: Methods are the same as for the ground and road surveys, and Incident reports described for Ungulates (**Section 3.4**). However, reporting for migratory bird mortalities and incidents need to be directed to ECCC (reports are to be sent to: cwsnorth-scfnord@ec.gc.ca). The threshold level of mortality beyond which further mitigation will be required is one Waterbird per year (see **Table 17**).

Frequency: See **Table 17**. The number of Waterbird mortalities will be analyzed on an annual basis with findings presented in the annual Wildlife Monitoring Summary Report.

3.7.3 Thresholds

Should the thresholds outlined in **Table 17** be exceeded, the following actions will be undertaken.

3.7.3.1 Habitat Loss & Degradation

See **Section 3.2.2.**

3.7.3.2 Disturbance of Nesting Waterbird

Where disturbances to nesting Waterbirds are observed beyond the acceptable threshold (see **Table 17**), further mitigation will be discussed and implemented in consultation with ECCC to minimize effects. As per Project Certificate No.008, Condition 34, Agnico Eagle will maintain a Migratory Bird Protection Plan (**Appendix F**), which will be updated as needed in consultation with ECCC. Studies were undertaken in collaboration with Trent University in 2018, 2019, and 2021 to encompass the flooding phases and follow up monitoring of the Whale Tail Mine. As per condition 34, results were presented to NIRB on an annual basis. The study was completed in 2021 and indicated that mitigation measures for migratory birds related to flooding are no longer required. No further reporting under the Migratory Bird Protection Plan is anticipated.

3.7.3.3 Project-Related Mortality

If the threshold mortality level for Waterbirds is exceeded, further mitigation will be discussed and implemented in consultation with ECCC to minimize effects.

3.8 UPLAND BREEDING BIRDS

3.8.1 Objectives

The primary objective of the monitoring program for ptarmigan, shorebirds, passerines, and other upland breeding birds is to collect information that contributes to national monitoring databases by undertaking the Protocol for Regional and International Shorebird Monitoring (PRISM) and complete a North American Breeding Bird Survey Route every three years, or as agreed upon by ECCC, for contribution to this program, and mitigation monitoring. While these protocols will contribute data to national databases, they are unsuited to detecting Project-related effects. Previous studies at other similar developments have found that effects to upland birds are either undetectable or not biologically significant at a population level (see **Section 2.3.6**).

3.8.2 Monitoring Approach

The PRISM and North American BBS surveys are intended to contribute to national databases administered by ECCC (2012) and are not linked to an impact prediction or threshold. In 2021, Agnico Eagle and ECCC agreed to monitoring parameters for upland breeding birds. PRISM surveys will be completed at 48 PRISM plots over ten years for combined Meadowbank and Whale Tail Mine (2021-2031) at sites selected by ECCC. North American BBS surveys will be conducted at least every three years during operations, closure and post-closure; survey locations along the AWAR and WTHR will be selected by ECCC. BBS surveys may also be completed

opportunistically when qualified or same observers are present at site for other bird monitoring programs (e.g., PRISM).

3.8.2.1 Habitat Loss & Degradation (monitored via habitat monitoring)

Methods: Habitat loss and degradation will be monitored and assessed through the Wildlife Habitat monitoring program (see **Section 3.2.2** for details). An analysis of the loss of High suitability habitats will be conducted and compared to thresholds (see **Table 17**).

Frequency: See **Section 3.2.2**.

3.9 TRAFFIC MANAGEMENT

A Traffic Management Plan will be implemented along the AWAR and WTHR. Drivers will report all large mammals observations, and speed limits will be enforced to reduce potential interactions with wildlife. Traffic data along the AWAR and WTHR to be collected include:

- unique vehicle descriptions (haul truck, light vehicle, bus, etc.), including:
    - vehicle class
    - grouped vehicle descriptions (convoy, single, etc.)
- unique to/from abbreviations
- departure/arrival times

Currently, vehicle passages are recorded by dispatch for the AWAR and the WTHR. This information can be used to determine the intensity of traffic, particularly as it relates to caribou interactions with the mine and associated infrastructure, and any mitigation implemented. In addition, caribou will be given right-of-way on all roads, and drivers will be required to slow down and/or stop if caribou are near the road. Vehicle-specific mitigation measures to minimize effects to ungulates on the AWAR and WTHR are presented in **Table 6** (**Section 2.3.2.2**).

Traffic data collected at the appropriate time scale for the AWAR and WTHR and will be presented on an annual basis and compared to EIS predictions as part of the TEMP annual report. Adaptive management measures will be considered if evaluations demonstrate an exceedance of predictions made in the EISs with regards to traffic related to the Project. Additional traffic data collection will occur to support special studies, as recommended by the TAG.

Currently Agnico Eagle has implemented several measures related to stockpile management as an adaptive management strategy to reduce traffic frequency on the Haul Road during caribou migration periods while increasing hauling frequency between these sensitive seasons. New measures include:

- Installation of a 3.5ML fuel tank at Meadowbank
- Purchased an additional four long-haul trucks and contracted an additional four long-haul trucks to increase stockpile size prior to migration (i.e., total of eight additional long-haul trucks)

- Alignment of mill shutdown schedule with migration period (i.e., mill shutdowns during April and October)
- Operational Readiness Plan to ensure KPI and stockpiles are maintained prior to migration season.
- Currently considering Artificial Intelligence (AI) options to improve truck management and increase productivity.

3.9.1 Convoy Management

Convoy management is critical to achieve the dual purpose of caribou protection and attenuating the effects of road closures on essential activities and production. Timing of all convoys (i.e., daily, weekly) will depend on the number, location, proximity of caribou, and timing of migration. To attenuate the impact of road closures on essential activities and production triggered by GSTs and weather, Agnico Eagle, will implement the convoy management during caribou migration and consists of the following types of convoys as defined in **Section 3.4.2**:

- essential traffic
- non-essential vehicles
- essential needs convoy
- operational needs convoy

In principle, a convoy is understood to be a continuous line of vehicles (no more than 1,000 m apart) that are led by a pilot vehicle, all departing from the hub within 30 minutes of the first vehicle. A single daily convoy refers to one roundtrip per day.

During convoys, pilot vehicles have the authority to cancel or delay transport, based on field observations, both upstream and downstream of the road. Convoy management will depend on the time of year, with different protocols during caribou migration.

Spring migration convoy management will vary with the timing of the lead caribou. Mitigation measures will be defined by two phases: the lead caribou herd period and the remainder of the migration period (**Appendix J**). Differences between these two periods include the type of convoy permitted. During the lead caribou closure, minimal traffic will be allowed on the road on alternating days in the form of an essential needs convoy, as outlined in **Appendix J**. For the remaining migration period, operational needs convoys can be used daily.

Fall migration convoy management will differ by road location based on the specific needs and conditions of each road. Mitigation measures will be defined independently at the AWAR and WTHR (**Appendix K**). Following the procedures outlined in **Appendix K**, Agnico Eagle can operate an operational needs convoy, which can include operational needs vehicles (e.g. fuel, freight), crew changes vehicles, and food transportation vehicles, on the condition that following this convoy, a minimum period of 24 hours is maintained without any non-essential traffic, including the essential needs convoy. The operational needs convoy is not subject to the essential needs convoy vehicle cap (**Appendix K**). On the WTHR, essential needs convoys will be permitted as outlined in **Appendix K**. Agnico Eagle can operate a convoy composed of essential

needs (e.g. crew changes, food) for no more than five days a week. Essential needs convoy shall be designed in a manner to limits potential disturbances with no more than five vehicles.

During non-sensitive seasons, daily convoys can occur during road closures. Convoys will be escorted by trained personnel and can include non-essential traffic, as defined in **Section 3.4.2**. Longer convoys with larger equipment (i.e., flatbed trucks, heavy equipment) are minimized where possible, to reduce the frequency of these larger disturbances down the road.

Wildlife road surveys are to be performed daily at both roads.

3.10 SPECIAL STUDIES

In addition to regular monitoring described by the TEMP, on occasion special studies may be carried out by the Project. Special studies may be implemented to better understand effects, address a concern identified by the TAG or communities or as a contribution to research, science or IQ. Agnico Eagle will seek recommendations related to study design for special studies from the TAG. Special studies will need to have set timeline and objectives and are not anticipated to become an integral part of regular monitoring outlined in the TEMP and may be completed and reported independently from TEMP results. Should a program be successful and lead to a new measure to be implemented, a TEMP update may be required. Decision trees may be temporarily modified through TAG approval for the purpose of these special studies.

Example previous, ongoing, and proposed special studies include:

- effects of road interacting caribou on calving productivity (Golder 2020b)
- snow study (2022 to 2024; **Appendix D**)
- remote camera program (2019 to present; see Golder (2022) for current design)
- blast monitoring (2019 to present)
- caribou behaviour monitoring (2020 to present)
- comparison of road survey and viewshed survey detectability (WSP 2023)
- measurement of convoy parameters (Proposed)
- cap and pulse road mitigation (EDI 2020)
- lead caribou protection protocol (**Appendix J**)
- fall caribou protection protocol (**Appendix K**)

4. REPORTING

A Wildlife Monitoring Summary Report will be provided annually summarizing the terrestrial ecosystem monitoring activities and results of the previous calendar year. The summary report will discuss the accuracy of predictions of the effect of the Project on the various wildlife VECs, the success of mitigation (i.e., whether any thresholds are exceeded), briefly describe new measures taken through the adaptive management approach, visually present results of all monitoring activities, and recommendations for mitigation and monitoring activities in the current year. Monitoring programs with low numbers of observations that limit conclusions may be assessed at larger time intervals than on an annual basis. An attempt will be made to distinguish between Project-related changes and natural variations in wildlife populations.

The annual Wildlife Monitoring Summary Report will allow regulators and other stakeholders to review and contribute insight, expertise, and suggestions for improving wildlife management activities within the Project area. To ensure the reported information is accessible for all stakeholders, the summary report will be concise, visual and simple in format.

As per Project Certificate No.008, Condition 33, Agnico will provide wildlife incident reports to the appropriate authorities in a timely fashion (ECCC, KivIA and the GN, amongst others as required). These reports will provide the following information: location coordinates (i.e., latitude and longitude or UTM), species, number of animals, sex, age class (if possible), and a description of the animal activity.

Agnico Eagle will have the full responsibility for all aspects of the monitoring program (implementation, monitoring, reporting) and the plan will be reviewed and updated as deemed necessary.

4.1 MITIGATION AUDIT

The mitigation described in this document stems from current practices at existing mines, or was suggested during the environmental assessment process. However, an auditing system is required to evaluate the use and effectiveness of the mitigation, following the principals of adaptive management. In other words, it should be confirmed that the mitigation proposed here is used and that it works. Further, new mitigation should be documented. As an example, per Project Certificate No.008, Condition 32, Agnico Eagle will engage with the Baker Lake Hunters and Trappers Organization and other relevant parties to ensure that safety barriers, berms, and designed crossings associated with project infrastructure, including the haul road are constructed and operated as necessary to allow for the safe passage of caribou and other terrestrial wildlife. The audit will be undertaken annually, specific to audit the mitigation listed in Section 2, which requires Agnico Eagle to evaluate:

- if all mitigation has been implemented
- which mitigation is perceived to be or shown to be successful
- if new mitigation has been implemented in response to new issues and

- if some mitigation is redundant

This audit is implemented annually, as part of the annual report.

4.2 TERRESTRIAL ADVISORY GROUP

As per Project Certificate No.008 (Amendment 001), Term and Condition 27 Agnico Eagle is committed to the establishment of and participation in a TAG consisting of representatives, at a minimum, from the following organizations:

- Agnico Eagle
- GN DoE
- KivIA
- HTO of Baker Lake

The terms of reference for this TAG was developed in 2019 and included in the TAG Memorandum of Understanding.

The purpose of the TAG is to review and refine mitigation and monitoring details within the TEMP. Additional relevant sources of information such as caribou collar data, results from associated studies, IQ shared by knowledge holders, and other monitoring data will be considered.

Agnico Eagle will provide a summary of the outcomes from the TAG meetings to the NIRB on an annual basis in the annual report.

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APPENDIX A

Meadowbank Mine Project Certificate No.004, Whale Tail Pit Project Certificate No.008 (Amendment 001) Terms and Conditions, and Government of Nunavut Commitments

P.C.	T&C No.	Term or Condition	Location in TEMP Document
Meadowbank Project Certificate			
No. 004	32	AEM shall operate the all-weather road as a private access road, and implement all such measures necessary to limit non-mine use of the road to authorized, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities. The measures AEM shall undertake include, but are not limited to: a. maintaining a gate and manned gatehouse at kilometer 5 of the Private Access Road b. in consultation with the Hamlet of Baker Lake, the local HTO, and the KivIA, update the all-weather Private Access Road Management Plan to set out the criteria and processes to authorize and ensure safe and controlled non-mine use of the road by all-terrain vehicles for the purpose of carrying out traditional Inuit activities, and measure to limit all other non-mine use of the road. The updated Plan is to be submitted to the GN, INAC, and KivIA for approval no later than one month after the approval of revised Condition 32 c. the posting of signs in English and Inuktitut at the gate, each major bridge crossing, and each 10 km of road, stating that unauthorized public use of the road is prohibited d. the posting of signs in English and Inuktitut along the road route to identify when entering or leaving crown land e. prior to opening of the road, and annually thereafter, advertise and hold at least one community meeting in the Hamlet of Baker Lake to explain to the community that the road is a private road with non-mine use of the road limited to approved, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities f. place notices at least quarterly on the radio and television to explain to the community that the road is a private road with non-mine use of road limited to authorized, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities g. record all authorized non-mine use of the road, and require all mine personnel using the road to monitor and report unauthorized non-mine use of the road, and collect and report this data to NIRB one year after the road is opened and annually thereafter and h. report all accidents or other safety incidents on the road, to the GN, KivIA, and the Hamlet immediately, and to NIRB annually	**Section 2**; **Table 3**; Annual Reporting
No. 004	51	Cumberland shall engage the HTOs in the development, implementation and reporting of creel surveys within waterbodies affected by the Project to the GN, DFO and local HTO.	**Section 3.4.2.8**
No. 004	54	Cumberland shall provide an updated TEMP, to the GN, EC and INAC, within three months of the issuance of the Project Certificate including: a. updated terrestrial ecosystem baseline data b. details of the method and rationale for conducting monitoring surveys prior to the commencement of construction c. statistical validation to support the conclusions drawn from monitoring impacts of the mine and infrastructure on wildlife d. detailed analysis of the method of distinguishing between cow/calf groups from other caribou group observations e. details of a comprehensive hunter harvest survey to determine the effect on ungulate populations resulting from increased human access caused by the all-weather private access road, including establishing preconstruction baseline harvesting data, to be developed in consultation with local HTOs, the GN DoE and the Nunavut Wildlife Management Board f. details of annual aerial surveys to be conducted to assess waterfowl densities in the regional study area during the construction phase and for at least the first three years of operation, with the data analyzed and compared to baseline data to determine if significant effects are occurring and require mitigation	**Section 2.3** (methods of analysis); **Section 3** (monitoring and impact prediction); **Section 4** (TEMP annual report)

P.C.	T&C No.	Term or Condition	Location in TEMP Document
		g. details of an annual breeding bird plot surveys and transects along the all-weather road to be conducted during the construction phase and for at least the first three years of operation h. details of a monitoring program, including recording the locations and frequency of observing caribou and carnivores and any actions taken to avoid contact with or disturbance, and a specific mitigation plan for Short-eared owls and any other species of special concern pursuant to Schedule 3 of the Species at Risk Act located in the local study area or along the all-weather private access road	
No. 004	55	Cumberland shall provide the following analysis in the March 2007 Wildlife Summary Monitoring Report: a. further review and analysis of the size of the regional study area b. summary of the involvement of Inuit in the monitoring program c. detailed report of the natural variability of VECs in the region d. detailed analysis on distribution and abundance of cows, bulls, and calves e. results of the 2006 monitoring program, including field methodologies and statistical approaches used to support conclusions drawn f. any proposed changes to the TEMP survey methodologies, statistical approaches or proposed adaptive management stemming from the results of the monitoring program	TEMP Annual Report
No. 004	56	Cumberland shall plan, construct, and operate the mine in such a way that caribou migration paths through the Project, including in the narrows west of Helicopter Island, are protected. Maps of caribou migration corridors shall be developed in consultation with Elders and local HTOs, including Chesterfield Inlet and placed in site offices and upgraded as new information on corridors becomes available. Information on caribou migration corridors shall be reported to the GN, KivIA and NIRB's Monitoring Officer annually.	TEMP Annual Report
No. 004	57	Cumberland shall participate in a caribou collaring program as directed by the GN DoE.	TEMP Annual Report
Whale Tail Pit Project			
No. 008	27	The Proponent shall participate in a TAG with the GN, the Baker Lake HTO, the KivIA and other parties as appropriate to continually review and refine mitigation and monitoring details within the TEMP. Additional caribou collar data, results from associated studies, IQ shared by knowledge holders, and other monitoring data as available should be considered for incorporation as appropriate.	**Section 4.2**
No. 008	28	The Proponent shall maintain a TEMP throughout all phases of the Project. The Plan shall include detailed monitoring, mitigation, and adaptive management measures for wildlife, with consideration for each Project activity predicted to affect wildlife, and with inclusion of specific triggers for mitigation and adaptive management intervention. The TEMP shall demonstrate consideration for all relevant commitments made by the Proponent throughout the Nunavut Impact Review Board's review of the Project. Updates to the TEMP may be required when there are significant changes in project development plans, monitoring results indicating biologically-meaningful changes, significant updates to the scientific understanding of management methods relevant to wildlife at the project site, IQ, Traditional Knowledge, changes in climatic conditions that might subject wildlife to unexpected impacts, or as otherwise necessary.	Entire Document

P.C.	T&C No.	Term or Condition	Location in TEMP Document
No. 008	29	The Proponent shall, in collaboration with the GN, collect additional caribou collar data and conduct analyses of this data to quantify the zone of influence and associated effects of project components on caribou movement for a study area that includes the Whale Tail mine site, the haul road, the Meadowbank Gold Mine and its AWAR.	Outside of TEMP, but related
No. 008	30	The Proponent shall work with the GN, the Baker Lake HTO and the KivIA through the TAG to develop and update thresholds to trigger implementation of mitigation measures on both the AWAR and WTHR, up to and including temporary road closures. The Proponent shall consider how these thresholds and mitigation measures reflect caribou life cycle sensitivities as well as demonstrate how IQ was incorporated throughout the development of these criteria and procedures.	**Section 3.4**
No. 008	31	The Proponent shall develop and implement a Road Access Management Plan and maintain traffic monitoring logs along the haul road between the Whale Tail Pit project and the Meadowbank mine. Where traffic exceeds levels predicted within the Environmental Impact Statement, the Proponent shall develop and implement appropriate modifications to its wildlife protection measures.	Outside of TEMP, but will be reported within annual TEMP reports
No. 008	32	The Proponent shall engage with the Baker Lake HTO and other relevant parties to ensure that safety barriers, berms, and designed crossings associated with project infrastructure, including the haul road, are constructed and operated as necessary to allow for the safe passage of caribou and other terrestrial wildlife.	TEMP Annual Report
No. 008	33	The Proponent shall provide wildlife incident reports to the appropriate authorities in a timely fashion. Wildlife incident reports should include the following information: a) locations (i.e., latitude and longitude), species, number of animals, a description of the animal activity, and a description of the gender and age of animals if possible b) prior to conducting project activities, the Proponent should map the location of any sensitive wildlife sites such as denning sites, calving areas, caribou crossing sites, and raptor nests in the project area, and identify the timing of critical life history events (i.e., calving, mating, denning and nesting) and c) additionally, the Proponent should indicate potential impacts from the project, and ensure that operational activities are managed and modified to avoid impacts on wildlife and sensitive sites ***Commentary:*** *Items (b) and (c) are not typically included in the wildlife incidents reports, but rather are expected to be included in the TEMP and will be provided in accordance with the requirements of term and condition #28.*	TEMP Annual Report
No. 008	34	The Proponent will maintain a Migratory Birds Protection Plan for the Project in consultation with Environment and Climate Change Canada and other interested parties. The plan should include and/or demonstrate that the Proponent give consideration to the following: • information obtained from baseline characterization of migratory bird and vegetation communities within the predicted flood area • results of field tests and/or the thorough literature review of the effectiveness of preferred deterrence prior to actual flooding and • details regarding monitoring the effectiveness of mitigation measures during flooding	**Appendix F** and TEMP Annual Report
No. 008	35	The Proponent shall ensure that the mitigation and monitoring strategies developed for Species at Risk are updated as necessary to maintain consistency with any applicable status reports, recovery strategies, action plans, and management plans that may become available through the duration of the Project.	TEMP Annual Report

P.C.	T&C No.	Term or Condition	Location in TEMP Document
No. 008	36	Prior to removal or deterrence of raptors, the Proponent will contact the GN DoE to discuss proposed mitigation options and, if required, will obtain the necessary permits.	**Section 3.6** and **Appendix F**
No. 008	65	The Proponent shall, in consultation with the TAG, develop a construction plan for the widening of the WTHR which includes: • design features of the WTHR intended to facilitate caribou movement across the road • identified sections of the roadside that will be constructed with slopes and top-dressing material appropriate for caribou crossing The plan must incorporate available IQ in the selection of caribou crossing locations.	Outside of TEMP, but related

Notes:
- Adaptive management and ongoing discussions with the Meadowbank Division TAG may trigger updates to the TEMP, as appropriate. Recommendations will be noted in the TEMP Annual Reports.

Agnico Eagle = Agnico Eagle Mines Limited
AWAR = All-Weather Access Road
GN DoE = Government of Nunavut (Department of Environment)
HTO = Baker Lake Hunters and Trappers Organization
IQ = Inuit Qaujimajatuqangit
KivIA = Kivalliq Inuit Association
KM = Kilometre
TAG = Meadowbank Division Terrestrial Advisory Group
TEMP = Terrestrial Ecosystem Management Plan
WTHR = Whale Tale Haul Road

Commitments made to the Government of Nunavut regarding revisions to the TEMP (Commitments as submitted by Agnico Eagle during the Whale Tail Pit Final Hearing and listed in the NIRB Final Hearing Report, NIRB File # 170921-16MN056-FH EX21-Agnico Eagle Terrestrial Commitments-IA2E, September 21, 2017)

No.	Subject	Commitment by Agnico Eagle	TEMP V9 Reference and Status
1	Evaluation of Caribou Protection Measures	The Proponent shall conduct an evaluation of caribou protection measures employed by the Project. The components of this evaluation shall include the following: a. tests of the monitoring methods that are used to detect caribou near the Project in order to quantify: (i) the probability of detecting groups; (ii) the effective range of detection; and (iii) the spatial extent of detection capacity relative to the mitigation distance buffers b. the collection of additional data on caribou group sizes to confirm the relevance of group size thresholds used in mitigation c. collection and analyses of collar data to quantify the Zone-of-Influence (ZOI) associated with the Whale Tail Project, its haul road and the existing Meadowbank mine (and AWAR) d. collection and analyses of collar data to quantify the effects of the Whale Tail Project, its haul road and the existing Meadowbank mine (and AWAR) on the movements of caribou, in particular during migratory periods e. collection of accurate records documenting the detection of caribou and the subsequent implementation of mitigation measures f. Analyses of collar data comparing the movements of individuals that were and were not subject to the implementation of mitigation measures. The scope of this evaluation shall include the following: a. a study area or areas that encompass the Whale Tail mine site, haul road, Meadowbank mine and all-weather-access-road (including all activities utilizing this infrastructure including on-going exploration), all of which are integral components of the Project b. the use of accepted scientific methods and experimental designs to provide quantitative information c. the engagement of recognized subject matter experts in each area of the evaluation d. collection of data with sufficient statistical power to detect potential impacts e. guidance on study designs, analyses and interpretation from the Project's TAG f. collection of data during both the construction and active mining phases of the Project g. completion of the evaluation within 5 years of Project commencement (beginning with construction) to ensure that any adverse effects or deficiencies in caribou protection measures are revealed prior to potential extensions in the use of Project infrastructure h. a technical report, as noted above in (g), for the evaluation to be submitted to NIRB; and If the Project's active mining life span is extended beyond that currently proposed (i.e., 2022), including extended use of the haul road to support other projects, the evaluation should be updated every 5 years	**Section 3.4.2.3** Complete – ongoing TAG discussions

No.	Subject	Commitment by Agnico Eagle	TEMP V9 Reference and Status
2	Seasonal Windows for Caribou	The Proponent shall revise the TEMP to define the fall caribou migration season as the period from September 22 to December 15 for the purposes of applying caribou protection measures, as detailed in the Project's TEMP. All caribou protection measures that are applied to the period from September 22 to November 7 in the current version of the TEMP (**Figure 6** to **Figure 9** of version 4) shall be applied to this revised period.	**Section 2.3.2.1** and **Figure 6** to **Figure 9** Complete
3 & 4	Caribou Group Size Thresholds – Data Collection	The Proponent shall collect additional data on caribou group-sizes in proximity to the Project (including the haul road) to assess the relevance of the proposed group size thresholds. These data shall be collected using the same definition of caribou 'group' used to trigger caribou protection measures in the TEMP. The TAG shall be directly involved in this assessment. This shall occur within five years of the Project's start.	**Sections 3.4.2.1** and **3.4.2.2** and **Table 15** Complete - ongoing TAG discussions
5	Monitoring for CPM - Frequencies	Within 1 year of Project certification, the Proponent shall revise the TEMP to increase the frequencies of height-of-land, road and ground surveys for caribou compared to the current levels in the TEMP (v.4.0). Thereafter, further revisions may be made annually within the TEMP, taking into account ongoing project monitoring. The revisions shall adhere to advice provided by the TAG, as per the terms of reference.	**Sections 2.3.2.1, 3.1.1, 3.4.2.2** and **3.4.2.6** and **Figure 6** to **Figure 9** Complete
6	Monitoring for CPM – Height of Land and Road Surveys coverage	Within 1 year of Project certification, the Proponent shall revise the number of proposed height-of-land and road-side survey points to provide sufficient line-of-sight coverage to detect caribou within 4 km of the Project (including haul road and pit) with greatest coverage at known road crossing points (as determined from IQ, collar data and other observations, and reviewed by the TAG). Thereafter, further revisions may be made annually within the TEMP, taking into account ongoing project monitoring. The revisions shall adhere to advice provided by the TAG, as per the terms of reference.	**Sections 3.1.2** and **3.4.2.6** and **Appendix H** Complete – ongoing TAG discussions
7	Monitoring for CPM – Caribou GST	Within 1 year of Project certification, the Proponent shall revise caribou group-size thresholds for adaptive management, taking into account the frequency of monitoring effort, spatial coverage of monitoring and likelihood of detecting groups of caribou, in order to ensure a majority (70%) of caribou are subject to enhanced mitigation (i.e., levels 1 through 3 of mitigation and monitoring as illustrated in **Figure 6** through **Figure 8** of the TEMP, v4.0). Thereafter, further revisions may be made annually within the TEMP, taking into account ongoing project monitoring. The revisions shall adhere to advice provided by the TAG, as per the terms of reference.	**Section 3.4.2.2** Complete – ongoing TAG discussions
8	Monitoring for CPM – alternatives research	The Proponent shall actively engage in research to develop alternative monitoring methods that may revise monitoring range, spatial coverage, frequency and detection probabilities.	**Section 3.4.2.3** Complete – ongoing TAG discussions

No.	Subject	Commitment by Agnico Eagle	TEMP V9 Reference and Status
9	Caribou Monitor – Level 2	The Project's TEMP shall be revised to clarify that the definition of "non-essential vehicles and heavy equipment", as referenced in caribou mitigation procedures, includes vehicles and equipment used to continue mining operations or hauling of ore. "Essential vehicles" includes vehicles operated for the purpose of maintaining the safety of personnel, ERT, security and wildlife monitoring.	**Section 3.4.2** and **Figure 6** to **Figure 9** (footnote) Complete
10	Caribou Monitor – Level 2	Within 1 year of Project certification, the Project's TEMP shall be revised to reduce reliance on the use of discretionary mitigation measures at level 2 of caribou adaptive management, and shall include the addition of specific automatic measures intended to prepare for an operational shutdown if caribou move closer to mine operations or roads. Thereafter, further revisions may be made annually within the TEMP, taking into account ongoing project monitoring. The revisions shall be consistent with advice provided by the TAG, as per the terms of reference.	**Sections 3.4.2** and **3.4.2.3** and **Figure 6** to **Figure 9** Complete
11	Caribou Monitor – suspension of vehicles, Heavy Equip. With	With respect to monitoring and mitigation of caribou in proximity to mine operations, the Project's TEMP shall be revised such that the provision for suspension of non-essential vehicles and heavy equipment operation (Level 3 in **Figure 6** to **Figure 9**, TEMP, v.4.0), when seasonal caribou group size thresholds are exceeded within a 500 m radius of the vehicle, is applied year-round and increased to 1 km during the calving and post-calving periods. This distance buffer may be revised periodically throughout the life of the Project whenever relevant information becomes available. The revisions shall be consistent with advice provided by the TAG, as per the terms of reference.	**Figure 6** Complete
12	Caribou Monitor – non essential vehicle	The Project's TEMP shall be revised to clarify that the definition of "non-essential vehicles and heavy equipment", as referenced in caribou mitigation procedures, includes vehicles and equipment used to continue mining operations or hauling of ore. "Essential vehicles" includes vehicles operated for the purpose of maintaining the safety of personnel, ERT, security and wildlife monitoring.	**Section 3.4.2** and **Figure 6** to **Figure 9** (footnote) Complete
13	Caribou Monitor – Level 2	Within 1 year of Project certification (and again thereafter whenever relevant information becomes available), the Project's TEMP shall be revised to reduce reliance on the use of discretionary mitigation measures at level 2 of caribou adaptive management and shall include the addition of specific automatic measures intended to prepare for an operational shutdown if caribou move closer to mine operations or roads. Thereafter, further revisions may be made annually within the TEMP, taking into account ongoing project monitoring. The revisions shall be consistent with advice provided by the TAG, as per the terms of reference.	**Figure 6** to **Figure 9** Complete
14	Caribou Monitor – Level 3	Within 1 year of Project certification, the Project's TEMP shall be revised to further specify the provision for limitation of nonessential vehicles on the Whale tail haul and Meadowbank AWARs when caribou are in proximity to these roads (i.e., level 3 responses, **Figure 7** to **Figure 9**, TEMP v4.0) outside sensitive seasons. Thereafter, further revisions may be made annually within the TEMP, taking into account ongoing project monitoring. The revisions shall be consistent with advice provided by the TAG, as per the terms of reference.	**Figure 7** Complete

No.	Subject	Commitment by Agnico Eagle	TEMP V9 Reference and Status
15	4 km and 5 km - Blasting Buffer	The TEMP shall be revised such that blasting activities at the Whale Tail site are suspended when caribou above the specified seasonal group size threshold are present within 4 km of the blast site. This provision shall apply year-round except during calving season when the buffer shall be increased to 5 km when cows with calves are present. These buffer thresholds are preliminary pending the results of further studies. These no-blasting buffers may be reviewed periodically throughout the life of the Project whenever relevant information becomes available taking into account ongoing project monitoring. Any revisions shall adhere to advice provided by the TAG, as per the terms of reference.	**Table 6** and **Figure 10** Complete
16	Blasting - Study	A noise, vibration and visual cues study shall be conducted that: (1) will validate blasting noise and vibration predictions in the Project's EIS; (2) will document the scale and range of visual cues generated by blasting activities (i.e., the distance and duration over which dust plumes can be observed by the naked eye); and (3) may be used to revise the Project's no-blasting buffers for caribou. Notwithstanding the no blasting buffers, Agnico Eagle may conduct studies on caribou within the buffer distance for the purposes of determining whether the buffer distance can be modified. The design and conduct of the study shall be consistent with advice provided by the TAG, as per the terms of reference.	**Section 3.4.2.4** Complete
17	Blasting Surveys	Prior to each blast, surveys shall be conducted to detect caribou and other wildlife within the no-blasting buffers specified in the TEMP.	**Section 3.4.2.4, Table 6** and **Figure 10** Complete
18	Helicopter – Distance buffers for caribou	The Proponent shall apply mandatory, minimum distance buffers of 300 m vertically and 1000 m horizontally for the operation of all helicopters and fixed winged aircraft in proximity to caribou and a vertical distance of 1000 m and 1500 m horizontal distance from groups of 50 or more caribou, subject to exception for safety considerations or the fulfillment of regulatory compliance activities only.	**Table 6** Complete
19	Helicopter – Distance buffers for landing and take-offs	The Proponent shall apply the mandatory, minimum distance buffers to landings and take-offs of helicopters, such that engine starts and takeoffs are suspended when caribou are observed within the buffer distance.	**Table 6** Complete
20	Helicopter – Monitor Traffic	The Proponent shall revise the Project's TEMP to include a program to monitor and report helicopter traffic associated with the Whale Tail project (including existing Meadowbank infrastructure) and all associated exploration activities so that the spatial scale and intensity of this activity can be documented. This should include the collection and analysis of GPS track logs for all helicopter flights contracted by the Proponent.	No update Complete
21	Traffic Monitoring – Program through TAG	Prior to Project commencement, the Proponent shall develop a traffic-monitoring program. This program shall be designed to collect data on vehicle type, time, date, location (i.e., specific road segment utilized), point of origin and destination for all vehicles (Proponent-owned or contracted) using the Project's roads including the WTHR and Meadowbank AWAR. The design of this program shall be consistent with advice provided by the TAG, as per the terms of reference.	**Sections 1.3** and **3.9** Complete

No.	Subject	Commitment by Agnico Eagle	TEMP V9 Reference and Status
22	Traffic Monitoring – Traffic Data Accuracy	The Proponent shall verify annually traffic data to ensure its accuracy and shall summarize traffic data for each road segment including the WTHR and Meadowbank AWAR. In addition to daily rates, any seasonal or monthly variation in traffic shall be reported. The observed rates and composition of traffic shall be compared to predictions in the EIS.	**Section 3.9** Complete
23	Traffic Monitoring – Exceed traffic predictions	Where traffic rates or composition exceed predictions in the EIS, based on a 3-year average, the Proponent shall produce a revised assessment to examine the potential impacts of this excess traffic on wildlife. This revised assessment shall be submitted to NIRB for consideration.	**Section 3.9** Complete
24	Traffic Monitoring – Recording public use	The Proponent shall expand monitoring efforts for recording public use of roads to include the collection of data by staff conducting wildlife road surveys.	**Section 3.9** Complete
25	Project tolerant animals – Definition	Within 1 year of Project certification, the Project's TEMP shall be revised to further define 'Project tolerant' animals as applied to wildlife mitigation and monitoring activities. Thereafter, further revisions may be made annually within the TEMP, taking into account ongoing project monitoring. The revisions shall be consistent with advice provided by the TAG, as per the terms of reference.	**Section 3.4.2.1** Complete
26	Project tolerant animals – consulting	Where mitigation measures are to be relaxed for project tolerant animals, the Proponent shall consult with the TAG prior to reducing/removing mitigation.	**Section 3.4.2.1** Complete
27	Project tolerant animals – reporting	The Proponent shall document all cases where mitigation measures are relaxed for project tolerant animals and shall report these cases in the annual project monitoring report.	**Section 3.4.2** and **Figure 6** to **Figure 9** Complete
28	Muskox – Group size thresholds	Within 1 year of Project certification, the Project's TEMP shall be revised to specify and justify the group-size threshold for triggering adaptive management for muskox. Justification of the group-size threshold should be based on available muskox group size data. Thereafter, further revisions may be made annually within the TEMP, taking into account ongoing project monitoring. The revisions shall be consistent with advice provided by the TAG, as per the terms of reference.	Commitment discontinued based on fall 2024 TAG (including GN) discussions (Agnico Eagle 2024a)
29	Muskox – Blasting Suspension	The Project's TEMP shall be revised to include a provision for mandatory suspension of blasting when groups of muskox above the specified group size threshold are observed within 1 km of blasting activities. The suspension of blasting shall be maintained until the animals have moved away. The no-blasting buffer may be reviewed periodically throughout the life of the Project whenever relevant information becomes available. The revisions shall be completed annually within the TEMP, taking into account ongoing project monitoring, and will be consistent with advice provided by the TAG, as per the term of reference.	Section 3.4.2.4 Figure 10
30	Muskox – Roads, vehicle speeds	The Project's TEMP shall be revised to include a requirement for vehicles to slow to 30 km/hr when passing within 500 m of a group of muskox above a specified group size threshold. This mitigation measure may be reviewed periodically throughout the life of the Project taking into account ongoing project monitoring. The revisions shall be consistent with advice provided by the TAG, as per the terms of reference.	Commitment discontinued based on fall 2024 TAG (including GN) discussions (Agnico Eagle 2024a)

No.	Subject	Commitment by Agnico Eagle	TEMP V9 Reference and Status
31	Muskox – Aircraft Buffers	The Project's TEMP shall be revised to include a mandatory requirement for aircraft to maintain distances of at least 300 m vertically and 1000 m horizontally from groups of muskox; subject to exception for flight safety purposes. This mitigation measure may be reviewed periodically throughout the life of the Project taking into account ongoing project monitoring. The revisions shall be consistent with advice provided by the TAG, as per the terms of reference.	**Table 6** Complete
32	Raptor Nests – Buffers	The proponent shall establish automatic minimum no-disturbance buffers around all raptor nests located in proximity to the Project. Project activities, including the operation of vehicles, heavy equipment, aircraft and blasting, shall be prohibited within these buffers unless an exception is specified within a nest-specific management plan that has been reviewed and approved by the GN, subject matter experts and other relevant parties. The size of minimum, no-disturbance buffers shall be based on the BC Guidelines for Raptor Conservation (BC 2013) or similar guidelines as recommended by the Project's TAG.	**Section 3.6.2.1** Complete

Notes:
- Adaptive management and ongoing discussions with the Meadowbank Division TAG may trigger updates to the TEMP, as appropriate. Recommendations will be noted in the TEMP Annual Reports.

Agnico Eagle = Agnico Eagle Mines Limited
ATV = All-terrain Vehicles
AWAR = All-Weather Access Road
BC = British Columbia
EIS = Ecological Impact Statement
ERT = Emergency Response Team
GN DoE = Government of Nunavut (Department of Environment)
GST = Group Size Threshold
HOL = Height-of-Land Surveys
HTO = Baker Lake Hunters and Trappers Organization
IQ = Inuit Qaujimajatuqangit
KivIA = Kivalliq Inuit Association
TAG = Meadowbank Division Terrestrial Advisory Group
TEMP = Terrestrial Ecosystem Management Plan
WTHR = Whale Tail Haul Road
ZOI = Zone of Influence

Final Agnico Eagle Commitments for the Whale Tail Expansion Project – Relevant to the TEMP (Commitments as finalized per the Whale Tail Pit Public Hearing, Final Written Statement Responses, and Technical Meetings; NIRB File # 200207-16MN056-Agnico Eagle Final Commitment List-OT2E, February 7, 2020)

No.	Commitment by Agnico Eagle	TEMP V9 Reference and Status
BLHTO	a. fund a second wildlife monitor to monitor the road between Baker Lake and Meadowbank subject to terms and conditions related to executing the tasks as set out in the job description which will be worked out between both Baker Lake HTO and Agnico Eagle within 60 days of a positive determination by NIRB and the Minister of this Whale Tail extension application b. postpone the haul truck convoy pilot project until more information is available, and all members of the TAG provide their explicit consent"	Agnico Eagle and HTO agreed on the wording of this commitment to resolve "*all issues between them*", which is also found in Exhibit 74 filed by the BLHTO at the public hearings. • **Section 3.1.1** Outside of TEMP, but related
GN-FWS -01	"The Proponent shall revise the TEMP to during sensitive seasons (spring and fall migrations): When one collared caribou is within 50 km of the AWAR or Haul Road Level 1 caribou monitoring and mitigation, as specified in **Figure 7** to**Figure 9** and **Figure 10** of the TEMP version 7, shall be implemented. When two collared caribou are within 25 km of these roads, on an apparent trajectory to migrate across the relevant roads, Level 2 as specified in **Figure 7** to **Figure 9** and **Figure 10** of TEMP version 7 shall be implemented. When one collared caribou is within 10 kms of the AWAR or Haul Road on an apparent trajectory to migrate across the relevant road, AEM will invite the other parties (KivIA, BL HTO, GN and AEM) to a meeting to discuss whether a Level 3 shutdown, including road closures, should be triggered. Any decision regarding a Level 3 shutdown will be made on a consensus basis. The TAG will review the numbers of collars required to trigger mitigation action annually. The current tiered system as found at **Figure 7** to **Figure 9** and **Figure 10** of the TEMP version 7 shall be adjusted accordingly in order to implement the foregoing."	Agnico Eagle and the GN agreed on the wording of this commitment to resolve GN-FWS-01, which is also found in Exhibit 79 filed by the GN at the public hearings. • incorporated in TEMP V9 (particularly **Figure 6** to **Figure 9**)
GN-FWS-02	Agnico Eagle agreed to postpone the haul truck convoy pilot project until more information is available, and all members of the TAG provide their explicit consent."	Agnico Eagle and the GN agreed on this commitment, which resolved GN-FWS-02. • outside of TEMP, but related
GN-FWS-03	Agnico Eagle will revise the TEMP to reflect that snowbank heights are to be kept below 1 m or less per the results of the snow study.	Agnico Eagle and the GN agreed on this commitment, which resolved GN-FWS-03. • **Section 2.3.2.1**

No.	Commitment by Agnico Eagle	TEMP V9 Reference and Status
GN-FWS -04	"Within 1 year of project certification and prior to construction of the widened WTHR the Proponent shall develop a plan for constructing the road in a manner that facilitates caribou movement across the road. This plan shall identify the sections of the road where the following mitigation for caribou is to be applied: The road within these identified sections will be constructed as follows: a. where the backfill height is less than 1.5 m; roadside slopes will be top-dressed with appropriate grain size for caribou crossing and b. Where the backfill height is between 1.5 m and 3 m; roadside slopes will consist of 4:1 slopes and appropriate grain size for caribou crossing. Government of Nunavut Revised Recommended Terms and Conditions 2019-08-29 The plan shall be reviewed by the TAG and approved in accordance with the TAG's Terms of Reference."	Agnico Eagle and the GN agreed on the wording of this commitment to resolve GN-FWS-04, which is also found in Exhibit 79 filed by the GN at the public hearings. • Outside of TEMP, but related
GN-FWS-05	Agnico Eagle commits to providing support to the Ahiak and Wager Bay Research Work Plan, subject to the negotiation of a mutually agreeable MOU and as per our Technical Response to GN-FWS-05.	Agnico Eagle and the GN agreed on this commitment, which resolved GN-FWS-05. • Outside of TEMP, but related
GN-FWS-06	Road Management Plan "The Proponent commits to adding the Whale Tail Pit Haul protocols outlined in the Meadowbank Project Certificate 004 Term and Condition 32. "	Agnico Eagle and the GN agreed on the wording of this commitment to resolve GN-FWS-06, which is also found in Exhibit 77 filed by the GN at the public hearings. Agnico Eagle proposed wording to resolve GN-FWS-06 in the Final Written Submission, but this wording was refined and replaced during the public hearing. • **Section 2**, **Table 3**
KivIA-Terrestrial-01	"AEM shall work through the TAG to update Management Plan to integrate information on the timing and locations of the caribou crossings relative to traffic frequency and road closures from all Commitments emanating from the June 11-13, 2019, technical meeting and the August 26-29, 2019, final hearing for the Project. This integration will reduce the uncertainties about caribou responses to and effects of the Expansion Project and lay a sound basis for adaptive management. The revised TEMP shall be submitted to Nunavut Impact Review Board within 6 months of issuance of a Project Certificate."	Agnico Eagle and the KivIA agreed on the wording of this commitment to resolve KivIA-Terrrestrial-1, which is also found in Exhibit 67 filed by the GN at the public hearings. • Outside of TEMP, but related

No.	Commitment by Agnico Eagle	TEMP V9 Reference and Status
KivIA-Terrestrial-02	"AEM shall work through the TAG to update Management Plan to increase the frequency and efficacy of road monitoring to implement mitigation. The updates will identify appropriate Road survey sites, map these for viewshed, and increase the frequency of Road surveys to cover a greater proportion of each day when long-distance data (generally collared caribou) indicate that migrating caribou may be approaching. The enhanced monitoring will provide a basis for describing the effects of caribou response to traffic which in turn will improve the effectiveness of mitigation. The revised TEMP shall be submitted to Nunavut Impact Review Board within 6 months of issuance of a Project Certificate."	Agnico Eagle and the KivIA agreed on the wording of this commitment to resolve KivIA-Terrrestrial-2, which is also found in Exhibit 67 filed by the GN at the public hearings. • **Section 3** and ongoing analyses and discussions with TAG Viewshed surveys were discontinued following 2024 TAG discussions (Agnico Eagle 2024a)
HTO-FWS-05	Agnico Eagle is committed to working with the Baker Lake HTO to develop next project monitoring along the Meadowbank AWAR, and the request for additional funding for staff to conduct the necessary reviews as part of the review processes. These conversations can take place through ongoing consultation meetings with the Baker Lake HTO and Agnico Eagle.	This commitment was superseded and replaced during the public hearing by Agnico Eagle's commitments to the BLHTO set out at Section 1, Row 2. • outside of TEMP, but related
GN-FWS-03	Management of Snow on Haul Road to Facilitate Wildlife Crossing As per Commitment 9, Agnico Eagle will provide a study design program to the TAG by October 1, 2019, to be discussed further at the October TAG meeting.	• **Section 2.3.2**, **Appendix I** and ongoing discussions with TAG
GN-TRC-02	**Snow berm monitoring** Agnico Eagle will conduct a study designed to monitor snow berm height and depth of snow along the sides of the haul road in representative areas. The purpose of the study is to determine how snow accumulation influences road permeability for caribou and other wildlife along the proposed widened Haul Road. Study design will be consistent with advice provided by the TAG. The study will be conducted over three years in an attempt to capture annual variability in conditions.	Resolved. • **Section 2.3.2**, **Appendix I**
GN-TRC-04	**Reporting of caribou observations** All observations of caribou will be reported in future Meadowbank and Whale Tail Wildlife Monitoring Summary Reports using the format presented in Table GN-TRC-#4-1 of AEM's response to technical comments on the Expansion Project.	Resolved. • outside of TEMP, but related
GN-TRC-03 KivIA-Terrestrial-TC#02	**Examine caribou interactions with the Whale Tail Haul Road.** **Agnico Eagle will develop** a study design to examine the permeability of the WTHR to caribou movement as those interactions relate to the physical parameters of the road (including backfill height, slope and material grain size). This study design will consider multiple data sources (including cameras, snow tracking and collar data).	Resolved. Development of study design ongoing. • outside of TEMP, but related

No.	Commitment by Agnico Eagle	TEMP V9 Reference and Status
KivIA-Terrestrial-TC#3 HTO-FWS-03	**Haul Road construction windows to avoid caribou sensitive periods (migration)** Agnico Eagle will explore alternatives to the Haul Road widening construction schedule including windows of inactivity of construction to accommodate caribou migration. These alternatives are intended to reduce the additive sensory disturbance associated with construction, will consider construction duration and stop and start-up of activities, and would be in addition to existing shutdowns triggered by group size thresholds as part of current TEMP mitigation activities.	Resolved. Update by Q2 2020 • outside of TEMP, but related

Notes:
AWAR – All-Weather Access Road
HTO = Baker Lake Hunters and Trappers Organization
TAG = Meadowbank Division Terrestrial Advisory Group
TEMP = Terrestrial Ecosystem Management Plan
WTHR = Whale Tail Haul Road

APPENDIX B

Wildlife Protection and Response Plan: Meadowbank Division

1. SECTION 1 – INTRODUCTION

As part of this Terrestrial Ecosystem Management Plan (TEMP; 2017), mitigation measures and monitoring initiatives have been proposed to lessen the likelihood that wildlife will become habituated to the Meadowbank Mine, which includes Vault Pit, the All-Weather Access Road, Whale Tail Pit, and the Whale Tail Haul Road, and all associated infrastructure. The TEMP identified measures to deter wildlife from obtaining food rewards, finding shelter around the Project site, gaining access to harmful substances present on the site, being injured as a result of vehicle collisions, and damaging mine property.

Despite these mitigation measures, personnel may occasionally come into contact with wildlife that inhabits the Project area. To manage these incidents, a specific Wildlife Protection and Response Plan has been developed. Incidents must be managed to keep both humans and wildlife safe, using only humane control methods.

Furthermore, all staff must be familiar with the standard operating procedures and best practices aimed at ensuring human-wildlife conflicts are minimized during the life of the Project. All personnel, including contractors, on site have a role to play in ensuring human safety, conservation of wildlife and documenting wildlife activities in the Project area.

The following Wildlife Protection and Response Plan provides information on general human-wildlife conflicts policies and regulations, species-specific response plans for Ungulates and Predatory Mammals, and wildlife awareness.

2. SECTION 2 – HUMAN-WILDLIFE CONFLICTS

2.1 OVERVIEW

Wildlife encounters can take many forms. A conflict occurs when either human or wildlife health, and/or safety are put at risk. Human health and safety can be affected by contact or conflict with wildlife in several ways, including direct or indirect physical injury, and exposure to animal diseases that can infect humans (i.e., known as zoonotic diseases).

The most common conflict faced by wildlife is the increased risk of mortality from human encounters, which most often occurs when wildlife become habituated to human activity and lose their natural fear of people. The most serious form of habituation is directly correlated to the animal obtaining food, which is known as food conditioning. Food-conditioned animals become dependent on humans as sources of food. Because these human-induced habits become engrained in the animal, attempts to deter the habituated behavior generally fail with the end result usually the death of the animal. Loss of habitat effectiveness (how the animal uses its available habitat), and effects to wildlife movement (how the animal travels through its available habitat) can also result from wildlife in conflict with human development. Ultimately, this will affect both the health and safety of the wildlife species involved. While it is impossible to remove all risk to human and wildlife health and safety, approaches to minimize the risk do exist. Reactive measures do have their place in stopping the conflicts when they occur, but proactive strategies are the most effective means of preventing potential conflicts.

2.2 MINE POLICIES AND REGULATIONS

The following summarizes the general rules regarding wildlife on the site and will form the basis of the Wildlife Awareness Orientation and Courses (see below).

Employees and contractors are advised to report all incidents of unauthorized activities on or in the vicinity of the mine site to the Environment Department.

2.2.1 General Restrictions for Wildlife Protection

The following are general restrictions for Project workers and contractors, intended to minimize the potential for negative Project-related effects (e.g., increased mortality risk) on wildlife in and around the site.

- Wildlife shall have the right-of-way except where it is judged to be unsafe to do so. All species of wildlife (i.e., from small mammals to large carnivores, songbirds to raptors) when encountered by personnel on foot or in vehicles will be given the right-of way.
- Non-mine-registered firearms are not permitted on site (i.e., carrying of firearms in private vehicles to and from the project site on workdays).
- Feeding wildlife is prohibited at all times on or in the vicinity of the Project, including during travel to and from the site.

- Harassment (defined as to kill, injure, seize, capture or trap, pursue and includes to stalk, track, search for, lie in wait for, or shoot at - for any of those purposes not authorized by the Environment Department) of wildlife is prohibited at all times on or in the vicinity of the Project, including during travel to and from the site.
- The deliberate destruction or disruption of wildlife nests, eggs, dens, burrows, and the like, is prohibited at all times on or in the vicinity of the Project, including during travel to and from the site.
- Hunting and fishing is prohibited at all times on or in the vicinity of the Project, including during travel to and from the site on workdays.
- Pets are prohibited at all times on or in the vicinity of the Project, including during travel to and from the site on workdays.
- Maximum speed limit on all access roads is 50 km/h (30 mph).
- Traffic (including ATVs and snowmobiles) is restricted to designated access roads and trails.

The mine site refers to any mine facility present during the operations phase of the Project, including but not limited to, outbuildings (e.g., machine shop, offices), pits, parking areas, tailings storage facilities, and waste piles.

2.2.2 Wildlife Attractants

A list of potential wildlife attractants is provided below. The list is intended as a general summary of attractants but may not be comprehensive of all potential attractants.

- Food wastes and garbage.
- Chemicals (e.g., road salt) and their refuse (e.g., empty fuel containers).
- Wildlife carcasses (e.g., road kills, hunter kills).
- Movement and human activity (e.g., movement of people and equipment outdoors).
- Roads, which may create preferential travel corridors for wildlife, can lead to vehicle collisions and increased exposure to wildlife encounters at the Project site.

General recommendations directed at minimizing wildlife concerns related to food wastes and garbage is presented under **Section 2.2.3** (Garbage Management).

Protocols for dealing with chemical storage, disposal, and spills are presented in Meadowbank's Hazardous Materials Management Plan and Spill Contingency Plan. These protocols will minimize the potential for adverse wildlife effects, and are referenced under **Section 2.2.3** (Garbage Management) and **Section 2.2.4** (Wildlife Health).

Requirements related to the reporting and removal of wildlife carcasses are presented under **Section 2.2.7** (Reporting Wildlife Observations and Incidents).

2.2.3 Garbage Management

General recommendations directed at minimizing wildlife concerns related to food wastes and garbage are provided below.

- Littering is prohibited on and in the vicinity of the Project site, which includes all access roads. All garbage (e.g., lunch bags) must be returned to temporary storage containers. Note: organic wastes (e.g., orange peels, apple cores) are included.
- Food-related waste (including packaging) will be incinerated on a daily basis and general waste will be sent to the landfill and then buried.
- Wastes associated with mechanical maintenance and repairs (e.g., motor oil and antifreeze) will be disposed of as per the Hazardous Materials Management Plan.
- All temporary (small) storage containers for food waste garbage (yellow bin) will be wildlife protective (i.e., have bear proof lids).
- No open top buckets or anything similar will be tolerated outside buildings.
- Feeding wildlife is prohibited at all times on or in the vicinity of the Project, including during travel to and from the site on workdays.
- Wildlife incidents related to garbage or human food attractants will be reported as soon as possible. See **Section 2.2.7** (Reporting Wildlife Observations and Incidents) for more information.
- Improperly disposed of garbage, particularly food wastes will be reported as soon as possible.

See **Section 2.2.7** (Reporting Wildlife Observations and Incidents) for more information.

While Arctic Fox tend to be the greatest concern with respect to access to garbage, other animals (e.g., Wolverines, Wolves and Grizzly Bears) may be attracted to uncontained garbage sources. Problem wildlife data at the Meadowbank Mine to date indicate that Arctic Fox and Wolves are the most likely species to be attracted to the site.

2.2.4 Wildlife Health

The following recommendations are intended to reduce potential Project-related effects on wildlife health (including non-vehicle related accidents and consumption of toxic substances).

- Feeding wildlife is prohibited at all times on or in the vicinity of the Project, including during travel to and from the site. If caught feeding wildlife, an employee can be suspended and/or dismissed.
- Company procedures on the safe and prompt clean-up of any chemical spills will be followed. See Spill Contingency Plan for a more detailed protocol.
- Any observations of wildlife in and around potential sources of contaminants (e.g., fuelling sites) will be reported. See **Section 2.2.7** (Reporting Wildlife Observations and Incidents) for details.

2.2.5 Wildlife and Vehicles

The following recommendations are intended to reduce the incidence of wildlife-vehicle collisions and near misses.

- Wildlife has the right-of-way except where it is judged to be unsafe to do so.
- Obey all traffics signs.
- Maximum speed limit on all access roads is 50 km/h (30 mph).
- Verbally report wildlife carcasses observed on and in the vicinity of the Project, including along all access roads, as soon as possible. See **Section 2.2.7** (Reporting Wildlife Observations and Incidents) for more information.
- Restrict traffic (including ATVs and snowmobiles) to designated access roads and trails.
- Push and spread out the snow with a dozer when clearing the road to avoid build-up snow banks on the side of the road.
- Report all wildlife-vehicle collisions that results in the death or injury of wildlife as soon as possible. See **Section 2.2.7** (Reporting Wildlife Observations and Incidents) for details.
- A near miss between a vehicle and an animal should be reported as a wildlife 'incident'. See **Section 2.2.7** (Reporting Wildlife Observations and Incidents) for details.

2.2.6 Wildlife and Buildings

The following recommendations are intended to reduce the risk of close encountering situations between wildlife and people.

- Skirting will be added around the building to avoid having wildlife under the buildings.
- Under building access ways must be closed at all time.
- Keep c-can doors close at all time to avoid wildlife using them as shelter.
- Open top bins and containers for food waste will not be permitted outside buildings. If needs be, a bear-resistant container shall be used.

2.2.7 Reporting Wildlife Observations and Incidents

2.2.7.1 Reporting Requirements of Project Workers and Contractors

Project workers and contractors are required to verbally notify the Environment Department of the following wildlife observations or incidents as soon as possible.

- Signs of animal presence (e.g., tracks, scat, nests, burrows) in close proximity (visible to the eye from within the mine site footprint) to site facilities, vehicles, equipment, or areas frequented by workers.
- Sightings of animals in close proximity (visible to the eye from within the mine site

footprint) to site facilities, vehicles, equipment, or areas frequented by workers.

- Aggressive or unusual wildlife behavior in and around Project facilities.
- Instances of workers feeding wildlife.
- Instances of improper disposal of garbage or other waste materials.
- Observed maintenance issues (e.g., improper placement or maintenance of garbage containers).
- Instances of workers not following vehicle use guidelines (e.g., speed limits).
- Vehicle collisions with wildlife or near misses.
- Observations and locations of dead (e.g., road kill) or injured animals.

Following the verbal report of a wildlife incident or observation, completion of a Wildlife Incident Report Form may be requested at the discretion of the Environmental Coordinator or designate (s).

2.2.7.2 Reporting Requirements of Wildlife Occurrences

Wildlife Incident Reports (found in Appendix B to the TEMP) provide essential information that may identify: 1) potentially dangerous situations requiring intervention (e.g., problem wildlife); 2) situations that require notification of the Department of Environment; 3) weaknesses in garbage-handling and problem wildlife prevention measures; and 4) areas that may require warning signs (e.g., poor visibility road corners). The Environmental Coordinator or designate(s) should ensure that records of wildlife observations and incidents are thoroughly documented. Reports should attempt to include the following information wherever possible.

- Identification and number of wildlife observed.
- Specific timing and location of the observation(s).
- Details regarding the animal behavior, including direction of approach and departure, what it was doing, any aggressive behavior, etc.
- Assessment of local attractants, such as garbage, odors, movement of people, other wildlife, etc.
- If local attractants are identified as a factor, determination of what steps were or will be taken to address/remove potential attractants.
- Identification of any potential mitigation measures available to deter wildlife or limit access and how they will be implemented (refer to **Section 2.2.7** for additional information on dealing with problem wildlife).
- If an animal is destroyed, a description of the lethal measures deployed (e.g., rifle), statement of the rationale for use of lethal measures (e.g., proximity to workers, repeated incidents, observed condition of the animal, etc.), and indication of what previous non-lethal measures were employed (e.g., deterrents, hazing, trapping, and relocating [with permission from GN] etc.).

2.2.8 Protocols for Dealing with Problem Wildlife

A problem wildlife situation may arise where animal acts in an aggressive manner and/or is a repetitive nuisance or threat to worker safety. The following protocols should be used to deal with problem wildlife.

- Immediately notify the Environmental Coordinator or designate(s) of any problem wildlife issue. Reporting wildlife incidents as they occur will ensure that proactive rather than reactive measures can be taken to prevent a serious outcome (e.g., human injury, destruction of the problem animal). See **Section 2.2.7** (Reporting Wildlife Observations and Incidents) for details.
- If deemed necessary by the Environmental Coordinator, notify the Conservation Officer in the Hamlet of Baker Lake or other designated Government of Nunavut representative, inform them of the problem wildlife encountered on site, discuss appropriate aversive and mitigation actions, and determine timing when lethal methods should be implemented, if necessary.
- The Environmental Coordinator or designate(s) will initiate the appropriate actions in response to a problem wildlife issue, Recommended actions include:
    - Assess potential local attractants and address or remove all those identified, where practical;
    - Utilize non-lethal deterrents (e.g., aversive conditioning, hazing, trapping and relocating), projectiles (e.g., rubber bullets) or consider trapping and relocation of animals (e.g., Arctic Fox), where it is considered appropriate and safe to do so (refer to **Sections 3 and 4** for species-specific deterrents); and
    - Use lethal measures. Lethal measures should only be considered as a last resort in the event of aggressive animal behavior and/or repeated nuisance animals that pose a threat to worker safety and/or site facilities.
- Only authorized personnel (Environment Department) are permitted to use lethal and non-lethal projectiles (e.g., rubber bullets) or deploy traps for problem wildlife interventions.
- Do not attempt to deal with a problem wildlife issue on your own. Problem wildlife can be dangerous.
- Conform to recommendations regarding predator safety. All staff should have received a predatory mammal (i.e., Grizzly Bear, Wolverine, Wolf, and Arctic Fox) awareness training orientation. See **Section 5**.

3. SECTION 3 – SPECIES-SPECIFIC RESPONSE PLANS

3.1 PURPOSE

Response plans specific to species groups (i.e., ungulates and predatory mammals) are required to ensure that all personnel working for the Project are provided guidance on how to respond in a manner that is safe to both humans and wildlife should they encounter wildlife on or around the Project site.

3.2 SPECIES GROUPS ADDRESSED

Ungulates (Caribou and Muskoxen) and predatory mammals (Grizzly Bear, Wolverine, Wolf, and Arctic Fox) have the highest potential for interactions with humans during the life of the Project, and thus require specific response plans. If other wildlife are encountered, adaptive management strategies will be implemented if mitigation techniques and the policies and regulations mentioned in this document are not effective for these species. The proposed wildlife monitoring program will be the preferred measure of identifying potential areas in need of new mitigation strategies, or changes in policies or regulations.

For each of the species groups described below, the seasonal activity in the Project area is discussed, as well as the protocol in the event of an encounter.

3.2.1 Ungulates (Caribou and Muskoxen)

3.2.1.1 Seasonal Activity in the Project Area

Results from baseline surveys indicate that Caribou and Muskoxen are present in the Project area in all four seasons, but are observed in greatest abundance in the fall (e.g., October) when thousands of animals may be present in the vicinity of the Project, and in lowest abundance in the summer (see the baseline reports for Meadowbank [Cumberland Resources 2005a] and Whale Tail [Dougan and Nunavut Environmental 2015], and annual Wildlife Monitoring Reports for more details). Calving or post-calving aggregations or movements of Caribou have not been observed within the Project study areas since baseline studies were initiated in 1999.

3.2.1.2 Response to Encounters

Humans rarely have physical altercations with Caribou. Caribou do rut in the fall when they are at relatively high numbers on the Project site and the levels of aggression displayed, particularly by males, increases substantially. There is some anecdotal information suggesting that a bull Caribou may attack a person or vehicle during the rut; therefore, a close encounter with Caribou (during the fall) could be dangerous. Although considered rare, Muskoxen will charge humans if they are threatened (especially lone bulls). Being a sedentary species, Muskoxen will have the tendency to stand their ground when threatened, defending their territory or their young.

If you encounter a single or herds of Caribou or Muskoxen, the following actions should be taken.

- Back away slowly.
- Ensure animal(s) have an escape route.
- Do not make sudden movements.
- Do not make loud noises or attempt to scare the animal(s).
- Use radio/satellite phone to report presence of the animal(s) to the Environment Department.
- Stay in radio/phone contact until the animal(s) moves away or you have returned to a safe area (e.g., inside vehicle or building).
- Wait for the animal(s) to pass before continuing work in the area.

3.2.2 Predatory Mammals

3.2.2.1 Seasonal Activity in the Project Area

Grizzly Bear

Baseline surveys indicated limited use of the Project area by Grizzly Bears, which is consistent with what would be expected for Grizzly Bears in the north, given their wide-ranging habits and low densities. In the fall, when Caribou (a prey item) are more abundant, the Project area may have higher value for Grizzly Bears (see annual Wildlife Monitoring Reports, and Meadowbank and Whale Tail baseline reports for more details). Furthermore, increasing hunting and food caches along the Meadowbank access road in all seasons may also attract Grizzly Bears to the area.

Wolverine

Wolverines occur in the Project area on a year-round basis. Records of Wolverine sightings or their sign were infrequent in the Project area during baseline and monitoring studies beginning in 1999. Similar to Grizzly Bears, the limited evidence for Wolverine in the area is not surprising given their wide-ranging movements and characteristically low population densities (see annual Wildlife Monitoring Reports, and Meadowbank and Whale Tail baseline reports for more details). Only two occurrences (i.e., in 2011 and 2014) of a habituated Wolverine has reported at the Project site since baseline studies began in 1999.

Wolf

Although they do occur year-round in the Project area, Wolves were observed infrequently during all survey sessions, but were most common in the fall, perhaps in response to the increased Caribou abundance at that time of the year (see annual Wildlife Monitoring Reports, and Meadowbank and Whale Tail baseline reports for more details). Wolves have been one of the most frequent problem wildlife species encountered since the Meadowbank Mine became operational in 2009. Most problem Wolves were single and emaciated.

Arctic Fox

Camp personnel have regularly observed Arctic Foxes close to camp and in and around camp buildings during most months of operation, including winter (see annual Wildlife Monitoring

Reports, and Meadowbank and Whale Tail baseline reports for more details). Arctic Foxes are the most common predatory mammal species to be encountered at the Project site.

3.2.2.2 Responses to Different Levels of Encounters

Predatory mammals (such as Wolves, Wolverine, Arctic Fox, and Grizzly Bears) rarely attack people; however, they are extremely strong and vicious, and should be given respect. Members of the dog family (such as wolves and foxes) are more at risk of carrying rabies, and other zoonotic diseases, and therefore should be avoided. Arctic Fox in particular is easily tamed, quickly losing their fear of humans, and often approaching very close. Sick or injured animals may no longer be able to feed themselves and could be in a state of starvation. Often they show few physical signs that something may be wrong, but typically act more aggressively or even 'friendly' towards humans; therefore, a close encounter with a predatory mammal could be dangerous. All bites and scratches from wildlife should be reported immediately to Health & Safety department since animals can be vectors for rabies.

If you encounter a predatory mammal, your response will depend on the situation at hand. There are different levels of sightings and predatory wildlife alerts that will affect the immediate decisions you make in the field (i.e. General Sighting, or a Green, Yellow, and Red Wildlife Alert). This system allows for workers to quickly determine if predatory wildlife on or near the Project footprint/personnel needs to be left alone to pass through the size, or moved away from hazards or if the animal presents a risk to humans.

General Wildlife Sighting

Definition: When a bear or other predatory mammal is sighted >1000 m away from human activity and/or Project footprint.

Action:

- Immediately inform the Environment Department of situation using a radio/phone. A general notice will be broadcasted by the Environment Coordinator via radio to all other departments;
- Workers on the ground or helicopters in the vicinity will monitor the wildlife's trajectory non-invasively;
- Follow up notifications will be issued if the sighting changes to an Alert status, which will be dependent on the worker's location and exposure; and
- Stay in radio/phone contact until the animal(s) moves away or you have returned to a safe area (e.g., inside vehicle or building).

Green Wildlife Alert

Definition: When a bear or other predatory mammal is sighted <1000 m away from human activity and/or Project footprint.

Action:

- Immediately inform the Environment Department of situation using a radio/phone. A Green Wildlife Alert will be broadcasted by the Environment Coordinator via radio to all other departments;

- Workers on the ground or helicopters in the vicinity will monitor the wildlife's trajectory non-invasively and report the animals location regularly so that a trajectory of movement can be estimated;
- Follow up notifications will be issued if the sighting changes to a higher Alert status, which will be dependent on the worker's location and exposure;
- Workers in the affected area should be ready in case the situation escalates to a Yellow Alert Status by having a safe area (e.g., inside a building or vehicle) in the immediate vicinity that they can access quickly; and
- Stay in radio/phone contact until the animal(s) moves away or you have returned to a safe area (e.g., inside vehicle or building).

Yellow Wildlife Alert

Definition: When a bear or other predatory mammal is sighted <500 m away from human activity or Project footprint where an encounter, near miss, incident, or injury to a person or animal may be possible. If the wildlife's trajectory is aimed at human activity and/or Project footprint, or if the wildlife demonstrates abnormal behavior (such as interest or fixation), the following actions must be taken.

Action:

- Avoidance and distancing measures between workers and the animal should take place first by moving all workers away from the predicted trajectory of the animal, which may lead to a temporary closure of activities in that area. Preparation of personal deterrents should take place. Actively move personnel away from the work area, cease activities in the area and the predicted trajectory of the animal and go to a safe place (e.g., inside a building or vehicle);
- Immediately inform the Environment Department of the situation using a radio/phone. A Yellow Wildlife Alert will be broadcasted by the Environment Coordinator via radio to all other departments;
- Should avoidance and distancing measures not be possible for wildlife deterrence, possible mobilization of helicopters and the Environment Department Response Team may occur; and
- Stay in radio/phone contact until the animal(s) moves away or you have returned to a safe area (e.g., inside vehicle or building).

Red Wildlife Alert

Definition: When a bear or other predatory mammal is sighted <250 m away from human activity and/or Project footprint where an encounter, near miss, incident, or injury to a person or animal may be imminent if the animal does not change their trajectory. Wildlife deterrence must be placed into action immediately by trained wildlife responders and the following actions must be taken.

Action:

- Sound air horn with two long blasts. This will help deter the bear/predatory animal and inform all other workers of dangerous wildlife in close proximity;

- Avoidance and distancing measures between workers and the animal should take place first by moving all workers away from the predicted trajectory of the animal, which will lead to a temporary closure of activities in that area. Preparation of personal deterrents should take place. Actively move personnel away from the work area and cease activities in the immediate area of the animal and the predicted trajectory of the animal and go to a safe place (e.g., inside a building or vehicle);
- Immediately inform the Environment Department of the situation using a radio/phone. A Red Wildlife Alert will be broadcasted by the Environment Coordinator via radio to all other departments;
- ***If the predatory mammal does not back away, or shows interest in you:***
    - Continue to back away slowly and ensure a 10 m distance between yourself and the animal;
    - Make sure the animal has a safe route of escape;
    - Make noise to alert the animal of your presence or to scare it off;
    - Avoid provoking it;
    - Return to a safe area as soon as possible (e.g., inside a building or vehicle);
    - Keep the Environment Department informed of situation using the radio/phone;
- Immediate mobilization of helicopters (if available) and the Environment Department Response Team will occur to remove personnel from the area and/or deter the animal; and
- Stay in radio/phone contact until the animal(s) moves away or you have returned to a safe area (e.g., inside vehicle or building).

Table A-1 Summary of Predatory Wildlife Sightings and Alerts

General Wildlife Sighting **If wildlife is more than 1 km away:** 1. Inform Environment Department of location, distance, and number of animals. 2. Continue to monitor the bear and notify is sighting changes to Alert status. 3. Stay in radio/phone contact 4. Helicopters and Environment Department Team prepared to remove personnel or deter bear if needed.
Green Wildlife Alert **If wildlife is less than 1 km away:** 1. Inform Environment Department of location, distance, and number of animals. 2. Continue to monitor the bear and notify if Alert status changes. 3. Stay in radio/phone contact. 4. Workers are ready to go to safe area if needed. 5. Helicopters and Environment Department Response Team prepared to remove personnel or deter bear if needed.
Yellow Wildlife Alert **If wildlife if less than 500 m away:** 1. Inform Environment Department of location, distance, and number of animals. 2. Temporary work area closures for areas in vicinity of the animal and along its trajectory. Workers to prepare their personal deterrents and to go to a safe area immediately. 3. Stay in radio/phone contact. 4. Helicopter and Environment Department Response Team may be deployed to remove personnel or deter bear. 5. All personnel to stay in safe area until an all clear is given.
Red Wildlife Alert **If wildlife is less than 250 m away:** 1. Sound air horn with two long blasts. 2. Temporary work area closures for areas in vicinity of the animal and along its trajectory. Workers to immediately go to a safe area and use personal deterrents if needed. 3. Inform Environment Department of location, distance, and number of animals. 4. Stay in radio/phone contact. 5. Helicopter and armed Environment Department Response Team are deployed immediately to remove personnel or deter bear. 6. All personnel to stay in safe area until an all clear is given.

The Environment Department is to treat all predatory mammals that are threatening or aggressive as they would treat a Grizzly Bear, which is perceived to be the most dangerous. All predatory mammals that are showing interest in a person or Project facilities must be aggressively deterred to prevent habituation to the Project site. Detailed response recommendations are provided in **Section 3.2.2.3** below. If an animal is not of an immediate safety concern, the Wildlife Response team should discuss options to deter or remove the animal with Government of Nunavut Department of Environment (DOE) conservation personnel.

3.2.2.3 Environment Department Protocols for Managing Problem Predatory Mammals

As part of the detailed response plan, the Environment Department will follow the procedures included here when responding to predatory mammal sightings and encounters. It is assumed that the reporting person(s) has followed procedures for predatory mammal incidents, and has requested the Environment Department Response Team to be dispatched due to the failure of human presence to deter the predatory mammal. If an animal is not of an immediate safety concern, the Environment Department should discuss options to deter or remove the animal with Government of Nunavut DOE conservation personnel. All wildlife problems are to be recorded in the wildlife database.

In case of a General Wildlife Sighting or a Green Wildlife Alert, the Environment Department will:

- Conduct on-going monitoring and radio communication will continue in case the situation escalates and Alert status increases.

In the case of a Yellow Wildlife Alert:

- Environmental Coordinator or delegate will respond to the initial radio/call to confirm they have received the Alert message and that action is being taken;
- Environmental Coordinator or delegate will commence temporary area closures and collect all deterrent equipment and give a briefing to the Environment Department Response Team on location and circumstance of the call;
- The Environmental Coordinator will contact the helicopter dispatch and request immediate deployment (if required). Helicopter will prepare for deployment of Environment Department Response Team in to the field for emergency pick-up of field crews or a bear deterrence using the helicopter; and
- The Environmental Coordinator (or designate) should proceed to the security office to provision a firearm if needed and the site Medic should be on alert and monitor Alert updates.

In the case of a Red Wildlife Alert:

- The Environmental Coordinator or delegate will respond to the initial radio/call to confirm they have received the Alert message and that action is being taken;
- Environmental Coordinator or delegate will commence temporary area closures and collect all deterrent equipment and give a briefing to the Environment Department Response Team on location and circumstance of the call;
- The Environmental Coordinator will contact the helicopter dispatch and request immediate deployment (if required). Helicopter will prepare for deployment of Environment Department Response Team in to the field for emergency pick-up of field crews, or a bear deterrence using the helicopter;
- The Environmental Coordinator (or designate) should proceed to the security office to provision a firearm if needed and the site Medic and ERT should be on standby in the

unlikely event of a wildlife attack; and

- Updates on the situation will be broadcast if the situation or affected areas change, the Alert status changes, or when the hazard no longer exists and work may resume.

Once the Environment Department Response Team is deployed in the field:

- Prior to implementing any deterrence measures ensure the bear has a clear avenue of escape, and all workers have vacated the area;
- Depending on location, slowly drive or walk towards the animal staying a safe distance from the animal (minimum of 10 m);
- No firearms or deterrents should be discharged in a work area until all personnel are removed or are safely inside structures;
- When firearms are to be used there will always be two individuals, one person with a firearm (12 gauge) for deterrent use, the other as back up with lethal force. No lethal force will be taken without consent from the Environmental Superintendent / Coordinator in conjunction with the consultation of the Government of Nunavut DOE Wildlife Officer unless the situation is deemed to be life threatening;
- The appropriate less than lethal deterrent will be chosen and used in an effort to scare the predatory mammal away; and
- If the deterrent is successful, the incident will be recorded in the wildlife database and will detail the type and level of deterrent used, information on the predatory mammal involved, and all information on the circumstances leading up to the incident.

If the deterrent is not effective and the predatory mammal continues to approach or doesn't move away from the area of human activity or Project footprint.

- Increase deterrent efforts to less than lethal projectile (rubber bullet) if not already being employed;
- Ensure the animal has an open escape route; and
- Continue aggressive use of less than lethal projectile deterrents to try and chase the animal away.

All but the most aggressive animals should have been deterred at this point. The situation is now extremely dangerous and the Environment Department must be ready to use lethal force.

The risk to human life or property is imminent since the predatory mammal has not* responded *to non-lethal deterrent options and the safety of the team or mine property is now compromised.

- Shoot with the intention of stopping the threat, using the buckshot or 1-ounce lead slugs, as appropriate, to kill the animal;
- Shots should be aimed at the chest area, not the head or hind quarters;
- If lethal force has been used, the Environment Department must complete a full report

detailing the event immediately;

- The Government of Nunavut DOE conservation officers will be notified by phone. Direction will then be given to properly dispose of the carcass; and
- Any wildlife showing signs of rabies will be killed (never shot in the head) and reported.

Helicopter Deterrence:

- This method of deterrence is to be considered as a last resort depending on the circumstances (i.e., location of work);
- At least one member of the Environment Department must be onboard the helicopter to monitor the deterrence. The helicopter pilot is in charge of the safety of the aircraft and the passengers. The pilot will have the final say regarding where and how the aircraft is flown with regards to safety;
- To reduce stress on the animal, the helicopter must stay at least 100 m back and 30 m up from the animal during a helicopter deterrence;
- Animals cannot be pushed for more than ten minutes or 3 km (2.2 miles);
- The Environment Department passenger will notify the helicopter pilot once they are satisfied that the animal has been pushed a sufficient distance and that it is moving away from the site. They will then instruct the pilot to go up in altitude to continue monitoring the location of the animal and ensure that it is not returning;
- In the event that a firearm will need to be transported to a site via helicopter for deterrence (e.g., remote drill site), the firearm must be placed in a secure gun case and be unloaded; and
- A detailed record of all bear/wildlife activities and deterrence actions must be presented to the Environment Coordinator in a timely manner. This forms part of the reporting requirements for Wildlife Incident Tracking for regulatory authorities.

4. SECTION 4 – WILDLIFE AWARENESS INFORMATION AND ENCOUNTER STRATEGIES

This section deals with general predatory mammal (i.e., Wolves, Wolverines, and Grizzly Bears) awareness information and encounter strategies. It does not replace the need for all personnel to take a recognized wildlife awareness course.

4.1 FACTORS THAT INFLUENCE A PREDATORY MAMMAL'S REACTION

Wolverines, Wolves, and Grizzly Bears will react differently to chance encounters with humans, depending upon many factors, including each animal's past experience with humans. Their reaction is difficult to predict because of the variability of factors with each encounter.

- Female mammals may aggressively defend her young ones (for example: Female bears with cubs are more likely to attack than to flee).
- Wolverines or bears may defend a food cache (for example: a bear's main objective is to eat from the time it leaves its den to the time it returns to a winter den. Hunting bears will cache food after eating part of it by covering the food with dirt, branches or leaves. They will often establish a daybed nearby and return later for another meal). Animals will aggressively defend their food cache.
- Individual Space: All predatory mammals have a minimum distance surrounding them within which any intrusion is considered a threat. A cornered or surprised predatory mammal may be dangerous. If there is no cover to retreat to, their usual response to danger is to attack or to stand its ground.
- Old, wounded or predatory mammals with teeth malformations can be dangerous because they are very hungry or starving (e.g., Wolves observed on-site in 2009).
- Wolverines, Wolves, Arctic Fox, and Grizzly Bears are easily attracted to human food sources and may become aggressive to obtain it. Predatory mammals that have obtained food from humans become "human food habituated`. These mammals are accustomed to humans and link people as sources for obtaining food.
- Young animals which are inexperienced hunters and/or recently weaned are also at a greater risk to take advantage of human food source opportunities.

4.2 ANIMAL ENCOUNTERS

Most of animal safety is prevention – avoiding an encounter is the best way to stay safe while working in the home ranges of Wolverines, Wolves, Arctic Fox, and Grizzly Bears.

4.3. HOW TO REACT TO ANIMAL ENCOUNTERS

Your reaction should depend on circumstances and the behavior of the mammal.

- Stop and assess the situation before you act.

- Does the predatory mammal know you are there?
- How is the animal reacting to the nearby activity?
- Remain calm.
- Do not turn your back on the animal.

DO NOT RUN – You will trigger the animal's natural response to chase you. Wolverines, Wolves and Grizzly Bears are extremely fast and you cannot outrun them.

Some Simple Rules

- Respect them – they can kill you.
- Be alert at all times.
- Watch for sign.
- Make noise – don't surprise animals.
- Travel in groups when possible.
- Be cautious in noisy areas (streams).
- Know the types of areas animals use during the year.
- Do not approach them.
- Never feed them.
- Get trained and carry deterrents.
- Remember carcass equals danger – look for ravens, strong odours.
- Mentally rehearse encounters.

4.3.1 Specific Situations: Animal Encounters

Wolverine, wolf, or bear is not aware of you.

- Leave the area quietly in the same direction that you came from.
- Move while the predatory mammal is not aware of you and stop moving when the mammal lifts its head to check its surroundings.
- Stay downwind so the predatory mammal will not pick up your scent.
- When you have moved a safe distance away and preferably to your truck or shop where you can watch and wait until the predatory mammal leaves.
- Report event to Environment Department immediately.

If the wolverine, wolf or bear is unaware of you and approaching.

- Allow the mammal the right-of-way. Make sure there is a safe escape route and that you

are not in the way.

- Return to vehicle or building when available or allow animal a wide birth.
- Report event to Environment Department immediately.

If you cannot leave undetected

- Move upwind so animal can pick up your scent; this will help them identify you as human.
- If it is possible, try to keep the predatory mammal in your sight.
- Watch to see if the predatory mammal leaves when it smells that a person is nearby.
- Report event to Environment Department immediately.

If the wolverine, wolf or bear is aware of you but in the distance.

- Continue walking at the same general pace and towards a safe area (vehicle or building).
- DO NOT RUN.

The wolverine, wolf or bear is aware of you and close.

- A predatory mammal will feel threatened in a close confrontation. Generally their natural tendency will be to reduce or to remove the threat. Assist the animal by acting as non-threatening as possible.
- Do not make direct eye contact.
- Do not make any sudden moves.
- DO NOT RUN.
- In the case of a bear, they need to identify you as a person, so talk in low tones and slowly wave your arms over your head.
- Attempt to give the predatory mammal an opportunity to leave. Be sure they have an open escape route.
- Try to back away slowly.
    - If the predatory mammal begins to follow you, drop your jacket, or pack or some other article (not food) to distract it. This may distract the animal long enough for you to escape.
    - Report to Environment Department immediately.

The wolverine, wolf or bear is close and threatening.

- If you have a deterrent such as a bear banger or bear spray, be prepared to use it depending on how close the predatory mammal is.

- If you do not have a deterrent, or if using the deterrent is not successful, act as non-threatening as possible.
- Talk to the predatory mammal in a calm authoritative tone of voice.
- Do not startle or provoke the predatory mammal by making sudden moves.
- Back slowly away from the animal and drop a pack, jacket, or some other article in order to distract it momentarily.
- Remember that the predatory mammals may be defending their cubs that you have not yet seen or they may have a food cache nearby. Attempt to look as non-threatening as possible.
- Report to Environment Department immediately.

The wolverine, wolf or bear is very close and approaching.

A distance of less than 50 m in an open area is considered very close.

- If the predatory mammal continues to approach, use your deterrent when in range.
- If the predatory mammal does not respond to the deterrent you must now STAND YOUR GROUND!
- Report to Environment Department immediately.

The wolverine, wolf or bear charges.

In this case you have done something that has provoked the Wolverine, Wolf or Grizzly Bear into showing signs of aggression towards you. It is often not clear to the person what they have done to provoke the mammal until after the attack. It is important that you act passively, humble your posture, and do not look directly at the animal. Always keep the animal in sight. Never yell or throw things as these are obvious signs of aggression

When faced with a charging wolverine, wolf or bear.

- First use your deterrent, either a banger or pepper spray. If authorized (only Environment Department representatives or local security personnel) to carry a firearm, shoot the predatory mammal.
- **DO NOT PLAY DEAD IF THE PREDATORY MAMMAL CONSIDERS YOU FOOD.**
- You must defend yourself with whatever means are available, act aggressively towards the bear.
- Stand up on something high and try to make yourself look bigger. Try to appear dominant. Try to frighten it. Yell, scream, shout, and wave your arms. Jump up and down and fight back.
- Hold your jacket or backpack over your head to make yourself look bigger.
- If being aggressively attacked in a predatory attack, fight back. Concentrate your efforts on the face, eyes, and nose of the bear. Use whatever means you have, rocks, sticks,

tools, hardhat, or simply kick and punch with all the strength you can muster.

- Report to Environment Department immediately.

4.3.2 Types of Bear Attacks

Provoked Attacks

- You have done something that has provoked the bear into showing signs of aggression towards you. It is often not clear to the person what they have done to provoke the bear until after the attack.
- It is important that you act passively, humble your posture and do not look directly at the bear. Always keep the bear in sight.
- Lie down on the ground in the prone position (i.e., play dead as this is a sign of submission to the bear and shows the bear that you are no longer a threat to them).
- Never yell at the bear or throw things at the bear, these are obvious signs of aggression towards the bear.
- Report to Environment Department immediately.

Predatory Attacks

- The bear is hunting or stalking you! You are being treated as potential food. DO NOT PLAY DEAD IF THE BEAR CONSIDERS YOU FOOD.
- You must defend yourself with whatever means are available, act aggressively towards the bear. Stand up on something high and try to make yourself look bigger.
- Try to appear dominant. Try to frighten the bear. Yell, scream, shout and wave your arms. Jump up and down and fight back. Hold your jacket or backpack over your head to make yourself look bigger.
- Use your deterrent; either a banger or pepper spray. If authorized to carry a firearm, shoot the bear.
- Report to Environment Department immediately.

4.4 WILDLIFE DETERRENTS

4.4.1 Noise

- Pencil Flare Guns are highly portable but many people have received injuries from this type of deterrent as the pen explodes while they are holding it. This deterrent is still sold and is not recommended. Canadian Conservation Officers no longer using pencil flares.
- Pyrotechnics, including bangers, screamers, whistlers, and flares. Requires a magazine launcher. These launchers look like a small handgun. There are different types available, some carry only a single shot, and some will carry multiple cartridges. The bangers, screamers and whistlers are charges that will explode and emit a variety of different noises. The name of the device indicates the noise it will make.

4.4.2 Wildlife Chemical Deterrents

Bear Sprays are highly effective but they must be used correctly to be effective. As with all deterrents they have their good points and their bad points.

- The main ingredient in bear spray is Capsicum an extract from hot peppers.
- Capsicum needs to strike the eyes, nose or mouth of the mammal, (open membranes) to be effective.
- These sprays can only be used at very close range, 3 to 8 m or 10 to 25 ft.
- You cannot discharge the bear spray too early – or it will be completely ineffective.
- If the predatory mammal comes within the range of the bear spray – aim directly into their face and spray.
- You must be aware of the wind direction. If you the wind is blowing towards you, the spray will be carried by the wind into your face.
- Bear spray may not be effective in sub-zero weather (Spray cans do not fire well in very cold temperatures.) In colder weather, you need to keep the can of bear spray warm in order for it to fire effectively.
- Bear spray will not be effective in the rain. When you fire a can of bear spray, the spray will create a billowing cloud of capsicum and propellant. Rain can/will wash the spray right out of the air before it strikes the bear in the face.
- If you have used your can of bear spray to deter a mammal, wash the nozzle off with soap and water to remove the scent. Replace your can of spray as soon as possible. You do not want to have another bear encounter with a half a can of spray left.
- Bear sprays have a shelf life. Always replace your bear spray when you are nearing the end of the shelf life. The Capsicum does not deteriorate over time; it is the canister seals that deteriorate over time.
- Do not test your can of spray before going out into the field. You need to take a full can of spray into the field, not a partially used one.
- Wildlife chemical deterrents are only to be used for the purpose they are intended for. Misuse of wildlife deterrents such as chemical sprays, bangers, and pyrotechnics is considered a criminal offence.

5. SECTION 5 – TRAINING PROTOCOL

5.1 SCOPE

The Wildlife Training Protocol outlines recommended levels of training that specific groups of people at the Project site should receive. It is important that human activity at the site does not result in wildlife encounters that put people or wildlife at risk. All personnel on site have a role to play in ensuring human safety, conservation of wildlife, and documenting wildlife activities in the Project area.

5.2 ASSUMPTIONS AND KEY CONSIDERATIONS

Agnico Eagle, Meadowbank Division must assign overall accountability, recording and reporting responsibility to the Environmental Coordinator or designate(s) if the various wildlife response plans and training initiatives are to be effective.

The Environmental Coordinator or designates(s) will be responsible for ensuring that all employees, contractors, and visitors at the Project site receive wildlife training appropriate to their roles and responsibilities.

The Environment Department will be responsible for all deterrent action whenever it is necessary to deter wildlife from mine infrastructure or personnel. All members of the Environment Department will receive specialized training in various levels of deterrent use. Security personnel and the Environment Department will be the only onsite personnel to have access to a firearm.

5.3 TRAINING

Mandatory wildlife awareness orientation for all staff will include the following components.

5.3.1 Wildlife-Human Conflict

- General restrictions for wildlife protection.
- Wildlife Attractants.
- Garbage Management.
- Wildlife Health.
- Wildlife and Vehicles.
- Preventing Problem Wildlife.
- Dealing with Problem Wildlife.
- Reporting Wildlife Observations and Incidents.

5.3.2 Wildlife Awareness

The Wildlife Awareness and Working in the Wild brochure has been developed to provide Agnico Eagle staff and contractors with awareness of potential wildlife encounters that may occur at the Project site. This brochure discusses the following:

- Wildlife that commonly occur near the Project site;
- Behavior of wildlife that may be encountered near the Project site;
- Wildlife encounters; and
- Wildlife Deterrents.

5.3.3 Environment Department

In addition to the required Project site orientation, the Environment Department may require additional training. The following training is recommended, especially for those without experience in situations where wildlife occurrences are common.

Bear Safety Training

Provided by qualified contractor or territorial, provincial or federal Wildlife Officer, this course will provide:

- Instruction on the use of lethal and non-lethal deterrents for emergency response to bear incidents;
- Techniques for euthanizing bears during an emergency response;
- Other types of deterrent options available in non-emergency situations;
- In depth aversive conditioning techniques;
- Live trapping techniques and protocols;
- Necropsy techniques, and biological sampling; and
- Practicum.

Carnivore Safety Training

Provided by qualified contractor or territorial, provincial or federal Wildlife Officer to include:

- Biology, ecology, and behavior of Wolverine, Wolf, Arctic Fox, and Grizzly Bear;
- Rabies and other zoonotic diseases;
- Detailed deterrent and aversive conditioning techniques;
- Live trapping techniques;
- Instruction on the use of lethal and non-lethal deterrents for emergency response to incidents involving large carnivores;
- Necropsy techniques and biological sampling; and
- Practicum.

APPENDIX C

Field Data Forms and UTM Coordinates for Monitoring Programs

MEADOWBANK WILDLIFE INCIDENT PROCEDURES

Wildlife incidents refer to a range of possible occurrences at the Mine, including:

- human-wildlife interactions that present a risk to either people or animals;
- wildlife-caused damage to property or delay in operations;
- wildlife deterrent actions; and
- wildlife injury or mortality.

The objective of wildlife incident reporting is to document and mitigate impacts to wildlife, reduce risks to people, and identify new mitigation.

Natural processes should be left alone, unless intervention is required to reduce risk to either wildlife or staff from Project activities. Each incident requires unique responses, but each incident should be assessed to reduce or eliminate the chance that it will recur.

GN should be contacted in the case of problem wildlife, and prior to disturbing nests. Detailed wildlife incident reporting is critical for implementing adaptive management. As part of the TEMP, all wildlife incidents are reported and reviewed to determine patterns in incident occurrences and to develop management procedures.

All wildlife incidents should be documented by Meadowbank Environment Department staff using the attached form, and reported immediately to the Environmental Superintendent. The report should include photographs and conversations with the individuals involved. Please attached additional pages or information that may be useful to understand what occurred and what can be learnt from the incident.

Wildlife Incident Report Form

Date:		**Time:**	
Individuals involved:			
Species:			
Number, gender, age:			
Location (description):			
Location (UTM):			
Digital photo numbers:			
Describe the incident or accident that occurred. Was there a threat to wildlife or human safety? What was the situation that caused it?			
Describe any use of wildlife deterrents: Describe any wildlife mortality:			
Describe any communication with ECCC and/or GN-DOE:			
What immediate measures were taken to reduce risk or harm?			
What measures are recommended to prevent future occurrences?			
Report prepared by:		**Reviewed by:**	

Meadowbank Gold Mine: Caribou Behaviour Monitoring Data Sheet

Date:	Time (24 hr [00:00 to 24:00]) Start:		End:
Observers:			
Location Waypoint number:	UTM Easting:	UTM Northing:	Road name and distance marker:
Distance from caribou to observer location. Circle one: **0-50 m** **51-100 m** **100- 300 m** **300-1000 m** **>1000 m** Bearing: _____°			
Is group location East or West of the Road at start of survey? Circle one: **E** **W**	Did the group cross the road during the survey? Circle one: **Y** **N**		
Caribou group size: Exact count when possible: _____ Estimated size (for larger groups). Circle one: **50-100** **101-200** **201-500** **501-1000** **>1000**			
Temperature: ___°C Wind speed: _____km/h Wind direction:_____° Humidity:_____% Days since last snow or wind event: _____ Weather observations:			
Road Height:	Road Side Width:	Structures Present:	

Observation time. From start of survey	Number of animals exhibiting each behaviour type						Comments and photo numbers (Note if any caribou crossed road or travelled along road since previous observation)
	Feeding	Lying Down	Standing	Walking	Alert	Trotting or running	
0 minutes							
3 minutes							
6 minutes							
9 minutes							
12 minutes							
15 minutes							
18 minutes							
21 minutes							
24 minutes							
27 minutes							
30 minutes							

Observed disturbance events (record time from start of survey and check type of disturbance)

Time from start of survey	Light truck	Haul Truck	Road maintenance vehicle (e.g., grader)	ATV	Aircraft	Predator (note species)	Comments and photo numbers. Note other disturbances here

MEADOWBANK – ROAD SURVEY FORM

Date (day/month/year) _____
Time Started _ _ **Time Ended** _____
Page **of** _ _
Survey Location (AWAR/WTHR/Pit) _____
Start Location (UTM) _____
End Location _ **Observer Names** : _____
Temperature: _ **Wind Speed (km/hr):** **Wind Direction:** _ **Visibility (circle):** 100m 500m 1km >1km **Precipitation:** _____

Time	Species Name	Number	Sex and age	Habitat Type (ELC)[2]	Behaviour[3]	Direction of Travel[4]	Distance from Road (m)	Direction from Road (N or S)	Location on Access Road (GPS Coordinates)				Comments
									KM	Zone	Easting	Northing	

1 **Sex** = M (Male) or F (Female); Age = C (Calf, Chick, Cub or Pup), Y (Yearling), and A (Adult)
2 **Habitat** = WA (Water), SE (Sedge), BR (Birch & Riparian Shrub), HT (Heath Tundra), LI (Lichen), LR (Lichen-Rock), RC (Ridge Crest/Esker/Avens), RO (Rock & Boulder), and DI (Disturbed)
3 **Behaviour** = RE (Resting), ST (Standing), AL (Alert), FO (Foraging), WS (Walking Slowly), WQ (Walking Quickly), TR (Trotting), RU (Running), MI (Milling), LI (Limping), CO (Courting), FL (Flying), DB (Dive-Bombing), SW (Swimming), NE (Nesting), DI (Digging)
4 **Direction of Travel** = N (North), NE (Northeast), E (East), SE (Southeast), S (South), SW (Southwest), W (West), and NW (Northwest)

AGNICO EAGLE

Viewshed Field Sheet (Whale Tail Haul Road)

Date: _____ **Field Team:**

Temperature: **Wind Speed: km** **Wind Direction:**

Visibility (check): ☐ **100m** ☐ **500m** ☐ **1 km** **Precipitation:**

Viewshed *(KM)*	**Cardinal point**	**Species**	**Qty**	**Habitat Type**	**Behaviour**	**Direction of Travel**	**Side of the road Road**	**Distance from Road (m)**
1 *116* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							
2 *118* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							
3 *121-122* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							
4 *128* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							
5 *Start blindhill 133* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							

AGNICO EAGLE

Viewshed	Cardinal point	Species	Qty	Habitat Type	Behaviour	Direction of Travel	Side of the road Road	Distance from Road (m)
6 *138* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							
7 *144* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							
8 *Blind hill 154* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							
9 *156* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							
10 *160-161* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							
11 *166 blind hill* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							

AGNICO EAGLE

Viewshed	Cardinal point	Species	Qty	Habitat Type	Behaviour	Direction of Travel	Side of the road Road	Distance from Road (m)
12 *169* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							
13 *176* Time: Did it?: Y/N Wildlife? Y/N	East							
	West							

APPENDIX D

Whale Tail Snow Berm Study

TECHNICAL MEMORANDUM

DATE 3 March 2020 **Project No.** 19130696-392-TM-Rev0

TO Manon Turmel and Robin Allard
Agnico Eagle Mines Limited

CC Jen Range, Carolina Leseigneur Torres

FROM Murdoch Taylor, Dan Coulton, Corey De La Mare **EMAIL daniel_coulton@golder.com**

WHALE TAIL EXPANSION PROJECT COMMITMENT 9: PROPOSED HAUL ROAD SNOW STUDY

Per Whale Tail Expansion Project commitment 9 from the Technical Meeting held in Baker Lake June 11-13, Agnico Eagle Mines Limited (Agnico Eagle) will include a three-year snow monitoring program as part of the Terrestrial Ecosystem Management Plan that measures snow conditions related to removal of Haul Road snow. The approach to monitoring snow conditions as caribou migrate through the Haul Road area are described below. The goal of the snow monitoring is to determine whether changes to snow resulting from snow removal along the Haul Road result in conditions that potentially inhibit caribou movements. Following the circulation of version 1 of the study design to members of the Terrestrial Advisory Group (TAG) on 02 October 2019, the Kivalliq Inuit Association (KivIA) recommended monitoring of areas of caribou use and non-use along the Haul Road (KivIA 2019). No other TAG members provided written comments or recommendations of Version 1. At the November 2019 TAG meeting, other TAG members supported the KivIA's recommendations, which are reflected in Version 2 (this document). The variables that will be measured include the height, width and slope of snowbanks, snow depth of deposited snow, snow hardness, and the depth of fresh tracks.

Background

Collared caribou from the Lorillard herd interact with the Haul Road during their spring migration. Spring migration occurs annually between April 5 to May 28 as defined by the Government of Nunavut. During this period, collared caribou have interacted with these roads annually from approximately late April to early May, from 2011 to 2019 (Figure 1). The direction of travel for these animals crossing the road has always been from the west to the east in the spring. Snow is removed periodically from the Haul Road to promote safe driving conditions for the transport of Meadowbank Mine staff and supplies, and mined ore. Snow is removed or redistributed from the road surface to areas adjacent to Roads. The snow is redistributed in a way to minimize the size of any snow berms formed on the side of the roads (i.e., snow is pushed to the eastern, downwind side of the road).

Over the course of winter, snow will drift naturally and become hardened as the result of wind, temperature and weight of additional snowfall. Wind monitoring data from Meadowbank Mine indicates that the predominant long-term winter and spring (December 15 to May 10, 2012 to 2018) wind direction is from the northwest (Figure 2). As temperatures rise above 0°C, snowmelt will occur and reduce the weight-bearing potential of snow cover. As a result of prolonged exposure to the dominant wind direction, it is anticipated that snow along the upwind side of the Haul Road will be harder than the downwind side. If snow conditions are softer and deeper on the eastern, downwind side of the road, caribou may expend more energy travelling through these areas compared to the upwind side of the road.

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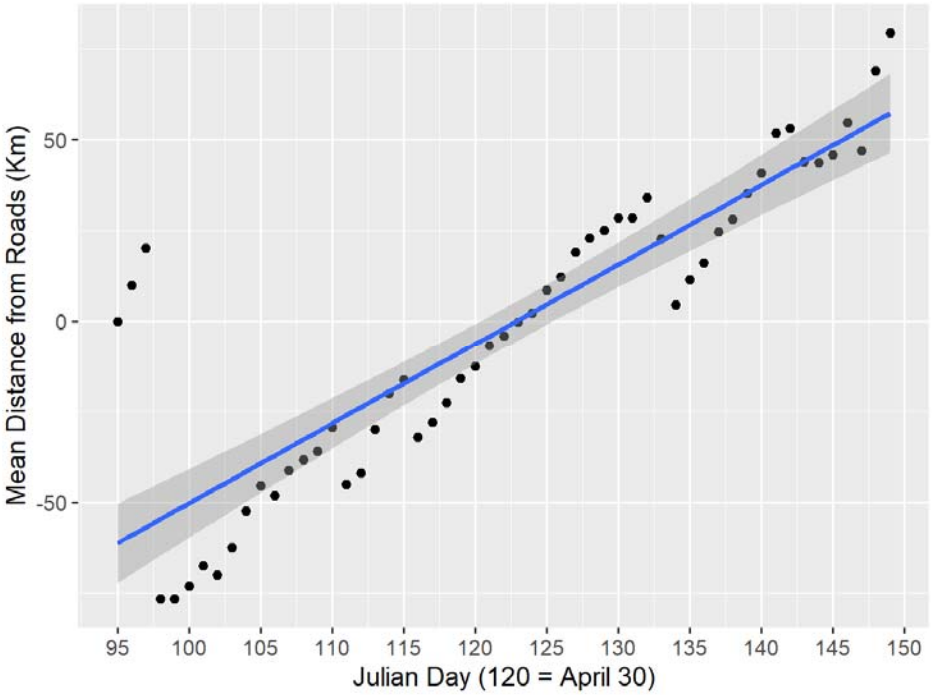
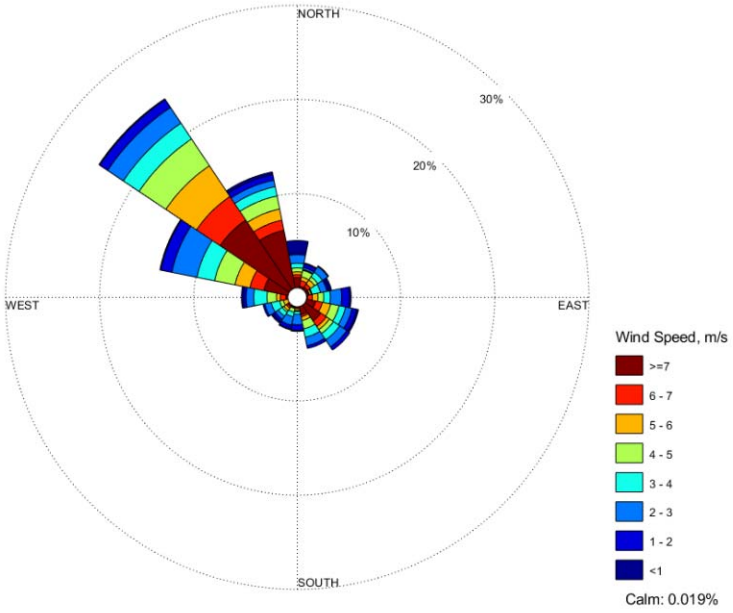
Figure 1: Collared Lorillard Caribou East (+ values) or West (- values) Distribution Relative the Haul Road and All Weather Access Road Over Time During Spring Migration (2011 to 2019)



Note: distances of collared caribou locations were standardized relative to the centre line of the Haul Road and All Weather Access Road (i.e., Haul Road or All Weather Access Road = 0 km). Distances were multiplied by -1 if the location was west of either road.

Figure 2: Wind Rose Showing the Predominant Winter Wind Direction at Meadowbank Mine, 2012 to 2018



Study Design

Sampling locations will occur in areas along the Haul Road where caribou have crossed the road. Both the upwind and down wind sides of the Haul Road will be monitored by two staff to collect measures of height, width and slope of snow berms, snow depth of deposited snow and snow hardness measurements. Staff will search for caribou groups that are actively crossing the Haul Road. Snow conditions will be measured at these crossing areas (sampling location) to measure snow conditions at the time of crossing events. This will provide the best representation of the snow conditions that caribou encountered during spring migration.

At each sampling location, three sample plots will be established on each side of the road (i.e., six survey plots sampled per sampling location). One survey plot will occur within the managed snow area created by Haul Road plows and will coincide with an area where fresh caribou tracks are present. These plots will represent areas that were used by caribou to cross the Haul Road and will be referred to as “use plots”. Two use plots per study site will be established, one on the down wind side and one on the upwind side.

For each use plot, two paired control plots will also be established. One will be a managed snow control plot and a second non-managed snow control plot. The managed snow control plot will occur within the managed snow area but in an adjacent area that was not used by caribou (i.e., where no fresh tracks are present). Snow conditions within the snow-management control plot will be compared to those in the use plot to determine if the berm slope, snow depth, or snow hardness are statistically different in areas where the caribou choose to cross compared to areas where they haven’t crossed. The non-managed control plot will occur in an area where caribou tracks are present but beyond the visible managed snow area where plowed snow has not been redistributed. Snow conditions within the non-managed control plot will be compared to those in the use plot to determine if there are differences in the snow conditions and depth of caribou tracks between areas affected by plows on the Haul Road (i.e., the use plots within the berm) and areas that fall beyond where snow is piled on the side of the Haul Road. This comparison is intended to address the Government of Nunavut’s concern that managed snow will result in softer snow conditions that might cause caribou sink and impede movements.

All control locations will be placed randomly 5.0 m from their paired use plots area. Surveys will collect information on snow conditions, topography, and track characteristics at the six survey plots established at each sampling location. Specifics on the measurements collected at each of the use and control plots are outlined below in “Survey Plot Measurements”.

To capture changes in snow conditions as caribou migrate across the Haul Road, snow monitoring surveys will be completed during caribou spring migration. The monitoring is anticipated to occur between April 15 and May 10, during the time when caribou are expected to be in the area, based on historical observations (Figure 1). A sampling goal of 36 sampling locations over the course of spring migration is desired. It is assumed that a single sampling location will require 1.5 hours to complete for two staff for a maximum of six sampling locations possible in a 10-hour workday. Under ideal conditions the program will require 6 field days to achieve the sampling goal of 36 sampling locations. During 2019 Haul Road surveys, the bulk of caribou moved through the Haul Road area over a two-week period between April 19 to May 4 (15 days). Factors affecting effort will include the presence of caribou, weather, and daylight. Should the target be achieved quickly, daily effort could be reduced but monitoring should continue to the end of migration to maximize the variation measured over time. By sampling over the course of spring migration, the magnitude of change associated with time can be quantified.

The snow monitoring program is planned to occur over three years, 2020 to 2022. The 2020 survey year will act as a pilot study year where methodology will be tested and, based on the results obtained, adjusted as needed. While 2020 will act as a pilot study year, the data obtained during this year will still be incorporated into analysis as part of the three-year monitoring program results. Findings of the Haul Road snow study will be incorporated into the annual monitoring reports for the Terrestrial Ecosystem Management Plan.

Sampling Location Selection and Methodology

Sampling locations for the snow monitoring program will be identified during roadside surveys completed by truck during the spring migration period. Surveyors will identify and GPS mark areas along the Haul Road where caribou have recently crossed the road (i.e., fresh tracks present on both sides of the Haul Road) and will establish the six survey plots. Sampling locations will be dependant on where caribou choose to cross the Haul Road. All areas sampled should be GPS referenced.

Survey Plot Measurements

Each survey plot will be established within a 1.5 m x 1.5 m quadrat. All snow and track measurements will be made within the inside of the quadrat. A total of six survey plots will be established at each study site: one use and two control plots on the upwind side and the same repeated on the down wind side of the Haul Road (Figure 3).

Use Plots

The placement of the use plots will occur in an area immediately adjacent to the Haul Road where plowed snow has been piled and where caribou have recently travelled through (i.e., an area with fresh tracks). Surveyors will measure snow berm height at its tallest point from the ground (i.e., max berm height) and the snow berm width (the perpendicular distance from the Haul Road), using a GPS device or tape measure. The slope of the snow berm will be measured using a field protractor attached to a meter stick. The slope will be recorded as the angle from the top of the snowbank outward toward the surrounding landscape. Total snow depth within the survey plot will also be measured at three locations within the use plots.

Caribou track depth (i.e., how far from the snow surface has the animal sunk into the snow) will be measured at each of the use plots. Track depth from five different prints left in the snow will be measured using a metre stick or ruler. Ideally these should span the upper, mid and lower regions of the quadrat slope. Five snow hardness measurements will also be collected at each use plot location using a mechanical dynamometer (i.e., push-pull gauge; Lundmark and Ball 2008). A rod with a metal, circular disk on one end will be attached to the dynamometer. The circular disk will be pushed into the snow and the dynamometer will provide a measure of snow hardness by calculating the force required to drive the disk into the snow. Surveyors will push the disk into the snow to the same depth as the measured depth of each of the caribou prints at that plot. This measurement will be repeated five times within the use plot and will occur in patches of snow where tracks are not present. All measurements will be recorded on paper datasheets and will be photo documented.

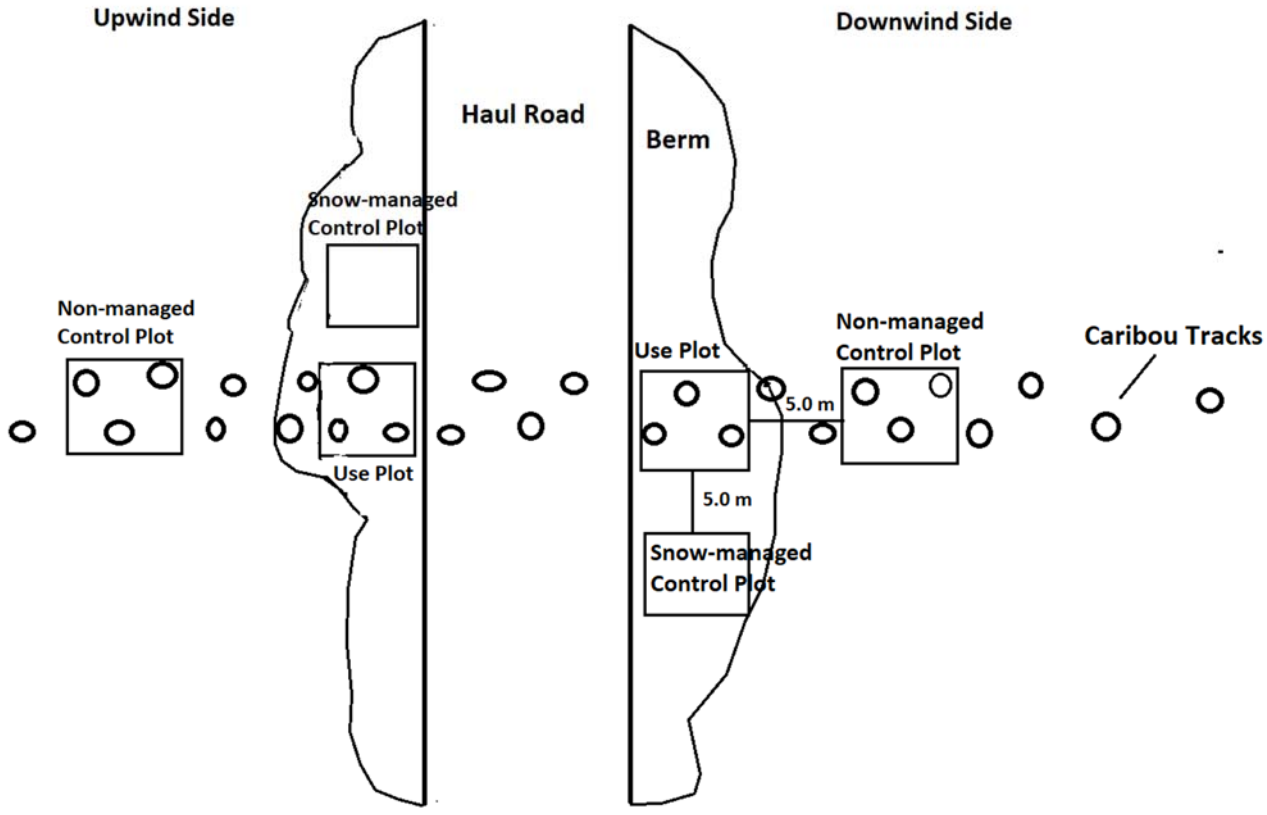
Snow-managed Control Plots

The same measurements for snow condition made in the use plots will be repeated in the snow-managed control plots. Five measurements of snow hardness will be made within the snow-managed control plot. Snow berm height (highest point), total snow depth (repeated five times), berm width, and berm slope will also be measured following methods described above. Five hardness measurements should be taken at locations that are consistent with and match depths of the use plot.

Non-managed Control Plots

Slope, snow hardness, snow depth, and caribou track depth will be measured in each of the non-managed control plots. Methods used to collect these data will follow methods outlined above for the use plots.

Figure 3: Placement of Survey Plots within Sampling Locations for Snow Monitoring



Analysis

Statistical analysis for the snow monitoring program will focus on answering two questions:

1) How do snow conditions within the managed snow area where caribou are crossing the Haul Road differ from the snow conditions in adjacent portions of the berm where crossing did not occur?

2) How do snow conditions and caribou track characteristics differ between areas within the snow berm and areas beyond the berm where snow conditions have not been altered by plowing activity?

To answer question 1), a repeated-measures analysis of variance (ANOVA) or analysis of covariance (ANCOVA) will be performed using data collected in the use survey plots and comparing them to data collected in the snow-managed control plots. Data will be paired by sampling location and by the side of the road that they were collected on.

A separate repeated-measures ANOVA or ANCOVA will be performed to compare snow hardness and track depth conditions between the use plot and the non-managed control plot. The relative difference in snow hardness between areas where snow has been redistributed by removal from the Haul Road and controls will be assessed to answer question 2) above. Secondary analyses will also evaluate variation in measured variables over time in which caribou migrate through the area and whether differences exist between upwind and down wind sides of the Haul Road.

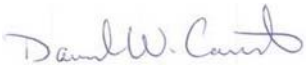
As the initial year of study represents a “pilot” program, Agnico Eagle will adaptively manage the program based on the results. Results from the 2020 survey year will determine the survey effort and analysis approach used in the subsequent monitoring years.

Closure

We trust the above meets your needs, should you have any questions, please contact the undersigned.

Murdoch Taylor, M.Sc., P.Biol
Wildlife Biologist

Corey De La Mare, P.Biol.
Principal, Senior Ecologist



Dan Coulton, Ph.D, RPBio.
Wildlife Biologist

MET/DWC/CDLM/jr

https://golderassociates.sharepoint.com/sites/115643/project files/5 technical work/00_snow_study/rev0/19130696-392-tm-whaletailsnowbermstudy_rev0.docx

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Golder (Golder Associates Ltd.). 2019. Whale Tail Expansion Project Commitment 8: Crossing Analysis – Assessment of Effects from the Haul Road to Caribou. Prepared for Agnico Eagle Mines Limited by Golder Associates Ltd., Calgary, Alberta.

KivIA (Kivalliq Inuit Association). 2019. Kivalliq Inuit Association review of Whale Tail Expansion Project Commitment 9: Proposed Haul Road Snow Study, 2 October 2019. Prepared for the Kivalliq Inuit Association by Aurora Wildlife Research, Nelson, BC.

Lundmark, C., and J.P. Ball. 2008. Living in Snowy Environments: Quantifying the Influence of Snow on Moose Behavior. Arctic, Antarctic, and Alpine Research 40:111–118.

APPENDIX A

Snow Survey Datasheet

SNOW SURVEY

Project Name				**Sheet**	_____ of _____
Project Number		**Phase**		**Task**	
Date (dd/mm/yy)		**Survey Period**		1	2
Observers		**Field QA/QC by**			
Sampling Location ID		**Side of Road (Wind or Lee?)**			

Use Plot Info

Plot ID Number	UTM Easting	UTM Northing	NAD	Zone	T_{ime}Start (24h)
			83		

Snow Condition Information	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5
Max Snow Berm Height (m):		-	-	-	-
Snow Berm Width (m):		-	-	-	-
Snow Berm Slope (°):		-	-	-	-
Snow Depth (m):				-	-
Snow Hardness (N):					
Caribou Track Information					
Number of individuals in Group:		-	-	-	-
Track Depth (cm):				-	-

Snow-managed Control Plot Info (within berm)

Plot ID Number	UTM Easting	UTM Northing	NAD	Zone	T_{ime}Start (24h)
			83		

Snow Condition Information	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5
Max Snow Berm Height (m):		-	-	-	-
Snow Berm Width (m):		-	-	-	-
Snow Berm Slope (°):		-	-	-	-
Snow Depth (m):				-	-
Snow Hardness (N):					

Non-managed Control Plot Info (outside of berm)

Plot ID Number	UTM Easting	UTM Northing	NAD	Zone	T_{ime}Start (24h)
			83		

Snow and Track Information	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5
Snow Hardness (N):					
Number of individuals in Group:		-	-	-	-

APPENDIX E

Screening Level Risk Assessment Plan

AGNICO EAGLE

MEADOWBANK COMPLEX

Wildlife and HHRA$_{\text{Country Foods}}$ Screening Level Risk Assessment Plan

In Accordance with NIRB Project Certificate No.004

Version 9

March, 2024

IMPLEMENTATION SCHEDULE

This Plan will be implemented immediately subject to any modifications proposed by the NIRB as a result of the review and approval process.

DISTRIBUTION LIST

Agnico Eagle – Environment and Critical Infrastructures Superintendent

Agnico Eagle – Environment General Supervisor

Agnico Eagle – Environmental Coordinator

Agnico Eagle – Environmental Technician

DOCUMENT CONTROL

Version	Date (YMD)	Section	Revision
1	2016-03-31	All	Comprehensive plan for Meadowbank Project
2	2018-06-01	2.5	ROC based on a commitment made during the Whale Tail Final Hearing through discussions with Environment and Climate Change Canada
3	2019-04-25	Throughout 3.4	Version 2 text expanded to describe assessment of risks to Semi-Palmated Sandpiper from exposure to contaminants in the TSF. Updated time-in-area for caribou from 33% to 12% based on collaring data.
4	2021-04-12	2.4	Introduced screening of potential COPCs in soil and water samples using soil and water quality guidelines or baseline +10%, according to Golder, 2016/Agnico Eagle, 2019.
		3.2	Reduction of sampling effort from 5 samples per monitoring station to 3 samples
		3.4	Updated time-in-area factors according to Golder, 2019.
		Throughout	Added analysis of risk to all receptors of concern from consumption of tailings material.
5	2021-08-27	Appendix B	Updated SOP to reflect V4 sampling requirements (3 locations, additional tailings samples) and corrected sample site coordinates.
6	2022-04-11	Section 2.1	Conceptual model added.
		Section 2.1.3	Clarified pathway for shorebirds (TSF only). Previously this section erroneously suggested tundra pathways would also be assessed, which was not planned, as indicated in Section 3.4.
		Section 2.2	EDI approach updated to align with Golder (2019b) – adopted method of calculating EDI for assessment location only, rather than assessment location + external reference combined.
		Section 2.2.2	Kangislulik (Mammoth) Lake added as an assessment location for water quality, due to discharge of effluent in this location
		Section 2.2.2.2	Dietary preferences – percentage of benthic invertebrates obtained from the TSF adjusted to 13% from 100%, based on results of 2021 field study (further described in Section 3.3)
		Section 2.3	TRVs – removed allometric scaling factor for mammalian TRVs to align with Golder (2019a,b) methods, as recommended in Allard et al. (2010).

Version	Date (YMD)	Section	Revision
		Former Appendix A	Appendix A (example calculation) removed for brevity since the components are clearly presented in main text.
		Appendix A	Updated SOP with selected 2021 Whale Tail site UTM coordinates and tailings beach sediment sample collection (for consideration).
		Section 3 and throughout	$HHRA_{country\ foods}$ Assessment Plan added
7	2022-07-14	Section 2.2.1	Minor correction to soil intake values to properly reflect diet % moisture value indicated.
		Section 2.2.2.2	Proportion of shorebird diet obtained from TSF adjusted from 13% to 100% (more conservative) per ECCC recommendation.
8	2023-01-25	Section 2.2.2.1 & Appendix A	Methods for collection and analysis of tailings sediment samples updated (collection of beach sediment rather than mill effluent)
9	2024-03	Throughout	Text revisions for clarity.
		Section 2.2.2	Updated BSAFs to include more empirically-derived values from the available literature.
		Section 3	Updated Health Canada guidance document references (Health Canada, 2021a & b). No significant change to methods, except TDIs will be revised according to Health Canada, 2021b in subsequent analyses.
		Section 3.1.3	To identify COPCs, collected soil and water samples will be screened against maximum measured background concentrations, rather than background + 10%.

Prepared By: Meadowbank Environment Department

Approved by: Eric Haley

Environment and Critical Infrastructures Superintendent

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Table 4. Time-in-area assumption for each study area and ROC. 18

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1 INTRODUCTION

1.1 BACKGROUND

In 2006, Azimuth Consulting Group Inc. conducted a pre-construction wildlife screening level risk assessment (WSLRA) for the Meadowbank Mine to assess potential future risks to wildlife via dietary uptake of mine-related contaminants (Azimuth, 2006). Specifically, the pre-construction SLRA focused on determining the contaminants of potential concern (COPCs) from planned minesite activities, and evaluating potential risks to wildlife from exposure to contaminants under baseline conditions as well as predicted conditions during mine operation.

Under baseline conditions, negligible risks were found for all COPCs except chromium, which was determined to pose an improbable but potential risk for songbirds due to naturally elevated concentrations in the region. COPC exposure concentrations were not expected to increase during mine operation, so potential risks were not expected to change from baseline conditions.

In addition, a pre-construction risk assessment for consumption of country foods ($HHRA_{country\ foods}$) was completed (Wilson Scientific, 2006) to assess risk to human receptors associated with ingestion of various country foods under baseline and future operational conditions. No incremental risks from consumption of country foods were predicted as a result of mine operations.

In 2016, Agnico Eagle submitted a Final Environmental Impact Statement (EIS) to NIRB for the Whale Tail Mine satellite deposit (Agnico Eagle, 2016) at the Meadowbank Complex. This FEIS included assessments of risk to wildlife and country foods consumers in the Whale Tail Mine area under baseline and future operational conditions. Concentrations of contaminants in soil were not predicted to change or the changes met screening criteria, so no residual impacts to soil and subsequently, vegetation and prey quality were predicted as a result of mine operation, and no quantitative risk characterization (hazard quotient calculation) was required. Results of an updated assessment conducted in support of the Whale Tail Mine Expansion Project in 2018 – 2019 (Golder, 2019a) presented the same conclusion. An additional assessment for exposure of wildlife receptors of concern to contaminants in ingested tailings water and sediment (Golder, 2019b) found that while screening values were exceeded for a number of parameters, risks were acceptable (HQ <1) for all receptors.

While no incremental risks to wildlife or country foods consumers were predicted in environmental assessments for the Meadowbank Complex, Agnico Eagle will continue to validate these predictions every three years, during operations, as required under Nunavut Impact Review Board Project Certificate No.004 - Condition 67.

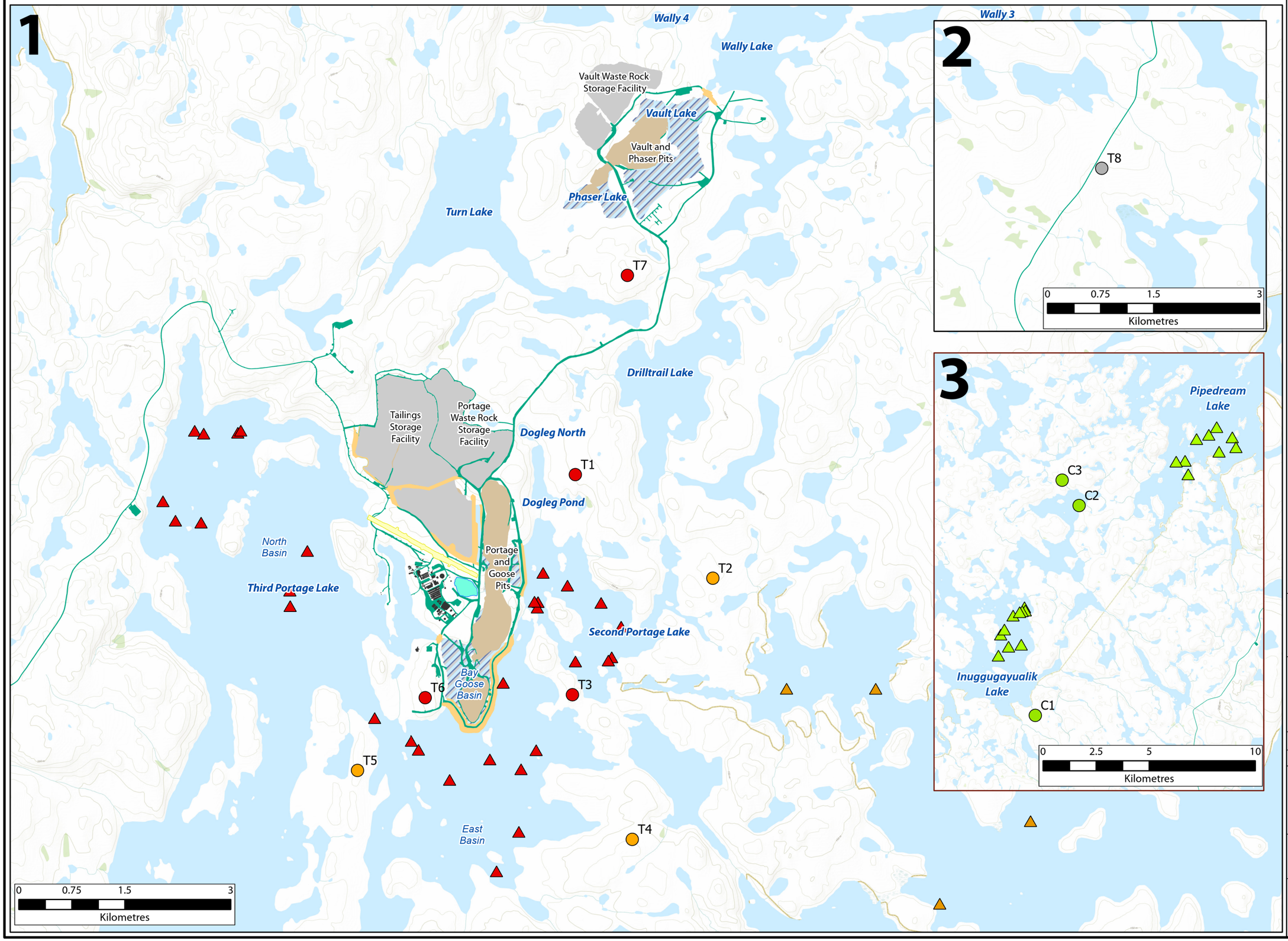
This plan is intended to guide the WSLRA and $HHRA_{country\ foods}$ risk assessment process, and methods in each reporting year will be reviewed and adjusted as required, based on current practices and guidance available at the time.

1.2 GENERAL APPROACH

The goal of the Meadowbank Complex WSLRA and $HHRA_{country\ foods}$ is to validate FEIS-phase predictions of risk for wildlife and general public consumers of country foods from ingestion of chemical contaminants under operational conditions. The general approach includes the common risk assessment components of problem formulation, exposure assessment, toxicity assessment and risk characterization. In particular, assessments will aim to distinguish risk due to operation of the mine from risk due to background conditions by collecting samples of environmental media from a variety of

potentially impacted and reference locations in each assessment year (Figures 1 and 2; further described in Section 2.2.2).

Risk assessments will follow a hazard quotient approach, and are based on food-chain modeling developed for the baseline screening level risk assessments at the Meadowbank Mine (Azimuth, 2006; Wilson Scientific, 2006) and updated using methods from the Whale Tail Mine assessments (Golder 2019a,b) as described below. The risk assessment framework has been developed according to various standard Canadian and American sources, with updates as available (e.g. CCME, 1996, 2020; USEPA, 1998; Health Canada, 2012, 2021a).

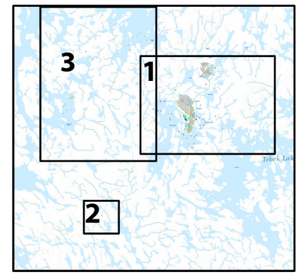


Legend

Soil/Veg Sampling Location
- Onsite
- Near Site
- External Reference
- AWAR

Water Sampling Location
- Onsite
- Near Site
- External Reference

Mine Plan
- Dewatered Lake
- Roads
- Pits
- Airstrip
- Dikes
- Facilities
- Waste Rock & Tailing Storage Facility
- Stormwater Management Pond



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Meadowbank HHERA Sampling Locations

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PROJECT: DA11-062-06

CLIENT: Agnico-Eagle Mines Ltd., Meadowbank Div.

N W E S
UTM Zone 14 NAD83

DATE: FEBRUARY 2022

SCALE: 1:50,000

DRAWN BY: LC, JS, NW

CHECKED BY:

FIGURE:

1

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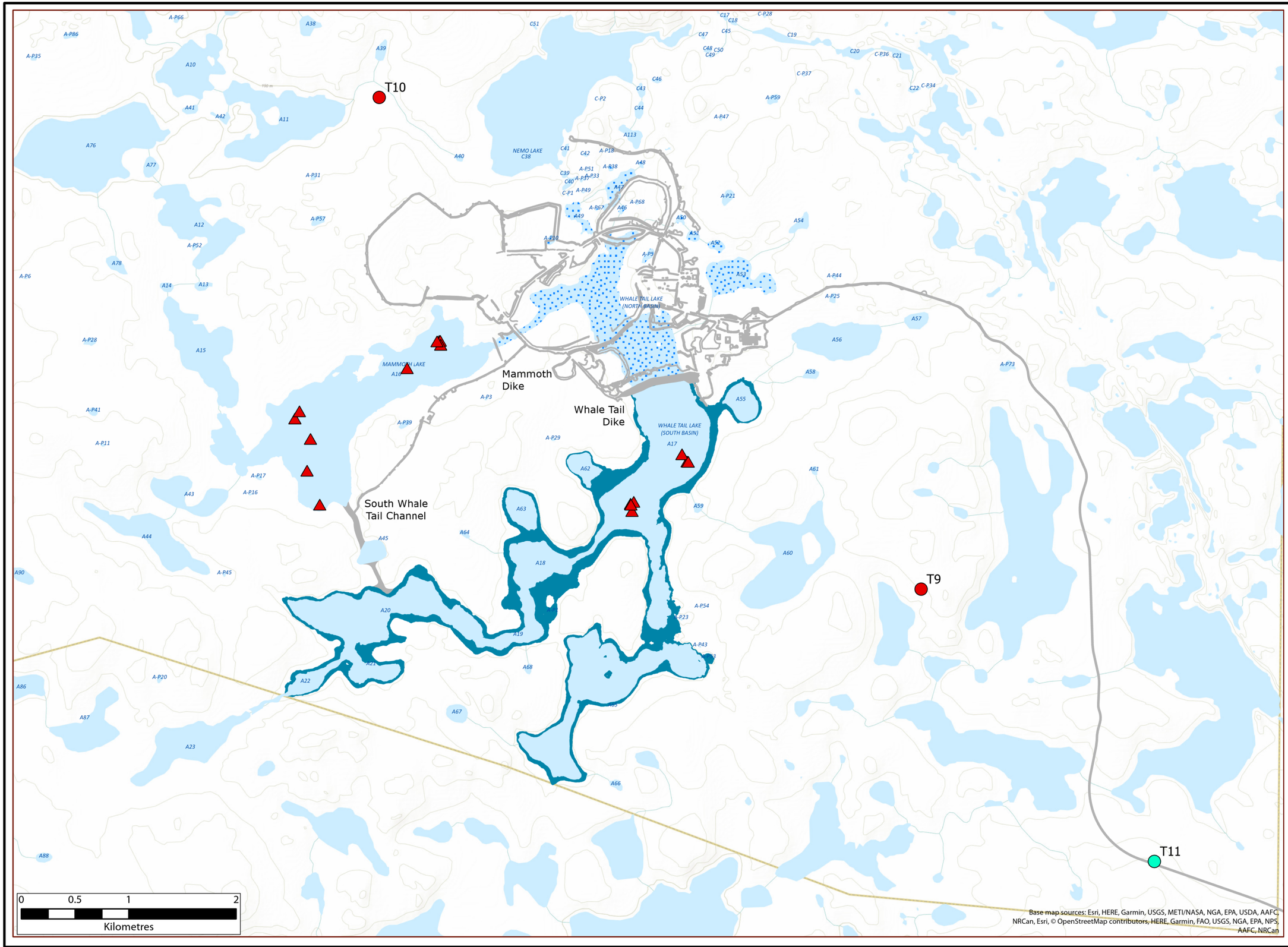

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Legend

- Water Sampling Location
- Soil/Veg Sampling Location
- Soil/Veg Sampling Location - WTHR
- Dewatered Lake
- Infrastructure

South Whale Tail Lake Elevations

- Baseline Water Level
- Flood Zone

Whale Tail HHERA Sampling Locations

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PROJECT: DA11-062-06

CLIENT: Agnico-Eagle Mines Ltd., Meadowbank Div.

N W E S
UTM Zone 14 NAD83

DATE: JANUARY 2022

SCALE:

DRAWN BY: LC, JS, NW

CHECKED BY:

FIGURE:

2

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1.3 LOCATION DESCRIPTION

The Meadowbank Mine is located 70 km north of the hamlet of Baker Lake, Nunavut, near the border of the Northern and Southern Arctic ecozones. The Whale Tail Mine is located a further 50 km north-west. Collectively these sites are referred to as the Meadowbank Complex. Terrain in the Meadowbank area is typical barren-ground subarctic, with low-growing vegetation in poorly developed soil with continuous permafrost. The landscape is dominated by many interconnected lakes and isolated ponds with indistinct drainage patterns. Topography consists of rolling hills, boulder fields and bedrock outcrops. The site is located at the headwaters of the Quioch River system, which flows southeast through Chesterfield Inlet into Hudson Bay. Lakes in this region are ultra-oligotrophic, with low productivity levels. This region supports few terrestrial mammals (15 species) and birds (62 species) (Azimuth, 2006). Migratory species (primarily caribou and Canada geese) are present.

1.4 SITE FACILITIES

The Meadowbank Complex consists of several gold-bearing deposits, primarily mined as open pits (Portage, Goose, Vault, Phaser, Whale Tail, and IVR Pits). The Whale Tail Mine also has underground operations. Much of the original Meadowbank Mine infrastructure is located in close proximity to the Meadowbank mill, with the exception of Vault and Phaser Pits which are approximately 10 km northeast of the main site. The Whale Tail Mine, which was permitted in 2018, is approximately 50 km northwest of the site. Operations at the Portage, Vault and Phaser Pits ceased in 2019, and simultaneously operations at the Whale Tail Mine began.

Waste rock from the pits is stored in the Portage Waste Rock Storage Facility, Vault Waste Rock Storage Facility, Whale Tail and IVR Waste Rock Storage Facilities (RSFs). Rock Storage Facilities are constructed to minimize the disturbed area and will be capped with a layer of non-potentially acid-generating rock (NPAG). During the construction period, NPAG is also used for construction of dikes and roads. Mined ore is either processed in the mill or stockpiled for eventual processing.

Tailings are stored in the Tailings Storage Facility (TSF), located at the Meadowbank Mine. The TSF is defined by the series of dikes built around and across the basin of the dewatered northwest arm of Second Portage Lake. In-pit disposal has also been occurring in Portage and Goose Pits since 2019. Tailings water is reclaimed for use in ore processing.

An onsite airstrip supports transportation of goods and personnel to and from the Meadowbank Complex by jet. A 110-km All Weather Access Road (AWAR) runs between the Meadowbank Mine and the hamlet of Baker Lake, where Agnico Eagle maintains a bulk fuel storage and barge facility. The Vault and Phaser Pits area is connected to the Meadowbank Mine by a 10-km haul road, and the Whale Tail Mine is connected to the Vault and Phaser Pits area by a 62-km haul road.

1.5 SOURCES OF CONTAMINANTS

Major mine site operations and their potential to contribute to COPCs (based on Azimuth, 2006 and Golder, 2019a) are summarized here.

Open pits – Along with ore, pits produce waste rock, which may contribute to COPCs through dust emissions.

Rock storage facilities – Waste rock (not containing ore) is moved to these areas. Dust may be blown from the rock piles during dumping and vehicle traffic during transport of material. Seepage from rock storage facilities is controlled in sumps and pumped back to attenuation ponds or the TSF.

Borrow pits and quarries – Borrow pits and quarries are used as necessary for the construction of mine site roads and road maintenance. The COPCs for borrow pits and quarries are similar to open pits.

Tailings Storage Facilities (TSF) – The northwest arm of Second Portage Lake was partitioned off by the East Dike and de-watered from 2009 to 2012. This area was further partitioned by the Central Dike and Stormwater Dike to create the North and South Cell TSF. This material is fine-grained and could be a source of dust emissions during dry periods, prior to capping. Tailings are also disposed in Portage and Goose Pits, but a sub-aqueous method is used so these tailings are not considered as a source of dust emissions.

Roads and airstrip – Frequently-used gravel haul roads run throughout the mine site to connect pits, waste rock storage and processing facilities. An airstrip, receiving approximately five planes per week, was built at the mine site to receive deliveries and personnel. Dust from these sources could be a potential source of contaminants. A 110 km long all-weather access road (AWAR) was constructed between the mine and the Hamlet of Baker Lake, using gravel from quarries along the road, and the Whale Tail Mine satellite deposit is connected by a 62-km haul road to the Meadowbank Mine.

Effluent discharge – Dewatering of lakes for mine construction is considered effluent discharge and is regulated under the current NWB Water License and MDMER. Lake water is treated for suspended solids before discharge, if needed, and since it is an existing surface water source, it is not likely to be a source of contaminants in the receiving water. Effluent is also periodically discharged from attenuation ponds into adjacent lakes, under NWB Water License and MDMER requirements. As a result, metals regulated under MDMER are evaluated for potential as COPCs.

Diesel generating plant, mine mill plant and associated facilities – Diesel generating plants provide power for the mine. The Air Quality Impact Assessment (2005) determined emission of PAHs was “very low” and did not require modeling. The milling of rock in the processing plant takes place under wet conditions, and is not a source of particulate emissions. Health and safety-related requirements to reduce particulate emissions during handling of the ore at the mine plant before processing are in place, so these are not expected to be a significant source of contaminants to the receiving environment.

Overall, roads, waste rock and tailings were determined to be the main sources potentially contributing to COPCs through dust emissions. Dewatering effluent discharge may potentially contribute to COPCs in water sources, along with physical changes to waterbodies for the Whale Tail Mine (flooding). In addition, risks to wildlife from exposure to contaminants within the tailings storage facility are now considered, following discussions with Environment and Climate Change Canada during the Final Hearing for the Whale Tail Pit project (2017).

2 WILDLIFE ASSESSMENT

2.1 PROBLEM FORMULATION

The WSLRA evaluates risks to wildlife receptors of concern (ROCs) from ingestion of COPCs measured in environmental media for specified exposure pathways. Receptors, protection goals, exposure

pathways, and methods for identification of COPCs are summarized below, and the conceptual model is shown in Figure 3.

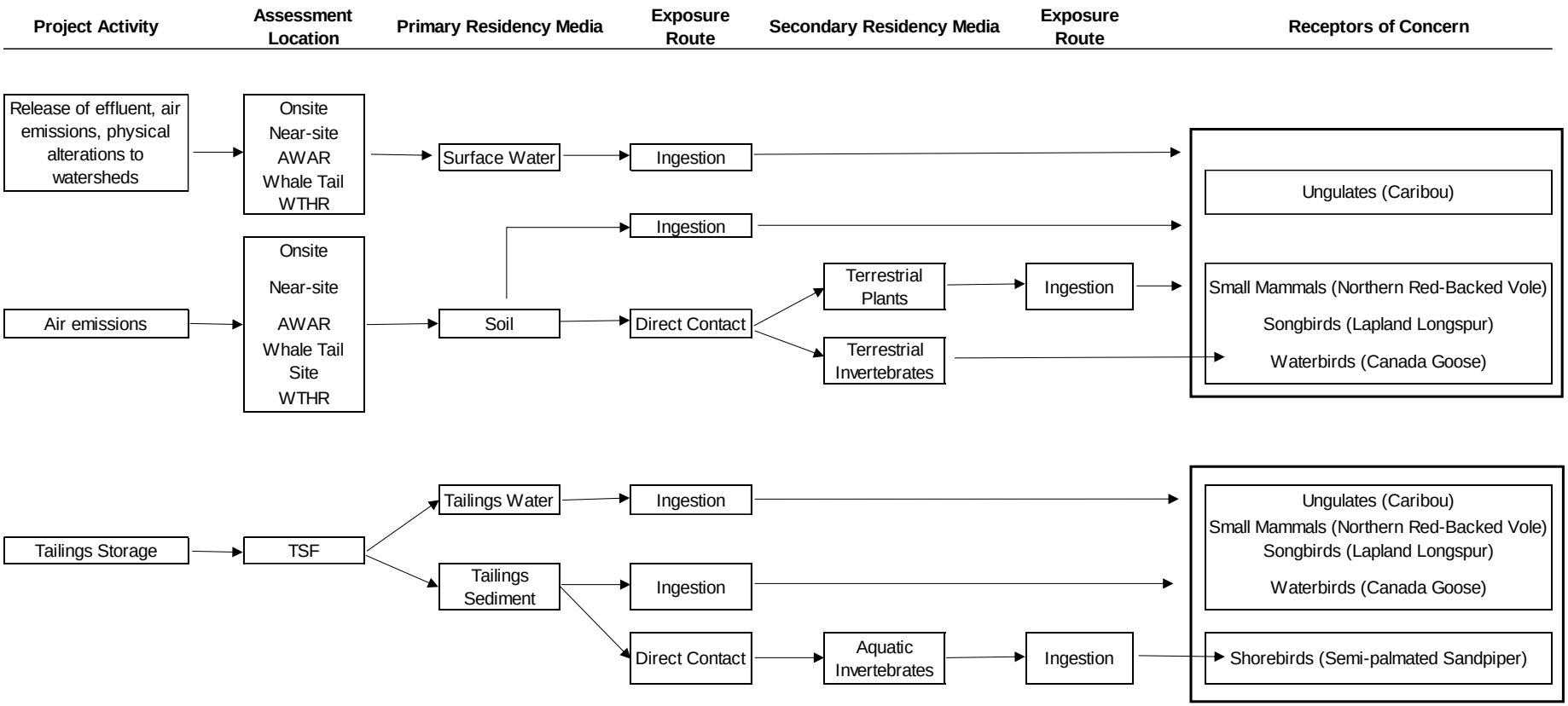

Figure 3. Wildlife risk assessment conceptual model.

2.1.1 Receptors of Concern (ROCs)

The original Meadowbank WSLRA (Azimuth, 2006) considered four groups of ROCs: ungulates, small mammals, waterfowl and songbirds. These choices were determined from the project's initial FEIS (Cumberland, 2005), which included discussions with stakeholders, public meetings, traditional knowledge and experience from other mines. Specifically, the WSLRA focussed on caribou, Canada goose, Lapland longspur and northern red-backed vole as representative species. An ecological description of the area and detailed descriptions of the biology of each of these receptors can be found in Azimuth (2006). This updated assessment framework also includes an assessment of risks to all original receptors, plus shorebirds (as represented by semi-palmated sandpiper) from contaminants within the TSF, based on a commitment made during the Whale Tail Mine project Final Hearing, following discussions with Environment and Climate Change Canada (ECCC) (Technical Meeting Commitment 45, as described in Golder, 2019b.

2.1.2 Protection Goals and Endpoints

Since the ROCs identified are not rare or endangered species, protection at the population level was determined to be appropriate (Azimuth, 2006). The assessment endpoint is no adverse effect of COPCs on populations of caribou, Canada goose, Lapland longspur, northern red-backed vole, and semi-palmated sandpiper.

As a result, ecotoxicological benchmarks used in the risk characterization will be lowest observable adverse effect levels (LOAELs), which are generally considered to be appropriate for determining risk at the population level (Azimuth, 2006). Toxicity reference value (TRV) selection is further described in Section 2.3.

2.1.3 Exposure Pathways

The following exposure pathways will be investigated, as shown in Figure 3. The term "tundra pathways" is used throughout to refer to evaluations conducted for samples collected at onsite, near-site, AWAR, Whale Tail Mine and WTHR locations (Figures 1 and 2), as opposed to the "TSF pathway" which assesses exposure to contaminants directly from the TSF.

Small mammals (Northern Red-Backed Vole):

- TSF pathway: ingestion of tailings water
- Tundra pathways: ingestion of insects, plants, water; incidental ingestion of soil

Ungulates (Caribou):

- TSF pathway: ingestion of tailings water
- Tundra pathways: ingestion of plants, water; incidental ingestion of soil

Songbirds (Lapland Longspur):

- TSF pathway: ingestion of tailings water
- Tundra pathways: ingestion of insects, plants, water; incidental ingestion of soil

Waterfowl (Canada Goose):

- TSF pathway: ingestion of tailings water
- Tundra pathways: ingestion of insects, plants, water; incidental ingestion of soil

Shorebirds (Semi-Palmated Sandpiper):

- TSF pathway: ingestion of tailings water and tailings benthic invertebrates; incidental ingestion of tailings sediment
- Tundra pathways: not evaluated[1]

Inhalation and dermal absorption of metals are generally considered to be insignificant in comparison to exposures through ingestion (USEPA, 2005), so they are not considered in the Meadowbank WSLRA.

2.1.4 Contaminants of Potential Concern (COPCs)

Potential sources of contaminants are indicated in Section 1.5. In the baseline WSLRA, Azimuth (2006) identified COPCs for risk characterization based on the chemical composition of the identified dust sources, the predicted effects of effluent on water quality in Third Portage Lake, and a review of metals regulated under MDMER (see Azimuth, 2006, Section 2.5 for details). Projected concentrations of metals in four dust sources (roads, waste rock and tailings) that exceeded the 90th centile of baseline soil concentrations or CCME Soil Quality Guidelines for the Protection of Environmental and Human Health were included as COPCs for the Meadowbank Mine evaluation. For water, manganese and cadmium were included because they were predicted to exceed CCME Water Quality Guidelines for the Protection of Aquatic Life (cadmium) or aesthetic drinking water objectives (manganese). Although not predicted to exceed guidelines, five metals regulated under MDMER (arsenic, copper, lead, nickel and zinc) and mercury were included in the assessment because they were found to be of concern to the general public in the Arctic.

For the Whale Tail Mine assessments (Golder, 2016 & 2019a), wildlife COPCs were identified by screening predicted concentrations in primary residency media (soil and water; tailings sediment and water) against established guideline values (primarily CCME sources), or maximum measured baseline concentrations +10% (where baseline was greater than the guideline value).

For Meadowbank WSLRAs completed in 2011, 2014 and 2017, quantitative risk characterization (hazard quotient calculation) was performed for all COPCs identified historically in Azimuth (2006). However, beginning in 2021, measured concentrations in primary residency media (soil and lake water; and TSF sediment and water - Figure 3) collected through the WSLRA field program at sites around the Meadowbank Complex (Section 2.2.2) have been initially screened against established regulatory guideline values (described below) and/or maximum measured background values + 10%, as in Golder (2019a,b) to identify COPCs.

Parameters selected for screening will include all metals with CCME Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME, 2022a) or CCME Canadian Water Quality Guidelines for the Protection of Agriculture (livestock watering - CCME, 2022b), plus COPCs identified

[1] Based on discussions with ECCC during the permitting process for the Whale Tail Mine Expansion Project, assessment of risk to shorebirds was required to be added for the TSF pathway only (as in Golder, 2019b).

in previous Meadowbank WSLRAs (manganese and strontium were identified as COPCs in Azimuth (2006) because predicted concentrations in mine rock dust sources exceeded baseline soil concentrations; cyanide was identified as a COPC for the TSF pathway in Golder (2019b)). Certain chemicals which are controlled through best management practices and which were not addressed in the baseline SLRA include petroleum hydrocarbons, dioxins, nitrates, ammonia and PAHs. For each source of these chemicals, best management practices are in place and environmental exposures are not expected to occur.

The corresponding primary soil and water quality guidelines selected for this screening at this time are the same as those used in the Whale Tail Mine Expansion Project HHERA (Golder, 2019a,b):

Soil/Sediment[2]:

- Canadian Council of Ministers of the Environment Soil Quality Guidelines for the Protection of Environmental and Human Health (SQG_E – Residential Land Use) (CCME, 2022a)

Water:

- Livestock Watering Guidelines from the CCME Water Quality Guidelines for the Protection of Agriculture (CCME, 2022b)
- Livestock Watering Guidelines from the British Columbia Ministry of Environment (BC MOE, 2021)

Where guideline values are unavailable from these sources for the screening parameters, alternate appropriate sources will be referenced (e.g. CCME, 2022c; BC CSR, 2021a). Screening guidelines will be updated as new reference values become available, with changes described in each SLRA report.

Any parameters with measured concentrations exceeding screening values are retained as COPCs for quantitative risk characterization. This approach is consistent with the recent ecological risk assessments for the Whale Tail Mine (Golder, 2016 & 2019a,b).

2.2 EXPOSURE ASSESSMENT

Exposure assessment is used to calculate the dose of each identified COPC received by each ROC for each complete exposure pathway. The exposure assessment uses the food chain model developed by Azimuth (2006) with updates as in Golder (2019b), as described below. The model was developed to calculate daily exposure to contaminants in the various study locations based on COPC concentrations in exposure media, dietary preferences, ingestion rates and dose-adjustment factors.

Estimated daily intake of each COPC is calculated separately for each study location as:

[2] In the absence of sediment guidelines that are protective of semi-aquatic birds and mammals, guidelines for soil that are protective of wildlife are used for comparison purposes.

$$EDI = \sum_{w,s,f} (I_{w,s,f} \times C_{w,s,f}) \times BF \times T$$

Where:

EDI = estimated daily intake (mg/kg body weight·d)

$I_{w,s,f}$ = intake of water, soil/sediment and food items (L/kg ww·d; kg dw/kg ww·d; kg dw/kg ww·d)

$C_{w,s,f}$ = concentration of COPC in water, soil/sediment and food items (L/kg ww·d; kg dw/kg ww·d; kg dw/kg ww·d)

BF = biotransfer factor (absorption factor) – assumed to be 100%

T = proportion of time in area (%)

Each component is described below.

2.2.1 $I_{w,s,f}$ - Intake of Water, Soil/Sediment, and Food

Water, food and soil/sediment ingestion rates used in the assessments are shown in Table 1. All intake parameters are considered to be conservative. Water and food ingestion rates were derived from species profiles or allometric equations in USEPA (1993), as described in Table 1. Soil ingestion rates for Canada goose and northern red-backed vole are also from USEPA (1993). Sediment ingestion rates for semi-palmated sandpiper are from Beyer et al. (1994). Although Beyer et al. (1994) was referenced as the source of most soil ingestion rates in the Meadowbank baseline assessment, the species chosen to represent Caribou and Lapland Longspur were not indicated. The soil consumption rate for Caribou was therefore increased in subsequent Meadowbank assessments from 2% of dry food consumption to 5%, which is the general rate for mammals in Beyer et al. (1994), as used in (Senes, 2008). Similarly, the soil ingestion rate for Lapland longspur was increased from 2% in the baseline assessment to 7%, based on Hansen et al. (2011). This study identified a rate of 0.7% for Swainson's thrush, a ground-dwelling songbird that primarily feeds on flying insects and berries. A 10x safety factor was applied because Swainson's thrush is a foliage-gleaner, while Lapland longspur is considered a ground-forager (Cornell University, 2011). This factor is considered to be conservative however, because Lapland longspur does not scratch the ground to uncover food items as other ground foragers do (Harrison, 1967).

Table 1. Body weight (BW), water intake (I_{water}), soil intake (I_{soil}), and wet and dry (I_{food}; FI) food intake for the identified ROCs.

Parameter	Units	Value	Reference	Notes
Northern Red-backed Vole				
BW	kg wet	0.02	Nagorsen (2005)	Smallest body weight used
I_{water}	L/kg wet/day	0.253	USEPA (1993)	Species profile data for the Prairie Vole
I_{soil}	kg dry/kg wet/day	0.0012	USEPA (1993)	Assumed 2.4% of dry food ingestion rate (similar to Meadow Vole)
I_{food}	kg wet/kg wet/day	0.135	USEPA (1993)	Species profile data for the Prairie Vole
FI	kg dry/kg wet/day	0.049	Not available	Moisture in food assumed to be 64%

Parameter	Units	Value	Reference	Notes
				as per diet moisture calculation
Caribou				
BW	kg wet	75	Dauphine (1976)	Smallest body weight used
I_{water}	L/kg wet/day	0.064	USEPA (1993)	Based on allometric equation for all mammals (L/day) ($0.099*(BW)^{0.90}$)
I_{soil}	kg dry/kg wet/day	0.0013	Beyer et al. (1994)	Assumed 5% of dry food ingestion rate (general rate for mammals)
I_{food}	kg wet/kg wet/day	0.047	Not available	Moisture in food assumed to be 43% as per diet moisture calculation
FI	kg dry/kg wet/day	0.027	USEPA (1993)	Based on total dry food intake for herbivorous mammals (g/day) ($0.577*(BW)^{0.727}$)
Lapland Longspur				
BW	kg wet	0.023	Cornell University (2011)	Smallest body weight used
I_{water}	L/kg wet/day	0.205	USEPA (1993)	Based on allometric equation for all birds (L/day) ($0.059*(BW)^{0.67}$)
I_{soil}	kg dry/kg wet/day	0.0174	Hansen et al. (2011)	Assumed 7% of dry food ingestion rate (rate of Swainson's thrush +10x safety factor)
I_{food}	kg wet/kg wet/day	0.654	USEPA (1993)	Moisture in food of insectivorous birds; assumed 62% as per diet moisture calculation
FI	kg dry/kg wet/day	0.249	USEPA (1993)	Based on total dry food intake for passerine birds (g/day) ($0.398*(BW)^{0.850}$)
Canada Goose				
BW	kg wet	2.000	Mowbray et al. (2002)	Smallest body weight used
I_{water}	L/kg wet/day	0.044	USEPA (1993)	Species profile data for Canada Goose
I_{soil}	kg dry/kg wet/day	0.0009	USEPA (1993)	Assumed 8.2% of dry food ingestion rate
I_{food}	kg wet/kg wet/day	0.032	USEPA (1993)	Species profile data for Canada Goose
FI	kg dry/kg wet/day	0.011	Not available	Moisture in food assumed to be 66% as per diet moisture calculation
Semi-Palmated Sandpiper				
BW	kg wet	0.0235	ECCC (2019)	Site specific body weight provided from ECCC in teleconference July 10, 2019
I_{water}	L/kg wet/day	0.188	USEPA (1993)	Allometric scaling for birds (L/day) = $0.059\ Wt^{0.67}$ (kg)
$I_{sediment}$	kg dry/kg wet/day	0.059	Beyer et al. (1994)	30% of dry food ingestion rate
I_{food}	kg wet/kg wet/day	1.0	USEPA (1993)	Allometric scaling for birds (g (dw)/day) = $0.648\ Wt^{0.651}$ (g); assumed moisture content of 80% per Senes (2008)

Parameter	Units	Value	Reference	Notes
FI	kg dry/kg wet/day	0.197	USEPA (1993)	Allometric scaling for birds (g (dw)/day) = 0.648 $Wt^{0.651}$ (g); assumed moisture content of 80% per Senes (2008)

2.2.2 $C_{w,s,f}$ - Dietary Concentrations of COPCs

Dietary concentrations of COPCs in drinking water, soil/sediment, and food items are calculated as:

Cs = [soil]; (measured directly)

Cw = [drinking water]; (measured directly)

$C_{food\ items} = \sum_{food\ items}$ ([food item] x DP(%)); (measured or modeled – Section 2.2.2.1)

Where:

DP = dietary preference (% of food item in diet of the ROC – Section 2.2.2.2)

Each component is described below.

2.2.2.1 Concentrations in Ingested Media ([soil], [drinking water], [food items])

For tundra exposure pathways, concentrations of COPCs in lake water, soil, and plant tissue (food items: sedges, lichens, berries) are measured directly in samples collected at specified locations around the Meadowbank Complex in assessment years (Figures 1 & 2). Historically (through 2017), five samples of each media type were collected from each location. Beginning in 2021, three of the five stations will be randomly selected and sampled in any monitoring year. This slightly reduced sampling effort is warranted since to date, no unacceptable mine-related risk has been identified (2011, 2014, 2017, 2021 WSLRA assessments), and recent risk assessments for the Whale Tail site (Golder, 2016; Golder, 2019a; Golder, 2019b) have not identified any anticipated unacceptable risk.

Lake water samples from the Core Receiving Environment Monitoring Program (CREMP) will be used in the WSLRA analyses for drinking water in tundra pathways (assessment lakes and 2021 sites shown in Figure 1 – specific sites within each lake change annually). Onsite (Meadowbank Mine) concentrations will be from samples collected in Second Portage Lake (SPL) and the east and north basins of Third Portage Lake (TPE, TPN). AWAR concentrations will be from samples collected in TPN. Near-site concentrations will be from samples collected in Tehek Lake (TE). Whale Tail Mine concentrations will be from samples collected in Whale Tail Lake South and Kangislulik (formerly Mammoth) Lake. Whale Tail Haul Road concentrations will be from samples collected in Pipedream Lake (PDL). External reference samples are from Inuggugayualik Lake (INUG) and PDL. Exact coordinates are subject to slight changes each year – see CREMP Plan for details.

For the TSF exposure pathway, water quality samples (ponded North and South Cell Tailings water) are collected monthly during the open water season (typically June – October) under regular mine-site monitoring programs. Results for the WSLRA monitoring year will be used in the assessment. Historically (2021 WSLRA Report and Golder (2019b)), exposure to contaminants in tailings sediment were assessed using monthly analysis results for direct mill effluent. Moving forward, tailings beach sediment will be preferentially sampled in the WSLRA monitoring year, as it is more representative of exposure media.

For the identified COPCs in tundra pathways (see Section 2.1.4), the upper 95% confidence limit of the mean (UCLM) concentrations in soil and plant tissue for each assessment location will be used for food chain modeling. If measured values are below the laboratory detection limit, a value of one half the detection limit will be used in calculations. Based on published literature, methyl mercury is assumed to comprise 1% of total mercury in water and soil, and 34% of total mercury in plant tissue, and inorganic mercury = total – methyl mercury (Azimuth, 2006).

For the TSF pathway, maximum measured values in tailings sediment and ponded TSF water were initially planned to be used in EDI calculations, as in Golder (2019b). This approach is more conservative than the UCLM method and was adopted because of the relatively low sample size for these media (generally one sample per month). However, since exposure concentrations for sediment are now measured in a suite of tailings beach sediment locations (10+) during the in-migration period in each WSLRA monitoring year, rather than a single monthly sample of mill effluent, a measure of central tendency (e.g. mean measured concentrations, or UCLM) will be used in EDI calculations for the TSF pathway, as for the tundra pathway.

Concentrations of COPCs in terrestrial insects consumed by certain ROCs (Section 2.2.2.2) are not measured, but are modeled from soil concentrations using published bioaccumulation models for arsenic, cadmium, copper, lead, and zinc (Sample and Arenal, 2001; as described in Azimuth, 2006):

$$\ln[\text{insect}] = B0 + B1(\ln[\text{soil}]); \text{ concentrations are expressed in mg/kg dry weight}$$

This method is particularly conservative, because the modeled factors are for ground insects whereas the songbird population in this assessment consumes primarily flying insects. A bioaccumulation factor (BAF) of 1 is assumed for all remaining COPCs, which is also considered to be very conservative.

For benthic invertebrates that are potentially ingested by semi-palmated sandpiper in the TSF pathway, BSAFs from the literature will be used to estimate whole-body tissue concentrations based on measured sediment concentrations as:

$$[\text{benthic invertebrate; mg/kg ww}] = \text{BSAF} \times [\text{sediment; mg/kg dw}]$$

BSAFs identified to date from literature review are shown in Table 2, with updates to prioritize empirically-derived values. Specifically, BSAFs were obtained from the following sources, in order of preference:

1. Bechtel-Jacobs (1998) – BSAFs available for As, Cd, Cr, Cu, Pb, Hg, Ni, Zn
   - As recommended in Bechtel-Jacobs (1998) for screening-level assessment (conservative BSAFs), the selected values represent the 90th centile of the BSAF datasets developed by the authors for each contaminant from literature review. These primary study datasets include only freshwater invertebrates, and only results from studies using extraction methods standard in environmental assessment. Many studies included are from Canadian locations.
2. Jacques Whitford (2009) – BSAFs for Sb, Ba, Be, Co, Se, V
   - BSAFs for these parameters were derived from four primary sources (Haus et al. 2007, Hamilton et al. 2002, Garn et al. 2001, and Welsh and Maughan, 1993), as described in Jacques Whitford (2009): "*The BSAFs … were calculated as the arithmetic mean of literature acquired values when the range did not exceed one order of magnitude and as the geometric mean if the BSAF values acquired varied by more than one order of magnitude.*"
3. USEPA (1999) – Th, CN

- For both of these parameters, no empirically-derived BSAFs were identified in the literature, but USEPA (1999) recommends a value representing the average for all metals with empirical datasets (0.9).

For all other COPCs, a BSAF of 1 is assumed, as in previous assessments.

Table 2. Biota-sediment accumulation factors (BSAFs) used for estimating whole-body concentrations of COPCs in benthic invertebrates (mg/kg wet tissue per mg/kg dry sediment). Note: a moisture content of 80% was assumed in dry to wet weight conversions from literature values, where needed (Senes, 2008).

Parameter	BSAF	Reference
Antimony	0.0113	Jacques Whitford, 2009
Arsenic	0.14	Bechtel-Jacobs, 1998
Barium	0.137	Jacques Whitford, 2009
Beryllium	0.132	Jacques Whitford, 2009
Cadmium	1.60	Bechtel-Jacobs, 1998
Chromium	0.09	Bechtel-Jacobs, 1998
Cobalt	0.002	Jacques Whitford, 2009
Copper	1.05	Bechtel-Jacobs, 1998
Lead	0.121	Bechtel-Jacobs, 1998
Manganese	1	N/A
Mercury	0.574	Bechtel-Jacobs, 1998
Molybdenum	1	N/A
Nickel	0.46	Bechtel-Jacobs, 1998
Selenium	0.626	Jacques Whitford, 2009
Strontium	1	N/A
Thallium	0.9	USEPA, 1999
Tin	1	N/A
Uranium	1	N/A
Vanadium	0.015	Jacques Whitford, 2009
Zinc	1.505	Bechtel-Jacobs, 1998
Cyanide	0.9	USEPA, 1999

2.2.2.2 Dietary Preferences (DP)

For tundra pathways, the proportions of food items (sedge, lichen, berries, insects, benthic invertebrates – Table 3) contributing to the diet of each receptor for each assessment location were determined using literature reviews in Azimuth (2006). Sedges, lichens and berries are considered surrogates for all plant matter ingested by the ROCs.

For the TSF pathway, as in Golder (2019b), semi-palmated sandpiper is assumed to consume drinking water and benthic invertebrates from the TSF. All other receptors are assumed to consume water only.

Table 3. Proportion of dietary items obtained from the WSLRA assessment locations for the receptors of concern.

Dietary Item	Northern Red-Backed Vole	Caribou	Lapland Longspur	Canada Goose	Semi-Palmated Sandpiper
Tundra Pathways					
Sedges	55%	30%	25%	50%	-
Lichens	0%	65%	0%	0%	-
Berries	40%	5%	5%	45%	-
Insects	5%	0%	70%	5%	-
Total Food	100%	100%	100%	100%	-
Drinking Water	100%	100%	100%	100%	-
TSF Pathway					
Benthic Invertebrates	-	-	-	-	100%
Drinking Water	100%	100%	100%	100%	100%

2.2.3 Biotransfer Factor

The uptake efficiency factor (biotransfer or absorption factor) describes the proportion of the COPC that is absorbed into the animal from any ingested sources. Uptake efficiency was conservatively assumed to be 100% for all COPC/receptor combinations and/or accounted for in TRV determination.

2.2.4 Time in Area

Territory size (foraging range) affects the proportion of an animal's diet that could be affected by mine-related contaminants. In the baseline assessment for Meadowbank (Azimuth, 2006), an adjustment factor for foraging range was not applied (animals were assumed to spend 100% of time in the study area). For subsequent assessments, the only ROC assumed to spend 100% of its time in the study area is the northern red-backed vole, because of its small territory size. Canada geese, and Lapland longspur are migratory species, and the fraction of time spent in the study area for those species is estimated at 33%, based on the 2008 Screening Level Environmental Effects Assessment for the Kiggavik Project (Senes, 2008).

The time caribou spend in the study area (12%) was determined through an examination of collared caribou from the Meadowbank region, which found that any one animal spent no more than a maximum of 12% of the year within 25 km of the minesite (Martin Gebauer and Jason Shaw, personal communication, March 2012). This is similar to the estimate of 10% used in the 2004 assessment of the Lupin minesite (Golder, 2004).

For the TSF, time-in-area factors from Golder (2019b) were used. While semi-palmated sandpiper are migratory and estimated to spend 33% of the year in the minesite area (Senes, 2008), they are expected to spend a smaller proportion of this time interacting with the TSF, since best management practices are in place to actively discourage wildlife from this area. During breeding season, inspections are performed, and birds are deterred from the open-water areas of the TSF through the use of personnel presence, decoys, noise cannons, and flares as necessary. While bird presence around the TSF could occur for up to 2 weeks in the very early spring, prior to ice-off on natural lakes, very few birds are observed in this area after that time. Therefore, the proportion of time that semi-palmated sandpiper

are potentially exposed to COPCs in the TSF is conservatively over-estimated at 8% (i.e. 4 weeks per year). The same factor was applied for all other receptors except vole, based on the ice-free season and that voles are not actively deterred from the TSF as the other receptor types are.

Risk will be characterized for small-territory ROCs (northern red-backed vole, Canada goose and Lapland longspur) for Meadowbank minesite (onsite), near-site, AWAR, TSF, Whale Tail Pit, Whale Tail Haul Road, and external reference locations separately, in order to determine whether those animals choosing territories at any mine-related location are at increased risk compared to those choosing territories at nearby reference locations. Exposure data for main minesite and near-site locations will be combined for caribou because they can readily roam between the onsite and near-site locations in the course of a day.

Time-in-area adjustment factors are summarized in Table 4.

Table 4. Time-in-area assumption for each study area and ROC.

Study Area	Northern Red-Backed Vole	Caribou	Lapland Longspur	Canada Goose	Semi-Palmated Sandpiper
Onsite	100%	12%	33%	33%	-
Near-site	100%		33%	33%	-
AWAR	100%	12%	33%	33%	-
Whale Tail Pit Area	100%	12%	33%	33%	-
Whale Tail Haul Road	100%	12%	33%	33%	-
External Reference	100%	12%	33%	33%	-
TSF	25%	8%	8%	8%	8%

2.3 TOXICITY ASSESSMENT

Toxicity reference values (TRVs) used to date in the Meadowbank assessments are provided in Appendix A. These were collated in Azimuth (2006) unless otherwise indicated, from a review of the literature; mainly from Sample et al. (1996). This still represents one of the most comprehensive and commonly used sources available for wildlife toxicity reference values and has been used in other similar assessments for this region (e.g. Senes, 2008). In order to ensure the selected TRVs were relevant to the Meadowbank site and the conditions of that risk assessment, several criteria were used in the baseline assessment in screening toxicity studies. These included selecting values from studies conducted on species of similar phylogeny (i.e. bird or mammal), and selecting studies that examined individual or population-level effects over chronic time periods. The following describes TRV selection, as performed by Azimuth (2006):

> The TRVs chosen for use in the risk characterization include both no observable adverse effect levels (NOAELs) and lowest observable adverse effect levels (LOAELs) when available. If effects concentrations were reported in terms of food concentrations, these were converted to dose. If a LOAEL was reported but no NOAEL could be determined, it was estimated as 1% of the LOAEL (as in Sample et al. 1996, Chapman et al. 1998). LOAELs cannot be estimated if only a NOAEL is available. Since the protection goal of

this risk assessment no adverse effect of COPCs on populations of the ROCs, LOAELs are the most relevant TRV, and are used in the final risk estimate.

Where toxicity information was found for multiple forms of a contaminant, the one with the greatest toxic potency was chosen. TRVs for chromium-VI were available for mammals, but only chromium-III was available for birds. No NOAELs or LOAELs were available for total mercury. Mammalian LOAELs were not available for inorganic mercury or beryllium. Avian LOAELs were not available for uranium or vanadium. Avian NOAELs were not available for antimony and beryllium and were extrapolated from the mammalian values. The avian LOAEL for antimony was extrapolated from the mammalian value.

While previous versions of this plan and WSLRAs in 2011 – 2017 included allometric scaling to adjust mammalian TRVs from test species to ROCs, those were removed beginning in Version 5, as recommended in Allard et al. (2010), and to align with Golder (2019a,b) methods.

The TRV for cyanide used for the TSF pathway was obtained from Ma and Pritsos (1997), as applied for another Northern shorebird, the common snipe, in Golder (2004).

TRVs presented here will be reviewed and updated as necessary in future assessments.

2.4 RISK CHARACTERIZATION

Risk characterization compares predicted exposure concentrations with the toxicity reference values from the literature, using the hazard quotient approach. Hazard quotients for all study areas (main Meadowbank minesite (onsite), near-site, AWAR, Whale Tail Pit, Whale Tail Haul Road, TSF, and external reference) will be calculated as:

$$HQ = EDI / TRV$$

Where:

EDI = estimated daily intake (mg/kg body weight·d)

TRV = toxicity reference value (mg/kg body weight·d)

Because of the conservative assumptions included at this level of assessment, there is generally considered to be a high degree of certainty associated with results indicating negligible risk. A hazard quotient > 1 indicates the possible need for more in-depth assessment, including analysis of assumptions used. However, when HQ values exceed 1 for both the external reference (or baseline) and study areas, and are of similar magnitude, it may be assumed that the receptor is adapted to the measured exposure level, or that the assumptions used in calculating the HQ have resulted in an over-estimation of risk (Dominion Diamond, 2015).

HQ values and a characterization of risk for each ROC will be provided in the assessment report.

2.5 UNCERTAINTY ASSESSMENT

The assumptions included in each section of the assessment will be discussed, along with implications for over- or under-estimating risk.

3 HUMAN HEALTH – COUNTRY FOODS ASSESSMENT

3.1 PROBLEM FORMULATION

The $HHRA_{country\ foods}$ assessment will re-evaluate risk to human receptors for country foods exposure pathways identified in the pre-construction HHRA (Wilson, 2006) and follow-up assessments (HHRAs conducted in 2011, 2014, 2017, and 2021), making use of environmental samples collected through the Wildlife Assessment (Section 2.2.2). The conceptual model for country foods consumption is shown in Figure 4.

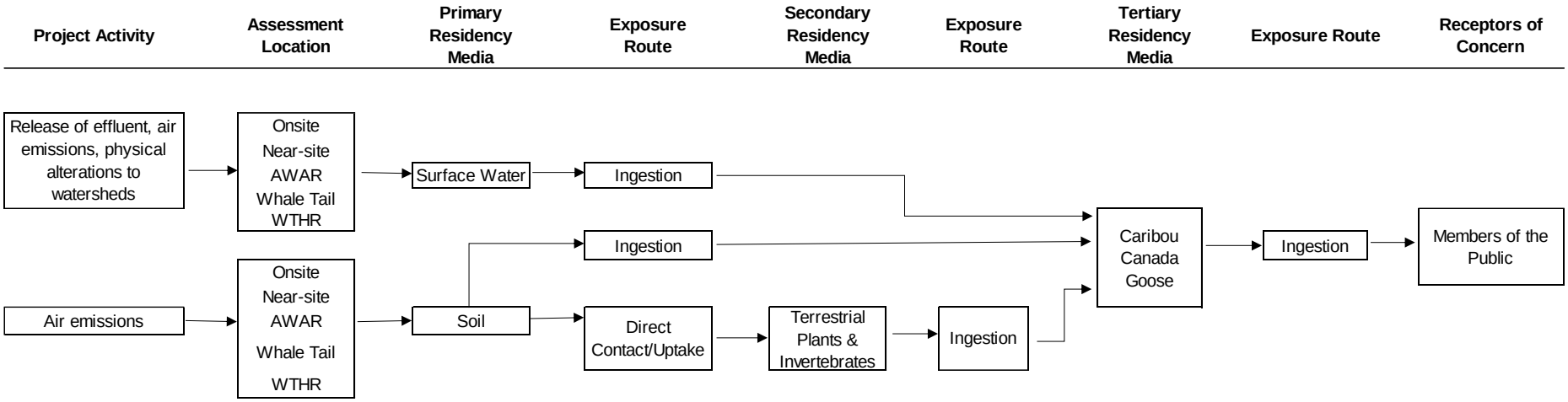

Figure 4. Human health (country foods) risk assessment conceptual model.

3.1.1 Exposure Pathways

From reviews of oral testimony collected in 2005 (Traditional Knowledge Report as part of the Meadowbank FEIS - Cumberland, 2005), Wilson (2006) found caribou meat, kidney and liver, Canada goose meat and lake trout to be the food items most representative of local country foods consumption patterns. Lake trout was included in the baseline assessment because they represent the majority of fish in the project lakes. However, since a no-fishing policy was put in place for workers and fish from project lakes are non-migratory, consumption rates of fish impacted by the mine site were expected to be negligible. Analyses of risk from fish consumption were therefore excluded from subsequent Meadowbank risk assessments[3]. Although it was determined that local residents may consume wild berries, it was found to be unlikely that they would be harvested from the mine site area due to distance, the fact that public access is prohibited past km 85 on the AWAR, and abundance of this food source closer to Baker Lake. Consumption of berries was therefore not evaluated in the baseline assessment or subsequent updates. Following HC recommendations received via the NIRB process (June 8, 2023), Agnico Eagle continues to evaluate the potential addition of berry consumption to the HHRA pathway. Berries are currently collected as part of the WSLRA/HHRA field program, which will next occur as scheduled in 2024. Finally, although risk analyses for consumption of Canada goose are maintained in this Plan, it is noted that only 7% of the population of Baker Lake was found to consume this item, at a frequency of less than 1 day per month (Areva, 2011).

The following food items are therefore included in the $HHRA_{country\ foods}$ evaluation:

- Caribou meat (muscle)
- Caribou kidney
- Caribou liver
- Canada goose meat (muscle)

Assessed exposure pathways for these country food items are identified in Figure 4.

3.1.2 Potential Receptors

For consistency with Wilson (2006), potential receptors are considered to be a young child or toddler (age 6 months – <5 yrs) and an adult consumer of country foods. These receptors are considered to be representative and protective of the general population.

3.1.3 Contaminants of Potential Concern

As described in Section 2.1.4, pre-construction wildlife risk assessments for the Meadowbank Mine identified COPCs according to predicted concentrations in dust sources, effluent, and a review of metals regulated under MDMER (see Azimuth 2006, Section 2.5 for details). These parameters were also

[3] As required under NIRB Project Certificate No. 008 Condition 63, Agnico evaluates concentrations of mercury in fish tissue at the Whale Tail Mine under the Mercury Monitoring Plan. Results are provided in the Meadowbank Complex Annual Report to the NIRB. A summary of this program and results will be provided in the HHRA report.

assessed as COPCs in the pre-construction $HHRA_{country\ foods}$ (Wilson, 2006), and subsequent 2011, 2014, and 2017 assessments under operational conditions.

For the Whale Tail Mine HHERAs (Golder, 2016 & 2019a), COPCs were identified by screening predicted concentrations in primary residency media (soil and water) against established regulatory guideline values that are protective of human health, or maximum measured baseline values +10% (where baseline was greater than the guideline value).

Beginning in the 2021 assessment, human health COPCs have been identified for risk characterization using the screening approach described in Golder (2019a), which is consistent with the wildlife assessment approach (Section 2.1.4). Measured concentrations in primary residency media (e.g. soil and lake water; Figure 4) collected through the WSLRA field program at sites around the Meadowbank Complex (Section 2.2.2) will be initially screened against established regulatory guideline values (described below) and/or maximum measured background values, to identify COPCs.

Parameters selected for screening will include all metals with CCME Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME, 2022a) or Health Canada Canadian Water Quality Guidelines for Drinking Water (Health Canada, 2020), plus any COPCs identified in previous assessments (manganese and strontium were identified as COPCs in 2006 because concentrations in onsite dust sources were predicted to exceed baseline soil concentrations).

The corresponding primary soil and water quality guidelines selected for this screening are the same as those used in the Whale Tail Mine Expansion Project HHERA (Golder, 2019a):

Soil:

- Canadian Council of Ministers of the Environment Soil Quality Guidelines for the Protection of Environmental and Human Health (SQG_H – Residential Land Use) (CCME, 2022a)

Water:

- Health Canada Canadian Water Quality Guidelines for Drinking Water (Health Canada, 2020)

Where guideline values are unavailable from these sources for the screening parameters, alternate appropriate sources will be referenced (e.g. BC CSR, 2021a,b).

Any parameters with measured concentrations exceeding screening values will be retained as COPCs for quantitative risk characterization.

3.2 EXPOSURE ASSESSMENT

Exposure assessment is used to calculate the dose of each COPC received by country foods consumers. For consistency, the exposure assessment follows methods from Wilson (2006), with updates as described below, and is based on the food chain model for caribou and Canada goose developed by Azimuth (2006).

Daily exposure to COPCs from consumption of country foods is calculated based on Health Canada (2021a) as:

$$Dose = C_F \times IR_F \times RAF_{ORAL} / BW$$

Where:

Dose = estimated daily intake of COPC from consumption of food item; µg/kg bw·d

C_F = concentration of COPC in food items (caribou meat, kidney, liver, goose meat); mg/kg ww

IR_F = consumption rate of food item; g/day

RAF_{ORAL} = relative absorption factor (assumed to be 1)

BW = body weight of person; kg

Each component is described below.

3.2.1 C_F - COPC Concentrations in Country Food Items

To estimate risk from consumption of country foods, concentrations in each food item (caribou meat, caribou organs, Canada goose meat) are modelled from the soil, lake water, sedge, lichen, and berry samples collected as described in Section 2.2.2.

Estimated daily intake (EDI) by caribou and Canada goose is calculated as described in Section 2.2, except source concentrations used for $HHRA_{country\ foods}$ food chain modeling are maximum measured values for each location, as recommended by Health Canada (2021a), as opposed to the 95% UCLM values used in the baseline HHRA assessment and WSLRA. Depending on the available dataset, the UCLM or a measure of central tendency may be used, with justification (Health Canada, 2021a).

Modelled tissue concentrations for each food item are then calculated as follows:

3.2.1.1 Caribou Muscle

To estimate concentrations of COPCs in caribou muscle, EDIs for Caribou are multiplied by body weight and feed-to-muscle biotransfer factors from the literature.

Caribou muscle concentrations (C_M) are calculated as:

$$C_M = EDI_C \times W_C \times BTF$$

Where:

C_M = Concentration in muscle tissue (meat); mg/kg ww

EDI_C = estimated daily intake of COPC by caribou; mg/kg ww·d

W_C = caribou weight; kg (75 kg; Dauphine, 1976)

BTF = biotransfer factor (feed to muscle; beef); d/kg ww (Appendix A; or other appropriate referenced source)

3.2.1.2 Caribou Kidney and Liver

Concentrations of COPCs in caribou kidney and liver have historically been estimated from muscle concentrations using muscle-to-kidney and muscle-to-liver transfer factors for caribou provided by Gamberg (2012) (Appendix A). While these factors were unpublished, they are from a large scale and long-term study that is part of the Northern Contaminants Program. These values differ from the 2006 assessment, in which only kidney transfer factors calculated from mean concentrations were available (mainly for moose), and these were assumed to be representative of both organs in caribou. Factors will be reviewed and sources updated as available at the time of the next assessment.

Kidney concentrations (C_K) and liver concentrations (C_L) were calculated as:

$$C_K \text{ or } C_L = C_M \times BTF$$

Where:

C_K = concentration of COPC in caribou kidney; mg/kg ww

C_L = concentration of COPC in caribou liver; mg/kg ww

C_M = concentration of COPC in caribou muscle; mg/kg ww

BTF = transfer factor (muscle to organ; caribou) (Gamberg, 2012, as in Appendix A; or other appropriate referenced source)

3.2.1.3 Canada Goose Muscle

To estimate concentrations in Canada goose muscle, estimated daily intake rates were multiplied by Goose weight and feed-to-muscle biotransfer factors from the literature.

Goose muscle concentrations (C_{GM}) were calculated as:

$$C_{GM} = EDI_G \times W_G \times BTF$$

Where:

C_G = concentration of COPC in goose muscle; mg/kg ww

EDI_G = estimated daily intake of COPC by goose; mg/kg ww·d

W_G = weight of goose; 2 kg (Mowbray et al. 2002)

BTF = biotransfer factor (feed to muscle; chicken); d/kg ww (Appendix A)

3.2.2 IR_F – Intake (Consumption) Rate of Food Items

Based on a review of oral testimony and professional judgement, Wilson (2006) considered three scenarios (heavy, moderate and low consumption) for each food item, which will be carried forward to subsequent assessments unless otherwise indicated:

Caribou Muscle

- heavy consumption: 2 meals per day, 365 days per year
- moderate consumption: 3 meals per week, 52 weeks per year
- low consumption: 1 meal per month, 12 months per year

Caribou Organs

- heavy consumption: 1 meal per week, 52 weeks per year
- moderate consumption: 2 meals per month, 12 months per year
- low consumption: 1 meal per month, 12 months per year

Waterfowl Muscle

- heavy consumption: 3 meals per week, 52 weeks per year
- moderate consumption: 1 meal per week, 52 weeks per year
- low consumption: 1 meal per month, 12 months per year

Using a serving size of 200 g/serving for adults and 86 g/serving for toddlers (Richardson, 1997), Wilson (2006) estimated average daily consumption values. Since the derivation of consumption rates used in Wilson (2006) could not be traced to quantitative survey data, a review of the literature was performed in 2014 to verify that values were consistent with those available from published sources. This review indicated that some consumption rates for caribou meat may have been underestimated, while consumption rates for caribou organs and Canada goose may have been overestimated compared to values identified in local or regional surveys. As a result, consumption rates were updated to reflect data from these published sources, as described in Table 5. Scenarios of heavy, moderate and low consumption were maintained to reflect variety in preferences for country foods and the range of consumption rates identified in the literature.

Table 5. Food items, consumption scenarios, and estimated consumption rates. Toddler values are 43% of adult values (Richardson, 1997) unless otherwise indicated. Values will be updated with appropriate references as available at the time of reporting.

Food Item	Consumption Scenario	Consumption Rate (g/d)		Reference/Rationale
		Toddler	Adult	
Caribou meat (muscle)	Heavy	189.2	440	Highest daily intake in Kivalliq survey, as shown in Senes (2008), Table C-1
	Moderate	89.4	208	Average daily consumption in Nunavut survey (IHS, 2012); similar to estimated adult consumption rate for wild game in Richardson (1997) of 270 g/d
	Low	15	65	Average consumption for men and maximum consumption for toddlers in Baker Lake survey using ^{137}Cs body burdens in 1989-90 (Tracy and Kramer, 2000)
Caribou organ (kidney, liver)	Heavy	1.2	2.9	Harvest survey estimate: In 2010, there were 5020 caribou harvested by Baker Lake hunters (Areva, 2011) and an adult population of 1779 (GNBS, 2014). At a kidney weight of 187 g (Crete and Nault, 1989), maximum consumption would be of 2.9 g/d if adults consume all kidneys. This value is consistent with a Yukon survey by Schuster et al. (2011) indicating 3.2 g/d consumption of kidney, and 2.5 g/d consumption of liver. Larter and Nagy (2000) indicate 2.1 g/d for kidney. Chan et al. (2012) indicate 2.7 g/d for all ungulate organs combined.
	Moderate	0.6	1.3	Proportion of "heavy" caribou organ consumption in Wilson (2006)
	Low	0.3	0.7	Proportion of "heavy" caribou organ consumption in Wilson (2006)
Canada goose meat (muscle)	Heavy	9.9	23	Average daily consumption in Nunavut survey (IHS, 2012); also 95th centile of consumption in Chan et al. (2012) for 2 northern Manitoba reserves
	Moderate	5.6	13	Average daily consumption in Chan et al. (2012); also value used in Senes (2008) for ptarmigan consumption in Baker Lake
	Low	0.8	1.8	Based on proportion of "heavy" in Wilson (2006)

3.2.3 BW – Receptor Body Weight

The following body weight values from Richardson (1997; as recommended in Health Canada, 2021a) are used in the $HHRA_{country\ foods}$ assessments, unless otherwise indicated:

Toddler:	16.5 kg
Adult:	70.7 kg

3.3 TOXICITY ASSESSMENT

Toxicity reference values (TRVs) used in all previous $HHRA_{country\ foods}$ assessments are presented in Appendix A. TRVs will be reviewed and updated as appropriate at the time of future assessments (e.g. Health Canada, 2021b).

TRVs for metals are expressed as Tolerable Daily Intakes (TDIs) for non-cancer endpoints, and cancer slope factors for cancer endpoints. Inorganic arsenic was the only COPC identified as a potential carcinogen through the oral ingestion route.

3.4 RISK CHARACTERIZATION

3.4.1 Non-Cancer Risks

The risk characterization stage compares predicted exposure concentrations with published tolerable daily intake (TDI) values from the literature. Non-cancer risks were classified using hazard quotients (HQs), which are calculated as:

$$HQ = Dose / TDI$$

Where:

Dose = estimated daily intake from country foods; µg/kg bw·d

TDI = toxicity reference value; µg/kg bw·d

HQ values and a characterization of risk for each receptor and consumption scenario will be provided in the assessment report.

Based on recommendations in Health Canada (2021a) for preliminary quantitative risk assessment, a hazard quotient ≤ 0.2 indicates negligible risk when exposure from one pathway (i.e. country foods) is considered. This is different from the baseline $HHRA_{country\ foods}$ assessment in which negligible risk was associated with an HQ ≤ 1.

Because of the conservative assumptions included at this level of assessment, there is generally considered to be a high degree of certainty associated with results indicating negligible risk. For HQs greater than 0.2, adverse health effects will not necessarily occur. Rather, the assumptions and uncertainties associated with the risk analysis should be studied, and the possibility for more detailed or probabilistic assessment may be considered.

The main goal of this assessment is to determine potential effects of the Project over and above background concentrations. Therefore, when HQs exceeded the threshold of 0.2, results will be

compared with external reference values or historical data in order to comment on the incremental effects of the Project on exposure to COPCs in country foods. Values are not directly compared to baseline HQs, because TDIs and some exposure parameters differ in certain cases, as described in the preceding sections.

It is noted that the magnitude of HQs is not necessarily proportional to risk, due to differences in underlying dose-response curves. While very large HQ values may indicate higher potential for risk, small differences in HQs cannot be considered to be significant (Ritter et al. 2002). The expectation of what represents a small difference will be explored individually for each food item/COPC where necessary, and expected significance of the incremental risk (difference in HQs) investigated through additional analysis of the underlying data where warranted.

3.4.2 Incremental Lifetime Cancer Risk

For carcinogenic substances (inorganic arsenic), risk is determined assuming lifetime exposure (no amortization) at adult consumption rates. Incremental lifetime cancer risk (ILCR), is calculated as:

$$ILCR = LADD \times SL$$

Where:

ILCR = incremental lifetime cancer risk

LADD = estimated lifetime average daily dose from country foods; µg/kg bw·d

SL = slope factor; $(\mu g/kg \cdot d)^{-1}$

ILCR values and a characterization of risk for each receptor and consumption scenario will be provided in the assessment report.

Based on recommendations in Health Canada (2021a), cancer risk is found to be “essentially negligible” (*de minimis*) when ILCR ≤ 1×10^{-5}.

3.5 UNCERTAINTY ASSESSMENT

The assumptions included in each section of the assessment will be discussed, along with implications for over- or under-estimating risk.

4 REPORTING AND ADAPTIVE MANAGEMENT

The WSLRA and $HHRA_{country\ foods}$ for the Meadowbank Complex will evaluate risks to wildlife and consumers of country foods from contaminant exposure in and around the mine site every three years during operation. Results will be reported to NIRB in the context of Agnico Eagle’s Annual Report for the Meadowbank Complex.

Because of the conservative assumptions included at this level of assessment, there is generally considered to be a high degree of certainty associated with results indicating negligible risk (i.e. HQ <1

for the wildlife assessment, or <0.2 for the $HHRA_{county\ foods}$). When hazard quotients exceed these targets and measured concentrations in environmental media differ substantially between mine-related and external reference sites for an individual COPC, incremental risk due to mine operation will be classified as potentially unacceptable and more detailed investigations will be initiated. This may include a desk-top review and refining of the assessment parameters, and/or additional sampling in the subsequent year to confirm results. In the case that results of refined assessments continue to indicate unacceptable risk, adaptive management may include such interventions as capping of dust sources, increased road watering, delineation of contaminated areas, and deterrence methods pending reclamation.

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Appendix A

Toxicity Reference Values, Bio-Transfer Factors, and Tolerable Daily Intake Values, as used in previous assessments.

(To be updated using current literature, as available, at the time of future assessments)

Table A-1: WSLRA Toxicity Reference Values (mg/kg d) (as updated in the 2021 assessment)

Parameter	Receptor	TRV Basis	Antimony[2,3,4]	Arsenic[1]	Barium[1]	Beryllium[1,2]	Cadmium[1]	Chromium[1,5]	Cobalt[7]	Copper[1]	Lead[1]	Manganese[1]	Total Hg	Inorg-Hg[1]
Mammals	Northern Red-backed Vole	NOAEL	98.0	0.126	5.1	0.66	1	3.3	0.2	11.7	8	88	na	1
		LOAEL	112.9	1.26	19.8	na	10	13.1	2	15.1	80	284	na	na
	Caribou	NOAEL	98.0	0.126	5.1	0.66	1	3.3	0.2	11.7	8	88	na	1
		LOAEL	112.9	1.26	19.8	na	10	13.1	2	15.1	80	284	na	na
Birds	Lapland Longspur	NOAEL	9.8	2.5	21	0.066	1.5	1	2.37	47	1.1	977	na	0.45
		LOAEL	11.3	7.4	42	na	20	5	4.74	62	11.3	na	na	0.9
	Canada Goose	NOAEL	9.8	2.5	21	0.066	1.5	1	2.37	47	1.1	977	na	0.45
		LOAEL	11.3	7.4	42	na	20	5	4.74	62	11.3	na	na	0.9
	Semi-palmated Sandpiper	NOAEL	9.8	2.5	21	0.066	1.5	1	2.37	47	1.1	977	na	0.45
		LOAEL	11.3	7.4	42	na	20	5	4.74	62	11.3	na	na	0.9

Parameter	Receptor	TRV Basis	MeHg[1]	Molybdenum[1]	Nickel[1]	Selenium[1]	Strontium[1,2]	Thallium[1,6]	Tin[1]	Uranium[1]	Vanadium[1]	Zinc[1]	CN[8]
Mammals	Northern Red-backed Vole	NOAEL	0.015	0.26	40	0.2	263	0.0074	23.4	3.1	0.2	160	68.7
		LOAEL	0.025	2.6	80	0.3	na	0.074	35	6.1	2.1	320	na
	Caribou	NOAEL	0.015	0.26	40	0.2	263	0.0074	23.4	3.1	0.2	160	68.7
		LOAEL	0.025	2.6	80	0.3	na	0.074	35	6.1	2.1	320	na
Birds	Lapland Longspur	NOAEL	0.0064	3.5	77.4	0.4	26.3	0.202	6.8	16	11.4	14.5	0.025
		LOAEL	0.064	35.3	107	0.8	na	0.757	16.9	na	na	131	na
	Canada Goose	NOAEL	0.0064	3.5	77.4	0.4	26.3	0.202	6.8	16	11.4	14.5	0.025
		LOAEL	0.064	35.3	107	0.8	na	0.757	16.9	na	na	131	na
	Semi-palmated Sandpiper	NOAEL	0.0064	3.5	77.4	0.4	26.3	0.202	6.8	16	11.4	14.5	0.025
		LOAEL	0.064	35.3	107	0.8	na	0.757	16.9	na	na	131	na

Notes:

No allometric scaling for mammals (or birds) per Golder, 2019b

underline corresponds to an unbounded LOAEL (10X safety factor used to derive the NOAEL) (see text for details)

na indicates that there was no TRV (NOAEL or LOAEL) available

[1] Sample et al. (1996)

[2] Bird TRVs calculated by multiplying the mammal TRVs with a safety factor of 0.1 (see text for discussion)

[3] NOAEL from Dieter et al. (1991) as quoted in Lynch et al. (1999)

[4] LOAEL from Rossi et al. (1987)

[5] Mammals TRV based on chromium VI; bird TRV based on chromium III

[6] Ueberschar et al. (1986)

[7] Chetty et al. (1979) for mammal NOAEL TRV, Szakmary et al. (2001) for mammal LOAEL TRV, Van Vleet (1982) for bird TRVs.

[8] Bird TRV from Ma and Pritsos (1997) in Golder (2004); uncertainty factor of 10 was applied to account for chronic exposure.

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Table A-2: $HHRA_{country\ foods}$ biotransfer factors used in 2011, 2014, and 2017 assessments.

COPC	Caribou				Canada Goose	
	Feed-to-Muscle		Muscle-to-Kidney[1]	Muscle-to-Liver[1]	Feed-to-Muscle	
	d/kg	Source[2]			d/kg	Source[3]
Antimony	0.0012	IAEA 2010	1.17	0.82	0.006	Staven et al. 2003
Arsenic	0.002	USEPA 2005	6.45	0.64	0.83	Staven et al. 2003
Barium	0.00014	IAEA 2010	40.9	2.66	0.019	IAEA 2010
Beryllium	0.001	USEPA 2005	2.33	0.87	0.4	Staven et al. 2003
Cadmium	0.0058	IAEA 2010	2049	287	1.75	IAEA 2010
Chromium	0.0055	USEPA 2005	0.52	0.78	0.8	Staven et al. 2003
Cobalt	0.00043	IAEA 2010	10.5	18.6	0.97	IAEA 2010
Copper	0.01	RAIS 2012	2.06	13.7	0.5	Staven et al. 2003
Lead	0.0007	IAEA 2010	33.2	250	0.8	IAEA 2010
Manganese	0.0005	IAEA 2010	0.85	0.68	0.05	IAEA 2010
Inorg-Hg	0.00609	NCRP 1989	105	15	0.03	IAEA 2010
MeHg	0.00078	USEPA 2005	105	15	0.03	Staven et al. 2003
Molybdenum	0.001	IAEA 2010	44.2	153	0.18	IAEA 2010
Nickel	0.006	USEPA 2005	1.68	1.21	0.001	Staven et al. 2003
Selenium	0.32	IAEA 2010	19.3	2.28	9.7	IAEA 2010
Strontium	0.008	IAEA 2010	5.27	1.28	0.08	Staven et al. 2003
Thallium	0.04	USEPA 2005	14.9	2.51	0.8	Staven et al. 2003
Tin	0.001	RAIS 2012	3.88	9.44	0.8	IAEA 2010
Uranium	0.00039	IAEA 2010	3.23	2.61	0.75	IAEA 2010
Vanadium	0.0025	RAIS 2012	4.33	5.85	2	Staven et al. 2003
Zinc	0.16	IAEA 2010	0.95	1.11	0.47	IAEA 2010

Notes:

1 - All muscle-to-organ factors were obtained from Gamberg (2012)

2 - For Caribou feed-to-muscle factors, all values are for beef, with the exception of selenium, which is for pig.

3 - All values for Canada Goose are for chicken

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Table A-3: $HHRA_{country\ foods}$ tolerable daily intake (TDI) values used in the baseline (2005) assessment and subsequent updates (2011, 2014, 2017).

COPC	TDI (µg/kg·day)			Source		
	2005	2011	2014 & 2017	2005	2011	2014 & 2017
Antimony	0.4	0.4	0.4	IRIS[1]		
Arsenic	2	0.3	0.3	HC 2002	IRIS[1]	
Barium	200	200	200	IRIS[1]		HC 2010
Beryllium	2	2	2	IRIS[1]		
Cadmium	1	0.8	1*	HC 2004		HC 2010
Chromium	5.4	1	1	HC 1996	HC 2004	HC 2010
Cobalt	1.4	1.4	1.4	RIVM 2001		
Copper	250	30	91[#]	HC 2002	HC 2004	HC 2010
Lead	3.6	3.6	0.1[+]	HC 2004		HC 2014
Manganese	140	-	136[#]	IRIS[1]		HC 2010
Inorg-Hg	0.71	0.3	0.3	HC 2002	HC 2004	HC 2010
MeHg	0.2	0.1	0.2^	HC 2002	IRIS[1]	HC 2010
Molybdenum	5	5	23000[#]	IRIS[1]		HC 2010
Nickel	17	17	20	IM 2001		IRIS[1]
Selenium	5	5	6200[#]	IRIS[1]		HC 2010
Strontium	600	-	600	IRIS[1]		
Thallium	0.07	0.07	0.01*	IRIS[1]		USEPA 2012
Tin	-	200	300	-	ITER 2012	ATSDR 2005
Uranium	-	0.6	0.6	-	HC 2004	HC 2010
Vanadium	5	5	5	IRIS[1]		
Zinc	700	300	480[#]	HC 2002	IRIS[1]	HC 2010

Notes:

Inorganic arsenic was the only COPC identified as a potential carcinogen through the oral ingestion route, and the cancer slope factor was 1.80 (mg/kg·day)$^{-1}$ (Health Canada, 2010).

*provisional or screening value

[#]tolerable upper intake/essential trace element toxicity value (toddlers)

^value for women of child-bearing age and children <12 yrs

+median dietary lead exposure for the Canadian population

1 - IRIS database accessed in the assessment year - see References.

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APPENDIX F

Migratory Birds Protection Plan

TECHNICAL MEMORANDUM

DATE May 21 2019 **Project No.** 1658927.3100_Rev2

TO Manon Turmel
Agnico Eagle Mines Limited

CC David Brown, Jen Range

FROM Dan Coulton, Corey De La Mare **EMAIL daniel_coulton@golder.com**

MIGRATORY BIRDS PROTECTION PLAN

1.0 INTRODUCTION

Agnico Eagle has planned two water diversions as part of water management activities for the proposed Whale Tail Project (the Project) and the proposed Whale Tail Expansion Project (Expansion Project). The purpose of the Migratory Bird Protection Plan (Plan) is to present the anticipated flooding area and schedule during the Whale Tail Lake (South Basin) flooding and present appropriate mitigation measures to reduce impacts to nesting migratory birds.

The Whale Tail Lake (South Basin) diversion consists of construction of the Whale Tail Dike, from June 2018 to February 2019, to divert Whale Tail Lake (South Basin) and tributary lakes through Lake A45, just south of Lake A16 (Mammoth Lake). Flooded tributary lakes (light blue shading in Figure 1) include Lake A18, Lake A19, Lake A20, Lake A21, Lake A22, Lake A55, Lake A62, Lake A63, Lake A65, Pond A-P1, and Pond A-P43 (Figure 1). Active flooding from elevation 152.5 to 156.00 masl of the area will occur from 2018 until 2020 causing approximately 157 ha of flooding; this flooding activity will require migratory bird mitigation. The flooded area will remain at elevation 156.00 masl from June 2020 until 2026, during operations.

The flooding has the potential for incidental disturbance and destruction of migratory birds and their nests. As per Nunavut Impact Review Board (NIRB) Project Certificate No.008 Condition 34, this Plan describes how these impacts will be mitigated; the mitigation will be focused between 2018 to July 2020, or until water levels reach their maximum. This Plan revision has been updated to include results from 2018 monitoring of migratory birds and the proposed monitoring design for 2019. The Plan revision also includes an additional section on monitoring of flooded areas.

The *Migratory Birds Convention Act* (1994) (*MBCA*) prohibits the harm of migratory birds and the disturbance or destruction of nests and eggs. The original aim of this legislation in the early 1900s was to conserve migratory bird populations from overharvest (CWS 2007). Inadvertent disturbance or destruction of migratory birds has been termed “Incidental Take” and Environment and Climate Change Canada (ECCC) currently lacks legal mechanisms to regulate Incidental Take (CWS 2007).

This Plan describes the likely effects pathways that may harm migratory birds (based on the Whale Tail FEIS, Agnico Eagle 2016), the mitigation options to reduce these impacts, and Agnico Eagle’s preferred option for proceeding.

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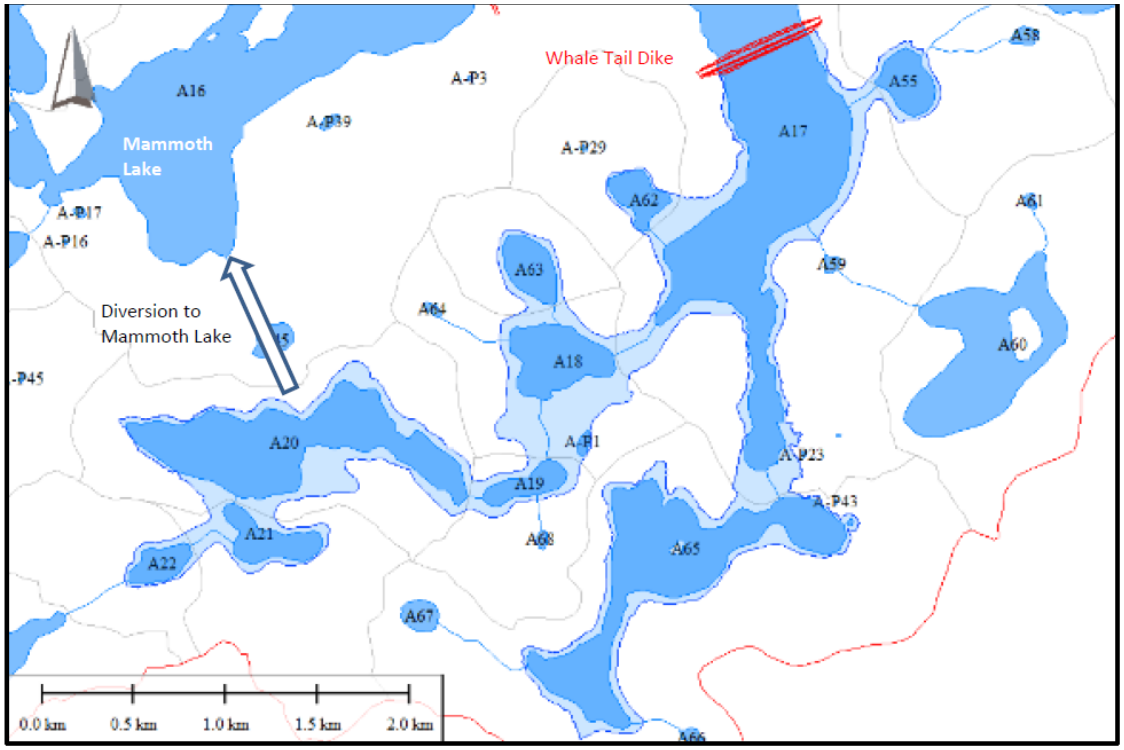

Figure 1: Whale Tail Lake (South Basin) Diversion Flooding occurring between June 2018 to July 2020, and during operation (July 2020 to 2026). Light blue shading shows flooded areas.

2.0 EFFECTS PATHWAYS AND MITIGATION

The flooding resulting from the Whale Tail Project and proposed Whale Tail Expansion Project water diversions will lead to incidental disturbance and destruction of migratory birds and their nests. There is less flooding predicted for the Expansion Project than for the Approved Project.

2.1 Effects Pathway

Flooding at the Project and proposed Expansion Project site is anticipated due to the construction of new dikes in Whale Tail Lake (South Basin) and downstream of Lake A46 and Lake A50. Some of the flooding will occur during the nesting season and may lead to the loss of nests near the shoreline of the lakes.

Shoreline surveys during the Project baseline field work examined 62.8 km of shoreline along lakes and streams (Agnico Eagle 2016, Volume 5, Appendix 5-C). In total, 24 species of birds and eight nests were observed including three semipalmated sandpiper nests, two semipalmated plover nests, one dunlin nest, one herring gull nest, and one cackling goose nest. Assuming that observers recorded nests that were observed within a 20 m swath surveyed by two people, the nest density for the Project is 0.06 nests per ha. Given the area of flooding expected to occur at the Project and proposed Expansion Project, and assuming densities are the same as that observed during baseline studies, approximately seven nests in 2019 and three nests in 2020 of the shorebirds, gulls and waterfowl groups may be displaced by flooding if no mitigation is undertaken (Table 1).

Upland birds have been surveyed at Meadowbank from 2003 to 2015 using PRISM protocols. PRISM surveys found 3.8 pairs of breeding birds per plot during 2015. As PRISM plots are 16 ha in size this indicates a density of 0.24 pairs per ha. The average nests observed per PRISM plot was 0.6 nests, or 0.04 nests per ha. It is assumed that not all the nests or breeding pairs were detected during the 2015 baseline studies so a nest density of 0.5 nests per ha was used to calculate the number of nests displaced due to flooding. It is predicted that approximately 61 upland bird nests will be displaced in 2019 and approximately 27 nests in 2020 if no mitigation is undertaken at the Project and proposed Expansion Project (Table 1).

Table 1: Predicted Number of Bird Nests Displaced from Flooding

Nesting Period Year[a]	Whale Tail Lake (South Basin) Diversion			Northeast Diversion		
	Change in Flooded Terrestrial Area (ha)	Predicted Number of Nests Displaced		Change in Flooded Terrestrial Area (ha)	Predicted Number of Nests Displaced	
		Shoreline Survey	PRISM Survey		Shoreline Survey	PRISM Survey
2018	0.21	0.01	0.10	0	0	0
2019	115.96	6.96	57.98	6.58	0.42	3.29
2020	41.38	2.48	20.69	11.86	0.75	5.93
2021	0	0	0	0	0	0
2022	-64.94[b]	0	0	-18.45[b]	0	0

[a] The nesting period used included the months of May, June, July, and August.

[b] Between May and August 2020 the total flooded habitat area and the flooded terrestrial area is expected to decrease in size.

PRISM = Program for Regional and International Shorebird Monitoring; ha = hectare.

In 2018, 18 experimental low-lying wet sedge habitat plots (6 ha each) were monitored regularly to evaluate changes in breeding behavior associated with flash tap and effigy mitigation devices relative to control plots (Agnico Eagle 2018). Fifty-nine nests were detected at these 18 plots for a density of 0.54 nests per ha. The density of breeding birds was estimated to be 1.2 per ha.

In 2018, surveys for breeding migratory birds and nests were completed in areas predicted to be flooded (Agnico Eagle 2018). A total of 8 species of birds and 50 nests (0.28 nests per ha) were recorded, which is less than the 0.5 nests per ha assumed in the FEIS. Based on the nests found, monitoring completed in 2018 indicates impacts may be less than predicted in the FEIS (Agnico Eagle 2018).

The density of breeding birds measured at the Whale Tail Project have varied through time and ranged from 1.4 per ha in 2016 to 3.4 per ha in 2018, although areas and observers have changed during this time (Dougan and Associates 2017; Agnico Eagle 2018). For example, in 2015 and 2016 PRISM methods at 16 ha plots and shoreline surveys were completed by subcontractors, whereas 2018 surveys included different 6 ha plots and more extensive searches in the areas predicted to be flooded completed by Trent University. Predictions of absolute birds impacted by Project-related flooding used area extrapolation of the highest mean observed density during baseline (1.41 observed in 2015). While monitoring in 2018 estimated a higher density of breeding birds, application through area extrapolation will only increase the absolute numbers of birds impacted while the relative magnitude will remain the same as predicted in the FEIS because the area does not change.

2.2 Mitigation

Based on field studies completed in the summer of 2017 and discussions with ECCC, the following mitigation options were selected:

- Deploying visual and audio bird deterrents.
- Regular sweeps to discourage nesting through human activity, and to move the visual and audio deterrents.

Bird Deterrents

Agnico Eagle would consider hiring additional local staff from May to August 2019 and 2020 to actively deter by use of walking, rope drags, ATVs or boats to deter nesting.

A variety of predator type calls could be broadcast to prevent habituation for a variety of upland bird species. Noise makers can be equipped with a solar panel to provide power for continuous operation. Visual deterrents may include scare balloons, human, and predator effigies and other visual deterrents. Scare balloons have large predator eye designs that look threatening to the birds and reflective flash tape rustles in the breeze, preventing habituation in the area. Snow melt, ice melt and arrival of migratory birds will be documented, prior to the flooding activities, to inform mitigation. The location and distribution of visual deterrents will be rearranged occasionally to maintain their effectiveness, and will be deployed prior to migratory bird nesting period (i.e., the beginning of May, or prior to 50% snow melt).

Bird deterrents deployed in 2018 included flash tape and a hawk kite effigy (Section 2.1). These deterrents will be used in 2019 with the addition of an auditory stress call (Agnico Eagle 2018). In 2018, monitoring of bird activity was carried out in collaboration with Trent University and Environment and Climate Change Canada (Agnico Eagle 2018), which will continue in 2019.

2.3 Mitigation Effectiveness

Agnico Eagle is currently collaborating with Trent University and Environment and Climate Change Canada on monitoring impacts to nesting migratory birds and deterrent mitigation effectiveness. In 2018 deterrents were evaluated at 18 plots of low-lying sedge habitat (Agnico Eagle 2018). The deterrents tested included flash tape and a hawk kite effigy. Audio deterrents were planned for 2018 but did not arrive at site in time to be deployed Preliminary results indicated no change in breeding behaviour between experimental and control plots.

Monitoring of mitigation effectiveness and breeding birds will continue from May to July 2019 and include the use of audio and visual deterrents. The deterrents will be deployed in May following snow melt and before nesting activity begins. Deterrent and control treatments will be assigned randomly to 18 plots. Two types of deterrent treatments are planned and include auditory distress calls with flash tape and audio with a hawk kite effigy. Control plots will have no deterrents and serve as the reference condition to quantify changes in breeding behaviour. New for 2019 is the use of temperature probes placed in nests as another line of evidence about whether deterrents influence breeding behaviour. Similar to 2018, nest surveys will also be completed in areas where flooding is predicted (Figure 2).

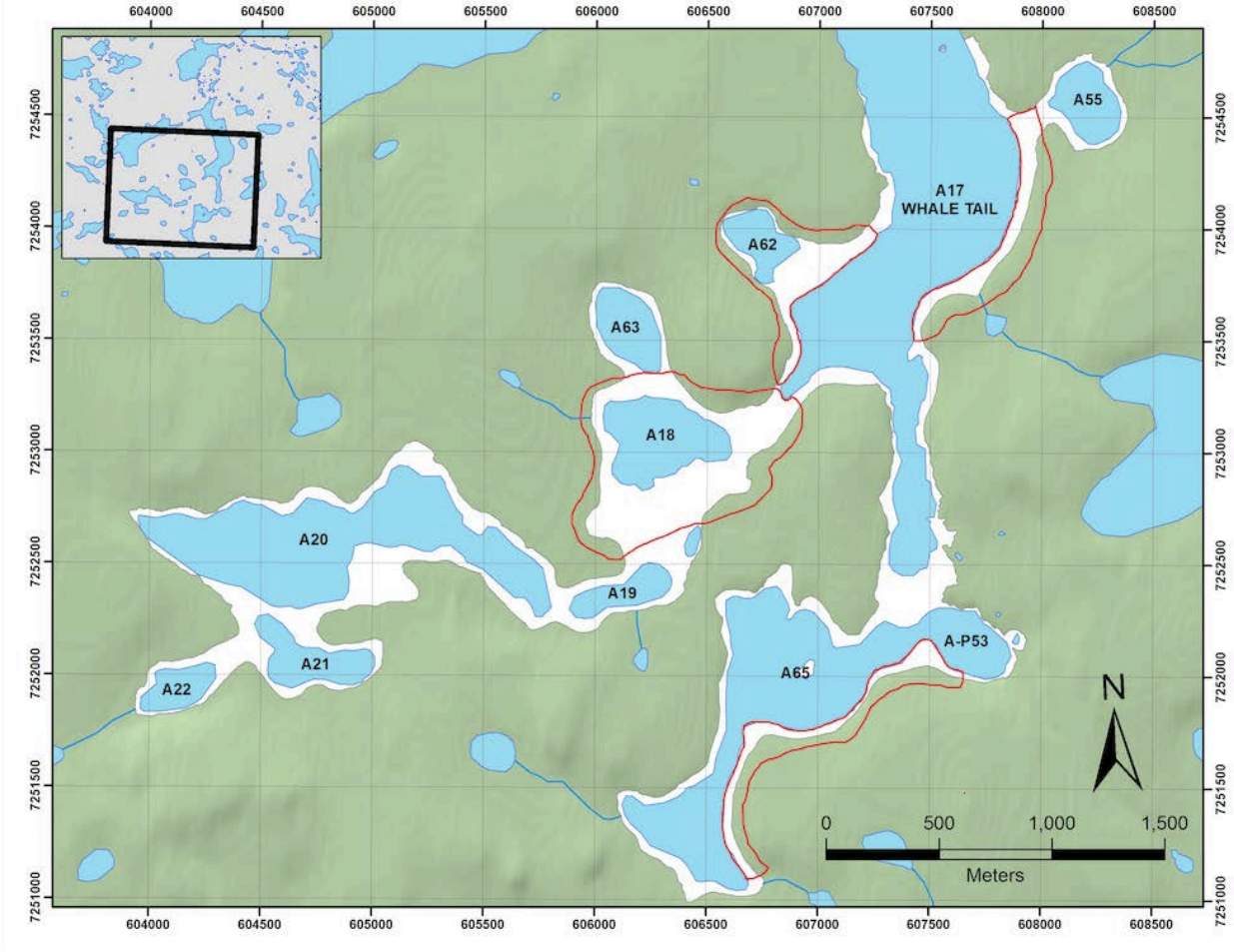

Figure 2: Planned monitoring areas (red outline) for 2019

3.0 EVALUATION OF FLOODING PREDICTIONS

The FEIS predicted that the Whale Tail Lake (South Basin) diversion would flood 148.5 ha of terrestrial habitat (Table 1). The predictions were derived from a mean annual water balance modeling as described in Appendix 6-F. A monitoring program was developed to monitor and compare the actual water levels resulting from the diversion, to those estimated by the mean annual water balance.

Agnico Eagle has committed to weekly monitoring (i.e. water level measurement) in water bodies where flooding will occur. As stated previously, the following 12 water bodies are expected to be impacted by the Whale Tail Lake (South Basin) diversion: A17, A18, A19, A20, A21, A22, A55, A62, A63, A65, A-P1, A-P43 (Figure 1) beginning in 2019.

In 2019 and 2020, the water level in Whale Tail Lake (South Basin) was predicted to range from 155.1 masl to 156.0 masl. At these elevations, all the water bodies listed above are expected to be inundated. Therefore, weekly monitoring will be required throughout. However, the frequency of monitoring may be adapted depending on actual conditions. For example, if there is little change recorded at the weekly frequency, then the monitoring frequency may be reduced following discussion with ECCC

Surveys will be performed in the lakes and ponds to determine the water levels. Staff gauges or data loggers (or both) will be installed in all 12 water bodies to allow visual confirmation of water levels. Care should be taken to ensure the gauges do not move (due to wind or wave action, or poor installation). The staff gauges will be referenced to fixed benchmarks (at wadable locations) references to the geodetic datum to maintain consistency in water level readings. Given the potential range of water levels during the Expansion Project life (approximately 152.5 masl to 156.0 masl), multiple, staggered staff gauges will be required in order to measure the full range of flows.

If regular access to any of the lakes and/or ponds proves difficult, Agnico may choose to supplement the staff gauges with remotely accessible data loggers in these water bodies. However, these loggers must be installed to prevent freezing or should be removed prior to winter (potentially missing water levels during the spring freshet).

The readings will be plotted with the predicted water levels (Appendix 6-F) and will include historical water levels for each lake or pond. This will allow Agnico Eagle to react quickly if water levels deviate from expected levels and provide input to the mitigation measures described in Section 2.2.

4.0 REPORTING

Results of Plan monitoring and mitigation effectiveness will be reported in the annual Terrestrial Ecosystem Monitoring Report including any adaptive management required. As per Project Certificate No.008 Condition 34, Agnico Eagle will report the results of the Migratory Birds Protection Plan to NIRB on an annual basis.

5.0 REFERENCES

Agnico Eagle (Agnico Eagle Mines Limited). 2016. Whale Tail Pit Final Environmental Impact Statement. Submitted to Nunavut Impact Review Board and Nunavut Water Board. June 2016.

Agnico Eagle. 2018. Meadowbank Gold Project: 2018 Migratory Bird Protection Plan Report. March 2019.

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Environment Canada. 2013. Planning ahead to Reduce the Risk of detrimental effects to migratory Birds, and their nests and eggs. Available at: http://www.ec.gc.ca/paom-itmb/. Accessed May 2015.

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APPENDIX G

Peregrine Falcon Management and Protection Plan

Peregrine Falcon Management

and Protection Plan on the Meadowbank Gold Project Site

Version 2 - Updated June 18, 2012

Background and Purpose:

Since 2009, peregrine falcons have been observed along the All Weather Access Road occurring in three to five quarries. In June 2012, for the first time, falcon activity was observed in the Portage Pit. Subsequently a falcon nest site was observed in the South Portage Pit. In response a general mine site peregrine falcon management and protection plan was developed in accordance with the Terrestrial Ecosystem Management Plan (TEMP).

The purpose of this plan is to protect peregrine falcons from mine activities by firstly preventing them from nesting within the perimeter of active mining Pits (Portage, Goose, or Vault pits) during operation. If falcons nest in the mine pits, operations will be adapted according to the management plan and monitoring will increase to ensure protection of the falcons and their nest(s). The peregrine falcon is listed as "may be at risk" by the Canadian Endangered Species Conservation Council (2001) and the Nunavut Government (Government of Nunavut, 2001). *Falco peregrinus tundrius*, the subspecies that breeds north of the treeline, is listed as being of special concern in Canada (COSEWIC, 2002). Therefore we must ensure all activities protect these species.

Throughout the year Meadowbank environment department staffs routinely monitor the pit and other areas on site for birds to ensure their protection and that the management plan is being implemented. The following document outlines specific management and mitigative measures to protect peregrine falcons in accordance with the Meadowbank TEMP.

Deterrence and Protection Plan Prior to Nesting in Portage, Goose and Vault Pit:

Level 1) Prior to and during nesting season (May 25 – July 1) an inspection of the pit walls will be conducted daily. These inspections will include a visual assessment from the bottom of the pit looking up at the wall faces, and also from the top looking down the wall faces. Records shall be kept of the dates, times, and which individual(s) carried out the inspection.

Level 2) If falcons are reported to have been seen in the vicinity of the pit or are observed by environment department staff, inspections will increase to 3 times daily; once in early morning, once at mid-day, and once again in the later evening. All sightings shall be documented as to the date, time, location, and individual(s) spotting the falcons. Owl decoys will be erected in the

area where the falcons have been seen to attempt to deter the falcons from nesting in the pit areas. Noise cannons may also be utilized.

Level 3) If sightings become regular, inspections will increase to every 3 hours including incorporating a night shift to perform inspections.

Level 4) If perching is observed or if nests are being created within the pit, the following management measures will be under taken.

A. Shoot off a pistol banger (non-pyro technique) to ease them away from their location of perching. At no time will a banger be shot in the direction of the falcon, all bangers will be shot from a safe distance away to avoid any physical harm to the bird, i.e. hearing impairment.
B. When the bird flies away it will be observed. The reason for this is that Agnico-Eagle does not want any falcon to leave one active pit, ie., South Portage and move to North Portage or from either Portage pit to Bay Goose Pit. We must ensure the falcon is deterred from the active pit areas. If the falcon re-lands within one of the pit perimeters repeat step A.
C. If a nest is being constructed, each nest will be treated on a case by case basis depending on its location. One option at this level would be to roll or place wire mesh fencing over the nesting area to prevent the return of the falcon to the nesting area.

With protective measures in place, our goal is to never have to get beyond *Level 4:A*.

Portage, Goose and Vault Pit Nest Monitoring and Protection Plan

If a nest is established and/or eggs are observed blasts will be minimized within a protective zone of the nest. It is likely that the nest will occur near the top of the pit wall. Blast vibration and noise has not appeared to have deterred the falcons from nesting near pits at this time; therefore the greatest risk to the eggs and young would be from blast fly rock. To prevent falcon disruption, the frequency of blasts will be reduced, vehicle traffic and most importantly human traffic will be reduced within a radius of ~150m from the nest. Fly rock will be monitored by video to ensure no impacts. Through controlled blasts and video monitoring of fly rock in June and July AEM will ensure that fly rock is kept to a minimum height that does not exceed the height of the nests.

In accordance with the TEMP, daily monitoring by environmental staff will be conducted with binoculars or a scope from the west side of the pit and recorded. After all blasts, environmental staff will check on the nests and record observations. Portable motion sensor automatic cameras may also be installed to record movements in the nest on regular intervals.

Based on past monitoring results of the nests along the All Weather Road (2009-2011), there is no pattern that has indicated that some young have survived while others have not due to road or quarry operations. The activities in the pit need to continue to be protective of the nests and the environmental staff will continue to monitor the activity and nests daily between June and September if a nest is observed.

Portage, Goose and Vault Pit Mine Operation Mitigation

Blasting

As a protective measure, blasting in the south pit east wall will become less frequent with smaller controlled blasts. Over the past 6 months, blasting has been optimized to reduce dilution and control fly rock by modifying blast material density, timing and patterns.

Blasts should occur less frequently and should be minimized within 150m of the nest in June and July, operations will prevent blast fly rock from disturbing the nests and video record all blasts within a 150m radius. The blast vibration and noise does not appear to have deterred the falcons from nesting nearby. Through controlled blasts and video monitoring, fly rock will be monitored to ensure it has not flown towards the nests. If blasts occur within the radius, fly rock will not exceed 60m or the height of the nest in June and July.

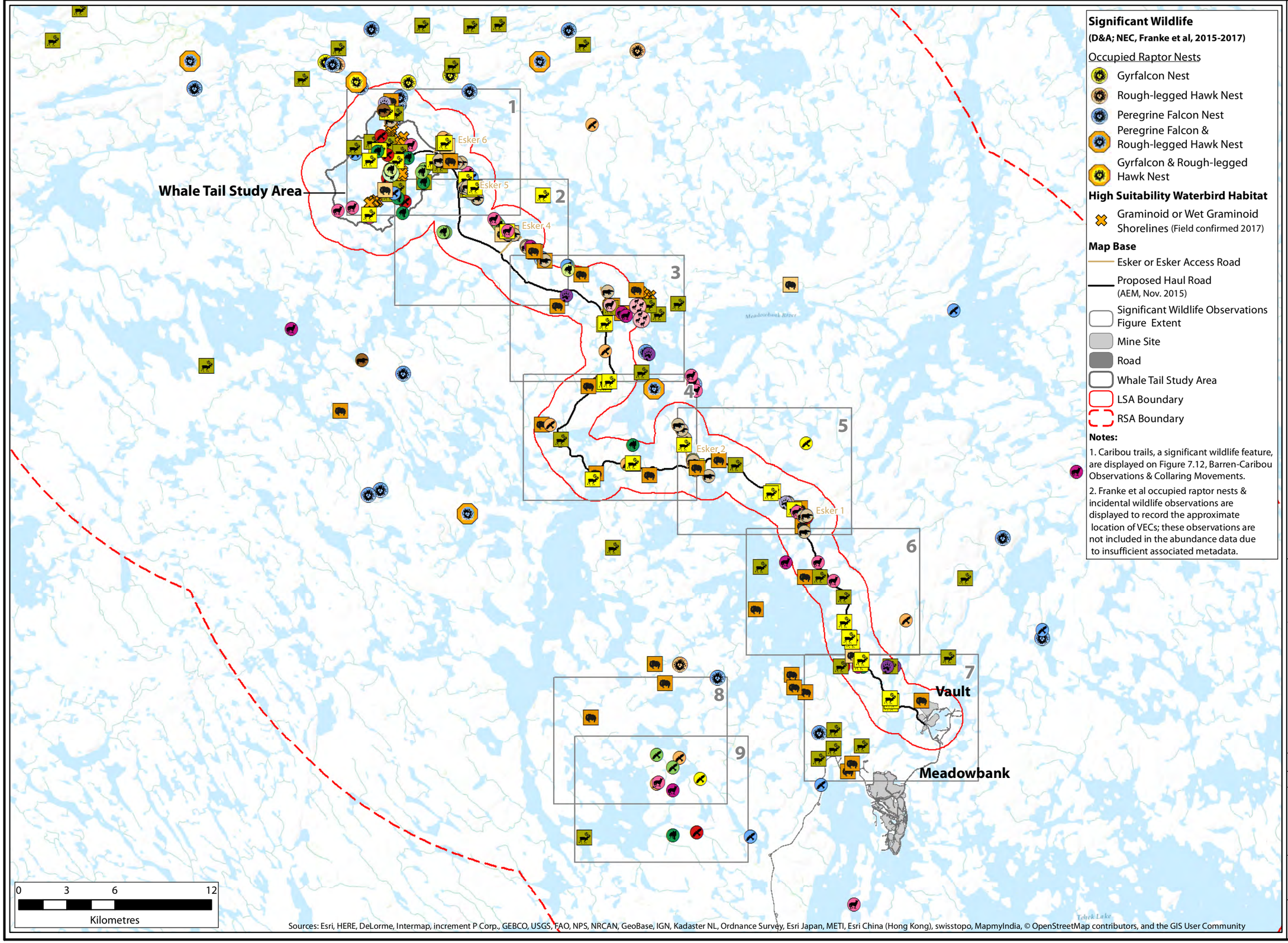
Mine Operations and Reduced Vehicle Traffic

Traffic should be reduced within 150m radius of the nest to protect it from dust; if traffic cannot be reduced, dust suppressant should be used.

If all above mentioned measures have failed and AEM environment are not able to conform to the TEMP, the Government of Nunavut Department of Environment will be contacted by the Environment Superintendent, Environment Biologist, or Environment Coordinator.

APPENDIX H

Representative Figure from Baseline Characterization Report



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Significant Wildlife
(D&A; NEC, Franke et al, 2015-2017)

Occupied Raptor Nests
- Gyrfalcon Nest
- Rough-legged Hawk Nest
- Peregrine Falcon Nest
- Peregrine Falcon & Rough-legged Hawk Nest
- Gyrfalcon & Rough-legged Hawk Nest

High Suitability Waterbird Habitat
- Graminoid or Wet Graminoid Shorelines (Field confirmed 2017)

Map Base
- Esker or Esker Access Road
- Proposed Haul Road (AEM, Nov. 2015)
- Significant Wildlife Observations Figure Extent
- Mine Site
- Road
- Whale Tail Study Area
- LSA Boundary
- RSA Boundary

Notes:

1. Caribou trails, a significant wildlife feature, are displayed on Figure 7.12, Barren-Caribou Observations & Collaring Movements.
2. Franke et al occupied raptor nests & incidental wildlife observations are displayed to record the approximate location of VECs; these observations are not included in the abundance data due to insufficient associated metadata.

Significant Wildlife
(D&A; NEC, Franke et al, 2015-2017)

Predatory Mammals
- Arctic Fox Pups
- Arctic Fox Den
- Arctic Fox Sign
- Arctic Fox Observation
- Arctic Wolf Nursery
- Arctic Wolf Den
- Arctic Wolf Sign
- Arctic Wolf Observation
- Wolverine Sign
- Wolverine Observation
- Barren-ground Grizzly Bear Den
- Barren-ground Grizzly Bear Sign
- Barren-ground Grizzly Bear Observation

Ungulates
- Barren-ground Caribou Sign
- Barren-ground Caribou Observation
- Muskox Sign
- Muskox Observation

Raptors
- Bald Eagle Observation
- Gyrfalcon Observation
- Peregrine Falcon Observation
- Rough-legged Hawk Observation
- Short-eared Owl Observation

Whale Tail Pit & Whale Tail Haul Road
Comprehensive Terrestrial Baseline Characterization Report

Signficant Wildlife Observations

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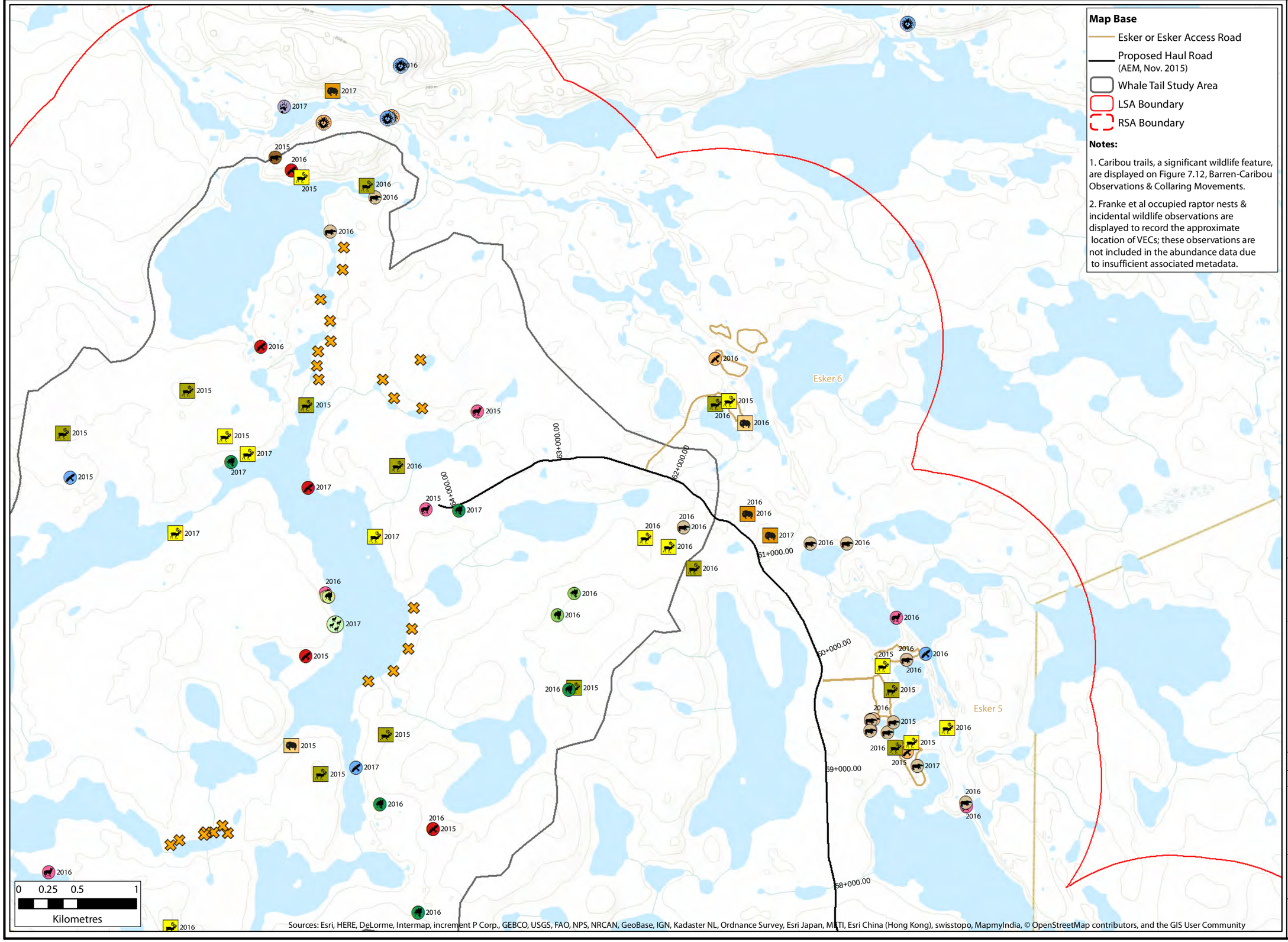
Nunavut ENVIRONMENTAL CONSULTING LTD

PROJECT: Whale Tail Pit & Haul Road	
CLIENT: Agnico Eagle Mines Limited	
N / W / E / S (UTM Zone 14 NAD83)	DATE: NOVEMBER 21, 2017
	SCALE: 1:220,000
	DRAWN BY: Lindsey Carter
	CHECKED BY: Mary Anne Young

Figure:

9 - Key Map

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation.



Map Base

- Esker or Esker Access Road
- Proposed Haul Road (AEM, Nov. 2015)
- Whale Tail Study Area
- LSA Boundary
- RSA Boundary

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- Barren-ground Grizzly Bear Observation

Ungulates
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- Barren-ground Caribou Observation
- Muskox Sign
- Muskox Observation

Raptors
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- Peregrine Falcon Observation
- Rough-legged Hawk Observation

Occupied Raptor Nests
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Nunavut ENVIRONMENTAL CONSULTING LTD

PROJECT: Whale Tail Pit & Haul Road

CLIENT: Agnico Eagle Mines Limited

N / W / E / S
UTM Zone 14 NAD83

DATE: NOVEMBER 21, 2017

SCALE: 1:30,000

DRAWN BY: Lindsey Carter

CHECKED BY: Mary Anne Young

Figure:

9 - 1

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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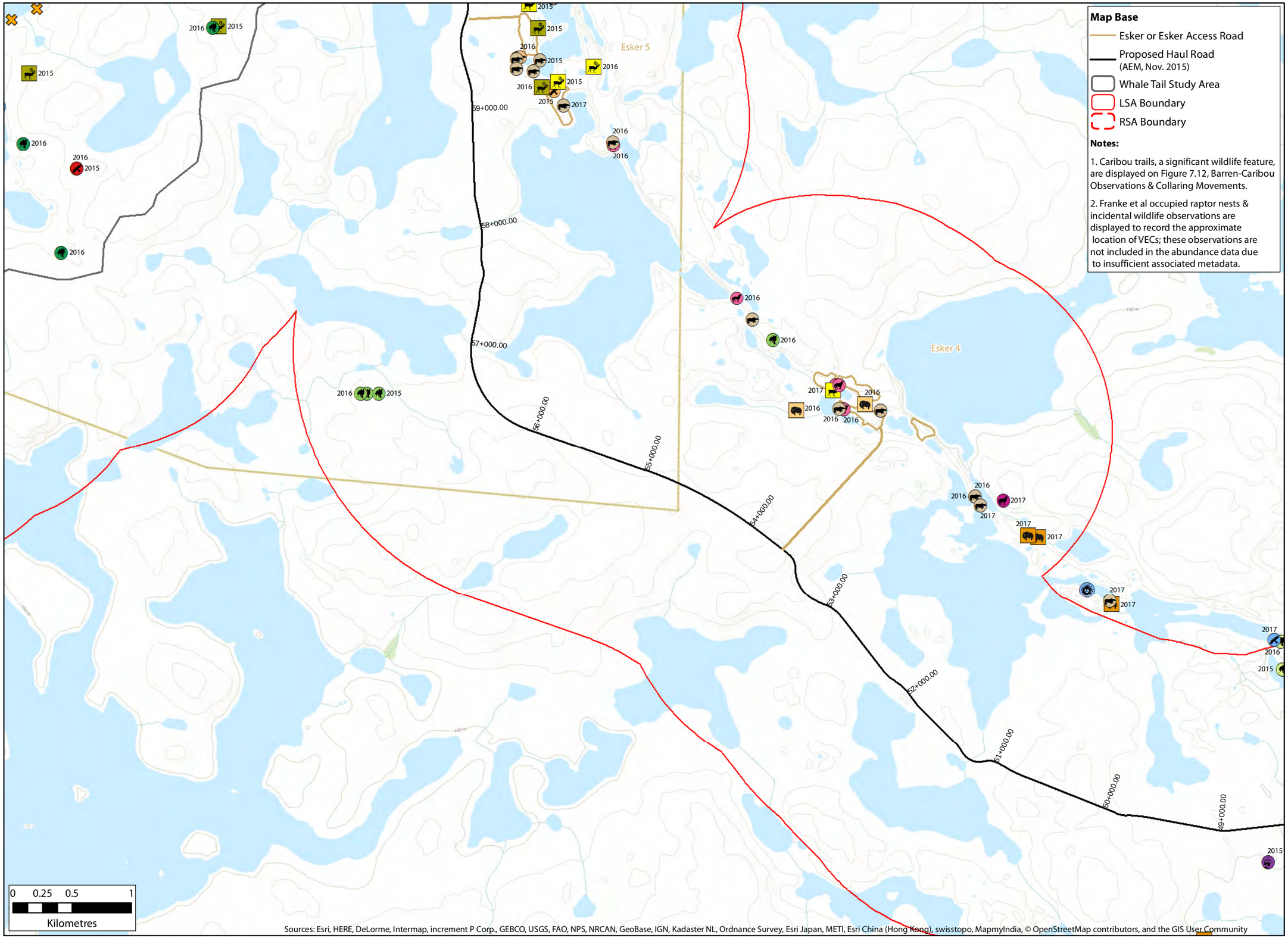

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- Muskox Observation

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- Peregrine Falcon Observation
- Rough-legged Hawk Observation

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Nunavut ENVIRONMENTAL CONSULTING LTD

PROJECT: Whale Tail Pit & Haul Road	
CLIENT: Agnico Eagle Mines Limited	
N / W / E / S (UTM Zone 14 NAD83)	DATE: NOVEMBER 21, 2017
	SCALE: 1:30,000
	DRAWN BY: Lindsey Carter
	CHECKED BY: Mary Anne Young

Figure:

9 - 2

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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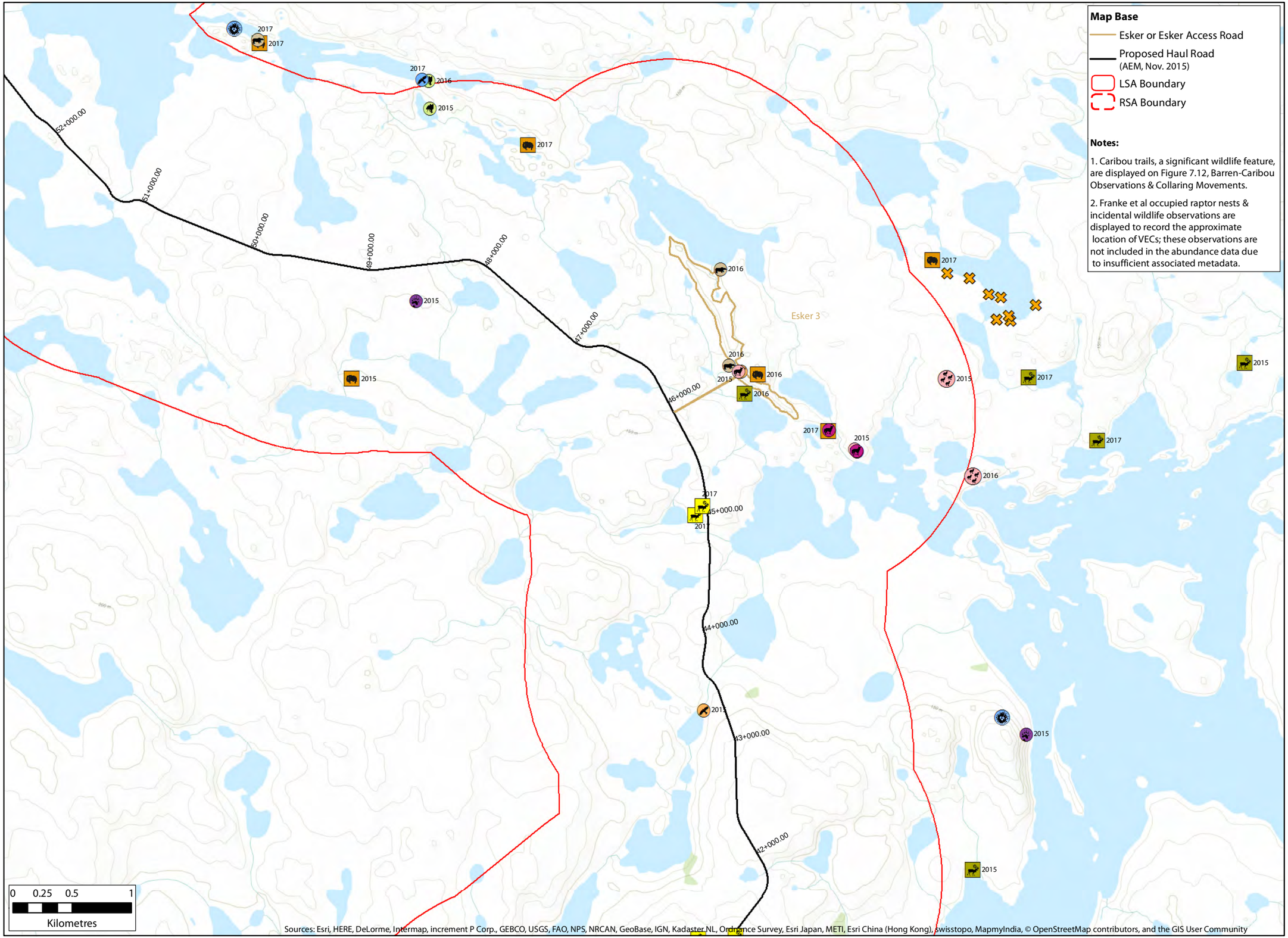

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- RSA Boundary

Notes:

1. Caribou trails, a significant wildlife feature, are displayed on Figure 7.12, Barren-Caribou Observations & Collaring Movements.
2. Franke et al occupied raptor nests & incidental wildlife observations are displayed to record the approximate location of VECs; these observations are not included in the abundance data due to insufficient associated metadata.

Significant Wildlife
(D&A; NEC, Franke et al, 2015-2017)

Predatory Mammals
- Arctic Fox Den
- Arctic Wolf Nursery
- Arctic Wolf Den
- Arctic Wolf Observation
- Wolverine Observation
- Barren-ground Grizzly Bear Sign

Ungulates
- Barren-ground Caribou Sign
- Barren-ground Caribou Observation
- Muskox Observation

Raptors
- Peregrine Falcon Observation
- Rough-legged Hawk Observation

Occupied Raptor Nests
- Peregrine Falcon Nest

High Suitability Waterbird Habitat
- Graminoid or Wet Graminoid Shorelines (Field confirmed 2017)

Whale Tail Pit & Whale Tail Haul Road
Comprehensive Terrestrial Baseline Characterization Report
Signficant Wildlife Observations

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Nunavut ENVIRONMENTAL CONSULTING LTD

PROJECT: Whale Tail Pit & Haul Road

CLIENT: Agnico Eagle Mines Limited

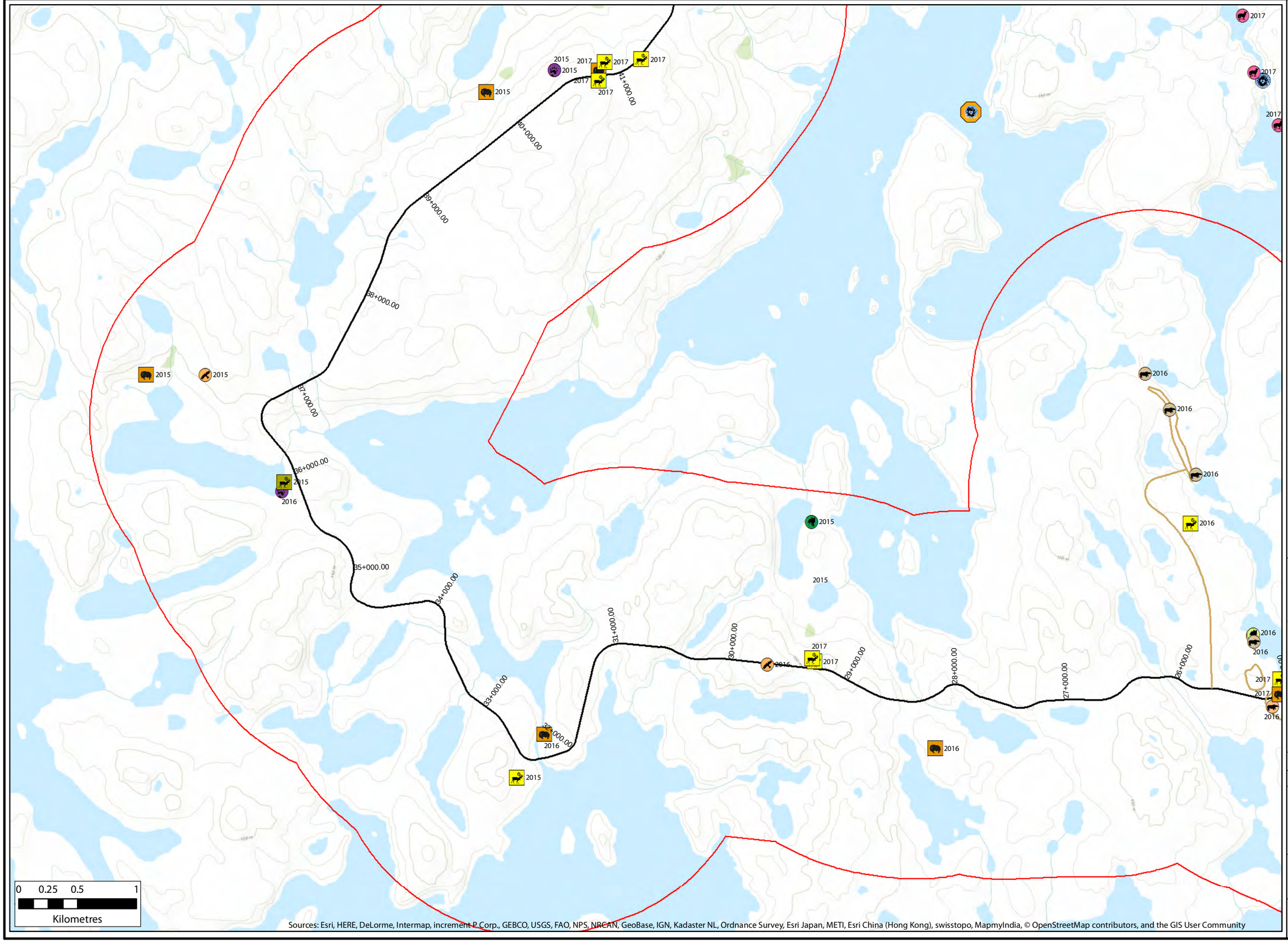
N W E S
UTM Zone 14 NAD83

DATE: NOVEMBER 21, 2017
SCALE: 1:30,000
DRAWN BY: Lindsey Carter
CHECKED BY: Mary Anne Young

Figure:

9 - 3

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation.



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Significant Wildlife
(D&A; NEC, Franke et al, 2015-2017)

Predatory Mammals
- Arctic Fox Den
- Arctic Fox Observation
- Arctic Wolf Sign
- Wolverine Observation
- Barren-ground Grizzly Bear Den
- Barren-ground Grizzly Bear Sign

Ungulates
- Barren-ground Caribou Sign
- Barren-ground Caribou Observation
- Muskox Observation

Raptors
- Rough-legged Hawk Observation

Occupied Raptor Nests
- Peregrine Falcon Nest
- Peregrine Falcon & Rough-legged Hawk Nest

Map Base
- Esker or Esker Access Road
- Proposed Haul Road (AEM, Nov. 2015)
- LSA Boundary
- RSA Boundary

Notes:

1. Caribou trails, a significant wildlife feature, are displayed on Figure 7.12, Barren-Caribou Observations & Collaring Movements.
2. Franke et al occupied raptor nests & incidental wildlife observations are displayed to record the approximate location of VECs; these observations are not included in the abundance data due to insufficient associated metadata.

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N W E S
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DATE: NOVEMBER 21, 2017
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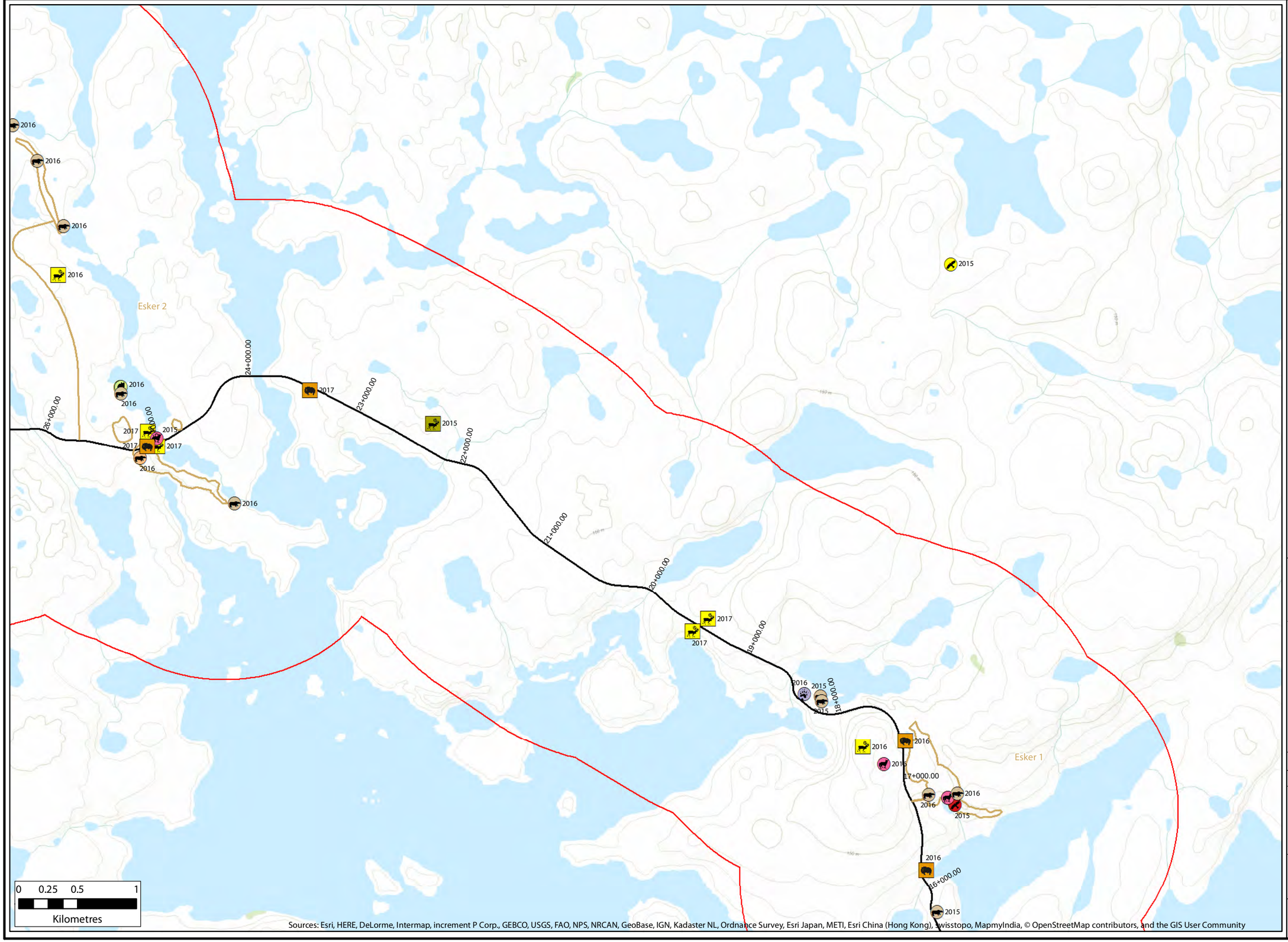
CHECKED BY: Mary Anne Young

Figure:

9 - 4

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation.



Significant Wildlife
(D&A; NEC, Franke et al, 2015-2017)

Predatory Mammals
- Arctic Fox Den
- Arctic Wolf Sign
- Wolverine Sign
- Barren-ground Grizzly Bear Den
- Barren-ground Grizzly Bear Sign

Ungulates
- Barren-ground Caribou Sign
- Barren-ground Caribou Observation
- Muskox Observation

Raptors
- Bald Eagle Observation
- Gyrfalcon Observation

Map Base
- Esker or Esker Access Road
- Proposed Haul Road (AEM, Nov. 2015)
- LSA Boundary
- RSA Boundary

Notes:

1. Caribou trails, a significant wildlife feature, are displayed on Figure 7.12, Barren-Caribou Observations & Collaring Movements.

2. Franke et al occupied raptor nests & incidental wildlife observations are displayed to record the approximate location of VECs; these observations are not included in the abundance data due to insufficient associated metadata.

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CLIENT: Agnico Eagle Mines Limited

N W E S
UTM Zone 14 NAD83

DATE: NOVEMBER 21, 2017

SCALE: 1:30,000

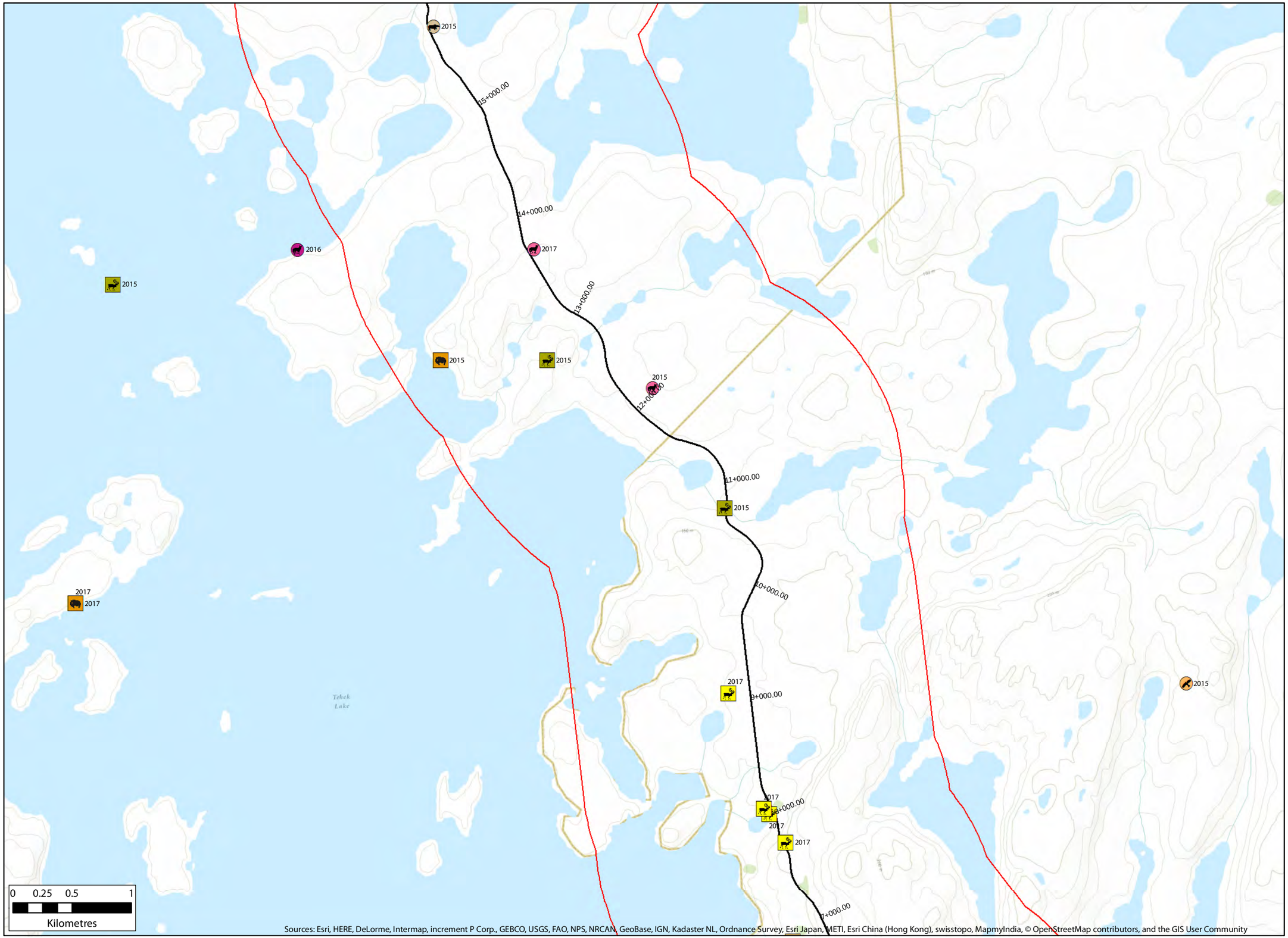
DRAWN BY: Lindsey Carter

CHECKED BY: Mary Anne Young

Figure:

9 - 5

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation.



Significant Wildlife
(D&A; NEC, Franke et al, 2015-2017)

Predatory Mammals
- Arctic Wolf Sign
- Arctic Wolf Observation
- Barren-ground Grizzly Bear Sign

Ungulates
- Barren-ground Caribou Sign
- Barren-ground Caribou Observation
- Muskox Sign
- Muskox Observation

Raptors
- Rough-legged Hawk Observation

Map Base
- Proposed Haul Road (AEM, Nov. 2015)
- LSA Boundary
- RSA Boundary

Notes:

1. Caribou trails, a significant wildlife feature, are displayed on Figure 7.12, Barren-Caribou Observations & Collaring Movements.
2. Franke et al occupied raptor nests & incidental wildlife observations are displayed to record the approximate location of VECs; these observations are not included in the abundance data due to insufficient associated metadata.

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N W E S
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DATE: NOVEMBER 21, 2017
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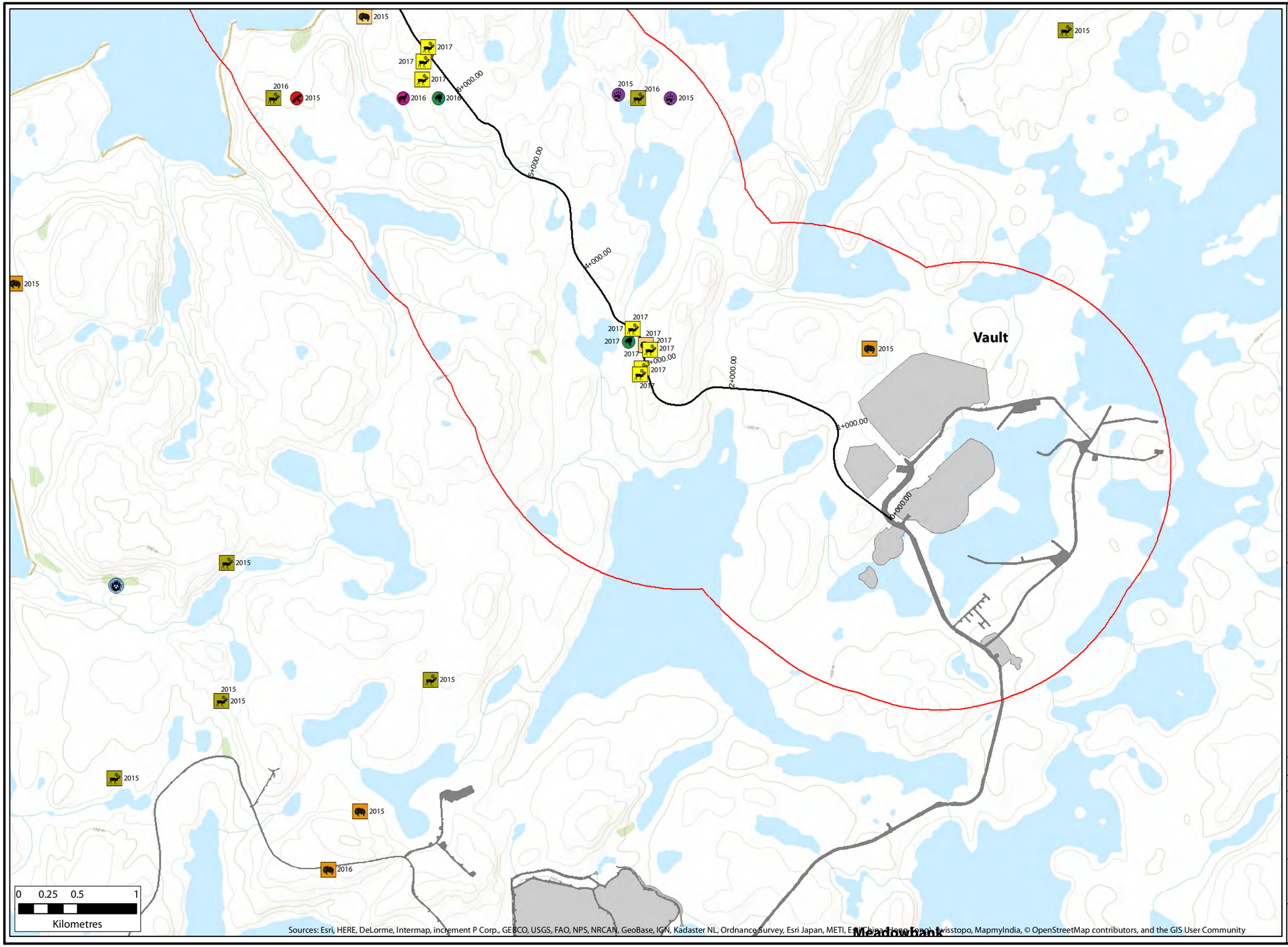
CHECKED BY: Mary Anne Young

Figure:

9 - 6

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation.



Significant Wildlife
(D&A; NEC, Franke et al, 2015-2017)

Predatory Mammals
- Arctic Fox Observation
- Arctic Wolf Observation
- Wolverine Observation

Ungulates
- Barren-ground Caribou Sign
- Barren-ground Caribou Observation
- Muskox Sign
- Muskox Observation

Raptors
- Bald Eagle Observation

Occupied Raptor Nests
- Peregrine Falcon Nest

Map Base
- Proposed Haul Road (AEM, Nov. 2015)
- Mine Site
- Road
- LSA Boundary
- RSA Boundary

Notes:

1. Caribou trails, a significant wildlife feature, are displayed on Figure 7.12, Barren-Caribou Observations & Collaring Movements.
2. Franke et al occupied raptor nests & incidental wildlife observations are displayed to record the approximate location of VECs; these observations are not included in the abundance data due to insufficient associated metadata.

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CHECKED BY: Mary Anne Young

Figure:

9 - 7

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation.

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Significant Wildlife
(D&A; NEC, Franke et al, 2015-2017)

Predatory Mammals
- Arctic Wolf Sign
- Arctic Wolf Observation

Ungulates
- Muskox Observation

Raptors
- Gyrfalcon Observation
- Rough-legged Hawk Observation
- Short-eared Owl Observation

Occupied Raptor Nests
- Peregrine Falcon Nest

Map Base
- RSA Boundary

Notes:

1. Caribou trails, a significant wildlife feature, are displayed on Figure 7.12, Barren-Caribou Observations & Collaring Movements.
2. Franke et al occupied raptor nests & incidental wildlife observations are displayed to record the approximate location of VECs; these observations are not included in the abundance data due to insufficient associated metadata.

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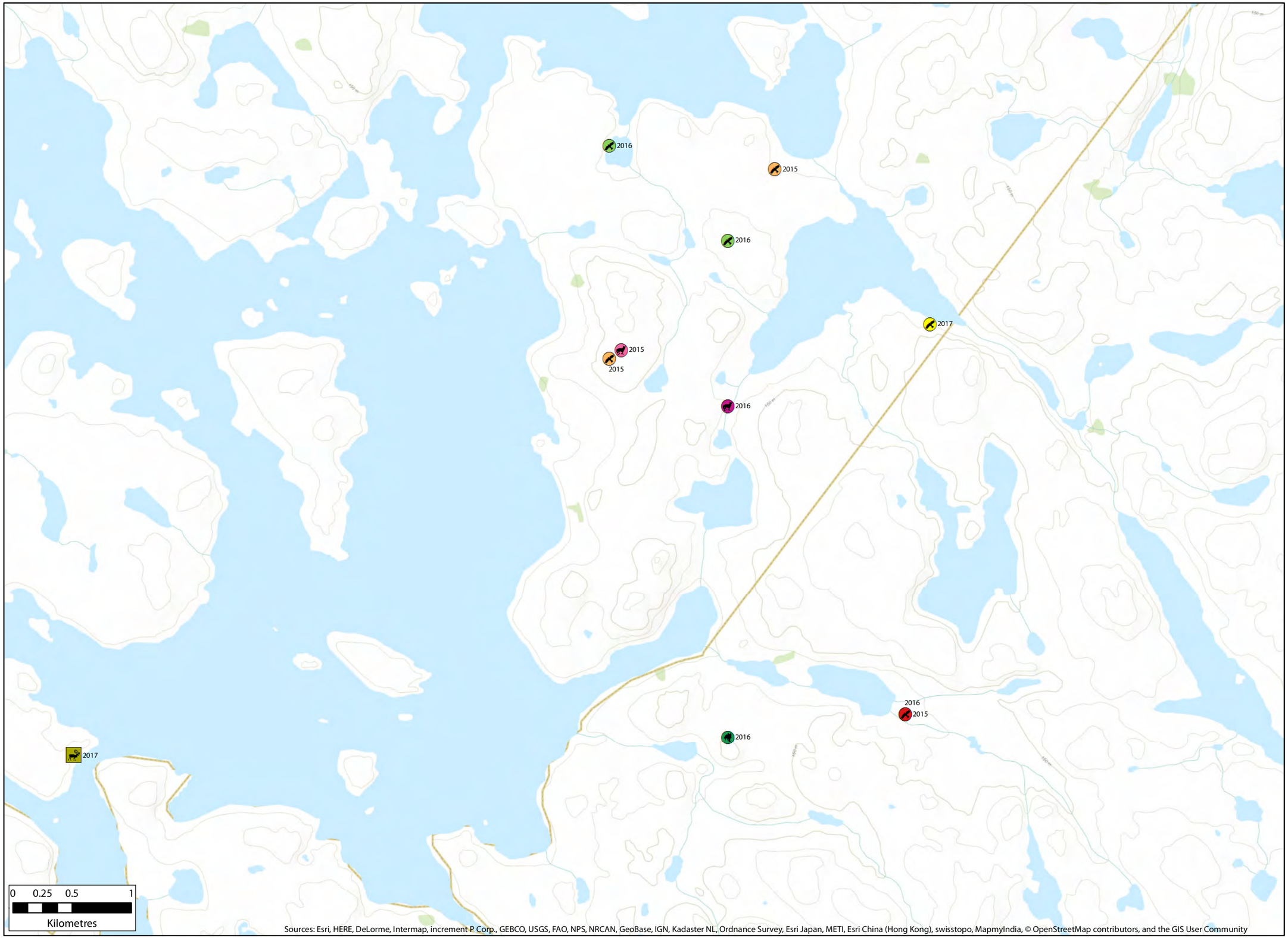
N / W / E / S
UTM Zone 14 NAD83

DATE: NOVEMBER 21, 2017
SCALE: 1:30,000
DRAWN BY: Lindsey Carter
CHECKED BY: Mary Anne Young

Figure:

9 - 8

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation.



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Significant Wildlife
(D&A; NEC, Franke et al, 2015-2017)

Predatory Mammals
- Arctic Fox Observation
- Arctic Wolf Sign
- Arctic Wolf Observation

Ungulates
- Barren-ground Caribou Observation

Raptors
- Bald Eagle Observation
- Gyrfalcon Observation
- Peregrine Falcon Observation
- Rough-legged Hawk Observation
- Short-eared Owl Observation

Map Base
- RSA Boundary

Notes:

1. Caribou trails, a significant wildlife feature, are displayed on Figure 7.12, Barren-Caribou Observations & Collaring Movements.
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CLIENT: Agnico Eagle Mines Limited

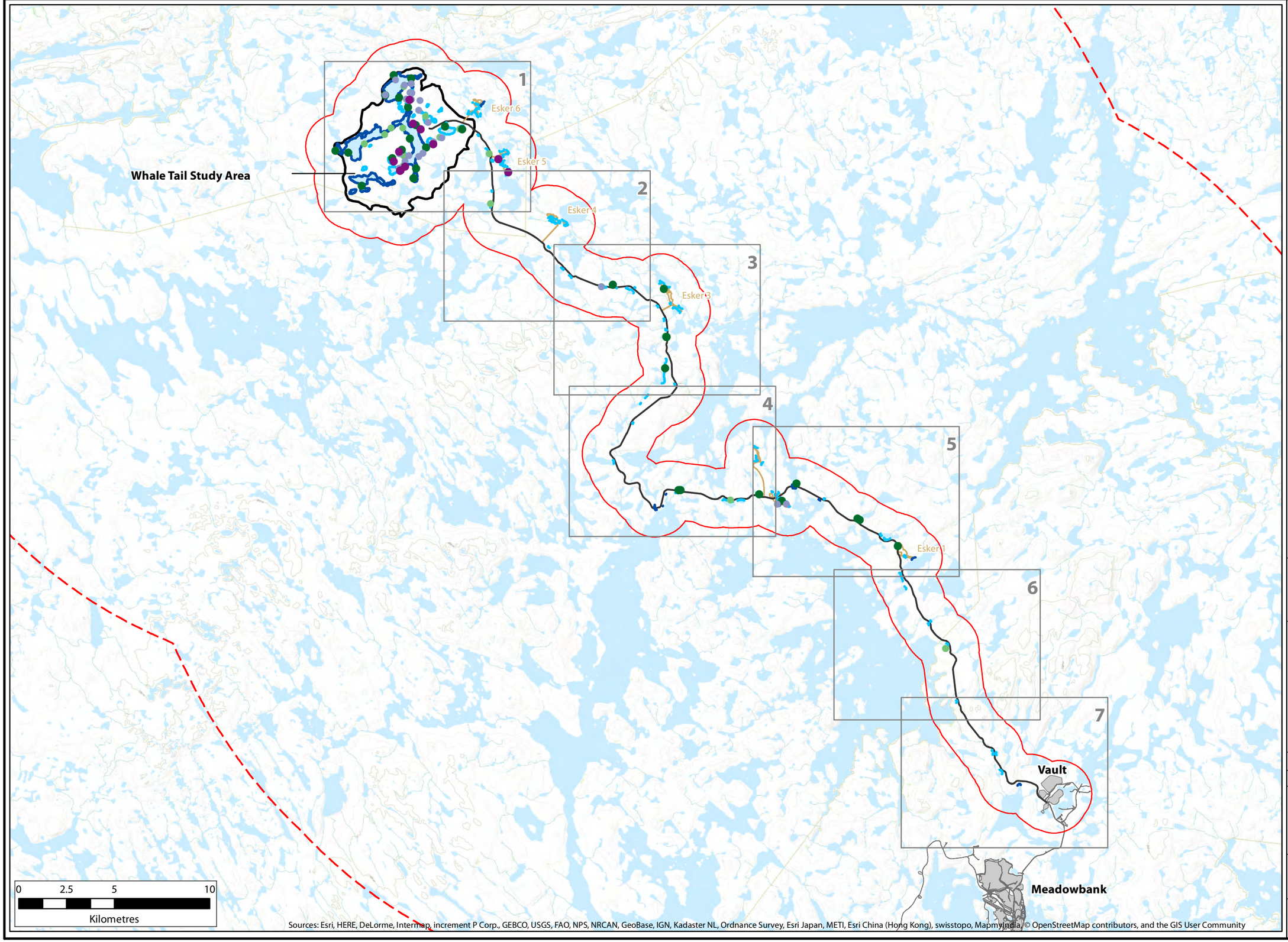
N W E S
UTM Zone 14 NAD83

DATE: NOVEMBER 21, 2017
SCALE: 1:30,000
DRAWN BY: Lindsey Carter
CHECKED BY: Mary Anne Young

Figure:

9 - 9

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation.



Legend

Confirmed Breeding [1] (2015-2017)

Waterbirds
- Confirmed Nest
- Additional Confirmed Breeding

Upland Birds
- Confirmed Nest
- Additional Confirmed Breeding

Waterbird Survey Transect
(D&A, 2016)
- Lake
- Pond

Map Base
- Esker or Esker Access Road
- Proposed Haul Road (AEM, Nov. 2015)
- 2015 - 2017 Shoreline Surveys Figure Extent
- Mine Site
- Road
- LSA Boundary
- RSA Boundary
- Whale Tail Study Area

Whale Tail Pit & Whale Tail Haul Road
Comprehensive Terrestrial Baseline Characterization Report
2015-2017 Shoreline Surveys

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CLIENT: Agnico Eagle Mines Limited

N W E S
UTM Zone 14 NAD83

DATE: NOVEMBER 21, 2017

SCALE: 1:185,000

DRAWN BY: Lindsey Carter

CHECKED BY: Mary Anne Young

Figure:

11 - Key Map

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation.

Observed Waterbirds

Species Code - (# in 2015, 2016, 2017)

AGPL - American Golden-Plover (2,1,4)
CACG - Cackling Goose (15,3,1)
CANG - Canada Goose (4,127,67)
COLO - Common Loon (3,8,0)
COME - Common Merganser (.0.0.2)
DUNL - Dunlin (1,2,1)
GLGU - Glaucous Gull (2,0,0)
GRWF - Greater White-fronted Goose (1,6,0)
HERG - Herring Gull (7,21,9)
LESA - Least Sandpiper (1,4,2)
LTDU - Long-tailed Duck (21,23,7)
PALO - Pacific Loon (0,1,0)
PESA - Pectoral Sandpiper (0,3,0)
PEEP - Sandpiper species (0,0,1)
RBME - Red-breasted Merganser (4,7,0)
RNPH - Red-necked Phalarope (0,0,2)
RTLO - Red-throated Loon (1,4,2)
SACR - Sandhill Crane (0,5,0)
SEPL - Semipalmated Plover (8,26,2)
SESA - Semipalmated Sandpiper (38,53,26)
SNGO - Snow Goose (1,0,0)
YBLO - Yellow-billed Loon (0,5,0)

Confirmed Nests

Species Code - (# in 2015, 2016, 2017)

AGPL - American Golden-Plover (0,0,1)
AMPI - American Pipit (2,4,0)
CACG - Cackling Goose (1,0,0)
CANG - Canada Goose (0,2,0)
DUNL - Dunlin (1,1,0)
HERG - Herring Gull (0,1,1)
HOLA - Horned Lark (0,1,0)
HORE - Hoary Redpoll (1,1,1)
LALO - Lapland Longspur (11,14,6)
LESA - Least Sandpiper (0,1,0)
LTDU - Long-tailed Duck (0,0,1)
REDP - Redpoll Species (0,2,0)
ROPT - Rock Ptarmigan (0,1,0)
RTLO - Red-throated Loon (0,1,0)
SAVS - Savannah Sparrow (2,4,0)
SEPL - Semipalmated Plover (2,3,1)
SESA - Semipalmated Sandpiper (8,10,2)

*** Notes:**

1. Shoreline Surveys were carried out on all waterbodies within the Whale Tail Pit Study Area & within 100 m of the alignments of the Proposed Haul Road, Esker Borrow Areas, & Esker Access Roads at the time of the Shoreline Survey (June 2016). The Proposed Haul Road alignment changed between the 2015 & 2016 surveys.
2. Only the Whale Tail Study area surveyed in 2017. Shoreline surveys were not conducted along the Haul Road in 2017.
3. Lakes 200-203 were added to the 2017 shoreline surveys due to proposed flooding.
4. For Upland bird obersvations by Shoreline Survey Transect see Appendix F: Shoreline Survey Results 2015, 2016, 2017
5. Refer to Appendix G: D&A to AEM Lake Names for the conversation between D&A Shoreline Survey Transects & AEM Lake Names

P71
CACG - 2,2
LTDU - 0,2
SEPL - 0,3
SESA - 2,0

P75
CANG - 0,0,2

P74
CANG - 0,2,4
SESA - 0,2,0

L09
CACG - 0,1,0
CANG - 2,14,0
COLO - 1,0,0
HERG - 1,1,0
RBME - 2,4,0
SACR - 0,3,0
SEPL - 3,5,0
SESA - 0,2,0

P68
LESA - 0,1,0
SESA - 1,0,1

P73
SESA - 0,1,0

P63
DUNL - 0,1,0

P57
COLO - 0,1,x
RMBE - 1,0,x

L12
SEPL - 0,1,x

P76
COME - 0,0,2
LESA - 0,0,2
SESA - 0,0,2

P77
CANG - 0,4,0

P69
CANG - 0,2,0
RTLO - 0,2,0
SESA - 1,0,0

P70
SEPL - 2,0,0

P72
SESA - 0,1,0

P79
PEEP - 0,0,1

P64
RBME - 0,2
SESA - 1,2

P61
GRWF - 0,4,x
SESA - 2,2,x

P62
DUNL - 0,1,x
CACG - 2,0,x
LTDU - 5,0,x
SESA - 4,0,x

P81
LTDU - 0,1,1
SESA - 1,3,0

P82
AGPL - 1,0,1
HERG - 0,1,0
SESA - 1,0,1

P83
HERG - 2,2,4
LTDU - 0,5,0
RTLO - 0,0,1
SESA - 0,2,2

P85
YBLO - 0,1,0

L10
CANG - 1,2,x
COLO - 2,2,x
HERG - 0,3,1
RBME - 1,0,x
SESA - 2,0,x
SNGO - 1,0,x
YBLO - 0,4,x

L202
CANG - x,x,6
HERG - x,x,1

L08
AGPL - 0,0,3
CACK - 0,1,1
CANG - 0,17,20
COLO - 0,1,0
GLGU - 1,0,0
HERG 0,1,0
LESA - 0,2,0
LTDU - 0,1,0
RTLO - 0,1,0
SEPL - 0,3,2
SESA - 4,13,6

L200
SESA - x,x,5

L201
SESA - x,x,1

P38
CACG - 11,0,x
CANG - 1,0,x
RBME - 0,1,x

P39
AGPL - 0,1,x

P49
DUNL - 1,1,x
HERG - 0,1,x
SESA - 1,2,x

P37
LTDU - 2,0,x
SESA - 1,0,x

P36
SESA - 1,1,x

P53
HERG - 0,1,x

P54
COLO - 0,1,x
RTLO - 0,1,x

P109
SEPL - 0,1,x

P110
SEPL - 0,2,x

P105
SEPL - 0,1,x

Whale Tail Study Area
Nemo Lake
Mammoth Lake
Whale Tail Lake
Esker 6
Esker 5

0 0.5 1 2
Kilometres

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Legend

Confirmed Breeding [1] (2015-2017)

Waterbirds
- Confirmed Nest
- Additional Confirmed Breeding

Upland Birds
- Confirmed Nest
- Additional Confirmed Breeding

Waterbird Survey Transect
(D&A, 2015 - 2017)
- Lake
- Pond

Map Base
- Esker or Esker Access Road
- Proposed Haul Road (AEM, Nov. 2015)
- Shoreline Survey Area *
- Whale Tail Study Area
- LSA Boundary
- RSA Boundary

Whale Tail Pit & Whale Tail Haul Road
Comprehensive Terrestrial Baseline Characterization Report
2015-2017 Shoreline Surveys

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CLIENT: Agnico Eagle Mines Limited
DATE: NOVEMBER 21, 2017
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CHECKED BY: Mary Anne Young
UTM Zone 14 NAD83

Figure:
11 - 1

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Observed Waterbirds
Species Code - (# in 2015, 2016, 2017)
AGPL - American Golden-Plover (2,1,4)
CACG - Cackling Goose (15,3,1)
CANG - Canada Goose (4,127,67)
COLO - Common Loon (3,8,0)
COME - Common Merganser (.0.0.2)
DUNL - Dunlin (1,2,1)
GLGU - Glaucous Gull (2,0,0)
GRWF - Greater White-fronted Goose (1,6,0)
HERG - Herring Gull (7,21,9)
LESA - Least Sandpiper (1,4,2)
LTDU - Long-tailed Duck (21,23,7)
PALO - Pacific Loon (0,1,0)
PESA - Pectoral Sandpiper (0,3,0)
PEEP - Sandpiper species (0,0,1)
RBME - Red-breasted Merganser (4,7,0)
RNPH - Red-necked Phalarope (0,0,2)
RTLO - Red-throated Loon (1,4,2)
SACR - Sandhill Crane (0,5,0)
SEPL - Semipalmated Plover (8,26,2)
SESA - Semipalmated Sandpiper (38,53,26)
SNGO - Snow Goose (1,0,0)
YBLO - Yellow-billed Loon (0,5,0)

Confirmed Nests
Species Code - (# in 2015, 2016, 2017)
AGPL - American Golden-Plover (0,0,1)
AMPI - American Pipit (2,4,0)
CACG - Cackling Goose (1,0,0)
CANG - Canada Goose (0,2,0)
DUNL - Dunlin (1,1,0)
HERG - Herring Gull (0,1,1)
HOLA - Horned Lark (0,1,0)
HORE - Hoary Redpoll (1,1,1)
LALO - Lapland Longspur (11,14,6)
LESA - Least Sandpiper (0,1,0)
LTDU - Long-tailed Duck (0,0,1)
REDP - Redpoll Species (0,2,0)
ROPT - Rock Ptarmigan (0,1,0)
RTLO - Red-throated Loon (0,1,0)
SAVS - Savannah Sparrow (2,4,0)
SEPL - Semipalmated Plover (2,3,1)
SESA - Semipalmated Sandpiper (8,10,2)

*** Notes:**
1. Shoreline Surveys were carried out on all waterbodies within the Whale Tail Pit Study Area & within 100 m of the alignments of the Proposed Haul Road, Esker Borrow Areas, & Esker Access Roads at the time of the Shoreline Survey (June 2016). The Proposed Haul Road alignment changed between the 2015 & 2016 surveys.
2. Only the Whale Tail Study area surveyed in 2017. Shoreline surveys were not conducted along the Haul Road in 2017.
3. Lakes 200-203 were added to the 2017 shoreline surveys due to proposed flooding.
4. For Upland bird obersvations by Shoreline Survey Transect see Appendix F: Shoreline Survey Results 2015, 2016, 2017
5. Refer to Appendix G: D&A to AEM Lake Names for the conversation between D&A Shoreline Survey Transects & AEM Lake Names

P105
SEPL - 0,1,x

P36
SESA - 1,1,x

P35
CANG - 0,16,x

P48
RTLO - 1,0,,x

P47
SEPL - 0,1,x

P103
SEPL - 0,1,x

P44
SEPL - 0,1,x
SESA - 1,0,x

P33
COLO - 0,1,x

P118
SESA - 0,1,x

P32
HERG - 1,0,x
LTDU - 1,0,x

SEPL (2016)
LALO (2016)
SESA (2016)
LALO (2016)
Esker 4
P46
P45
P101
P34
P99
59+000.00
58+000.00
57+000.00
56+000.00
55+000.00
54+000.00
53+000.00
52+000.00
51+000.00
50+000.00
49+000.00
48+000.00
47+000.00

0 0.5 1 2
Kilometres

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Legend

Confirmed Breeding [1] (2015-2017)
Waterbirds
- Confirmed Nest
- Additional Confirmed Breeding

Upland Birds
- Confirmed Nest
- Additional Confirmed Breeding

Waterbird Survey Transect
(D&A, 2015 - 2017)
- Pond

Map Base
- Esker or Esker Access Road
- Proposed Haul Road (AEM, Nov. 2015)
- Shoreline Survey Area *
- Whale Tail Study Area
- LSA Boundary
- RSA Boundary

Whale Tail Pit & Whale Tail Haul Road
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2015-2017 Shoreline Surveys

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Nunavut ENVIRONMENTAL CONSULTING LTD

PROJECT: Whale Tail Pit & Haul Road
CLIENT: Agnico Eagle Mines Limited
DATE: NOVEMBER 21, 2017
SCALE: 1:30,000
DRAWN BY: Lindsey Carter
CHECKED BY: Mary Anne Young
N W E S
UTM Zone 14 NAD83

Figure:
11 - 2

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation.

Observed Waterbirds

Species Code - (# in 2015, 2016, 2017)

AGPL - American Golden-Plover (2,1,4)
CACG - Cackling Goose (15,3,1)
CANG - Canada Goose (4,127,67)
COLO - Common Loon (3,8,0)
COME - Common Merganser (.0.0.2)
DUNL - Dunlin (1,2,1)
GLGU - Glaucous Gull (2,0,0)
GRWF - Greater White-fronted Goose (1,6,0)
HERG - Herring Gull (7,21,9)
LESA - Least Sandpiper (1,4,2)
LTDU - Long-tailed Duck (21,23,7)
PALO - Pacific Loon (0,1,0)
PESA - Pectoral Sandpiper (0,3,0)
PEEP - Sandpiper species (0,0,1)
RBME - Red-breasted Merganser (4,7,0)
RNPH - Red-necked Phalarope (0,0,2)
RTLO - Red-throated Loon (1,4,2)
SACR - Sandhill Crane (0,5,0)
SEPL - Semipalmated Plover (8,26,2)
SESA - Semipalmated Sandpiper (38,53,26)
SNGO - Snow Goose (1,0,0)
YBLO - Yellow-billed Loon (0,5,0)

Confirmed Nests

Species Code - (# in 2015, 2016, 2017)

AGPL - American Golden-Plover (0,0,1)
AMPI - American Pipit (2,4,0)
CACG - Cackling Goose (1,0,0)
CANG - Canada Goose (0,2,0)
DUNL - Dunlin (1,1,0)
HERG - Herring Gull (0,1,1)
HOLA - Horned Lark (0,1,0)
HORE - Hoary Redpoll (1,1,1)
LALO - Lapland Longspur (11,14,6)
LESA - Least Sandpiper (0,1,0)
LTDU - Long-tailed Duck (0,0,1)
REDP - Redpoll Species (0,2,0)
ROPT - Rock Ptarmigan (0,1,0)
RTLO - Red-throated Loon (0,1,0)
SAVS - Savannah Sparrow (2,4,0)
SEPL - Semipalmated Plover (2,3,1)
SESA - Semipalmated Sandpiper (8,10,2)

P97
CANG - 0,37,x
SEPL - 0,1,x

P118
SESA - 0,1,x

P32
HERG - 1,0,x
LTDU - 1,0,x

P42
SEPL - 0,1,x

P96
LESA - 0,1,x
SEPL - 0,1,x

P43
LTDU - 2,2,x
SEPL - 1,2,x

P29
HERG - 1,1,x
LTDU - 0,1,x
SESA - 0,2,x

P25
LTDU - 2,0,x

SESA (2016)
LALO (2016)
LALO (2016)
AMPI (2016)
HOLA (2016)
SAVS (2016)
LALO (2016)
SAVS (2015)

P99
P31
P30
P28
P27
P26

Esker 3

50+000.00
49+000.00
48+000.00
47+000.00
46+000.00
45+000.00
44+000.00
43+000.00
42+000.00

*** Notes:**

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Legend

Confirmed Breeding [1] (2015-2017)

Waterbirds
- Additional Confirmed Breeding

Upland Birds
- Confirmed Nest
- Additional Confirmed Breeding

Waterbird Survey Transect
(D&A, 2015 - 2017)
- Pond

Map Base
- Esker or Esker Access Road
- Proposed Haul Road (AEM, Nov. 2015)
- Shoreline Survey Area *
- LSA Boundary
- RSA Boundary

0 0.5 1 2
Kilometres

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N W E S
UTM Zone 14 NAD83
DATE: NOVEMBER 21, 2017
SCALE: 1:30,000
DRAWN BY: Lindsey Carter
CHECKED BY: Mary Anne Young

Figure:
11 - 3

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Observed Waterbirds
Species Code - (# in 2015, 2016, 2017)
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CANG - Canada Goose (4,127,67)
COLO - Common Loon (3,8,0)
COME - Common Merganser (.0.0.2)
DUNL - Dunlin (1,2,1)
GLGU - Glaucous Gull (2,0,0)
GRWF - Greater White-fronted Goose (1,6,0)
HERG - Herring Gull (7,21,9)
LESA - Least Sandpiper (1,4,2)
LTDU - Long-tailed Duck (21,23,7)
PALO - Pacific Loon (0,1,0)
PESA - Pectoral Sandpiper (0,3,0)
PEEP - Sandpiper species (0,0,1)
RBME - Red-breasted Merganser (4,7,0)
RNPH - Red-necked Phalarope (0,0,2)
RTLO - Red-throated Loon (1,4,2)
SACR - Sandhill Crane (0,5,0)
SEPL - Semipalmated Plover (8,26,2)
SESA - Semipalmated Sandpiper (38,53,26)
SNGO - Snow Goose (1,0,0)
YBLO - Yellow-billed Loon (0,5,0)

Confirmed Nests
Species Code - (# in 2015, 2016, 2017)
AGPL - American Golden-Plover (0,0,1)
AMPI - American Pipit (2,4,0)
CACG - Cackling Goose (1,0,0)
CANG - Canada Goose (0,2,0)
DUNL - Dunlin (1,1,0)
HERG - Herring Gull (0,1,1)
HOLA - Horned Lark (0,1,0)
HORE - Hoary Redpoll (1,1,1)
LALO - Lapland Longspur (11,14,6)
LESA - Least Sandpiper (0,1,0)
LTDU - Long-tailed Duck (0,0,1)
REDP - Redpoll Species (0,2,0)
ROPT - Rock Ptarmigan (0,1,0)
RTLO - Red-throated Loon (0,1,0)
SAVS - Savannah Sparrow (2,4,0)
SEPL - Semipalmated Plover (2,3,1)
SESA - Semipalmated Sandpiper (8,10,2)

*** Notes:**
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P25
LTDU - 2,0,x

P94
HERG - 0,3,x

P93
LTDU - 0,1,x
SACR - 0,2,x
SEPL - 0,1,x

P92
CANG - 0,10,x

P22
CANG - 0,18,x
HERG - 0,3,x
SESA - 0,1,x

P17
LTDU - 1,0,x

ROPT (2016)
LALO (2016)
AMPI (2016)
REDP (2016)
SESA (2015

P24
P23
P21
P20
P19
P18
L04
L05
L06

41+000.00
40+000.00
39+000.00
38+000.00
37+000.00
36+000.00
35+000.00
34+000.00
33+000.00
32+000.00
31+000.00
30+000.00
29+000.00
28+000.00
27+000.00
26+000.00

0 0.5 1 2
Kilometres

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Legend

Confirmed Breeding [1] (2015-2017)
Upland Birds
- Confirmed Nest
- Additional Confirmed Breeding

Waterbird Survey Transect
(D&A, 2015 - 2017)
- Lake
- Pond

Map Base
- Esker or Esker Access Road
- Proposed Haul Road (AEM, Nov. 2015)
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Figure:
11 - 4

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P93
LTDU - 0,1,x
SACR - 0,2,x
SEPL - 0,1,x

P92
CANG - 0,10,x

P16
GRWF - 1,2,x
LTDU - 0,1,x
SESA - 0,3,x

Esker 2

L03
LESA - 1,0,x
SESA - 1,1,x

SAVS (2015)

24+000.00

23+000.00

P90
PESA - 0,3,x
SESA - 0,1,x

22+000.00

P-(2016)

25+000.00

LALO (2016)

SESA (2015)

SEPL (2015)

P15
LTDU - 5,6,x
SESA - 3,4,x

P41
LTDU - 1,0,x
SEPL - 1,0,x
SESA - 0,1,x

L02
HERG - 1,0,x

P17
LTDU - 1,0,x

L07
SESA - 1,0,x

P89
HERG - 0,1,x

21+000.00

SAVS (2016)

20+000.00

LALO (2016)

P14
COLO - 0,1,x

19+000.00

18+000.00

P40
HERG - 0,1,x
PALO - 0,1,x

HORE (2016)

P87
P88
P12

Esker 1

P13
SESA 1,0,x

17+000.00

16+000.00

0 0.5 1 2
Kilometres

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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GLGU - Glaucous Gull (2,0,0)
GRWF - Greater White-fronted Goose (1,6,0)
HERG - Herring Gull (7,21,9)
LESA - Least Sandpiper (1,4,2)
LTDU - Long-tailed Duck (21,23,7)
PALO - Pacific Loon (0,1,0)
PESA - Pectoral Sandpiper (0,3,0)
PEEP - Sandpiper species (0,0,1)
RBME - Red-breasted Merganser (4,7,0)
RNPH - Red-necked Phalarope (0,0,2)
RTLO - Red-throated Loon (1,4,2)
SACR - Sandhill Crane (0,5,0)
SEPL - Semipalmated Plover (8,26,2)
SESA - Semipalmated Sandpiper (38,53,26)
SNGO - Snow Goose (1,0,0)
YBLO - Yellow-billed Loon (0,5,0)

Confirmed Nests
Species Code - (# in 2015, 2016, 2017)
AGPL - American Golden-Plover (0,0,1)
AMPI - American Pipit (2,4,0)
CACG - Cackling Goose (1,0,0)
CANG - Canada Goose (0,2,0)
DUNL - Dunlin (1,1,0)
HERG - Herring Gull (0,1,1)
HOLA - Horned Lark (0,1,0)
HORE - Hoary Redpoll (1,1,1)
LALO - Lapland Longspur (11,14,6)
LESA - Least Sandpiper (0,1,0)
LTDU - Long-tailed Duck (0,0,1)
REDP - Redpoll Species (0,2,0)
ROPT - Rock Ptarmigan (0,1,0)
RTLO - Red-throated Loon (0,1,0)
SAVS - Savannah Sparrow (2,4,0)
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Legend

Confirmed Breeding [1] (2015-2017)

Waterbirds
- Additional Confirmed Breeding

Upland Birds
- Confirmed Nest

Waterbird Survey Transect
(D&A, 2015 - 2017)
- Lake
- Pond

Map Base
- Esker or Esker Access Road
- Proposed Haul Road (AEM, Nov. 2015)
- Shoreline Survey Area *
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DATE: NOVEMBER 21, 2017
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DRAWN BY: Lindsey Carter
CHECKED BY: Mary Anne Young

Figure:
11 - 5

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Observed Waterbirds

Species Code - (# in 2015, 2016, 2017)

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COLO - Common Loon (3,8,0)
COME - Common Merganser (.0.0.2)
DUNL - Dunlin (1,2,1)
GLGU - Glaucous Gull (2,0,0)
GRWF - Greater White-fronted Goose (1,6,0)
HERG - Herring Gull (7,21,9)
LESA - Least Sandpiper (1,4,2)
LTDU - Long-tailed Duck (21,23,7)
PALO - Pacific Loon (0,1,0)
PESA - Pectoral Sandpiper (0,3,0)
PEEP - Sandpiper species (0,0,1)
RBME - Red-breasted Merganser (4,7,0)
RNPH - Red-necked Phalarope (0,0,2)
RTLO - Red-throated Loon (1,4,2)
SACR - Sandhill Crane (0,5,0)
SEPL - Semipalmated Plover (8,26,2)
SESA - Semipalmated Sandpiper (38,53,26)
SNGO - Snow Goose (1,0,0)
YBLO - Yellow-billed Loon (0,5,0)

Confirmed Nests

Species Code - (# in 2015, 2016, 2017)

AGPL - American Golden-Plover (0,0,1)
AMPI - American Pipit (2,4,0)
CACG - Cackling Goose (1,0,0)
CANG - Canada Goose (0,2,0)
DUNL - Dunlin (1,1,0)
HERG - Herring Gull (0,1,1)
HOLA - Horned Lark (0,1,0)
HORE - Hoary Redpoll (1,1,1)
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LTDU - Long-tailed Duck (0,0,1)
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ROPT - Rock Ptarmigan (0,1,0)
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SAVS - Savannah Sparrow (2,4,0)
SEPL - Semipalmated Plover (2,3,1)
SESA - Semipalmated Sandpiper (8,10,2)

P11
SEPL - 0,1,x

P08
SESA - 3,1,x

P07
SESA - 0,3,x

P06
SESA - 1,1,x

P10
P09
P05
LALO (2016)

15+000.00
14+000.00
13+000.00
12+000.00
11+000.00
10+000.00
9+000.00
8+000.00
7+000.00

Tehek Lake

0 0.5 1 2
Kilometres

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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Legend

Confirmed Breeding [1] (2015-2017)

Upland Birds

- Additional Confirmed Breeding

Waterbird Survey Transect

(D&A, 2015 - 2017)

- Pond

Map Base

- Proposed Haul Road (AEM, Nov. 2015)
- Shoreline Survey Area *
- LSA Boundary
- RSA Boundary

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CLIENT: Agnico Eagle Mines Limited

N W E S
UTM Zone 14 NAD83

DATE: NOVEMBER 21, 2017
SCALE: 1:30,000
DRAWN BY: Lindsey Carter
CHECKED BY: Mary Anne Young

Figure:

11 - 6

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Observed Waterbirds

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SACR - Sandhill Crane (0,5,0)
SEPL - Semipalmated Plover (8,26,2)
SESA - Semipalmated Sandpiper (38,53,26)
SNGO - Snow Goose (1,0,0)
YBLO - Yellow-billed Loon (0,5,0)

Confirmed Nests

Species Code - (# in 2015, 2016, 2017)

AGPL - American Golden-Plover (0,0,1)
AMPI - American Pipit (2,4,0)
CACG - Cackling Goose (1,0,0)
CANG - Canada Goose (0,2,0)
DUNL - Dunlin (1,1,0)
HERG - Herring Gull (0,1,1)
HOLA - Horned Lark (0,1,0)
HORE - Hoary Redpoll (1,1,1)
LALO - Lapland Longspur (11,14,6)
LESA - Least Sandpiper (0,1,0)
LTDU - Long-tailed Duck (0,0,1)
REDP - Redpoll Species (0,2,0)
ROPT - Rock Ptarmigan (0,1,0)
RTLO - Red-throated Loon (0,1,0)
SAVS - Savannah Sparrow (2,4,0)
SEPL - Semipalmated Plover (2,3,1)
SESA - Semipalmated Sandpiper (8,10,2)

*** Notes:**

1. Shoreline Surveys were carried out on all waterbodies within the Whale Tail Pit Study Area & within 100 m of the alignments of the Proposed Haul Road, Esker Borrow Areas, & Esker Access Roads at the time of the Shoreline Survey (June 2016). The Proposed Haul Road alignment changed between the 2015 & 2016 surveys.
2. Only the Whale Tail Study area surveyed in 2017. Shoreline surveys were not conducted along the Haul Road in 2017.
3. Lakes 200-203 were added to the 2017 shoreline surveys due to proposed flooding.
4. For Upland bird obersvations by Shoreline Survey Transect see Appendix F: Shoreline Survey Results 2015, 2016, 2017
5. Refer to Appendix G: D&A to AEM Lake Names for the conversation between D&A Shoreline Survey Transects & AEM Lake Names

P05
8+000.00
7+000.00
6+000.00
5+000.00
P04
LTDU - 1,0,x
P03
P02
SESA - 0,1,x
4+000.00
P01
3+000.00
2+000.00
L01
HERG - 1,0,x
1+000.00
0+000.00
Vault

0 0.5 1 2
Kilometres

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Legend

Waterbird Survey Transect
(D&A, 2015 - 2017)
Pond

Map Base
Proposed Haul Road
(AEM, Nov. 2015)
Mine Site
Road
Shoreline Survey Area *
LSA Boundary
RSA Boundary

Whale Tail Pit & Whale Tail Haul Road
Comprehensive Terrestrial Basleline Characterization Report
2015-2017 Shoreline Surveys

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PROJECT: Whale Tail Pit & Haul Road
CLIENT: Agnico Eagle Mines Limited
N W E S
UTM Zone 14 NAD83
DATE: NOVEMBER 21, 2017
SCALE: 1:30,000
DRAWN BY: Lindsey Carter
CHECKED BY: Mary Anne Young

Figure:
11 - 7

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation.

APPENDIX I

Government of Nunavut GST Calculation Methods

Method for Calculating Caribou Group Size Thresholds (GST)

For Application to Caribou Decision Trees in the Terrestrial Ecosystem Management Plan (TEMP) for Agnico Eagle Mines Ltd, Meadowbank Division

The Group Size Threshold (GST) is defined as the group size at, or above which, 75% of caribou observed interacting with Project infra-structure are expected to occur in.

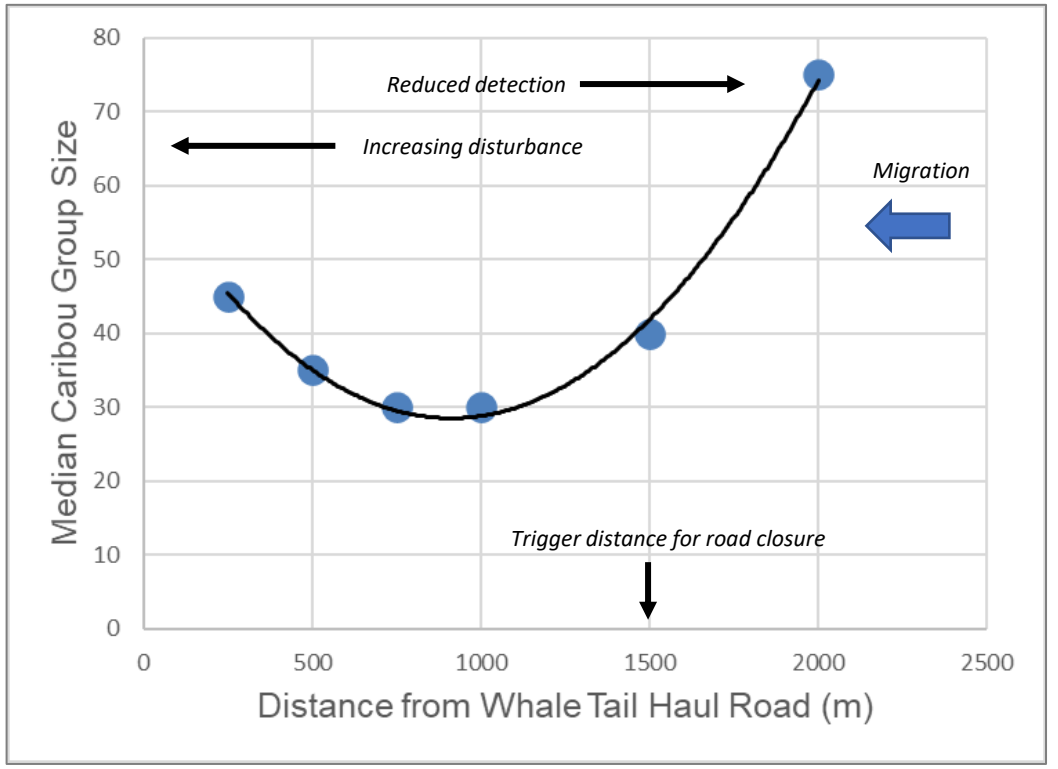
Selection of Data:

Using road survey data, exclude observations of caribou made within 250m and beyond 1000m of roads.

Example of supporting evidence:

Using the largest data set available, the 2019 road survey data, group sizes tend to be higher within 250 meters and beyond 1000 meters of the road. This probably reflects effects of increasing caribou disturbance close the road and reduced ability of observers to detect caribou in small groups far from the road (i.e. great than 1000m).

Ninety-four percent of caribou groups are observed within 1000 meter of the road.



Sample Sizes:

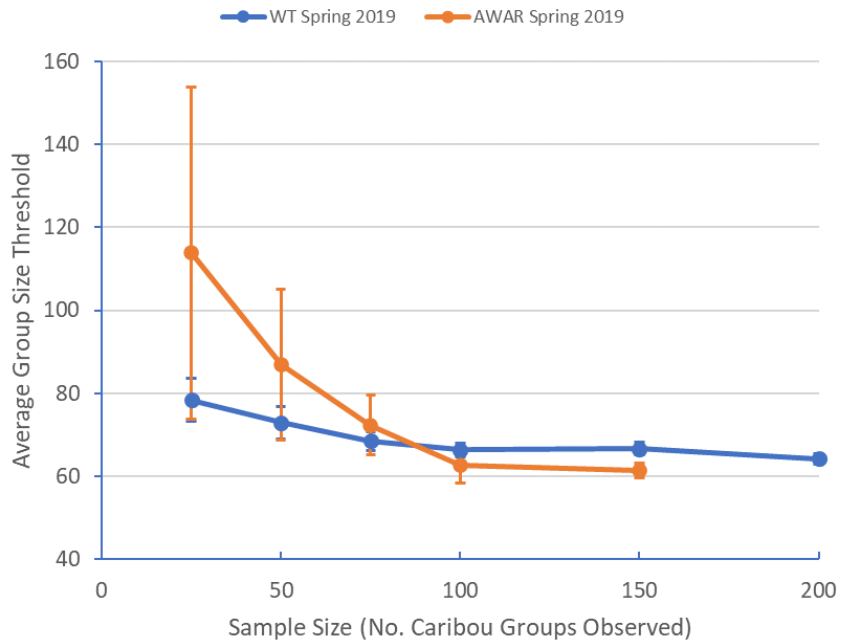
Use data from years and seasons in which the number of caribou groups observed (greater than 250 m and within 1000 m of roads) is at least 100.

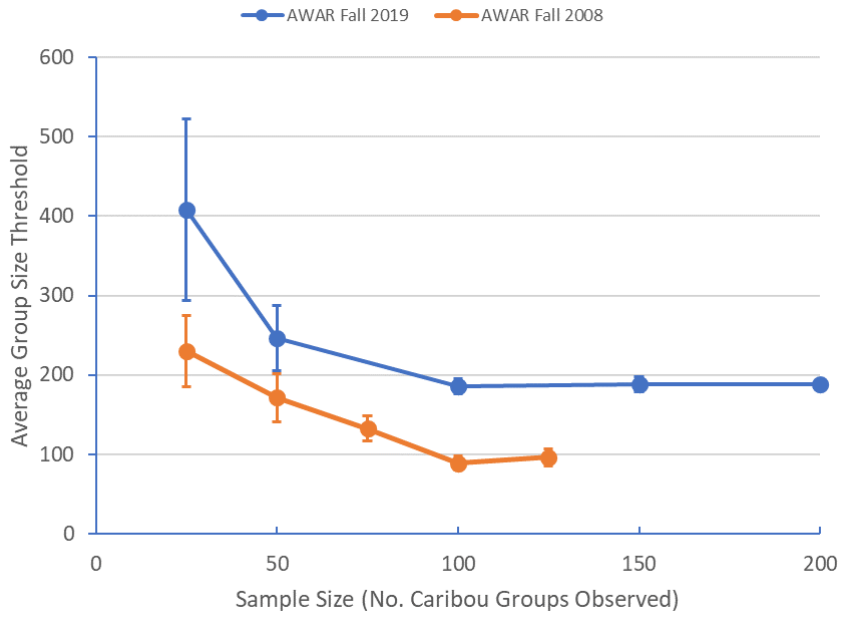
Example of supporting evidence:

By randomly sampling the largest data sets available, multiple times, we can estimate how the accuracy and precision of GST estimates is affected by sample size.

The results show that in-order to calculate a GST, unaffected by bias or variation due to low sample size, observations of at least 100 caribou groups are required.

The results also suggest that groups sizes are similar for the Meadowbank All-Weather-Access-Road (AWAR) and Whale Tail Haul Road (HR). Data for these two roads, from the same year and season, can be pooled for calculating GST's.





Samples Sizes:

Vary widely amongst years and seasons

The years 2008, 2018, 2019 and 2020 had sufficient sample sizes for calculation of Spring GSTs.

The years 2008 and 2019 had sufficient samples sizes for calculation of fall GSTs.

Migration Season & Road		YEAR													
		7	8	9	10	11	12	13	14	15	16	17	18	19	20
Spring	AWAR	9	163	21	28	38	24	27	33	65	31	4	110	163	115
	HR												4	274	136
Fall	AWAR	57	143	14	34	23	21	9	60	43	10	16	20	91	52
	HR												21	36	3

Results:

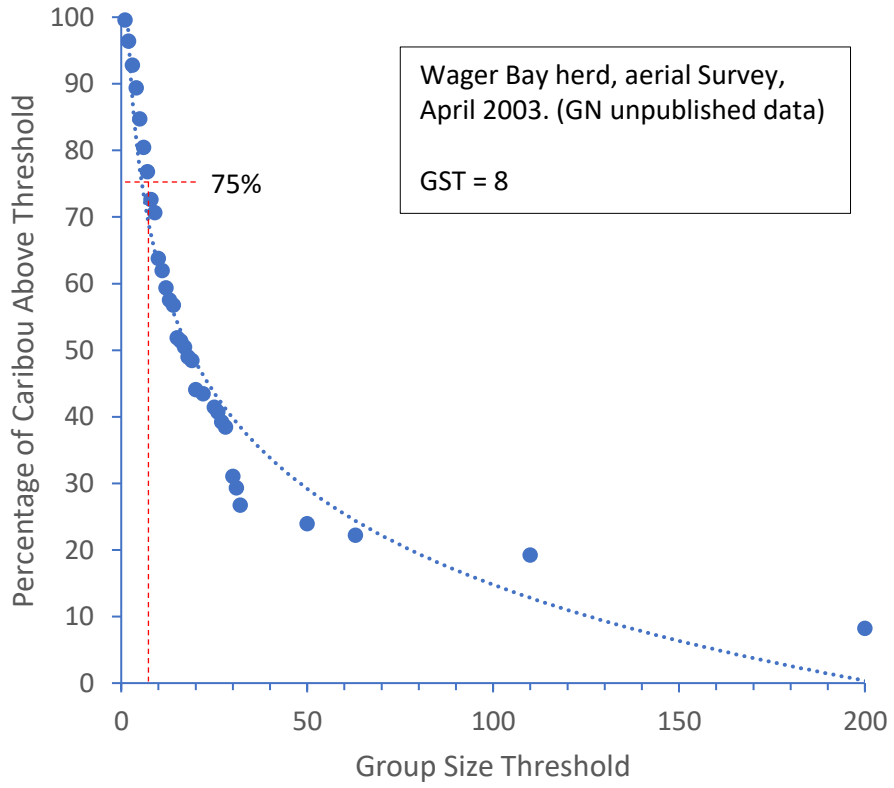
The average GST is 34 and 112 for the spring and fall migrations, respectively. These are the recommended GSTs for application in 2021.

Migration Season	YEAR				
	8	18	19	20	Average GST
Spring	12	30	60	34	34
Fall	100	--	125	--	112

Supporting evidence:

The GST calculated using the 2008 spring road survey data was 12. This closely matches GSTs calculated using aerial survey data for herds near the project, also collected during spring (see opposite).

Observed caribou group sizes have increased since roads came into operation after 2008. This may reflect disturbance of caribou caused by the roads and associated activities.



APPENDIX J

Spring Migration Caribou Protection Protocols

AGNICO EAGLE
MEADOWBANK

2024 Spring Migration Caribou Protection Protocols

In an effort to continuously improve caribou protection protocols around the Meadowbank Complex, Agnico Eagle, along with the TAG members, are proposing to trial updated caribou migration mitigation measures for the 2024 spring migration. The update is based on IQ highlighting the importance of allowing the lead migrating caribou herd to travel, encouraging the remaining herd to follow. Following the migration period, a debrief will be held with the TAG to align next steps in caribou migration mitigation measures. Specific mitigation measures have been identified during two phases of the 2024 spring caribou migration period: the lead caribou herd period and the rest of the migration period.

Overarching monitoring and mitigation measures

This section will summarize the mitigation measures that are applicable throughout the migration period. The 2024 spring migration period is defined from April 1st, 2024 and extends up to May 25th, 2024.

- The GST for the 2024 spring migration will be: 38 (GN calculation method)
- Prior to the expected start of migration, initiate daily TAG calls with KivIA, GN, BL HTO and CIRNAC. These calls are to be maintained throughout the migration period.
- Wildlife road surveys are to be conducted at least every second day. Frequency to be increased as per mitigation measures outlined in sections below.
- Prior to expected start of migration, Whale Tail Haul Road Viewshed Surveys to be conducted every 2 days, serving as potential early warning signal. Once migration is ongoing, frequency can be reduced to twice/week.
- Should the GST be exceeded during the migration period road will be closed to non-essential traffic.
- Each road will be managed independently throughout the caribou migration.
- During convoys, pilot vehicles have the authority to cancel or delay transport, based on field observations, both upstream and downstream of the road.
- Daily site-wide notification of caribou presence (if applicable).
- Any other item not covered within these protocols will refer to the currently approved TEMP v7, or as otherwise agreed upon during the daily TAG calls.

Lead caribou monitoring and mitigation measures

This section will summarize the mitigation measures applicable during the lead caribou period.

- Monitoring measures:
  - In the days leading up to expected arrival of lead caribou, daily wildlife road surveys will be performed by Agnico Eagle;
- Lead caribou identification:
  - Lead caribou will be identified using a combination of some of the following line of evidence:

        - Community observation and feedback;
        - Road survey observation (groups containing female caribou (GST 10));
        - Caribou collar movement.
    - Based on the line of evidence, decision to be made in collaboration by KivIA, GN, BL HTO, Agnico Eagle and elders, if available.
- Once lead caribou have been identified, the following measures will be automatically applied for 10 days:
    - Minimal traffic will only be authorized on the road on alternating days, in a convoy. The intent is to provide multiple 40-hour window without possible traffic disturbances to potentially accelerate lead caribou passage.
        - Traffic is defined as vehicles to transport passengers (busses), transport food, perform wildlife monitoring, and perform minimal road maintenance.
        - Any deviation of this list requires approval from the TAG members.
        - Should crew changes be cancelled, they will be reattempted the next day.
        - Convoys will be led by KivIA, HTO or Agnico Eagle. In order to minimize traffic on the road, wildlife monitors will share the same vehicle.
    - At the start of the 10-day period, a schedule of days with authorized road traffic will be shared to TAG members.

Monitoring & mitigation measures for the remaining migration period

This section will summarize the mitigation measures applicable outside of the lead caribou period.

- Monitoring measures:
    - Remaining monitoring to follow measures outlined in the approved TEMP v7.
- Mitigation measures will follow the measures outlined in the approved TEMP v7, with the following modifications:
    - Convoys composed of essential operational needs (e.g. fuel, freight) can be escorted daily, unless there is presence of caribou in a group exceeding 200 within 500m upstream of the road, with apparent intent to migrate across the road.
    - Crew changes to be attempted on a daily basis, escorted by KivIA, HTO or Agnico Eagle.
        - Crew changes defined above also include food transportation between sites.
        - Should a large group cause a cancellation of a crew change, the crew change will occur on the following day.
    - Road maintenance will be authorized in sectors with minimal caribou presence, based on observations and consultation with KivIA, BL HTO and GN.

APPENDIX K

Fall Migration Caribou Protection Protocols

AGNICO EAGLE
MEADOWBANK

Fall Migration Caribou Protection Protocols

In an effort to continuously improve caribou protection protocols around the Meadowbank Complex, Agnico Eagle, along with the TAG members (KivIA, BL HTO, GN), are proposing to trial updated caribou migration mitigation measures for the upcoming three (3) fall migrations (2025-2027). The objective of the update is to evaluate the effectiveness of allowing fixed period of time without any non-essential disturbance to caribou. At the end of the first season, a debrief will be held with the TAG to review implementation of the measures.

Overarching monitoring and mitigation measures

This section will summarize the mitigation measures that are applicable throughout the fall migration period. The fall migration period is defined from September 22nd to December 15th.

- The GST for the fall migration will be calculated per the TEMP (GN calculation methodology).
- Should the GST be exceeded during the migration period road will be closed to non-essential traffic.
- Each road will be managed independently throughout the caribou migration.
- Daily site-wide notification of caribou presence (if applicable)

Monitoring and mitigation measures <u>during road closures</u>

This section will present the monitoring and mitigation measures to be applied during road closures for each road of the Meadowbank Complex individually. The roads will have slightly different measures due to their nature (criticality of remote site, length, etc.).

<u>AWAR (All-Weather Access Road)</u>

- Monitoring measures:
  - Wildlife Road Surveys to be performed daily.
  - Review GN provided satellite information as frequently as made available to Agnico Eagle.
- Mitigation measures:
  - Road will be closed to non-essential vehicles
  - Daily site-wide notification of caribou presence
  - Implement daily calls with the operational TAG members (KivIA, BL HTO, GN). The frequency of these calls can be adjusted based on group consensus.
  - **Convoys:**
    - Operational Needs Convoy: Agnico Eagle can operate a convoy composed of operational needs (e.g. fuel, freight), crew changes and food transportation, on the condition that following this convoy, a minimum period of 24 hours is maintained without any non-essential traffic. Composition of the convoy will be of Agnico Eagle choosing.

        - Convoys will be escorted by KivIA, HTO or Agnico Eagle and would be executed in a manner to minimize disturbances. Opportunities to combine monitoring vehicles would be taken when possible.
        - During convoys, pilot vehicles have the authority to cancel or delay transport, based on field observations, both upstream and downstream of the road
        - Should a large group cause a cancellation of a crew change, minimally, a crew change will occur on the following day, since no passage will have been completed.
        - All efforts should be placed on minimizing the number of separate potential disturbances.
    - Road maintenance will be authorized in sectors with minimal caribou presence, based on observations and consultation with KivIA, BL HTO or GN.

WTHR (Whale Tail Haul Road)

- Monitoring measures:
    - Wildlife Road Surveys to be performed daily.
    - Review GN provided satellite information as frequently as made available to Agnico Eagle.
- Mitigation measures:
    - Road will be closed to non-essential vehicles
    - Daily site-wide notification of caribou presence
    - Implement daily calls with the operational TAG members (KivIA, BL HTO, GN). The frequency of these calls can be adjusted based on group consensus.
    - **Convoys:**
        - Essential needs convoy: Agnico Eagle can operate a convoy composed of essential needs (e.g. crew changes, food) for no more than 5 days a week. Essential needs convoy shall be designed in a manner to limits potential disturbances with no more than 5 vehicles.
        - Operational Needs Convoy: Agnico Eagle can operate a convoy composed of operational needs (e.g. fuel, freight); crew changes and food transportation, on the condition that following this convoy, a minimum period of 24 hours is maintained without any non-essential traffic. Composition of the convoy will be of Agnico Eagle choosing but will not include hauling of ore.
        - All convoys will be escorted by KivIA, HTO or Agnico Eagle and would be executed in a manner to minimize disturbances. Opportunities to combine monitoring vehicles would be taken when possible.
        - During convoys, pilot vehicles have the authority to cancel or delay transport, based on field observations, both upstream and downstream of the road

        - Should a large group cause a cancellation of a crew change, minimally, a crew change will occur on the following day, since no passage will have been completed.
        - All efforts should be placed on minimizing the number of separate potential disturbances.
    - Road maintenance will be authorized in sectors with minimal caribou presence, based on observations and consultation with KivIA, BL HTO or GN.

Essential Traffic: vehicles operated for the purpose of maintaining the safety of personnel, Emergency Response Team (ERT), Security and wildlife monitoring.

APPENDIX L

Predatory Mammal Den Management and Protection Plan

BACKGROUND AND PURPOSE

Predatory mammals represent a valued ecosystem component (VEC), which occur and are known to den in the vicinity of the Meadowbank and Whale Tail Project facilities. Sensory disturbances near to active dens such as blasting, vehicles and, most significantly, ground personnel, may negatively impact denning success by inducing stress responses in the adult mammals, which can result in den abandonment.

This plan is applicable to four species:

- Arctic wolf (*Canis lupus*) natal dens
- Grizzly bear (*Ursus arctos*) natal/overwintering dens
- Arctic fox (*Vulpes lagopus*) natal dens
- Wolverine (*Gulo gulo*) natal dens

The purpose of this plan is to provide a framework for identification, characterization, and monitoring of predatory mammal dens in order to protect any detected dens from disturbance throughout exploration and operation activities in the vicinity of all Meadowbank and Whale Tail Project facilities. The plan will include consultation with the Government of Nunavut (GN) with respect to obligations under the *Wildlife Act*, SNU 2003, c. 26.

MANAGEMENT AND PROTECTION PLAN PROTOCOL

Overview

All observation visits to any active predatory den site must be undertaken with utmost care to avoid disturbing the den. Observations will take place from the greatest possible distance that allows for accurate observation and will employ binoculars and spotting scopes.

Stage 1 – Detection

Detection of predatory mammal dens will be completed using a combination of targeted surveys prior to new construction and ongoing wildlife monitoring during operation.

OPTION A – DURING OPERATION	OPTION B – PRIOR TO CONSTRUCTION
During project facilities operation; Predatory mammal observations, including any indication of denning, will be recorded at any point during operation of project facilities. This detection will be supported by ongoing monitoring activities: road surveys and height-of-land surveys in conjunction with incidental observations by AEM personnel.	**Prior to construction of any new project facilities;** High-suitability denning habitat (i.e. eskers) within 1 km of the project footprint will be investigated for active predatory mammal dens.

If active predatory mammal dens are detected during Option A or Option B of Stage 1 (listed above) then proceed to Stage 2 of the protocol. If no active dens are detected then continue with Stage 1: Option A is ongoing and Option B is to be utilized as needed.

Stage 2 – Identification and Characterization

If an active predatory mammal den has been detected, Stage 2 of the protocol will be undertaken. In the table below, a list of the identification questions and examples of characterization answers are provided. This process will involve the completion of the following questions as well as dates, timing, identification information about the observer(s), and any additional comments. A blank version of this table, which can be used as a field data collection sheet, is provided at the end of this Appendix.

	Identification Questions to be Answered	Characterization Answer Examples
1	Unique ID?	e.g Wolf Den 01
2	What predatory mammal species is occupying the active den?	e.g. Arctic wolf; Grizzly bear; Arctic fox; Wolverine
3	Coordinates of the active den?	UTM Coordinates of den
4	Site description?	e.g. Arctic fox denning under trailer near Whale Tail helipad e.g. Arctic wolf den located approximately 800 meters from Whale Tail haul road on the south facing side of an ~8m tall esker.
5	Juveniles Observed?	e.g. Yes; 3 fox pups observed in the entering the den. e.g. No; wolf pups have not been observed directly. However, the behaviour of the adult wolves, the repeated observations of wolves at the site, the sandy ridge location of the site and the observations of wolf burrows at the site indicate that an active den with juveniles is highly probable.
6	Disturbance and impact considerations?	e.g. The wolf den occurs within 800 m of the Whale Tail haul road. As such vehicle noise, including helicopters, is frequently present within 1 km of the den site.
7	Adaptive management considerations?	e.g. Ground personnel access will be restricted within 1km of the den and, as much as possible, vehicles will not stop on the roadway at km 35. Helicopter routing will be advised and flybys of the esker at this location will be minimized.
8	Recommended monitoring program?	e.g. Weekly checks by the den monitoring survey team will be undertaken to monitor the progress of den development (i.e. age of pups), investigate for signs of adult stress responses and inform any additional adaptive management requirements. Checks will be undertaken from a height-of-land at (coordinates), approximately 300 m NW of the suspected den location.

Stage 3 – Monitoring

Monitoring visits will be undertaken at the frequency, distance and location recommended by the identification and characterization stage (Stage 2). In addition to the information in the table below, dates, timing, identification information about the observer(s), and any additional comments will be recorded. A blank version of this table is provided at the end of this appendix.

	Monitoring Questions to be Answered	Monitoring Characterization Answer Examples
1	Unique ID?	Wolf Den 01
2	Changes to disturbance and impact considerations?	e.g. frequency of helicopter flybys within 1 km have increased in conjunction with construction activities at the Whale Tail site.
3	Development stage of den?	e.g. Pups are now more active outside of the den.
4	Changes to site location?	e.g. Adult wolves still display territorial behaviours, but the specific den has likely been relocated ~200m to the NE.
5	Recommended changes to monitoring program?	e.g. Weekly monitoring is considered sufficient. e.g. Recommendation to reduce monitoring to bi-weekly visits: wolf den establishment appears stable, so reduction of personnel presence in the area is advisable
6	Recommended adaptive management considerations?	e.g. Continue restricting access to ground personnel within 1 km of the den. e.g. Develop new flight path instructions with helicopter teams. Avoid flybys over the den by at least 1 km.

Monitoring (Stage 3) continues at the rate recommended by Stage 2 assessment and all subsequent monitoring visits. Monitoring of an active den will be discontinued once the pups have left the den, the den has been relocated to a distance greater than 1 km from operating facilities, or the potential impacts to the den are considered negligible.

ADAPTIVE MANAGEMENT

Based on findings from Stage 3 monitoring, new adaptive management solutions may be required to prevent negative impacts to the active predatory mammal den. This may include the restriction of movements or activities by certain vehicles or work teams to minimize disturbances. It may also include alterations to monitoring activities to reduce disturbances or increase the amount of information available to inform management decisions. See Chart 3 in 2016 TEMP for adaptive management timing and work flow.

Data Sheet for Stage 2 – Identification and Characterization

Date: **Observer:**

	Identification Questions to be Answered	**Characterization Data**
1	Unique ID?	
2	What is the predatory mammal species is occupying the active den?	
3	Coordinates of the active den?	
4	Site description?	
5	Juveniles Observed?	
6	Disturbance and impact considerations?	
7	Adaptive management considerations?	
8	Recommended monitoring program?	

Data Sheet for Stage 3 – Monitoring

Date: **Observer:**

	Monitoring Questions to be Answered	**Monitoring Data**
1	Unique ID?	
2	Changes to disturbance and impact considerations?	
3	Development stage of den?	
4	Changes to site location?	
5	Recommended changes to monitoring program?	
6	Recommended adaptive management considerations?	