



AGNICO EAGLE

Memo

To: Nunavut Impact Review Board

From: Agnico Eagle Mines Limited

Date: May 23, 2023

Subject: Additional Technical Questions from the GN – Habitat Loss Calculation – Meliadine Extension Proposal

The following provides responses to the additional requests received from the Government of Nunavut (GN) to Technical Comments 5, 9, and 11 on the Meliadine Extension FEIS Addendum. A response has also been prepared for Technical Comment 7 (Waterline Commitment 38), which references the production of the Waterlines Commitment 38 as a stand-alone report.

1 GN-TRC-05

1.1 Detailed Review Comment and Recommendations/Request

*The Proponent's response does not address the GN-ENV concerns. The assessment will most accurately reflect current and future conditions when only the most recent data is used. Incorporating data that are decades old in some cases has the effect of inflating the size of the caribou seasonal ranges and therefore artificially reducing the potential effects on direct and indirect habitat losses. The GN-ENV is asking: If you were to look at the recent or present seasonal ranges of the Qamanirjuaq herd using the last 5-10 years of data to define recent or present, what would be the habitat losses attributable to the Meliadine project? This would be the most conservative approach to minimize risks. Without conducting this assessment, there is no confidence in the Meliadine Extension Final Environmental Impact Statement (FEIS) Addendum predictions. In addition to redefining the seasonal ranges, GN-ENV has also requested that the Proponent apply zones-of-influence that reflect more recent and/or more relevant studies. Case in point are the studies conducted by the GN-ENV of Agnico Eagle Mines' Meadowbank-Whale Tail project. By not using the results of these studies but instead relying on older or less relevant literature, the assessment is ignoring pertinent information. It should also be noted that the GN-ENV's request was for a revised assessment of direct and indirect habitat losses for calving, post-calving and summertime ranges. The Proponent's response does not discuss summer range. **GN-TRC-05 remains unresolved.***

The Government of Nunavut recommends the following to reach resolution:

- *The Proponent provide seasonal ranges of the Qamanirjuaq herd using 2012 to 2022 years of data to define:
 - *Recent and present possible habitat losses attributable to the Meliadine project.*
 - *Direct and indirect habitat losses for calving, post-calving, and summer-time ranges.**
- *The Proponent apply zones-of-influence from more recent and relevant studies.
 - *Use GN-ENV studies of AEM's Meadowbank-Whale Tail project.**
- *The Proponent complete the recommendations outlined in GN-TRC-05, GN-TRC-09, GN-TRC-11*
- *The Proponent accept a temporary Data and Sample Sharing Agreement for data solely for the purpose of producing products to support the Nunavut Impact Review Board assessment.*

1.2 Updated Assessment of Direct and Indirect Effects to Caribou Habitat

1.2.1 Introduction

With access to Qamanirjuaq collar data, Agnico Eagle is providing an updated assessment of direct and indirect effects to caribou habitat per the GN's request.

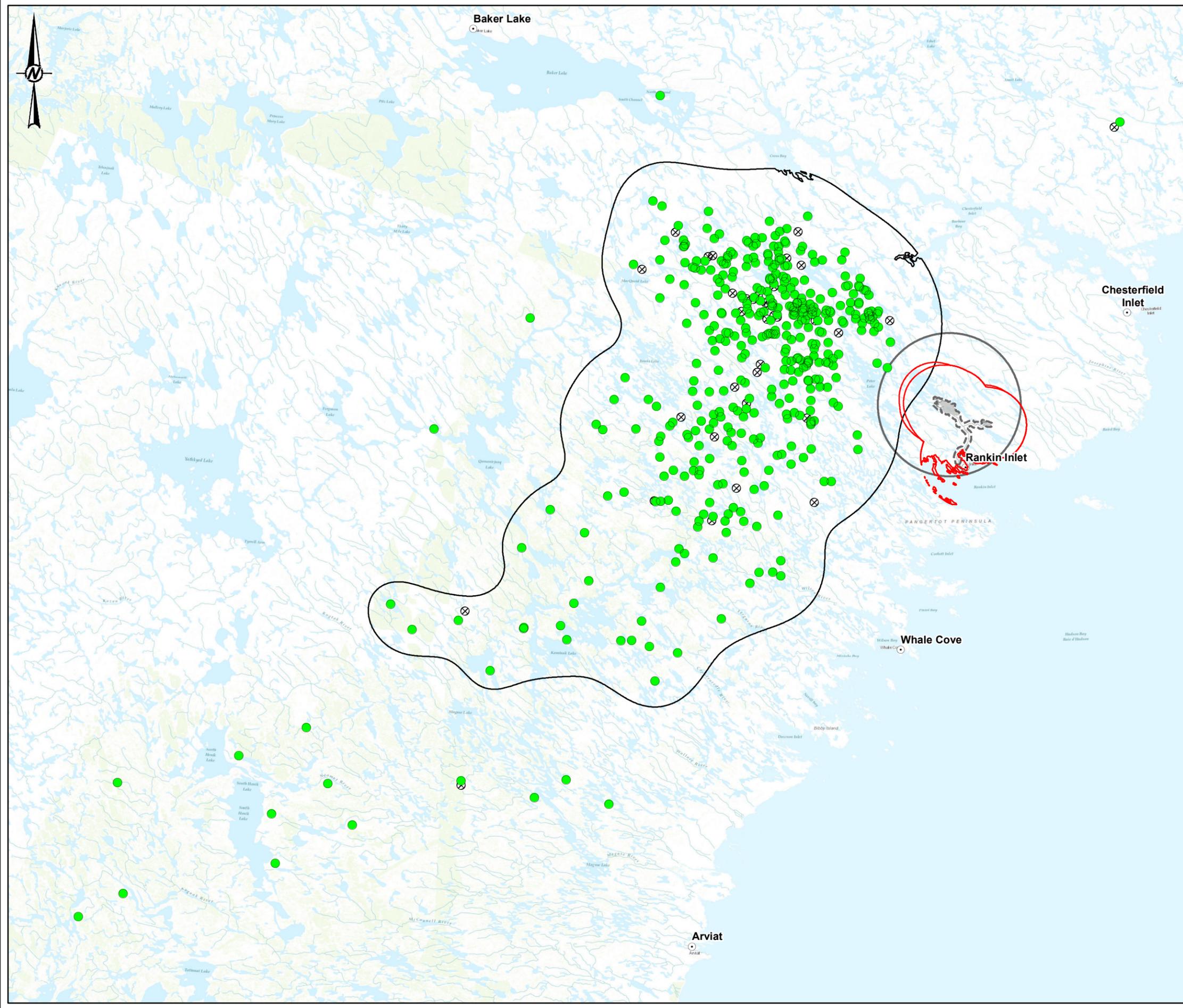
Seasonal range delineation followed the methods described in Caslys (2015). The GN's methods for range delineation are based on fixed dates associated caribou movements (Caslys 2015). These dates are applied to all caribou cow collar data, which for the calving range assumes all cows produce a calf and will overestimate the size of the calving range.

Verified methods are now available to predict calf events and neonate mortality events from collar data based on movement patterns from distances between location fixes (DeMars et al. 2013; Cameron et al. 2018). Calving predictions of individual collared caribou were made using collar data with more than one location per day. These data were considered of adequate temporal resolution to predict calving events (n=470 caribou-years). The proportion of collared Qamanirjuaq cows predicted to have calves from 2012 to 2022 was 86.8% (408 of 470 collared cows). Agnico Eagle believes this calving range is a more biologically meaningful than the GN's fixed date-based calving range because it reflects the spatial distribution of calving events and does not include range use by cows without calves.

Applying the GN range delineation parameters to the predicted calving locations results in an area of 2,493,064 ha and the 95% contours do not overlap Meliadine Mine, All-weather Access Road (AWAR), or Extension footprints (Figure TRC-05-1). **This means the Meliadine Mine, AWAR, and Extension do not have direct effects to calving habitat.** There is a total of 7,332.8 ha (0.3%) of overlap with a 14 km zone of influence applied to the Meliadine Mine and total of 12,750 ha (0.5%) of overlap to the Extension. However, these areas are unlikely to have a strong influence on calving caribou.

The delineated calving range is consistent with the high use areas shown by collared caribou data using a Brownian Bridge Movement Model for 2018 to 2022 (response to GN-TRC-06 provided in a separate memo). The nearest calving location to Meliadine Mine was 22 km away and occurred in 2020. A total of 37 neonate mortality events were predicted between 2012 and 2022, with the nearest event 35 km away from Meliadine Mine and occurred in 2022. Since construction of Meliadine Mine in fall 2017, there has never been a calf birthed at site, nor a mine-related caribou adult or calf mortality (Agnico Eagle 2022). The mitigation implemented at site is effective at avoiding caribou-related mortalities when large numbers of caribou interact the Mine and AWAR. This is evidence that the Mine is not measurably influencing the caribou population demographically at a time when the caribou population would be sensitive.

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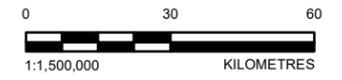


LEGEND

- COMMUNITY
- MELIADINE APPROVED PROJECT
- MELIADINE EXTENSION FOOTPRINT
- MELIADINE EXTENSION LSA
- MELIADINE EXTENSION RSA
- 14 km ZOI
- CALVING SEASONAL RANGE (PARTURITION EVENTS)

CALVING AND CALF MORTALITY LOCATIONS

- CALVING
- CALF MORTALITY



REFERENCE(S)

1. TOPOGRAPHIC MAP © ESRI AND ITS LICENSORS. USED UNDER LICENSE, ALL RIGHTS RESERVED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT **AGNICO EAGLE MINES LIMITED**

AGNICO EAGLE

PROJECT
MELIADINE GOLD PROJECT
NUNAVUT

TITLE
CALVING SEASONAL RANGE (PARTURITION EVENTS)

	CONSULTANT	YYYY-MM-DD	2023-05-18
		DESIGNED	MB
		PREPARED	CDB
		REVIEWED	
		APPROVED	

PROJECT NO. 22524250	CONTROL 4000/4005	REV. A	FIGURE TRC-05-1
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At the Meliadine Terrestrial Advisory Group meeting of April 13 and 14, 2023, the GN indicated that the 14 km zone of influence and disturbance coefficients for caribou occurrence assumed for operating mines in the 2014 FEIS and Meliadine Extension FEIS Addendum should be applied to the Mine's AWAR for the indirect effects assessment on caribou habitat. All other zones of influences and disturbance coefficients for indirect effects are the same as the 2014 FEIS and Meliadine Extension FEIS Addendum. In addition to the 2012 to 2022 period requested by the GN, an assessment of the full temporal extent of 1993 to 2022 collar data for the same seasonal ranges is presented below. This was done as a conservatism to account for all areas of habitat used by caribou throughout their collar history and to maximize the predicted cumulative effects. Cumulative effects from developments will be underestimated from ranges defined by the years of 2012 to 2022. The Caribou Effects Study Area (CESA) applied in the 2014 FEIS and Meliadine Extension FEIS Addendum maximized the number of developments encountered by caribou (Table TRC-05-1).

Per the request of the GKD during a meeting with Agnico Eagle on April 12, 2023, the results are shown relative to patterns of caribou habitat selection. Patterns of selection were identified for each seasonal range based on use of Kivalliq land cover data by collared caribou relative to the availability of different land covers available (Manly et al. 2002) within each seasonal range from 1993 to 2022 (Table TRC05-2). Preference was inferred when 95% confidence intervals of use exceeded availability, avoidance when 95% confidence intervals of use were less than availability, and when 95% confidence intervals of use overlapped availability, land cover was neither preferred nor avoided. The assessment quantified direct and indirect reductions in post-calving and summer pooled preferred, avoided, and used land cover types. Maps illustrating the spatial distribution of preferred, avoided and used land covers are also provided (TRC-05-2, TRC-05-3).

Table TRC05-1: Absolute Numbers of Baseline Developments within Different Assessment Spatial and Temporal Boundaries

Development Type	Caribou Effects Study Area	Calving		Post-calving		Summer	
		2012 to 2022	1993 to 2022	2012 to 2022	1993 to 2022	2012 to 2022	1993 to 2022
All-Weather Road	2	1	1	1	1	1	1
Camp	14	4	4	5	5	10	10
Contaminated Site	59	16	16	35	35	49	49
Fuel Storage	3	0	0	0	0	3	3
Mine	1	0	0	1	1	1	1
Mineral Exploration	31	13	13	15	16	27	28
Miscellaneous	5	0	1	2	2	3	3
Quarries/Borrow Pits	3	3	3	3	3	3	3
Territorial Campground	2	1	1	1	1	1	1
Winter Road	2	2	2	2	2	2	2
Total	122	40	41	65	66	100	101

Table TRC05-2: Percent Use ($\pm 95\%CI$) of Different Land Cover Types Available (ha, %) by Collared Qamanirjuaq Caribou within the Post-calving and Summer Ranges, 1993 to 2022

Land Cover	Post-calving		Summer	
	Available (ha, %)	Used (% <i>, 95%CI</i>)	Available (ha, %)	Used (% <i>, 95%CI</i>)
Boulder/Gravel	214,894 (4.0)	2.0 (1.7, 2.4)	279,329 (1.8)	1.3 (1.2, 1.5)
Cloud/Shadow	82,115 (1.5)	1.6 (1.4, 1.9)	294,355 (1.9)	2.2 (1.9, 2.6)
Disturbance	1,840 (<0.0)	1.0 (1.0, 1.1)	2,157 (<0.1)	0.9 (0.8, 1.0)
Forb Tundra	62,928 (1.2)	1.3 (1.2, 1.5)	85,131 (0.5)	0.9 (0.8, 1.0)
Graminoid Tundra	138,449 (2.6)	2.5 (2.1, 3.0)	247,942 (1.6)	1.5 (1.3, 1.7)
Graminoid/Heath Tundra	156,758 (2.9)	3.8 (3.2, 4.6)	188,478 (1.2)	1.8 (1.6, 2.0)
Graminoid/Shrub Tundra	46,402 (0.9)	1.4 (1.2, 1.6)	94,624 (0.6)	0.8 (0.7, 0.9)
Heath Tundra	477,979 (8.9)	9.0 (7.4, 10.9)	2,547,306 (16.3)	22.8 (20.7, 25.1)
Heath Upland	387,104 (7.2)	7.3 (5.7, 9.4)	1,208,070 (7.7)	10.5 (5.8, 19.1)
Heath Upland/Rock Complex	600,969 (11.2)	8.9 (7.2, 10.8)	729,830 (4.7)	5.3 (4.6, 6.1)
Lichen Tundra	56,426 (1.1)	1.4 (1.2, 1.6)	68,641 (0.4)	0.9 (0.8, 1.0)
Lichen/Rock Complex	148,578 (2.8)	2.3 (1.9, 2.7)	159,676 (1.0)	1.2 (1.1, 1.4)
No Data/Unclassified	281,437 (5.2)	2.8 (2.3, 3.3)	1,877,925 (12.0)	0.8 (0.7, 0.9)
Rock	42,091 (0.8)	1.0 (0.9, 1.0)	46,819 (0.3)	0.6 (0.6, 0.8)
Sand	6,780 (0.1)	1.0 (0.9, 1.1)	7,380 (<0.1)	0.7 (0.6, 0.8)
Shrub Thicket	6,978 (0.1)	1.0 (1.0, 1.1)	126,489 (0.8)	0.9 (0.8, 1.0)
Shrub Tundra	249,249 (4.6)	3.3 (2.6, 4.2)	1,443,704 (9.2)	7.8 (6.6, 9.2)
Shrub/Heath Tundra	590,826 (11.0)	9.9 (8.0, 12.2)	1,593,330 (10.2)	13.1 (11.7, 14.7)
Shrub/Tree Complex	NA	NA	13,023 (<0.1)	0.8 (0.7, 0.9)
Tree	5 (<0.1)	0	123,282 (0.8)	0.7 (0.6, 0.8)
Tree/Lichen Complex	NA	NA	1,391 (<0.1)	1.0 (0.9, 1.0)
Water	1,486,650 (27.7)	4.2 (3.5, 5.1)	3,765,163 (24.1)	8.0 (7.1, 9.0)
Wet Graminoid	324,535 (6.1)	5.0 (4.1, 6.0)	726,276 (4.6)	4.6 (4.0, 5.2)
Total Area	5,362,993		15,630,320	

NA = Not applicable because the land cover type does not occur within range boundary.

Bold use values indicate preferred land cover type; bold italics indicate avoided land cover type.

Use values with no confidence interval means is a land cover type that was not used by any collared caribou and confidence intervals could not be estimated.

1.2.2 Post-Calving Range Habitat Changes

2012 to 2022 Post-Calving Range Habitat Changes

The post-calving range for 2012 to 2022 direct and indirect incremental reduction in total habitat availability (i.e., preferred, avoided, and used) are provided in Table TRC05-3 and Table TRC05-4, respectively.

The magnitude of the incremental direct reduction of preferred habitat availability during the 2012 to 2022 post-calving range is less than 0.5 percent for any development scenario, which is negligible. The distribution of preferred habitat indicates the greatest concentrations in the post-calving range occur outside of the Meliadine Mine regional study area (RSA) (Figure TRC-05-2).

The magnitude of the incremental indirect reduction of preferred habitat during the 2012 to 2022 post-calving range was not greater than 0.5 percent for the Baseline to the 2014 FEIS and for the Existing Condition to Extension development scenarios, which is negligible. The magnitude of cumulative change to preferred habitat availability from Reference through Future is 10.0 percent, which is low.

1993 to 2022 Post-Calving Range Habitat Changes

The post-calving range for 1993 to 2022 direct and indirect incremental reduction in total habitat availability (i.e., preferred, avoided, and used) are provided in Table TRC05-5 and Table TRC05-6, respectively.

The magnitude of the incremental direct reduction of preferred habitat availability during the 1993 to 2022 post-calving range is less than 1/10th of a percent for any development scenario, which is negligible.

The magnitude of the incremental indirect reduction of preferred habitat during the 1993 to 2022 post-calving range was not greater than 0.5 percent for the Baseline to the 2014 FEIS and for the Existing Condition to Extension development scenarios, which is negligible. The magnitude of cumulative change to preferred habitat availability from Reference through Future is 9.6 percent, which is low.

Table TRC05-3: Direct Incremental Habitat Loss within the Post-calving Range (2012 to 2022) for Reference, Baseline, Existing Conditions, Approved Project, Meliadine Extension, and Future Cases

Land Cover	Reference Area (ha)	Area Removed from Reference to Baseline (ha)	Change Reference to Baseline (%)	Area (ha) Removed from Baseline to 2014 FEIS	Change Baseline to 2014 FEIS (%)	Area (ha) Removed from 2014 FEIS to Existing Conditions	Change 2014 FEIS to Existing Conditions (%)	Area (ha) Removed from Existing Conditions to Meliadine Extension	Change Existing Conditions to Meliadine Extension (%)	Area (ha) Removed from Meliadine Extension to Future	Change Meliadine Extension to Future (%)	Area (ha) Removed from Reference to Future	Cumulative Change Reference to Future (%)
Avoided	2,920,681	745	<0.0	825	<0.0	137	<0.0	16	<0.0	2,013	0.1	3,735	0.1
Preferred	292,226	410	0.1	100	<0.0	48	<0.0	19	<0.0	565	0.2	1,146	0.4
Used	1,503,783	441	<0.0	1,645	0.1	123	<0.0	158	<0.0	1,622	0.1	4,003	0.3
Total	4,716,691	1,596	<0.0	2,570	0.1	308	<0.0	193	<0.0	4,200	0.1	8,884	0.2

Avoided = use is less than availability; Preferred = use greater than availability; Used = use the same as availability. Amounts of each category are based on collared caribou seasonal selection patterns from Table TRC05-1.

Table TRC05-4: Indirect Incremental Habitat Loss within the Post-caribou Calving Range (2012 to 2022) for Reference, Baseline, Existing Conditions, Approved Project, Meliadine Extension, and Future Cases

Land Cover	Reference Area (ha)	Area Removed from Reference to Baseline (ha)	Change Reference to Baseline (%)	Area (ha) Removed from Baseline to 2014 FEIS	Change Baseline to 2014 FEIS (%)	Area (ha) Removed from 2014 FEIS to Existing Conditions	Change 2014 FEIS to Existing Conditions (%)	Area (ha) Removed from Existing Conditions to Meliadine Extension	Change Existing Conditions to Meliadine Extension (%)	Area (ha) Removed from Meliadine Extension to Future	Change Meliadine Extension to Future (%)	Area (ha) Removed from Reference to Future	Cumulative Change Reference to Future (%)
Avoided	2,920,681	57,069	2.0	8,298	0.3	35,551	1.2	1,615	0.1	60,878	2.2	163,410	5.6
Preferred	292,226	14,369	4.9	1,436	0.5	4,943	1.8	96	<0.0	8,481	3.1	29,324	10.0
Used	1,503,783	29,791	2.0	9,803	0.7	19,908	1.4	1,674	0.1	40,063	2.8	101,238	6.7
Total	4,716,691	101,229	2.1	19,537	0.4	60,401	1.3	3,385	0.1	109,421	2.4	293,973	6.2

Avoided = use is less than availability; Preferred = use greater than availability; Used = use the same as availability. Amounts of each category are based on collared caribou seasonal selection patterns from Table TRC05-1.

Table TRC05-5: Direct Incremental Habitat Loss within the Caribou Post-calving Range (1993 to 2022) for Reference, Baseline, Existing Conditions, Approved Project, Meliadine Extension, and Future Cases

Land Cover	Reference Area (ha)	Area Removed from Reference to Baseline (ha)	Change Reference to Baseline (%)	Area (ha) Removed from Baseline to 2014 FEIS	Change Baseline to 2014 FEIS (%)	Area (ha) Removed from 2014 FEIS to Existing Conditions	Change 2014 FEIS to Existing Conditions (%)	Area (ha) Removed from Existing Conditions to Meliadine Extension	Change Existing Conditions to Meliadine Extension (%)	Area (ha) Removed from Meliadine Extension to Future	Change Meliadine Extension to Future (%)	Area (ha) Removed from Reference to Future	Cumulative Change Reference to Future (%)
Avoided	3,214,447	790	<0.0	825	<0.0	137	<0.0	16	<0.0	2,013	0.1	3,780	0.1
Preferred	308,505	410	0.1	100	<0.0	48	<0.0	19	<0.0	565	0.2	1,146	0.4
Used	1,690,970	474	<0.0	1,645	0.1	123	<0.0	158	<0.0	1,622	0.1	4,036	0.2
Total	5,213,922	1,674	<0.0	2,570	<0.0	308	<0.0	193	<0.0	4,200	0.1	8,962	0.2

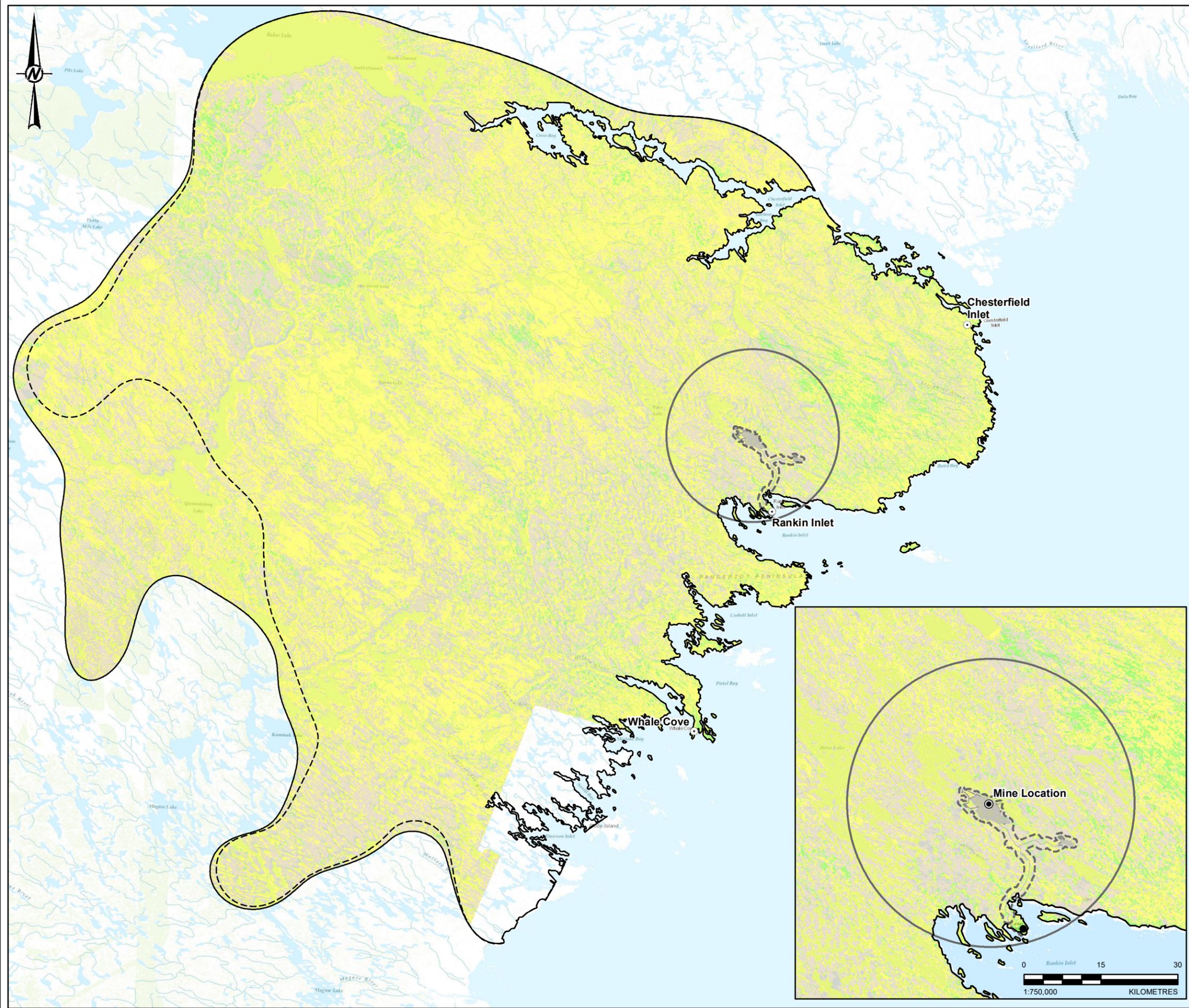
Avoided = use is less than availability; Preferred = use greater than availability; Used = use the same as availability. Amounts of each category are based on collared caribou seasonal selection patterns from Table TRC05-1.

Table TRC05-6: Indirect Incremental Habitat Loss within the Caribou Post-calving Range (1993 to 2022) for Reference, Baseline, Existing Conditions, Approved Project, Meliadine Extension, and Future Cases

Land Cover	Reference Area (ha)	Area Removed from Reference to Baseline (ha)	Change Reference to Baseline (%)	Area (ha) Removed from Baseline to 2014 FEIS	Change Baseline to 2014 FEIS (%)	Area (ha) Removed from 2014 FEIS to Existing Conditions	Change 2014 FEIS to Existing Conditions (%)	Area (ha) Removed from Existing Conditions to Meliadine Extension	Change Existing Conditions to Meliadine Extension (%)	Area (ha) Removed from Meliadine Extension to Future	Change Meliadine Extension to Future (%)	Area (ha) Removed from Reference to Future	Cumulative Change Reference to Future (%)
Avoided	3,214,447	60,524	1.9	8,298	0.3	35,551	1.1	1,615	0.1	60,919	2.0	166,907	5.2
Preferred	308,505	14,764	4.8	1,436	0.5	4,943	1.7	96	<0.0	8,485	3.0	29,723	9.6
Used	1,690,970	33,533	2.0	9,803	0.6	19,908	1.2	1,674	0.1	40,096	2.5	105,013	6.2
Total	5,213,922	108,821	2.1	19,537	0.4	60,401	1.2	3,385	0.1	109,500	2.2	301,643	5.8

Avoided = use is less than availability; Preferred = use greater than availability; Used = use the same as availability. Amounts of each category are based on collared caribou seasonal selection patterns from Table TRC05-1.

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LEGEND

- COMMUNITY
- MELIADINE APPROVED PROJECT FOOTPRINT
- MELIADINE EXTENSION FOOTPRINT
- MELIADINE EXTENSION LSA
- MELIADINE EXTENSION RSA
- POST-CALVING SEASONAL RANGE (2012 TO 2022)
- POST-CALVING SEASONAL RANGE (1993 TO 2022)
- PREFERRED AND AVOIDED HABITATS (POST-CALVING SEASONAL RANGE)**
- PREFERRED
- USED
- AVOIDED



REFERENCE(S)
 1. TOPOGRAPHIC MAP © ESRI AND ITS LICENSORS. USED UNDER LICENSE, ALL RIGHTS RESERVED.
 2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT **AGNICO EAGLE MINES LIMITED**

AGNICO EAGLE
 PROJECT
MELIADINE GOLD PROJECT
NUNAVUT

TITLE
CARIBOU PREFERRED AND AVOIDED HABITATS
(POST-CALVING SEASONAL RANGE)

CONSULTANT	YYYY-MM-DD	2023-05-16
	DESIGNED	SW
	PREPARED	CDB
	REVIEWED	
	APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
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1.2.3 Summer Range Habitat Changes

2012 to 2022 Summer Range Habitat Changes

The summer range for 2012 to 2022 direct and indirect incremental reduction in total habitat availability (i.e., preferred, avoided, and used) are provided in Table TRC05-7 and Table TRC05-8, respectively.

The magnitude of the incremental direct reduction of preferred habitat availability during the 2012 to 2022 post-calving range is no greater than 0.1 percent for any development scenario, which is negligible. The distribution of preferred habitat in the summer range indicates they greatest concentrations occur south and west of the Meliadine Mine RSA (Figure TRC05-3).

The magnitude of the incremental indirect reduction of preferred habitat during the 2012 to 2022 post-calving range was not greater than 0.1 percent for the Baseline to the 2014 FEIS and for the Existing Condition to Extension development scenarios, which is negligible. The magnitude of cumulative change to preferred habitat availability from Reference through Future is 2.9 percent, which is low.

1993 to 2022 Summer Range Habitat Changes

The summer range for 1993 to 2022 direct and indirect incremental reduction in total habitat availability (i.e., preferred, avoided, and used) are presented in Table TRC05-9 and Table TRC05-10, respectively.

The magnitude of the incremental direct reduction of preferred habitat availability during the 1993 to 2022 post-calving range is no greater than 0.1 percent for any development scenario, which is negligible.

The magnitude of the incremental indirect reduction of preferred habitat during the 1993 to 2022 post-calving range was not greater than 0.1 percent for the Baseline to the 2014 FEIS and for the Existing Condition to Extension development scenarios, which is negligible. The magnitude of cumulative change to preferred habitat availability from Reference through Future is 2.8 percent, which is low.

Table TRC05-7: Direct Incremental Habitat Loss within the Caribou Summer Range (2012 to 2022) for Reference, Baseline, Existing Conditions, Approved Project, Meliadine Extension, and Future Cases

Land Cover	Reference Area (ha)	Area Removed from Reference to Baseline (ha)	Change Reference to Baseline (%)	Area (ha) Removed from Baseline to 2014 FEIS	Change Baseline to 2014 FEIS (%)	Area (ha) Removed from 2014 FEIS to Existing Conditions	Change 2014 FEIS to Existing Conditions (%)	Area (ha) Removed from Existing Conditions to Meliadine Extension	Change Existing Conditions to Meliadine Extension (%)	Area (ha) Removed from Meliadine Extension to Future	Change Meliadine Extension to Future (%)	Area (ha) Removed from Reference to Future	Cumulative Change Reference to Future (%)
Avoided	5,582,277	926	<0.0	706	<0.0	57	<0.0	13	<0.0	1,252	<0.0	2,953	0.1
Preferred	4,517,357	875	<0.0	325	<0.0	96	<0.0	43	<0.0	2,249	<0.0	3,592	0.1
Used	4,585,429	962	<0.0	1,539	<0.0	155	<0.0	138	<0.0	2,304	0.1	5,113	0.1
Total	14,685,062	2,763	<0.0	2,570	<0.0	308	<0.0	193	<0.0	5,806	<0.0	11,657	0.1

Avoided = use is less than availability; Preferred = use greater than availability; Used = use the same as availability. Amounts of each category are based on collared caribou seasonal selection patterns from Table TRC05-1.

Table TRC05-8: Indirect Incremental Habitat Loss within the Caribou Summer Range (2012 to 2022) for Reference, Baseline, Existing Conditions, Approved Project, Meliadine Extension, and Future Cases

Land Cover	Reference Area (ha)	Area Removed from Reference to Baseline (ha)	Change Reference to Baseline (%)	Area (ha) Removed from Baseline to 2014 FEIS	Change Baseline to 2014 FEIS (%)	Area (ha) Removed from 2014 FEIS to Existing Conditions	Change 2014 FEIS to Existing Conditions (%)	Area (ha) Removed from Existing Conditions to Meliadine Extension	Change Existing Conditions to Meliadine Extension (%)	Area (ha) Removed from Meliadine Extension to Future	Change Meliadine Extension to Future (%)	Area (ha) Removed from Reference to Future	Cumulative Change Reference to Future (%)
Avoided	5,582,277	69,430	1.2	6,114	0.1	20,082	0.4	1,446	<0.0	51,835	0.9	148,906	2.7
Preferred	4,517,357	51,100	1.1	3,824	0.1	16,337	0.4	563	<0.0	56,923	1.3	128,748	2.9
Used	4,585,429	58,574	1.3	9,599	0.2	23,160	0.5	1,376	<0.0	54,648	1.2	147,356	3.2
Total	14,685,062	179,104	1.2	19,537	0.1	59,579	0.4	3,385	<0.0	163,405	1.1	425,010	2.9

Avoided = use is less than availability; Preferred = use greater than availability; Used = use the same as availability. Amounts of each category are based on collared caribou seasonal selection patterns from Table TRC05-1.

Table TRC05-9: Direct Incremental Habitat Loss within the Caribou Summer Range (1993 to 2022) for Reference, Baseline, Existing Conditions, Approved Project, Meliadine Extension, and Future Cases

Land Cover	Reference Area (ha)	Area Removed from Reference to Baseline (ha)	Change Reference to Baseline (%)	Area (ha) Removed from Baseline to 2014 FEIS	Change Baseline to 2014 FEIS (%)	Area (ha) Removed from 2014 FEIS to Existing Conditions	Change 2014 FEIS to Existing Conditions (%)	Area (ha) Removed from Existing Conditions to Meliadine Extension	Change Existing Conditions to Meliadine Extension (%)	Area (ha) Removed from Meliadine Extension to Future	Change Meliadine Extension to Future (%)	Area (ha) Removed from Reference to Future	Cumulative Change Reference to Future (%)
Avoided	5,741,584	933	<0.0	706	<0.0	57	0.0	13	<0.0	1,278	0.0	2,986	0.1
Preferred	4,665,303	882	<0.0	325	<0.0	96	0.0	43	<0.0	2,306	0.0	3,655	0.1
Used	4,754,187	996	<0.0	1,539	<0.0	155	0.0	138	<0.0	2,395	0.1	5,237	0.1
Total	15,161,073	2,811	<0.0	2,570	<0.0	308	0.0	193	<0.0	5,978	0.0	11,878	0.1

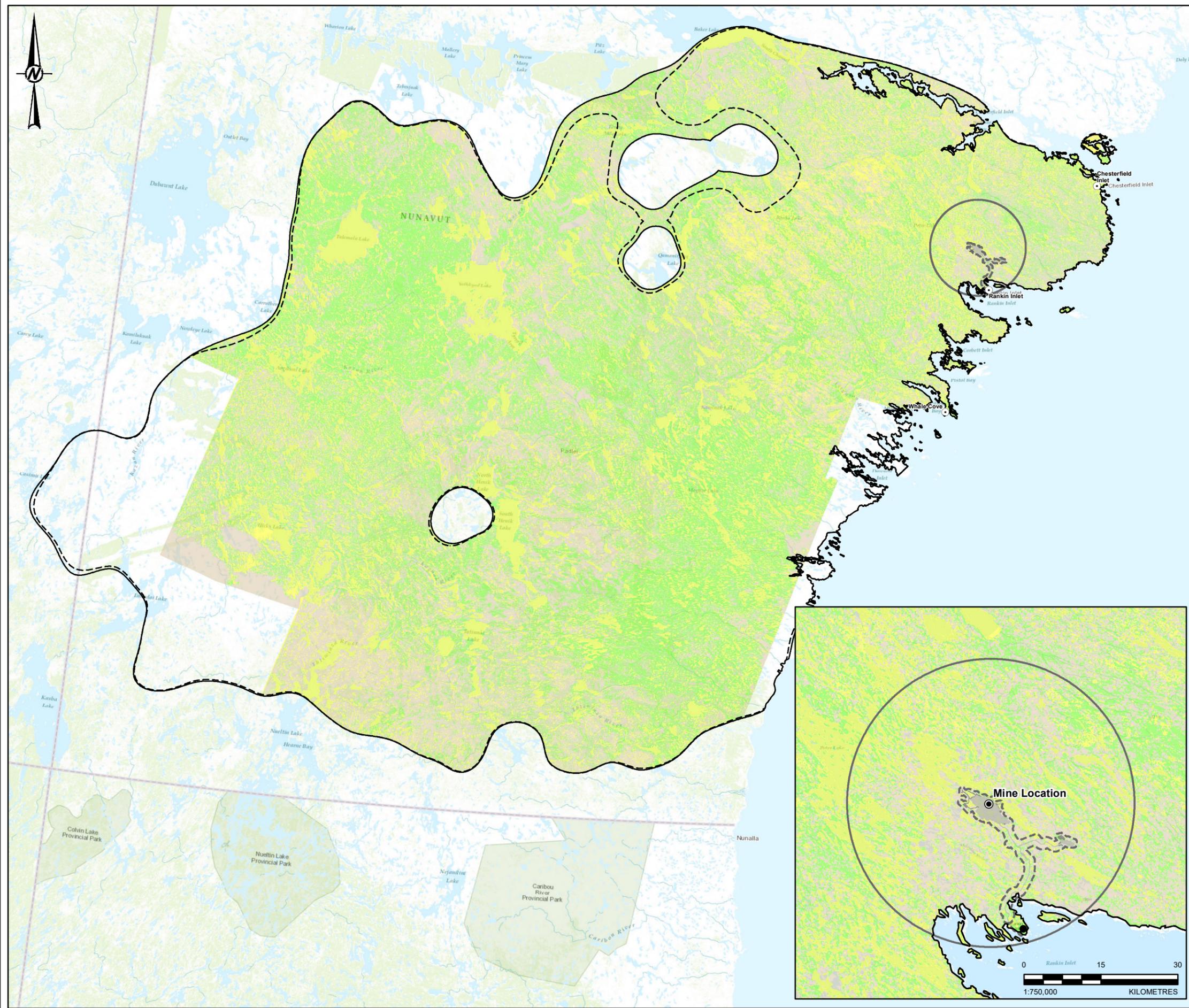
Avoided = use is less than availability; Preferred = use greater than availability; Used = use the same as availability. Amounts of each category are based on collared caribou seasonal selection patterns from Table TRC05-1.

Table TRC05-10: Indirect Incremental Habitat Loss within the Caribou Summer Range (1993 to 2022) for Reference, Baseline, Existing Conditions, Approved Project, Meliadine Extension, and Future Cases

Land Cover	Reference Area (ha)	Area Removed from Reference to Baseline (ha)	Change Reference to Baseline (%)	Area (ha) Removed from Baseline to 2014 FEIS	Change Baseline to 2014 FEIS (%)	Area (ha) Removed from 2014 FEIS to Existing Conditions	Change 2014 FEIS to Existing Conditions (%)	Area (ha) Removed from Existing Conditions to Meliadine Extension	Change Existing Conditions to Meliadine Extension (%)	Area (ha) Removed from Meliadine Extension to Future	Change Meliadine Extension to Future (%)	Area (ha) Removed from Reference to Future	Cumulative Change Reference to Future (%)
Avoided	5,741,584	70,197	1.2	6,114	0.1	20,142	0.4	1,446	<0.0	53,473	0.9	151,371	2.6
Preferred	4,665,303	51,155	1.1	3,824	0.1	16,366	0.4	563	<0.0	59,333	1.3	131,242	2.8
Used	4,754,187	58,728	1.2	9,599	0.2	23,255	0.5	1,376	<0.0	58,269	1.3	151,227	3.2
Total	15,161,073	180,081	1.2	19,537	0.1	59,763	0.4	3,385	<0.0	171,074	1.1	433,840	2.9

Avoided = use is less than availability; Preferred = use greater than availability; Used = use the same as availability. Amounts of each category are based on collared caribou seasonal selection patterns from Table TRC05-1.

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- LEGEND**
- COMMUNITY
 - MELIADINE APPROVED PROJECT FOOTPRINT
 - MELIADINE EXTENSION FOOTPRINT
 - MELIADINE EXTENSION LSA
 - MELIADINE EXTENSION RSA
 - SUMMER SEASONAL RANGE (2012 TO 2022)
 - SUMMER SEASONAL RANGE (1993 TO 2022)
- PREFERRED AND AVOIDED HABITATS (SUMMER SEASONAL RANGE)**
- PREFERRED
 - USED
 - AVOIDED



REFERENCE(S)

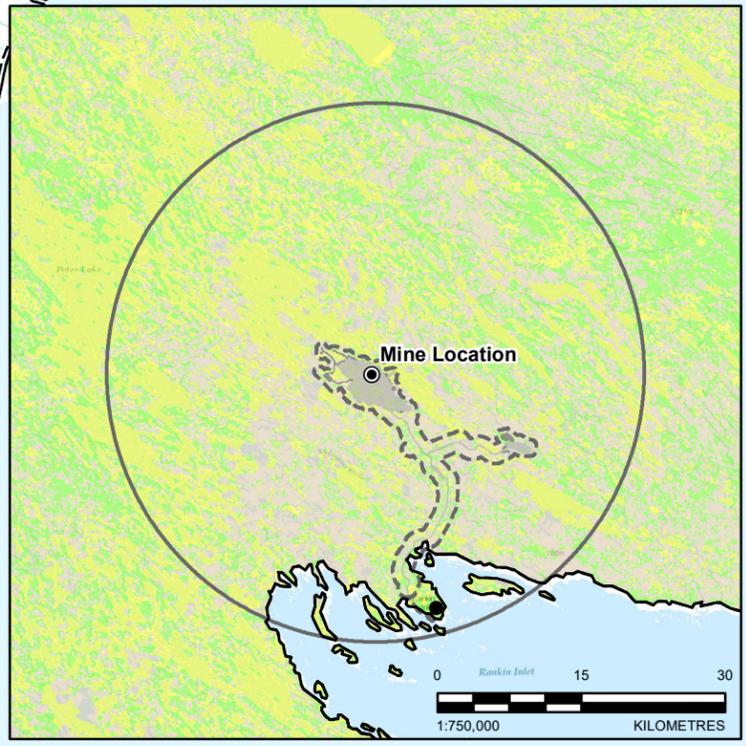
1. TOPOGRAPHIC MAP © ESRI AND ITS LICENSORS. USED UNDER LICENSE, ALL RIGHTS RESERVED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT **AGNICO EAGLE MINES LIMITED**

AGNICO EAGLE
 PROJECT
MELIADINE GOLD PROJECT
NUNAVUT

TITLE
CARIBOU PREFERRED AND AVOIDED HABITATS
(SUMMER SEASONAL RANGE)

CONSULTANT	YYYY-MM-DD	2023-05-16
	DESIGNED	SW
	PREPARED	CDB
	REVIEWED	
	APPROVED	



PROJECT NO.	CONTROL	REV.	FIGURE
22524250	4000/4005	A	TRC-05-3

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

1.2.4 Conclusion

Agnico Eagle has now completed direct and indirect effects assessments on caribou habitat using multiple spatial boundaries including the following:

- **2014 FEIS's CESA:** developed and provided by the GN to Agnico Eagle for use in the 2014 FEIS. The CESA maximized the number of developments on the landscape and included different seasonal ranges.
- **Nunavut Planning Commission Ranges:** included the calving and post-calving ranges downloaded from Nunavut Planning Commission website
- **Seasonal Ranges based on 2012 to 2022 and 1993 to 2022 periods:** included calving range based on calving events from collared caribou data and post-calving and summer ranges for the 2012 to 2022 and 1993 to 2022 periods following the GN's range delineation methods (Caslys 2015).
- **Zone of Influence:** assumed a 14 km zone of influence for the indirect effects related to the AWAR, which is 2.8 times greater than the 5 km zone of influence assumed in the 2014 FEIS for roads. A 5 km zone of influence for caribou is supported by the scientific literature (e.g., Polfus et al. 2011; Plante et al. 2018; Pritchard et al. 2022) and Northwest Territories barren-ground caribou range plan (GNWT 2019).

All of these separate assessments and additional conservatisms have not altered the 2014 FEIS or Meliadine Extension FEIS Addendum conclusions about direct and indirect effects to caribou habitat resulting from the Meliadine Extension or the approved Meliadine Mine; **that the residual direct and indirect effects on caribou habitat are predicted to be not significant. Assessing the direct and indirect effects to caribou habitat using multiple ways and arriving at the same conclusion increases confidence in the assessment and that effects predictions are conservative.**

1.2.5 References

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- GNWT (Government of the Northwest Territories, Department of Environment and Natural Resources) 2019. Bathurst caribou range plan. August 2019. Yellowknife, NT.
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Polfus JL, Hebblewhite M, Heinemeyer K. 2011. Identifying indirect habitat loss and avoidance of human infrastructure by norther mountain woodland caribou. *Biological Conservation* 144: 2637-2646.

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2 GN-TRC-07

2.1 Detailed Review Comment and Recommendations/Request

The requirement for an updated caribou road crossing memo (as per Term and Condition #44) could be replaced if Agnico Eagle Mines (AEM) commits to conduct an alternative study of the movements of caribou in relation to the Meliadine mine (not just its road) using collar data. This was the conclusion reached by the Meliadine Terrestrial Advisory Group (TAG) at its recent December 2022 meeting.

TAG members were clear that they wanted:

(a) This to be a collaborative analysis whereby the TAG was involved at each stage of the study including objectives selection, study design and analytical methods, review, and interpretation of results.

(b) That for each of the stages identified above, consensus should be reached if possible.

GN-TRC-07 is conditionally resolved.

The Government of Nunavut recommends the following to reach resolution:

- Provided that written commitment is made by AEM, as part of the Meliadine extension review that reflects the TAG notes, (a) and (b).*
- Alternative study must have a 1-year completion timeline from the receipt of the caribou collar data from GN-ENV.*

2.2 Updated Response

Agnico Eagle has initiated the Waterlines Commitment 38 study in collaboration with the TAG. The collaboration included input from TAG members on objectives, study design, and analytical methods at the TAG meeting held on April 13 and 14, 2023. TAG members reviewed and approved study objectives, study area delineation, an analysis method and model covariates to be considered. A presentation of results will be provided to the TAG members for review and interpretation at the scheduled June 27, 2023 TAG meeting.

3 GN-TRC-09

3.1 Detailed Review Comment and Recommendations/Request

*Potential impacts of the wind farm should be addressed during the Nunavut Impact Review Board's assessment process of the Meliadine Extension Project Proposal. Therefore, the GNENV does not support the removal of GN-TRC-09 or transferring this technical comment to the Meliadine Terrestrial Advisory Group (TAG) to be dealt with on a future date. GN-ENV recognizes that the Proponent's ability to address a part of this technical comment are to some extent dependent on having access to GN-ENV collaring data. **GN-TRC-09 remains unresolved.***

The Government of Nunavut recommends the following:

- *The Proponent complete GN-TRC-06 recommendations (updated ranges using last 10 years collar data, revised zone-of-influence, and revised disturbance coefficients etc.).*
- *The Proponent accept a temporary Data Sample and Sharing Agreement (DSSA) for data solely for the purpose of producing products to support the Nunavut Impact Review Board assessment.*
- *The Proponent complete recommendations for GN-TRC-11 and GN-TRC-05 and GNTRC-09.*

3.2 Updated Response

Please see response to GN TRC 05.

4 GN-TRC-11

4.1 Detailed Review Comment and Recommendations/Request

Potential impacts of the wind farm should be addressed during the Nunavut Impact Review Board's Reconsideration process of the Meliadine Extension Project Proposal. Therefore, the GN-ENV does not support the removal of GN-TRC-11 or transferring this technical comment to the Meliadine Terrestrial Advisory Group (TAG) to be dealt with on a future date. The recommendations in GN-TRC-11 (and its resolution) are linked directly to those of GNTRC-05 and GN-TRC-09 whereby the GN-ENV is seeking a revised analysis of direct and indirect habitat losses that incorporates revised caribou seasonal ranges based on more recent data only (last 10 years), revised zone-of-influence around key infrastructure (i.e windfarm, all weather access road) and revised disturbance coefficients. Since there are currently no Project-specific estimates of zone-of-influence or disturbance coefficients, the GN-ENV is also recommending that the TAG be consulted in making these revisions. The intent is to ensure the analysis is conservative enough to minimize risks due to lack of project-specific estimates.

GN-ENV recognizes that the Proponent's ability to address a part of this technical comment are to some extent dependent on having access to GN-ENV collaring data. GN-TRC-11 remains unresolved.

The Government of Nunavut recommends the following:

- The Proponent accept a temporary Data Sample and Sharing Agreement (DSSA). The data provided should be used solely for the purpose of producing products to support the Nunavut Impact Review Board assessment.*
- The Proponent complete recommendations for GN-TRC-11 and GN-TRC-05 and GNTRC-09.*

4.2 Updated Response

Please see response to GN-TRC-05.